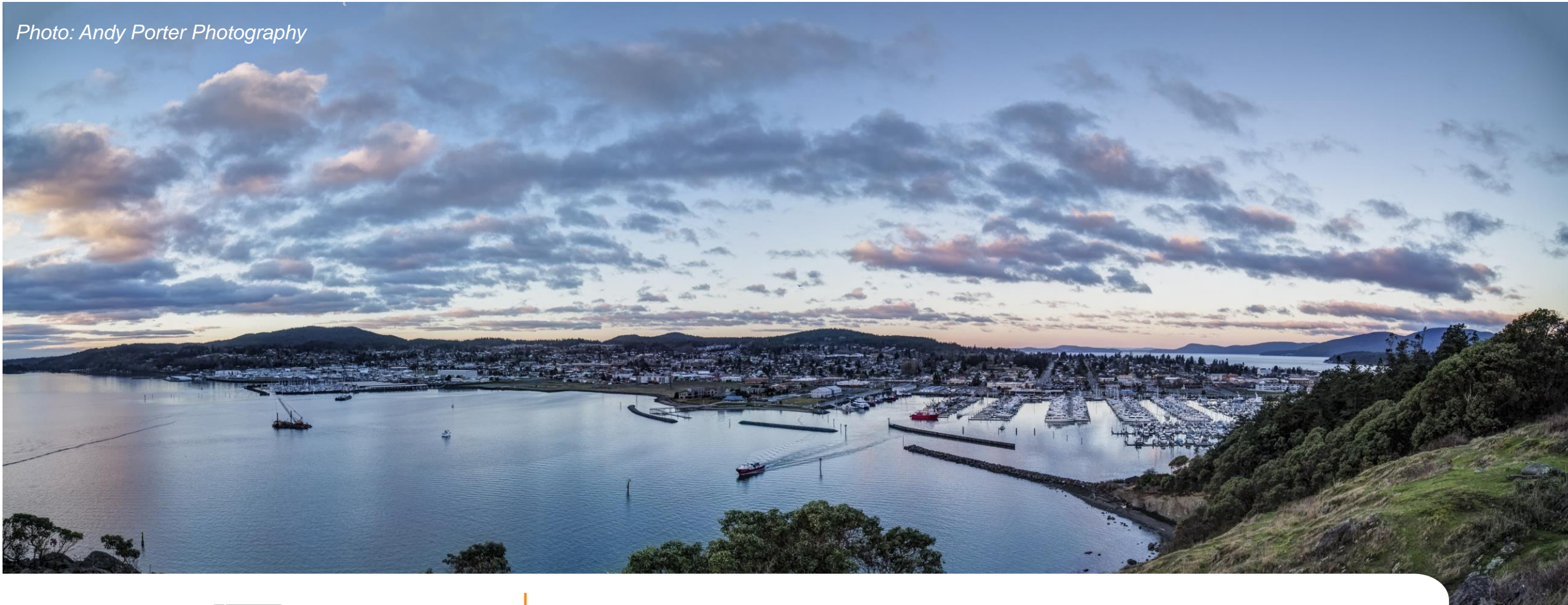


Photo: Andy Porter Photography



# 2021 Skagit Travel Survey & Passive Data Summary

**APRIL POLICY BOARD MEETING**  
APRIL 20, 2022

# Household Travel Survey & Passive Data Project Overview

- Skagit Council of Governments conducted a **Household Travel Survey (HTS)** to collect day-to-day travel data for residents in Skagit County in fall 2021 (October – December).
- The study collected data from **672 households** in the region to provide a **foundation for travel demand model updates**, as well as provide useful insights into current travel patterns and a benchmark for subsequent analysis.
- The study was conducted primarily **online and through a GPS-based smartphone app** (rMove™).
- To supplement the HTS data, the study team also **analyzed big passive data during the same time period**, including travel from non-residents in Skagit County and the surrounding region.

