UTA MARKET SEGMENTATION & GAP ANALYSIS REPORT

Notice of Rights

CONTENTS

LIST OF FIGURES

LIST OF TABLES

EXECUTIVE SUMMARY

In an effort to optimize service and identify market opportunities, UTA hired RSG to conduct a market segmentation analysis and market gap analysis. This report outlines the major findings from the market segmentation and market gap analyses.

RSG collected responses from 1,596 residents of Salt Lake, Utah, Davis, Weber, Tooele and Box Elder Counties consisting of UTA customers and non-customers. Respondents were recruited into the survey via postcard intercept, email lists and online panel outreach.

Data collection through the private online panel provider occurred between November 2 and November 20, 2021. Data collection for the email list occurred between November 10 and November 30, 2021 and included contacts obtained from the 2016 UTA Market Segmentation Study and the FAREPAY list. Postcards with invitations to take the survey online were distributed at five different intercept sites in Salt Lake City, Ogden and Provo between November 10 and November 16, 2021.

Market Segmentation Analysis

RSG analyzed the data using Latent Class Cluster analysis (LCC) to segment respondents. From this analysis, a 7-cluster solution emerged. Four clusters of the seven clusters use public transportation to varying degrees, however the underlying values, needs, and motivations for using transit differ between these four segments.

Green and Connected consists of younger, environmentally conscious transit users that embrace a multi-modal, urban lifestyle. They tend to use transit for all purposes and have relatively high rates of TRAX, FrontRunner, and Bus use.

Established Urbanites are similar to the Green and Connected in that they have positive feelings towards the environment and urban living, however, they put less importance on attitudes towards travel information and transportation reliability. This segment has comparatively high transit use but makes fewer total trips. They are more likely to use Bus and Trax than FrontRunner and are more likely to use transit for non-commuting purposes.

The Young and Transit Eager have a relatively high amount of transit use and similar to the Green and Connected and the Established Urbanites, they respond favorably towards environmental, urban lifestyle, transportation reliability, travel information and technology attitudes. However, unlike these other segments, they have high sensitivity to safety and are anxious while traveling.

The Commuting-focused Riders do not have favorable attitudes towards environmental and urban lifestyle statements. However, they do have favorable attitudes towards transit, indicating

that transit use for this segment is not due to an environmental or urbanist lifestyle but due to its practicality. The Commuting-focused Riders have a relatively high proportion of transit use for commuting purposes, but few use transit for non-commuting purposes.

The remaining three segments include the Families on the Go, Cautious Transit Rejectors, and Car-Centric Traditionalists. These segments place low importance on environmental issues or an urban lifestyle and have a strong preference for driving alone.

In order to identify the growth potential and market opportunities for the segments, attitudinal statements were grouped into factors through a factor analysis process. Of the eight factors, three stood out as differing the most between segments: Car-Independent Lifestyle, Sensitivity to Safety, and Predictability and Information.

Segments with a high Car-Independent Lifestyle score, including the Green and Connected, Established Urbanites and Young and Transit Eager, are easier to attract to transit because they actively would like transit to be a part of their life, while cars hold little appeal to them. Conversely, the Families on the Go, Cautious Transit Rejectors, and Car-Centric Traditionalists have the lowest desire to live a Car-Independent Lifestyle.

Segments with a high Sensitivity for Safety may be more challenging to serve with transit, as they feel anxious while traveling and avoid certain travel modes if they do not feel safe. The Families on the Go, Cautious Transit Rejectors and Young and Transit Eager have the highest Sensitivity to Safety, while this is less important to the Green and Connected, Established Urbanites, Car-Centric Traditionalists, and the Commuting-focused Riders.

Segments who put importance on Predictability and Information require real time transit info and place an importance on transit apps. The Green and Connected placed the highest importance on Predictability and Information followed by Families on the Go, Young and Transit Eager, and Commuting-focused Riders. The Cautious Transit Rejectors, Car-Centric Traditionalists, and Established Urbanites did not place a high importance on Predictability and Information.

Market Gap Analysis

RSG derived a synthetic population of demographics at the Census Block Group level from existing Census data. The LCC model was applied to these data to determine the percentage of each market segment within each Census Bock Group. Hotspot analysis was also conducted to determine statistically significant areas of transit-friendly market segments.

Exhibits showing the results of these analyses are shown throughout this report, however, shapefiles were also delivered to UTA to allow for additional analysis as needed. As data in this report are reviewed, and specific geographic areas and market segments are targeted, it is recommended that they be reviewed in the context of the specific characteristics and desires of each market segment.

2.0 SURVEY DESIGN

Residents of Salt Lake, Utah, Davis, Weber, Tooele and Box Elder Counties were eligible to participate in the 2021 UTA Market Segmentation Survey. Respondents from these counties, which included both UTA riders and non-riders, were recruited online or at intercept locations. The survey was administered entirely online and collected details about respondents' commuting and non-commuting trips as well as attitudes towards over forty travel- and transportation-related issues, which were used to better understand the needs and wants among various segments of the population. RSG closely worked with UTA during the survey design process, and UTA provided feedback and input on the content and format of the questions. For consistency and comparison reasons, the 2021 UTA Market Segmentation questionnaire broadly mirrored the questionnaire for the 2015 UTA Market Segmentation Study. However, due to the ongoing COVID-19 pandemic, some attitudinal questions about COVID precautions on transit were added, and some attitudinal questions that were not predictive of segmentation membership in 2015 were dropped.

2.1 SURVEY OUTLINE

The survey instrument included the following sections:

- Whether or not respondents commute for school or work
- For both commuting and non-commuting trips the following questions:
    - Frequency of using different modes
    - If using transit, type of public transportation used
    - If not using transit, reasons for not taking transit
- Telework frequency (commuting trips only)
- Types of trips using transit (non-commuting trips only)
- Personal vehicle availability
- Transit use impact due to COVID-19
- Attitudinal questions on travel and transit (e.g., importance of speed and time savings, environmental considerations, schedule flexibility, privacy concerns)
- Satisfaction with UTA's service (Riders)/Perception about UTA's service (Non-Riders)
- Demographics

2.2 WEB SURVEY SCREENSHOT EXAMPLES

This section provides illustrations of some of the survey questions included in the online survey. Figure 1 shows a question on the number of days the respondent commuted to work or school via different types of modes. An equivalent question was asked for non-commuting trips. These questions provide an overview and snapshot of the types of modes that participants commonly use and can provide insights into whether different types of modes are being used for commuting vs. non-commuting trips.

FIGURE 1: NUMBER OF DAYS DIFFERENT MODES ARE TYPICALLY USED FOR COMMUTING TRIPS

In a typical week, how many days per week do you use each of the following modes as your Primary mode for a work trip?

	5 or more days per week	4 days per week	3 days per week	2 days per week	1 day per week	Less than once per week	Never
Drive Alone	○	○	○	○	○	○	○
Walk for the entire trip	○	○	○	○	○	○	○
Public Transportation (including Paratransit)	○	○	○	○	○	○	○
Bicycle for the entire trip	○	○	○	○	○	○	○
Carpool	○	○	○	○	○	○	○
Ride Service (Uber, Lyft etc.)	○	○	○	○	○	○	○
Vanpool	○	○	○	○	○	○	○
Bikeshare (GREENbike)	○	○	○	○	○	○	○
Taxi	○	○	○	○	○	○	○

« Previous   Next »

© 2022, RSG | Privacy Policy | Sweepstakes Rules   Questions or comments? Contact us at utatraveler@rsginc.com

26%

Figure 2 illustrates the question that asked respondents to select which types of non-commuting trips they normally make with transit (if they use transit for work, they were already asked about those trips). The answers provided insight into the purpose of non-commuting trips that respondents make when using transit.

FIGURE 2: TYPES OF TRIPS FOR WHICH TRANSIT USED

Figure 3 shows a subset of the attitudinal questions about travel preferences and public transportation. These attitudinal questions can help segment respondents into different classes and identify those segments who are more (vs. less) open towards the idea of using public transportation.

FIGURE 3: SUBSET OF TRAVEL ATTITUDES

2.3 LOGIC CHECKS AND VALIDATION

The survey software was programmed to ensure clean data by implementing logic and answer validation checks. The survey screened for eligible respondents by asking respondents their home ZIP code, and respondents were only allowed to take the survey if they lived in the study area. Given that the survey was entirely programmed online, RSG was also able to include validation checks that verified, in real-time, that logical and valid responses were provided. For instance, an error message appeared when respondents indicated that there are more employed individuals in the household than the total number of individuals.

3.0 SURVEY ADMINISTRATION

3.1 RECRUITMENT AND FIELDING

The survey population included adult UTA riders and non-riders within UTA's service area including Salt Lake County, Tooele County, Utah County, Davis County, Weber County, and Box Elder County. RSG targeted 1,200 completed surveys, with at least 500 representing UTA riders. Recruitment efforts used the following sources, which we describe in greater detail below:

- Online panel provider
- Postcard distribution
- Email lists

Online panel provider

One method for recruitment to participate in the survey was through coordination with Dynata, a trusted and vetted private online panel provider. Members of this research panel residing within UTA's service area were invited to participate in the survey and screened by home ZIP code. RSG targeted 400 non-riders and 100 riders for a total of 500 completed surveys. Beyond targeting riders and non-riders, RSG worked closely with Dynata to collect completes that were broadly consistent with some important service area census demographics (e.g., age, income).

Postcard distribution

RSG also distributed postcard invitations at different stations/stops to supplement the sample with more transit riders. To reach a variety of different types of UTA riders, postcards were distributed at stations that offer different types of services (e.g., FrontRunner, TRAX, local bus, BRT). As shown in Figure 4, to maximize geographic reach, stations from different routes and bus lines were targeted and handouts were given to both alighting, boarding, and transferring riders at those stops/stations.

FIGURE 4: POSTCARD INTERCEPT LOCATIONS
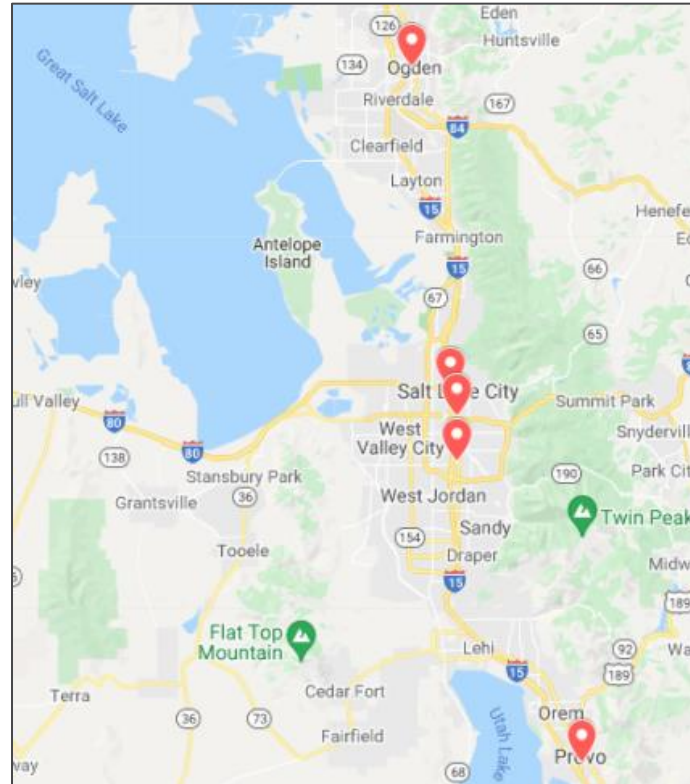
Based on these criteria, RSG handed out 2,126 postcard invitations at the following stations:

- **November 10, 2021, from 8am to 4pm:** Murray Central Station (Bus: 45, 47, 54, 200, 201; Rail: TRAX Red Line, TRAX Blue Line, FrontRunner)

- **November 11, 2021, from 8am to 4pm:** Central Pointe (Bus: 17, 21; Rail: TRAX Green, TRAX Blue Line, TRAX Red Line, S-line)

- **November 12, 2021, from 8am to 4pm:** Ogden (Bus: 455, 470, 473, 601, 603, 604, 613, 630, 650; Rail: FrontRunner)

- **November 15, 2021, from 10am to 6pm:** Salt Lake Central Station (Bus: 2, 6, 11, 205, 220, 509, 513, 519, 520, 902; Rail: TRAX Blue Line, FrontRunner)

- **November 16, 2021, from 8am to 4pm:** Provo Central (Bus: 805, 821, 831, 834; Rail: FrontRunner)

Email Lists

RSG also used various email lists as recruitment tools. For instance, RSG contacted nearly 2,000 respondents from the 2015 UTA Market Segmentation study who indicated that they would be willing to participate in future studies and provided their email address. Further, RSG,

in coordination with UTA, also used the FAREPAY email list to supplement the transit rider sample.

3.2 RESPONSE RATES

Overall, the field effort was successful with excellent response rates coming from both the email lists and the intercept field. The sample composition and survey completes broken out by recruitment type are shown below in Table 1.

TABLE 1: COMPLETED SURVEYS BY SAMPLING METHOD

County	Completed Surveys	Percent of Sample
Online panel provider	438	27%
Intercept*	401	25%
FAREPAY	409	26%
2015 UTA Segmentation Study	347	22%
Call Center	1	<1%
Total	**1,596**	**100%**

Note: For the intercept component, 2,126 postcard invitation were handed out, resulting in 401 completed surveys (before data cleaning), which translates into a response rate of 18%.

4.0 DATA CLEANING

4.1 EXCLUSION CRITERIA

RSG examined the data to detect any respondents with inconsistent or illogical data. Data were discarded if a respondent indicated that they lived outside the study area and therefore were not eligible to complete the survey in the first place. Survey completes were also discarded if the respondent did not pay attention to the survey as indicated by finishing the survey extremely fast, selecting the same response column for the attitudinal questions (i.e., "straight lining") or typing nonsensical comments in the open-ended questions.

4.2 GEOGRAPHIC REPRESENTATION OF THE SAMPLE

After data cleaning, 1,453 valid surveys were included in the final data set. Table 2 shows size and proportion of the sample by county as well as the population and percent of population in the six-county region, demonstrating that a roughly proportionate sample was collected from each county. It should be noted that "typical" weighting of the data was not necessary for this study at this point, since the primary purpose of this data is to estimate market segments which were extrapolated to the UTA Service area (based on census data) during the later part of the project.

TABLE 2: COMPLETED SURVEYS BY COUNTY

County	Completed Surveys	Percent of Sample	Population	% of Population
Salt Lake County	637	44%	1,185,238	46%
Utah County	345	24%	659,399	25%
Davis County	220	15%	362,679	14%
Weber County	187	13%	262,223	10%
Tooele County	33	2%	72,698	3%
Box Elder County	31	2%	57,666	2%
Total	**1,453**	**100%**	**2,599,903**	**100%**

5.0 ANALYSIS METHODS

5.1 LATENT CLASS ANALYSIS BACKGROUND AND METHOD

The behaviors, attitudes, and values of any given population are hugely variable. For the purposes of discussion and analysis, it is often useful to group a population into discrete categories that can be characterized and compared to one another. While many commonly used cluster analysis methods achieve this by using a priori segmentation approaches based on demographic variables (such as income, gender or age), the goal of Latent Class Cluster (LCC) analysis is to identify groups based on *latent* variables such as attitudes, preferences, values, or personality difference. For example, differences among individuals in their preference for using transit may be analyzed in relation to the traveler's household income, but perhaps the differences are not driven by income at all but by a particular set of attitudes towards, for example, privacy, the environment, or convenience when traveling.

