

2025 WHATCOM REGIONAL TRAVEL STUDY REPORT





Report Title:

2025 Whatcom Regional Travel Study Report

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Whatcom Council of Governments

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1.0 INTRODUCTION

1.1 OVERVIEW

This report provides a summary of the response to the Whatcom Council of Government's (WCOG) 2025 Regional Travel Study (RTS). The survey was conducted from October 3, 2025, through December 9, 2025, with the objective of collecting data from at least 1,200 households within Whatcom County. A total of 70,270 households received invitations by mail using address-based sampling during the survey field. A total of 1,157 households completed the ABS survey.

1.2 SURVEY TIMELINE

Survey Design (Sample planning, survey / website programming, invitation development)

May–August 2025

Survey Pre-Test (Conduct internal test of the programmed survey instruments)

September 2025

Data Collection (Send invitations, data monitoring, and adjustments)

October–December 2025

Data Preparation (Data cleaning, reporting)

January–April 2026

2.0 SURVEY METHODOLOGY

The following section outlines the household travel survey that study participants completed, including the topics covered in the questionnaire, the instruments used to administer the survey, and describes how participation, proxy reporting, and incentive values were determined for a given household.

Survey Questionnaire

RSG used the 2018 Whatcom RTS survey as the starting point for the survey instrument design and worked with the project team to address the project's specific data needs and customize answer choices (e.g., to align with current regional travel options). RSG used its state-of-the-practice questionnaire template to inform wording for these project-specific changes. The questionnaire captured all essential household travel survey data needed to support travel demand model and transportation planning needs. This includes a comprehensive set of household, demographic, and travel-related information to understand how Whatcom residents move throughout the region.

The recruit survey gathered core household attributes – including household composition, vehicle ownership and characteristics, employment and school status, and key details such as home, work, and school locations. Additional demographic questions covered age, education, income, disability status, and other equity-related indicators to ensure the study reflects the demographic makeup of the region.

The travel diary collected trip-level and daily surveys that documented participant travel behaviors. Trip surveys collect mode, purpose, parking, costs, travel party, and transfers for each trip made on a travel day. Additional modules gather insights into travel options such as biking, rideshare, and transit use. For households with children, a proxy survey captures school travel patterns. Daily surveys track whether participants travel, telework, or receive deliveries, along with day-specific work and school patterns. Together, these components offer a robust dataset capturing everyday travel behavior, enabling WCOG and its partners to make informed transportation planning decisions.

Survey Instruments

After finalizing the questionnaire, RSG programmed the survey instruments to enable smartphone, web, or phone participation. Households that participated in the survey via RSG's smartphone-based travel survey app, rMove, collected travel data for seven days for all adult members.

Non-app participants provided their responses using rMove for Web, either online or through the call center, for a single day of the week. Travel could be assigned on one of the days

determined to represent a typical weekday for this study (Tuesday, Wednesday, or Thursday). Call center interviewers used rMove for Web to administer the survey over the telephone to support consistent real-time data validation and survey alignment regardless of participation method. The call center has highly trained staff to conduct objective, professional telephone surveys while capturing respondents' answers as fully as possible. RSG provided phone scripts for operators and training reference documents. Operators administered the survey verbally using the online survey instrument (i.e., rMove for Web). By using integrated survey platforms (rMove and rMove for Web), survey responses from all three participation modes were processed using identical logic, validation, and real-time quality assurance checks.

Participation Mode

The recruit survey asked adults (age 18+) whether they had Apple or Android smartphones. Other types of smartphones are not considered rMove eligible. Households in which all adults had Apple or Android smartphones were offered the option of reporting their travel in the rMove app for seven consecutive days. All other households that did not own a smartphone or opted out of rMove app participation were instructed to report one day of travel via rMove for Web either online or through the call center by telephone interview.

Travel Date Assignment

Households were assigned to a travel date or travel week after completing the recruit survey. Households that participated via the one-day online travel diary were assigned to report travel on either a Tuesday, Wednesday, or Thursday, using a weighted probability to balance the travel days across the sample.

Households that participated via the seven-day smartphone app travel diary were assigned to report travel for a full, consecutive week beginning three days after completing the recruit survey (or one day after completing the recruit survey for one-person households).

Proxy Reporting for Child Trips

For rMove households with children, one adult in each household was designated to proxy report travel information in rMove for all children (i.e., household members 17 and under) in the household for a single travel day (reported "by proxy"). The app automatically copied travel details for any shared travel trips with adults in the survey household (e.g., drive to school) over to the child's record where the proxy adult would confirm the details. In addition, the proxy adult was asked to add trips 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).

For online and call center households, one adult was required to complete a full one-day travel diary for the children of the household (along with all the other members of the household). Like

with the rMove app, adult proxy reporters could copy children's trips from other adults and report new trips that the children made on their own.

Survey Incentives

Incentives were offered to all households that completed the survey. The study team decided to use the same incentive structure that was successfully employed in the 2018 RTS, which is shown below in Table 1. For households in block groups deemed to be hard-to-survey (see Section 3.0), a slightly higher incentive was offered to participants to compensate for lower expected response rates in these areas.

TABLE 1: WHATCOM RTS INCENTIVE STRUCTURE

	RMOVE PARTICIPANTS (PER PERSON)	ONLINE/CALL CENTER PARTICIPANTS (PER HOUSEHOLD)
Base incentive level	\$20	\$10
Hard-to-survey incentive level	\$30	\$20

Incentive amounts were posted on the study website and were outlined in the recruit survey question asking whether the household would like to complete the survey online or via rMove. Households could choose to receive their incentive in the form of an Amazon or Walmart e-gift card delivered by email, a Visa gift card delivered by mail, or could opt not to receive any incentive for their participation.

3.0 SAMPLE PLAN AND INVITATIONS

The primary goal of 2025 data collection was to collect travel behavior data from a representative set of households in the survey region. RSG used address-based sampling (ABS) methods for recruitment to achieve a representative dataset.

The survey aimed to collect 1,200 responses throughout Whatcom County through address-based sampling. After the data were reviewed and cleaned (see Section 4.0), completed surveys were collected for 1,157 households, or 96.4% of the target.

Sampling Frame

The sampling frame for this study is the list of all households in Whatcom county in Washington state, with the exception of one block group on the eastern half of the county, which falls outside the WCOG planning area. RSG will use address-based sampling (ABS) to select households for participation. Address-based sampling 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. Once the sample plan is finalized, RSG will purchase household mailing addresses from Marketing Systems Group (MSG), which maintains the Computer Delivery Sequence file from the U.S. Postal Service.

RSG plans to stratify the sample using census block group-level data from the 2019-2023 American Community Survey (ACS).¹ Census block groups typically contain 600 to 3,000 people, and there are 127 block groups in the study region.² The region contains 92,283 households and 225,931 persons.

RSG coordinated with WCOG to determine key subgroups for sampling. Based on this discussion and RSG's prior study experience, RSG proposes the following sample groups:

- 1) **Bellingham City:** Comprised of block groups in the study region that do not qualify for either of the three oversample groups below³. (33 block groups)
- 2) **Not Bellingham City Oversample:** Comprised of block groups outside the City of Bellingham boundary that do not qualify for either of the two groups below. (61 block groups)
- 3) **Low-Income Oversample:** Comprised of block groups in which at least 39% of households have annual household incomes below \$30,000.⁴ (13 block groups)

¹ The 2019-2023 ACS 5-year estimates became available on December 12, 2024.
<https://www.census.gov/programs-surveys/acs/news/data-releases/2023/release-schedule.html>

² Block Groups – Terms and Concepts. https://www.census.gov/geo/reference/gtc/gtc_bg.html

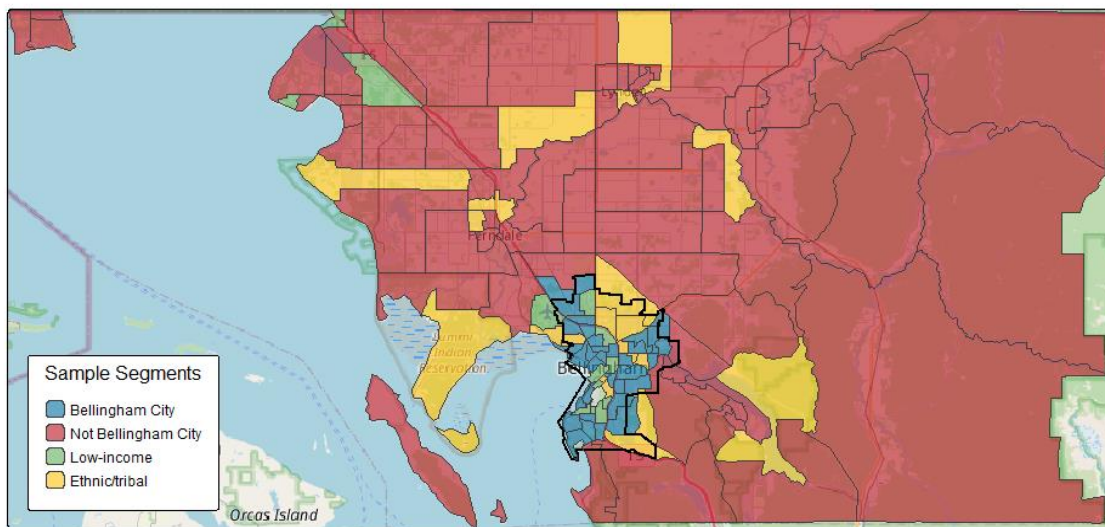
³ The Bellingham City boundary data is based on TIGRIS 2023 data.

⁴ Based upon ACS table B19001.

- 4) **Ethnic/Tribal Oversample:** Comprised of block groups in which at least 35% of households are considered minority (non-White and not Hispanic/Latino⁵). (20 block groups)

There were several block groups within the oversample groups that qualified for multiple characteristics. In these cases, block groups were assigned a sample segment using the following prioritization: low-income and ethnic/tribal. The resulting sample segments used for the 2025 RTS are shown below in Figure 1.

FIGURE 1: MAP OF WHATCOM RTS SAMPLE SEGMENTS



Sample Rates

To determine the sample rates for this survey, RSG used the response rates observed in the 2018 survey as a baseline and adjusted these rates to reflect the trend of declining overall response rates over the intervening 7 years. Previous and expected response rates are shown in Table 2 below.

TABLE 2: SAMPLE SEGMENT RESPONSE RATES

SAMPLE SEGMENT	2018 RESPONSE RATE	EXPECTED 2025 RESPONSE RATE
General Population	3.0%	---
Bellingham City	---	2.3%
Not Bellingham City	---	1.9%
Low-Income	2.8%	1.5%
Ethnic/Tribal	2.8%	1.5%
Total	3.1%	1.8%

The resulting invitation counts, and sample rates are summarized below in Table 3. Note The “Not Bellingham City” segment was identified by the study team as a candidate for targeted oversampling, and so an oversampling rate of 125% was applied for this segment.

TABLE 3: SAMPLE RATES AND EXPECTED DATASET COMPOSITION

SAMPLE SEGMENT	INVITED HHS	INVITE RATE	SAMPLE RATE (EXP.)	COMPLETE HHS (EXP.)
Bellingham City	11,660 (18.1%)	45.1%	1.0%	269
Not Bellingham City	35,530 (55.3%)	85.5%	1.6%	675
Low-Income	6,340 (9.9%)	68.5%	1.0%	95
Ethnic/Tribal	10,740 (16.7%)	68.8%	1.0%	161
Total	64,270	69.6%	1.3%	1,200

Survey invitations were sent in two mail “waves” of equal size. The schedule for the invitation letter and reminder postcards for each wave is shown in Table 4 below. After observing lower than expected response rates during early data collection, the study team decided to send invitations (postcard only) to an additional 6,000 households. These additional postcards were mailed on October 30, 2025.

TABLE 4: WHATCOM RTS INVITATION MAIL SCHEDULE

MAIL GROUP	INVITATIONS	LETTER DATE	REMINDER POSTCARD DATE
Mail Group #1	32,135	September 26, 2025	October 3, 2025
Mail Group #2	32,135	October 10, 2025	October 17, 2025

Survey Branding and Invitation Materials

Due to the success of the 2018 RTS, the survey branding (survey name, color scheme, and font selections) was kept fairly consistent with the previous study. The only significant alteration was the inclusion of the partner logos, in order to communicate the wide support for the survey from trusted, local organizations.

Residents invited to the survey received a letter, followed seven days later by a reminder postcard. Both the letter and the postcard contained a unique password allowing the recipient to enter the survey. The project logo, invitation envelope, letter, and postcard are shown in Figure 2 through Figure 6 below.

FIGURE 2: WHATCOM RTS LOGO

FIGURE 3: INVITATION ENVELOPE



FIGURE 4: INVITATION LETTER



**WHATCOM REGIONAL
TRANSPORTATION STUDY**

Whatcom Regional Transportation Study
314 East Champion Street
Bellingham, WA 98225

<First and last name/City name resident>
<Street Address 1>
<Street Address 2>
<City, ST < #####>

<Letter Date>

Dear <First name / City name resident>:

Thank you in advance for your participation in this important study. Your input will help the Whatcom Council of Governments (WCOG) and members better understand local travel needs and plan future transportation improvements. As technologies and travel behaviors change quickly over the next few years, we need your help now to plan for the future.

WCOG strongly values participation from all households, and this study adheres to data privacy best practices. Your voice can change our community, and we encourage you to begin today.

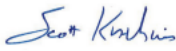
Together, we can improve transportation in our region.



Satpal Sidhu
Whatcom County Executive



Kim Lund
Mayor of Bellingham



Scott Korthius
Mayor of Lynden

Tell us how you get around and receive \$XX or more!

Visit our secure website and enter your access code to begin the study!



Go online:
WhatcomRTS.com



Call toll free:
1-800-981-1100

or Scan:



Your password is: **WCG123**

To learn more, visit WhatcomRTS.com or call 1-800-981-1100

FIGURE 5: REMINDER POSTCARD (FRONT)

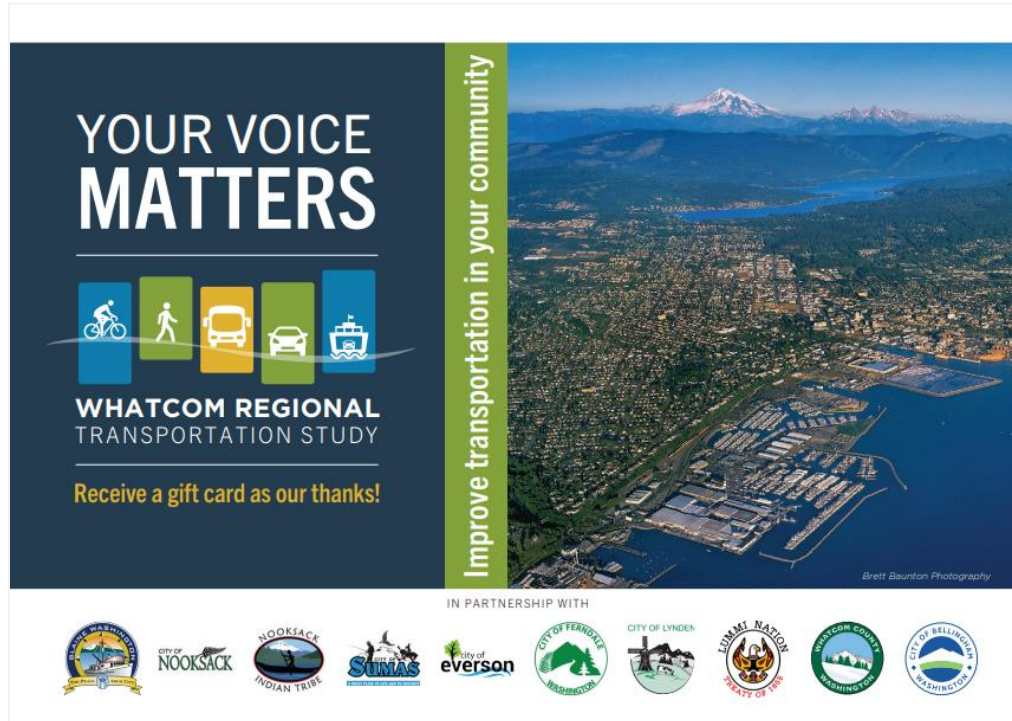
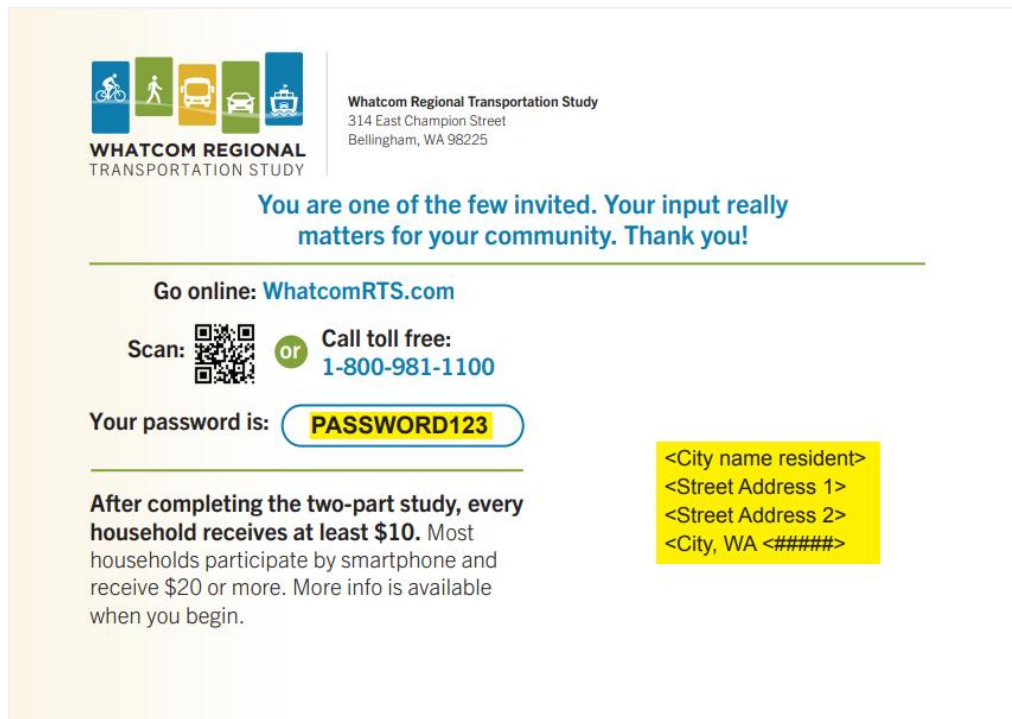