**Design**

*Jan – Apr 2020*

**Survey Data Collection**

*Oct – Dec 2021*

**Data Processing, Review, Weighting, Reporting**

*Jan – Apr 2022*





## **Project Overview & Methodology**

# 2021 Survey Overview

## SURVEY RECORDS



**672**  
**HOUSEHOLDS**  
*Unweighted Records*



**1,343**  
**PERSONS**  
*Unweighted Records*



**1,263**  
**VEHICLES**  
*Unweighted Records*



**4,130**  
**TRAVEL DAYS**  
*Unweighted Records*



**14,657**  
**TRIPS**  
*Unweighted Records*



**249,812**  
**LOCATIONS**  
*Unweighted Records*

- Designed to obtain high-quality household travel survey data to understand travel behavior in Skagit County and support travel demand modeling needs.
- Survey fielded from **September 28, 2021, through December 10, 2021.**
- **Smartphone participants completed a 7-day travel diary.**
- **Online and call center participants completed a 1-day travel diary.**
- Same questionnaire was used for smartphone, online, and call center participants.
- Survey was available in English and Spanish.



# Key Survey Design Elements

## Address Based Sampling

Households were invited to participate via mailed invitation. Invitees were selected randomly from the list of all households in Skagit County. Households that completed the survey received Visa gift cards (which were offered to encourage response and improve sample representation).

## Tailored Questionnaire

The 2021 HTS questionnaire was based on a template questionnaire that was collaboratively built by many agencies, including those in the state of Washington (e.g., WCOG, PSRC). This questionnaire was tailored to fit SCOG's primary planning and modeling needs.

## Online and GPS Smartphone Data Collection

Households had the option to participate online, by calling in, or by GPS smartphone app (rMove™). Online / call in households reported travel for one day. rMove households reported travel for up to seven consecutive days.