5.2 LATENT CLASS PREDICTIVE VARIABLES

The modeling effort started with a large number of variables ("indicators") used in the specification. From there, the number of variables were narrowed down to a set of variables that had the highest predictive values for the cluster model (i.e., the variables that best differentiated the clusters). As can be seen in Table 3, the indicator variables used in the final model developed for this analysis are predictive (R^2 above 10%). In latent class analysis, the R^2 value indicates how well an indicator is explained by the model. In addition to the indicator variables mentioned below, we also included the following demographic covariates in the model estimation: age, income, employment status, marital status, household size, number of children, number of employed household members, number of household vehicles, and education. Covariates may be included in a LCC model either as inactive (in which case the covariates do not alter the model parameters) or active (in which case they generally affect the other model parameters). We included these demographic variables as active covariates because this allows for the application of the latent class segments to the demographics of Census Block Groups using synthetic population techniques during the market gap analysis. It should be emphasized that the variables listed in the table were used to determine the correct model and the number of the different segments, but that once clusters are determined, they can be profiled by other variables that were not originally part of the model specification.

TABLE 3: INDICATOR VARIABLES AND VARIANCE

INDICATOR VARIABLES	R^2
I prefer a travel option that has predictable travel time from day to day	49%
If my travel option is delayed, I want to know the cause and length of the delay	47%
When traveling, I like to keep as close as possible to my departure and arrival schedules	46%
It is important to me to live near public transportation	46%
It is important to me that I am not reliant on a car for all of my trips	39%
I like to receive information about my trip in real time (through overhead signage, texts or mobile app)	36%
I am usually anxious and unsettled when traveling	32%
I know how to reach my destination using public transportation	30%
I would switch to a different form of transportation if it would reduce air pollution	29%
I prefer to live within walking distance of stores and restaurants	29%
I would ride transit if services were available to my destination when I need to travel	29%
I feel safe using public transportation	29%
Having access to mobile technology (cell phone, smartphone, tablet) is more important to me than having access to a car	28%
I wouldn't mind walking a few minutes to get to and from a bus or a TRAX stop	26%
Transit makes me nervous because I have never used it and don't know what it will be like	26%
People who drive alone should pay more to help improve air quality	24%
I don't mind traveling with strangers	24%
I worry about getting in an accident when I travel	23%
Use of public transportation can help improve air quality	23%
I avoid traveling at certain times because it is too stressful	22%
I would like to make productive use of my time when I travel	21%
It is important to me to always be connected (e.g., cell, WiFi)	17%
I would be willing to pay more when I travel if it would help improve air quality	16%
I prefer driving because I like to be alone while I travel	16%
I avoid traveling through certain areas because they are unsafe	15%
I would change my form of travel if it would save me some time	12%
Having my privacy is very important to me when I travel	11%

5.3 FACTOR ANALYSIS

A factor analysis was conducted to classify attitudinal variables that vary together and can be made into one factor and thereby reducing the number of variables for analysis. This can help simplify the analysis and reporting to be more digestible to the reader. The factor analysis allows to quickly identify the differences in attitudes among latent class segments, without losing the explanatory power of each individual statement. An exploratory factor analysis preceded the confirmatory factor analysis that was used to determine the finalized factors. The resulting factors are used extensively in the competitive positioning analysis (see section 7.0 Competitive Positioning) in order to compare general attitudes between latent class segments.

Exploratory Factor Analysis

The exploratory factor analysis was conducted on all attitudinal variables, allowing the study team to understand which attitudinal statements could be grouped together. This analysis was used as the input to the confirmatory factor analysis, although variables that did not have strong loadings on any particular factor were removed.

Confirmatory Factor Analysis

Confirmatory factor analysis is used to test hypotheses of relationships between variables. The confirmatory factor analysis was performed in R, a statistical programming software. First, the output of the exploratory factor analysis was tested and then, successively, several more attitudinal variables were excluded from the model or moved among factors because this provided a better fit.

The comparative fit index (CFI)[1] returns a value between 0 and 1, with values closer to 1 indicating a better fit, the confirmatory model has a CFI of 0.904. The root mean square error of approximation (RMSEA)[2] should be closer to 0 in a well-fitting model and values up to 0.07 are considered acceptable, the confirmatory model is in this acceptable range with a RMSEA of 0.062.

The final results of the confirmatory factor analysis are shown in Table 4. We have named the following six factors based on themes and topics that make up each factor:

- Factor 1 (**Predictability and Information)** consists of statements that deal with predictable, reliable travel times and real-time travel information.

- Factor 2 (**Car-Independent Lifestyle**) consists of statements that specifically involve placing greater importance on something other than a car, while other indicate preference for a walkable, urban lifestyle with accessibility to transit.

- Factor 3 (**Sensitivity to Safety**) consists of statements that deal with safety as well as stress and anxiety while traveling.

- Factor 4 (**Pro-Environment**) consists of all statements that indicate environmental awareness.

- Factor 5 (**Need for Speed and Convenience**) consists of statements dealing with speed and convenience. Higher scorers in this factor are more likely to use the simplest, fastest form of transportation regardless of cost.

---

[1] Bentler, Peter M. "Comparative fit indexes in structural models." Psychological Bulletin 107.2 (1990): 238.
[2] Steiger, James H. "Structural model evaluation and modification: An interval estimation approach." Multivariate behavioral research 25.2 (1990): 173-180.

- Factor 6 (**Privacy and Preference to Drive**) consists of statements that give an indication of a traveler's desire to drive as well as their desire to keep travel a private experience.

The three of these eight factors with the biggest differences between latent class segments are used to compare segments in the competitive positioning analysis in section 7.0 Competitive Positioning.

TABLE 4: CONFIRMATORY FACTOR ANALYSIS

FACTOR NAME	STATEMENT	COEF.	STD. ERROR	Z
1. Predictability and Information	I like to receive information about my trip in real time (through overhead signage, texts or mobile app)	1	0	NA
	When traveling, I like to keep as close as possible to my departure and arrival schedules	0.956	0.035	27.512
	I prefer a travel option that has predictable travel time from day to day	0.912	0.034	26.955
	If my travel option is delayed, I want to know the cause and length of the delay	0.901	0.033	26.947
2. Car-Independent Lifestyle	It is important to me to live near public transportation	1	0	NA
	It is important to me that I am not reliant on a car for all of my trips	0.887	0.029	30.525
	I prefer to live within walking distance of stores and restaurants	0.712	0.027	26.653
	Having access to mobile technology (cell phone, smartphone, tablet) is more important to me than having access to a car	0.661	0.030	21.945
	I know how to reach my destination using public transportation	0.647	0.029	22.653
	I would ride transit if services were available to my destination when I need to travel	0.629	0.024	25.940
	I wouldn't mind walking a few minutes to get to and from a bus or a TRAX stop	0.532	0.025	21.212
3. Sensitivity to Safety	I worry about getting in an accident when I travel	1	0	NA
	I avoid traveling at certain times because it is too stressful	0.993	0.044	22.381
	I am usually anxious and unsettled when traveling	0.971	0.041	23.542
	I avoid traveling through certain areas because they are unsafe	0.655	0.041	16.120
4.Pro-Environment	People who drive alone should pay more to help improve air quality	1	0	NA
	I would be willing to pay more when I travel if it would help improve air quality	0.973	0.038	25.474
	I would switch to a different form of transportation if it would reduce air pollution	0.896	0.036	25.217

FACTOR NAME	STATEMENT	COEF.	STD. ERROR	Z
5. Need for Speed and Convenience	I use the fastest form of transportation regardless of cost	1	0	NA
	I use the form of transportation that is simple and easy to use regardless of cost	0.668	0.060	11.197
6. Privacy and Preference to Drive	I prefer driving because I like to be alone while I travel	1	0	NA
	When I travel with others, I prefer to be the driver	0.646	0.039	16.728
	Having my privacy is very important to me when I travel	0.593	0.034	17.197

6.0 RESULTS BY LATENT CLASS SEGMENTS

6.1 SEGMENT DESCRIPTIONS

A 7-cluster solution provided the best model fit and made the most intuitive sense. Figure 5 shows the relative size of these seven segments in the sample. Below we introduce and describe these seven segments. It should be pointed out that the names of the segments are for illustrative purposes only and are probabilistic rather than deterministic. For instance, even though the "Young and Transit Eager" segment contains more younger members than any other segment, not all members of this segment are young.

FIGURE 5: SEGMENT SAMPLE SIZES
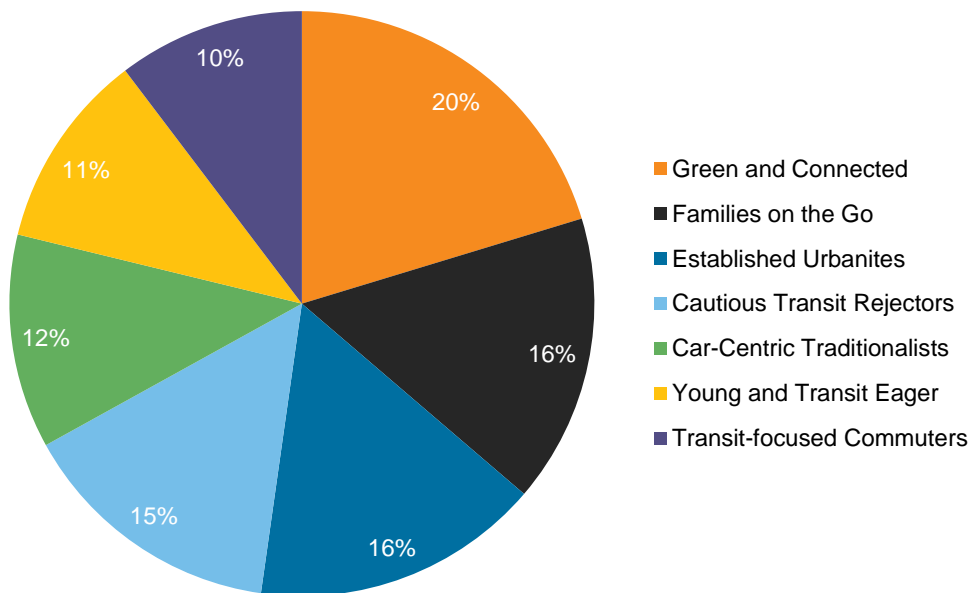
Green and Connected

The largest segment identified are the Green and Connected. This segment consists of younger, environmentally conscious transit users that embrace a multi-modal, urban lifestyle. They are more likely to agree with statements such as "It is important to me to live near public transportation" and "I would be willing to pay more when I travel if it would help the environment." They are not anxious travelers and not concerned about privacy when they travel. In addition, they place a high value on travel information, transportation reliability, and technology. This segment trends towards younger, slightly more educated, lower income, and are more likely to be students. They have the lowest vehicle ownership of any segment, and the

highest overall transit use. The Green and Connected use transit for all purposes and have relatively high rates of TRAX, FrontRunner, and Bus use.

Families on the Go

Families on the Go place a high value on transportation reliability, privacy, and are relatively time sensitive. They do not put importance on environmental issues or an urban lifestyle and have a strong preference for driving alone. Additionally, they are anxious travelers and are concerned about safety. Families on the Go tend to be working age (between 25 and 65), have median household incomes, high employment, and slightly lower education. They tend to be families, with the highest number of children in the household and high vehicle ownership. Families on the Go have fairly low transit use, but when they do use transit, they use FrontRunner indicating that they consider transit under some circumstances for commuting. Of the segments with low transit use, Families on the Go are the most time-sensitive and the least anti-transit, meaning that quality transit service that is safe and easy-to-use has a potential to attract them, particularly for commuting purposes.

Established Urbanites

The Established Urbanites use transit for a variety of purposes, and demonstrate pro-environmental, pro-transit and pro-urban lifestyle attitudes. The Established Urbanites are similar to the Green and Connected in that they are more likely have positive feelings towards the environment and urban living, however, they put less importance on attitudes towards travel information and transportation reliability such as "I prefer a travel option that has a predictable travel time from day to day." The Established Urbanites tend to be older (second oldest population of all segments), have higher household incomes, higher educated and live alone with no children in the household. This segment has comparatively high transit use but makes fewer total trips. They are more likely to use Bus and Trax than FrontRunner and more likely to use transit for non-commuting purposes. While speculative, it is possible that many of the Green and Connected individuals become Established Urbanites as they grow older, advance in their careers, earn higher salaries, and establish their professional lives.

Cautious Transit Rejectors

The Cautious Transit Rejectors do not put importance on environmental issues, urban living, travel information, transportation reliability or time management. The Cautious Transit Rejectors have high anxiety towards travel and have negative attitudes towards transit. For example, only 8% of Cautious Transit Rejectors agreed with the statement "I would ride transit if services were available to my destination when I need to travel." This segment trends towards lower income and a slightly lower education level, but they have a high vehicle ownership rate. Cautious Transit Rejectors have the highest percentage of females and highest percentage of people

outside of the labor force. This segment is very unlikely to use transit for any purpose and has the lowest overall trip total.

Car-Centric Traditionalists

The Car-Centric Traditionalists are dual income families with high household incomes and tend to have at least one household vehicle. The Car-Centric Traditionalists do not put importance on environmental issues, urban living, travel information, technology, transportation reliability or time management. However, they have low anxiety towards travel and are much less anti-transit compared to the Cautious Transit Rejectors. Despite not having the most anti-transit attitude, this segment has the least transit use for any purpose and is most likely to drive alone. The Car-Centric Traditionalists are the oldest and highest income segment. They are more likely than others to be out of the labor force and tend to be married. They have a slightly higher education level than other segments and the highest vehicle ownership. Based on their demographic and psychological profile, this segment shows little promise for targeting them as it relates to transit use.

Young and Transit Eager

The Young and Transit Eager have a relatively high amount of transit use and similar to the Green and Connected and the Established Urbanites, they respond favorably towards environmental, urban lifestyle, transportation reliability, travel information and technology attitudes. They differ from the Green and Connected and the Established Urbanites in that they display a high anxiety towards travel, responding favorably to statements such as "I am usually anxious and unsettled when travelling." Similar to the Green and Connected and the Established Urbanites, they are likely to use transit for non-commute purposes and like the Green and Connected they use a variety of transit modes including Trax, Bus and Frontrunner. The Young and Transit Eager is the youngest, least educated segment; however, one-quarter of this segment are currently students. They are more likely to live alone, not have kids and have a higher unemployment rate. Like the other transit-using segments, a high percentage of this segment do not own a vehicle.

Commuting-focused Riders

The Commuting-focused Riders do not have favorable attitudes towards environmental and urban lifestyle statements. However, they do have favorable attitudes towards transit indicating that transit use for this segment is not due to an environmental or urbanist lifestyle but due to its practicality. The Commuting-focused Riders have a relatively high proportion of transit use for commuting purposes, but few use transit at all for non-commuting purposes. In line with their practical, commuter-oriented tendencies, they are more likely to use Frontrunner than other transit modes and unlikely to use bus. This segment may be unlikely to actively seek out transit and would not mind moving to a place where they cannot access transit. Even so, this segment

could be a promising segment for UTA to target as it tries to increase ridership and the frequency with which riders take UTA.

6.2 TRANSIT TRIPS BY SEGMENT

Respondents who travel for purposes of commuting to work or school (n = 1,008) are considered a Rider if they use transit for commuting once per week or more frequently, an Occasional Rider if they use transit less than once per week for commuting, and a Non-Rider if they never use transit for commuting.

Figure 6 presents commute ridership by latent class segment. More than half of the Green and Connected (75%), the Younger and Transit Eager (64%), the Established Urbanites (61%) and the Commuting-focused Riders (55%) use transit once per week or more for commuting purposes. Among commuters, about two-thirds of the Cautious Transit Rejectors and the Car-Centric Traditionalists never use transit for commuting purposes.