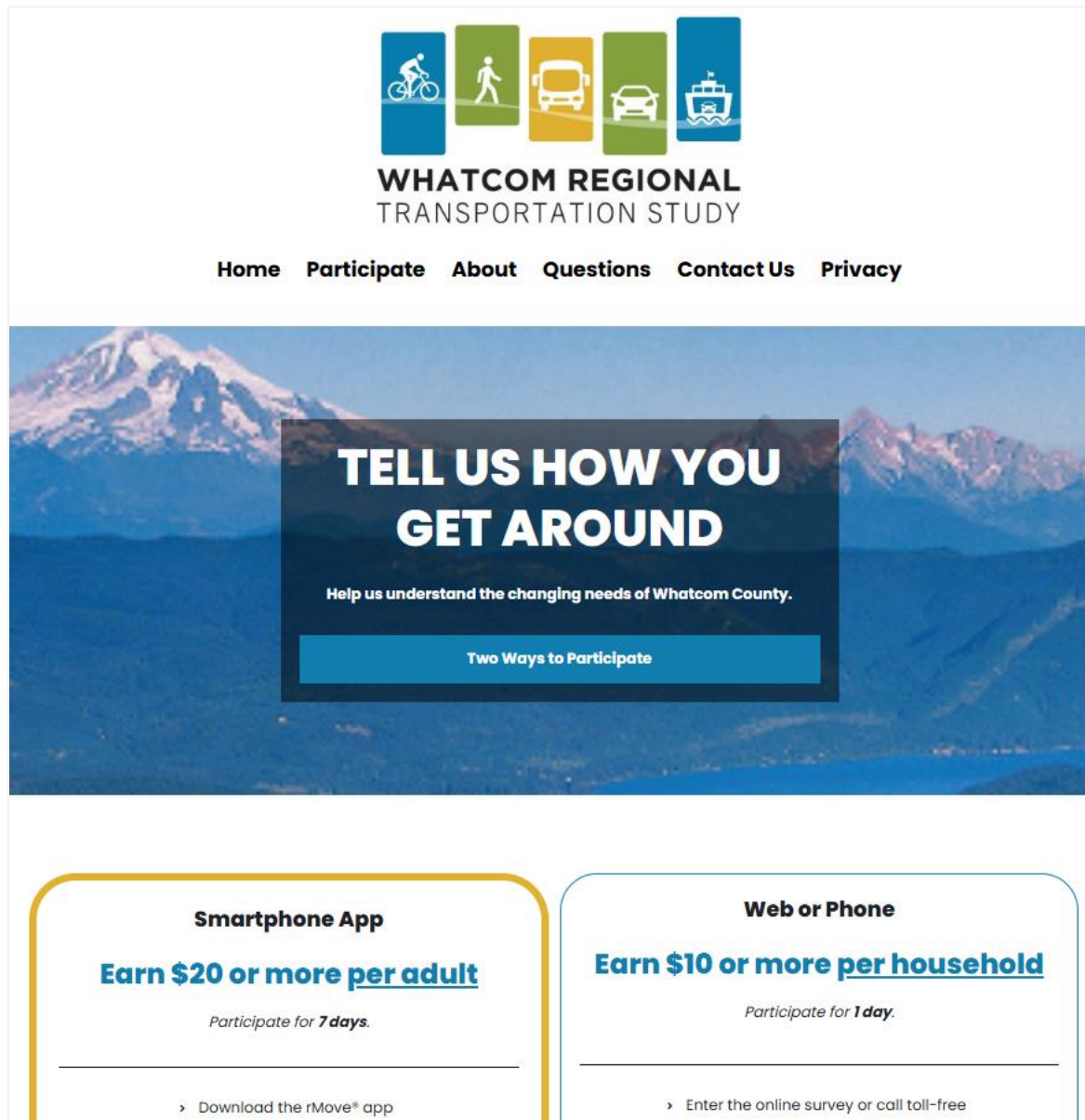
FIGURE 6: REMINDER POSTCARD (BACK)



Project Website

The study team also set up a website for the study (WhatcomRTS.com) which was included on the invitation materials. The website provided details on how to participate in the survey, answers to frequently asked questions, privacy information, and ways that participants could contact the study team. Figure 7 shows the homepage of the study's website.

FIGURE 7: WHATCOMRTS.COM HOMEPAGE



Participant Reminders

Respondents were required to provide an email address during the recruit survey. Reminder emails were sent throughout the travel period for smartphone app respondents, and on and after the assigned travel day for online respondents. The emails were branded with the RTS logo and maintained a consistent design.

Participant Support

The survey used both inbound and outbound participant support. “Inbound” refers to communications that participants initiated, and “outbound” refers to communications that RSG initiated.

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 via email (both published on the website). rMove participants also had the option to submit feedback directly through the app.

Outbound Participant Support

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

Email Reminders

RSG required all rMove and rMove for Web participants to provide email addresses. Reminder emails were sent throughout the travel period to all households. Households received emails on the following schedule:

- 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.
- 3–5 days after the end of the travel period if the household had not yet completed the survey.

In-App Reminders (rMove)

rMove participants also had in-app reminders to encourage them to complete all travel days during their survey period. Participants received notifications as soon as a new trip- or day-level survey was available to complete. Participants reporting their children's trips by proxy also received reminders to review and add to their children's trip rosters.

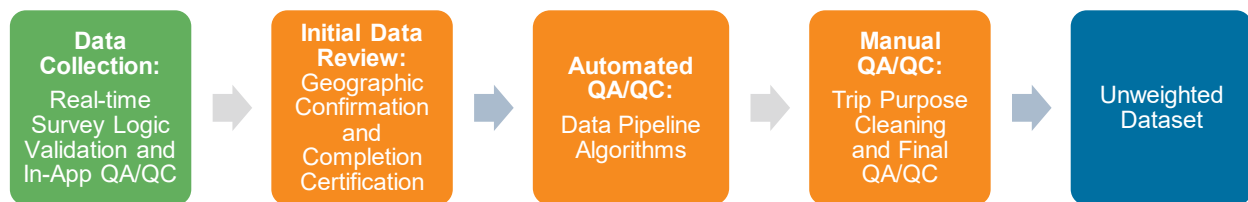
4.0 QA/QC AND DATA PROCESSING

4.1 DATASET COMPOSITION

The final dataset includes seven distinct data tables: Household, Person, Vehicle, Day, Unlinked Trip, Linked Trip, and Location. An outline of the process used to generate these tables is provided in the sections below.

The tables in the dataset include all user-input survey variables, certain survey metadata (e.g., survey completion mode), variables collected by the rMove smartphone application (e.g., trip origin and destination locations at the tract level), and variables derived to support data analysis. An overview of the data processing workflow applied to this dataset is shown in Figure 8.

FIGURE 8: WHATCOM RTS DATA PROCESSING WORKFLOW



4.2 IN-FIELD QA/QC

Most of the data collected in the survey was validated in real-time through logic programmed into the survey instrument. This survey logic had been rigorously tested by the project team using manual and automated testing tools prior to the launch of the survey. Real-time in-survey logic included:

- Geocoding and validating all locations provided by survey participants in real-time within the survey instruments (rMove and rMove for Web) including frequently visited locations such as home, work, and school, and all trip origin and destination locations.
- Promoting data consistency through trip level logic, such as validating that trip start and end times neither overlap nor have negative trip durations.
- Constraining the question and response options to those relevant to the respondent based on survey questionnaire logic (e.g., only those who reported being employed are asked work-related questions).
- Skipping the trip diary section for online participants who report that they did not make any trips on their assigned travel day and asking why they did not make any trips.

- To improve data quality and data consistency for shared travel trips, RSG provided a “copy trips” feature in the rMove for Web travel diary to allow household members to easily copy a trip (and the associated trip details) from another household member’s already reported diary. For example, if the first adult in the household reported a joint trip to the grocery in their diary, when the second adult in the household begins their travel diary, they can simply select and copy that trip to their diary (saving the time to add the trip while maintaining data consistency).

4.3 INITIAL DATA REVIEW

After data collection was completed, the first step in the processing workflow was to identify and flag complete households and household members and to create the working data tables. During this step, RSG removed households from the dataset that met the following exclusion criteria:

- Households that reported a home location outside the study region.
- Households that did not complete at least one concurrent travel day and are therefore considered incomplete. A travel day is complete for a participant when all trip surveys and the summary survey (or proxy survey for children) for the day were answered in full. (Note that respondents are able to remove trips from their survey but analysts are later able to add these back in.) Households with only one complete concurrent travel day and additional incomplete days will have all their travel days included in the data, but only the complete days will be weighted.
- Households that completed the survey more than once based on duplication rules involving home addresses and contact information have their duplicate record(s) removed.
- Households that experienced significant technological challenges when completing the surveys via the rMove application. While generally rare, these households have abnormal data and are therefore excluded from delivery.
- Households that requested their data be deleted as allowed by privacy laws and regulations.

Once a complete set of households had been identified, RSG spatially joined all reported coordinates including the reported home address, the sampled home address (if different), school and work locations (if applicable), and trip origin and destination locations to Census block group shapefiles via the R Tigris package. The reported home block group may not always match the block group ascribed to the household’s sample address (which is used to determine the sample segment) for a few reasons: sample addresses are geocoded differently than survey addresses, sample addresses sometimes are coded to a mailbox location rather

than a home location, and home addresses in the survey are not always geocoded to a person's exact home (e.g., a cross street nearby). Because a person's reported home address is considered more recent and typically more accurate than the sample address, the geographic variables were derived using this address.

4.4 AUTOMATED CONSISTENCY CHECKS

RSG then performed automated QA/QC using proprietary machine-learning algorithms that identify trips that require a manual review by trained analysts. These machine-learning algorithms—Random Forest Classifier—have been built using a train-test framework using a large set of data across various regions and trip types.

Once trips requiring manual review have been identified, RSG's analysts rigorously review and clean the smartphone GPS data with the goal of providing a user-friendly dataset. This was achieved by overlaying the smartphone trip path data collected onto maps to verify the trip segments, paths, and times all appear to be correct. The machine-learning algorithms also assisted in this process, helping to identify the trips most likely to require splitting into two or more trips (e.g., passenger drop-offs with a short stop period), merging with adjacent trips (e.g., trip split at long light in traffic), cleaning (e.g., spurious location jumps from urban canyon effect), or dropping from the dataset (e.g., spurious trips resulting from movement in a building).

After completing the manual review step, a series of automated consistency checks were performed on the data. A summary of the checks performed on each table is included below..

- For the **Household** table, checks confirmed that each household has a unique ID, non-missing and logical demographic values (e.g., number of adults, workers, vehicles, and trips), and that these counts are consistent with related tables (Person, Trip, and Vehicle). Geographical data such as tract values were also verified for completeness and consistency.
- In the **Person** table, validations verified unique IDs and consistency of trip and day counts across related tables. Additional logical rules were applied including to verify that children were not reported as holding licenses or drivers, and that children were classified as students appropriately. These checks also verified that work and school locations were present when relevant, and geographically consistent within tracts.
- Cleaning checks applied to the **Day** table verified unique person-day combinations, alignment with the number of trips in the Unlinked Trip table, and proper handling of survey completion status. The **Vehicle** table was checked for unique vehicle IDs, while the **Location** table was reviewed for uniqueness of locations by trace ID and collection time, as well as the presence of valid departure and arrival times and places.
- The **Unlinked Trip** table underwent the most extensive set of checks, verifying uniqueness, logical temporal order (departure before arrival), valid and consistent

duration, distance, and speed calculations, as well as correctness of imputed and derived fields. It also verified consistency between purposes for trip origins and destinations, trace identifiers, and access/egress requirements for transit trips. Trip purposes were reviewed further and imputed where necessary, as outlined in the following section.

As part of these automated checks, any trips that used a bus or rail mode and did not also use an auto mode were queried through the Google API to “unlink” these trips into their component access, transit, and egress legs.

4.5 TRIP MODE AND PURPOSE CLEANING

The mode information reported by respondents and captured in mode_1 through mode_3 in the Unlinked Trip table is synthesized down to a single, easier-to-use variable called mode_priority. This is done using a prioritization of the modes, giving more importance to less common modes such as transit or air travel. This mode_priority variable has the same large number of value labels as mode_1, and so mode_type has been defined to collapse the specific modes into categories. A similar process was also used to define the mode for linked trips.

RSG applied trip purpose cleaning to all rMove trips in person-days with at least 1 complete trip and no more than 10 incomplete trips. “Incomplete” trips are defined as those for which the respondent did not answer the trip-specific survey questions about purpose, mode, etc. for the given trip. During trip purpose cleaning, RSG applied a logical sequence of “tests” or rules to trips for which the reported purpose is not consistent with the location type based on the smartphone trip trace data (e.g., respondent reported they traveled home on a trip, but the trip’s destination is far from their reported home location from the sign-up survey).

The purpose cleaning rules are designed to:

- Check the respondent’s reported destination purpose when it conflicts with the destination location type. The details of the rules depend on the trip purpose with different criteria used for change-mode trips, escort trips, linked transit trips, trips with home destinations but other reported purposes, etc.
- Identify and clean cases where respondents swapped the order of two or more trips when reporting their trip details.
- Identify and clean cases where respondents appeared to have switched origin and destination.
- Identify and clean cases where respondents may have omitted a trip and shifted remaining reported trip details by one trip when reporting the rest of their trips.
- Fill missing data by sampling destination purposes from other trips made to the same locations, either by the same respondent or by other respondents.

Problematic trips were identified by comparing the destination purpose category to the destination location type. For example:

- For any destination purpose reported as “work” that was not at the primary work location, the destination purpose and purpose category was changed to “work-related”.
- Similarly, a new purpose category of “school-related” was added to apply to any destination purpose reported as “school” that was not at the primary school location.

These recoded values reduced the apparent mismatches between reported purposes and locations for work and school activities.

4.6 JOINT TRIP IMPUTATION

Once the initial review and automated checks were completed, the data tables were then processed using RSG’s Trip Imputation, Coordination, and Tour Organization Compiler (TICTOC) procedure to further process the Unlinked Trip Table as well as generate the Linked Trip table.

Joint Trip Detection and Imputation

Within a household, trips were matched across members if they overlapped in space and time (within ≈250 m and 15 min) and used the same mode. Matches were then grouped into “joint trip episodes” (using a clique finding algorithm), and each episode received a joint_trip_num identifier. This standardized joint travel identification for later steps in the process.

Missing joint trips were identified by comparing the reported household members with the detected joint trips. The hh_member columns indicate whether other household members were on the trip with the respondent. If a person was missing overlapping trips, the reported joint trip was imputed for them. A final check verified that newly imputed trips did not create gaps in the traveler’s trip chain, known as “teleporting.” Imputed trips were created using the host trip’s attributes, and a configuration file was used to fill in the necessary variables.