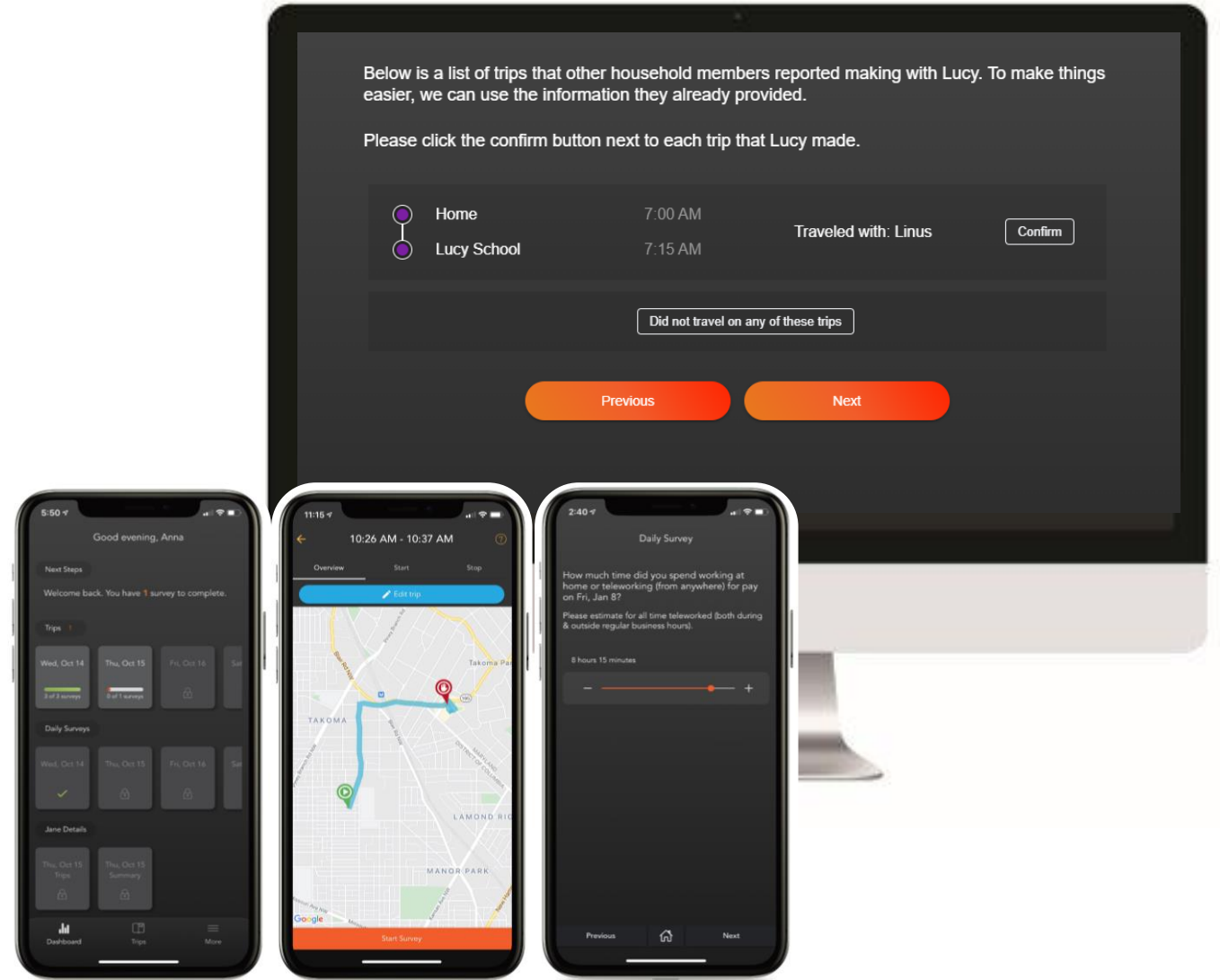




# Survey Instruments

Participants had the option to respond to the survey online or by phone for one day, or by GPS smartphone app (rMove™) for up to seven consecutive days.

The online and rMove instruments used the same questionnaires to ensure aligned data outputs. App participants' trip data was collected passively by the app whereas online participants reported each trip.



# Survey Data Preparation and Weighting

## Data Completion Criteria

Households in the final dataset met the following criteria:

- Reported a home location in Skagit County
- Responded to all required demographic and typical travel questions.
- All related adults reported complete travel information on at least one concurrent day

## Survey Data Cleaning

Following data collection, RSG conducted additional cleaning to correct rMove trip paths where necessary (e.g., merge or split trips that were captured incorrectly), derive key variables for analysis (e.g., number of workers in household), and code missing values where appropriate (e.g., distinguish between expected missing vs. incomplete).

## Survey Data Weighting

Once the survey data was cleaned, the project team expanded the data to meet key demographic and geographic targets for weighting. These targets included total households and persons, race / ethnicity, income, age, gender, and household vehicles (among other targets). The full weighting methodology is provided separately.





## 2021 Passive Data Overview

**RMERGE™**

To supplement the survey data (which was focused on travel among Skagit County residents), the project team also processed a sample of passively collected “big data” to better understand travel flows into and out of the county during the same time periods.

- Data is passively collected from smartphone apps using GPS, WiFi, Bluetooth and cell signals.
- Data includes timestamp and coordinates.
- rMerge filters the data for quality and turns coordinates into trips.
- The tool also infers home and work/habitual locations.
- Data is expanded to regional demographics.
- Lastly trip ends are aggregated to study geometries and summarized in origin-destination tables.





