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2022 SOUTH SOUND TRAVEL STUDY: FINAL REPORT

November 2022

Prepared for Thurston Regional Planning Council (TRPC)

Report Title:

2022 South Sound Travel Study

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Report Prepared for:

Thurston Regional Planning Council (TRPC)

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LIST OF ABBREVIATIONS

ABS	Address-based sample
ACS	American Community Survey
BG	Block Groups
HH	Household
HTS	Household Travel Survey
TRPC	Thurston Regional Planning Council

EXECUTIVE SUMMARY

1.1 STUDY OBJECTIVES AND HIGHLIGHTS

The 2022 South Sound Travel Study used a modern research approach to collect demographic and travel pattern information from residents throughout the South Sound region in Washington State.

The highlights of this innovative approach include the following:

- **A two-part survey**:
  - Part one (the “recruit survey”) gathered data on the household’s demographic composition and typical travel behaviors.
  - Part two (the “travel diary”) gathered individual travel data during a specified travel period for all members of the household (HH).
- **Multiple modes of data collection**:
  - Households with smartphones completed their travel diaries using the rMove™ smartphone app for up to seven consecutive days.
  - Households without smartphones participated by completing their travel diary online (rMove for Web) or by calling into the study call center. These households reported travel for one day (Tuesday, Wednesday, or Thursday).
- **An address-based sample (ABS) and mailed study invitations**:
  - The ABS included compensatory oversampling to improve the representativeness and quality of the final dataset. Compensatory oversampling focused on low-income households and higher minority populations areas.
  - Over the course of two weeks, invited households received a letter packet with comprehensive details about the study and a “reminder” postcard.
- **Aligned questionnaires**:
  - The smartphone-based (rMove) and online-based (rMove for Web) questionnaires were largely consistent to ensure a single, consistent dataset at the end of the study.
  - The questionnaire for both instruments was tailored to account for COVID-19 impacts (e.g., asking both current, and future expected telework frequency).

- **Advanced technologies and methods**:
  - The rMove app was the primary mode for travel data collection, which offered significant benefits for data quality and quantity (e.g., detailed trip paths, and lower degrees of underreporting).
  - The Bing Maps API helped capture and validate location and travel data.
  - The study employed American Community Survey (ACS) data, along with RSG's market research experience and expertise, to develop the sampling plan and data weighting approaches.
- **Minimized respondent burden and increased engagement**:
  - The study offered gift card incentives to households that completed the study to improve the response rates (and thereby lower the overall mailing costs) and representativeness of the dataset. The average household received $23.04 in gift cards for their participation.
  - Study respondents received customized reminders by email, telephone, or within the rMove smartphone app to encourage survey completion.
  - Study respondents could also contact user support by telephone, email, or within the rMove smartphone app. Responses were generally provided within one business day.
  - The study branding included an engaging logo and customized website to legitimize the study and encourage responses.

Study Timeline

Table 1 documents the project's schedule. RSG and TRPC conducted a small pretest to evaluate user experience in lieu of conducting a full pilot study. This approach was designed to maximize the number of households and quality of data collected during the main study.

TABLE 1: STUDY TIMELINE

Phase	Timeline
Design the study approach and questionnaire	January – February 2022
Create the sample plan	February 2022
Design survey and study materials	February – March 2022
Conduct and review pretest results	March 2022
Conduct household travel study	April – June 2022
Clean and weight study data	June – August 2022
Finalize study documentation	August – October 2022
Project closure	December 2022

1.2 STUDY RESULTS

The South Sound Travel Study collected a rich set of demographic and travel behavior data from a representative sample of 2,121 households in the Thurston Regional Planning Council (TRPC) area. The study collected data from 4,347 persons, representing 48,702 trips across 14,243 complete person-days from April 11 to June 12, 2022.

TABLE 2: RESULTS OVERVIEW

	Households Surveyed **2,121**	Weighted Households **256,451**
	Persons Surveyed **4,347**	Weighted Persons **643,619**
	Complete Person-Days **14,243**	Weighted Person-Days **605,585**

Key study findings include the following:

- The overall trip rate for the region was 3.37 person trips per day. All income groups had similar trip rates though those with incomes below $25,000 had the lowest trip rates at 2.5 and respondents who “Prefer not to answer” had the highest trip rates at 4.6 trips per day. Most trips (2.72) were made by car, with 45% of all trips by respondents who “drive alone”.

- Respondents reporting less than $49,999 in income were more likely to use transit than other income brackets (2%), and those reporting incomes over $200,000 were more likely to report walking as a mode.
- Among those who travel to workplaces, the distribution of commute modes is heavily skewed toward the car mode (96%).
- Among those who did not travel on their travel day, the most common reason was hanging out around home (48%) followed by working at home for pay (29%).
- While most respondents have considered purchasing an EV (64%), a higher percentage of respondents will not be buying an EV for the next few years (38%) than the 26% of respondents who may.

A full analysis of results is included in Section 8.0.

2.0 STUDY SAMPLING

2.1 SAMPLING GOALS

The 2022 study originally aimed to collect data from 2,000 households, resulting in a 0.8% target sample rate (based on the 2015–2019 ACS). The study collected data for 2,121 households (1.0% sample rate).

Sampling Frame and Method

The sampling frame for this study was the list of all households in Thurston County, plus portions of Grays Harbor, Lewis, and Pierce counties that fall all or partially within the TRPC model boundary, excluding any households living in group quarters. The study used ABS to select households for participation. ABS involves drawing a random sample of addresses from all residential addresses in that area. Using this method, all households within each defined area have an equal chance of selection for the sample. RSG purchased household mailing addresses from Marketing Systems Group, which maintains the Computer Delivery Sequence file from the US Postal Service. RSG stratified the sample using census block group data from the 2015–2019 ACS.

Sample Stratification/Segmentation

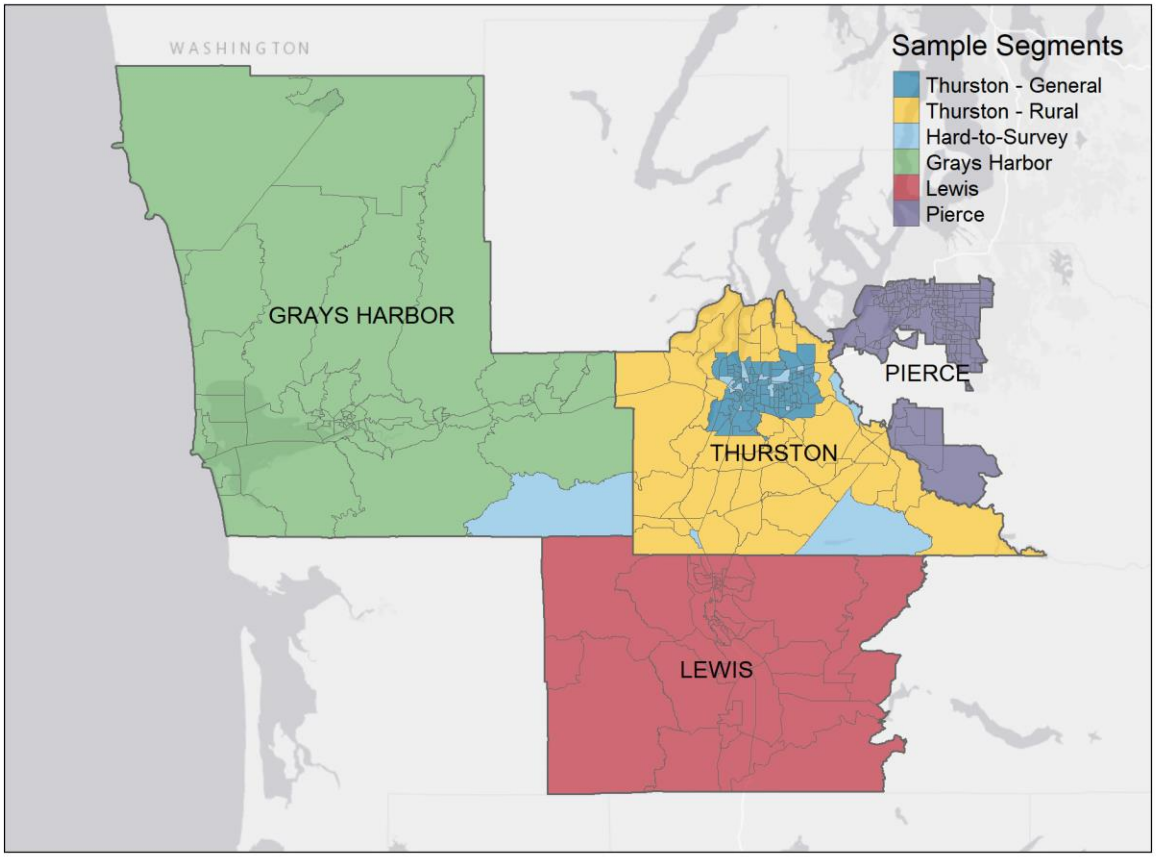
RSG proposed the following mutually exclusive and collectively exhaustive sample segments to encourage representation of groups that are typically hard to reach.

1) **Thurston – General:** Comprised of BGs in Thurston County that do not qualify for the rural or hard-to-survey oversampling segments below.
2) **Thurston – Rural:** Comprised of BGs in Thurston County with population density below 300 people per square mile.
3) **Hard-to-survey:** Comprised of the BGs in Thurston County with at least 60% of households earning less than $50,000 per year (“low income“) OR at least 60% of people identify as Hispanic and/or Black, Indigenous, or Persons of Color (BIPOC).
4) **Grays Harbor:** Comprised of BGs in Grays Harbor County that fall all or partially within the TRPC model boundary.
5) **Lewis:** Comprised of BGs in Lewis County that fall all or partially within the TRPC model boundary.
6) **Pierce:** Comprised of BGs in Pierce County that fall all or partially within the TRPC model boundary.

Block groups that qualified for both the hard-to-survey and rural segments in Thurston County were classified as hard-to-survey, which had a very slightly higher invitation rate and received higher differential incentives to encourage response (described in Section 3.3 below).

Figure 1 below shows the geographic locations of the oversample regions.

FIGURE 1: SAMPLE AND OVERSAMPLE REGIONS



Sample Rates

The target sample rates based on the segments, invitations, and response rates described above are delineated in Table 3 below. The target sample rate of 0.8% is consistent with typical sample rates seen in many similar household travel survey regions (which generally range from about 0.5% - 1.5%). The target sample rate within Thurston County – the area of highest interest for the model – was 1.5%.

TABLE 3: SAMPLE RATES BY SAMPLE SEGMENT

SAMPLE SEGMENT	TOTAL HOUSEHOLDS	INVITATIONS	INVITATION RATE	ESTIMATED COMPLETED HOUSEHOLDS	SAMPLE RATE
Thurston – General	61,339	34,500	56.2%	890	1.5%
Thurston – Rural	38,164	37,000	97.0%	555	1.5%
Hard-to-Survey	11,305	11,000	97.3%	165	1.5%
Grays Harbor	27,897	4,300	15.4%	90	0.3%
Lewis	26,150	4,800	18.4%	100	0.4%
Pierce	91,834	9,600	10.5%	200	0.2%
Total	**256,689**	**101,200**	**39.4%**	**2,000**	**0.8%**

The final sample plan memo includes additional details about the sample plan. The analysis sections below contain a more detailed evaluation of how the sample plan performed in practice.

Park & Ride Sampling

To supplement the ABS methods described above, TRPC distributed postcard invitations at Park & Ride lots throughout the region. These postcards provided the same information as the mailed postcard invitations (show in section 4.2 below). Ultimately, this effort yielded one additional response in the dataset.

3.0 STUDY DESIGN

3.1 OVERVIEW

The 2022 study combined multiple data collection methods, including smartphone, online, and telephone. While 41% of households completed their travel diaries by smartphone, 85% of all trips were collected by smartphone due to the extended travel log period from the smartphone app (up to 7 days) compared with the single-day online reporting. As described in more detail in the following sections, the survey design included two stages to recruit and collect data about households, their members, and their travel behaviors during the assigned travel period.

3.2 QUESTIONNAIRE

The questionnaire for this study (provided separately) aligned closely with the household travel survey questionnaires for other agencies in Washington over the past several years, including the Whatcom Council of Governments, Skagit Council of Governments, and the Puget Sound Regional Council.