School Trip Imputation

After joint trip imputation, school trip imputation was performed. School trip imputation is necessary due to significant underreporting of school attendance in raw survey data, especially among children. Previous studies have indicated that only 40 to 50% of students are reported as attending school on a typical weekday, which contrasts sharply with the expected attendance rates of 80% to 90%. This discrepancy largely arises because children under 18 do not participate directly in travel surveys; instead, their travel is reported by a proxy adult within the household. Consequently, child trips – particularly those not accompanied by the reporting adult – are more likely to be missed than adult trips. The travel survey included targeted questions for

the proxy reporter asking if the child attended school that day, if the location was different from their primary school, and their typical travel mode.

School trips were imputed when survey responses indicated the student attended school, but the student was missing trips to or from school. Imputed school trips had their start and end times sampled from the existing school trip distribution in the dataset. School locations and usual mode to/from school were captured separately and could therefore be used to impute the location and mode category of the trip. Further attributes such as disaggregate mode, vehicle occupancy, and driver status were also drawn from a random distribution built on existing survey data. If the proxy reporter said that the child attended school at a different location, imputation was not possible because the destination was unknown. Similarly, children identified as home-schooled or non-students were excluded from the school trip imputation process. This logic verifies that only plausible school trips are added to the travel dataset, improving completeness without introducing inaccurate records.

Trip Linking

“Unlinked” trips represent sub-segments for certain trip journeys. For example, a transit trip might be split into separate unlinked trips for walking to transit, riding transit itself, then walking to the trip’s actual destination. After joint and school trip imputation, the trip linking algorithm loops through each unlinked trip in chronological order and, if the unlinked trip has the destination purpose of “change mode”, then it is linked to the subsequent trip.

After converting from unlinked to linked trips by collating trips with change mode as their purpose, there is typically a many-to-one match between the surveyed trip purposes and the output modeling purposes. The modeling purposes can vary by region, but ABM implementations typically have the following categories for trips: work, school, university, shopping, eat out, escorting, social, other (discretionary), and other (maintenance). Typically, work-related travel falls into the other (maintenance) group instead of the work group.

Loop trips, defined as trips that start and end in the same location (e.g., if a person takes their dog for a walk without an intervening stop) were coded specifically as loop trips and can optionally be removed from downstream datasets, as they are not modeled.

4.7 FINAL QA/QC

Prior to final data delivery, RSG’s team reviewed each dataset for any final dataset inconsistencies. This included a comprehensive review of every data column in the dataset, leveraging frequency tables, cross tabulations, and distributions to catch irregularities that may not have been apparent to the automated processes.

5.0 DATA WEIGHTING

This outlines the weighting and expansion approach used for the 2025 Whatcom RTS dataset. For a more detailed description of the methods applied and the resulting impact on the weight distribution, please refer to the Weighting Memo.

Weighting was performed in order to expand the study data to represent Whatcom County residents across key metrics, such as geography and demographics, that impact travel behavior. The weighting process also corrected for biases related to data collection methods; for example, differences in response due to completing the survey over the phone or on a smartphone app.

The weighting process generated five types of weights used in the 2025 Whatcom RTS dataset:

- **A household-level weight.** The sum of these weights reflects the total households in Whatcom County.
- **A person-level weight.** The sum of these weights reflects the total persons in Whatcom County.
- **A day-level weight.** The sum of these weights also reflects the total persons in Whatcom County (and matches the sum of the person-level weights). The person weights are spread evenly across the number of complete weekdays, so the table represents one average weekday for each person in the study.
- **A trip-level weight.** The sum of these weights reflects the total trips in Whatcom County on a typical weekday (i.e., Tuesday, Wednesday, and Thursday).
- **A linked trip-level weight.** The average weight of the component unlinked trip legs.

The survey weighting process included four primary steps:

- 1) **Base Weight Estimation:** Each household is assigned a base weight based on its probability of being included in the survey. For example, if 5 households responded in a geography with 100 total households, each of the 5 households would receive a base weight of 20 ($100 / 5 = 20$).
- 2) **Round 1 Weighting:** After calculating base weights, household weights are adjusted to better fit selected household- and person-level demographic targets, sourced from American Community Survey (ACS) Public Use Microdata Sample (PUMS) data. For example, if 20% of households in Whatcom County are one-person households, but 25% of the sample households are one-person households, RSG adjusts the weights to better match the household size distribution of the population. RSG leverages an open-source tool, PopulationSim, to match the survey to many demographic targets

simultaneously using an entropy maximization approach. Round 1 person weights are derived from the household weights and corrected for the presence of un-surveyed persons (nonrelatives); and, Round 1 day-level weights are derived from person weights and adjusted for the number of days of data collected for each participant.

- 3) Round 2 Weighting:** During this step, RSG accounts for survey biases based on the method respondents used to report their travel. RSG uses a model to estimate the number of days with travel to work, school and other locations that would have been captured if all respondents had used the diary platform with the highest reported trip rates (usually smartphone). Along with the original demographic targets, these model estimates are supplied as targets to PopulationSim for a second round of weighting, resulting in new household weights. Person- and day-level weights are re-derived from these household weights as in step 2. These are the final household, person and day weights.
- 4) Round 3 Weighting:** The last step of weighting is to adjust trip weights for trip reporting bias. Linked trip weights are first derived from the Round 2 day weights, then adjusted with a model that accounts for non-response bias by trip type and survey mode. These are the final linked trip weights and serve as the basis for unlinked trip weights.

The weights produced by this process allow for a more representative set of analyses to be performed using the resulting dataset, and are applied throughout Section 6.0 below.

6.0 SURVEY RESULTS

This section provides several key summaries from the data collected during the 2025 Whatcom RTS. Unless otherwise specified, all figures shown below are weighted, and all trip-level analyses are performed using the linked trip data. The results are organized into the following topics:

- **Recruitment Summary** – Evaluation of the sample plan.
- **Demographics** – Distributions of key demographic variables, stratified by participation platform (online and call center combined).
- **Trip Analysis** – Summaries of daily trip rates, mode and purpose shares, time and distance distributions, and origin/destination coverage.
- **Work-Related Travel** – Distributions of typical commute modes, commute and telework frequency.
- **Deliveries** - Analysis of the delivery questions asked in the core daily survey, stratified by key demographics.

6.1 RECRUITMENT SUMMARY

Table 5 shows the resulting response rates and sample rates for each sample segment, compared to the target rate in parentheses. For all segments other than the Not Bellingham City segment, response was slightly better than anticipated. However, the Not Bellingham City segment underperformed its expected response rate, and since it was proportionally the largest of the sample segments the overall response was just below the target.

TABLE 5: ACTUAL VS. EXPECTED RESPONSE AND SAMPLE RATES, BY SAMPLE SEGMENT

SEGMENT NAME	HOUSEHOLDS	INVITES	COMPLETES	RESPONSE RATE (EXP.)	SAMPLE RATE (EXP.)
Bellingham City	25,860	12,749	313	2.5% (2.3%)	1.2% (1.0%)
Ethnic/Tribal	15,601	11,743	198	1.7% (1.5%)	1.3% (1.0%)
Low-Income	9,261	6,932	139	2.0% (1.5%)	1.5% (1.0%)
Not Bellingham City	41,561	38,846	507	1.3% (1.9%)	1.2% (1.6%)
Total	92,283	70,270	1,157	1.8% (1.8%)	1.3% (1.3%)

6.2 DEMOGRAPHICS

The charts in this segment show the distributions of key demographics collected in the survey, both overall and split out by which platform the participant used to fill out their travel diary. For the purposes of this analysis, the online and call center options have been combined.

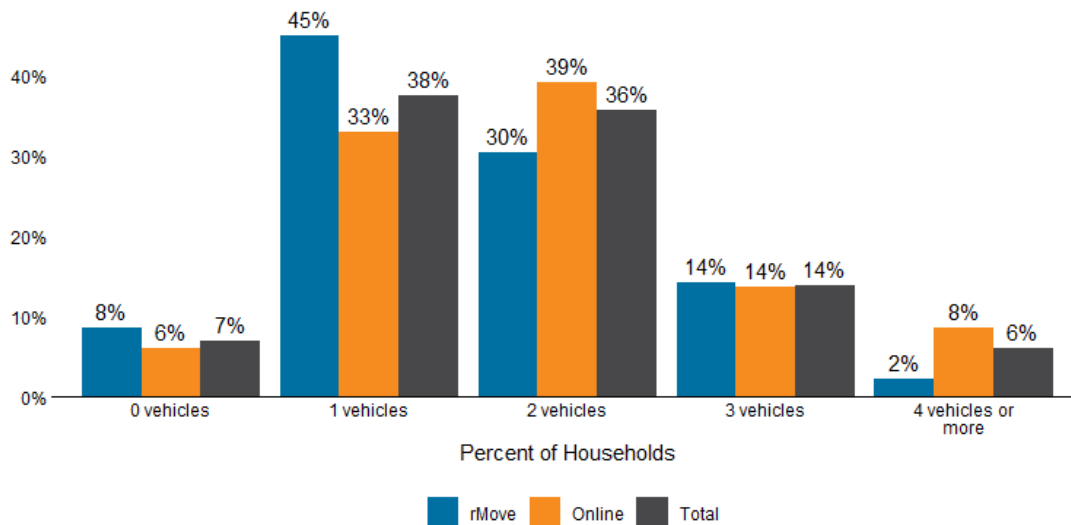
Figure 9 shows the distribution of household size in the survey sample. Overall, roughly two-thirds of residents live in one- or two-person households (65%). Households with two people were twice as likely to take the one-day online survey compared to the seven-day rMove survey.

FIGURE 9: HOUSEHOLD SIZE, BY PARTICIPATION GROUP



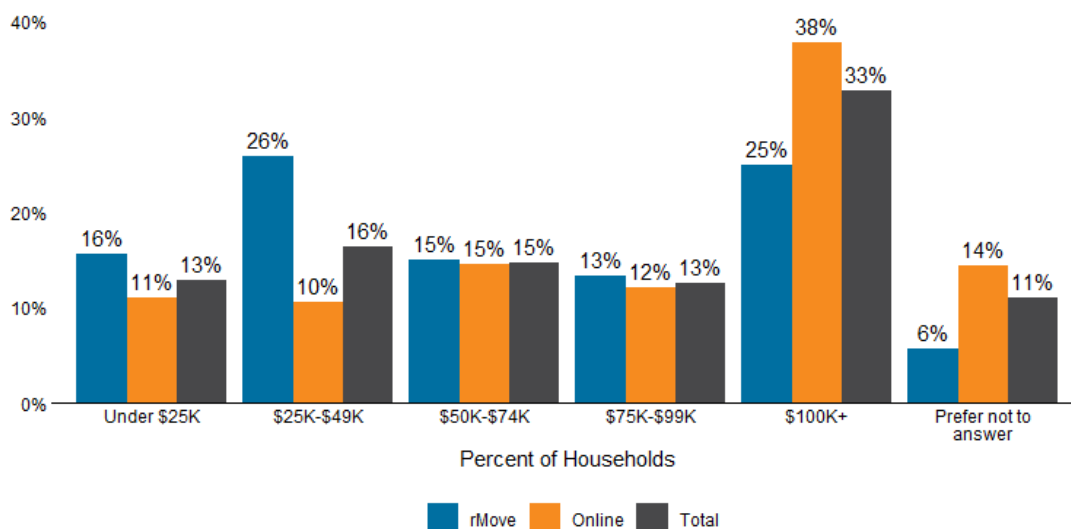
Figure 10 shows the same distribution for the number of vehicles owned or leased by members of the household. The vast majority of households have at least one vehicle (93%), and there is little variation in this metric by participation group.

FIGURE 10: HOUSEHOLD VEHICLES, BY PARTICIPATION GROUP



The distribution of household income is shown below in Figure 11. This question was asked once in the recruit survey, and anyone who selected “Prefer not to answer” was asked this question again in one of the daily surveys with broader categories. The median income category for the sample is in the \$75K-\$99K range, and households making less than \$50K were more likely to choose the rMove option and therefore earn a higher incentive, compared to households making over \$100K.

FIGURE 11: HOUSEHOLD INCOME, BY PARTICIPATION GROUP



According to Figure 12, the most common dwelling types in the study region are single family detached homes (65%) and apartments (22%). Respondents living in singly family detached homes were slightly more likely to take the survey online, whereas those living in apartments were more likely to choose rMove.

FIGURE 12: DWELLING TYPE, BY PARTICIPATION GROUP

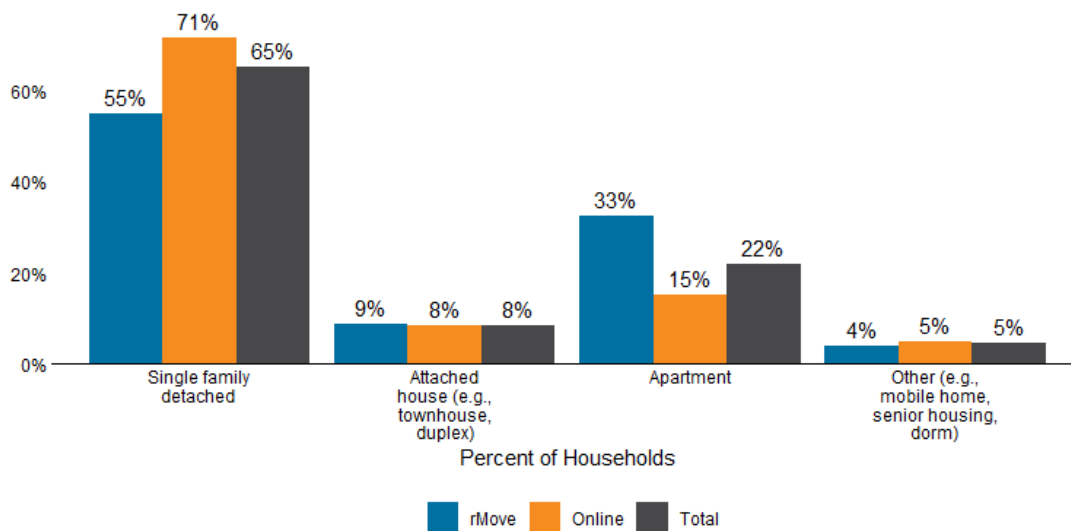
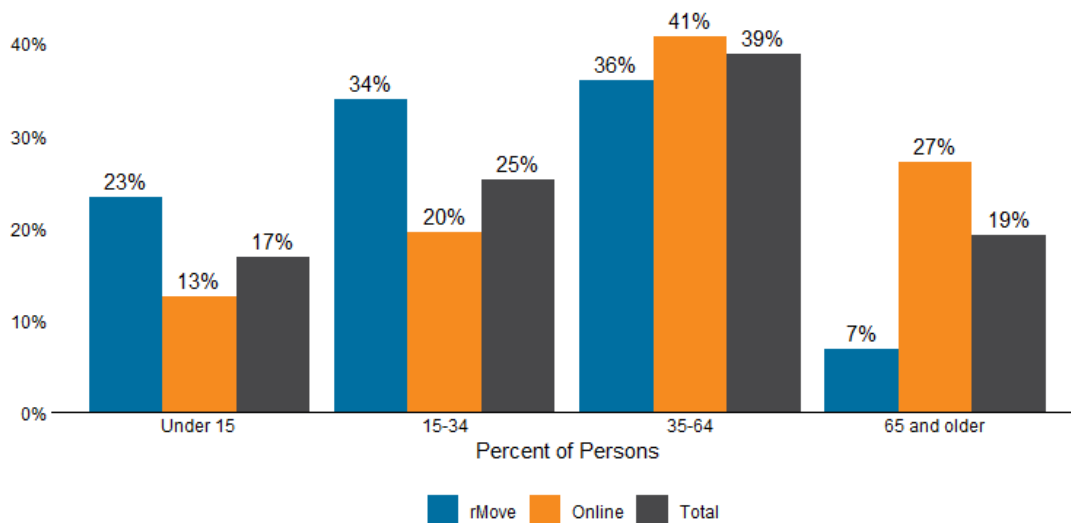


Figure 13 shows the distribution of respondents ages stratified by participation group. Respondents aged 65 or older were much less likely to choose the rMove option than younger respondents, highlighting the importance of offering multiple survey platforms to achieving a balanced sample.

FIGURE 13: RESPONDENT AGE, BY PARTICIPATION GROUP



Distributions for respondents' gender, race, and ethnicity are shown in Figure 14 through Figure 16 below. The gender split is fairly balanced, although there are slightly more women than men in the sample. The vast majority of residents in the study region are white (74%) and not Hispanic (82%), with little variation across the participation groups. For all three demographics, respondents were allowed to select "Prefer not to answer", and in each case this option was more popular among online/call center respondents. This indicates the call center and online survey options are a good alternatives for residents who may be more cautious about how much personal information they want to share with the study.

