



PUGET SOUND REGIONAL COUNCIL

2021 PUGET SOUND REGIONAL TRAVEL STUDY

Final Report | April 21, 2022



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ACKNOWLEDGMENTS

The 2021 Puget Sound Regional Travel Study was supported by the efforts and advice of many partners. The Puget Sound Regional Council offers their thanks and appreciation to these partners and their staff for their input on this study.

STUDY SPONSORS

- Puget Sound Regional Council.

CONSULTANT TEAM

- RSG (Prime Consultant).
- WestGroup Research (Subconsultant).

GLOSSARY OF TERMS

TERM	DEFINITION
ABS	Address-based sampling (ABS) draws from a complete list of households within a given geographic area. This study’s sampling frame was the full list of addresses in the specified census block groups as available from the United States Postal Service (USPS) Computerized Delivery Sequence File.
ACS	The American Community Survey (ACS) is an ongoing US Census Bureau survey that gathers demographic and other person- and household-level information. ACS estimates informed this study’s sampling and weighting methods.
BG	A block group (BG) is a statistical division of a census tract and a contiguous geographic area that typically contains 600–3,000 people.
HH	In this study, a household (HH) encompassed anyone who lives in the home, including roommates, relatives, friends, and household help.
HTS	A household travel survey (HTS) is a periodic survey that collects trip and other travel information from an entire household for a predefined period (at least one full day).
OPS	Online Panel Sampling (OPS) draws participations from providers that recruit survey participants independently for a variety of surveying purposes.
POC	Persons of Color (POC) are people who do not identify as White or non-Hispanic.
PSRC	The Puget Sound Regional Council (PSRC) “is a regional planning agency with specific responsibilities under federal and state law for transportation planning, economic development and growth management.” ¹
rMove™	rMove is a smartphone app designed to collect complete household travel diary information from invited participants. The app is compatible with most Android and iOS phones that are less than four years old. The study was designed to allow approximately 33% of participants to complete Part 2 using rMove.
rSurvey™	rSurvey is an online travel survey platform designed to collect complete household travel diary information from invited participants. All participants completed Part 1 using rSurvey, and approximately 66% of participants completed Part 2 of the study using rSurvey.
Travel date	In the context of this study, a “travel date” is the day on which a household reported its trips.

¹ Puget Sound Regional Council. “What We Do,” <https://www.psrc.org/about/what-we-do>.

1.0 INTRODUCTION

1.1 STUDY OBJECTIVES

The 2021 Puget Sound Regional Travel Study followed the 2017 and 2019 Puget Sound Regional Travel Study efforts and was the third and final wave of a planned three-wave, six-year data collection effort. The 2021 study collected household- and person-level activity and travel pattern information from residents throughout the Puget Sound Regional Council (PSRC) four-county region from April–June of 2021.

The overarching goal of the multiyear program is to maintain an updated source of household travel behavior data that supports and allows for the following:

- Transportation and land-use modeling and planning needs.
- Trend analysis over time.
- Regular study design updates to integrate evolving data collection methods and emerging travel behaviors and transportation issues.

Due to the effect of the COVID-19 outbreak on travel behavior, the 2021 study was designed to fulfill the latter two priorities but will not be used for modeling purposes.

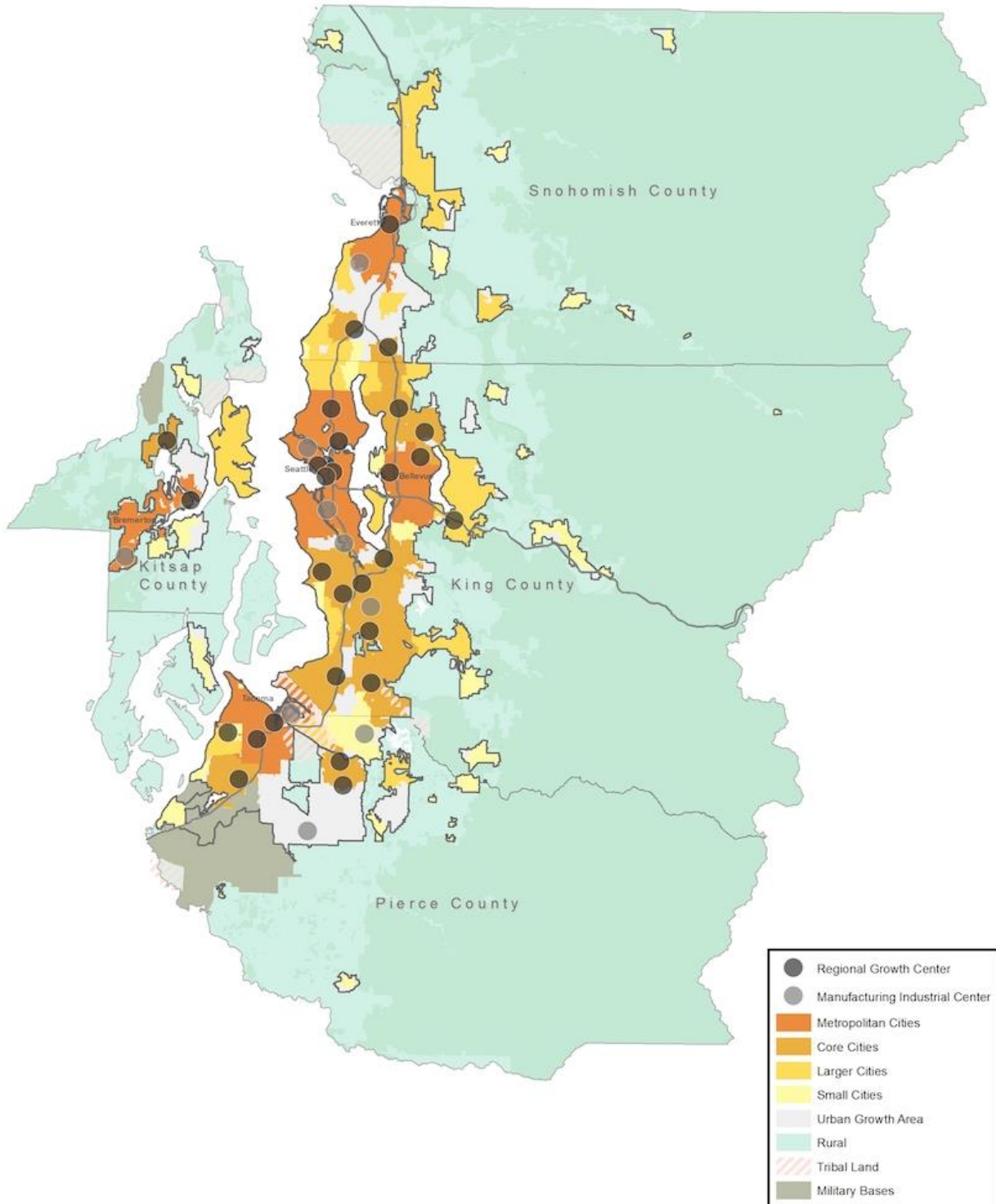
1.2 STUDY AREA

Consistent with recent surveys, the 2021 study encompassed the entire four-county PSRC region, which includes King, Kitsap, Pierce, and Snohomish counties. The region includes 82 cities and towns with a total population of over four million people. The study area comprises approximately 1,602,953 households.²

² Estimated residential household population from the American Community Survey 2015–2019 five-year estimates.



FIGURE 1: MAP OF STUDY AREA (PROVIDED BY PSRC)



Source: PSRC

1.3 STUDY TIMELINE

The scope of work for this project included the design and administration of a one-day household travel diary. Table 1 documents the project's schedule.

TABLE 1: STUDY TIMELINE

PHASE	TIMELINE
Scope Refinement	Nov. 2020–Feb. 2021
Survey Design	Feb. 2021–Apr. 2021
Survey Implementation	Apr. 2021–June 2021
Data Processing and Cleaning	June 2021–Oct. 2021
Weighting and Data Analysis	Oct. 2021–Mar. 2022
Documentation	Nov. 2022–Mar. 2022
Project Closure	Mar. 2022

Source: RSG



2.0 SURVEY SAMPLING

2.1 SAMPLING GOALS

The 2021 study aimed to sample **2,400 complete responses**, which equates a **0.15% sample rate** (based on data from the 2015–2019 American Community Survey [ACS]). This sample goal comprised both probability and non-probability respondents³:

- **Probability sample target:** 1,600 complete households in the four-county study region.
- **Non-probability sample target:** 800 complete persons⁴ in the four-county study region.

Typical sample rates for similar studies range from approximately 0.5–1%. Across the 2017, 2019, and 2021 studies, the combined sample rate was 0.6%. The 2014 PSRC study (the last study prior to the three-wave design) also had a sample rate of approximately 0.6%. The sections below further explain the process RSG used to determine the final sample rates for each census block group (BG).

2.2 SAMPLING METHODS

Probability Sample

Sampling Frame

The sampling frame for the probability sample was the list of all households in the four-county study region of King, Kitsap, Pierce, and Snohomish counties.⁵ RSG used address-based sampling (ABS) to select and invite households to participate in the study. ABS involves drawing a random sample of addresses from all the residential addresses in each sampling geography such that all households have an equal chance of selection for the sample. RSG purchased the final household mailing addresses from Marketing Systems Group, which maintains the Computer Delivery Sequence file from the USPS.

Stratification

The block groups in the four-county region were stratified to meet targets for probability sample responses by race/ethnicity and by county. The probability sample targets by county were a minimum of 200 completed households in each of the four counties, and a minimum of 1,600 across the four counties. In addition to county-level targets, the sampling objectives for the 2021

³ RSG and PSRC originally targeted a goal of 1,200 probability samples and 1,200 non-probability samples. Based on higher than expected response from the probability sample (and higher preference for probability sample), the study targets were adjusted mid-study to 1,600 probability samples and 800 non-probability samples.

⁴ Respondents sampled via non-probability methods provided full travel diary information for themselves only while participants sampled via probability methods provided full travel diary information for all adult members of the household.