3.3 STUDY STAGES AND PARTICIPATION METHODS

This study used an ABS approach with mailed recruitment materials (shown in Section 4.0). The mailed materials instructed households to visit the study website or call a toll-free number to complete Part 1 (the demographic “recruit” survey). Households received instructions for Part 2 (the travel diary) shortly after completing Part 1.

Participation Group Assignments

Part 1 of the survey asked adults (age 18+) to share whether they had Apple or Android smartphones. Households in which all adults had Apple or Android smartphones were offered the option to report their travel in the rMove app for seven consecutive days. All other households as well as those who opted out of rMove app participation reported their travel online for one day using rMove for Web.

Travel Date Assignments

rMove app households were assigned to a seven-day travel period beginning 1 – 4 days after completing Part 1 (depending on household size and the day on which they completed Part 1). rMove for Web households were assigned to the next Tuesday, Wednesday, or Thursday (assigned roughly proportionally across each of the three weekdays).

Study Components

Part 1 collected general demographic information (e.g., household size and person age) and established information to facilitate Part 2 (e.g., home/school/work addresses and number of vehicles). Part 2 collected all trip and travel day information and any person-level information (e.g., how often the participant uses transit).

Proxy Reporting for Child Trips

Among rMove households, only adults related to the main respondent were required to use the app on their smartphones. If a child in an rMove household was reported as a travel party member on an adult's trips, the trip was copied to the child's record. One rMove adult in each household was also designated to proxy report travel information for all children (under 18) in the household on a single travel day. This adult was asked to add trips to a child's roster if the child made an independent trip (e.g., riding the bus to school) or made a trip with someone outside of the household (e.g., getting a ride with a friend's parents).

Among online households, one adult (unassigned) was required to complete a full one-day travel diary for the children of the household. Like rMove, adult proxy reporters could copy children's trips from other adults and report new trips that the children made on their own.

Language Options

The invitation materials for the study were printed in English and Spanish. The survey instruments were fully translated into Spanish. Respondents could call the study call center to participate (or ask questions) in Spanish.

Study Incentives

RSG offered $10–$20 gift card incentives—as communicated on the study mailed materials—to all households that completed the study. Travel surveys offer incentives to boost response rates and the quality of respondent data, and to decrease the overall study cost by reducing the number of mailed invitations. Without incentives, the number of required households to invite increases, and this increased mailing cost is greater than the cost of providing incentives. rMove app households were offered one $20 Visa gift card per adult after all related adults had completed the study. Online households were offered one $10 Visa gift card per household. Households could also choose to receive no gift card. Households with multiple adults who completed the study through the smartphone app were eligible for multiple gift cards. The study team distributed a total of 2,619 cards to 2,088 households.

Note that some households were offered higher, differential incentives to further boost response. Households in the "Hard-to-survey" segment and households who reported a household income below $50,000, non-White race, or Hispanic ethnicity when they signed up

for the study were offered $20 to complete the study online or $30 per adult to complete the study through the rMove app. A total of 704 households were considered “hard-to-survey" and received the higher incentive amounts.

4.0 STUDY BRANDING, COMMUNICATION, AND ADMINISTRATION

4.1 STUDY BRANDING

RSG developed the study branding collaboratively with TRPC to ensure that the design fit the study region. The complete branding package included the study name, logo, color scheme, and font selections. The final 2022 study logo is shown in Figure 2.

FIGURE 2: 2022 STUDY LOGO

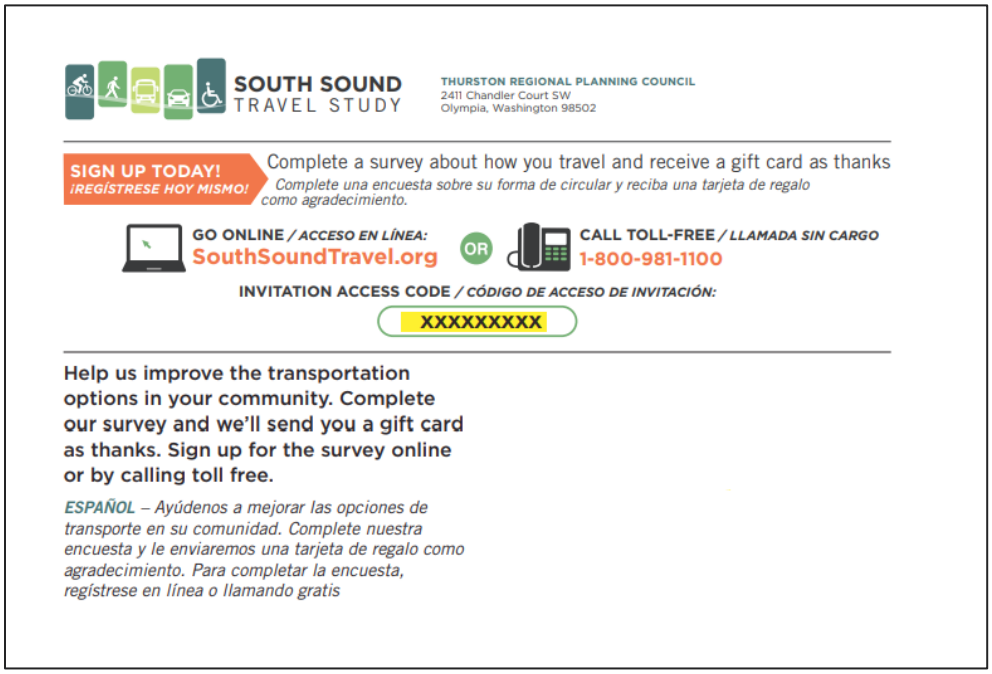
4.2 STUDY INVITATION MATERIALS

Each invited household received two mailings:

- **Invitation Packet**: The cover letter explained the study purpose and described the steps necessary to complete the study. The invitation packet also included a frequently asked questions sheet.
- **Reminder Postcard**: A reminder postcard arrived at each household approximately one week after the invitation packet. These cards included the study phone number, website address, and participant login information. Note that due to mail delivery delays, some households had a longer period between the invitation packet and reminder postcard arrival.

Figure 3 below shows the postcard invitations.

FIGURE 3: 2022 TRAVEL STUDY POSTCARDS (FRONT AND BACK)

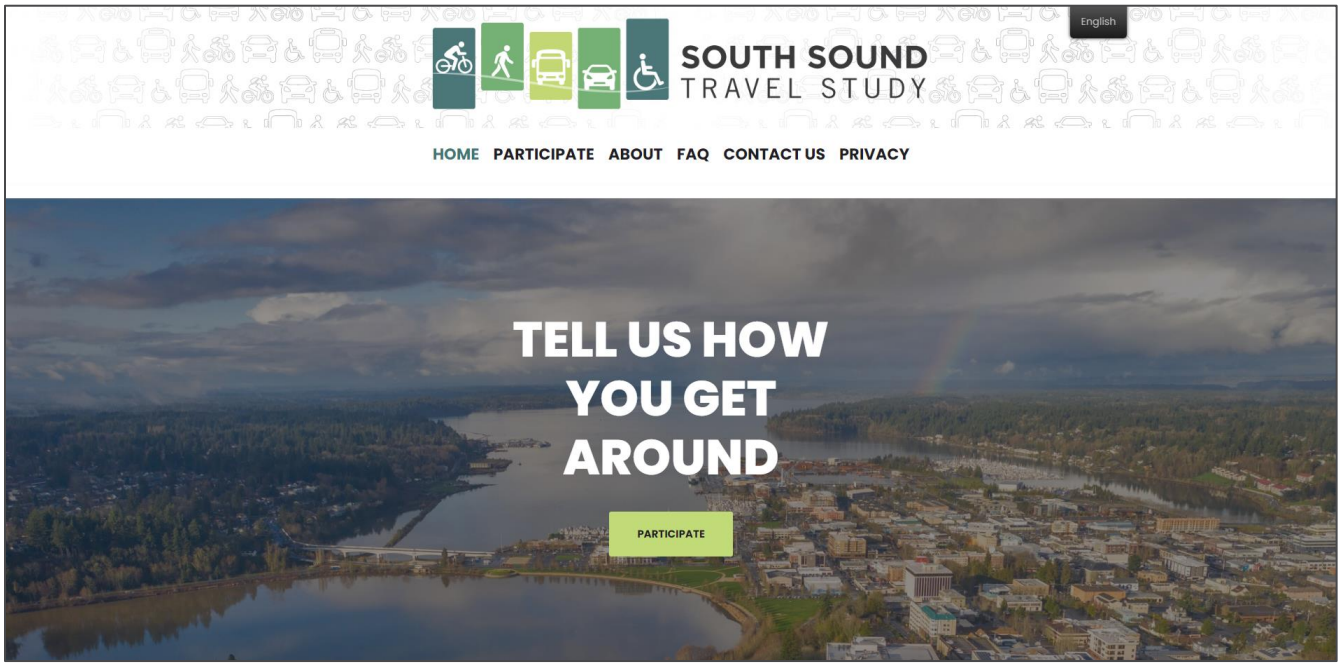


4.3 STUDY WEBSITE

RSG developed a project website to describe the study and facilitate study participation. This site was simple, intuitive, and easy to navigate on desktop computers and mobile devices.

While the study was open to respondents, participants could access the study by entering their passwords on the website's home page. Figure 4 shows a screenshot from the study website.

FIGURE 4: PROJECT WEBSITE HOME PAGE



5.0 PARTICIPANT SUPPORT

This study utilized both inbound and outbound participant support. “Inbound” refers to communications that participants initiated, and “outbound” refers to communications that RSG initiated.

Outbound Participant Support

RSG used several types of outbound participant support (beyond the previously mentioned website and invitation materials) to aid survey administration. The primary sources of outbound support were automated email reminders, reminder phone calls, and in-app reminders or notifications (rMove participants only).

Email Reminders and Phone Calls

RSG required all rMove participants to provide email addresses. Online participants could provide both an email address (required for most households, unless participating through the call center) and an optional phone number. Any household that provided an email address received email reminders, while households that only provided a phone number were reminded by phone.

The study call center conducted all phone reminders. These reminders occurred on the following schedule:

- One day before each household’s travel date.
- One day after each household’s travel date.
- Three to five days after each household’s travel date (if the household had not yet completed the study).

Reminder emails occurred on a similar schedule, although more frequently. RSG sent email reminders/notifications throughout the travel period to all households that provided an email address during Part 1 of the survey. Households received emails within an hour of completing Part 1, prior to the rMove travel periods (reminding participants to activate the app), the day before the travel period began, the day after each travel period ended, and 3–5 days after the end of the travel period if the household had not yet completed the study.

In-App Reminders (rMove)

rMove participants also had in-app reminders to encourage them to complete all surveys during their travel periods. Participants received notifications as soon as a new survey was available—either several minutes after the end of a trip or the morning after a travel day. rMove participants reporting their children’s trips by proxy also received reminders to review and add to their children’s trip rosters.

Inbound Participant Support

In addition to all outbound participant support, RSG provided three primary means through which participants could contact survey administrators. All participants could call a toll-free number to reach the survey call center or submit questions through the contact form on the website. There were a total of 740 calls and of 593 emails sent to the support team. rMove participants also had the option to submit feedback directly through the app.

6.0 DATASET PREPARATION

Throughout the study, RSG implemented strict dataset preparation and quality control checks to ensure data was properly collected, stored, and analyzed. Before study fielding, survey instrument testing confirmed that survey responses were recorded correctly. During data collection, all survey instruments employed real-time validations and logic checks to ensure consistent coding and logical response combinations and to prevent skipped questions. After the data collection period ended, additional time was spent reviewing, cleaning, and processing the raw data to prepare the unweighted dataset for analysis (described further below). The full steps and details of data processing are provided in the separate dataset guide.

Initial Data Review

Before reviewing the data for completion, RSG removed households from the dataset that met the following exclusion criteria:

1. Household reported a home location outside the study region. Most households dropped during initial review were excluded for this reason.
2. Household reported contact information that matches other households (indicating duplicates). In these cases, RSG kept the first “household” to report their travel diary and removed the subsequent records.