FIGURE 14: RESPONDENT GENDER, BY PARTICIPATION GROUP

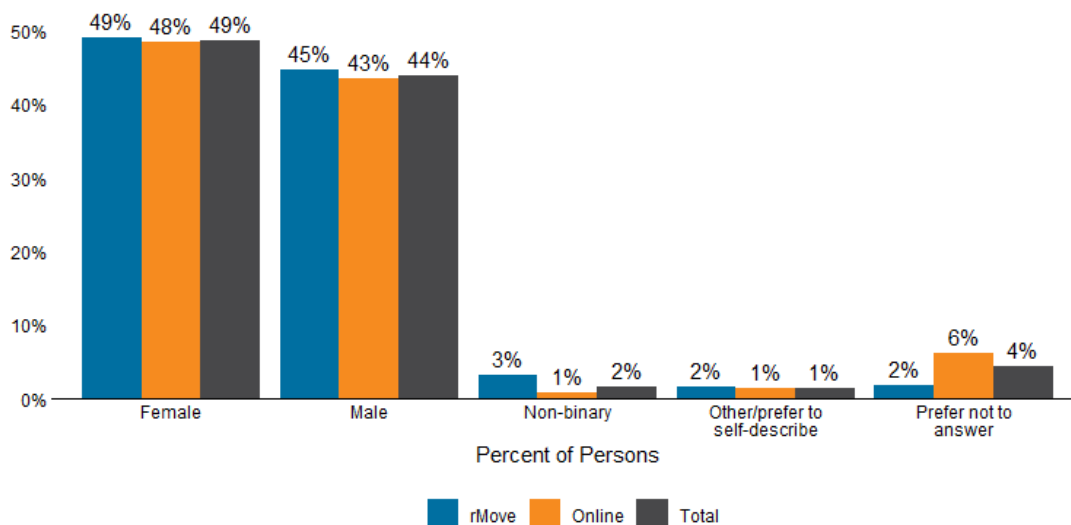


FIGURE 15: RESPONDENT RACE, BY PARTICIPATION GROUP

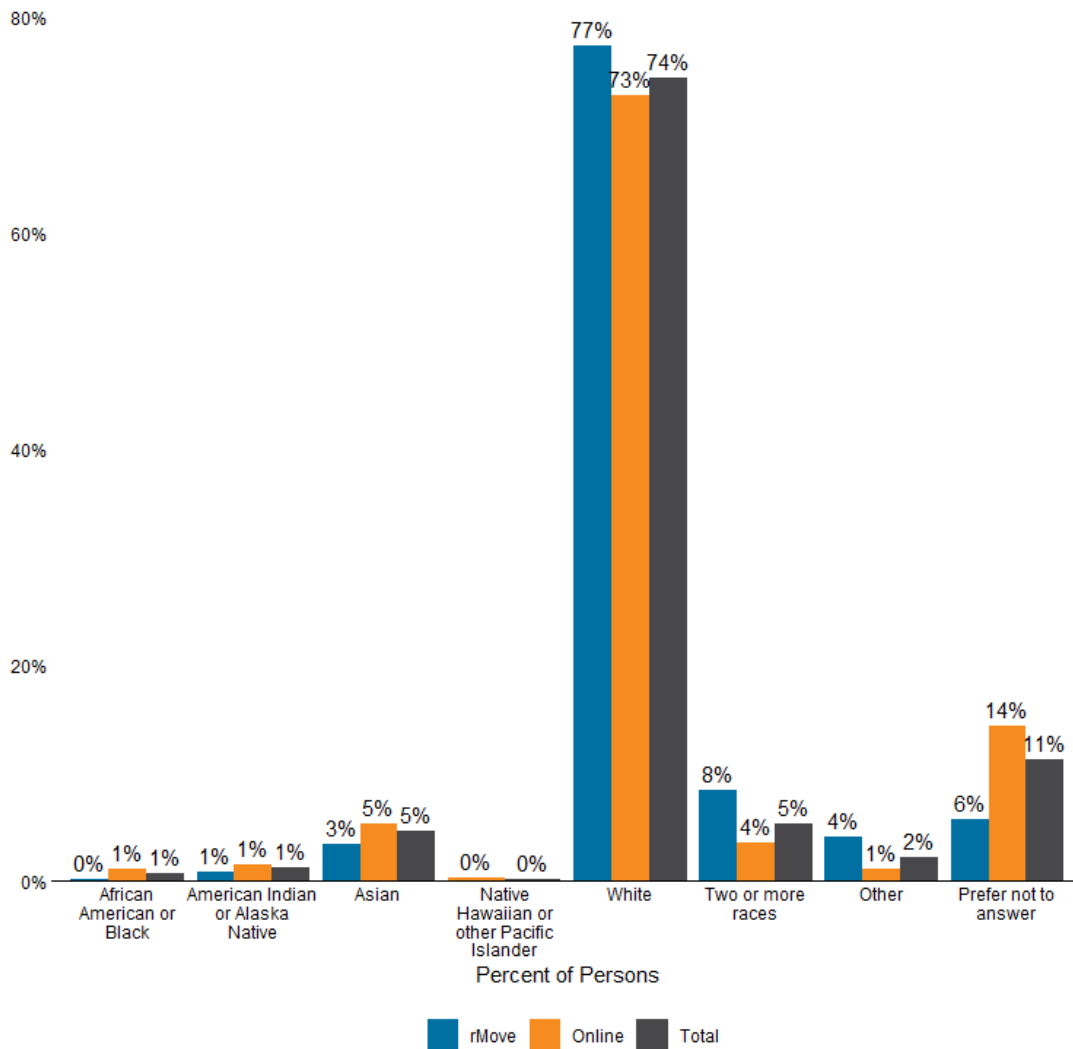
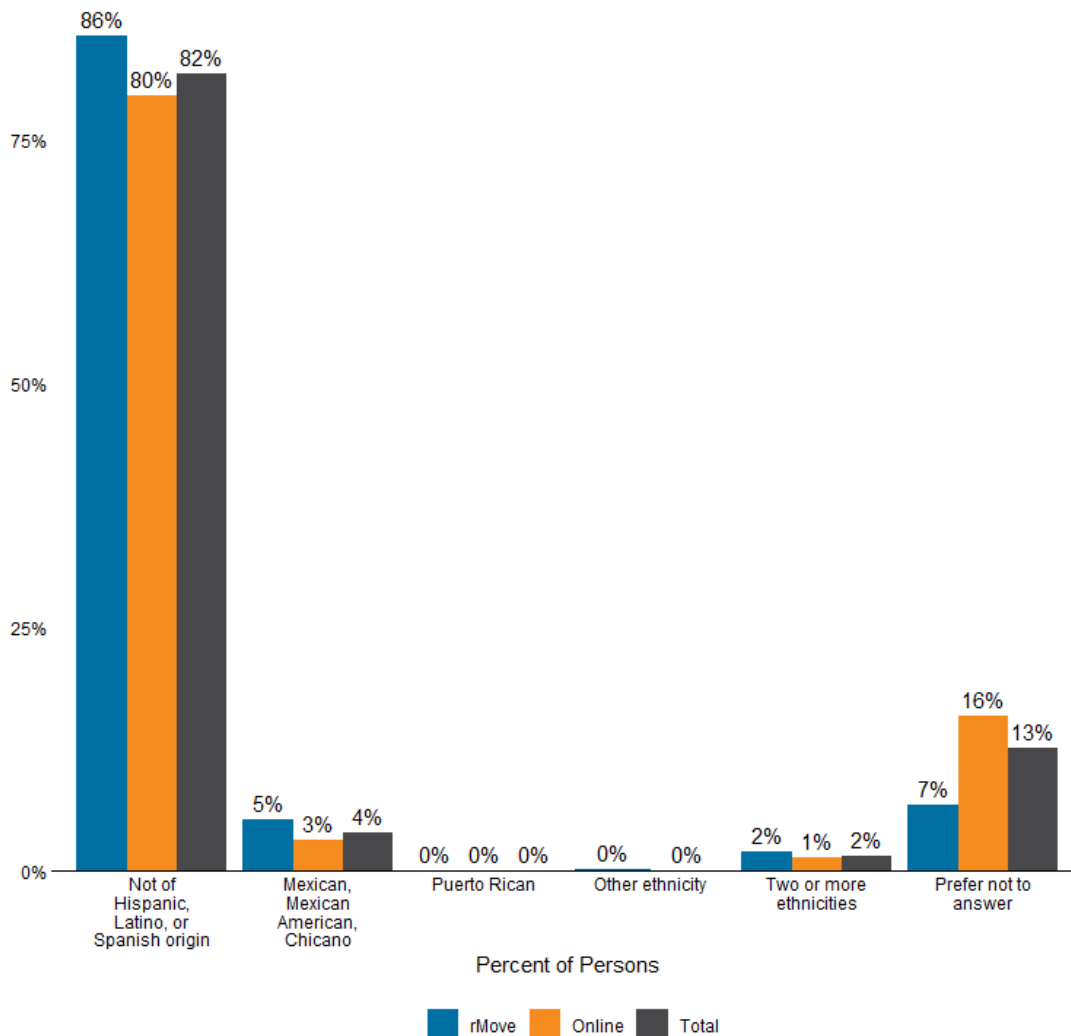
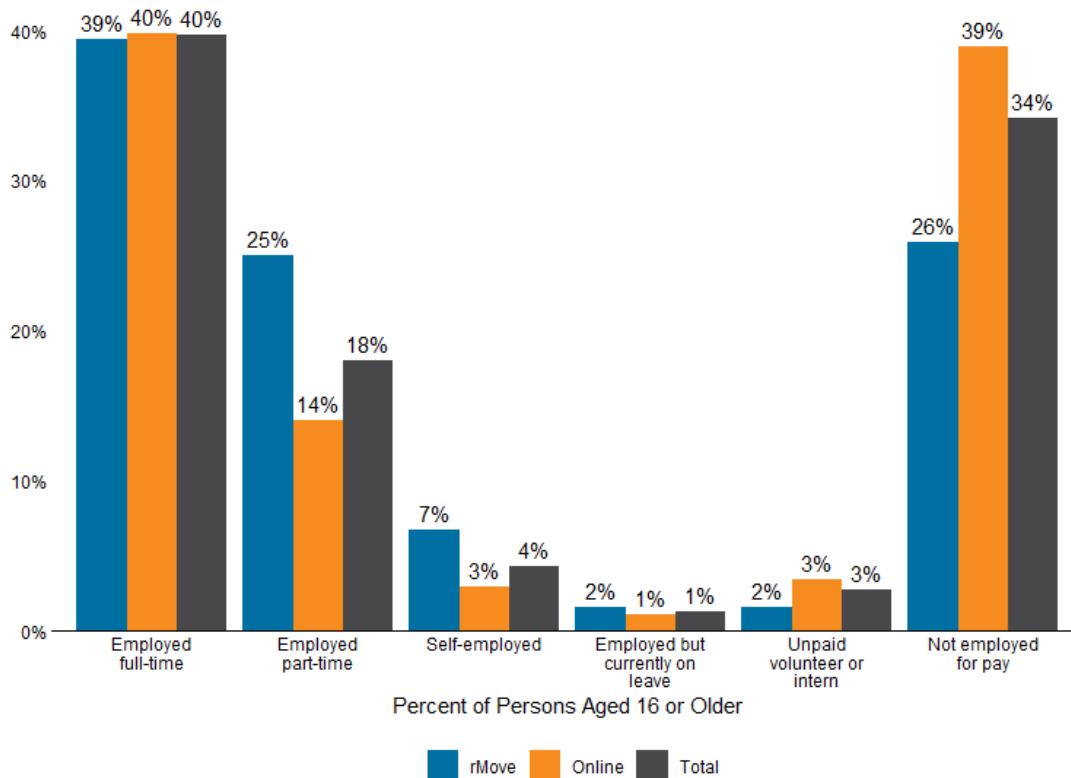


FIGURE 16: RESPONDENT ETHNICITY, BY PARTICIPATION GROUP



Lastly, the distribution for employment status by participation group is shown in Figure 17 below. The correlation between residents over the age of 65 and those not employed for pay (i.e., retired) is reflected in the higher portion of these respondents also selecting the online or call center option. Those who are employed part-time or self-employed were more likely to take the survey in rMove.

FIGURE 17: RESPONDENT EMPLOYMENT STATUS, BY PARTICIPATION GROUP

6.3 TRIP ANALYSIS

In this section, various summaries of the linked, weighted trip dataset are provided, including daily trip rates, mode and purpose shares, trip departure time and distance distributions, electric vehicle ownership and interest, and origin-destination coverage over the region segmented by trip mode and purpose.

Trip Rates

The overall trip rate for the 2025 dataset is 3.67 trips per day. Figure 18 through The last trip rate chart is stratified by respondent age (Figure 22). Respondents between the ages of 15 and 64 made roughly 4 trips per day on average, while those under 15 only made 3.05 trips per day and those 65 and older made 3.16 trips per day.

Figure 22 breaks the daily trip rate out by several key demographics. There is very little variation in trip rate across days of the week (only Tuesday, Wednesday, and Thursday were weighted), but residents of Bellingham make roughly one-third trips more per day (0.32) than residents of the rest of Whatcom county.

FIGURE 18: TRIP RATE, BY DAY OF WEEK

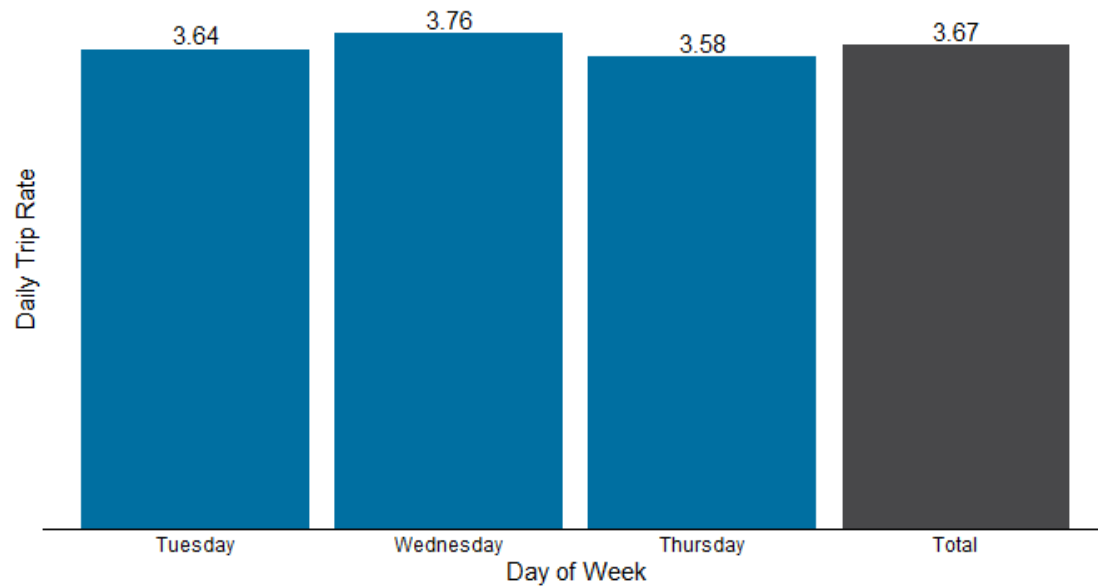
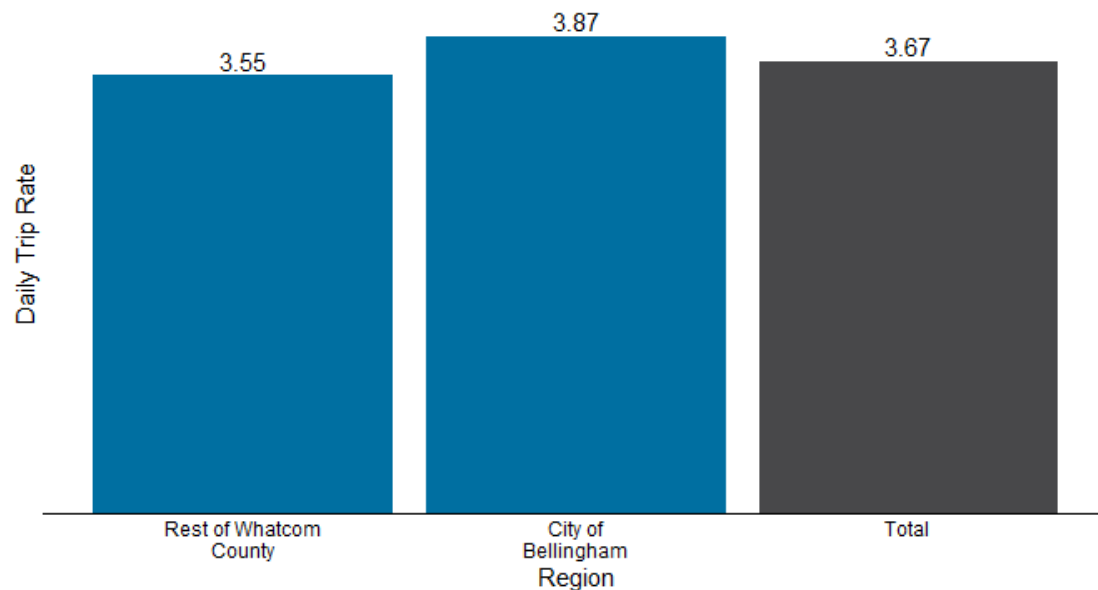


FIGURE 19: TRIP RATE, BY HOME REGION



Similar trip rate trends can be observed in Figure 20 and Figure 21. On average, households with multiple members and higher incomes make fewer trips per day than those with only one person and incomes under \$75K.