⁵ The sampling frame was defined and stratified using ACS estimates of number of households in each census BG; based on these ACS estimates, 17 block groups with no households or few households (fewer than 50) were excluded from the sample analysis and final sample frame.

study included achieving sufficient sample sizes for analysis among People of Color and from low-income households. Block groups in the region were further stratified into five groups based on the percent of People of Color (POC) adults living in each block group and percent of low-income households in each block group according to the 2019 ACS block group level data:

1. **Low POC:** Less than 30% POC adults.
2. **Medium POC:** Between 30% and 55% POC adults.
3. **High POC:** Between 55% and 70% POC adults.
4. **Very High POC:** 70% or more POC adults.
5. **High Low-Income:** Less than 55% POC adults and more than 20% of households with income below \$25,000.

The fourth segment, which comprises about 5% of the block groups in the region, was identified as the segment most likely to be effective for aggressive oversampling to achieve a higher-than-representative proportion of POC in the final sample. Therefore, this segment was also eligible for a higher, differential incentive, noted in the mailed invitations for this segment (i.e., \$25 per complete household instead of \$15 per complete household).

Table 2 summarizes the five segments in each of the four counties. Note that there were no block groups in the Very High POC segment in Kitsap County, so that segment / county combination is not included in the tables below.

TABLE 2: SUMMARY OF SAMPLING SEGMENTS, BY COUNTY

County	Segment Group	Block Groups (n)	% White Alone	% POC	% Low Income
King	1 – Low POC	538	81.0%	19.0%	7.4%
King	2 – Med POC	438	58.1%	41.9%	8.2%
King	3 – High POC	222	38.5%	61.5%	14.1%
King	4 – Very High POC	111	20.0%	80.0%	21.5%
King	5 – High Low-Income	108	63.7%	36.3%	28.8%
Kitsap	1 – Low POC	96	82.7%	17.3%	9.0%
Kitsap	2 – Med POC	24	63.4%	36.6%	9.5%
Kitsap	3 – High POC	5	44.1%	55.9%	15.1%
Kitsap	5 – High Low-Income	35	74.6%	25.4%	27.7%
Pierce	1 – Low POC	251	82.5%	17.5%	8.1%
Pierce	2 – Med POC	140	59.9%	40.1%	9.8%
Pierce	3 – High POC	57	38.4%	61.6%	21.2%
Pierce	4 – Very High POC	16	23.8%	76.2%	25.6%



County	Segment Group	Block Groups (n)	% White Alone	% POC	% Low Income
Pierce	5 – High Low-Income	90	66.3%	33.7%	28.5%
Snohomish	1 – Low POC	266	82.7%	17.3%	7.6%
Snohomish	2 – Med POC	140	58.7%	41.3%	8.4%
Snohomish	3 – High POC	29	42.6%	57.4%	12.6%
Snohomish	4 – Very High POC	6	26.0%	74.0%	29.3%
Snohomish	5 – High Low-Income	58	68.7%	31.3%	28.1%
Total		2,630	64.2%	35.8%	12.2%

Source: RSG

Based on the 2021 study's sampling objectives, the highest POC segment in each county was selected for high rates of oversampling (~25%). This level of oversampling was needed to obtain a representative sample given that the study sample plan was both compensating for differences in response rates and for the oversampling of the more rural counties. Those segments, marked with an X in Table 3, received the higher, differential incentive.

Table 3 shows the final invitation rate and number of invitations sent to each segment group in each county.

TABLE 3: INVITATION RATES AND NUMBER OF INVITATIONS SENT

County	Segment Group	Invitation Rate	Total Invitations	Differential Incentive
King	1 – Low POC	0.5%	1,397	
King	2 – Med POC	0.9%	2,494	
King	3 – High POC	2.8%	3,951	
King	4 – Very High POC	22.1%	15,122	X
King	5 – High Low-Income	2.2%	1,854	
Kitsap	1 – Low POC	3.4%	2,107	
Kitsap	2 – Med POC	9.8%	1,514	
Kitsap	3 – High POC	28.5%	853	X
Kitsap	5 – High Low-Income	8.9%	2,132	
Pierce	1 – Low POC	1.0%	1,310	
Pierce	2 – Med POC	1.9%	1,804	
Pierce	3 – High POC	5.2%	1,750	X
Pierce	4 – Very High POC	26.5%	2,632	X

Pierce	5 – High Low-Income	4.1%	2,158	
Snohomish	1 – Low POC	1.0%	1,395	
Snohomish	2 – Med POC	2.0%	1,784	
Snohomish	3 – High POC	5.7%	1,239	
Snohomish	4 – Very High POC	23.7%	992	X
Snohomish	5 – High Low-Income	4.4%	1,536	
Total		3.0%	48,024	

Source: RSG

Mid-Study Adjustment and Final Sample Rates

After the first several weeks of data collection, RSG and PSRC observed that the response rates among the online panel sample (OPS) was lower than expected while the response rates among the ABS sample was higher than expected. RSG and PSRC adjusted the target sample size of the OPS to 800 (from 1,200) and the ABS to 1,600 (from 1,200) to meet the overall sample target of 2,400. RSG and PSRC also added the higher, differential incentive to the Pierce – High POC sample group (which did not receive the higher incentive upfront initially).

Non-probability Sample

RSG coordinated online panel sampling with two sample providers, Marketing Systems Group (MSG) and Full Circle Research. The sample providers invited panel respondents via email to complete the online survey. Each invited respondent received a unique link to avoid multiple completions from the same respondent. Panel participation ran through travel weeks 1 – 6.

Panel respondents completed the Part 1 recruitment survey like the ABS respondents (i.e., they provided demographic information for all members in the household). Immediately after completing the Part 1 survey, panel respondents were directed to complete Part 2, the travel diary, **only** for themselves. The diary asked them to report travel for the most recent Monday, Tuesday, Wednesday, or Thursday. To ensure a short recall period for better data quality, the panel providers only allowed respondents to enter the survey on Tuesday through Friday, meaning most respondents provided travel for “yesterday.”



2.3 SAMPLE MONITORING

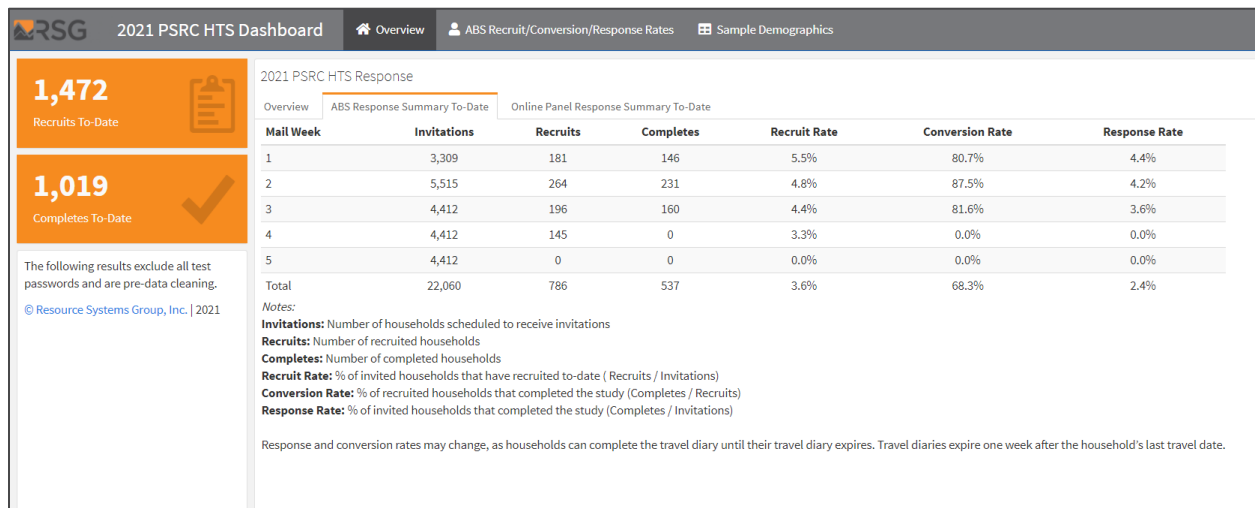
Throughout the data collection period, RSG monitored response rates to ensure that the survey response was on target overall and by individual segment. This monitoring included a project tracking dashboard that summarized live demographic distributions for households that completed at least Part 1 of the study (Figure 2). RSG and PSRC conducted a “midpoint review” after the first few weeks of data collection to determine whether adjustments were needed to help meet sampling objectives.

The consultant team monitored response at two levels:

- **Primary target:** Meet the total number of complete records for the study (2,400 completes across the region).
- **Secondary target:** Ensure that the response is roughly proportional in each sample segment.

During the data collection period, distinguishing between various levels of monitoring helped prioritize potential adjustments. For example, the trends at the midpoint review indicated that the initially planned number of invitations for Pierce County was unlikely to meet its quota of 200. As noted above, the consultant team increased the number of invitations sent to Pierce County and added the increased incentive amount of \$25 to the Pierce – High POC segment to boost response from that segment. Table 3 reflects these adjustments.

FIGURE 2: LIVE TRACKING DASHBOARD



3.0 SURVEY DESIGN

3.1 OVERVIEW

The 2021 study collected data using online- and telephone-based methods. The 2021 study used the same online survey instrument as in 2017 and 2019 so that the data collected was comparable across years to enable trend analysis. Unlike the 2017 and 2019 studies, the 2021 study did not include smartphone data collection.⁶ The 2021 study design incorporated additional adjustments to account for the non-probability online panel sample and updated reporting requirements for children’s travel, described in Section 3.7. The survey design included several stages to recruit and collect data about households, their members, and their travel behaviors during the assigned travel period.

3.2 SURVEY STAGES AND PARTICIPATION METHODS

As explained in Section 2.0, this study used both a probability address-based sample and a non-probability online panel sample. For the portion of the sample collected using a traditional ABS approach, RSG contacted invited households via mail (Section 4.0 provides additional detail about this process). The mailed study invitation 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) after completing Part 1. For the portion of the sample collected through an online panel, the panel providers, Marketing Systems Group (MSG) and Full Circle Research, invited participants via email. Participants were then redirected directly into the Part 1 demographic “recruit” survey. To enable panel participants to complete the survey in a single sitting, as is standard for panel-based surveys, participants began Part 2 (the travel diary) immediately after completing Part 1 and completed a travel diary **only** for themselves.