Completion and Exclusion Criteria

Following the initial data review, households were then further reviewed for study completion. Households were considered complete if they met the following conditions:

1. The household completed the recruit survey by answering all required questions.
2. The household completed a travel diary for all participating household members on at least one concurrent weekday.

All online households have a single complete travel day. rMove households must have at least one complete travel day (where all surveys are completed on the same day by all household adults) but may have up to seven completed travel days. Partially complete rMove travel days were included in the final dataset but flagged accordingly.

Further data cleaning steps are summarized in the study’s dataset user’s guide, provided separately.

7.0 EXPANSION AND WEIGHTING

Household travel surveys cover a fraction of the population, yet the resulting datasets help analyze and make inferences about the population at large. Weighting is the process of comparing selected demographics in the study to external control data, like the census or the ACS, and adjusting the profile of the study dataset to improve the representativeness of the population in the study area.

RSG provided household, person, day, and trip weights for analysis. Note that RSG did not weight travel data for Monday, Friday, Saturday, or Sunday because: (a) data was only collected from smartphone-participating households on those days, (b) the travel behavior for those days is not assumed to be interchangeable with the behavior for Tuesday-Thursday, and (c) the data is used primarily to analyze and model typical weekday travel.

The full weighting memo provided to TRPC contains the detailed description of the weighting process. The targets used for weighting are summarized in Figure 5.

FIGURE 5: WEIGHTING TARGETS

Household-level:	Person-level:
• Total households • Household size • Number of household workers • Household income • Number of household vehicles • Presence of children	• Total persons • Gender • Age • Worker status • Race • Ethnicity • University student status

The full weighting process is delineated in a separate weighting memo provided with the final dataset delivery.

Notes for Data Users

Although HTS data provides opportunities for many types of analysis, data users should always consider the context when applying the data. For example, it is important to consider the universe of study respondents in mind to ensure the data is logical. The 2022 South Sound Travel Study was designed to collect typical weekday data from residents in the South Sound region. Therefore, the HTS dataset is not ideal for understanding weekend or visitor analysis (for example).

Data users should always use weighted data in any analysis intended to draw conclusions about the region (as opposed to survey takers). Note that only Tuesday, Wednesday, and Thursday days were weighted in this study, so any weighted analyses do not represent travel on other days. Questions with “prefer not to answer” responses (race, ethnicity, gender, and

income) were imputed first before weighting. The weighting memo, provided separately, includes further details about the imputation process for these variables.

Finally, data users should ensure sufficient sample size (and acknowledge margins of error) in any analysis. The smaller the sample size, the larger the margin of error. Sample sizes and margins of error are a complicated topic, but a typical rule of thumb is to ensure at least 30 observations of a behavior to draw reasonable conclusions.

8.0 STUDY RESULTS

8.1 RESULTS OVERVIEW

The South Sound Travel Study collected a rich set of demographic and travel behavior data from a representative sample of 2,121 households in the Thurston Regional Planning Council (TRPC) area. The study collected data from 4,347 persons, representing 48,702 trips across 14,243 complete person-days from April 11 to June 12, 2022.

TABLE 4: RESULTS OVERVIEW

	Households Surveyed	Weighted Households
	2,121	**256,451**
	Persons Surveyed	Weighted Persons
	4,347	**643,619**
	Complete Person-Days	Weighted Person-Days
	14,243	**605,585**

The following sections evaluate the success of the sampling plan and provide descriptive statistics for key questions in the study and key travel behaviors from the travel diaries.

8.2 SAMPLE PLAN EVALUATION

This section evaluates the performance of the sample plan. Overall, this study targeted 2,000 households with complete travel surveys and obtained 2,121 households, which is 6% higher than the targeted number of households.

Table 5 shows the expected and actual response rate by sampling segment.

TABLE 5: EXPECTED AND ACTUAL RESPONSE BY SAMPLING SEGMENT

		Expected			*Actual*		
Segment	**Invitations**	**Response Rate**	**Complete Households**	**Sample Rate**	**Response Rate**	**Complete Households**	**Sample Rate**
Thurston-General	34,500	2.6%	890	1.5%	2.5%	871	1.4%
Thurston-Rural	37,000	1.5%	555	1.5%	1.9%	695	1.8%
Hard-to-survey	11,000	1.5%	165	1.5%	3.0%	335	3.0%
Grays Harbor	4,300	2.1%	90	0.3%	1.1%	48	0.2%
Lewis	4,800	2.1%	100	0.4%	1.2%	56	0.2%
Pierce	9,600	2.1%	200	0.2%	1.2%	115	0.1%
Park & Ride	-	-	-	-	-	1	-
TOTAL	**101,200**	**1.9%**	**2,000**	**0.8%**	**2.2%**	**2,121**	**0.8%**

8.3 DEMOGRAPHIC SUMMARY

This section analyzes the demographic composition of the final, weighted dataset. Unless otherwise noted, all analyses use weighted data. Weighted data means that the individual sample records have been assigned multipliers (weighting factors) so that, cumulatively, the variation in subgroup sample sizes is adjusted to align with the actual subgroup population sizes observed in the American Community Survey (ACS) data for the region. For an evaluation of how closely the *unweighted* dataset matched the ACS data for the region, please see the separate memo on the data weighting approach.

Household Characteristics

The distribution of household characteristics by diary mode (online / call center vs. smartphone app) were very similar overall (Figure 6 through Figure 8). In many regions smartphone participants have higher incomes on average. The 2-person household size was the most common household size (Figure 6). While there were slight variations by income, the two diary modes were comparable overall. Respondents who participated online or by call center were less likely to disclose a household income (Figure 7). Call center respondents were more likely to have three or more vehicles at home, and smartphone respondents were more likely to have one vehicle at home (Figure 8: Household Vehicles by Diary Mode (Weighted)

FIGURE 6: HOUSEHOLD SIZE BY DIARY MODE (WEIGHTED)

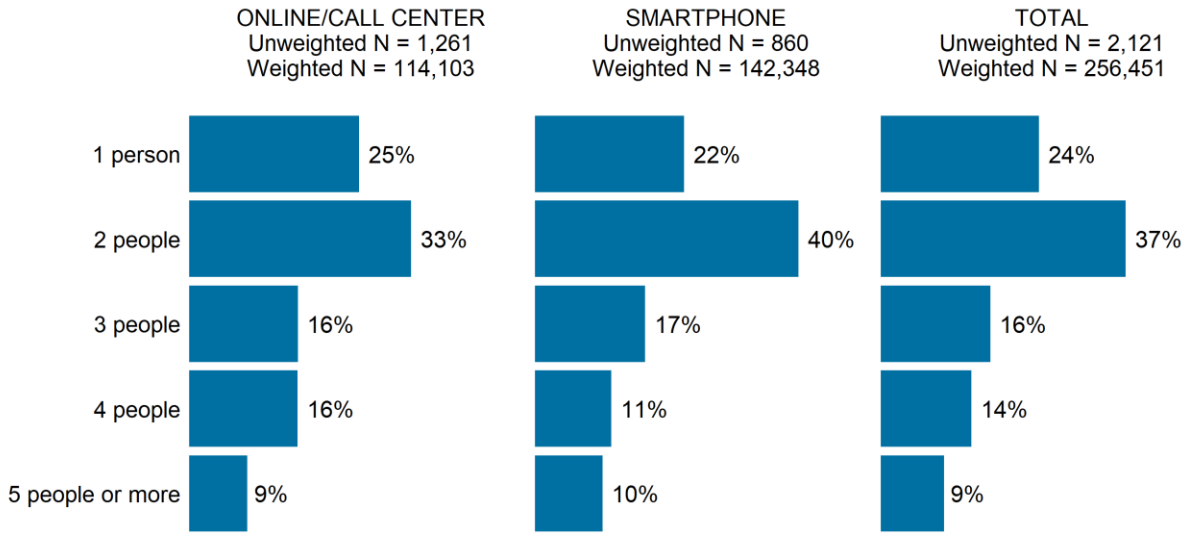


FIGURE 7: HOUSEHOLD INCOME BY DIARY MODE (WEIGHTED)

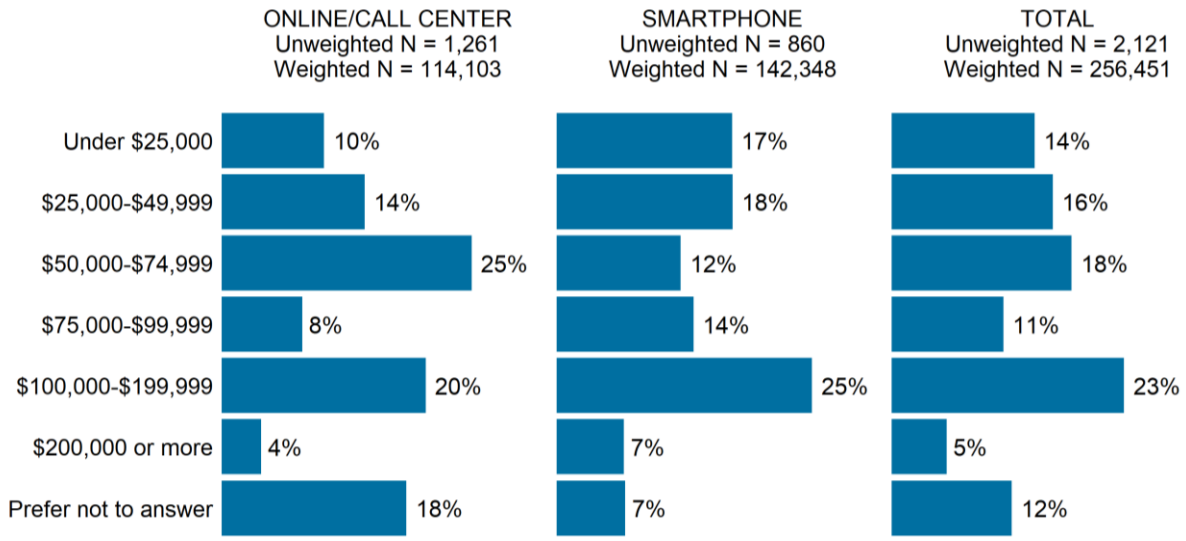
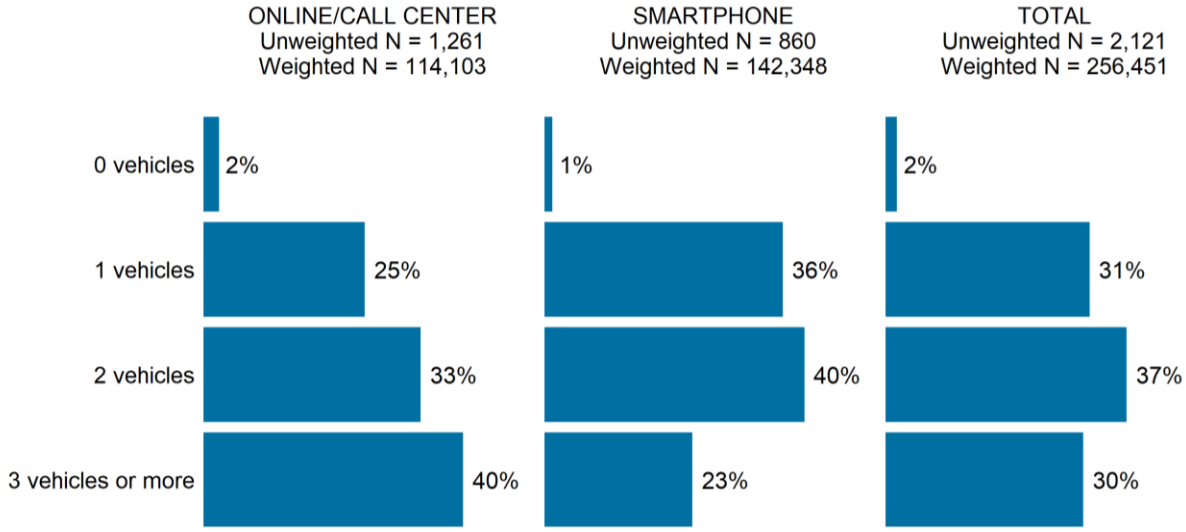


FIGURE 8: HOUSEHOLD VEHICLES BY DIARY MODE (WEIGHTED)



Person Characteristics

Unlike household characteristics, person-level characteristics varied more by diary mode. Overall, online and call center households were more likely to be older while smartphone participants were more likely to have children (Figure 9). Households with “White” respondents

were more likely to participate via smartphone, and online and call center participants had higher shares of respondents reporting “prefer not to answer” for race and ethnicity (Figure 10 and Figure 11). Among those who did report their race, online and call center participants were more likely to report their race as “African American or Black.” Seventy percent of all respondents reported their race as “White”, and 82% of respondents reported their ethnicity as “Not of Hispanic, Latino, or Spanish origin”.