FIGURE 20: TRIP RATE, BY HOUSEHOLD SIZE

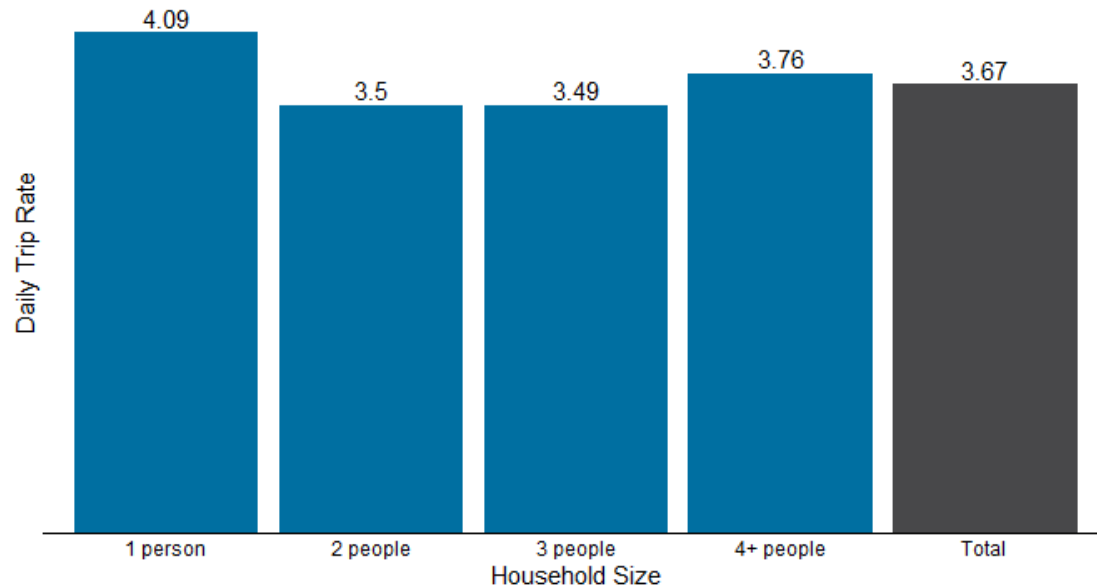
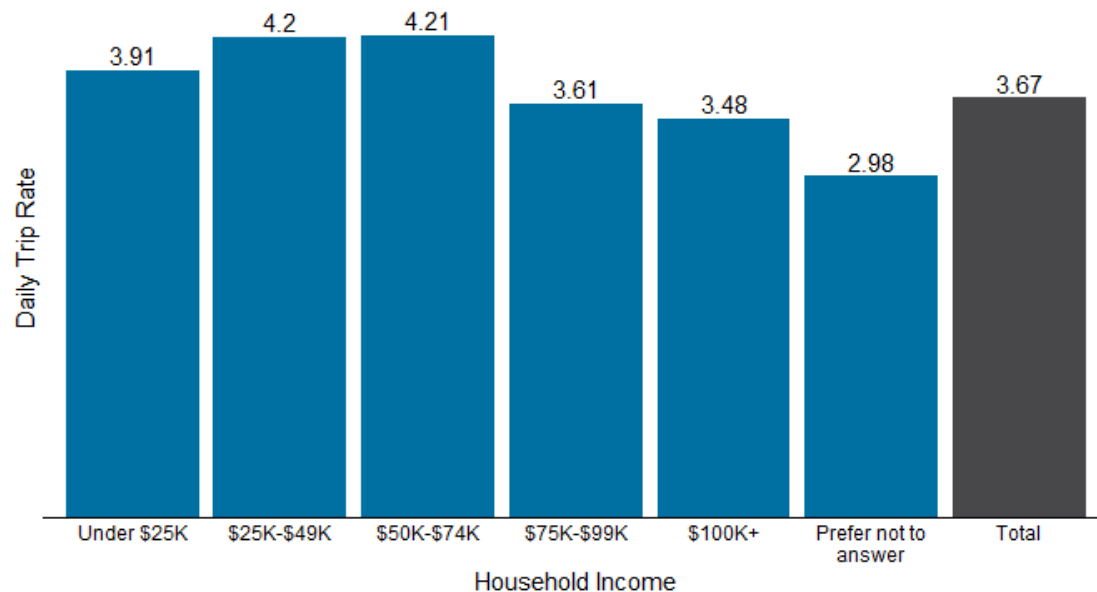
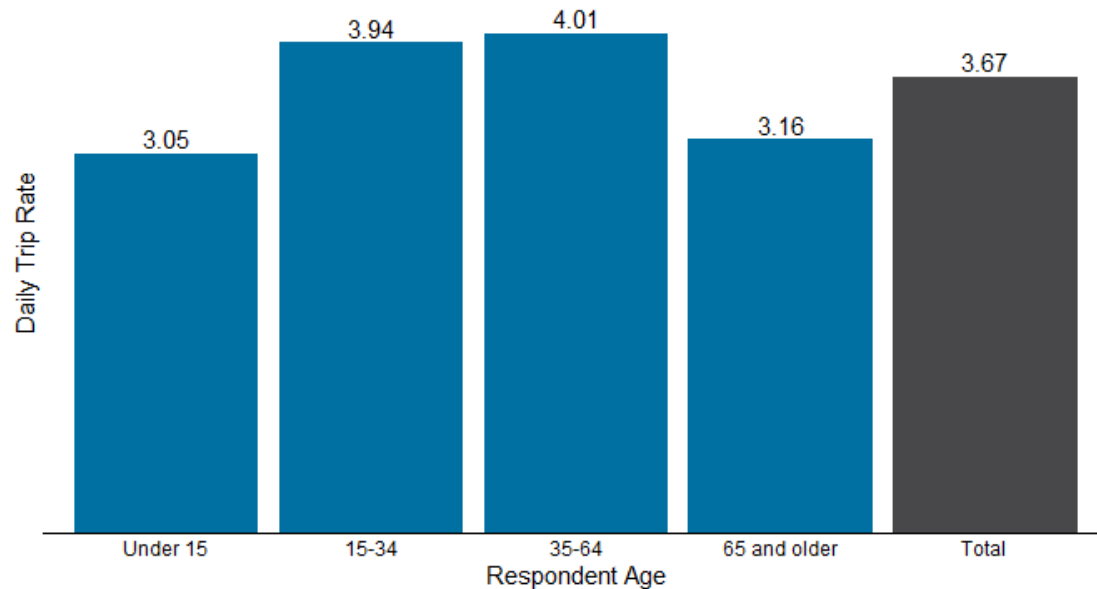


FIGURE 21: TRIP RATE, BY HOUSEHOLD INCOME



The last trip rate chart is stratified by respondent age (Figure 22). Respondents between the ages of 15 and 64 made roughly 4 trips per day on average, while those under 15 only made 3.05 trips per day and those 65 and older made 3.16 trips per day.

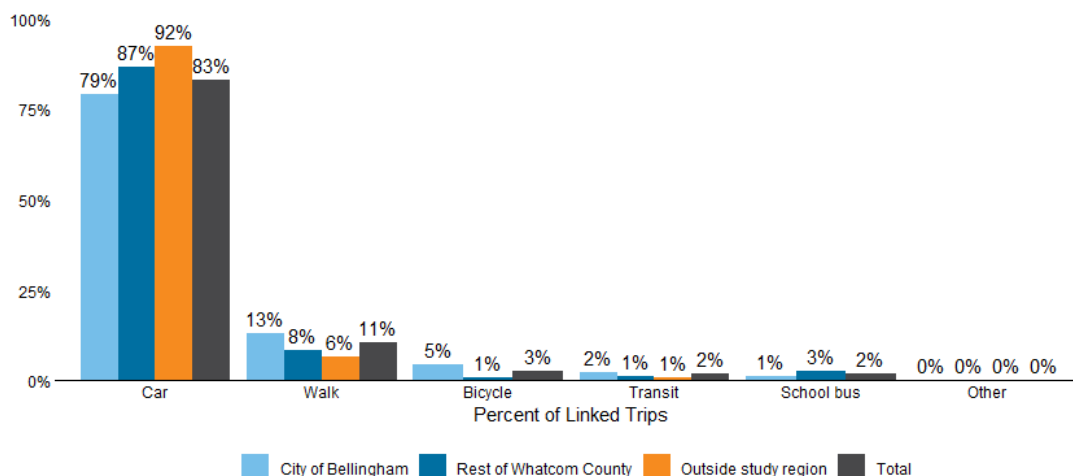
FIGURE 22: TRIP RATE, BY RESPONDENT AGE



Mode Share

The trip mode share is shown in Figure 23 below, both in total and split out by the location of the trip's destination. Overall the majority of trips in the region are made using cars (83%). In the City of Bellingham, a slightly smaller portion of trips are made using vehicles (79%), with higher shares of walk (13%) and bike (5%) trips largely accounting for the difference.

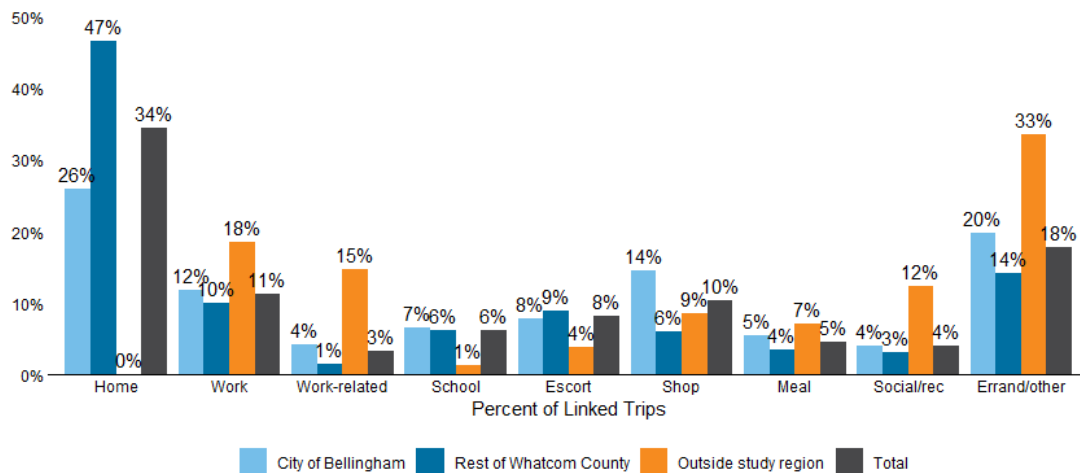
FIGURE 23: OVERALL MODE SHARE, BY DESTINATION REGION



Trip Purpose

Figure 24 shows that home trips make up the largest share of trips across all location types within the study region. For trips made outside the study region, the most common purposes are errands or other activities (33%) and work or work-related trips (also 33%), whereas shopping trips are more locally oriented within Bellingham.

FIGURE 24: TRIP PURPOSE, BY DESTINATION REGION



Trip Time and Distance

The charts in this section provide several distributions of trip departure hours and trip distances (in miles). Figure 25 shows the overall distribution of trip departure hours. Trips peaked around 7-10am and 3-6pm, with a larger spike in travel occurring during the PM peak period than the AM peak period.

FIGURE 25: DISTRIBUTION OF TRIP START TIMES

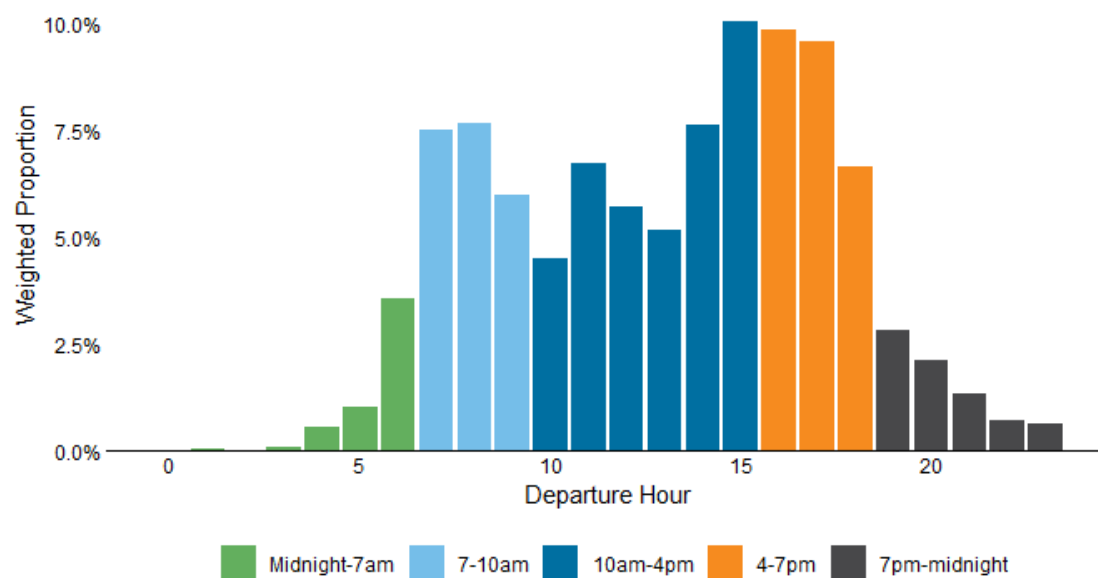


Figure 26 shows clear differences in trip start times by mode, reflecting how each mode is typically used. Auto, school bus, and transit trips exhibit strong weekday commute peaks in the morning and late afternoon, while walk and bike trips are more evenly distributed across the day, with greater activity during midday and early evening hours. Overall, the pattern suggests that non-motorized trips are more flexible and discretionary, whereas motorized modes are more closely tied to work and school schedules.