Study Components

All ABS households completed Part 1 either via the online survey or through the call center. (When households contacted the call center, a representative utilized an identical online survey instrument, resulting in consistent data coding for telephone and online responses.) All OPS participants completed Part 1 via the online survey. Part 1 collected general demographic information, established information to facilitate Part 2, and obtained any additional household-level information. Part 2 collected all trip and travel day information and any person-level information. All participants completed the Part 2 survey by reporting travel for one day in rSurvey™.

⁶ Multi-day smartphone collection is very beneficial for modeling purposes because it collects a much higher volume of data per household compared to other methods. Given that the 2021 survey data is not expected to be used for modeling purposes, the study team opted to eliminate smartphone data collection in 2021.



Travel Date Assignments

All ABS households were preassigned to a Monday, Tuesday, Wednesday, or Thursday travel date during the study period. Travel days were assigned randomly but were proportional across days and within segments. All OPS participants were asked to report travel retrospectively for the most recent Monday, Tuesday, Wednesday, or Thursday. To ensure a short recall period for better data quality, the panel provider will only invite participants on Tuesday through Friday, meaning most respondents will report travel for “yesterday”

Language Options

The online survey instrument was written entirely in English. Households that spoke Spanish, Russian, Chinese, Korean, Tagalog, Vietnamese, or Somali had the option to call the toll-free line to complete the survey over the phone in their preferred language. The online surveys also included a built-in Google translate bar that allowed participants to translate the survey into 103 different languages. Approximately 55 households used the online Google translate tool to complete the survey (compared to 90 in 2019 and 75 in 2017), and 7 completed the survey in a non-English language by phone.

3.3 SURVEY INCENTIVES

For all sampling segment groups except the highest POC segment in each county, RSG offered \$15 gift card incentives—as advertised on the study mailed materials—to each household that completed the study. To encourage response from POC, households in the highest POC segment in each county were offered a higher, differential incentive of \$25 gift cards, advertised on the study mailed materials.

Traditionally, transportation studies offer incentives to boost response rates and decrease the overall cost of mailed invitations (i.e., without incentives, the number of required households to invite increases. This increased mailing cost is greater than the cost of incentives). The increased response rates also help reduce nonresponse bias, producing a more trustworthy dataset.

Invited households could choose from physical or electronic Visa gift cards. Households also had the option to opt out of receiving a gift card. The Visa gift card offering was different than the 2019 and 2017 studies, which offered Amazon.com and Starbucks gift cards. Visa cards were offered for the 2021 study because they were less costly than Amazon.com and Starbucks gift cards and provided more spending flexibility for respondents.

3.4 HOUSEHOLD, PERSON, AND VEHICLE DATA COLLECTED

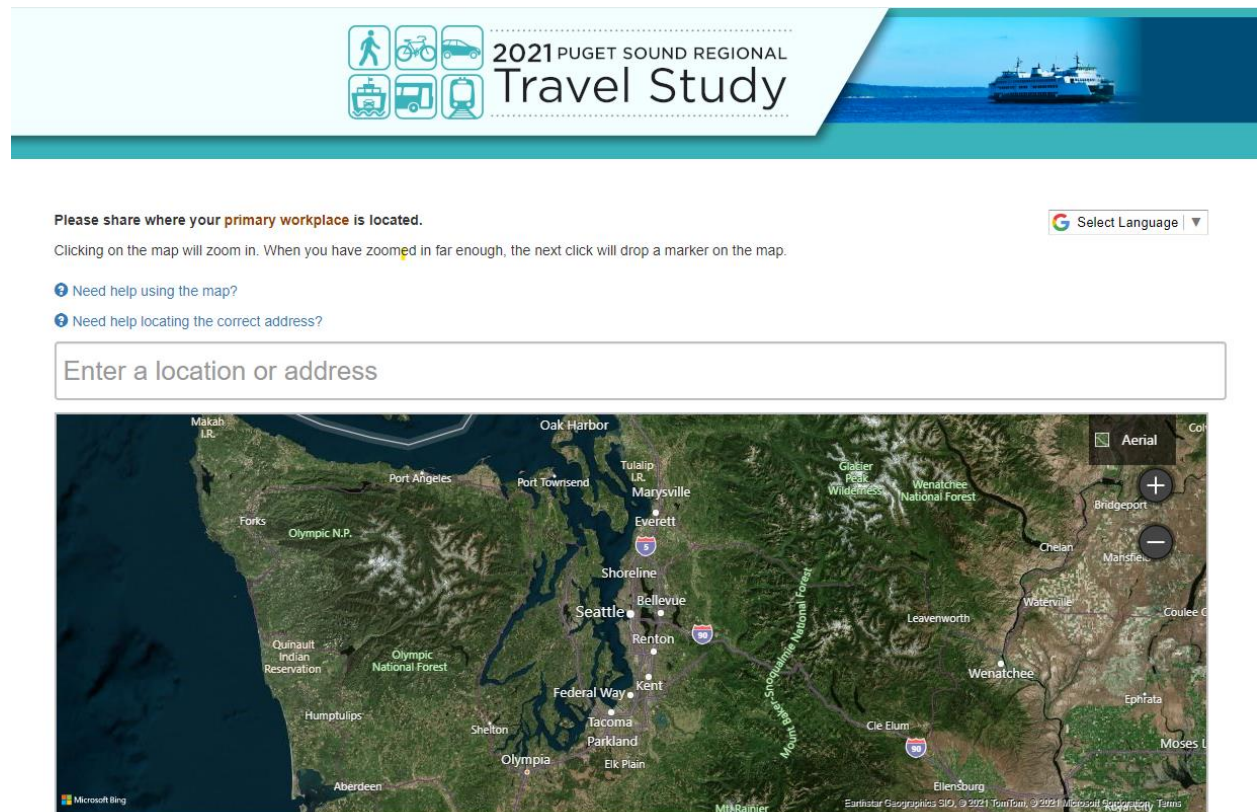
Part 1 of the survey was the main collection source of household, person, and vehicle data. ABS households could complete this section any time after the study opened, and up to eight days after their assigned travel dates (when their household travel diaries closed). OPS

participants completed this section upon entering the survey for the first time. Part 1 was organized into the following question categories:

1. Vehicle ownership.
2. Household membership details (e.g., age, relationship, smartphone ownership).
3. Work and school information, including changes due to COVID-19
4. Home and previous home details.
5. Home location preferences and reasons for relocation (if applicable).
6. Household income.
7. Incentive and communication preferences.
8. Part 2 completion instructions.

The survey collected all address information for current and previous “habitual” locations (e.g., home address, work address, school address) using a built-in real-time geocoder (Figure 3). This geocoder used the Bing Maps API and coded the latitude and longitude coordinates associated with respondents’ map entries. The full survey questionnaire is available in Appendix A.

FIGURE 3: PRIMARY WORKPLACE LOCATION GEOCODER (RECRUIT SURVEY SCREENSHOT)



Source: RSG



3.5 TRAVEL DIARY DATA COLLECTED

Trip Data

ABS participants were required to report full travel diary information for all household adults, while OPS participants were only required to report full travel for one household adult, the respondent taking the survey. Participants reported all their trip information through recollection (unlike rMove participants in 2017 and 2019, for whom trip information was passively obtained). Figure 4 shows an example trip roster in rSurvey. The rSurvey platform gathered the following information from participants:

- Trip roster.
- Trip start and end times / points.
- Travel party.
- Trip purpose.
- Travel mode(s).
- Trip costs and other details associated with each mode (e.g., access/egress modes, parking details).

FIGURE 4: RSURVEY TRIP ROSTER (SCREENSHOT)⁷

2021 PUGET SOUND REGIONAL
Travel Study

Please list, in order, all the places you went between 3 a.m. on Thursday, December 9, 2021 and 3 a.m. on Friday, December 10, 2021.

Please provide a unique name or short description for each unique/different place. If driven, got a ride, or rode a bike to/from a transit stop, include this stop as a place below. When all places are listed, click "Next" to continue.

Click and drag a place to re-order the list. Click the **+** icon next to a place to add a new place.
Click the **-** icon next to a place to remove it.

I began the day at: HOME

Then went to: STORE

I ended the day at: HOME

Your Household's Locations
Type HOME for your home

« Previous Next »

Privacy Documentation | Contact Us | Study Website | Study FAQs | © 2021, RSG for Puget Sound Regional Council

40%

Source: RSG

⁷ Note: This screenshot was taken for documentation purposes following data collection (explaining the December dates in the photo).

Travel Day Data

In addition to all trip data, the survey collected day-level information at the end of the travel day. This information included the following:

- Why the participant made no trips that day (when that was the case).
- Types of deliveries that occurred that day.
- How much time the participant spent telecommuting that day.

Reporting Summary Travel Details for Children by Proxy

Although Part 1 collected information on all household members, Part 2 required only household adults to report their travel (and in the case of the OPS, only respondents reported their travel). ABS adults provided summary travel diary information for all children under age 18. This summary data included whether children made trips to school, mode taken to school (if applicable), reason for not traveling to school (if applicable), and whether children made any other trips not previously reported by another household adult (e.g., a trip by themselves and/or with another person not in the household).

During postprocessing, RSG derived individual trip records for children based on the trips on which they traveled (reported in the travel party on trips made by other household members). Additionally, ABS adults were asked whether children made trips on their travel days without household adults, including trips to school.

3.6 ADDITIONAL DATA COLLECTED

The survey questionnaire also included questions about general travel behavior and preferences. These questions included the following:

- Typical travel and frequency of using different travel modes (how often the participant typically walks, bikes, or uses transit, ridesharing, or carsharing systems).
- Factors that would encourage increased bike use.
- Employer transit subsidies and commuter benefits.