FIGURE 6: TRANSIT RIDERSHIP FOR COMMUTING BY SEGMENT
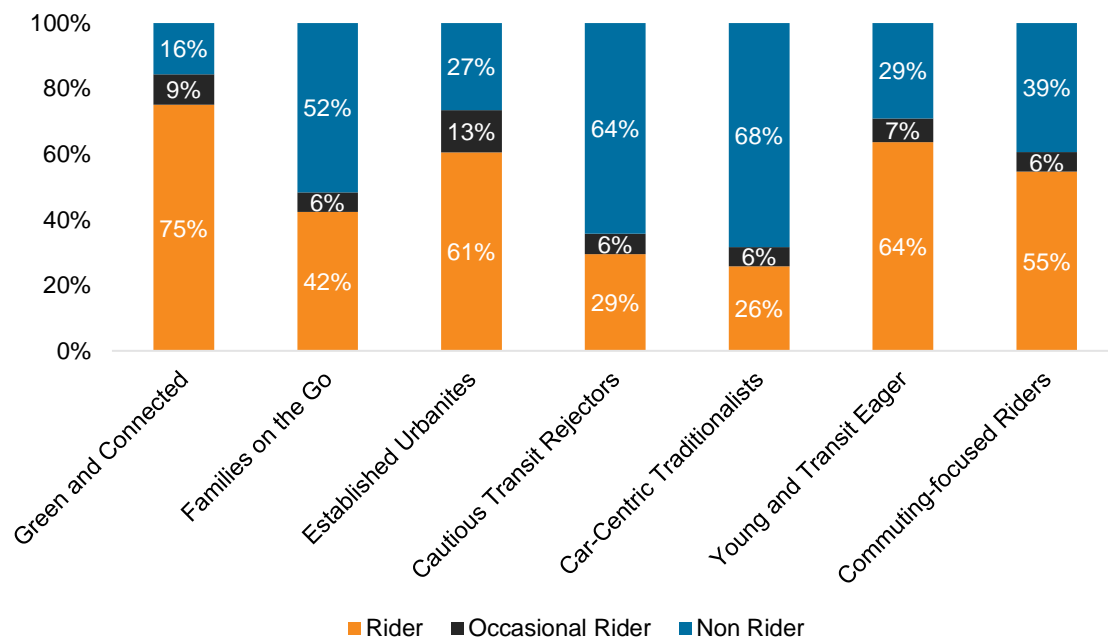
All respondents were asked about trips that they make for non-commute purposes. Figure 7 shows the proportions of Riders, Occasional Riders, and Non-Riders for non-commute trips by latent class segment. The Green and Connected, The Younger and Transit Eager, The Established Urbanites have the highest percentage of Riders for non-commute purposes. Compared to commuting trips, the Commuting-focused Riders have a much smaller proportion of Riders (14%), suggesting that this segment currently uses transit primarily for commuting

purposes. As a segment that is already familiar and comfortable with using transit from their commuting trips, a clear market opportunity consists of trying to have the Commuting-focused Riders use transit for their non-commuting trips, as well. Similarly, the Established Urbanites have the highest proportion of Occasional Riders (25%), indicating that this segment is dabbling in transit use and could be convinced to become more frequent users.

FIGURE 7: TRANSIT RIDERSHIP FOR NON-COMMUTING PURPOSES BY SEGMENT
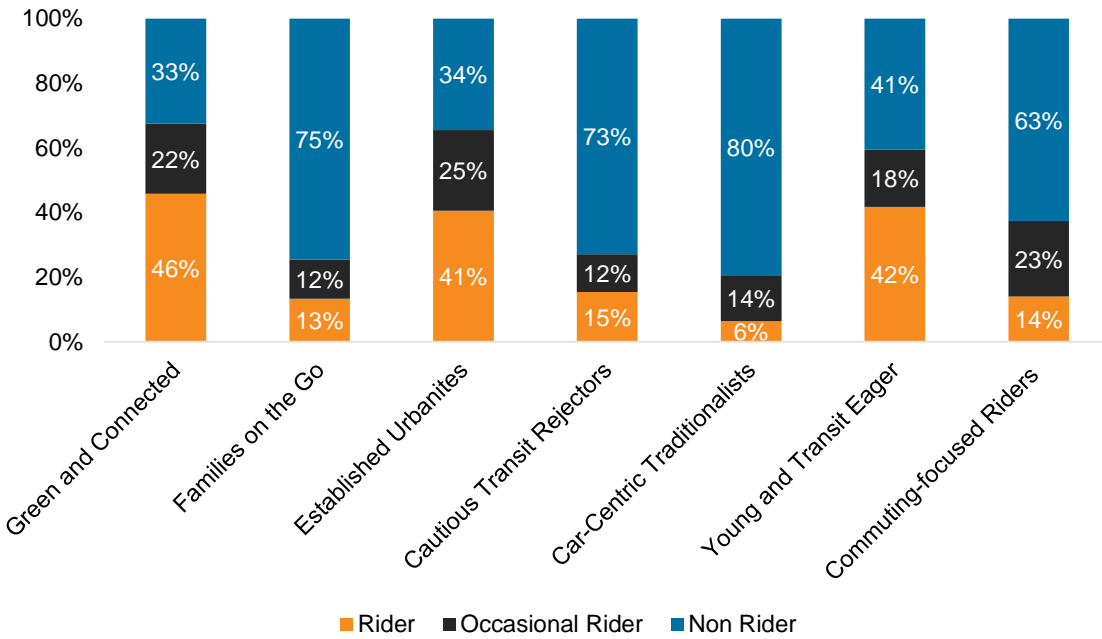
6.3 DEMOGRAPHICS BY SEGMENT

Figure 8 shows the age categories that make up each segment. The Young and Transit Eager are the youngest with 48% of the segment under 35 years old. They are followed closely by the Green and Connected (40%), while the Car-Centric Traditionalist and Established Urbanites tend to be older.

FIGURE 8: AGE BY SEGMENT
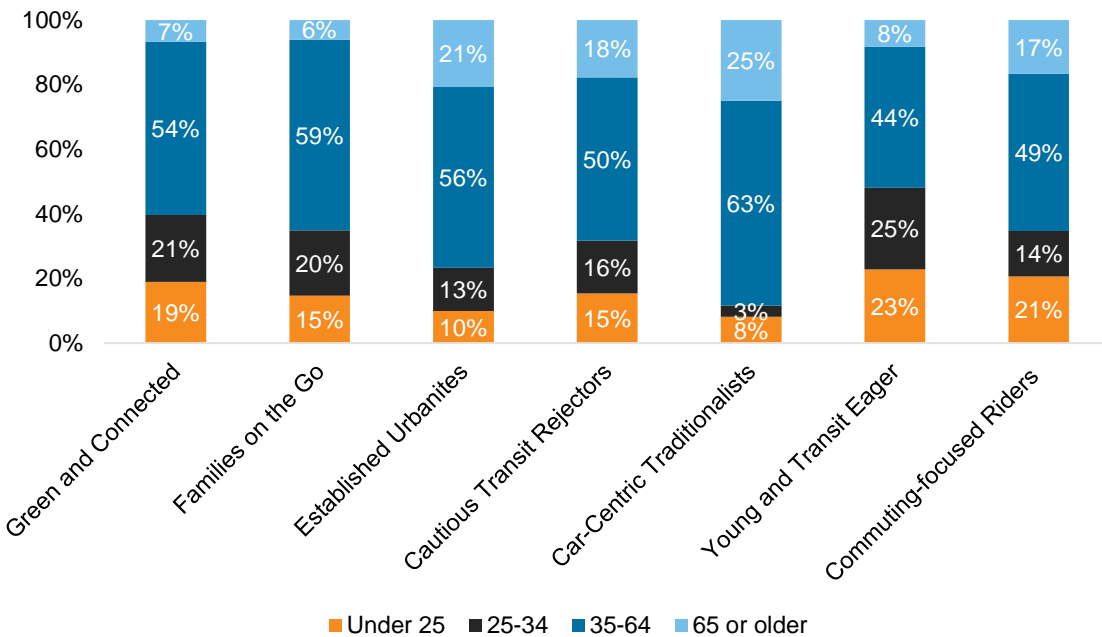
Figure 9 illustrates employment status by each latent class segment. The Green and Connected and Families on the Go have the highest rate of full-time employment at 80% and 81% respectively. About one-third (35%) of the Cautious Transit Rejectors are not in the labor force, and the Young and Transit Eager has the highest rate of unemployment (11%) of all the segments.

FIGURE 9: EMPLOYMENT BY SEGMENT
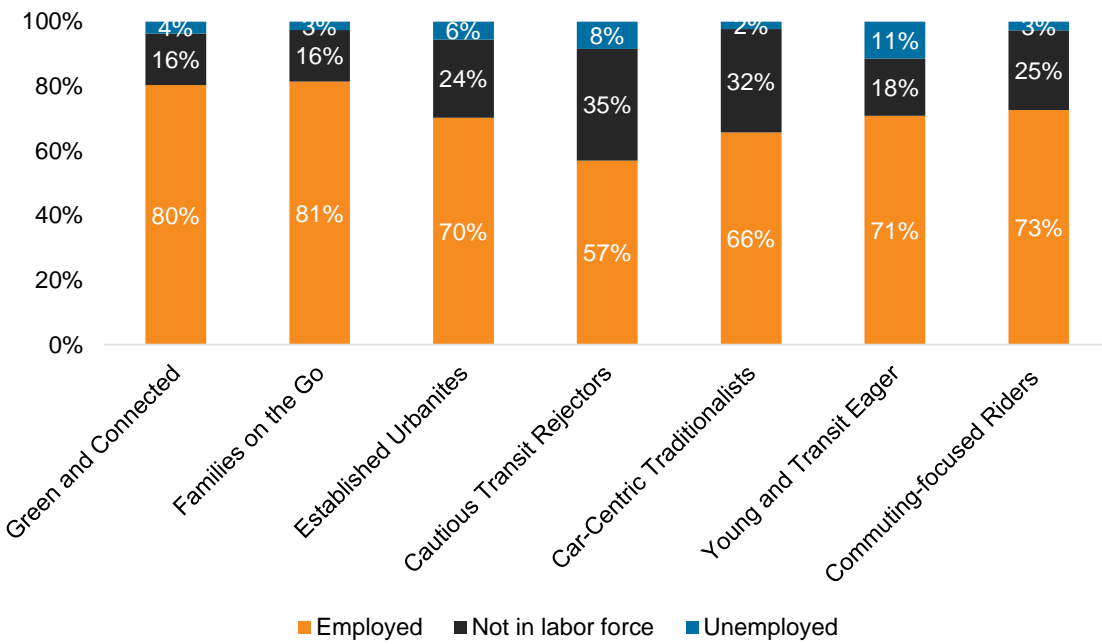
Figure 10 shows the number of days each week spent telecommuting *for employed respondents* by latent class segment. The Young and Transit Eager, Families on the Go and the Commuting-focused Riders have the highest percentage of non-telecommuters. On the other hand, 45% of Established Urbanites telecommute at least one day per week.

FIGURE 10: TELECOMMUTING BY SEGMENT
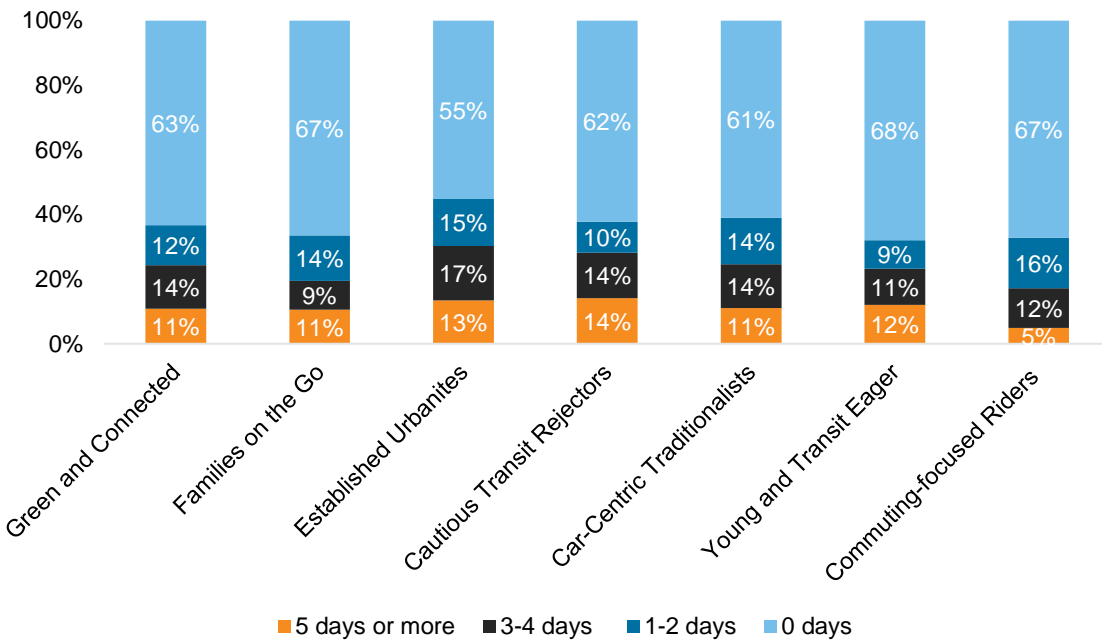
Figure 11 illustrates the percentage of students in each latent class segment. The Green and Connected (26%), the Young and Transit Eager (25%), the Commuting-focused Riders (24%) and the Families on the Go (23%) have the highest percentage of students, whereas only 11% of the Car-Centric Traditionalists are students.

FIGURE 11: STUDENT BY SEGMENT
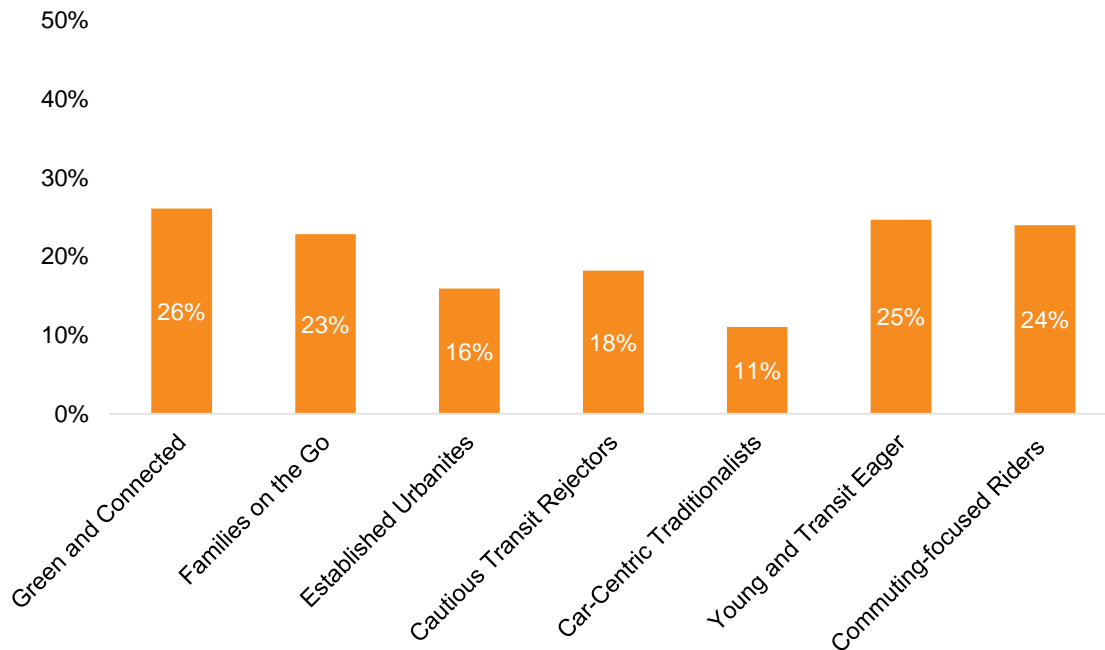
Figure 12 shows annual household income before taxes. The Car-Centric Traditionalists, Families on the Go and the Commuting-focused Riders all have household income levels that tend to be higher than average. The Young and the Transit Eager and the Green and Connected have lower household income levels.