FIGURE 26: DISTRIBUTION OF TRIP START TIMES, BY MODE

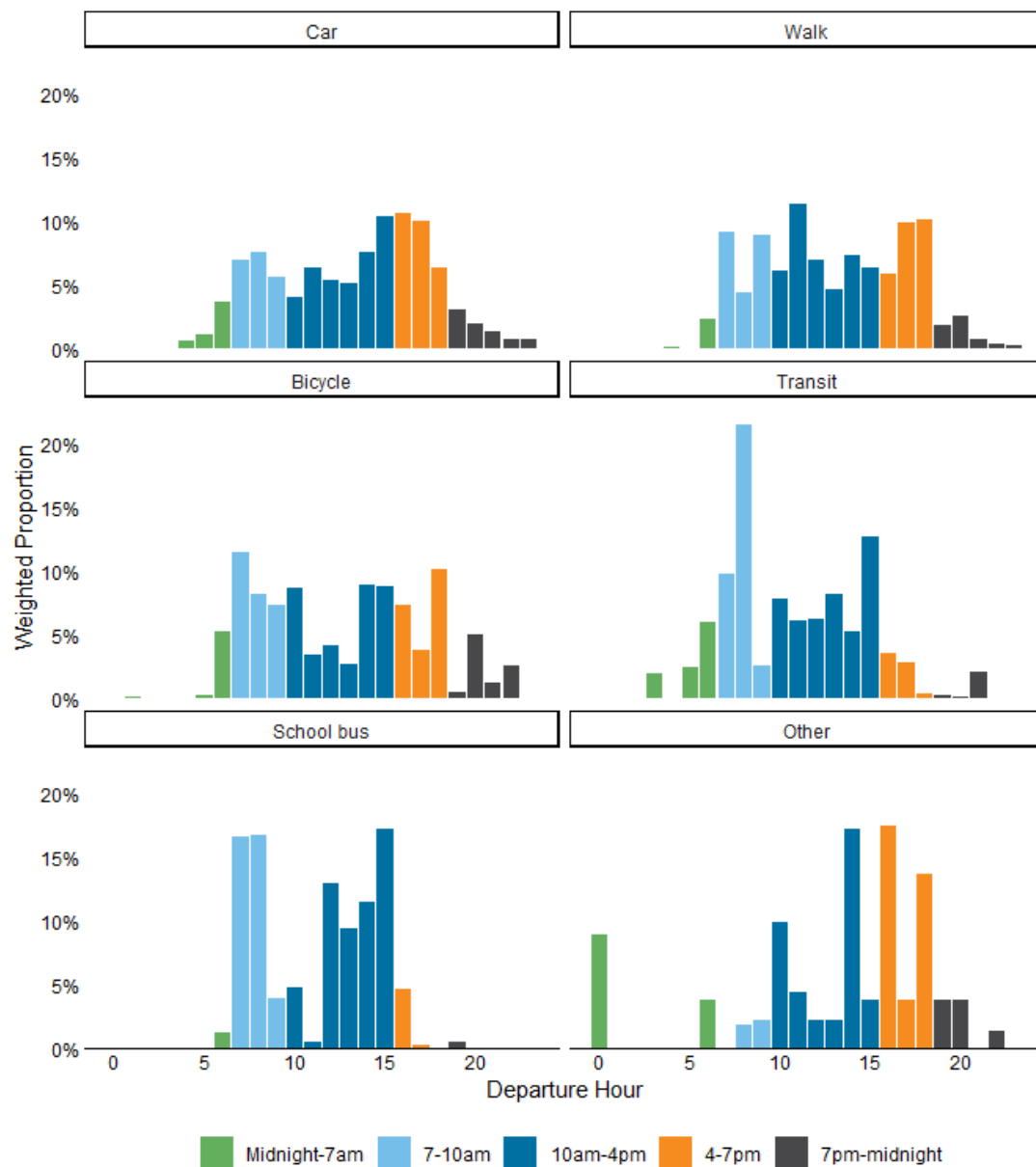
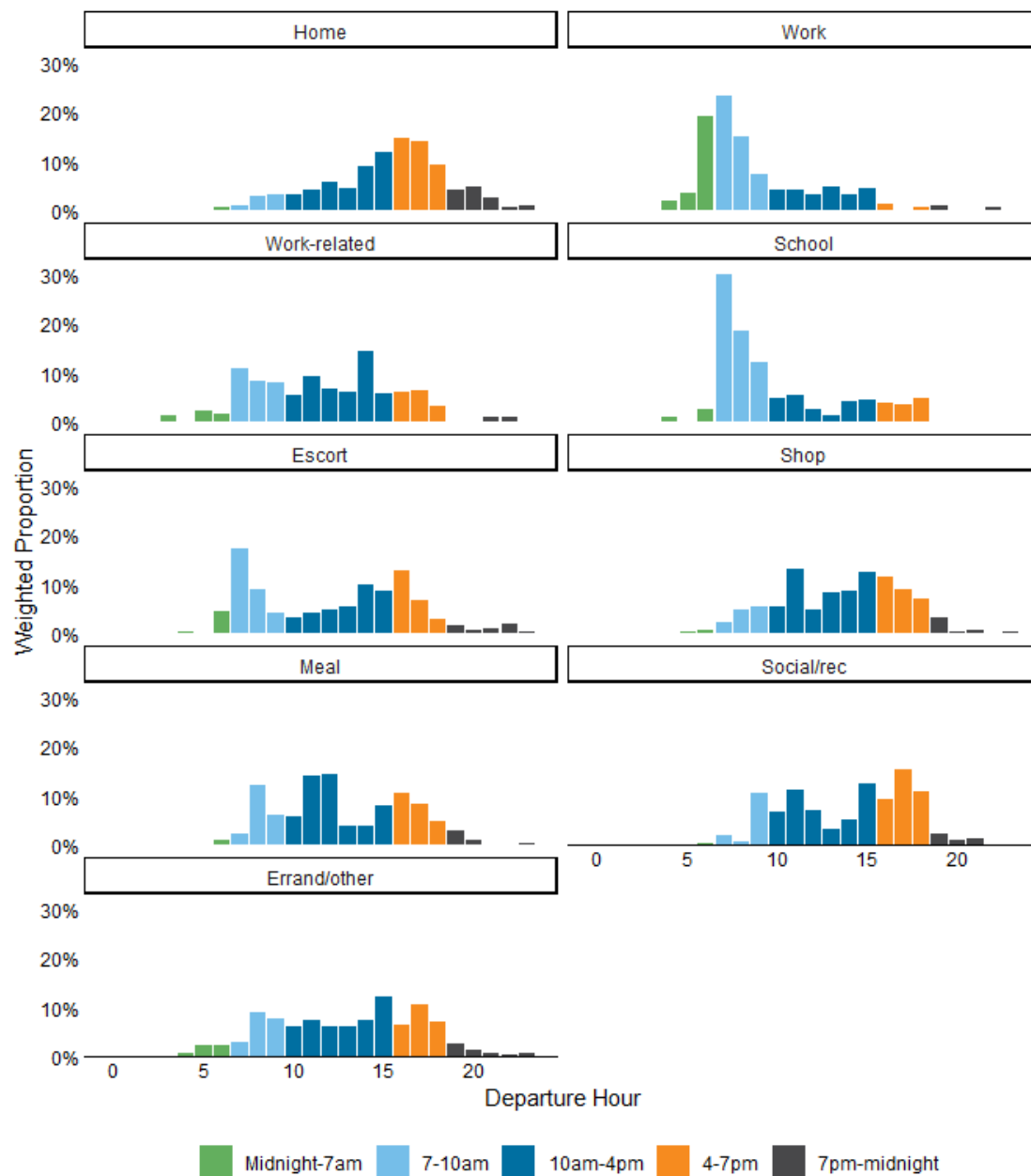


Figure 27 shows that trip start times vary strongly by trip purpose, reflecting different daily activity patterns. Work and school trips are concentrated in the morning peak period (7-10am), while shopping, errands, and other discretionary trips are more evenly distributed throughout the day, with greater activity during midday and early evening. Social and recreational trips tend to occur later in the day, highlighting their more flexible timing compared to mandatory travel.

FIGURE 27: DISTRIBUTION OF TRIP START TIMES, BY PURPOSE



The distribution of all trip distances is shown below in Figure 28, and Figure 29 has the distributions for Bellingham residents vs. the rest of the county. Unsurprisingly, trips made by Bellingham residents tend to be shorter in length than those made by other Whatcom residents. The overall median trip length (represented by the dashed line) is 3.38 miles, and the median lengths for Bellingham and Whatcom county residents are 2.30 and 4.63, respectively.

FIGURE 28: DISTRIBUTION OF TRIP DISTANCES

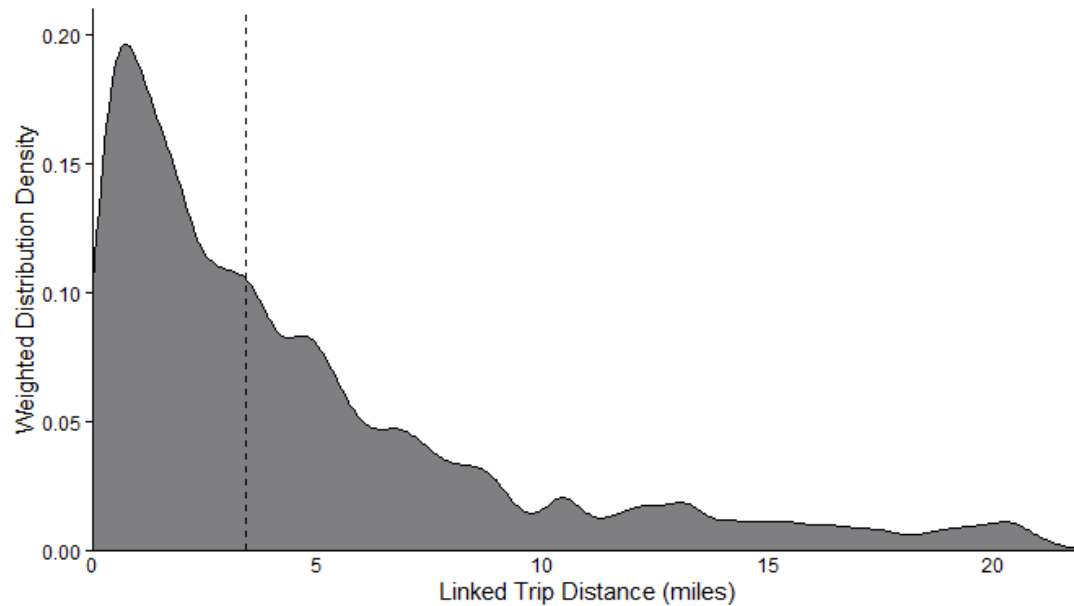
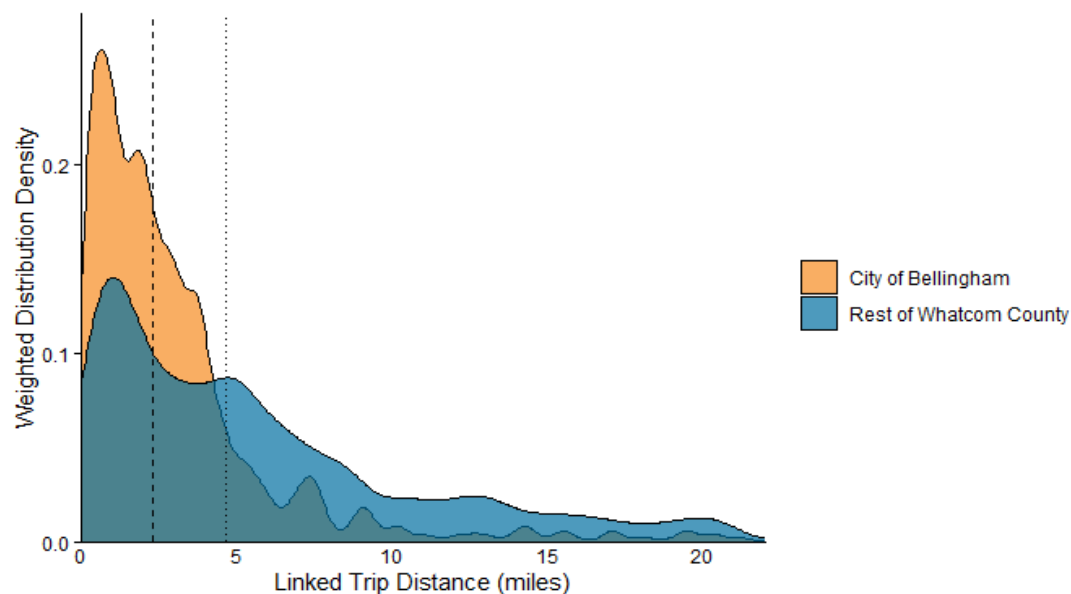


FIGURE 29: DISTRIBUTION OF TRIP DISTANCES, BY HOME REGION



Vehicle Behavior

The analysis in this section covers several of the survey questions related to vehicle ownership and usage. Average vehicle occupancy (AVO) for car trips is shown in Figure 30 below, segmented by the trip's purpose and the location of the trip's destination. Overall school, escort, and errand/other trips are most likely to be made with multiple people in the vehicle, while work commutes and work-related trips are most likely to be single-person trips. When split by the destination's region, the comparatively high AVO for school trips was consistent, while trips made for school and meals outside the study region had the highest AVO.

FIGURE 30: AVERAGE VEHICLE OCCUPANCY (AVO), BY PURPOSE AND DESTINATION REGION

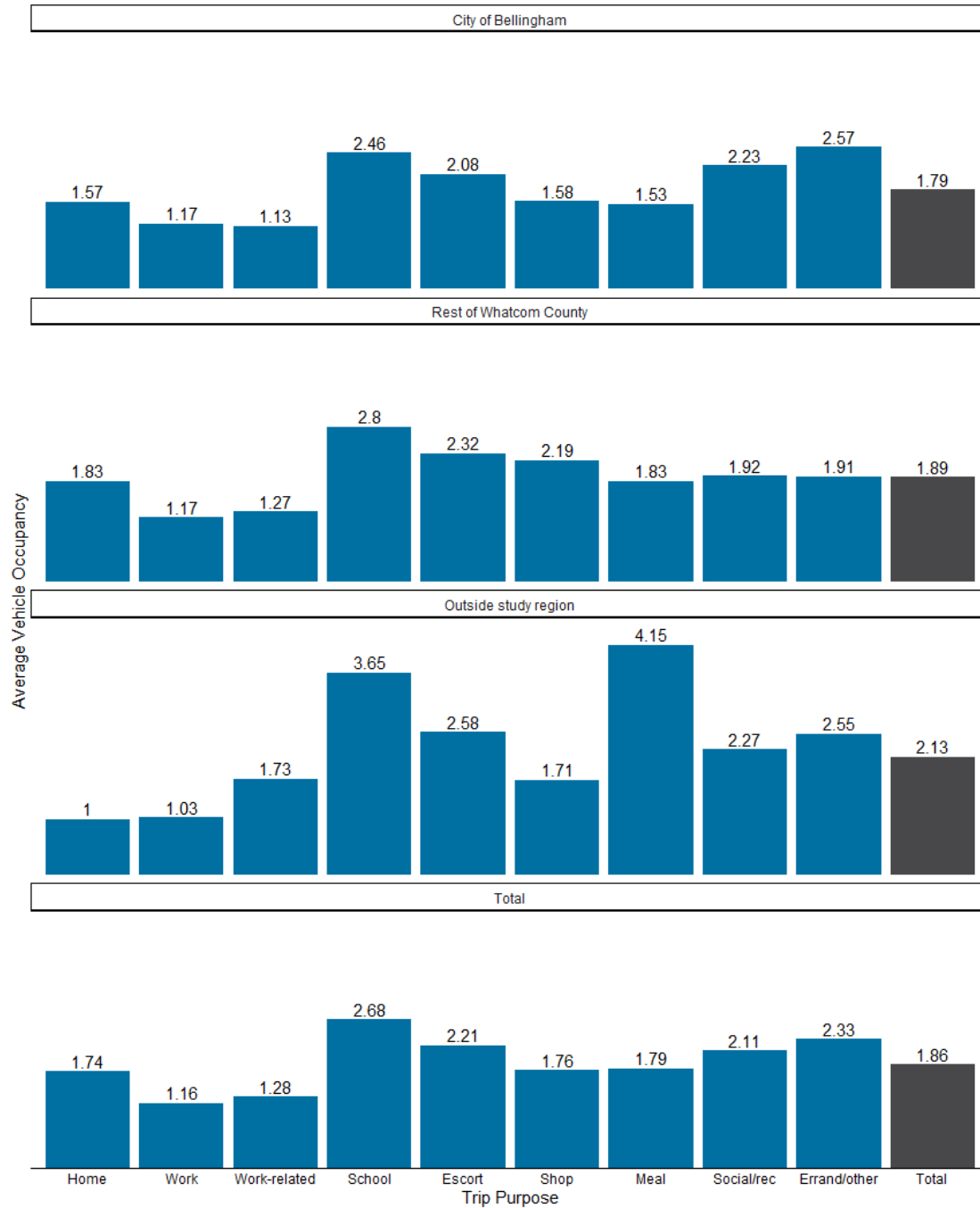
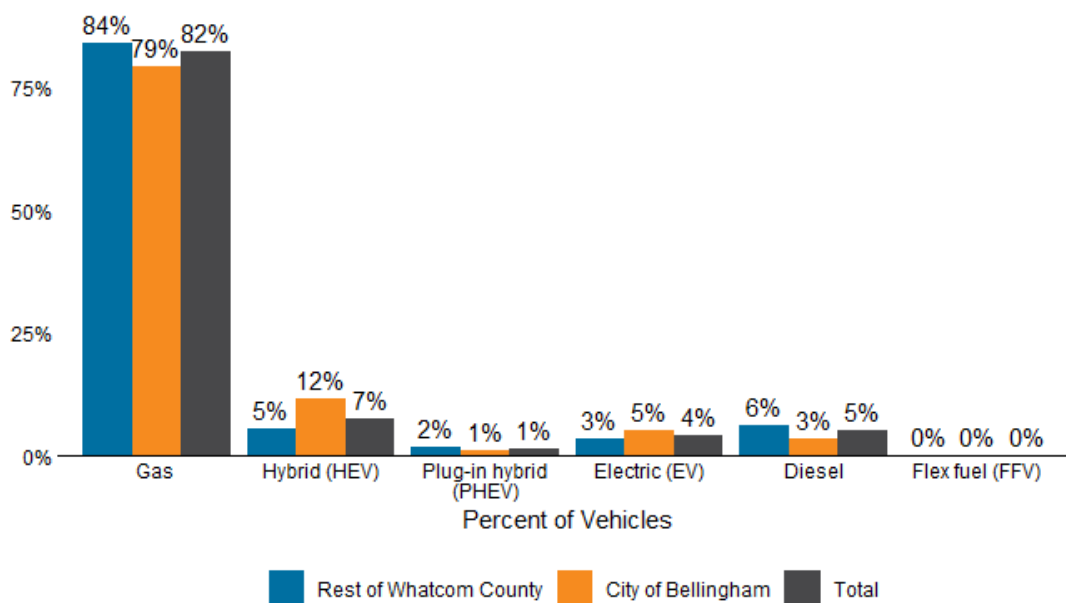


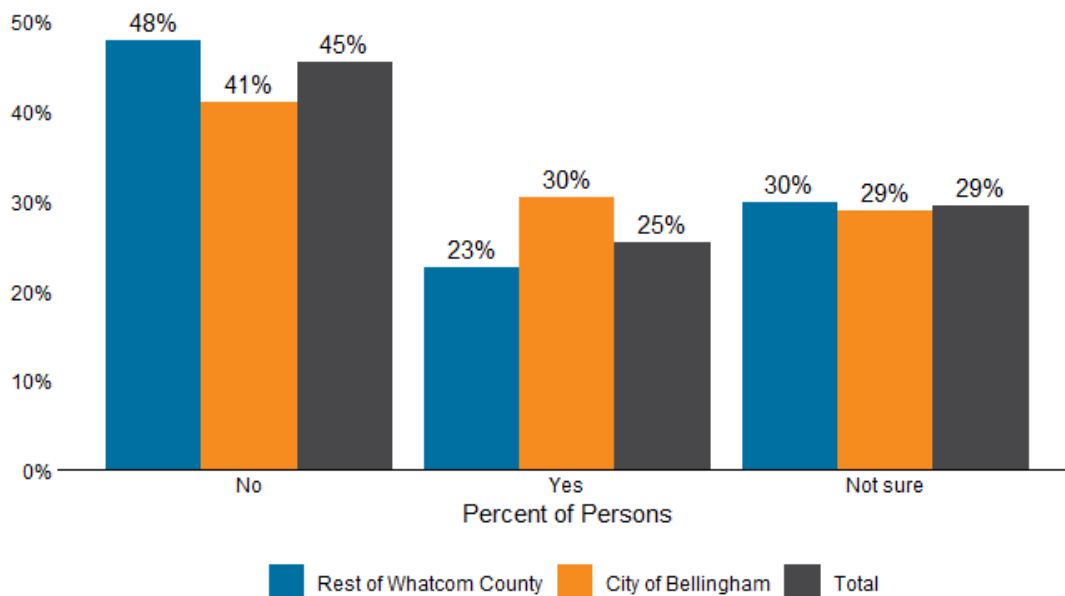
Figure 31 shows the composition of fuel types within the fleet of vehicles owned or leased by residents of the study region. Gas-powered vehicles remain the dominant fuel source among Whatcom residents' vehicles (82%), with HEVs (7%), diesel engines (5%), and EVs (4%) comprising the other most common choices. Bellingham residents were more than twice as likely to own an HEV than residents of the rest of Whatcom county, whereas the reverse is true for diesel engines.