3.7 SURVEY DESIGN UPDATES

While most of the survey design remained consistent with the 2019 study, there were several additions and changes. RSG and PSRC implemented these changes—listed in the sections below—to account for the impacts of COVID-19 on travel.

Overarching Design Changes

- **Integration of non-probability sampling:** Added OPS sampling methods to increase total sample size and test a new, cost-effective sampling approach to inform future data collection.



- **Exclusion of smartphone GPS travel diary option:** Excluded in 2021 given that data was not intended for modeling, so the benefits of collecting higher quantities of travel data were lesser (particularly given lower budget availability in 2021). This exclusion also allowed the study team to test online panel sampling.

Content Changes: Added/Modified Questions

- **Relationship:** Updated answer options to reduce word count and improve clarity (e.g., updated “wife/husband/partner” to “spouse or partner”).
- **Employment status:** Added answer option to capture persons employed but not currently working.
- **Employment status prior to COVID-19:** Added question to allow for comparisons to pre-COVID-19 employment.
- **School type:** Modified question to ask about type of school enrolled in, even if attending remotely.
- **Travel to school:** Modified question to ask how many days traveled to school in the last week.
- **Workplace:** Updated answer options to clarify partial telework situations.
- **Workplace prior to COVID-19:** Added question to allow comparisons to pre-COVID-19 work locations.
- **Work hours:** Updated wording to ask about hours worked in the last week (whereas 2019 asked about “typical” hours worked).
- **Commute frequency:** Updated wording to ask about commute frequency in the last week (whereas 2019 asked about “typical” commute frequency).
- **Commute frequency prior to COVID-19:** Added question to allow for comparisons to pre-COVID-19 commute frequency.
- **Commute mode:** Updated wording to ask about commute mode used in the last week.
- **Commute mode prior to COVID-19:** Added question to allow comparisons to pre-COVID-19 commute modes used.
- **Telecommute frequency:** Updated wording to ask about telecommute frequency in the last week (whereas 2019 asked about “typical” telecommute frequency).
- **Telecommute frequency prior to COVID-19:** Added question to allow for comparisons to pre-COVID-19 telecommute frequency.
- **Employment changes experienced due to COVID-19:** Added question to capture impacts of COVID-19 on employment and commuting.
- **Rental or ownership status of current residence:** Added answer option to reflect occupation without payment of rent.

- **Broadband availability:** Added question to collect information about broadband availability at current residence.
- **Reasons for choosing to move to current residence:** Added answer option to provide additional reasons for choosing current home location.
- **Reasons for leaving previous home location:** Updated answer options to include COVID-19-related reasons.
- **School attendance on travel date:** Added question for children to facilitate summary reporting.
- **School commute mode:** Added question to capture mode used to travel to school on the travel date.
- **Reasons for not attending school:** Added question for children to facilitate summary reporting.
- **Reasons for not traveling:** Updated answer options to include COVID-19-related reasons.
- **Telework time:** Condensed answer options for simplicity.
- **Future survey participation:** Added question to obtain consent from participants to be recontacted for future survey efforts by PSRC.

The 2021 study also included several updates to ensure that the survey was current. For example, RSG updated the list of vehicles from which participants could select their household vehicles' year/make/model.

Content Changes: Dropped Questions

The following questions were dropped from the 2021 study either to reduce survey burden or to keep the survey up to date:

- Smartphone ownership (previously used to determine rMove eligibility).
- Work parking location and payment.
- Details about previous work location.
- Travel day summary: Paid for parking on any trip.
- Trip details: Park and Ride location.
- Trip details: Parking location type and payment.
- Trip details: Transit lines used.
- Time spent shopping online on travel date.
- Transit fare payment method availability and use.
- Interest in and concern about autonomous vehicles.
- Improvements that would affect transit usage.



4.0 SURVEY BRANDING, COMMUNICATION, AND ADMINISTRATION

4.1 STUDY BRANDING

RSG developed the 2021 study branding collaboratively with PSRC, reusing many design aspects from the 2017 and 2019 studies. The complete branding package included the study name, logo, color scheme, and font selections. The final 2021 study logo is shown in Figure 5.

FIGURE 5: 2021 STUDY LOGO



Source: RSG

4.2 STUDY INVITATION MATERIALS

Each invited household received three mailings:

- **Prenotice postcard:** RSG sent prenotice postcards to invited households in eight mail weeks across two waves. Each mail week corresponded to a preassigned travel week. These postcards (arriving approximately 10 days before the household's assigned travel date) notified households that a formal study invitation would arrive shortly and that they would be offered an incentive after completing the study. The postcards also invited households to log on to the website or call the toll-free number to learn more about the study and to complete the first portion of the study.
- **Invitation packet:** Formal study invitation packets arrived at each household approximately three to four days before the assigned travel date. The cover letter explained the study purpose, described the steps necessary to complete the study, and included the PSRC logo and a signature from PSRC's executive director, Josh Brown. The invitation packet also included a Frequently Asked Questions (FAQ) sheet and foreign language insert with information about non-English participation.
- **Reminder postcard:** Reminder postcards arrived at each household approximately two or three days after the invitation packet to encourage every household to complete the study. Like the initial postcards, these cards included the study phone number, website address, and participant login information.

All mailings were written in English, but the postcards and letter also indicated phone support for non-English-speaking participants. The additional languages offered on the postcards and

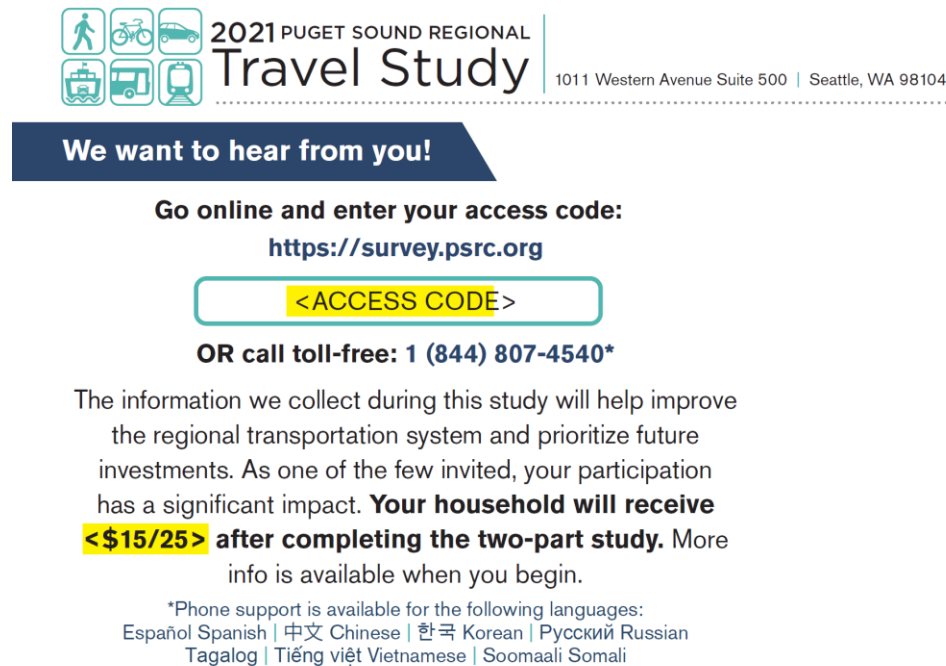
letter packet language insert were Spanish, Chinese, Korean, Russian, Tagalog, Vietnamese, and Somali. All languages were coordinated through the study call center. Example postcards are shown in Figure 6 (front) and Figure 7 (back), and examples of all printed materials can be found in Appendix B.

FIGURE 6: EXAMPLE SURVEY POSTCARD (FRONT)



Source: RSG

FIGURE 7: EXAMPLE SURVEY POSTCARD (BACK)



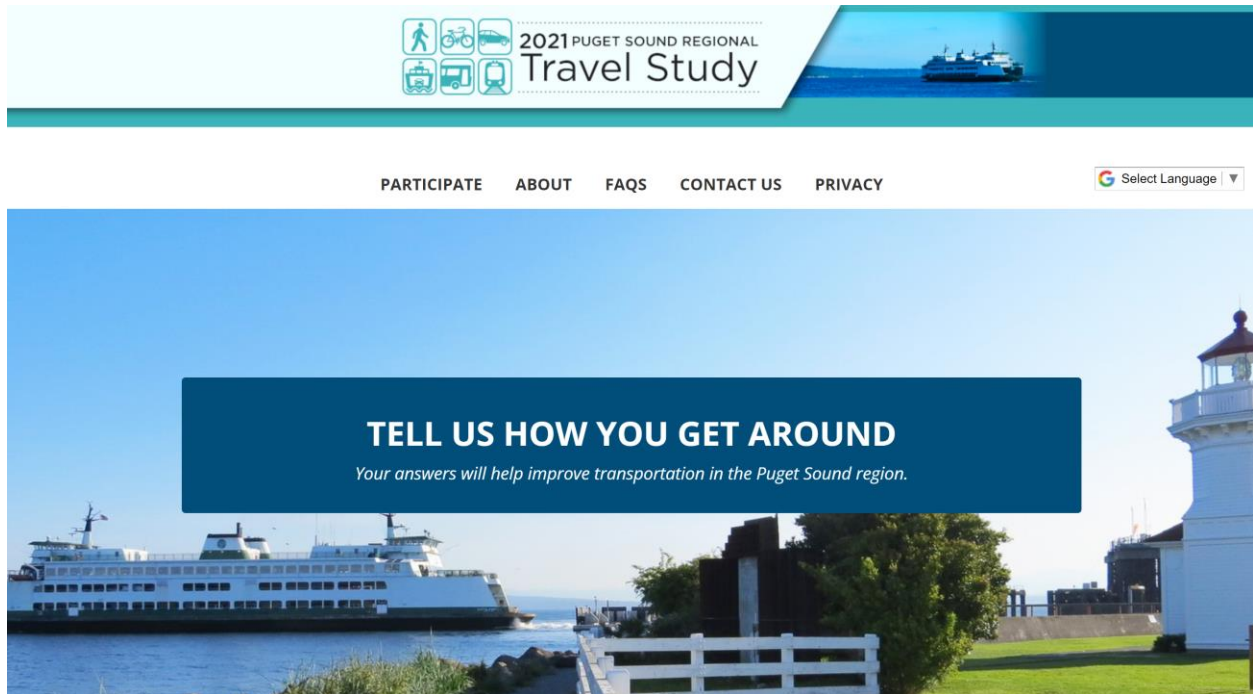
Source: RSG

Changes to the printed materials in the 2021 study included encouraging participation even if typical travel has changed due to COVID-19 and revising key study-specific details (e.g., updating the incentive and contact information).