Diary response types did not greatly differ between genders, though more participants responded “Prefer not to answer” within the call center and online diary modes. Person employment varied the greatest in the share of respondents who reported “Not employed and not looking for work” (42% of online / call center respondents compared to 30% of smartphone respondents). There was also a difference in favor of smartphone for “full-time employees” (52% of smartphone respondents as compared to 45% of call center / online respondents) (Figure 13).

FIGURE 9: PERSON AGE BY DIARY MODE (WEIGHTED)

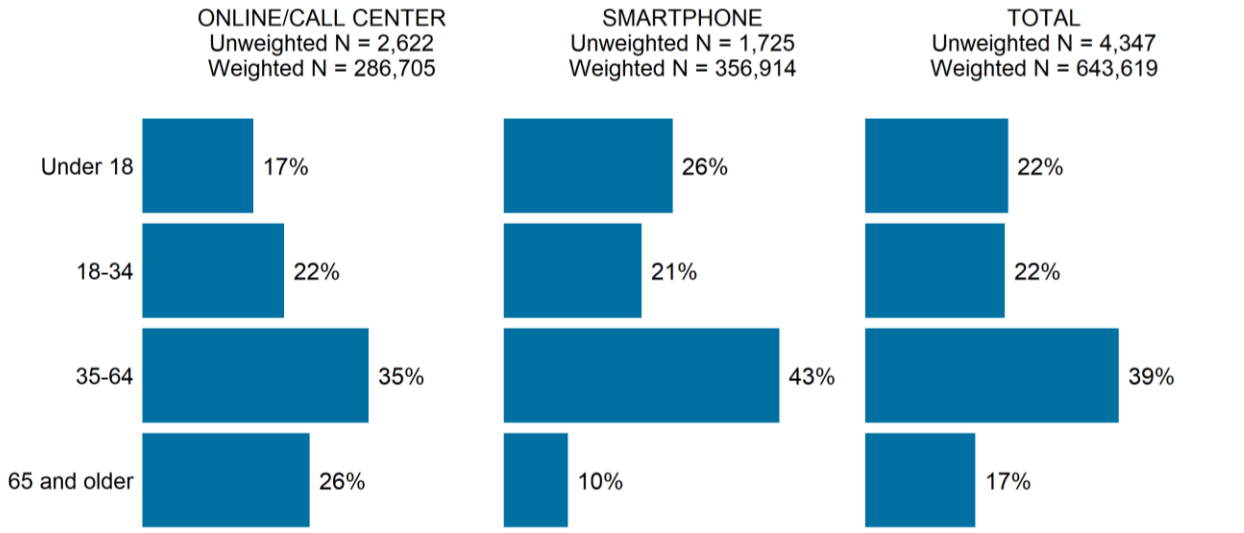


FIGURE 10: PERSON RACE BY DIARY MODE (WEIGHTED)

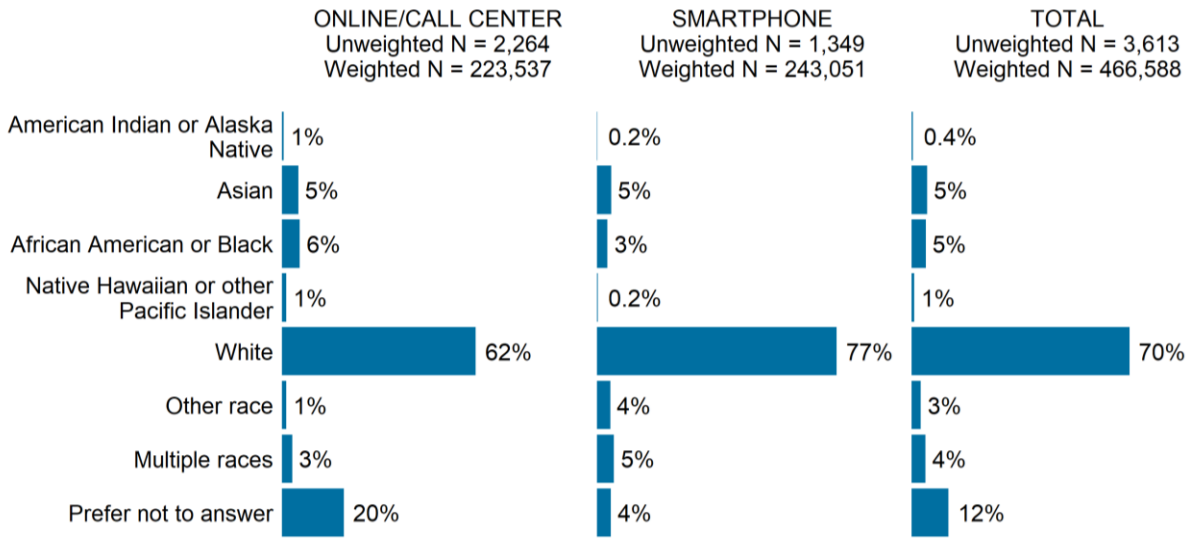


FIGURE 11: PERSON ETHNICITY BY DIARY MODE (WEIGHTED)

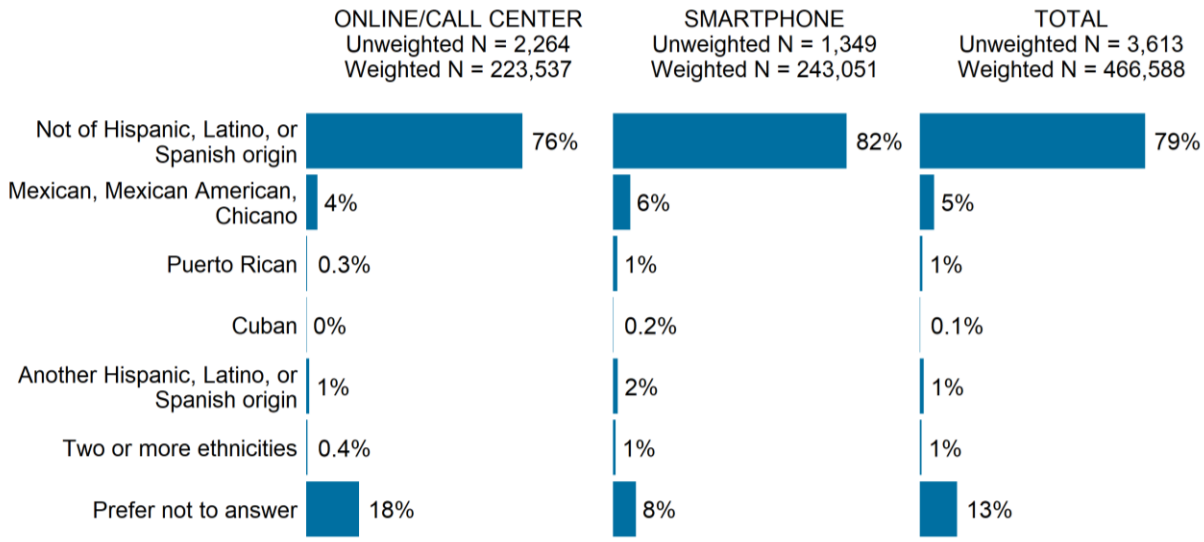


FIGURE 12: PERSON GENDER BY DIARY MODE (WEIGHTED)

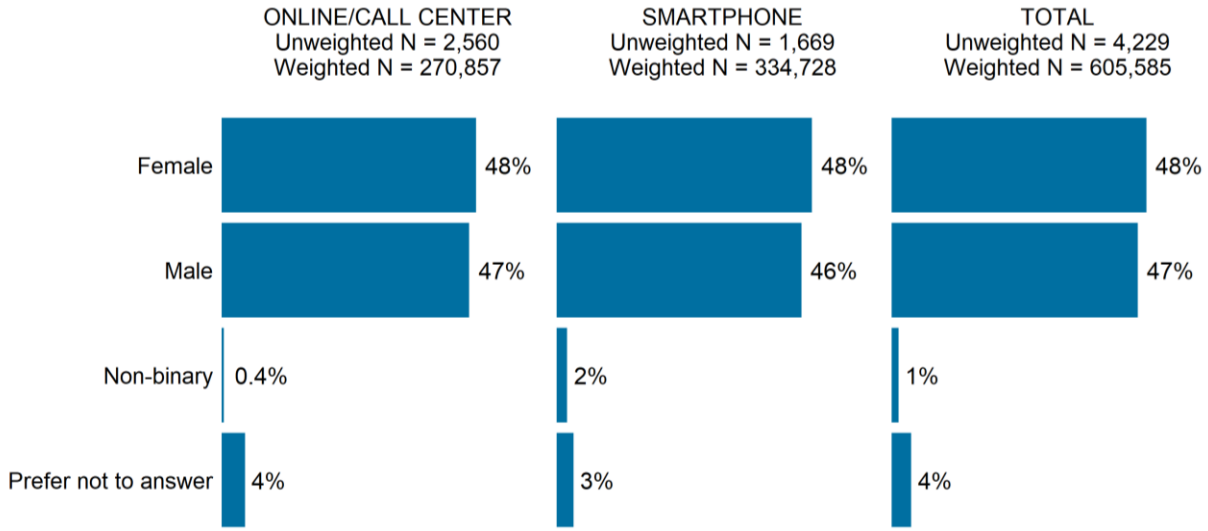
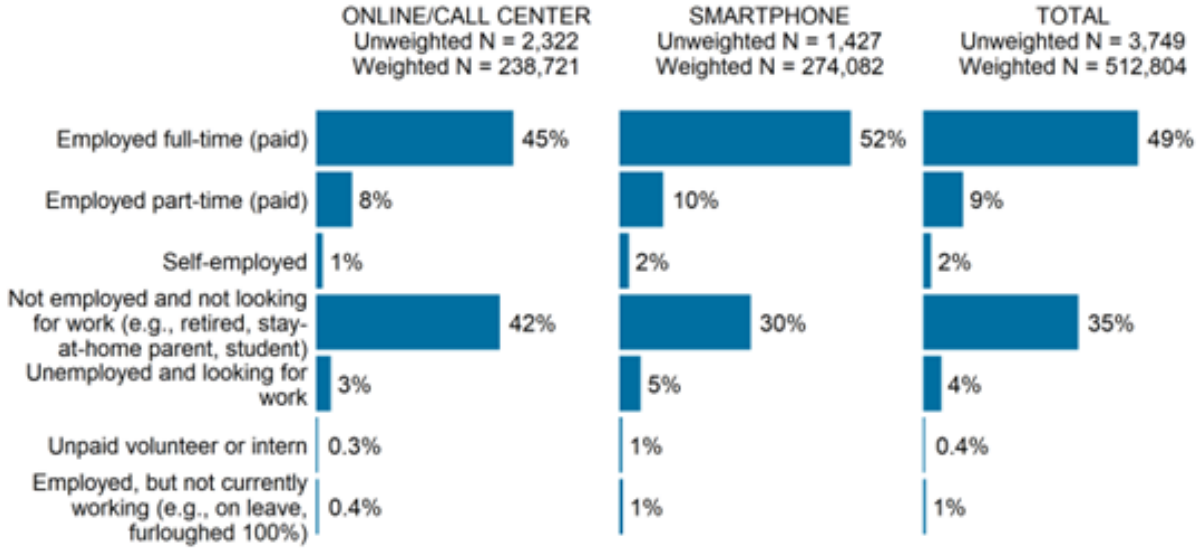


FIGURE 13: EMPLOYMENT STATUS BY DIARY MODE (WEIGHTED)



8.4 OVERALL TRIP ANALYSIS

This section describes the travel data collected during the study using distributions and trip rates. In some cases, these metrics are segmented by important variables, such as household income or trip purpose.