## Project Results

# The distribution of travel out of Skagit County was very similar in 2021 and 2019.



2021 DATA RECORDS



**4,316**  
**RESIDENT DEVICES**  
*Unweighted Records*



**16,740**  
**VISITOR DEVICES**  
*Unweighted Records*



**522,851**  
**CLUSTERS**  
*Unweighted Records*



**341,325**  
**TRIPS**  
*Unweighted Records*



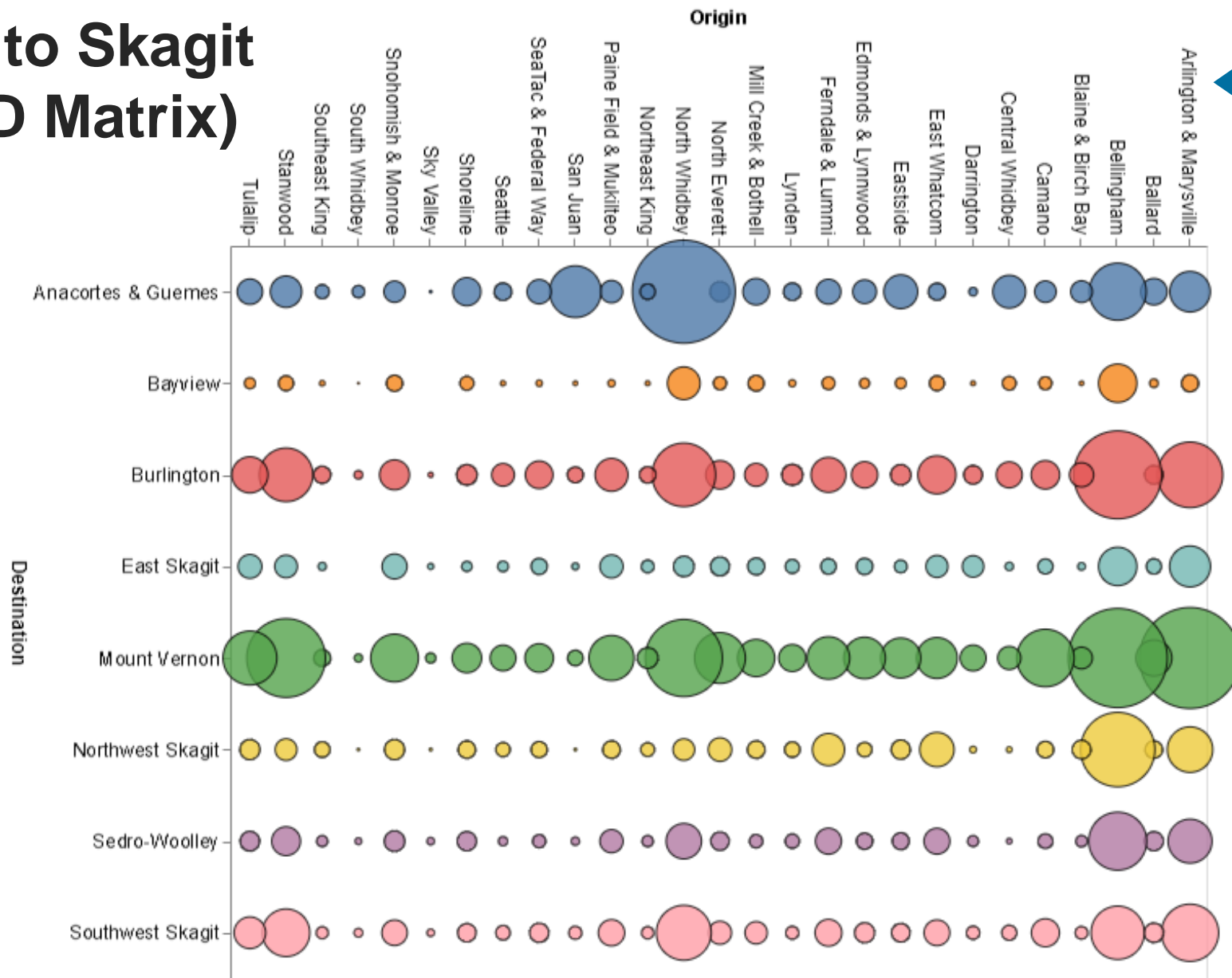
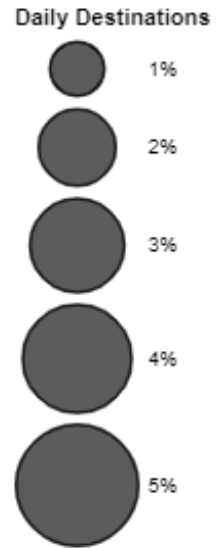
**91,802,689**  
**SIGHTINGS**  
*Unweighted Records*