4.3 STUDY WEBSITE

RSG developed a project website in 2014 to describe the 2014–2015 study and facilitate survey participation. RSG maintained this site in the interim and updated the design in 2017, 2019, and again in 2021 to reflect the new study and provide current information (e.g., updated FAQs, sponsors). The 2021 study website (like the 2014, 2017, and 2019 website) was designed to be simple, intuitive, and easy to navigate on desktop computers and mobile devices. The website home page is shown in Figure 8 below.

FIGURE 8: PROJECT WEBSITE HOME PAGE



Source: RSG

4.4 PARTICIPANT SUPPORT

Outbound Participant Support

RSG used two primary types of outbound participant support throughout the study. These included automated email reminders and reminder phone calls. While outbound participant support was provided for all ABS households, it was not provided for OPS participants due to the structure of the survey instrument for panel respondents (i.e., since the survey was meant to be completed in one sitting, reminders were not needed).

Email Reminders and Phone Calls

During Part 1 of the survey, ABS participants were required to provide a phone number or email address for study communications. Any household that provided a phone number and email address was asked to specify a preferred method for study communications.

The study call center conducted all phone reminders to households that only provided a phone number or specified phone as their preferred method of communication. Phone 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).

RSG sent reminder emails on a more frequent schedule:

- Immediately after each household completed Part 1.
- On the travel date.
- One day after the travel date.
- Three to seven days after the travel date (if the household had not yet completed the study).

Inbound Participant Support

In addition to all outbound participant support, RSG provided two primary means through which participants could contact study administrators. Participants could call a toll-free number to reach the study call center or email the study inbox with questions. The study website included the toll-free number and a contact form to submit an email request. Anyone with a question or comment could contact the consultant team or could contact PSRC directly for information, whether they were a participant or simply an interested member of the public.

Call Center

Participants who called the toll-free number were either connected to a trained representative who could answer any questions or asked to leave a voicemail. In total, the call center received 285 inbound calls, including 10 foreign language (5 Spanish, 3 Mandarin, and 2 Vietnamese) calls, and made 652 outbound calls (primarily reminder calls).

Email Inbox

RSG staff monitored and responded to the study email inbox, typically within one business day. Table 4 below shows the breakout of inbound emails, by primary topic.

TABLE 4: INBOUND EMAIL TOPICS

EMAIL TOPIC	COUNT
Gift card inquiry	55
rSurvey troubleshooting	48
General questions	31
No reply needed (e.g., “thank you”)	23
Login help	17
Comments and feedback	12
Contact information update	7
Out of town/Travel date reassignment request	7
Unsubscribe request	5
Volunteer inquiry	5
Data deletion request	1
Completion status	1
Total	212

Source: RSG

5.0 DATASET PREPARATION

5.1 OVERVIEW

RSG conducted dataset preparation and quality control procedures at every stage of the study (before, during, and after data collection). These procedures were designed to validate survey logic, review participant experience, and confirm consistent data coding in the survey database. The following sections summarize the various dataset preparation and quality control steps. RSG provided a separate dataset user guide to PSRC with the initial dataset; this guide included data cleaning details for key elements.

5.2 DATASET PREPARATION

Database Setup and Real-Time Quality Controls

Prior to a survey launch, RSG and PSRC reviewed the survey instruments to ensure that the survey interface was clear and easy to use, questions were understandable, and variables wrote out to the database as expected. To reduce survey burden and improve final data quality, the survey also included real-time data checks and logic. Examples of these checks include the following:

- Validation logic to prevent skipped questions.
- Logic checks to hide irrelevant questions and answers (e.g., employment questions for children).
- Spatial and temporal checks within trip rosters to prevent overlapping trips.

These real-time data checks do not eliminate every inconsistency, but they do significantly reduce reporting errors and recoding requirements after data collection.

Geographic Data Checks

RSG reviewed and processed rSurvey geographic data in several steps during and after data collection. During data collection, rSurvey used the Bing Maps API to geocode the coordinates for reported home, work, school, and trip addresses. The API was also used to estimate travel times and distances. These estimates were recorded in the database and shown to participants in real time to help them verify that they had correctly entered their trip location information.

Following data collection, RSG also coded home location points to BGs and broader regional definitions.

Trip Derivation for Nonparticipating Household Members

HTS require data for all household members to assess complete household travel patterns. However, some exceptions are allowed in the data collection process where travel can be reported by proxy, particularly for children.



In the 2021 study, ABS household adults were asked to report travel for the children in the household (under age 18). Participants could also report children of all ages as travel party members on their own trips. RSG used these records to derive diary records for children under age 18.

Completion Criteria

The last step of dataset preparation involved reviewing all data records to confirm that they met survey, travel day, and household completion criteria. “Complete” households met the following conditions:

1. The household completed the online recruitment/demographic survey.
2. All ABS household members provided complete travel diary information (i.e., answered all surveys and reported all trips). Online panel members provided complete travel diary information for themselves (person 1 in the household).
3. The household reported a home address within the study region.

6.0 EXPANSION AND WEIGHTING

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

The full weighting memo, provided separately, includes a detailed description of the weighting process for the 2021 study.



7.0 SURVEY RESULTS

7.1 SAMPLE PLAN EVALUATION

As mentioned in Section 2.0, the 2021 study aimed to collect a sample of 2,400 responses (1,600 ABS plus 800 OPS). Overall, both samples exceeded their targets for complete records. The final response rates and sample rates for the ABS sample are included in Table 5 below. The response and sample rates by segment group (estimated and actual) are included in Table 6 and Table 7 below, respectively.

The underlying invitations for the OPS were not known, as is typical for most online panel sampling. Therefore, the study team continued inviting potential respondents until the sample targets were reached.

TABLE 5: ABS RESPONSE AND SAMPLE RATES BY SAMPLE SEGMENT (ACTUAL)

ABS Segment	Invited Households	Completed Households	Response Rate	2015-19 ACS Households	Sample Rate
King Low POC	1,397	92	6.6%	310,379	0.03%
King Med POC	2,494	146	5.9%	276,986	0.05%
King High POC	3,951	162	4.1%	143,619	0.11%
King Very High POC	15,122	606	4.0%	68,321	0.89%
King High Low-Income	1,854	93	5.0%	82,671	0.11%
Kitsap Low POC	2,107	97	4.6%	61,430	0.16%
Kitsap Med POC	1,514	62	4.1%	15,449	0.40%
Kitsap High POC	853	27	3.2%	2,995	0.90%
Kitsap High Low-Income	2,132	90	4.2%	23,991	0.38%
Pierce Low POC	1,310	60	4.6%	134,392	0.04%
Pierce Med POC	1,804	56	3.1%	92,533	0.06%
Pierce High POC	1,750	39	2.2%	33,661	0.12%
Pierce Very High POC	2,632	58	2.2%	9,940	0.58%
Pierce High Low-Income	2,158	64	3.0%	52,763	0.12%
Snohomish Low POC	1,395	80	5.7%	142,322	0.06%
Snohomish Med POC	1,784	66	3.7%	91,021	0.07%
Snohomish High POC	1,239	53	4.3%	21,741	0.24%
Snohomish Very High POC	992	40	4.0%	4,178	0.96%
Snohomish High Low-Income	1,536	38	2.5%	34,561	0.11%
Total	48,024	1,929	4.0%	1,602,953	0.12%

TABLE 6: ABS RESPONSE RATES BY SAMPLING GROUP (ESTIMATED AND ACTUAL)

ABS Segment Group	Invited Households	Completed Households (Estimated)	Completed Households (Actual)	Response Rate (Estimated)	Response Rate (Actual)
Low POC	6,209	317	329	5.1%	5.3%
Med POC	7,596	244	330	3.2%	4.3%
High POC	7,793	242	281	3.1%	3.6%
Very High POC	18,746	583	704	3.1%	3.8%
High Low-Income	7,680	214	285	2.8%	3.7%
Total	48,024	1,600	1,929	3.3%	4.0%

TABLE 7: ABS SAMPLE RATES BY SAMPLING GROUP (ESTIMATED AND ACTUAL)

ABS Segment Group	2015-19 ACS Households	Completed Households (Estimated)	Completed Households (Actual)	Sample Rate (Estimated)	Sample Rate (Actual)
Low POC	310,379	317	329	0.05%	0.05%
Med POC	276,986	244	330	0.05%	0.07%
High POC	143,619	242	281	0.12%	0.14%
Very High POC	68,321	583	704	0.71%	0.85%
High Low-Income	82,671	214	285	0.11%	0.15%
Total	1,602,953	1,600	1,929	0.10%	0.12%



7.2 DEMOGRAPHICS BY PARTICIPATION GROUP

Table 8 through Table 15 below show the distribution of key demographics in the survey sample. The weights used for each analysis are included with each table. In all cases, the unweighted count includes the entire sample. The weighted count may only include a portion of the sample (e.g., ABS only) based on the weight used. Note that all weighted figures are rounded, thus total sums may differ slightly from the sum of individual categories.