Trip Rates

The total weighted trip rate was 3.4 person trips per day. In reviewing trip rates by age, those under age 18 made the fewest trips (2.1 trips per day on average) while those of age 65+ made the most trips (4.1 trips per day on average) (Figure 14). All income groups had similar trip rates, though those with incomes below $25,000 had the lowest trip rates at 2.5. Respondents who responded to the income question with “prefer not to answer” had the highest trip rates at 4.6 trips per day (Figure 15).

FIGURE 14: PERSON TRIP RATE BY AGE (WEIGHTED)

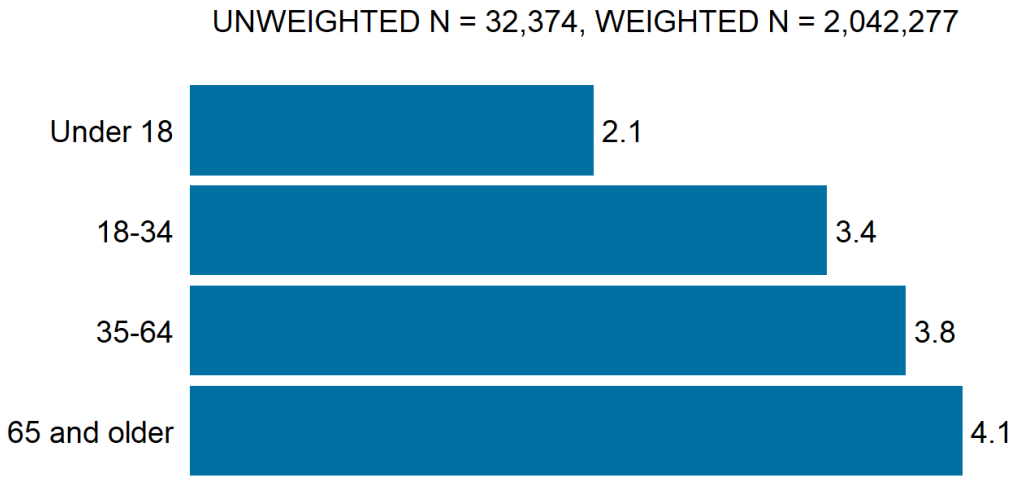
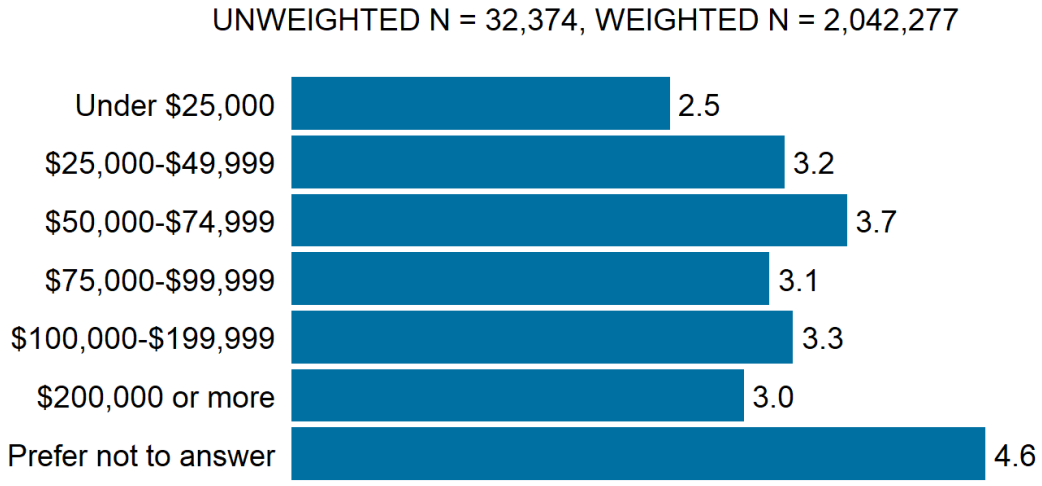


FIGURE 15: PERSON TRIP RATE BY INCOME (WEIGHTED)



In looking at trip rates by model mode, respondents drove alone about 1.52 times per day and shared a ride with one other person from their household on about 0.69 times per day. Vehicle mode options had the highest trips per day while transit and bus options had the lowest trips per day (Figure 16). On average, respondents took 1.23 trips home each day, 0.44 shopping trips each day, and 0.40 work trips each day (Figure 17).

FIGURE 16: PERSON TRIP RATE BY TRIP MODEL MODE (WEIGHTED)

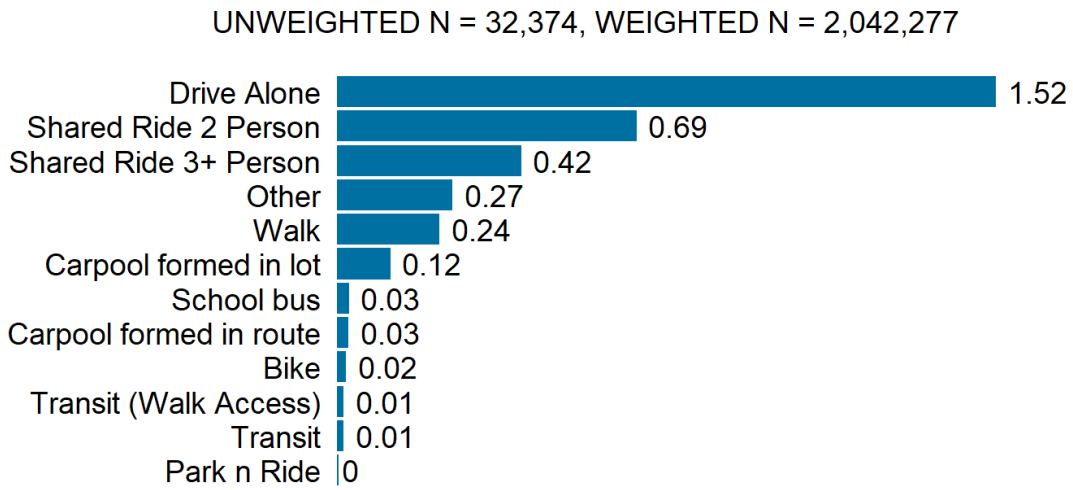
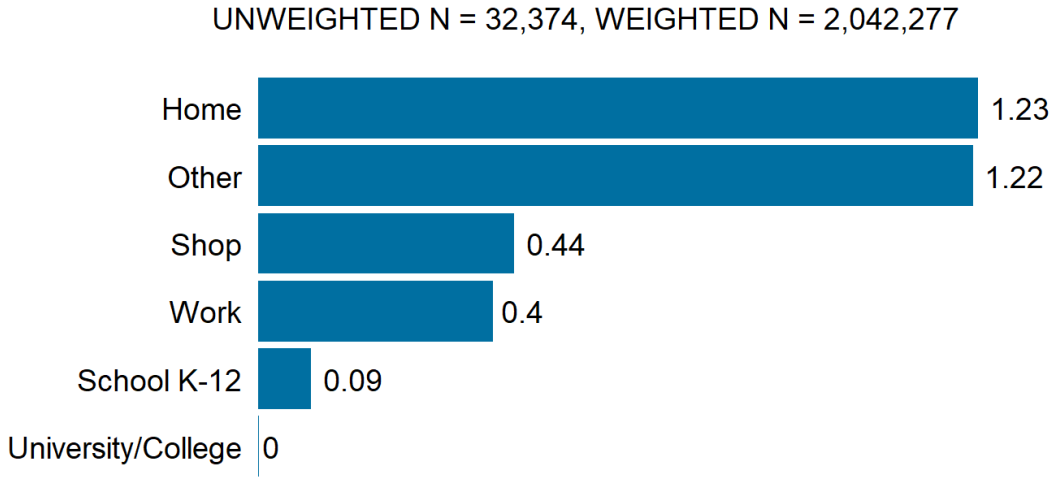


FIGURE 17: PERSON TRIP RATE BY TRIP MODEL PURPOSE (WEIGHTED)



8.5 TRIP MODE ANALYSIS

Trip Modes

Figure 18 and Figure 19 show distributions of travel modes by income and age for the TRPC model mode types. In most cases, the predominate mode used is “Drive alone,” representing 45% of all weighted trips.

Mode choice varied little by income in that most trips were car trips, but there were variations in vehicle occupancy by income. Those with incomes below $25,000 had the lowest shared ride 2 person trips (8%) while those with incomes between $50,000 and $74,999 or those who preferred not to answer had the highest share of shared ride 2 person trips (24% and 38%, respectively) (Figure 18). Respondents reporting incomes between $50,000 and $74,999 had the highest share of carpool formed in lot trips (14%), and the lowest share of bike trips across all reported incomes (0.1%) (Figure 18). Respondents reporting less than $49,999 in income were more likely to use transit and those reporting incomes greater than $100,000 were least likely to use transit (0%). Respondents reporting incomes over $200,000 were more likely to report walking as a mode (24%), followed by those reporting incomes less than $25,000 (12%) (Figure 18).

Mode choice also varied little by age except for those of age 35-64, who reported more trips driven alone (58%) and the least “shared ride 2 person” trips (14%) out of all age groups. (Figure 19). Those under 18 were most likely to have shared ride trips with 3 or more people (44%) and the least likely to drive alone (0.2%). Those 18-34 and 65 and older were most likely to use transit (1%). There was little variation in rates of walking and biking as modes by age (Figure 19).

FIGURE 18: TRIP MODE BY INCOME (WEIGHTED)