FIGURE 12: HOUSEHOLD INCOME BY SEGMENT
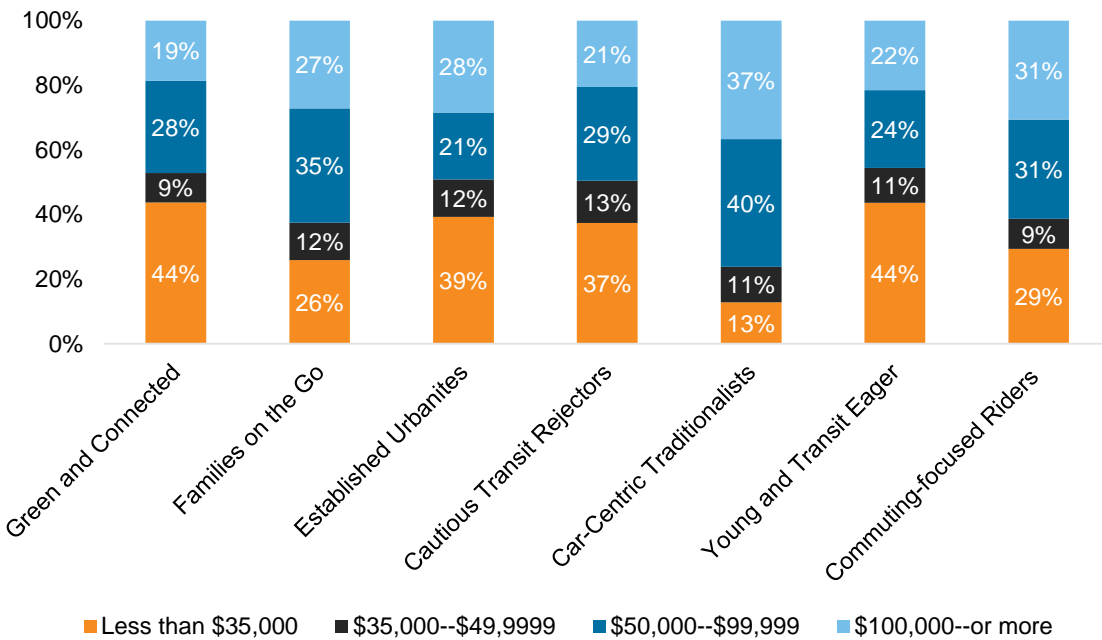
As shown in Figure 13 the Cautious Transit Rejectors and the Young and Transit Eager have the highest percentage of respondents, 23% and 21% respectively ordering online grocery delivery on a weekly basis.

FIGURE 13: ONLINE GROCERY DELIVERY BY SEGMENT
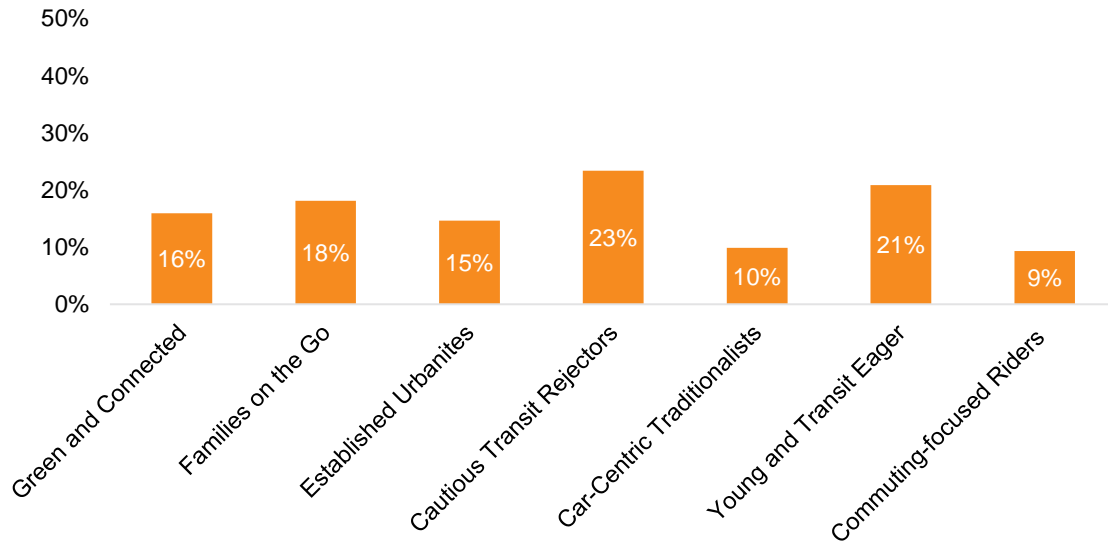
Figure 14 shows the percentage of respondents ordering food delivery weekly by latent class segment. The Green and Connected and the Young and Transit Eager order food the most frequently whereas, only 8% of the Car-Centric Traditionalist order food online weekly. The relatively high percentage of Green and Connected ordering food online might reflect their urban, time-sensitive lifestyle.

FIGURE 14: ONLINE FOOD DELIVERY BY SEGMENT
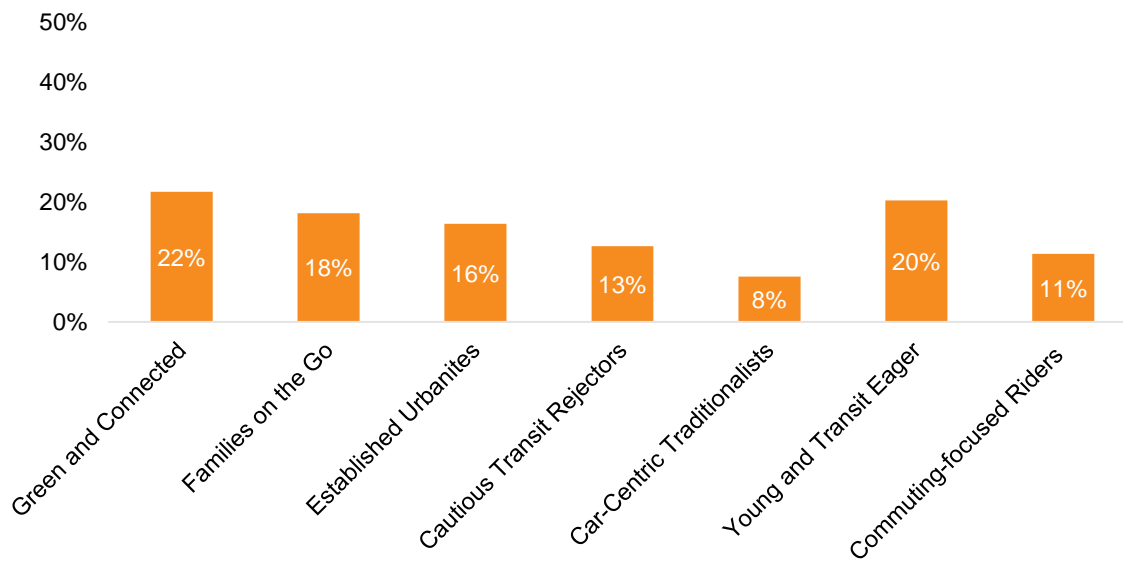
6.4 ATTITUDES BY SEGMENT

All attitudinal statements are presented in the following section by the percentage of respondents in each segment who agreed with the statement (i.e., selecting "6" or higher). The attitudinal statements are grouped by the factors that emerged from the confirmatory factor analysis. The factors are presented in order of overall most agreed-with to overall most disagreed-with.

Predictability and Information

The majority of respondents in each segment agrees with each of the four statements that make up the predictability and information factor (Table 5). Regardless of the segment, travelers value having information about their trip. All segments prefer predictable and consistent travel times and desire information to be communicated in the case of unexpected travel conditions.

TABLE 5: PERCENTAGE THAT AGREE WITH PREDICTABILITY AND INFORMATION ATTITUDINAL STATEMENTS BY SEGMENT

PREDICTABILITY AND INFORMATION	GREEN AND CONNECTED	FAMILIES ON THE GO	ESTABLISHED URBANITES	CAUTIOUS TRANSIT REJECTORS	CAR-CENTRIC TRADITIONALISTS	YOUNG AND TRANSIT EAGER	COMMUTING-FOCUSED RIDERS
I prefer a travel option that has predictable travel time from day to day	98%	99%	90%	72%	76%	96%	97%
If my travel option is delayed, I want to know the cause and length of the delay	98%	99%	84%	71%	83%	94%	96%
When traveling, I like to keep as close as possible to my departure and arrival schedules	98%	99%	84%	72%	70%	95%	95%
I like to receive information about my trip in real time (through overhead signage, texts or mobile app)	97%	93%	84%	61%	58%	95%	89%

Car-Independent Lifestyle

Seven statements make up the Car-Independent Lifestyle factor (Table 6). Two of these statements specifically involve placing greater importance on something other than a car, while two ("It is important to me to live near public transportation" and "I prefer to live within walking distance of stores and restaurants") indicate preference for a walkable, urban lifestyle with accessibility to transit. The Young and Transit Eager and the Established Urbanites tend to agree most with these statements, while the Cautious Transit Rejectors and the Car-Centric Traditionalists disagree almost unanimously.

TABLE 6: PERCENTAGE THAT AGREE WITH CAR-INDEPENDENT LIFESTYLE ATTITUDINAL STATEMENTS BY SEGMENT

CAR-INDEPENDENT LIFESTYLE	GREEN AND CONNECTED	FAMILIES ON THE GO	ESTABLISHED URBANITES	CAUTIOUS TRANSIT REJECTORS	CAR-CENTRIC TRADITIONALISTS	YOUNG AND TRANSIT EAGER	COMMUTING-FOCUSED RIDERS
I wouldn't mind walking a few minutes to get to and from a bus or a TRAX stop	90%	69%	92%	50%	59%	94%	82%
I would ride transit if services were available to my destination when I need to travel	96%	71%	91%	43%	53%	91%	75%
I know how to reach my destination using public transportation	98%	56%	85%	36%	43%	87%	86%
It is important to me to live near public transportation	94%	31%	81%	22%	6%	92%	28%

I prefer to live within walking distance of stores and restaurants	81%	37%	69%	40%	8%	84%	14%
It is important to me that I am not reliant on a car for all of my trips	85%	25%	74%	23%	3%	80%	21%
Having access to mobile technology (cell phone, smartphone, tablet) is more important to me than having access to a car	67%	28%	39%	29%	2%	88%	18%

Sensitivity to Safety

Four statements make up the Sensitivity to Safety factor (Table 7). The Families on the Go, Cautious Transit Rejectors and the Young and Transit Eager generally agree with statements about safety and anxiety while traveling. Being anxious and unsettled while traveling only resonated with the Young and Transit Eager group. The Families on the Go, Cautious Transit Rejectors and the Young and Transit Eager avoid traveling at certain times because it is too stressful and avoid traveling though certain areas because they are unsafe.

TABLE 7: PERCENTAGE THAT AGREE WITH SENSITIVITY TO SAFETY ATTITUDINAL STATEMENTS BY SEGMENT

SENSITIVITY TO SAFETY	GREEN AND CONNECTED	FAMILIES ON THE GO	ESTABLISHED URBANITES	CAUTIOUS TRANSIT REJECTORS	CAR-CENTRIC TRADITIONALISTS	YOUNG AND TRANSIT EAGER	COMMUTING-FOCUSED RIDERS
I avoid traveling at certain times because it is too stressful	33%	64%	37%	68%	26%	79%	15%
I avoid traveling through certain areas because they are unsafe	27%	64%	29%	51%	25%	70%	17%
I worry about getting in an accident when I travel	26%	50%	29%	53%	8%	77%	7%
I am usually anxious and unsettled when traveling	7%	25%	16%	40%	2%	63%	4%

Pro-Environment

Table 8 shows the three statements that make up the Pro-Environment factor. Some segments are enthusiastic when it comes to statements about switching to transit for environmental reasons. The Green and Connected, the Established Urbanites and the Young and Transit Eager are most likely to agree with statements about switching to a different mode or paying more to improve air quality. The Commuting-focused Riders differentiate themselves from other

transit-riding segments, as they are less likely to agree with statements about switching modes or paying more to improve air quality.

TABLE 8: PERCENTAGE THAT AGREE WITH PRO-ENVIRONMENT ATTITUDINAL STATEMENTS BY SEGMENT

PRO-ENVIRONMENT	GREEN AND CONNECTED	FAMILIES ON THE GO	ESTABLISHED URBANITES	CAUTIOUS TRANSIT REJECTORS	CAR-CENTRIC TRADITIONALISTS	YOUNG AND TRANSIT EAGER	COMMUTING-FOCUSED RIDERS
I would switch to a different form of transportation if it would reduce air pollution	84%	38%	72%	33%	15%	95%	31%
I would be willing to pay more when I travel if it would help improve air quality	64%	26%	57%	29%	17%	75%	16%
People who drive alone should pay more to help improve air quality	58%	13%	48%	20%	9%	66%	4%

Need for Speed and Convenience

Two statements make up the Need for Speed and Convenience factor in Table 9. High scorers in this factor are most likely to use the simplest, fastest form of transportation, regardless of the cost. For example, the Families on the Go and the Young and Transit Eager are more likely than the other segments to need to change travel plans at a moment's notice and make trips to a variety of locations. The Green and Connected and Established Urbanites are more cost-sensitive, less in a hurry and less likely to need to make trips to a variety of locations.

TABLE 9: PERCENTAGE THAT AGREE WITH NEED FOR SPEED AND CONVENIENCE ATTITUDINAL STATEMENTS BY SEGMENT

NEED FOR SPEED AND CONVENIENCE	GREEN AND CONNECTED	FAMILIES ON THE GO	ESTABLISHED URBANITES	CAUTIOUS TRANSIT REJECTORS	CAR-CENTRIC TRADITIONALISTS	YOUNG AND TRANSIT EAGER	COMMUTING-FOCUSED RIDERS
I use the form of transportation that is simple and easy to use regardless of cost	53%	63%	51%	51%	54%	70%	54%
I use the fastest form of transportation regardless of cost	38%	51%	30%	42%	41%	56%	43%

Privacy and Preference to Drive

Table 10 shows the three statements that make up the Privacy and Preference to Drive factor. Families on the Go, Cautious Transit Rejectors, and the Young and Transit Eager groups tend to value privacy more than other segments.

TABLE 10: PERCENTAGE THAT AGREE WITH PRIVACY AND PREFERENCE TO DRIVE ATTITUDINAL STATEMENTS BY SEGMENT

PRIVACY AND PREFERENCE TO DRIVE	GREEN AND CONNECTED	FAMILIES ON THE GO	ESTABLISHED URBANITES	CAUTIOUS TRANSIT REJECTORS	CAR-CENTRIC TRADITIONALISTS	YOUNG AND TRANSIT EAGER	COMMUTING-FOCUSED RIDERS
Having my privacy is very important to me when I travel	51%	76%	35%	64%	51%	80%	45%
When I travel with others, I prefer to be the driver	35%	52%	29%	43%	50%	54%	51%
I prefer driving because I like to be alone while I travel	17%	49%	17%	49%	34%	56%	30%

Other Statements (Not in a Factor)

Table 11 shows the remaining attitudinal statements that were not a part of one of the six factors broken out by segments. The statements are ordered from most agreed-with to least agreed-with (by total). Statements such as "I take preventative measures against COVID-19," "I would like to make productive use of my time when I travel" and "I am satisfied with the cleanliness of UTA vehicles" are near the top of the list. "Transit makes me nervous because I have never used it and don't know what it will be like" and "I need to make trips to a wide variety of locations every day" are at the bottom of the list.