TABLE 8: HOUSEHOLD SIZE (WEIGHT: ABS_HH_WEIGHT)

HOUSEHOLD SIZE	UNWEIGHTED COUNT	WEIGHTED COUNT	UNWEIGHTED %	WEIGHTED %
1 person	793	470,617	28.4%	26.9%
2 people	1,077	621,228	38.6%	35.5%
3 people	417	278,291	14.9%	15.9%
4 people	320	256,891	11.5%	14.7%
5+ people	186	122,259	6.7%	7.0%
Total	2,793	1,749,287	100.0%	100.0%

Source: RSG

TABLE 9: HOUSEHOLD INCOME (WEIGHT: ABS_HH_WEIGHT)

HOUSEHOLD INCOME	UNWEIGHTED COUNT	WEIGHTED COUNT	UNWEIGHTED %	WEIGHTED %
Under \$25,000	324	175,190	11.6%	10.0%
\$25,000-\$49,999	488	239,439	17.5%	13.7%
\$50,000-\$74,999	413	222,518	14.8%	12.7%
\$75,000-\$99,999	374	243,511	13.4%	13.9%
\$100,000-\$199,000	711	492,609	25.5%	28.2%
\$200,000 or more	284	244,506	10.2%	14.0%
Prefer not to answer	199	131,514	7.1%	7.5%
Total	2,793	1,749,287	100.0%	100.0%

Source: RSG

TABLE 10: HOUSEHOLD VEHICLES (WEIGHT: ABS_HH_WEIGHT)

HOUSEHOLD VEHICLES	UNWEIGHTED COUNT	WEIGHTED COUNT	UNWEIGHTED %	WEIGHTED %
0 vehicles	275	145,899	9.8%	8.3%
1 vehicle	1,171	580,281	41.9%	33.2%

HOUSEHOLD VEHICLES	UNWEIGHTED COUNT	WEIGHTED COUNT	UNWEIGHTED %	WEIGHTED %
2 vehicles	922	667,638	33.0%	38.2%
3+ vehicles	425	355,468	15.2%	20.3%
Total	2,793	1,749,287	100.0%	100.0%

Source: RSG

TABLE 11: PERSON AGE (WEIGHT: ABS_HH_WEIGHT)

PERSON AGE	UNWEIGHTED COUNT	WEIGHTED COUNT	UNWEIGHTED %	WEIGHTED %
Under 5 years old	340	257,268	5.2%	6.1%
5-11 years	456	345,163	7.0%	8.2%
12-15 years	281	197,990	4.3%	4.7%
16-17 years	134	102,432	2.1%	2.4%
18-24 years	503	260,718	7.8%	6.2%
25-34 years	1,098	758,851	16.9%	18.0%
35-44 years	1,047	613,603	16.2%	14.6%
45-54 years	798	565,910	12.3%	13.4%
55-64 years	787	526,783	12.1%	12.5%
65-74 years	739	423,730	11.4%	10.1%
75-84 years	245	125,888	3.8%	3.0%
85 or years older	54	36,458	0.8%	0.9%
Total	6,482	4,214,793	100.0%	100.0%

Source: RSG

TABLE 12: PERSON GENDER (WEIGHT: COMBINED_ADULT_WEIGHT)

PERSON GENDER	UNWEIGHTED COUNT	WEIGHTED COUNT	UNWEIGHTED %	WEIGHTED %
Male	3,100	1,646,426	47.8%	48.8%
Female	3,233	1,657,435	49.9%	49.1%
Non-binary	52	15,192	0.8%	0.5%
Not listed / Prefer not to answer	97	54,675	1.5%	1.6%
Total	6,482	3,373,728	100.0%	100.0%

Source: RSG

TABLE 13: PERSON RACE OR ETHNICITY (AGE 18+, WEIGHT: COMBINED_ADULT_WEIGHT)

PERSON RACE OR ETHNICITY	UNWEIGHTED COUNT	WEIGHTED COUNT	UNWEIGHTED %	WEIGHTED %
African American alone	219	156,771	4.2%	4.6%
American Indian alone	51	12,538	1.0%	0.4%
Asian alone	769	461,861	14.6%	13.7%
Hispanic alone	209	187,058	4.0%	5.5%
Native Hawaiian or Pacific Islander alone	38	15,170	0.7%	0.4%
White alone	3,299	2,113,249	62.6%	62.6%
Other alone	88	52,818	1.7%	1.6%
Multiple ethnicities	329	182,841	6.2%	5.4%
Prefer not to answer	269	191,421	5.1%	5.7%
Total	5,271	3,373,728	100.0%	100.0%

Source: RSG

TABLE 14: PERSON STUDENT STATUS (WEIGHT: COMBINED_ADULT_WEIGHT)

PERSON STUDENT STATUS	UNWEIGHTED COUNT	WEIGHTED COUNT	UNWEIGHTED %	WEIGHTED %
Not a student	4,798	3,027,091	74.0%	89.7%
Part-time student	198	128,341	3.1%	3.8%
Full-time student	1,486	218,295	22.9%	6.5%
Total	6,482	3,373,728	100.0%	100.0%

Source: RSG

TABLE 15: PERSON EMPLOYMENT STATUS (AGE 18+, WEIGHT: COMBINED_ADULT_WEIGHT)

PERSON EMPLOYMENT STATUS	UNWEIGHTED COUNT	WEIGHTED COUNT	UNWEIGHTED %	WEIGHTED %
Employed full time (35+ hours/week, paid)	2,394	1,670,500	45.4%	49.5%
Employed part time (fewer than 35 hours/week, paid)	465	338,085	8.8%	10.0%
Self-employed	313	213,455	5.9%	6.3%
Unpaid volunteer or intern	35	17,538	0.7%	0.5%

PERSON EMPLOYMENT STATUS	UNWEIGHTED COUNT	WEIGHTED COUNT	UNWEIGHTED %	WEIGHTED %
Homemaker	295	183,948	5.6%	5.5%
Retired	1,014	554,215	19.2%	16.4%
Not currently employed	675	355,570	12.8%	10.5%
Employed but not currently working (e.g., on leave, furloughed 100%)	80	40,418	1.5%	1.2%
Total	5,271	3,373,728	100.0%	100.0%

Source: RSG



7.3 TRIP RATES ON COMPLETE WEEKDAYS (MONDAY–THURSDAY)

Table 16 through Table 21 below show person trip rates on complete Mondays through Thursdays for key demographics and travel behaviors. The total trip rates are somewhat lower than in previous years, likely due to COVID-19 impacts. The total trip rates in 2019 for comparable online respondents were 3.45 trips per day (unweighted) and 4.56 trips per day (weighted). Note that the trip rates for children under age 18 are also lower because the 2021 study did not collect full travel diaries for children, though trips taken with other household adults were still captured. This is particularly apparent for those age 16-17, who are more likely to travel without household adults. Where applicable, the tables below also include weighted comparisons to the 2019 weighted dataset.

Section 7.4 and 7.5 show the weighted distribution of travel modes and trip purposes (respectively) by key variables including household income, age group, time of day, and trip distance.

TABLE 16: PERSON TRIP RATE, BY DAY OF WEEK (WEIGHT: COMBINED_ADULT_WEIGHT & COMBINED_ADULT_TRIP_WEIGHT)

DAY OF WEEK	UNWEIGHTED DAYS	WEIGHTED DAYS	UNWEIGHTED TRIPS	WEIGHTED TRIPS	UNWEIGHTED TRIP RATE	WEIGHTED TRIP RATE	<i>2019 WEIGHTED TRIP RATE</i>
Monday	1,079	699,813	2,365	2,703,574	2.19	3.86	3.86
Tuesday	1,389	904,273	3,108	3,572,414	2.24	3.95	4.30
Wednesday	1,345	988,169	3,152	4,240,335	2.34	4.29	4.26
Thursday	1,200	781,474	2,938	3,365,675	2.45	4.31	4.79
Total	5,013	3,373,728	11,563	13,881,998	2.31	4.11	4.40

Source: RSG

TABLE 17: PERSON TRIP RATE, BY HOUSEHOLD INCOME (WEIGHT: COMBINED_ADULT_WEIGHT & COMBINED_ADULT_TRIP_WEIGHT)

HOUSEHOLD INCOME	UNWEIGHTED DAYS	WEIGHTED DAYS	UNWEIGHTED TRIPS	WEIGHTED TRIPS	UNWEIGHTED TRIP RATE	WEIGHTED TRIP RATE	2019 WEIGHTED TRIP RATE
Under \$25,000	459	225,578	972	885,227	2.12	3.92	3.85
\$25,000-\$49,999	737	361,538	1,696	1,600,452	2.30	4.43	4.02
\$50,000-\$74,999	664	395,688	1,589	1,585,289	2.39	4.01	4.67
\$75,000-\$99,999	687	459,714	1,475	1,831,827	2.15	3.98	3.96
\$100,000-\$199,000	1,412	1,093,844	3,444	4,391,035	2.44	4.01	4.75 ⁸
\$200,000 or more	679	553,570	1,586	2,397,540	2.34	4.33	
Prefer not to answer	375	283,796	801	1,190,627	2.14	4.20	3.85
Total	5,013	3,373,728	11,563	13,881,998	2.31	4.11	4.40

Source: RSG

⁸ The 2019 survey included only a “\$100,000 or higher” category. The 2021 survey split this into two categories.

TABLE 18: PERSON TRIP RATE, BY AGE GROUP (WEIGHT: ABS_HH_WEIGHT)⁹

AGE GROUP	UNWEIGHTED DAYS	WEIGHTED DAYS	UNWEIGHTED TRIPS	WEIGHTED TRIPS	UNWEIGHTED TRIP RATE	WEIGHTED TRIP RATE	2019 WEIGHTED TRIP RATE
Under 5 years old	213	257,268	370	472,174	1.74	1.84	3.05
5-11 years	265	345,163	391	613,885	1.48	1.78	2.79
12-15 years	155	197,990	154	219,662	0.99	1.11	2.81
16-17 years	78	102,432	49	89,128	0.63	0.87	3.73
18-24 years	345	260,718	606	606,999	1.76	2.33	3.99
25-34 years	891	758,851	2,157	2,256,920	2.42	2.97	4.58
35-44 years	869	613,603	2,181	1,932,665	2.51	3.15	5.49
45-54 years	614	565,910	1,589	1,631,619	2.59	2.88	5.27
55-64 years	671	526,783	1,747	1,558,907	2.60	2.96	4.54
65-74 years	643	423,730	1,682	1,327,499	2.62	3.13	4.36
75-84 years	224	125,888	566	318,477	2.53	2.53	4.45
85 or years older	45	36,458	71	95,277	1.58	2.61	3.76
Total	5,013	4,214,793	11,563	11,123,212	2.31	2.64	4.40

Source: RSG

⁹ As noted above, trip rates for children under age 18 are much lower than in 2019 partially because the 2021 study did not collect full travel diaries for children, though trips taken with other household adults were still captured. This is particularly apparent for those age 16-17, who are more likely to travel without household adults.