ORIGIN COUNTY	DESTINATION COUNTY					
	Skagit	Whatcom	Island	Snohomish	King	Other
<b>Travel for Work (HBW &amp; NHBW)</b>						
Skagit (2019)	84.41%	4.90%	3.27%	6.91%	0.25%*	0.26%
Skagit (2021)	84.35%	4.17%	3.43%	6.23%	1.62%	0.20%
<b>All Travel</b>						
Skagit (2019)	83.87%	4.57%	2.89%	6.27%	1.96%	0.44%
Skagit (2021)	84.11%	4.22%	3.12%	6.34%	1.85%	0.36%



\*The 2019 passive data trips to King County are slightly underrepresented in this table due to differences in data processing

# 2021 Trips to Skagit County (OD Matrix)



# Household Travel Survey Met Response Targets

SURVEY

Sampling Segment	Invited Households	Expected Responses	Sampled Households	Response Rate	Sample Rate
General	16,360	419	392	2.5%	1.3%
Hard-to-Reach	13,640	231	280	2.1%	1.6%
<b>Total</b>	<b>30,000</b>	<b>650</b>	<b>672</b>	<b>2.3%</b>	<b>1.4%</b>

- The survey used oversampling in the “hard-to-reach” segment to ensure sufficient response from low-income and minority groups.
- The final sample rate of 1.4% is within the typical range for regions of this size, which is generally 1.0 – 1.5%.
- This sample rate supports the statistical validity of the data for analyses with sufficient sample sizes.
- All figures shown here use **weighted** data, which is expanded to the County’s demographic composition.



*\*Note: These figures were based on an analysis of the 2014-2018 ACS 5-year estimates (the most recent available at the time of sampling).*



# Trip distributions are similar across survey and passive datasets.



ORIGIN COUNTY	DESTINATION COUNTY					
	Skagit	Whatcom	Island	Snohomish	King	Other
<b>Travel for Work (HBW &amp; NHBW)</b>						
Skagit rMerge – Residents & Visitors (2019)	84.41%	4.90%	3.27%	6.91%	0.25%*	0.26%
Skagit rMerge – Residents & Visitors (2021)	84.35%	4.17%	3.43%	6.23%	1.62%	0.20%
<b>Skagit Survey – Residents (2021)</b>	<b>85.80%</b>	<b>4.16%</b>	<b>2.58%</b>	<b>5.79%</b>	<b>1.50%</b>	<b>0.17%</b>
<b>All Travel</b>						
Skagit rMerge – Residents & Visitors (2019)	83.87%	4.57%	2.89%	6.27%	1.96%	0.44%
Skagit rMerge – Residents & Visitors (2021)	84.11%	4.22%	3.12%	6.34%	1.85%	0.36%
<b>Skagit Survey – Residents (2021)</b>	<b>93.33%</b>	<b>2.26%</b>	<b>0.78%</b>	<b>1.95%</b>	<b>1.50%</b>	<b>0.17%</b>