TABLE 11: PERCENTAGE THAT AGREE WITH OTHER ATTITUDINAL STATEMENTS BY SEGMENT

OTHER STATEMENTS	GREEN AND CONNECTED	FAMILIES ON THE GO	ESTABLISHED URBANITES	CAUTIOUS TRANSIT REJECTORS	CAR-CENTRIC TRADITIONALISTS	YOUNG AND TRANSIT EAGER	COMMUTING-FOCUSED RIDERS
I take preventative measures against COVID-19	93%	86%	92%	75%	75%	92%	72%
Use of public transportation can help improve air quality	99%	72%	91%	59%	66%	96%	85%
I would like to make productive use of my time when I travel	91%	86%	82%	61%	51%	96%	83%
I am satisfied with the cleanliness of UTA vehicles	84%	58%	82%	60%	69%	85%	87%
I take the risk of spreading COVID-19 very seriously	90%	77%	84%	67%	64%	87%	64%
I am satisfied with the cleanliness at UTA transit stations	86%	61%	78%	62%	63%	75%	87%
I am satisfied with the adapted health precautions by UTA	82%	62%	75%	56%	61%	76%	78%
I feel safe using public transportation	93%	51%	87%	33%	59%	81%	95%
I would change my form of travel if it would save me some time	78%	81%	65%	53%	49%	89%	77%
I avoid situations where risk of transmission of COVID-19 is high	77%	69%	68%	65%	56%	85%	46%
My travel schedule tends to be the same day-to-day	79%	74%	57%	57%	53%	75%	73%

OTHER STATEMENTS	GREEN AND CONNECTED	FAMILIES ON THE GO	ESTABLISHED URBANITES	CAUTIOUS TRANSIT REJECTORS	CAR-CENTRIC TRADITIONALISTS	YOUNG AND TRANSIT EAGER	COMMUTING-FOCUSED RIDERS
It is important to me to always be connected (e.g., cell, WiFi)	88%	71%	61%	52%	38%	91%	55%
I feel comfortable using shared transportation options today	88%	50%	78%	28%	45%	73%	83%
I am satisfied with the mask policy enforcement while riding with UTA	65%	53%	64%	49%	54%	70%	62%
It's important to be able to change my travel plans at a moment's notice	62%	68%	48%	56%	50%	78%	62%
I don't mind traveling with strangers	91%	29%	74%	27%	44%	61%	79%
I would consider purchasing an electric vehicle when I next buy a car or truck	72%	60%	65%	40%	42%	72%	53%
I need to make trips according to a fixed schedule	74%	69%	51%	45%	32%	69%	60%
UTA meets the transportation needs of the community	68%	50%	65%	42%	46%	69%	61%
I would prefer to drive alone or only with immediate household members over other ways of traveling	32%	71%	28%	65%	58%	66%	40%
If I had an electric bicycle available to use, I would use it to make some trips that I currently make by car or transit	63%	45%	58%	32%	24%	68%	41%
I am usually in a hurry when I make a trip	50%	60%	34%	44%	33%	71%	44%
I need to travel mostly during rush hour times	50%	47%	37%	28%	29%	60%	42%
I have flexibility on when I can go to work	41%	33%	46%	34%	39%	53%	49%
I need to make trips to a wide variety of locations every day	32%	34%	31%	31%	31%	52%	22%
Transit makes me nervous because I have never used it and don't know what it will be like	2%	16%	1%	27%	7%	38%	0%

7.0 COMPETITIVE POSITIONING

Based on the attitudinal segmentation analysis presented so far, we can identify those segments that have attitudes that predispose them to be potential transit users, as well as those segments that will be difficult to convert to use transit. To do this, we focused on three factors that emerged from the confirmatory factor analysis and that show particularly strong differences between latent class segments.

The confirmatory factor analysis results in a factor score for each factor for each respondent. Factor scores are representative of the combination of the attitudinal statements that make up each factor. For each factor the average score is zero, so for a particular respondent, the factor score will indicate how far away that respondent is from the average.

7.1 FACTOR SCORES BY SEGMENT

Figure 15 shows the average of the factor scores for respondents in each latent class segment, painting a picture of how the latent class segments differ along key attitudinal dimensions. These factor scores indicate differences between segments, but do not necessarily reflect the overall importance of each factor across the population. In Figure 15, the factors at the top of the list differ the most among segments, that is, factors are ordered by the variance of the average factor scores of the seven segments.

FIGURE 15: AVERAGE FACTOR SCORES BY LATENT CLASS SEGMENT, DIFFERENCE FROM MEAN TOTAL SCORES

Factor	Green and Connected	Families on the Go	Established Urbanites	Cautious Transit Rejectors	Car-Centric Traditionalists	Young and Transit Eager	Commuting-focused Riders	Variance
Need for Speed and Convenience	-0.3 ↓	0.6 ↑	-0.7 ↓	-0.1	0.0	0.9 ↑	0.0	6.3
Car-Independent Lifestyle	2.7 ↑	-1.2 ↓	1.0 ↑	-2.0 ↓	-2.8 ↓	2.1 ↑	-1.1 ↓	6.1
Privacy, Prefer to Drive	-1.3 ↓	1.3 ↑	-1.3 ↓	0.9 ↑	0.2	1.3 ↑	-0.3	5.7
Pro-Environment	1.6 ↑	-1.1 ↓	0.9 ↑	-0.9 ↓	-1.8 ↓	2.1 ↑	-1.7 ↓	4.7
Sensitivity to Safety	-0.9 ↓	0.9 ↑	-0.3 ↓	1.2 ↑	-1.3 ↓	2.3 ↑	-1.9 ↓	3.7
Predictability and Information	1.3 ↑	1.0 ↑	-0.7 ↓	-1.8 ↓	-1.6 ↓	0.7 ↑	0.6 ↑	2.5

The factor scores for Car-Independent Lifestyle and Pro-Environment vary the most among the segments, but because they vary together across segments, inclusion of both of these factors would not add anything new to the competitive positioning analysis. Therefore, the Pro-

Environment factor is left out. Need for Speed and Convenience is added because it has the next highest variance and has a different pattern of positive and negative attitudes between segments than the Car-Independent Lifestyle and Fixed Schedule factors.

7.2 MARKET IMPLICATIONS OF FACTORS

Depending on the factor scores and underlying attitudes, we can assume that segments will be easier or more difficult to attract to transit. Here, we describe the implications of factor scores for the three factors included in the market positioning analysis: Car-Independent Lifestyle, Sensitivity to Safety, and Predictability and Information.

Car-Independent Lifestyle

Market segments that score high on the Car-Independent Lifestyle factor should be easier to attract to transit than those with a low score on the factor. A high factor score in this case is indicative of those who want to be less reliant on a car and would naturally be happy to use transit if it were available to them. Low scores indicate a preference to travel with a car and a reluctance to use transit, even if it were available.

The Green and Connected and the Younger and Transit Eager score high on this factor, indicating a willingness or even a desire to use transit. The Commuting-focused Riders score below average on this factor, indicating that they are less willing to use transit based on a lifestyle that does not require a car.

Sensitivity to Safety

Market segments with high Sensitivity to Safety factor scores are more likely to include travelers that become nervous or anxious while traveling. These travelers make their choice based on safety and familiarity. While it is possible for transit to serve this market, it is certainly easier for transit to serve a market where sensitivity to safety is less important.

The Young and Transit Eager and the Cautious Transit Rejectors score the highest on this factor.

Predictability and Information

Market segments with high Predictability and Information factor scores are more likely to include travelers that need to have a schedule when travelling and be informed about changes or disruptions.

The Green and Connected and Families on the Go score the highest in this factor.

7.3 RELATIVE POSITION OF FACTORS

Figure 16 to Figure 18 present the relative position of each segment by comparing the factors Car-Independent Lifestyle, Sensitivity to Safety and Predictability and Information. In each chart, two factors are plotted against each other, one on each axis, resulting in four quadrants that give an indication of potential for transit use. Figure 16 plots Car-Independent Lifestyle on the x-axis and Sensitivity to Safety on the y-axis. Figure 17 plots Car-Independent Lifestyle on the x-axis and Predictability and Information on the y-axis. Figure 18 plots the remaining combination of Sensitivity to Safety on the x-axis and Predictability and Information on the y-axis. The four quadrants in each of these Figures should be read as follows:

- Quadrant 1 (Upper Left): This quadrant represents the combination of attitudes that point towards the easiest market to attract to transit.

- Quadrant 2 and 3 (Upper Right and Lower Left): Segments landing in these quadrants may be transit-friendly on one set of attitudes but less so on another. Still, markets in these quadrants have a favorable attitude towards one of the factors so there is some opportunity to attract these markets to transit.

- Quadrant 4 (Lower Right): Segments landing in this quadrant are the most difficult to attract to transit due to transit averse attitudes on both axes.

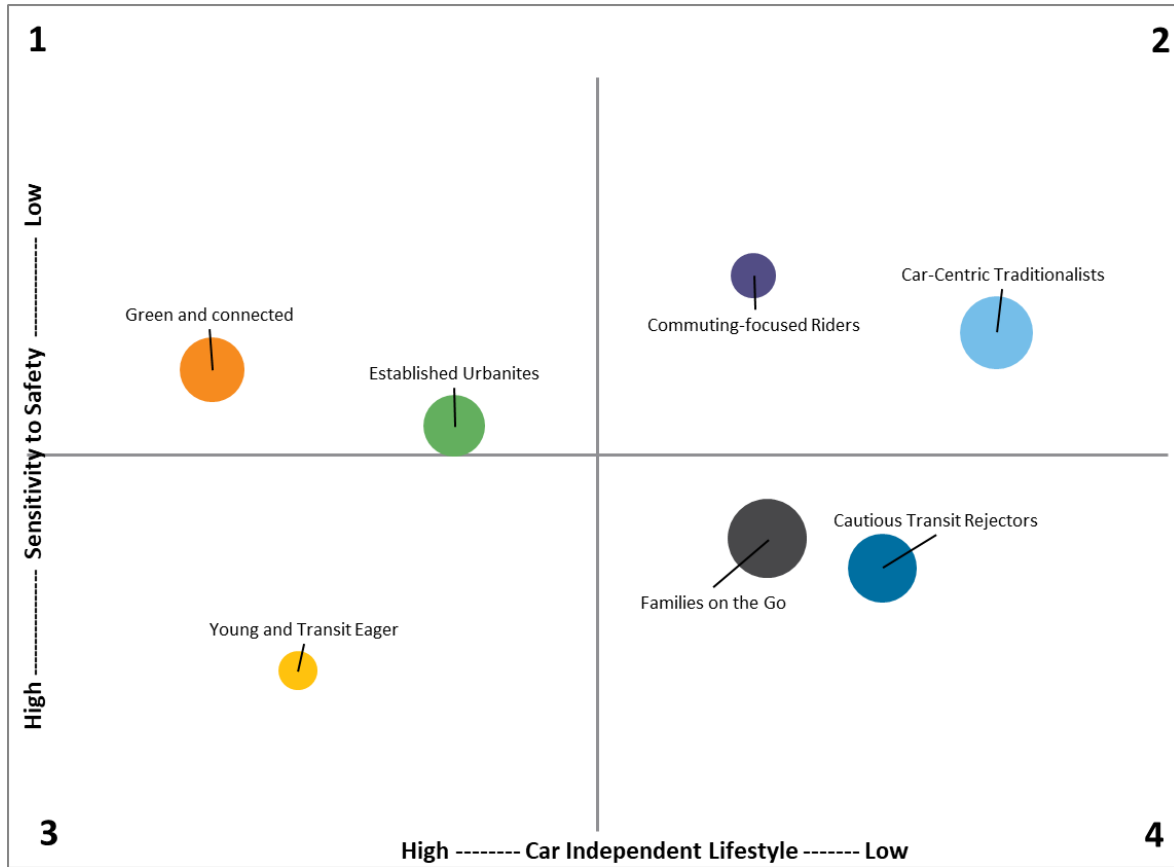**FIGURE 16: RELATIVE POSITIONS OF SEGMENTS, CAR-INDEPENDENT LIFESTYLE VS. SENSITIVITY TO SAFETY**

FIGURE 17: RELATIVE POSITIONS OF SEGMENTS, CAR-INDEPENDENT LIFESTYLE VS. PREDICTABILITY AND INFORMATION
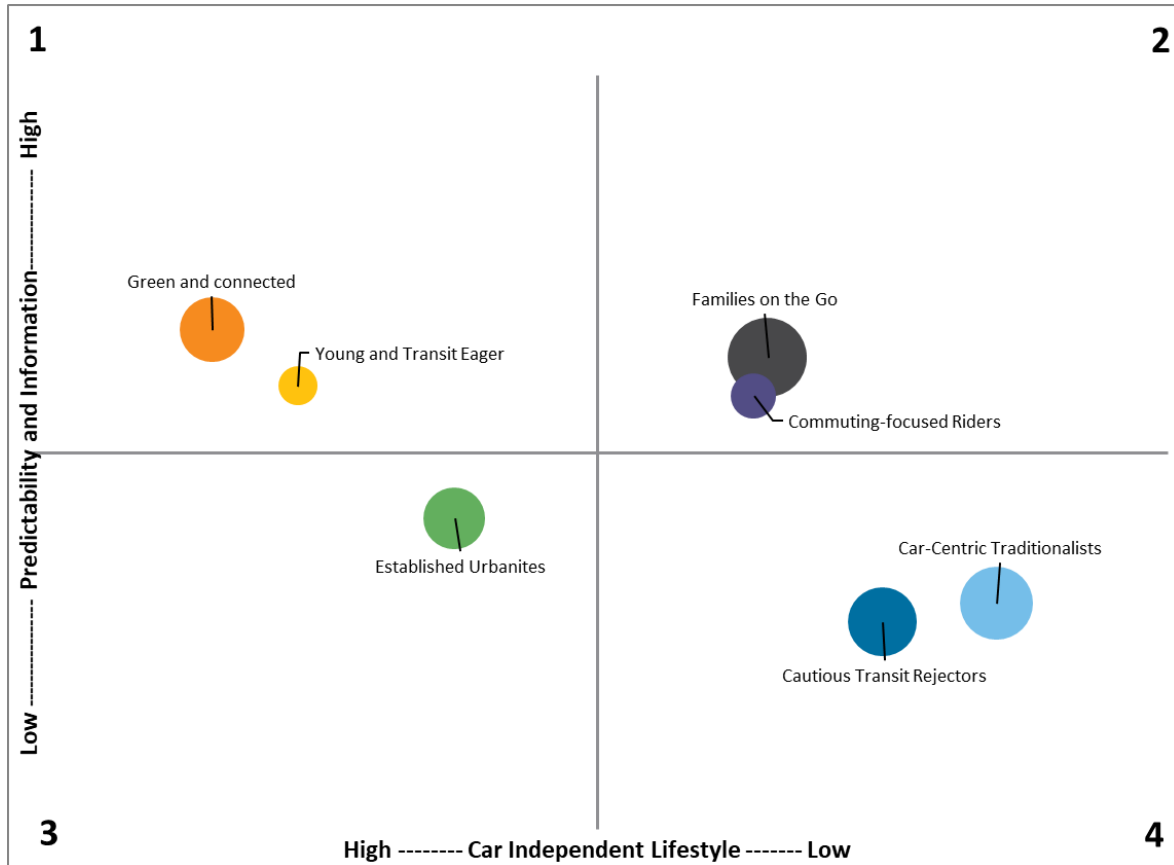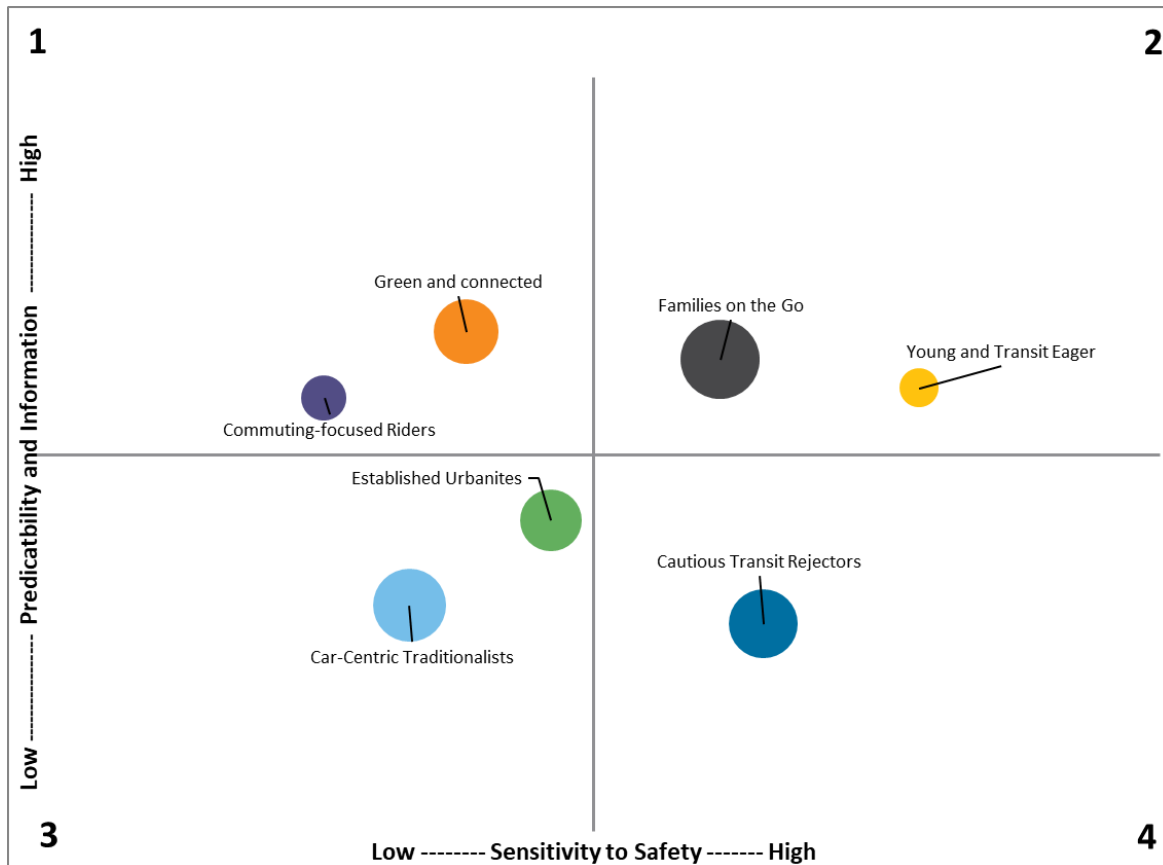
FIGURE 18: RELATIVE POSITIONS OF SEGMENTS, SENSITIVITY TO SAFETY VS. PREDICTABILITY AND INFORMATION