FIGURE 31: VEHICLE FLEET FUEL TYPE, BY HOME REGION



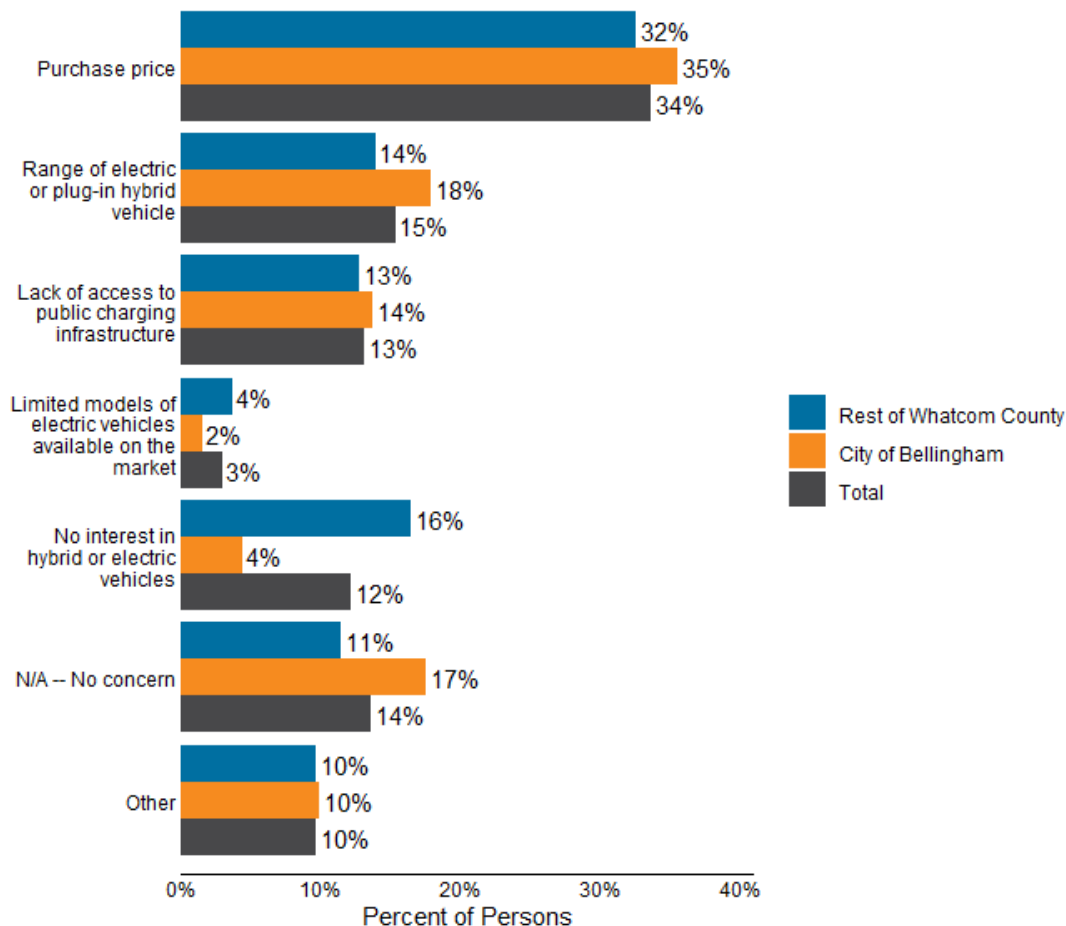
Respondents were asked in one of the daily survey if they are interested in purchasing or leasing an EV or PHEV sometime in the next five years. Overall, less than half of residents (45%) are not considering this option for their next vehicle at all, with 29% open to the idea but unsure about EV or HEV adoption. Additionally, Bellingham residents are more likely than other residents of Whatcom county to be planning to purchase an EV or PHEV.

FIGURE 32: INTERESTED IN PURCHASING AN EV OR PHEV, BY HOME REGION



Respondents were then asked to select the biggest concern they have about purchasing or leasing an EV or PHEV. By far the most commonly cited reason was the cost of the vehicle (34%), with the driving range and lack of charging infrastructure also making up a decent portion of the response (15% and 13%, respectively).

FIGURE 33: BIGGEST CONCERN ABOUT PURCHASING AN EV OR PHEV, BY HOME REGION



6.4 WORK-RELATED TRAVEL

This section contains several charts summarizing the questions specifically asked about employed respondents' commuting behavior. Figure 45 below shows the most frequently used commute mode for employed residents in the study region. Unsurprisingly vehicles are the most commonly selected option (79.9%), however roughly one in ten employed residents (10.8%) do not commute at all and only work remotely.

FIGURE 45: TYPICAL COMMUTE MODE

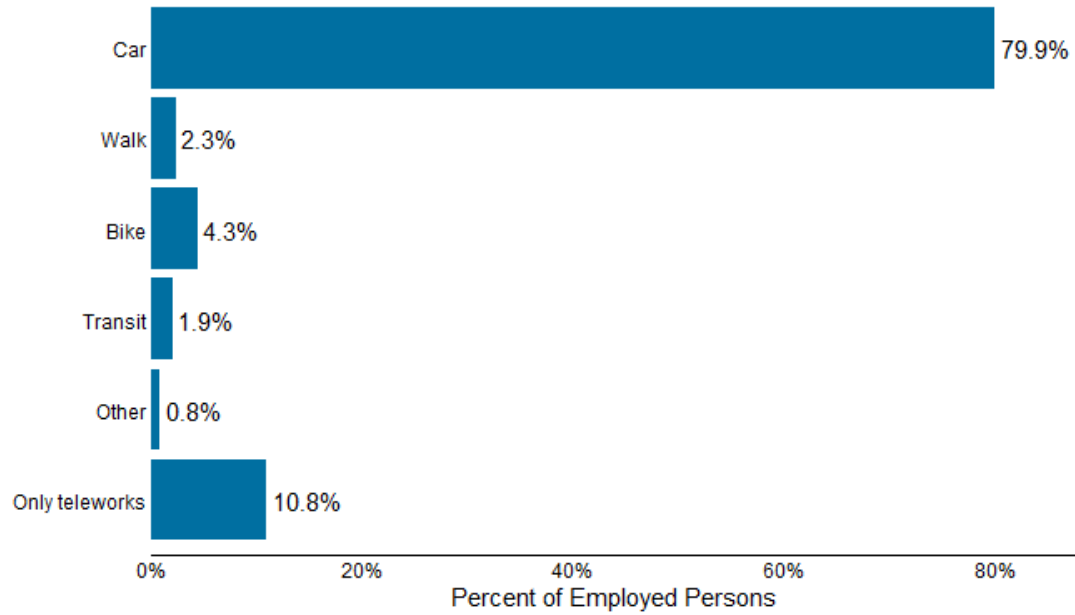


Figure 46 shows that commute mode choice varies noticeably by region, with Bellingham residents relying less on vehicles and showing higher shares of walking (5%), biking 8(%), and transit use (3%) for their commutes. In contrast, commuting outside Bellingham is more heavily vehicle-oriented, reflecting longer travel distances and fewer non-auto options.

FIGURE 46: TYPICAL COMMUTE MODE, BY REGION

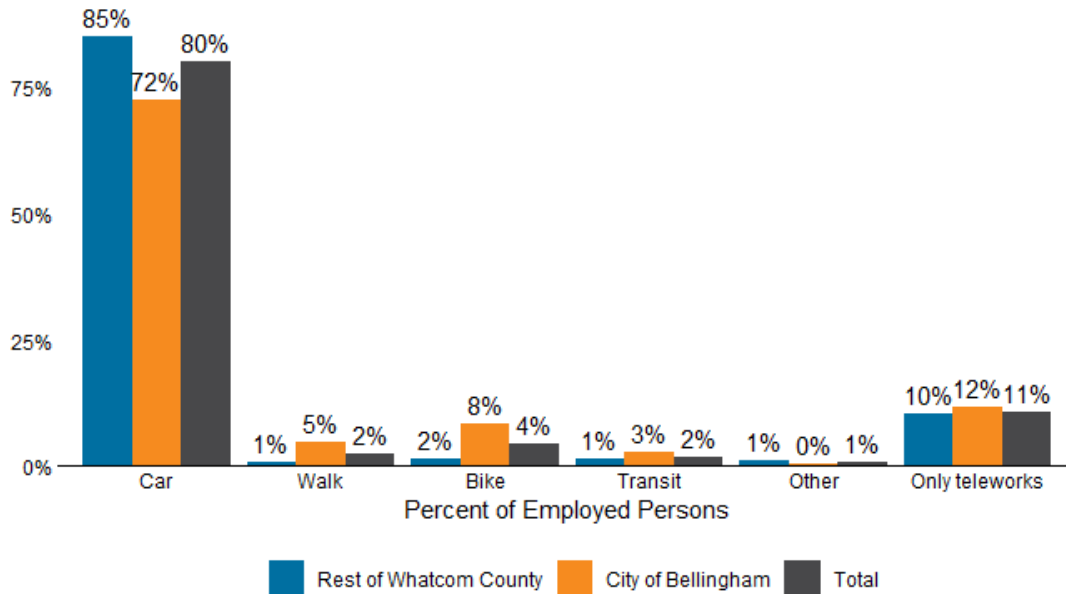


Figure 47 a shows that while most employed residents commute on a regular (near-daily) basis, there is meaningful variation in commute frequency, reflecting the impact of part-time schedules and flexible work arrangements.

FIGURE 47: COMMUTE FREQUENCY

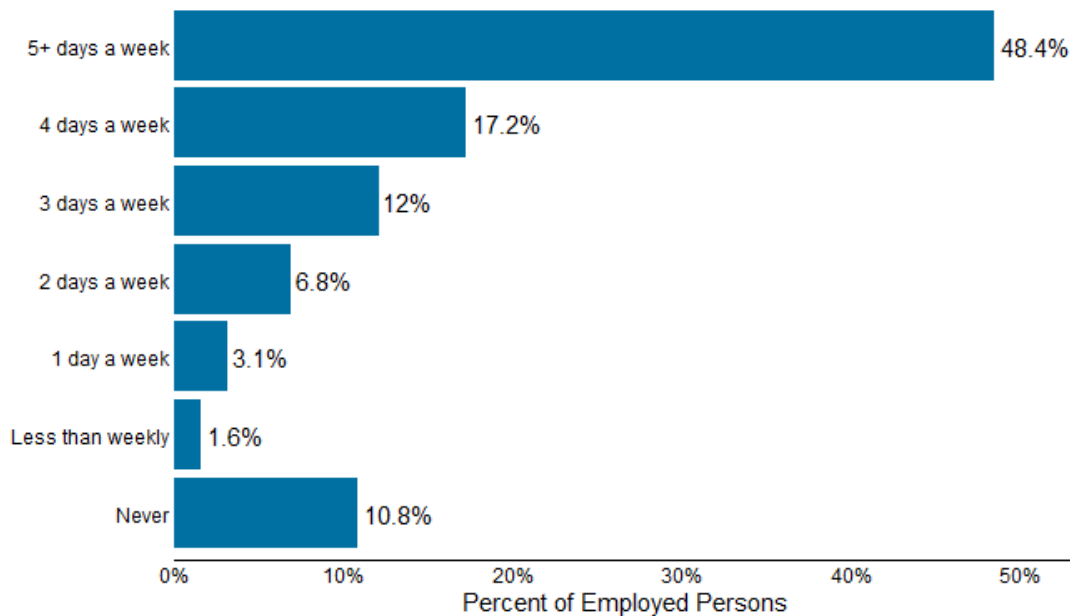
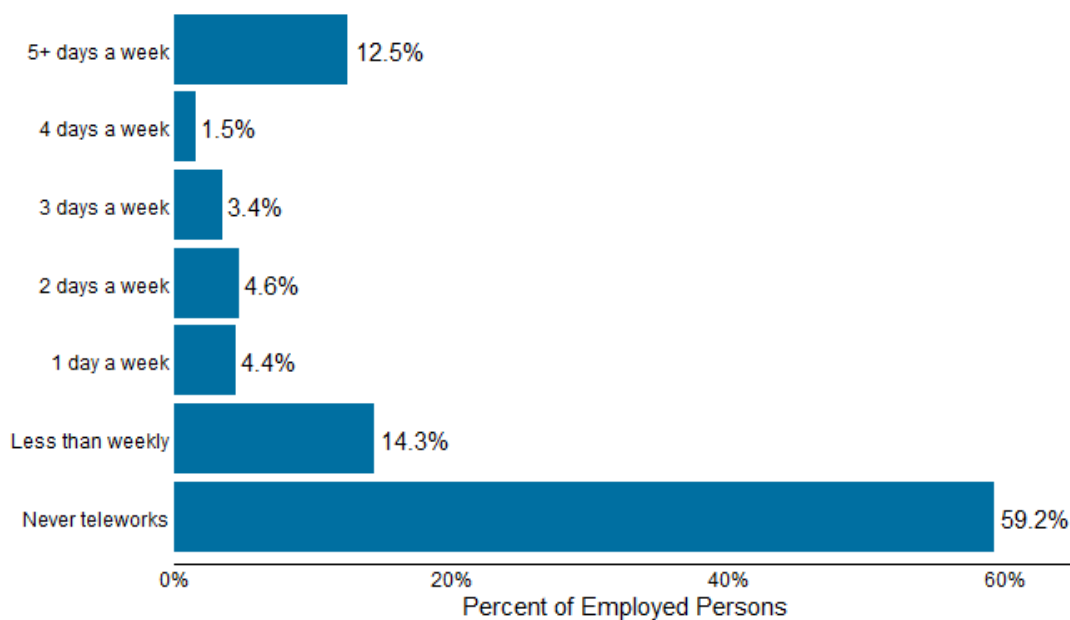


Figure 48 shows that roughly one in ten employed respondents (12.5%) telework at least 5 days a week, while a further 13.6% telework on a hybrid schedule (1-4 days a week).

FIGURE 48: TELEWORK FREQUENCY



6.5 DELIVERIES

For each day of their travel diary, respondents were asked if they had received any type of delivery that day. The responses were analyzed by the key demographics collected in the survey, and Figure 49 through Figure 52 below show the results which have noticeable variances across the demographic's distribution.

Figure 49 shows the portion of person-days in the study when one or more types of deliveries were received, split out by the person's home location. On roughly half of person-days in the study (48.5%) some type of delivery was received, with residents outside of Bellingham more likely to have received a delivery (52.4%).