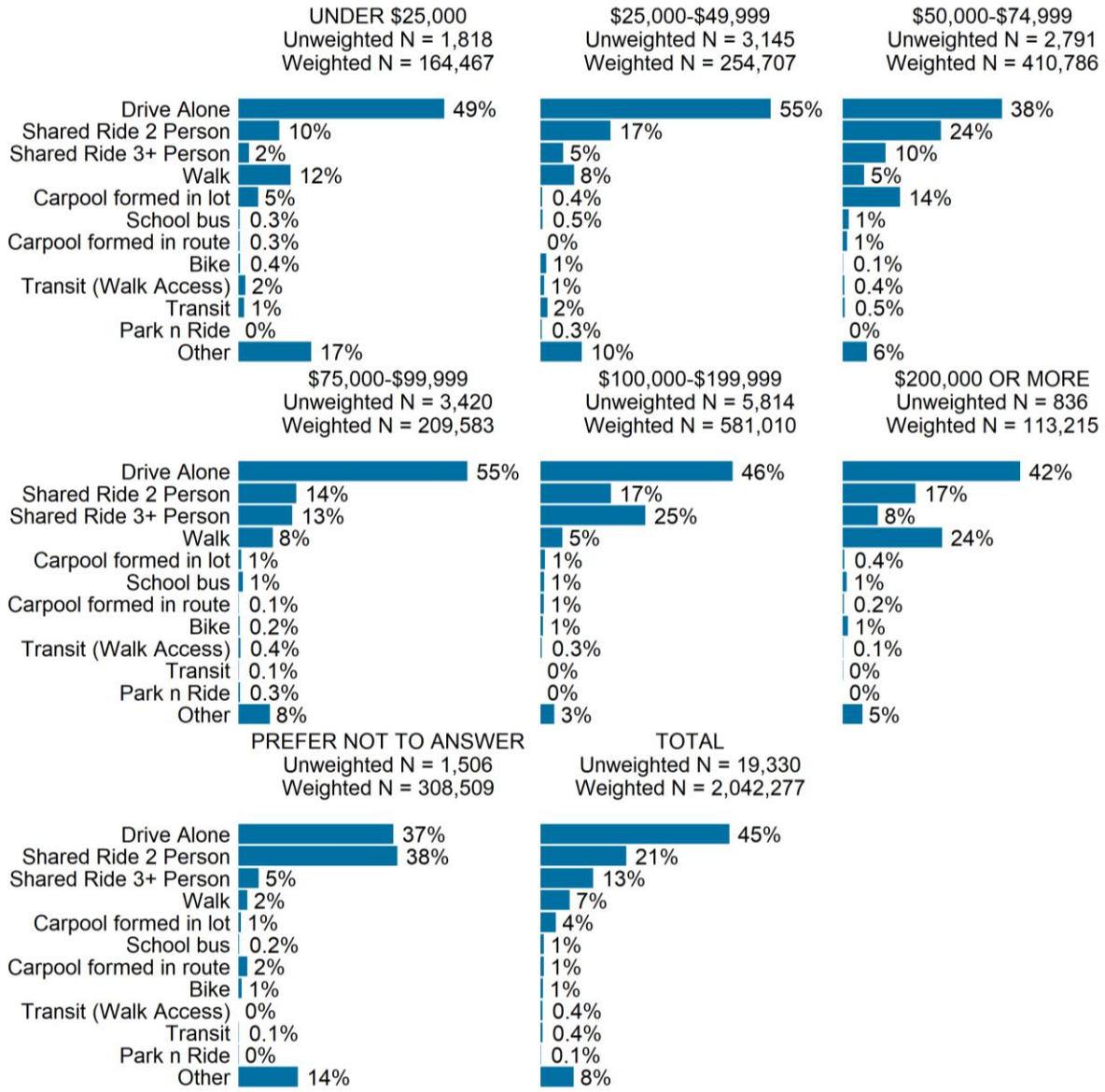
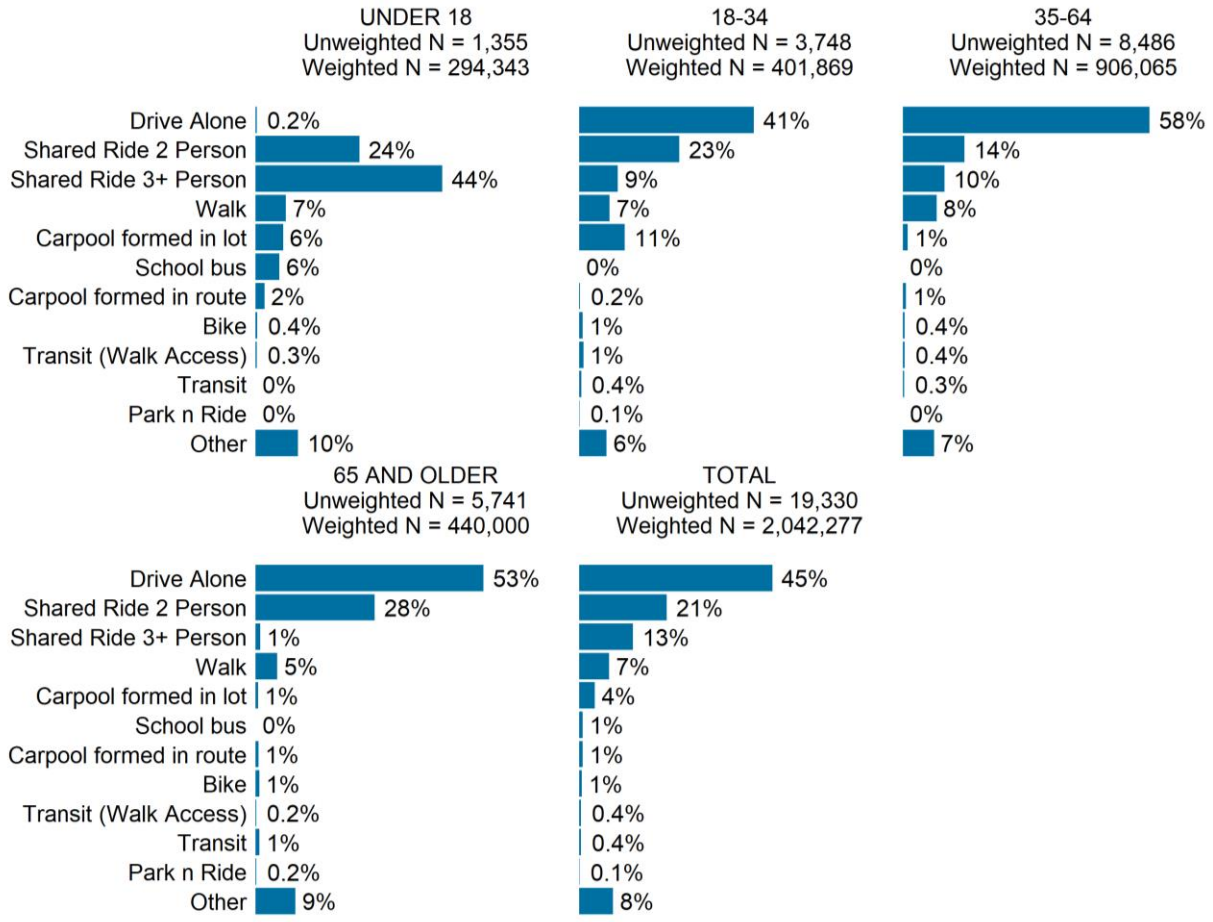


FIGURE 19: TRIP MODE BY AGE (WEIGHTED)



8.6 TRIP PURPOSE ANALYSIS

Figure 20 and Figure 21 show distributions of model purpose by income and age. The distributions of trip purpose varied little between income groups. “Home” and “other” trip purposes were the most common overall, followed by shop and work trips. School trips were the least frequent among respondents in households earning less than $50,000 (1%), and most frequent among respondents in households earning between $50,000-$74,999 (4%) (Figure 20). Work trips were least frequent among respondents in households with earnings greater than $200,000 (4%), which may be tied to great opportunities for teleworking among high-paying job types.

Trip purposes varied among age groups with higher percentages of shopping trips, with the highest rate of shopping trips among those 65 and older (19%). Work trips were most frequent

for those between 18-34 (21%) and those between 35-64 (16%). Trips with “other” purposes were most frequent among those under 18 (41%) and those over 65 (42%) (Figure 21).

FIGURE 20: TRIP MODEL PURPOSE BY INCOME (WEIGHTED)

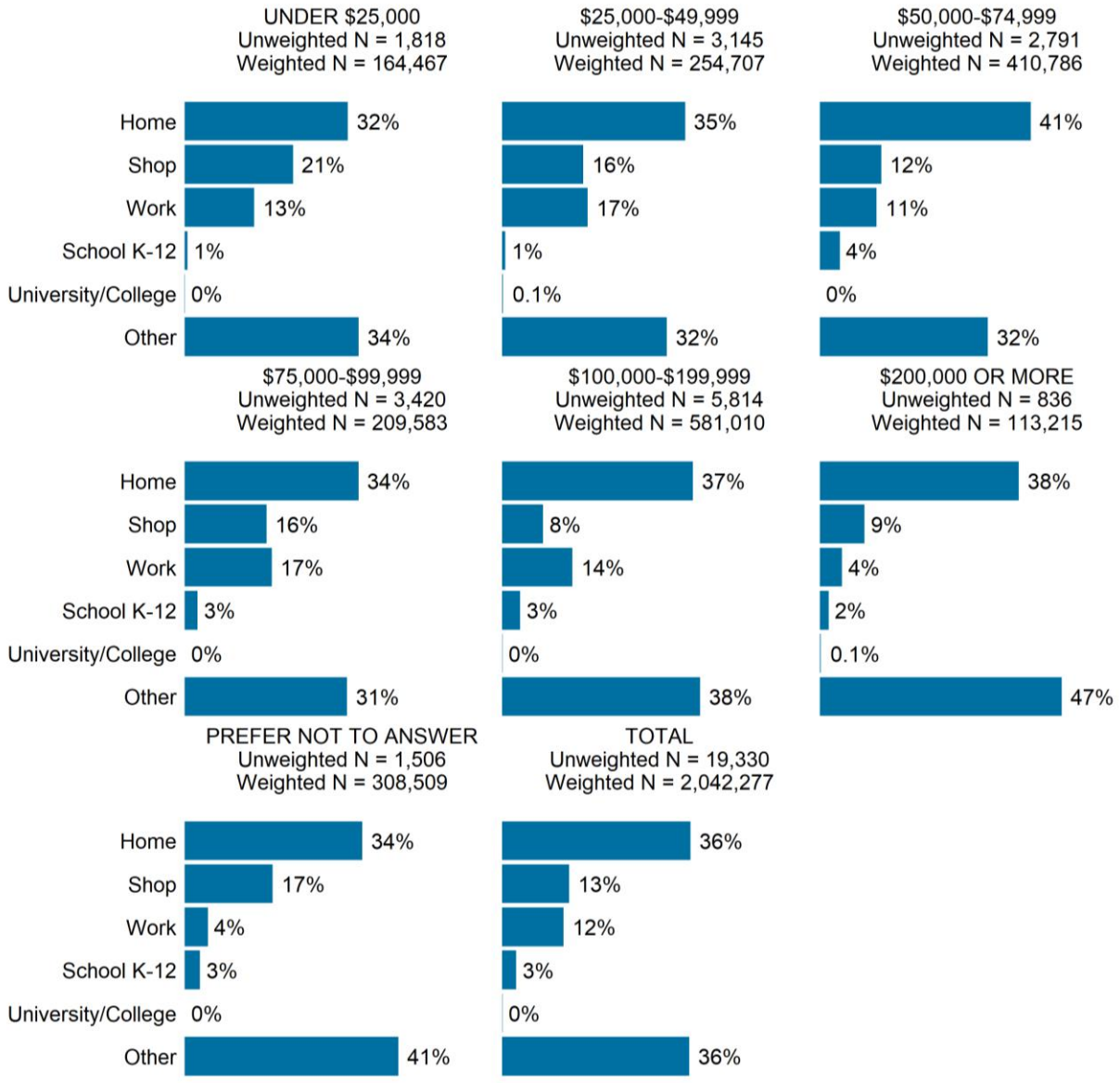
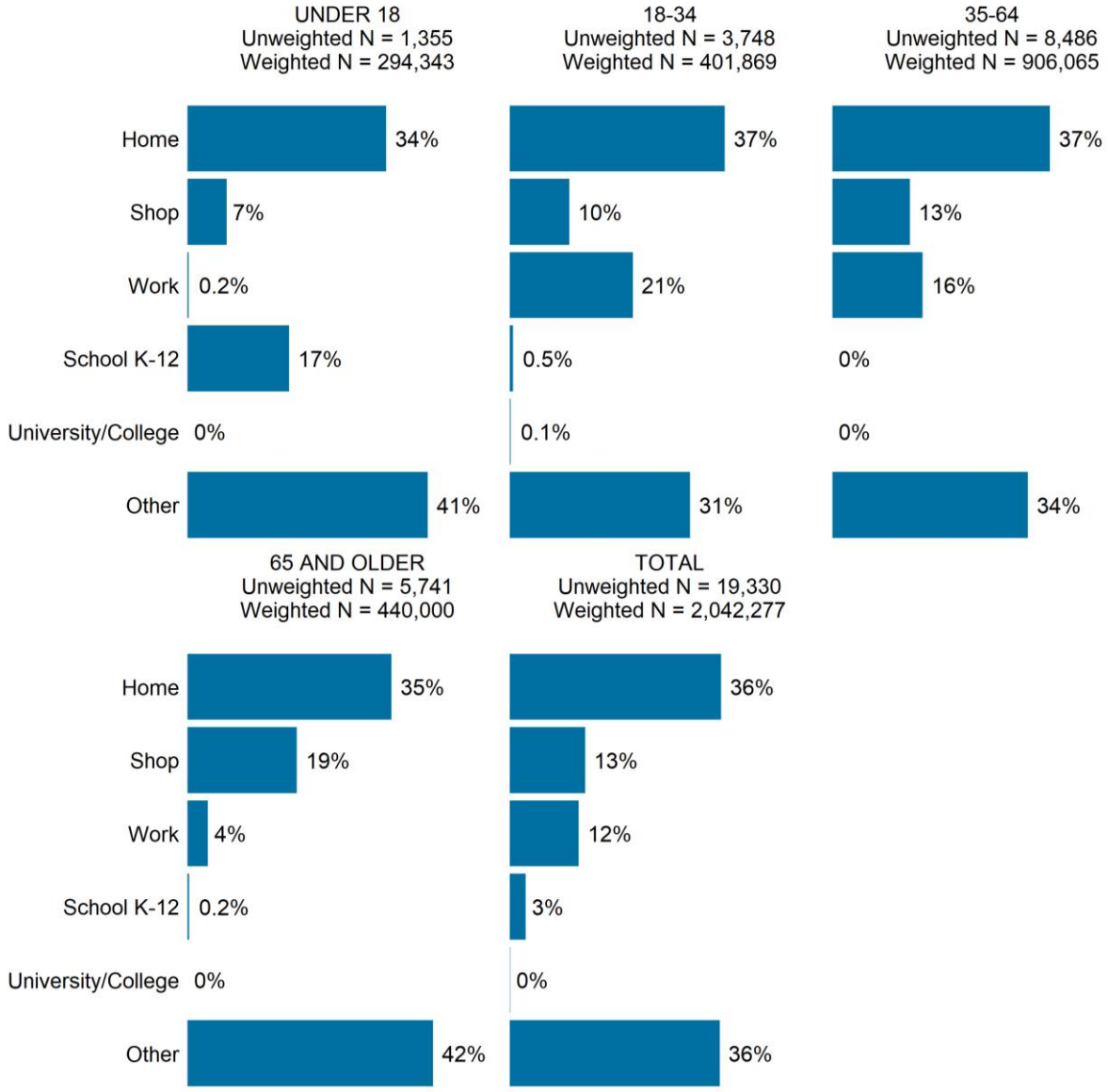