7.4 POTENTIAL FOR TRANSIT USE BY SEGMENT

Based on these three quadrant charts, the latent class segments are positioned as follows for transit use.

The Green and Connected have the highest potential for transit use and are positioned in the upper left quadrant in all three charts. They have a desire to have transit be a part of their lifestyle, and have less Sensitivity for Safety. They score in the higher spectrum of the Predictability and Information factor, meaning that they may have more of a need for real time transit information. Many of the Green and Connected are already using transit – 75% use it at least once per week for commute trips and 46% use it at least once per week for non-commute trips. Even though current use is high, there is some room to convert more Green and Connected to transit.

Similar to the Green and Connected, the Established Urbanites have a desire to have transit be a part of their lifestyle, and have less Sensitivity for Safety. However, they score lower on the Predictability and Information factor, meaning that they may have more flexibility in their schedules and do not require real-time transit information. Many of the Established Urbanites are already using transit, as 61% use it at least once per week for commute trips and 41% use it at least once per week for non-commute trips.

The Commuting-focused Riders are positioned in the upper left quadrant on the Predictability and Information vs. Sensitivity to Safety. The combination of a lower Sensitivity for Safety and the high Predictability and Information positions this segment well for transit use as they are not anxious while traveling and open to transit when provided real time information. However, the Commuting-focused Riders have a low Car-Independent Lifestyle score, indicating that they are not going out of their way to use transit, but do so because it fits their schedule and destinations. Many of the Commuting-focused Riders are already using transit, but this use is limited to commute trips (55% use it for commuting at least once per week), while few use it for non-commuting trips (only 14% for non-commuting at least once per week). Since much of this segment is already using transit for commute trips, there could be potential to convert some commuters into using transit for non-commuting trips as well.

The Families on the Go, Cautious Transit Rejectors and Car-Centric Traditionalists will be difficult to serve with transit and find themselves in the "Toughest Market" quadrant on at least one chart. They use transit very rarely, and UTA is best not to focus energy and resources on these segments.

8.0 CONCLUSIONS: MARKET SEGMENTATION ANALYSIS

This section describes different segments that vary in their propensity to use transit. Even though the transit-using segments differ in some of their underlying motivations and reasons for using transit, there is remarkable consistency between all segments in what is valued most: All travelers value real-time information about their trip, including travel times and travel conditions and, in the case of unexpected delays, up-to-date information about these delays. Given the universal desire for predictability and information, UTA should pay special attention to make travel information easily accessible and to communicate any travel exceptions or disruptions promptly. Ways in which travel information could be conveyed include overhead signage, platform announcements, emails, texts, or via mobile apps.

Green and Connected are the quintessential transit users in that they make a conscious choice to use transit as part of their Car-Independent Lifestyle, are Pro-Environment, have a lower Need for Speed and Convenience, and lower Sensitivity for Safety. Marketing messages that portray public transit as a part of the city experience and as an environmentally friendly alternative to the car might resonate most strongly this with segment. A network tailored towards Green and Connected would have extended time-of-day coverage, with time saving being somewhat less important.

Similar to the Green and Connected, the Established Urbanites place an importance on a Car-Independent Lifestyle and Pro-Environment. They do not place as much emphasis on predictability and information, implying they may have more flexible schedules. Marketing messages that portray public transit as a part of the city experience and as an environmentally friendly alternative to the car might also resonate most strongly this with segment.

Commuting-focused Riders have a low desire to live a Car-Independent Lifestyle, and not Pro-Environment and have a low Sensitivity to Safety. The majority of Commuting-focused Riders uses transit for their commute, and few use public transit for their non-commuting travel needs. This segment clearly desires routes and transit that will get them to/from work during predictable rush hour times. Marketing themes that resonate most might include messages about making the commute easy, predictable, simple, and affordable during rush hour times. Beyond commuting trips, Commuting-focused Riders show market potential by increasing their non-commuting trips. To reach this segment on transit beyond commuting to work, the cost savings, their familiarity and level of comfort with transit could be emphasized.

Young and Transit Eager tend to value a Car-Independent Lifestyle and have a Pro-Environment outlook. However, they have a higher Need for Speed and Convenience and are more willing to switch to a new mode if it has time savings. Marketing messages that resonate

most likely include environmental message, and portraying transit as a part of the city experience and as an alternative to the car. A transit network tailored towards the Young and Transit Eager would have to have short travel times and be reliable and predictable.

As mentioned before, it is not worth focusing on the remaining three segments, Families on the Go, Cautious Transit Rejectors, and Car-Centric Traditionalists because they place a high value on preference to drive and place low importance on Pro-Environment.

9.0 SEGMENTATION MODEL APPLICATION

As mentioned, the LCC modeling effort classified the survey population into seven segments based on attitudinal variables and then described the segments based on demographic covariates. These demographic covariates then allowed the application of the segmentation model to the population of the full study area using ACS (American Community Survey) Census data.

9.1 SYNTHETIC POPULATION DEVELOPMENT

Application of the segmentation model to the Wasatch Front study area required joint distribution demographic data at an areal resolution that could display the spatial distribution of market segments. Marginal distributions of the Wasatch Front's demographic data are available through the Decennial Census and ACS at various areal resolutions from coarse (e.g., States and Counties) to fine (e.g., Census Blocks and Block Groups). Join distributions of the Wasatch Front's demographic data are available through the ACS PUMS microdata. A synthetic population was created by expanding the ACS PUMS household weights to match the ACS demographic distributions for each Block Group in the region along demographic dimensions used in the segmentation model.

The synthetic population generation process used an IPF (iterative proportional fit) procedure. The process created a matrix of weights where the rows represented households in the PUMS data and the columns represented the block groups in the region. Each household ended up with a non-zero weight for every Block Group within each PUMA where households resided. A "PUMA" is the areal unit associated with the ACS PUMS. When added down each column, the weights total match the actual number of households in each Block Group. The same is true for the distribution of those households by the six dimensions used in the IPF. The IPF procedure ran separately for each Block Group. It started with the ACS PUMS weight for each household in the Block Group's PUMA, and a weight of zero for households outside the Block Group's PUMA, and iterated across the six demographic dimensions one hundred times. Each iteration adjusted the weights so that the sum of weights across households matched the Block Group's actual distribution on the particular dimension. After enough iterations, the weights match all the dimensions simultaneously.

9.2 MARKET SEGMENT APPLICATION

The resulting synthetic population contained the demographic covariates along the dimensions required for the LCC model by Census Block Group. The model was applied to each person within the synthetic population and the segment population totals. Applying the model to each person results in a classification weight, from 0 to 1, for each segment. This means that a

person is rarely 100% classified as a single segment but instead has a fractional occupancy within each segment. Once applied to each person with a Census Block Group, the segment populations are then calculated by summing the segment occupancies from each individual. By using the Census Block Groups within the synthetic population development, the resulting model application results can be displayed and analyzed spatially.

9.3 OVERALL MARKET SEGMENT DATA

Figure 19 shows the proportion of the total population in the study area for each market segment.

FIGURE 19: OVERALL MARKET SEGMENTS IN STUDY AREA
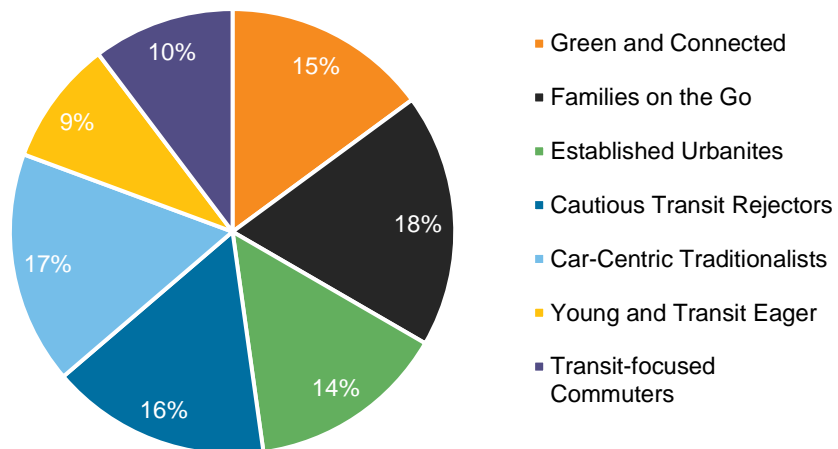
10.0 MARKET SEGMENTS BY ZONE

10.1 VISUALIZATION METHOD

Each zone represents one Census Block Group. Census Block Groups have similar populations (approximately 1,000 people), so their geographic size varies as a function of overall density.

Preliminary visualization of the market segments by population showed patterns that usually followed the density of the region. However, because most zones have generally similar populations, visualizing segments as percentages as opposed to actual population is a more effective way to spatially view patterns in the market segment data.

Care must still be taken in looking at the results of this analysis (as percentages) because some large zones could appear to have significantly more members of a certain market segment than a group of smaller geographically sized block groups. Therefore, as the percentages of various market segments are viewed in greater detail in subareas, the actual population of the zones should be taken into consideration.

10.2 PERCENT OF MARKET SEGMENT BY ZONE

RSG mapped the intensity of each market segment by zone as shown in Figure 20 through Figure 26. In order to best be able to compare market segments together, all of these Figures display percentages in identical ranges (e.g., the darkest purple color represents zones with higher than 25 percent across all market segment Figures). Transit-likely market segments, including Green and Connected, Established Urbanites, Young Transit Eager, and Commuting-focused Riders are discussed followed by market segments that are not as transit likely including Families on the Go, Cautious Transit Rejectors and Car-Centric Traditionalists.

Transit Friendly Market Segments

Figure 20 shows that the percentage of Green and Connected tends to be higher in downtown Salt Lake City as well as Provo. Some other areas with higher percentages include Ogden and central portions of the Salt Lake County such as parts of Murray and Midvale.
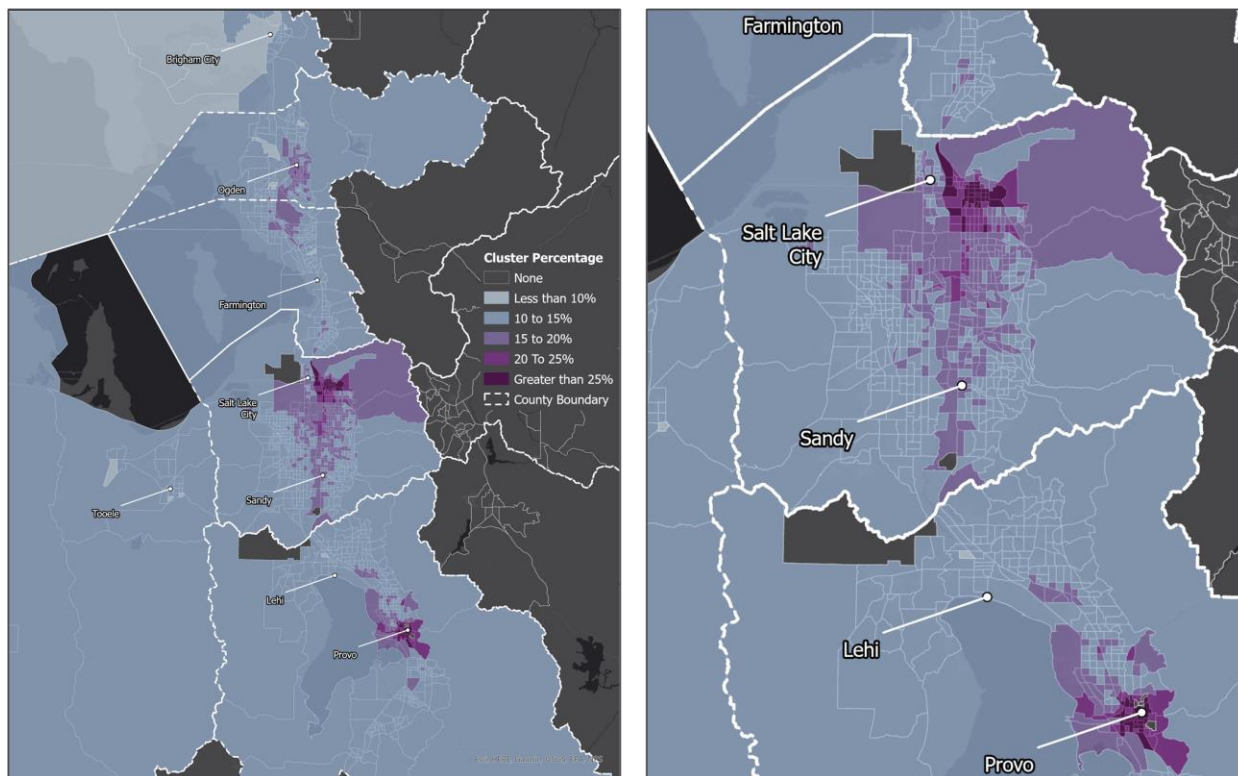
FIGURE 20: GREEN AND CONNECTED

Figure 21 shows the Established Urbanites tend to have the highest percentage in the North and East of Salt Lake County and the east of Weber County.