FIGURE 49: PERSON-DAYS WITH DELIVERIES RECEIVED, BY HOME REGION

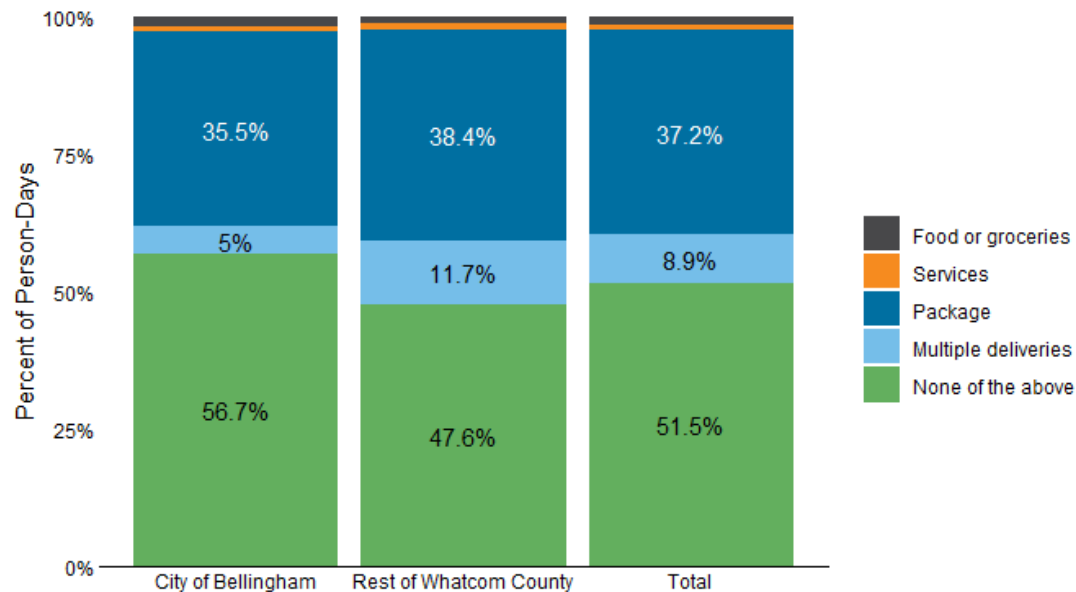


TABLE 6: PERSON-DAYS WITH DELIVERIES RECEIVED, BY HOME REGION

DELIVERY TYPE	BELLINGHAM		WHATCOM COUNTY		TOTAL	
	N	%	N	%	N	%
Food or groceries	981	1.8%	905	1.2%	1,886	1.5%
Services	570	1.0%	813	1.1%	1,383	1.1%
Package	19,347	35.5%	28,456	38.4%	47,803	37.2%
Multiple deliveries	2,725	5.0%	8,667	11.7%	11,392	8.9%
None of the above	30,934	56.7%	35,264	47.6%	66,198	51.5%
Total	54,557	100.0%	74,105	100.0%	128,662	100.0%

Figure 50 shows that the likelihood of receiving deliveries increases with household size, with multi-person households more likely to receive deliveries on a given day than one-person households. This suggests that delivery activity scales with household needs and consumption levels.

FIGURE 50: PERSON-DAYS WITH DELIVERIES RECEIVED, BY HOUSEHOLD SIZE

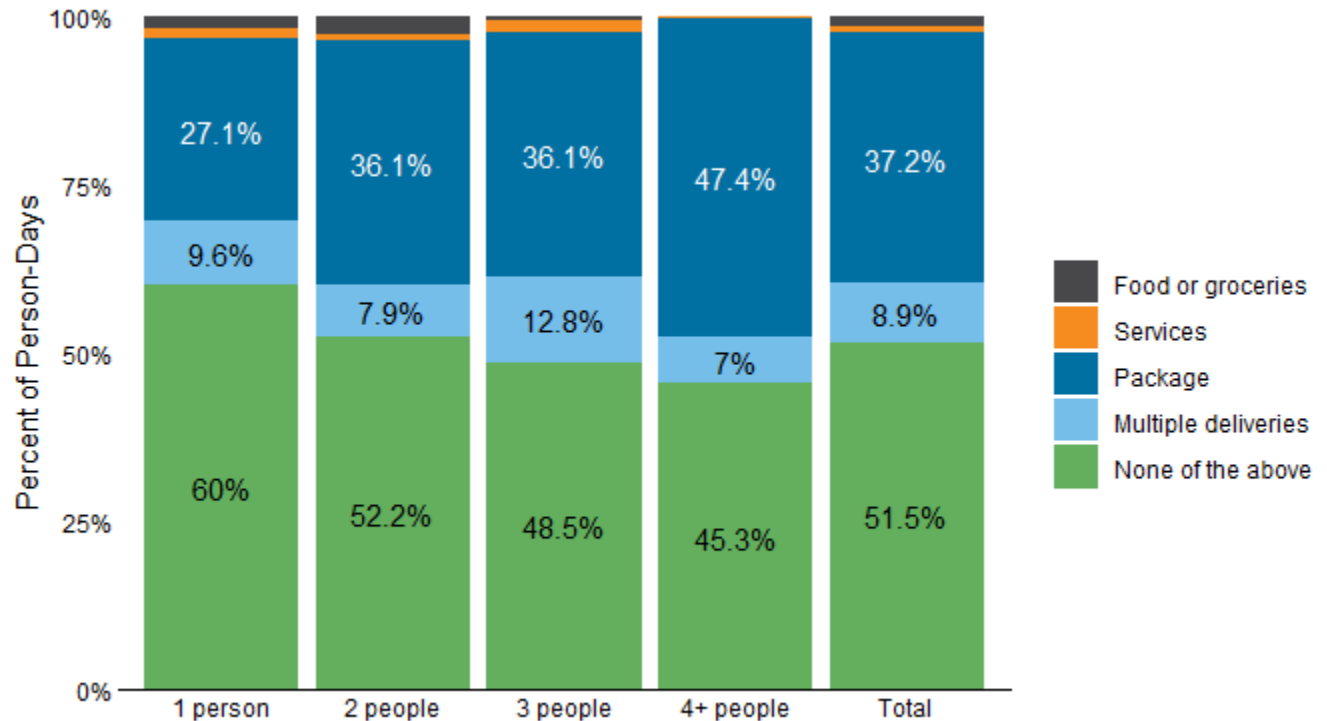


TABLE 7: PERSON-DAYS WITH DELIVERIES RECEIVED, BY HOUSEHOLD SIZE

DELIVERY TYPE	1 PERSON		2 PEOPLE		3 PEOPLE		4+ PEOPLE		TOTAL	
	N	%	N	%	N	%	N	%	N	%
Food or groceries	527	1.9%	1,180	2.7%	111	0.5%	68	0.2%	1,886	1.5%
Services	429	1.5%	472	1.1%	448	2.1%	34	0.1%	1,383	1.1%
Package	7,668	27.1%	15,897	36.1%	7,861	36.1%	16,378	47.4%	47,803	37.2%
Multiple deliveries	2,703	9.6%	3,484	7.9%	2,781	12.8%	2,424	7.0%	11,392	8.9%
None of the above	16,978	60.0%	23,001	52.2%	10,555	48.5%	15,664	45.3%	66,198	51.5%
Total	28,305	100.0%	44,034	100.0%	21,756	100.0%	34,568	100.0%	128,662	100.0%

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Figure 51 shows the portion of person-days in the study when one or more types of deliveries were received by household income. Similar to the household size pattern, the likelihood of receiving deliveries generally increases with household income, with higher-income households more likely to receive one or more deliveries on a given day. This pattern suggests that delivery activity is correlated with greater purchasing power.

FIGURE 51: PERSON-DAYS WITH DELIVERIES RECEIVED, BY HOUSEHOLD INCOME

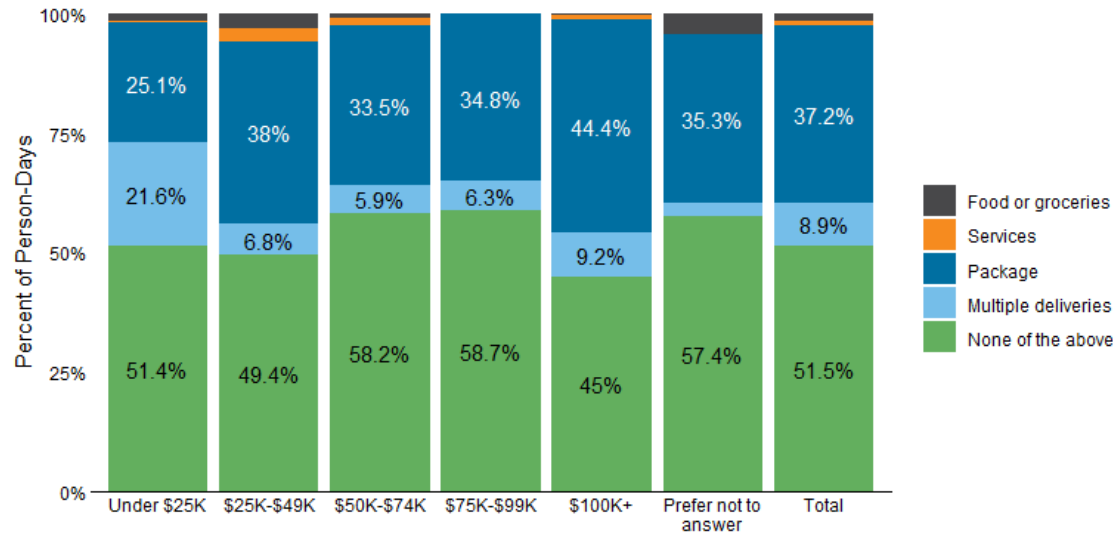


TABLE 8: PERSON-DAYS WITH DELIVERIES RECEIVED, BY HOUSEHOLD INCOME

DELIVERY TYPE	UNDER \$25K		\$25K-\$49K		\$50K-\$74K		\$75K-\$99K		\$100K+		PREFER NOT TO ANSWER		TOTAL	
	N	%	N	%	N	%	N	%	N	%	N	%	N	%
Food or groceries	245	1.5%	760	3.2%	156	0.8%	28	0.2%	157	0.4%	539	4.4%	1,886	1.5%
Services	61	0.4%	610	2.6%	298	1.6%	0	0.0%	409	1.0%	5	0.0%	1,383	1.1%
Package	4,023	25.1%	8,956	38.0%	6,195	33.5%	5,767	34.8%	18,504	44.4%	4,357	35.3%	47,803	37.2%
Multiple deliveries	3,455	21.6%	1,593	6.8%	1,090	5.9%	1,045	6.3%	3,848	9.2%	360	2.9%	11,392	8.9%
None of the above	8,239	51.4%	11,618	49.4%	10,780	58.2%	9,741	58.7%	18,729	45.0%	7,090	57.4%	66,198	51.5%
Total	16,023	100.0%	23,537	100.0%	18,519	100.0%	16,581	100.0%	41,647	100.0%	12,351	100.0%	128,662	100.0%

Figure 52 shows that delivery receipt varies by age, with working-age adults more likely to receive deliveries on a given day than younger or older respondents. This suggests that delivery activity is closely tied to lifestyle and ease of mobility.

FIGURE 52: PERSON-DAYS WITH DELIVERIES RECEIVED, BY RESPONDENT AGE

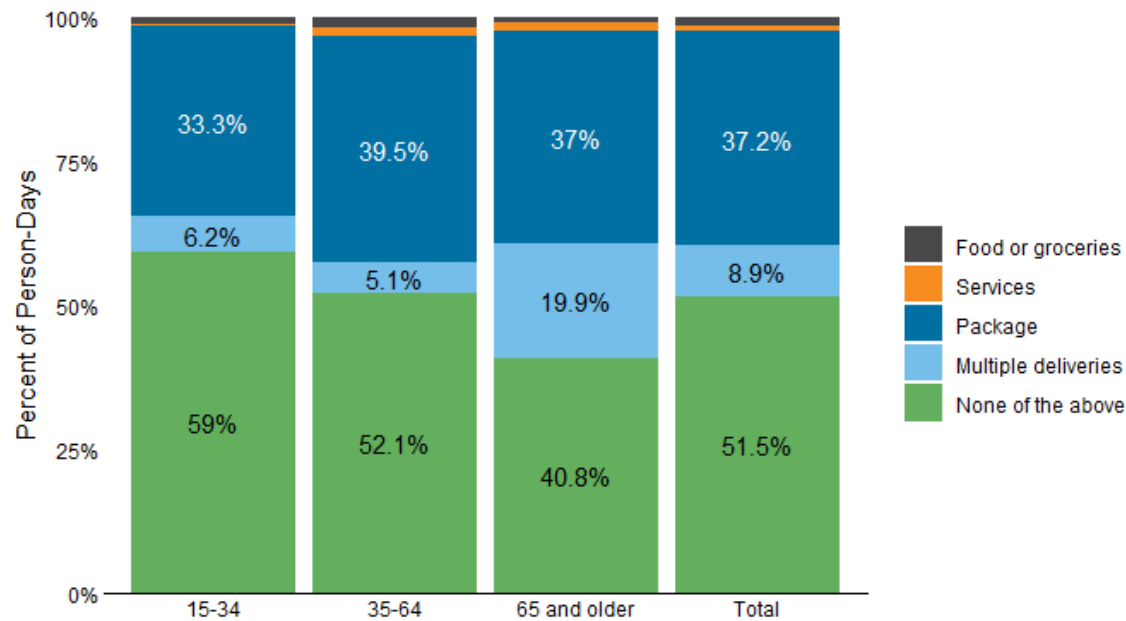


TABLE 9: PERSON-DAYS WITH DELIVERIES RECEIVED, BY RESPONDENT AGE

DELIVERY TYPE	15-34		35-64		65 AND OLDER		TOTAL	
	N	%	N	%	N	%	N	%
Food or groceries	492	1.3%	1,126	1.8%	268	0.9%	1,886	1.5%
Services	34	0.1%	929	1.5%	420	1.4%	1,383	1.1%
Package	12,200	33.3%	24,542	39.5%	11,062	37.0%	47,803	37.2%
Multiple deliveries	2,277	6.2%	3,182	5.1%	5,933	19.9%	11,392	8.9%
None of the above	21,620	59.0%	32,399	52.1%	12,180	40.8%	66,198	51.5%
Total	36,623	100.0%	62,178	100.0%	29,863	100.0%	128,662	100.0%

7.0 SUMMARY

The 2025 Whatcom Regional Travel Study provides a comprehensive picture of weekday travel behavior across Whatcom County, highlighting how travel patterns vary by geography, demographics, and trip characteristics. Overall, residents make an average of 3.67 trips per day, with relatively consistent trip-making across weekdays. Residents of the City of Bellingham make slightly more daily trips than those elsewhere in the county, reflecting higher activity density and shorter travel distances in the urban core.

Automobile travel remains the dominant mode of transportation in study the region, accounting for the majority of trips across the region, though mode choice varies meaningfully by location. Bellingham residents exhibit lower vehicle dependence and higher shares of walking, biking, and transit use compared to residents outside the city. These differences reflect the influence of land use mix and transportation options on travel behavior. Non-motorized trips are highly localized, with walk trips tightly clustered in dense urban areas and bike trips extending somewhat farther but still concentrated around Bellingham and nearby corridors.

Trip timing patterns show clear distinctions by both mode and purpose, reflecting how residents structure their daily activities. Overall travel peaks during the morning (7–10 AM) and late afternoon/early evening (3–6 PM), with the PM peak slightly stronger than the AM peak. Motorized modes such as auto and transit exhibit pronounced commute peaks, while walk and bike trips are more evenly distributed throughout the day, indicating greater flexibility and discretionary use. Trip purpose further shapes departure times. Work and school trips are highly concentrated in the morning peak, whereas shopping, errands, and other discretionary trips occur more evenly across midday and early evening hours. Social and recreational trips tend to start later in the day, reinforcing the contrast between mandatory and flexible travel.

The survey also highlights evolving work and commute patterns. While most employed residents continue to commute regularly, a substantial share teleworks either part-time or full-time, indicating that hybrid and remote work are now embedded in regional travel behavior.

Finally, the analysis of delivery activity underscores the growing role of goods movement in daily travel. Deliveries occur on nearly half of all person-days, with higher rates among larger households, higher-income households, and older adults. These patterns suggest that deliveries are a routine part of everyday life and an increasingly important consideration for curb management, neighborhood impacts, and freight planning.

Taken together, the results from the 2025 Whatcom Regional Travel Study illustrate a region where auto travel remains central but where urban areas support more diverse travel options, travel demand is increasingly flexible, and non-person travel (deliveries) plays a growing role.

These findings provide a strong empirical foundation for future transportation investments, land use decisions, and policy initiatives across Whatcom County.