FIGURE 21: TRIP MODEL PURPOSE BY AGE (WEIGHTED)

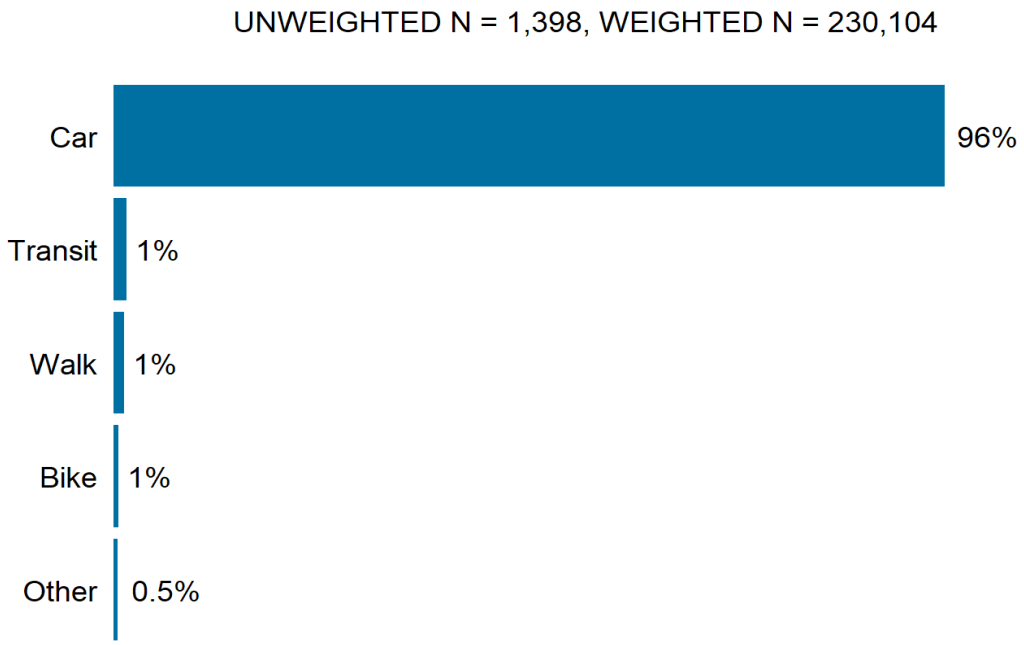


8.7 EMPLOYMENT ANALYSIS

To better understand how employment-related behaviors changed from before March 2020 to spring 2022, the study asked employed respondents to report their typical commute modes (if they travel to a workplace outside the home) and their typical teleworking frequency. Among

those who travel to workplaces, the distribution of commute modes is heavily skewed toward the car mode (Figure 22).

FIGURE 22: WORK COMMUTE MODE (WEIGHTED)



Among employed workers who commute to work fewer than 6-7 days per week, 28% reported working from home or teleworking at least once per week while most (58%) reported never teleworking (Figure 23). Respondents were also asked how many days per week they expect to work from home or telework after COVID-19 measures have ended. 45% expect to work from home or telework in the future while 45% expect to never telework (Figure 24). Among participants that are employed, nearly two-thirds work in the “private sector” (63% of workers), and very few work for the military (3% of workers) (Figure 25).

FIGURE 23: TELEWORK FREQUENCY SPRING 2022 (WEIGHTED)

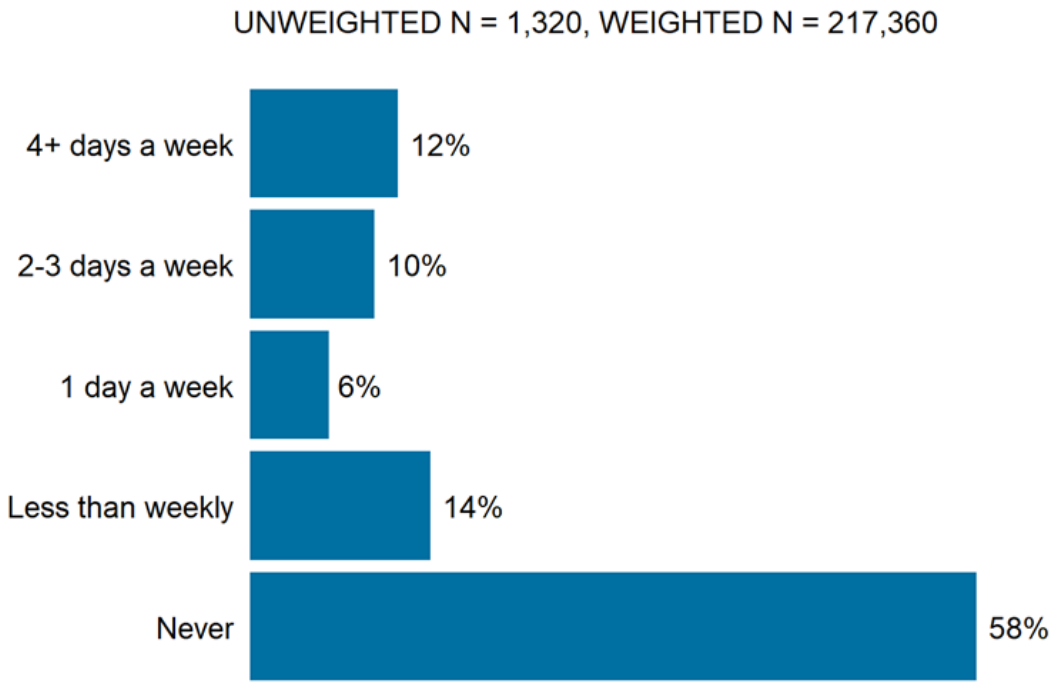


FIGURE 24: TELEWORK FREQUENCY AFTER COVID-19 MEASURES HAVE ENDED (WEIGHTED)

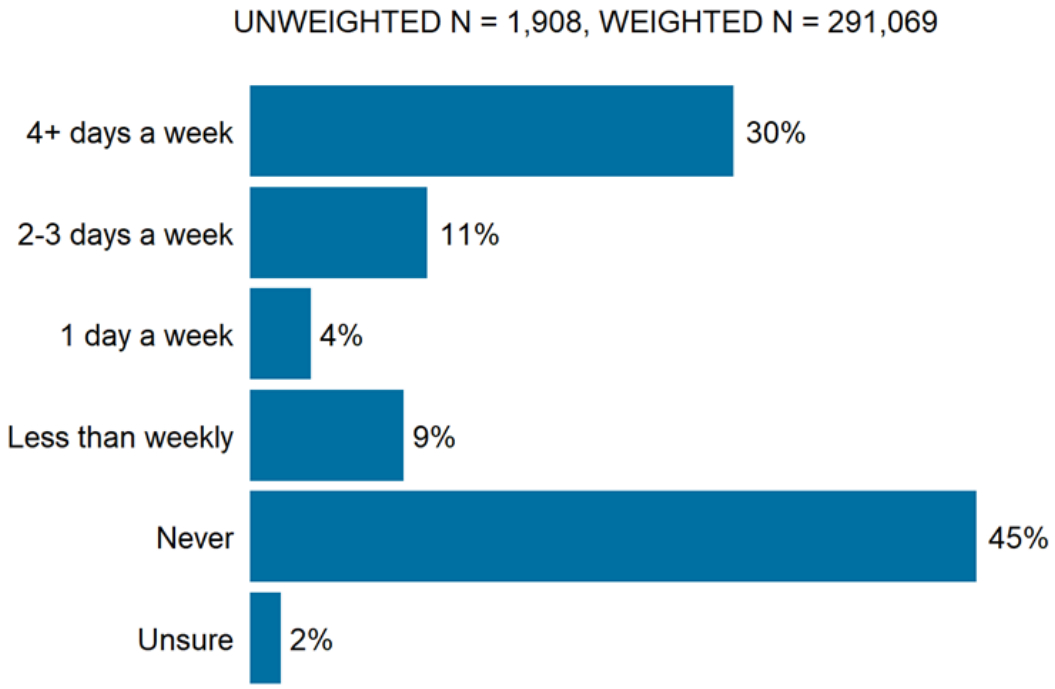
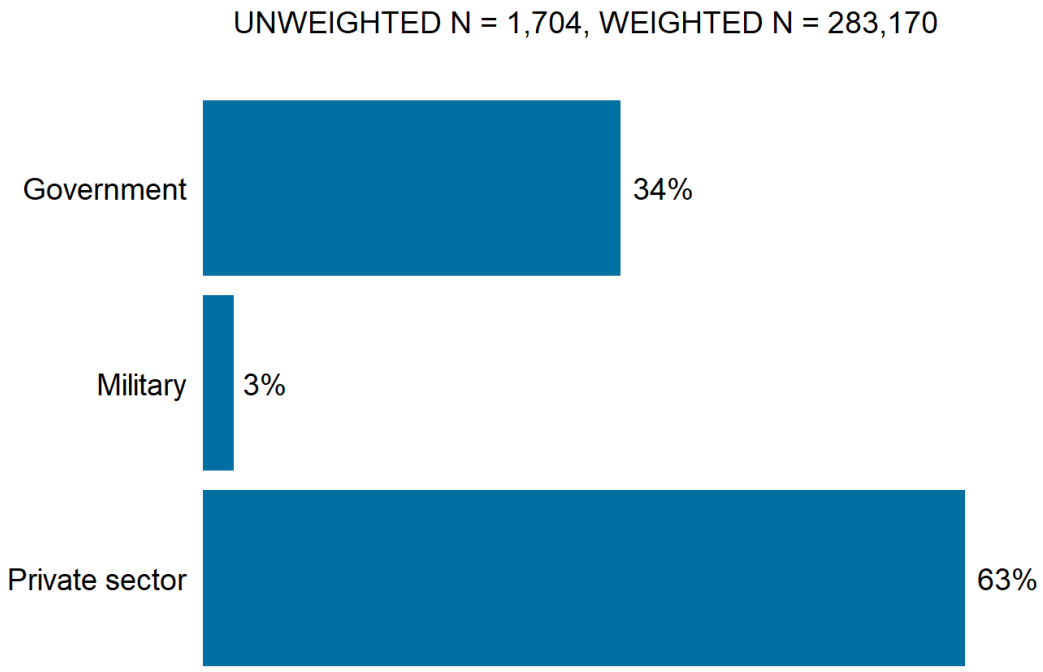


FIGURE 25: EMPLOYER TYPE DISTRIBUTION (WEIGHTED)



8.8 TRAVEL DAY & TYPICAL TRAVEL ANALYSIS

After each travel day, respondents were asked a handful of day-level questions to better understand their travel replacement activities. These included asking about their reasons for not traveling (if applicable), deliveries received on their travel day, and time spent telecommuting (if employed). Once during the study, respondents were also asked about their interest in purchasing an electric vehicle.