FIGURE 21: ESTABLISHED URBANITES
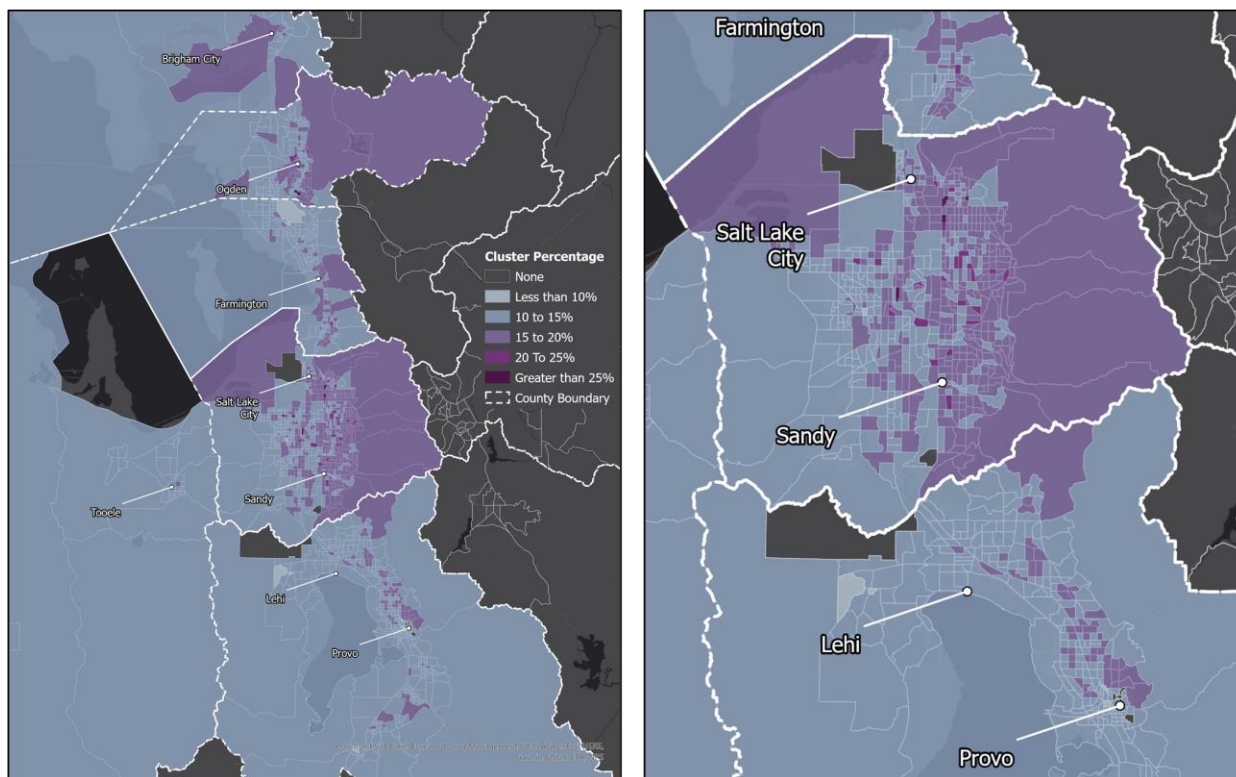
Figure 22 shows the percentage of Young Transit Eager tends to follow the pattern of Green and Connected, in that it is highest in Salt Lake City, Provo, and Ogden. However, the extent of zones with Young Transit Eager tend to extend out further than Green and Connected.
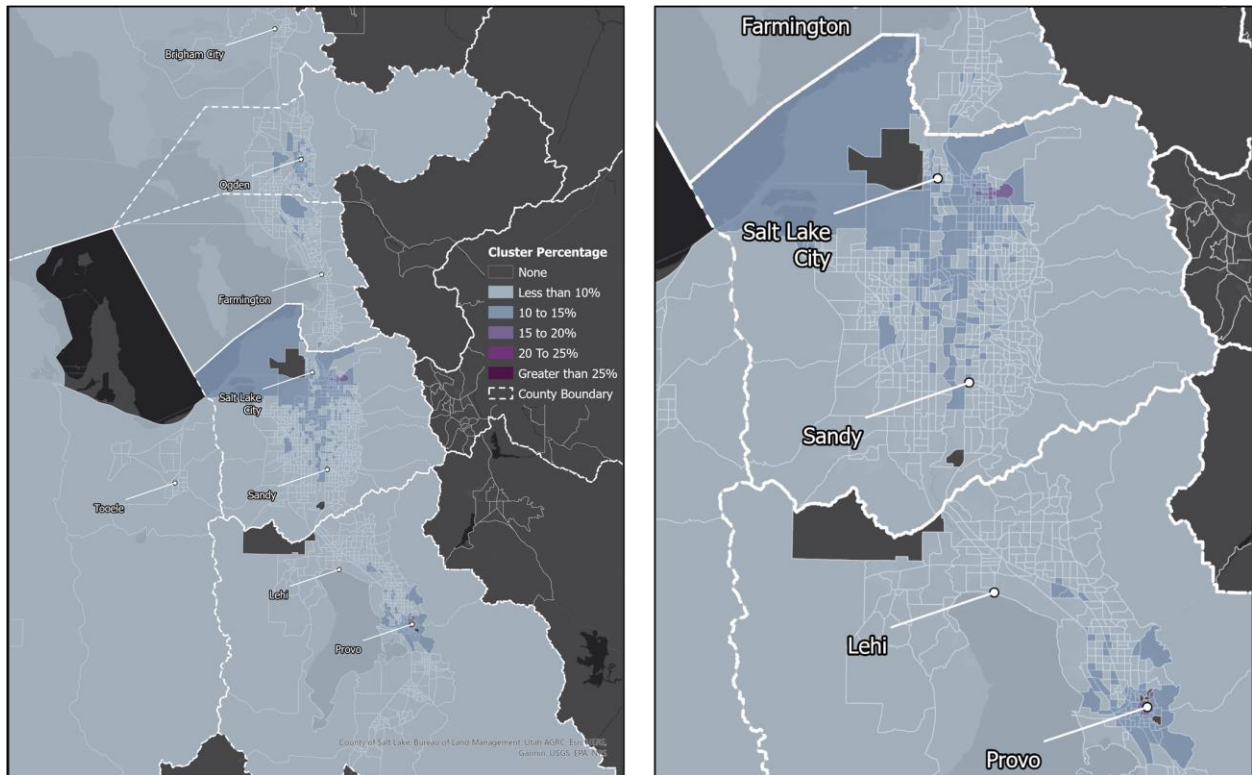
FIGURE 22: YOUNG AND TRANSIT EAGER

Figure 23 shows the percentage of Commuting-focused Riders tends to be higher in northern Utah County, some locations in southwest Salt Lake County, and western Davis County, as well as a few zones in southern Utah County. The low percentage in most zones shows this is not one of the larger market segments.

FIGURE 23: COMMUTING-FOCUSED RIDERS
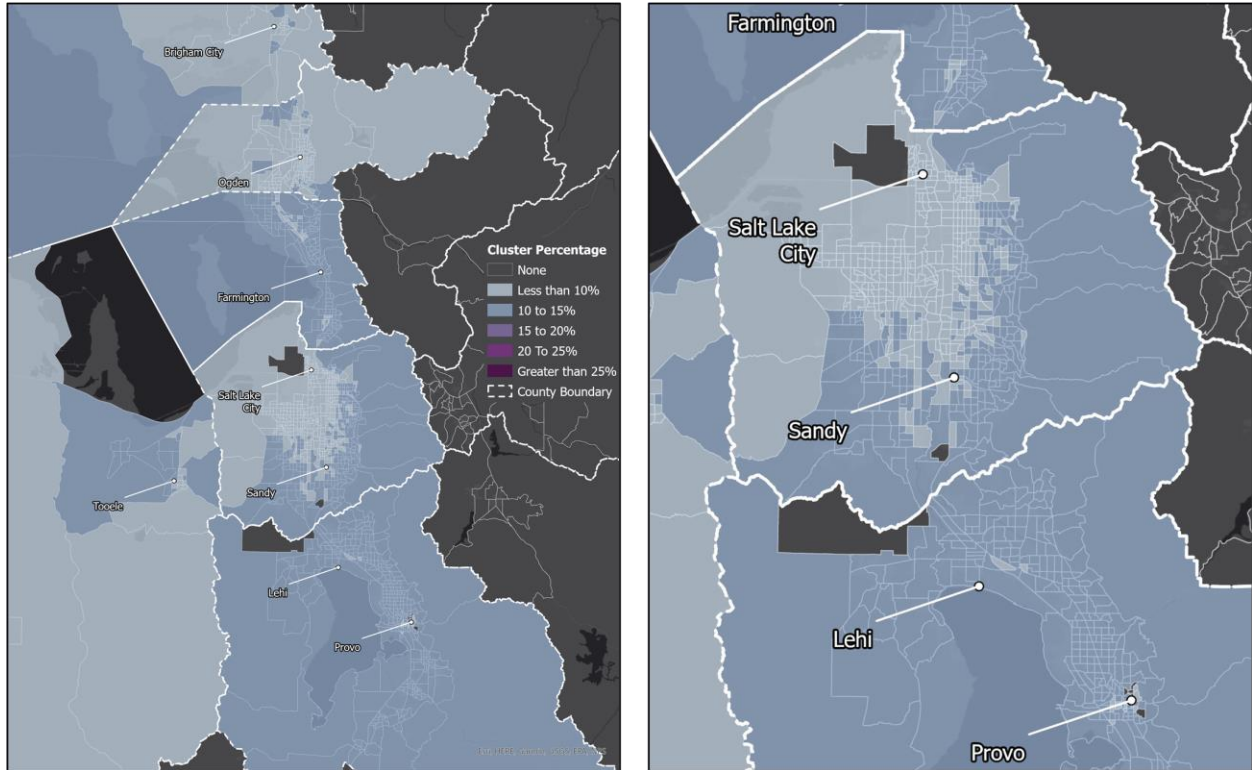
Less Transit Friendly Market Segments

Figure 24 shows the percentage of Families on the Go tends to be higher away from the downtown cores of Salt Lake City, Provo, and Ogden. Essentially, it has the opposite pattern of Green and Connected and Young Transit Eager.
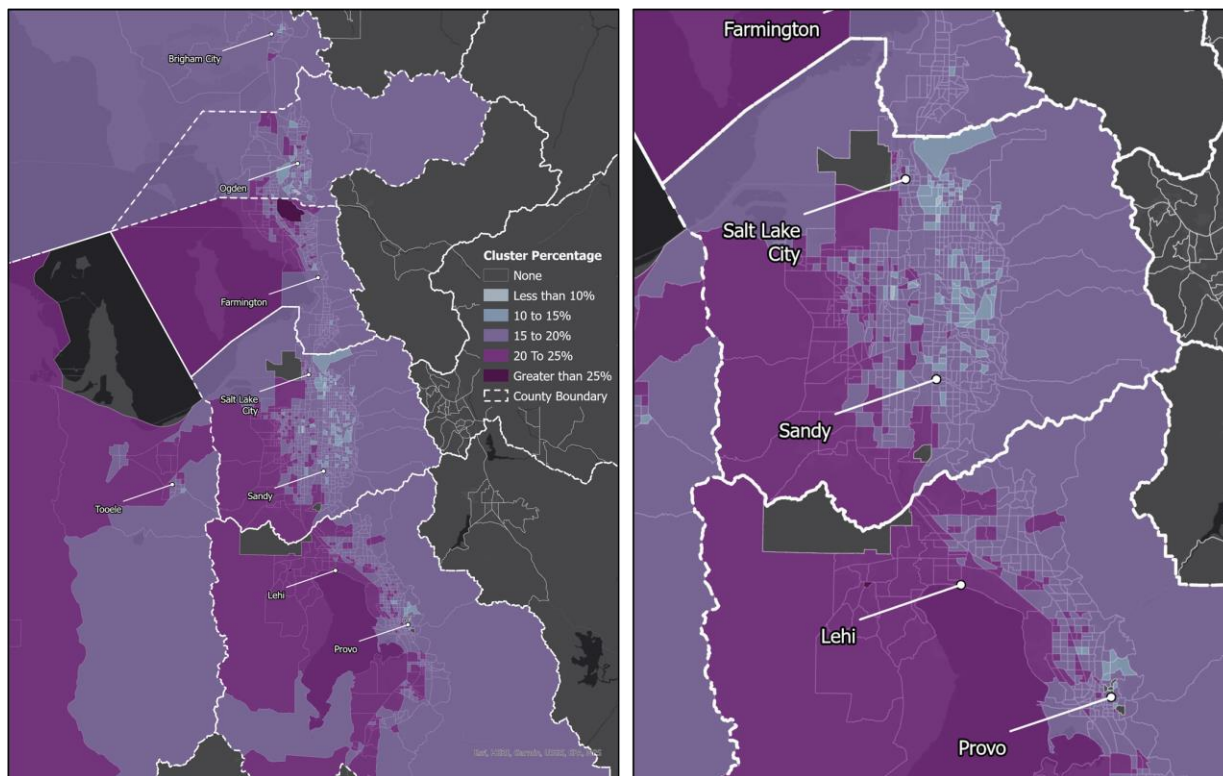
FIGURE 24: FAMILIES ON THE GO

Figure 25 shows the percentage of Cautious Transit Rejectors tend to have higher percentages in the suburban and rural study areas.