TABLE 19: PERSON TRIP RATE, BY EMPLOYMENT STATUS (AGE 18+ RESPONDENTS, WEIGHT: COMBINED_ADULT_WEIGHT & COMBINED_ADULT_TRIP_WEIGHT)

EMPLOYMENT STATUS	UNWEIGHTED DAYS	WEIGHTED DAYS	UNWEIGHTED TRIPS	WEIGHTED TRIPS	UNWEIGHTED TRIP RATE	WEIGHTED TRIP RATE	2019 WEIGHTED TRIP RATE
Employed full time (35+ hours/week, paid)	1,960	1,670,500	4,880	6,516,362	2.49	3.90	4.89
Employed part time (fewer than 35 hours/week, paid)	353	338,085	938	1,419,656	2.66	4.20	4.90
Self-employed	259	213,455	732	1,059,418	2.83	4.96	5.63
Unpaid volunteer or intern	29	17,538	69	89,569	2.38	5.11	4.93
Homemaker	251	183,948	639	856,688	2.55	4.66	5.89
Retired	885	554,215	2,242	2,525,499	2.53	4.56	4.23
Not currently employed	510	355,570	950	1,239,284	1.86	3.49	4.27
Employed but not currently working (e.g., on leave, furloughed 100%)	55	40,418	149	175,523	2.71	4.34	-
Total	5,013	3,373,728	11,563	13,881,998	2.31	4.11	4.82

Source: RSG

TABLE 20: PERSON TRIP RATE, BY TRAVEL MODE (WEIGHT: COMBINED_ADULT_WEIGHT & COMBINED_ADULT_TRIP_WEIGHT)

TRAVEL MODE	UNWEIGHTED DAYS	WEIGHTED DAYS	UNWEIGHTED TRIPS	WEIGHTED TRIPS	UNWEIGHTED TRIP RATE	WEIGHTED TRIP RATE	2019 WEIGHTED TRIP RATE
Walk	5,013	3,373,728	1,995	2,091,493	0.40	0.62	0.44
Bike	5,013	3,373,728	153	137,994	0.03	0.04	0.05
Car	5,013	3,373,728	8,782	10,980,661	1.75	3.25	3.60
Taxi	5,013	3,373,728	9	23,060	0.00	0.01	0.00
Transit	5,013	3,373,728	360	369,272	0.07	0.11	0.15
School bus	5,013	3,373,728	34	17,658	0.01	0.01	0.05
Other	5,013	3,373,728	65	62,504	0.01	0.02	0.03
Shuttle/Vanpool	5,013	3,373,728	112	133,262	0.02	0.04	0.03
TNC (Uber, Lyft, or other smartphone-app car service)	5,013	3,373,728	29	30,130	0.01	0.01	0.02
Scooter or e-scooter (e.g., Lime, Bird, Razor)	5,013	3,373,728	6	8,125	0.00	0.00	0.00
Long distance (e.g., airplane)	5,013	3,373,728	18	27,840	0.00	0.01	0.01
Total	5,013	3,373,728	11,563	13,881,998	2.31	4.11	4.40

Source: RSG

TABLE 21: PERSON TRIP RATE, BY TRIP PURPOSE (WEIGHT: COMBINED_ADULT_WEIGHT & COMBINED_ADULT_TRIP_WEIGHT)

TRIP PURPOSE	UNWEIGHTED DAYS	WEIGHTED DAYS	UNWEIGHTED TRIPS	WEIGHTED TRIPS	UNWEIGHTED TRIP RATE	WEIGHTED TRIP RATE	2019 WEIGHTED TRIP RATE
Home	5,013	3,373,728	4,405	4,953,660	0.88	1.47	1.40
Work	5,013	3,373,728	1,083	1,348,957	0.22	0.40	0.51
Work-related	5,013	3,373,728	242	410,872	0.05	0.12	0.18
School	5,013	3,373,728	196	85,493	0.04	0.03	0.15
Escort	5,013	3,373,728	425	615,990	0.08	0.18	0.32
Shop	5,013	3,373,728	1,786	2,299,550	0.36	0.68	0.56
Meal	5,013	3,373,728	635	885,397	0.13	0.26	0.28
Social/Recreation	5,013	3,373,728	1,530	1,708,591	0.31	0.51	0.47
Errand/Other	5,013	3,373,728	1,213	1,513,457	0.24	0.45	0.50
Change mode	5,013	3,373,728	48	60,030	0.01	0.02	0.02
Total	5,013	3,373,728	11,563	13,881,998	2.31	4.11	4.40

Source: RSG

7.4 PERCENTAGE OF TRIPS BY TRAVEL MODE (WEIGHTED)

TABLE 22: TRAVEL MODE, BY HOUSEHOLD INCOME (WEIGHT: COMBINED_ADULT_TRIP_WEIGHT)

TRAVEL MODE	UNDER \$25,000	\$25,000– \$49,999	\$50,000– \$74,999	\$75,000– \$99,999	\$100,000– \$199,000	\$200,000 OR MORE	PREFER NOT TO ANSWER
Walk	17.7%	10.4%	12.0%	17.2%	14.9%	16.4%	18.1%
Bike	0.8%	0.6%	0.7%	0.6%	1.5%	0.9%	1.0%
Car	62.3%	82.2%	81.8%	78.9%	80.1%	80.9%	77.0%
Taxi	0.0%	0.0%	0.2%	0.3%	0.2%	0.2%	0.0%
Transit	14.4%	4.4%	3.7%	2.0%	1.3%	0.3%	0.9%
School bus	0.2%	0.4%	0.0%	0.0%	0.2%	0.0%	0.0%
Other	1.0%	0.6%	0.8%	0.1%	0.1%	0.5%	1.0%
Shuttle/Vanpool	2.5%	0.9%	0.4%	0.7%	1.2%	0.2%	1.6%
TNC (Uber, Lyft, or other smartphone-app car service)	0.2%	0.2%	0.4%	0.2%	0.2%	0.0%	0.3%
Scooter or e-scooter (e.g., Lime, Bird, Razor)	0.9%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Long distance (e.g., airplane)	0.0%	0.1%	0.0%	0.0%	0.3%	0.5%	0.1%
Total	100%	100%	100%	100%	100%	100%	100%

Source: RSG

TABLE 23: TRAVEL MODE, BY AGE GROUP (WEIGHT: ABS_HH_WEIGHT)

TRAVEL MODE	UNDER 5 YEARS OLD	5-11 YEARS	12-15 YEARS	16-17 YEARS	18-24 YEARS	25-34 YEARS	35-44 YEARS	45-54 YEARS	55-64 YEARS	65-74 YEARS	75-84 YEARS	85 OR YEARS OLDER
Walk	19.6%	16.9%	5.1%	3.0%	16.6%	23.6%	14.9%	14.3%	12.5%	13.5%	19.7%	4.4%
Bike	0.2%	2.4%	3.1%	0%	0.1%	0.8%	1.0%	1.6%	1.6%	0.2%	0.1%	0%
Car	78.8%	78.4%	86.6%	97.0%	78.8%	69.4%	79.2%	80.5%	81.0%	82.0%	76.9%	90.1%
Taxi	0%	0%	0%	0%	0.1%	0.2%	0%	0%	0%	0%	0.2%	0%
Transit	0%	0.2%	2.4%	0%	2.3%	3.1%	3.7%	2.6%	3.2%	1.4%	1.4%	0%
School bus	0%	1.1%	2.3%	0%	0.5%	0%	0%	0.7%	0%	0%	0%	0%
Other	0%	0%	0.4%	0%	0%	0.6%	0.6%	0.2%	0.2%	0.4%	1.1%	5.5%
Shuttle/Vanpool	0%	0%	0%	0%	0.8%	1.2%	0.1%	0%	1.4%	2.0%	0.7%	0%
TNC (Uber, Lyft, or other smartphone-app car service)	0%	0%	0%	0%	0.1%	0.7%	0.1%	0.1%	0%	0%	0%	0%
Carshare (e.g., ZipCar, Car2Go)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0.5%	0%	0%
Bikeshare	0.8%	1.0%	0%	0%	0.7%	0.4%	0.4%	0%	0.1%	0%	0%	0%
Scooter or e-scooter (e.g., Lime, Bird, Razor)	19.6%	16.9%	5.1%	3.0%	16.6%	23.6%	14.9%	14.3%	12.5%	13.5%	19.7%	4.4%
Long distance (e.g., airplane)	0.2%	2.4%	3.1%	0%	0.1%	0.8%	1.0%	1.6%	1.6%	0.2%	0.1%	0%
Total	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%

Source: RSG

TABLE 24: TRAVEL MODE, BY TIME OF DAY (WEIGHT: COMBINED_ADULT_TRIP_WEIGHT)

TRAVEL MODE	AM PEAK: 6:00 A.M.– 9:00 A.M.	MIDDAY: 9:00 A.M.– 3:00 P.M.	PM PEAK: 3:00 P.M.– 6:00 P.M.	EVENING: 6:00 P.M.– 8:00 P.M.	NIGHT: 8:00 P.M.–6:00 A.M.
Walk	9.1%	12.8%	14.5%	14.6%	18.3%
Bike	3.2%	1.0%	0.6%	0.9%	1.2%
Car	78.6%	81.2%	80.9%	80.3%	75.1%
Taxi	2.3%	0.3%	0.0%	0.1%	0.0%
Transit	1.9%	3.0%	2.2%	2.1%	3.0%
School bus	0.0%	0.2%	0.4%	0.7%	0.6%
Other	0.0%	0.2%	0.3%	0.1%	0.0%
Shuttle/Vanpool	4.9%	1.0%	0.8%	0.7%	0.9%
TNC (Uber, Lyft, or other smartphone-app car service)	0.0%	0.2%	0.0%	0.3%	0.3%
Scooter or e-scooter (e.g., Lime, Bird, Razor)	0.0%	0.0%	0.2%	0.0%	0.0%
Long distance (e.g., airplane)	0.0%	0.1%	0.0%	0.0%	0.5%
Total	100.0%	100.0%	100.0%	100.0%	100.0%

Source: RSG

TABLE 25: TRAVEL MODE SHARE AMONG ADULTS BY YEAR (2021 WEIGHT: COMBINED_ADULT_TRIP_WEIGHT)¹⁰

TRAVEL MODE	2021	2019
Walk	15.1%	10.2%
Bike	1.0%	1.3%
Car	79.1%	82.3%
Taxi	0.2%	0.0%
Transit	2.7%	3.9%
School bus	0.1%	0.1%
Other	0.5%	0.9%
Shuttle/Vanpool	1.0%	0.6%
TNC (Uber, Lyft, or other smartphone-app car service)	0.2%	0.4%
Scooter or e-scooter (e.g., Lime, Bird, Razor)	0.1%	0.0%
Long distance (e.g., airplane)	0.2%	0.2%
Total	100.0%	100.0%

Source: RSG

¹⁰ The 2019 survey also included “carshare” and “bikeshare” mode categories (though mode share for both was < 0.1%).