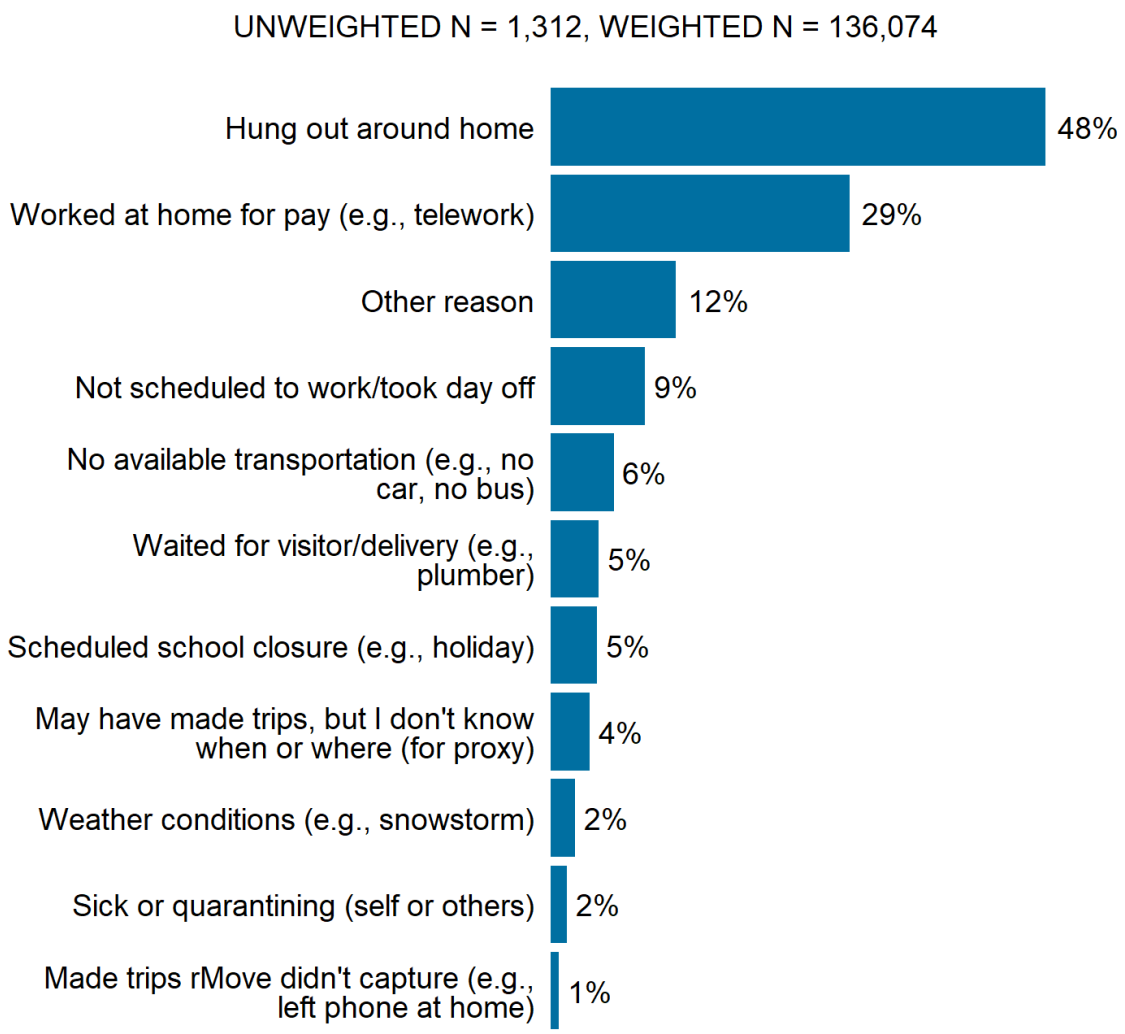
Among those who did not travel on their travel day, the most common reason was hanging out around home (48%) followed by working at home for pay (29%) (Figure 26).

49% of respondents received at least one type of delivery on their travel day (Figure 27). It may be worth noting that the share of respondents who have reported receiving deliveries has increased in the past several years. For example, more than 85% of respondents in the 2018 WCOG HTS reported receiving no deliveries on their travel day. This trend has also been observed in the recurrent PSRC HTS between 2019 and 2021. While household travel surveys are not suitable for fully quantifying the impact of freight travel, this trend may hint at regional transportation changes.

Employed respondents were asked how much time they spent teleworking on their travel day. 59% of employed respondents reported that they did not telework at all on their travel day while 32% reported teleworking six or more hours on their travel day.

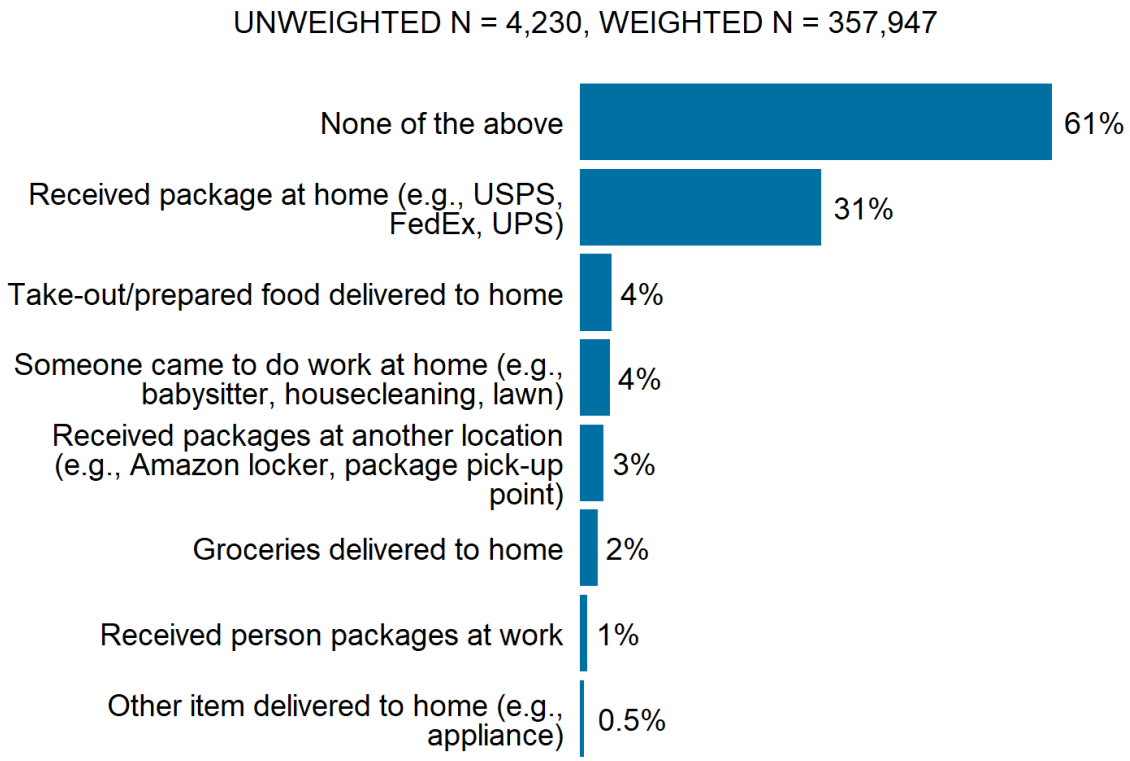
Lastly, participants were asked whether they had interest in purchasing an electric vehicle in the future. While most respondents have considered purchasing an EV (64%), a higher percentage of respondents will not be buying an EV for the next few years (38%) than the 26% of respondents who may (Figure 29).

FIGURE 26: REASONS FOR NOT TRAVELING ON TRAVEL DAY (WEIGHTED)



Note: Respondents could select more than one answer to this question.

FIGURE 27: DELIVERIES RECEIVED ON TRAVEL DAY (WEIGHTED)



Note: Respondents could select more than one answer to this question.

FIGURE 28: TELEWORK TIME ON TRAVEL DAY (WEIGHTED)

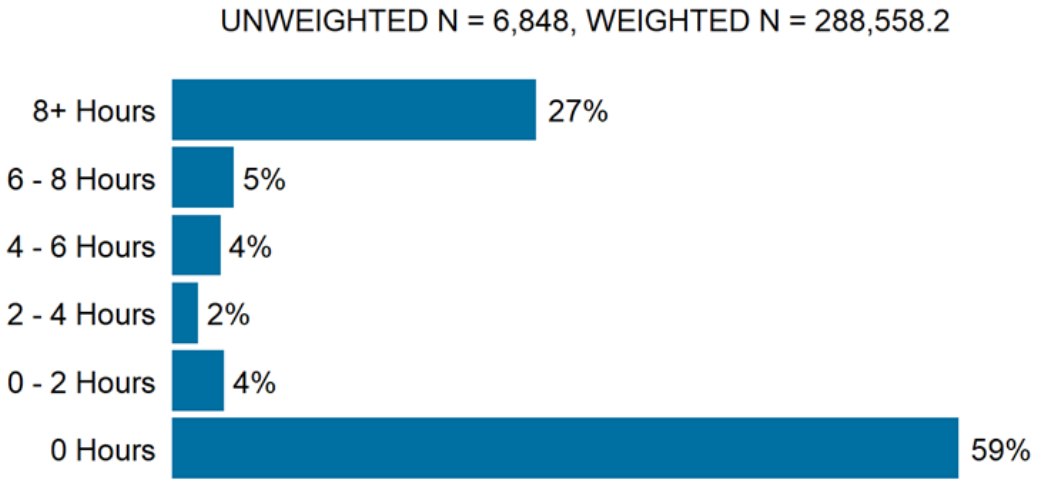
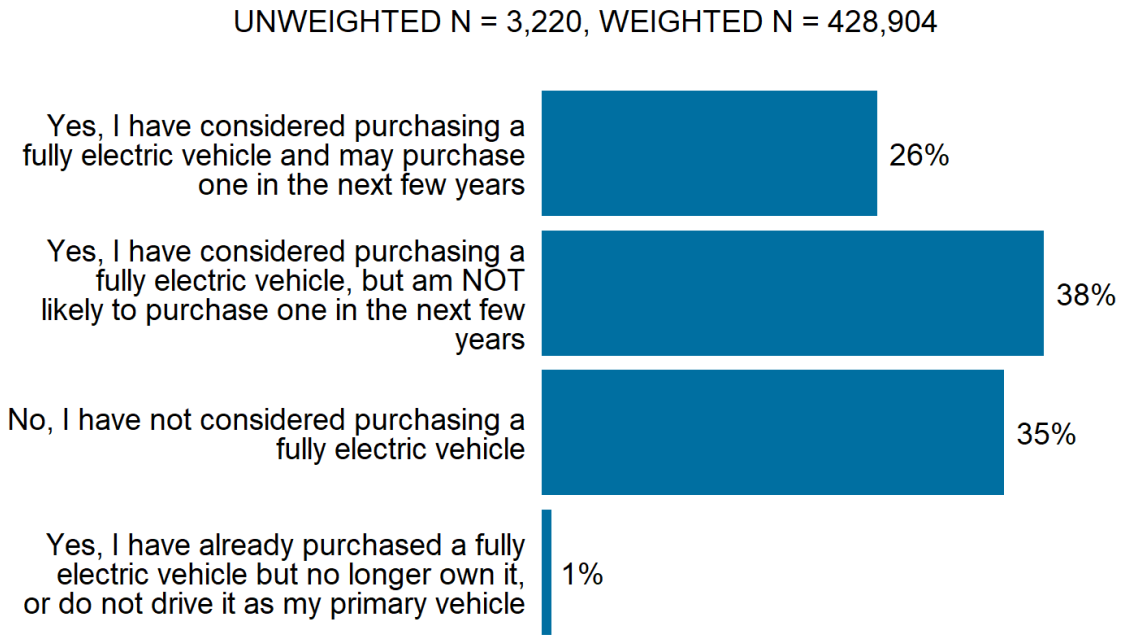


FIGURE 29:INTEREST IN PURCHASING AN ELECTRIC VEHICLE (WEIGHTED)



9.0 CONCLUSION

The methods used in the 2022 South Sound Travel Study provided higher-quality and more versatile data compared to traditional methods. The compensatory oversampling techniques resulted in a more representative sample than conventional random sampling would have allowed. Coherent, professional study branding and user-friendly survey tools (e.g., Bing Maps API) communicated expectations with participants and maximized the total participation rate. The high proportion of smartphone-collected data allowed for more precise trip rates and greater quantity of trip information captured across multiple days. Overall, the study applied innovative methods to capture higher-quality and higher-quantity data which will lead to greater analytical opportunities in the future.