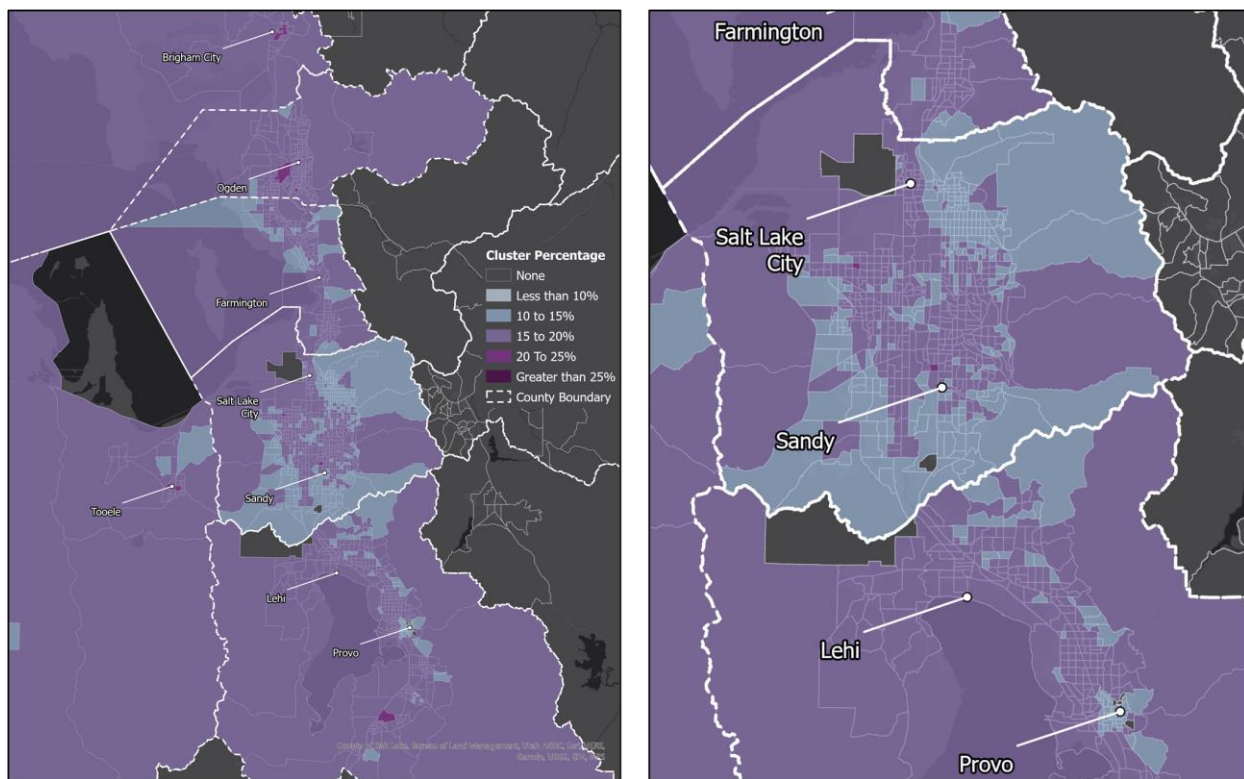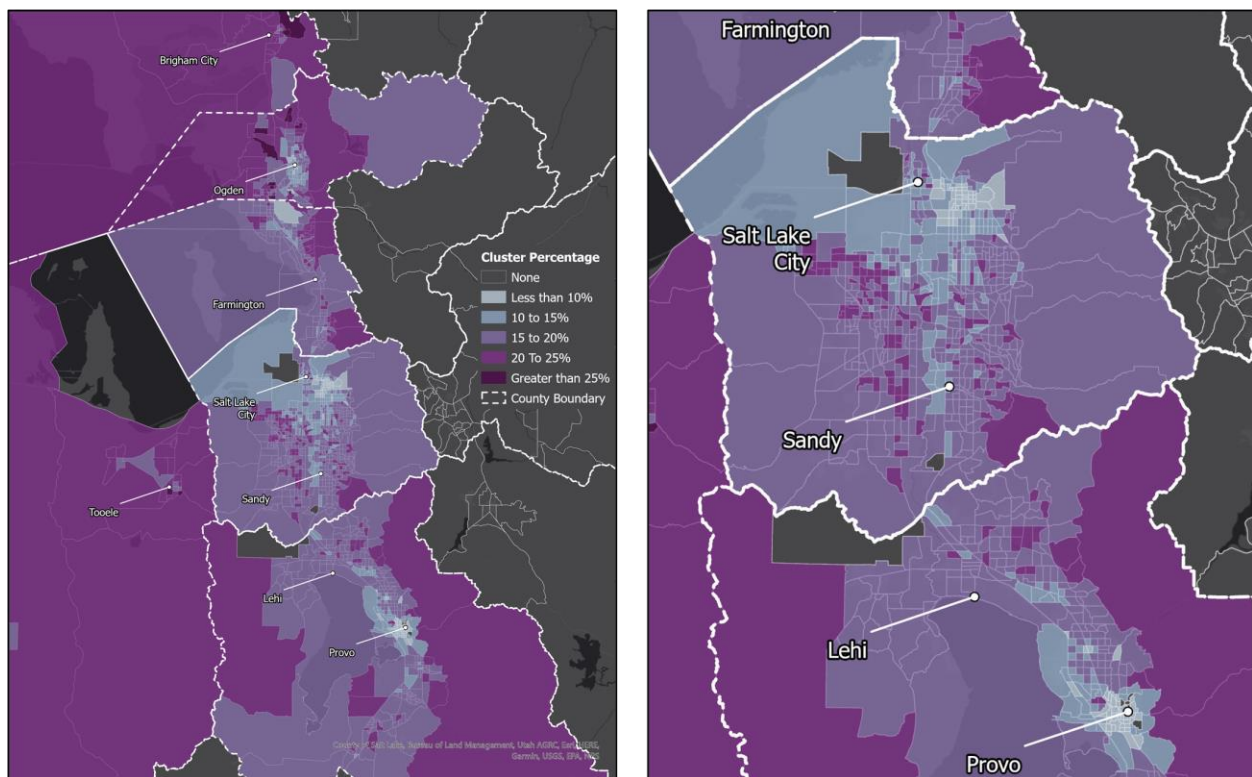**FIGURE 25: CAUTIOUS TRANSIT REJECTORS**

Figure 26 shows the percentage of Car-Centric Traditionalists tends to follow the same patterns as the other less transit focused segments, with a higher percentage outside the city areas.

FIGURE 26: CAR-CENTRIC TRADITIONALISTS

10.3 OPTIMIZED CLUSTER HOT SPOT ANALYSIS

An optimized hot spot analysis was completed on the market segment data using the Getis-ord GI* statistic. This statistic identifies the clusters of points (in this case, adjusted centroids of zones), with values higher in magnitude than what might be expected based on random chance. The output is a score that represents the statistical significance based on a specified distance. In the case of this analysis, a distance of one mile was used.

Figure 27 to Figure 30 show the hot spot analysis for transit focused segments. A high score (shown in the darkest red) indicates with 99% confidence that the particular market segment is higher than normal in the given zone and surrounding zones with the 1-mile radius. A very low (negative) score (shown in the darkest blue) indicates with 99% confidence that the particular market segment is lower than normal in the given zone and surrounding zones with the 1-mile radius. The neutral tan color indicates that a zone's neighbors within the specified radius tend to be random, and therefore no clustering is apparent. The 1-mile radius was used to identify a minimal number of truly significant sub-regions for potential further analysis.

Figure 27 shows that clusters of Green and Connected are significant in city centers of Salt Lake City, Provo and Ogden. "Cold Spots," areas with statistically significant lower proportions of Green and Connected, are located in the northern and southern most sections of Utah County. Figure 28 shows significantly higher clusters of Established Urbanites are also located in the farther fringes of eastern and southeastern Salt Lake County as well as central Weber County. Cold Spots are located in Utah County and Eastern Tooele County.

As expected, many portions of the study area have opposite clustering effects between the two groups of market segments. Further, a Cold Spot in one group can be interpreted as a hot spot for another group. However, because hot or cold spots of Green and Connected and Established Urbanites are not necessarily mutually exclusive, some areas have hot spots of both groups, most notably Salt Lake County. This particular area essentially has clusters of both Green and Connected and Established Urbanites that are not likely to be random.
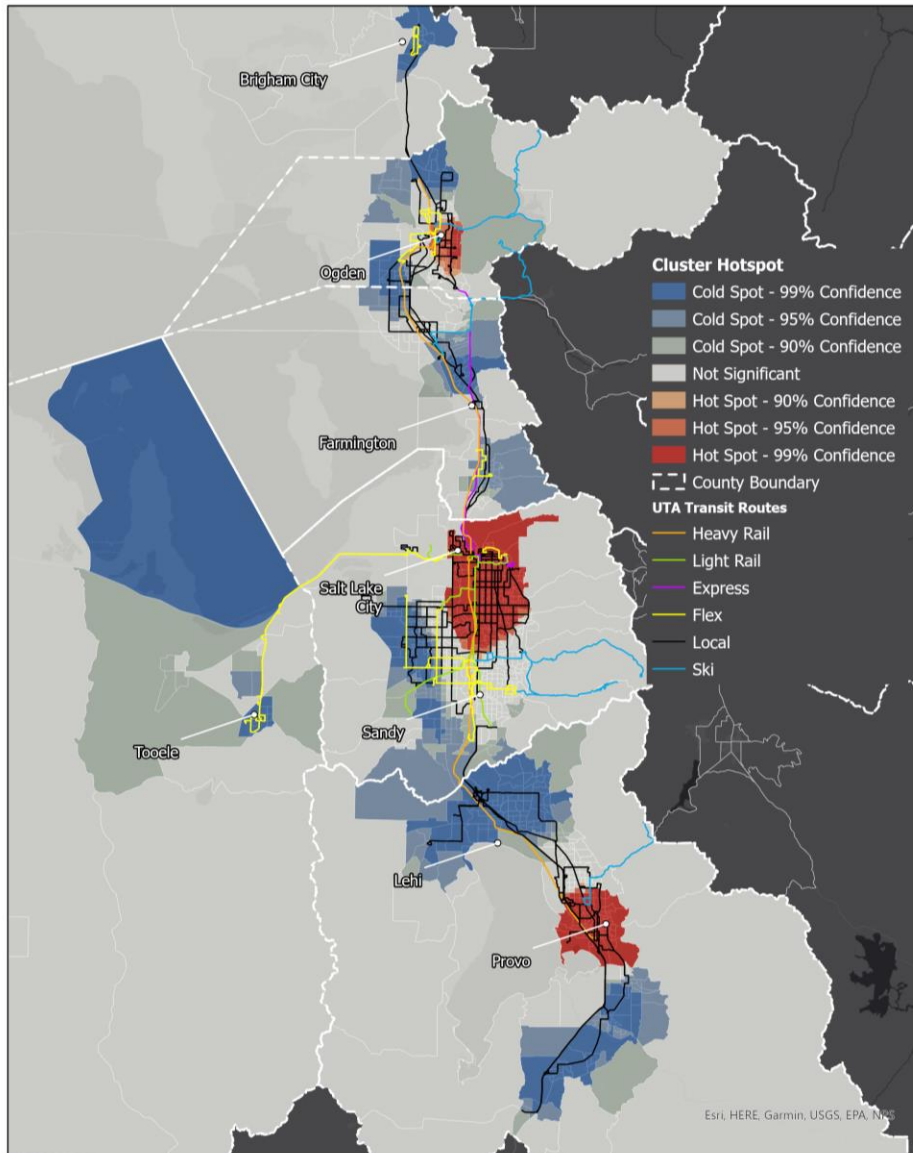
FIGURE 27: GREEN AND CONNECTED HOTSPOT MAP

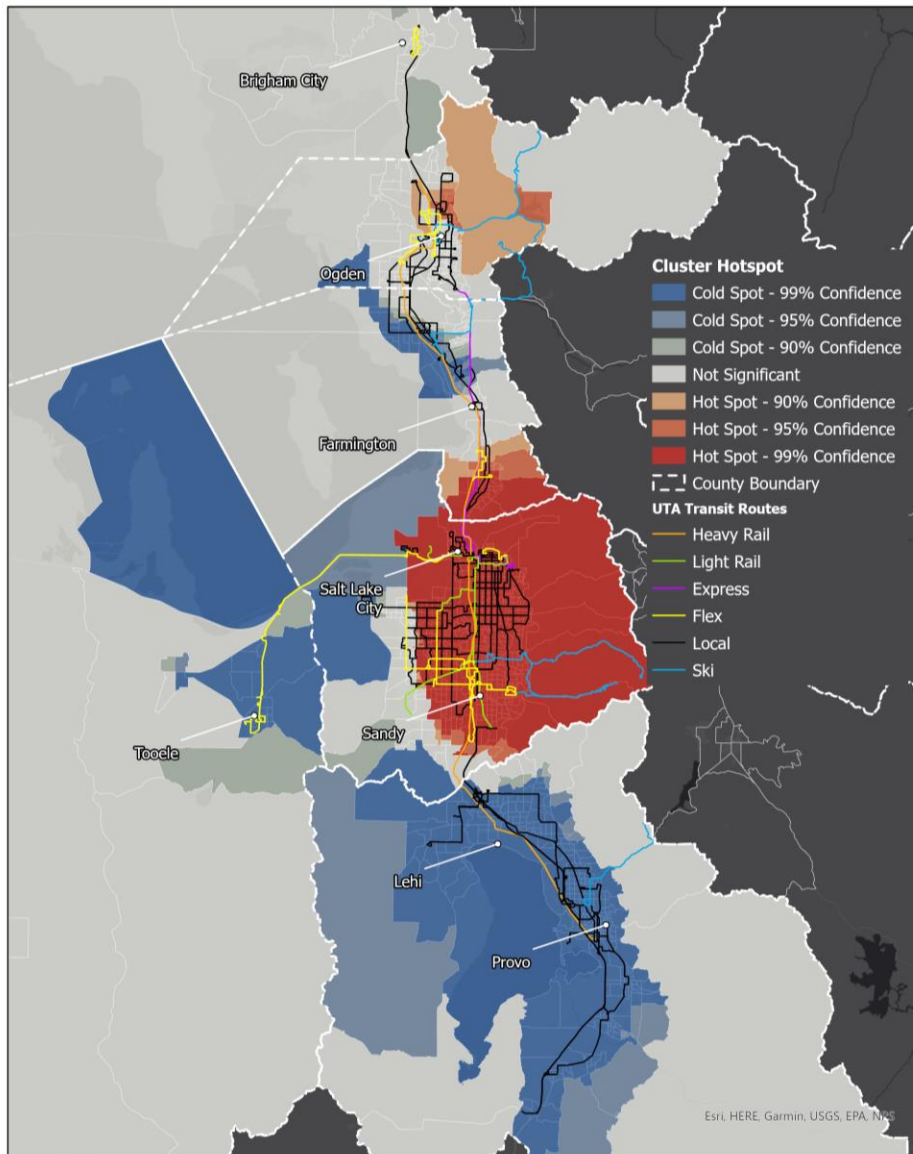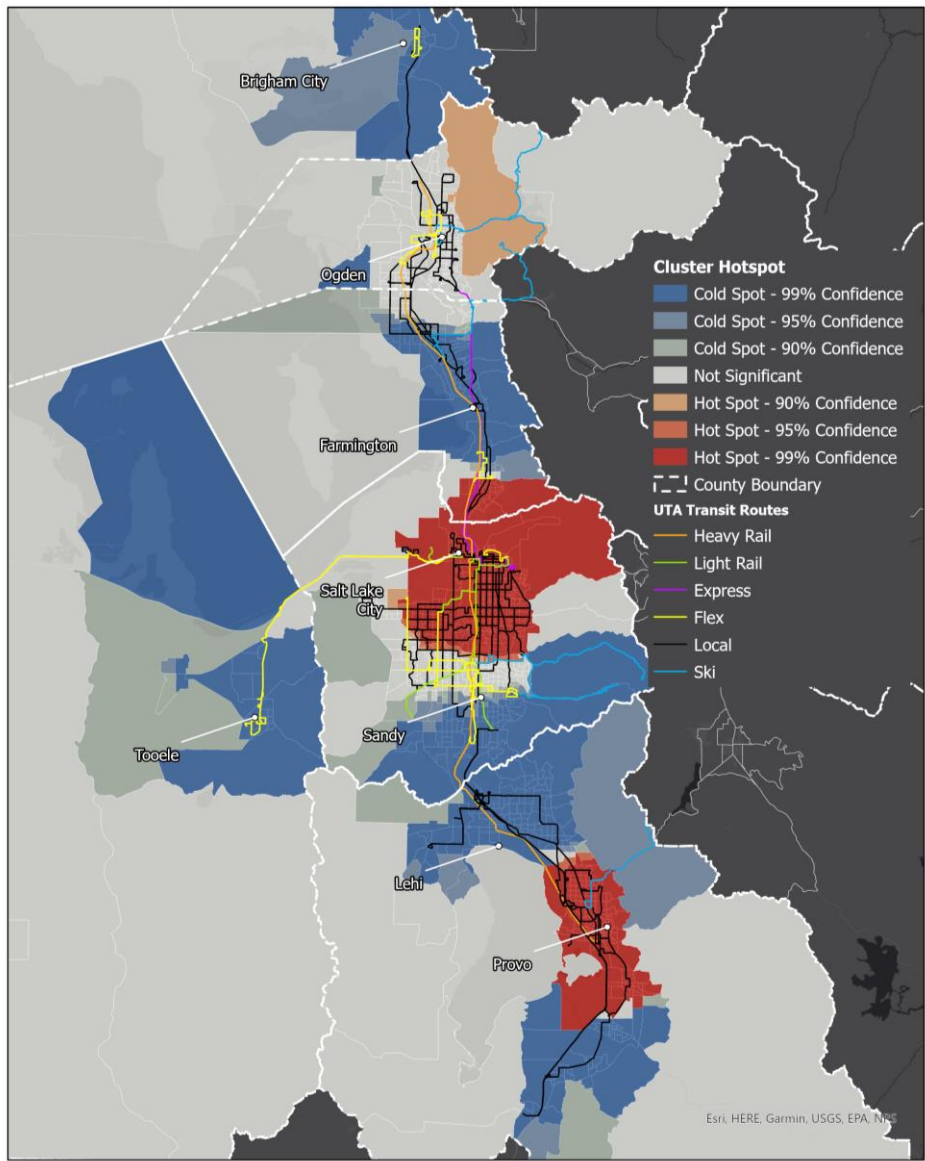**FIGURE** 28: **ESTABLISHED URBANITES**

FIGURE 29: YOUNG AND TRANSIT EAGER

FIGURE 30: COMMUTING-FOCUSED RIDERS