7.5 PERCENTAGE OF TRIPS BY TRIP PURPOSE (WEIGHTED)

TABLE 26: TRIP PURPOSE, BY HOUSEHOLD INCOME (WEIGHT: COMBINED_ADULT_TRIP_WEIGHT)

TRIP PURPOSE	UNDER \$25,000	\$25,000–\$49,999	\$50,000–\$74,999	\$75,000–\$99,999	\$100,000 OR MORE	PREFER NOT TO ANSWER
Home	35.7%	32.3%	35.1%	37.1%	36.1%	36.3%
Work	6.9%	9.7%	11.1%	9.2%	11.5%	8.6%
Work-related	0.9%	2.2%	1.5%	5.5%	3.1%	4.0%
School	0.9%	0.4%	0.9%	0.0%	0.3%	1.3%
Escort	2.6%	2.5%	2.5%	2.2%	4.5%	8.3%
Shop	23.2%	24.1%	19.3%	16.6%	15.1%	9.7%
Meal	5.9%	8.0%	5.7%	5.5%	6.0%	7.4%
Social/Recreation	12.4%	7.9%	11.4%	14.0%	13.0%	12.1%
Errand/Other	11.6%	12.7%	12.7%	9.3%	9.8%	11.5%
Change mode	0.0%	0.2%	0.0%	0.5%	0.6%	0.9%
Total	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%

Source: RSG

TABLE 27: TRIP PURPOSE, BY TIME OF DAY (WEIGHT: COMBINED_ADULT_TRIP_WEIGHT)

TRIP PURPOSE	AM PEAK: 6:00 A.M.–9:00 A.M.	MIDDAY: 9:00 A.M.–3:00 P.M.	PM PEAK: 3:00 P.M.–6:00 P.M.	EVENING: 6:00 P.M.–8:00 P.M.	NIGHT: 8:00 P.M.–6:00 A.M.
Home	17.6%	21.7%	29.3%	42.5%	52.1%
Work	48.5%	20.3%	7.8%	2.4%	1.9%
Work-related	2.8%	4.3%	4.7%	1.6%	1.0%
School	0.0%	1.3%	0.4%	0.1%	0.4%

TRIP PURPOSE	AM PEAK: 6:00 A.M.–9:00 A.M.	MIDDAY: 9:00 A.M.–3:00 P.M.	PM PEAK: 3:00 P.M.–6:00 P.M.	EVENING: 6:00 P.M.–8:00 P.M.	NIGHT: 8:00 P.M.–6:00 A.M.
Escort	2.3%	6.8%	2.7%	5.3%	2.8%
Shop	2.4%	16.2%	22.2%	17.9%	13.0%
Meal	0.7%	4.7%	6.7%	4.9%	8.9%
Social/Recreation	19.1%	11.9%	10.9%	13.8%	12.6%
Errand/Other	5.9%	12.4%	14.8%	11.3%	6.7%
Change mode	0.7%	0.3%	0.4%	0.2%	0.7%
Total	100.0%	100.0%	100.0%	100.0%	100.0%

Source: RSG



TABLE 28: TRIP PURPOSE, BY DISTANCE (WEIGHT: COMBINED_ADULT_TRIP_WEIGHT)

TRIP PURPOSE	< 1 MILE	1-2 MILES	2-4 MILES	4-6 MILES	6-8 MILES	8-10 MILES	10-12 MILES	12-14 MILES	14-16 MILES	16-18 MILES	18-20 MILES	>= 20 MILES
Home	34.0%	40.3%	36.6%	37.1%	35.4%	33.4%	32.3%	32.0%	38.1%	36.5%	35.5%	32.2%
Work	3.9%	4.9%	7.9%	10.2%	10.6%	11.8%	23.9%	21.5%	17.5%	18.5%	24.7%	20.1%
Work-related	1.9%	1.8%	3.1%	2.8%	1.9%	5.5%	5.2%	3.6%	4.1%	0.7%	6.2%	5.4%
School	0.6%	0.8%	1.0%	0.3%	0.2%	1.2%	0.1%	0.4%	0.2%	0.0%	1.0%	0.4%
Escort	2.2%	5.3%	5.9%	7.8%	6.7%	4.1%	2.7%	2.6%	1.4%	1.2%	0.6%	3.3%
Shop	21.4%	17.9%	17.3%	16.0%	15.9%	15.2%	11.6%	15.6%	5.1%	11.3%	12.9%	8.8%
Meal	9.0%	6.6%	6.2%	4.5%	6.6%	6.2%	4.3%	2.6%	5.5%	4.0%	0.8%	5.5%
Social/ Recreation	17.1%	12.5%	10.8%	8.7%	11.5%	12.1%	9.0%	11.8%	12.3%	11.3%	5.4%	10.5%
Errand/Other	9.8%	9.5%	11.1%	12.6%	10.8%	10.5%	10.4%	9.6%	15.7%	14.8%	12.7%	12.7%
Change mode	0.0%	0.3%	0.1%	0.1%	0.4%	0.1%	0.6%	0.3%	0.1%	1.7%	0.1%	1.1%
Total	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%

Source: RSG

TABLE 29: TRIP PURPOSE SHARE AMONG ADULTS BY YEAR (2021 WEIGHT: COMBINED_ADULT_TRIP_WEIGHT)

TRAVEL MODE	2021	2019
Home	35.7%	30.9%
Work	9.7%	13.4%
Work-related	3.0%	4.9%
School	0.6%	0.8%
Escort	4.4%	6.5%
Shop	16.6%	13.4%
Meal	6.4%	6.7%
Social/ Recreation	12.3%	10.8%
Errand/Other	10.9%	12.2%
Change mode	0.4%	0.5%
	Total	100.0%
		100.0%

Source: RSG

7.6 TRAVEL DAY ACTIVITIES (WEIGHTED)

In addition to providing details about each trip, participants were asked to provide travel replacement information for each day in their travel periods. This information included time spent working from home for pay and home deliveries (including services). The weighted findings from these questions are included below in Table 30 and Table 32. Comparisons to 2019 are included in Table 31 and Table 33.

The share of employed adults who reported teleworking in 2021 is much higher than in 2019. In 2019, the share of employed adults who reported teleworking was 23.2% - 28.5%, depending on the day of week. The share of respondents who reported receiving packages in 2021 is also higher than in 2019, primarily due to the increase in those who received food / meal prep delivery. In 2019, 31.3% of respondents reported receiving packages and only 0.5% reported receiving food / meal prep delivery. The share of respondents who reported receiving multiple deliveries also increased from 2.8% in 2019 to 13.5% in 2021.

TABLE 30: SUMMARY OF TELEWORK TIME, BY DAY OF WEEK (EMPLOYED ADULTS, WEIGHT: COMBINED_ADULT_WEIGHT)

TIME SPENT TELEWORKING ON TRAVEL DAY	MONDAY	TUESDAY	WEDNESDAY	THURSDAY
0–1 hours	2.8%	3.2%	3.3%	5.3%
1–6 hours	12.2%	13.0%	13.0%	12.2%
6+ hours	32.7%	31.2%	38.0%	30.7%
Did not telework	52.4%	52.6%	45.7%	51.8%
Total	100.0%	100.0%	100.0%	100.0%

Source: RSG

TABLE 31: 2019 SUMMARY OF TELEWORK TIME, BY DAY OF WEEK (EMPLOYED ADULTS)

TIME SPENT TELEWORKING ON TRAVEL DAY	MONDAY	TUESDAY	WEDNESDAY	THURSDAY
0–1 hours	4.5%	3.4%	3.4%	1.9%
1–6 hours	8.6%	11.3%	11.3%	11.5%
6+ hours	14.1%	13.7%	12.8%	9.8%
Did not telework	72.8%	71.5%	72.6%	76.8%
Total	100.0%	100.0%	100.0%	100.0%

Source: RSG

TABLE 32: SUMMARY OF REPORTED DELIVERIES ON TRAVEL DAY (WEIGHT: COMBINED_ADULT_WEIGHT)

DELIVERIES ON TRAVEL DAY	PERCENT (%)
Packages	27.8%
Services	6.2%
Groceries	5.1%
Food / Meal Prep	5.7%
Other	2.4%
Multiple	13.5%
None	39.4%
Total	100.0%

Source: RSG

TABLE 33: 2019 SUMMARY OF REPORTED DELIVERIES ON TRAVEL DAY

DELIVERIES ON TRAVEL DAY	PERCENT (%)
Packages	24.4%
Services	2.2%
Groceries	1.4%
Food / Meal Prep	0.5%
Other	-
Multiple	2.8%
None	68.7%
Total	100.0%

Source: RSG

APPENDIX A. QUESTIONNAIRES

(See separate PDF file.)

APPENDIX B. INVITATION MATERIALS

(See separate PDF files.)



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