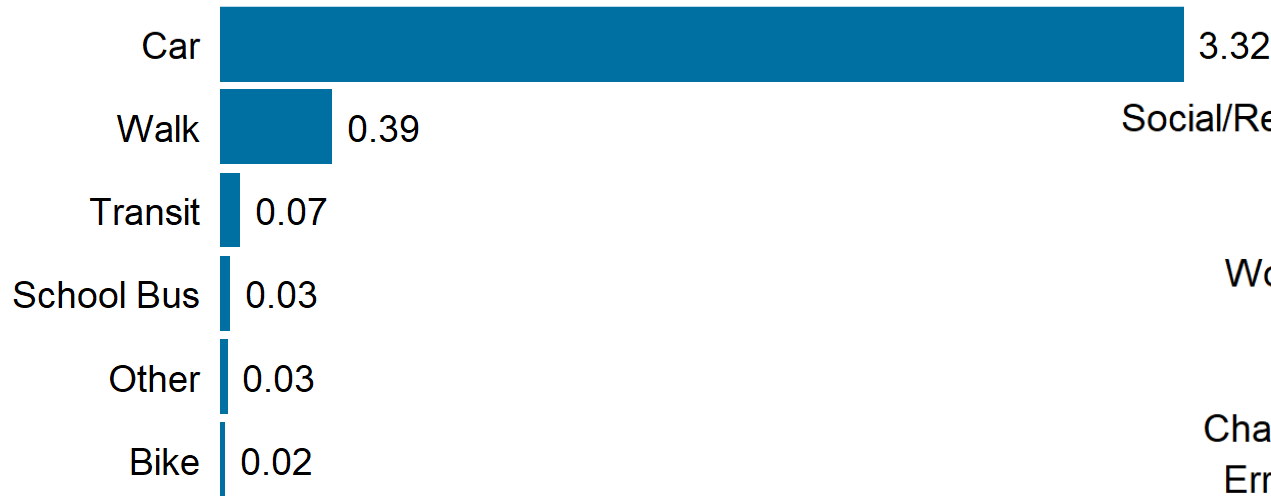
\*The 2019 passive data trips to King County are slightly underrepresented in this table due to differences in data processing

The survey captured baseline travel by mode and purpose (as well as demographics and other travel characteristic).



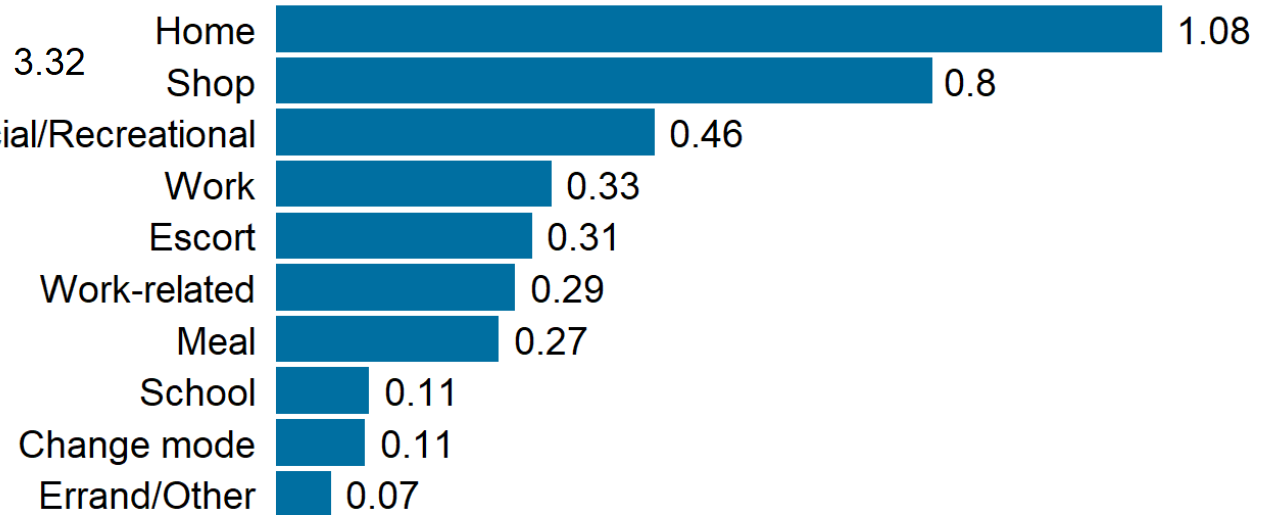
### TRIP RATE BY TRIP MODE

UNWEIGHTED N = 12,392, WEIGHTED N = 405,897.2



### TRIP RATE BY TRIP PURPOSE

UNWEIGHTED N = 12,392, WEIGHTED N = 405,897.2



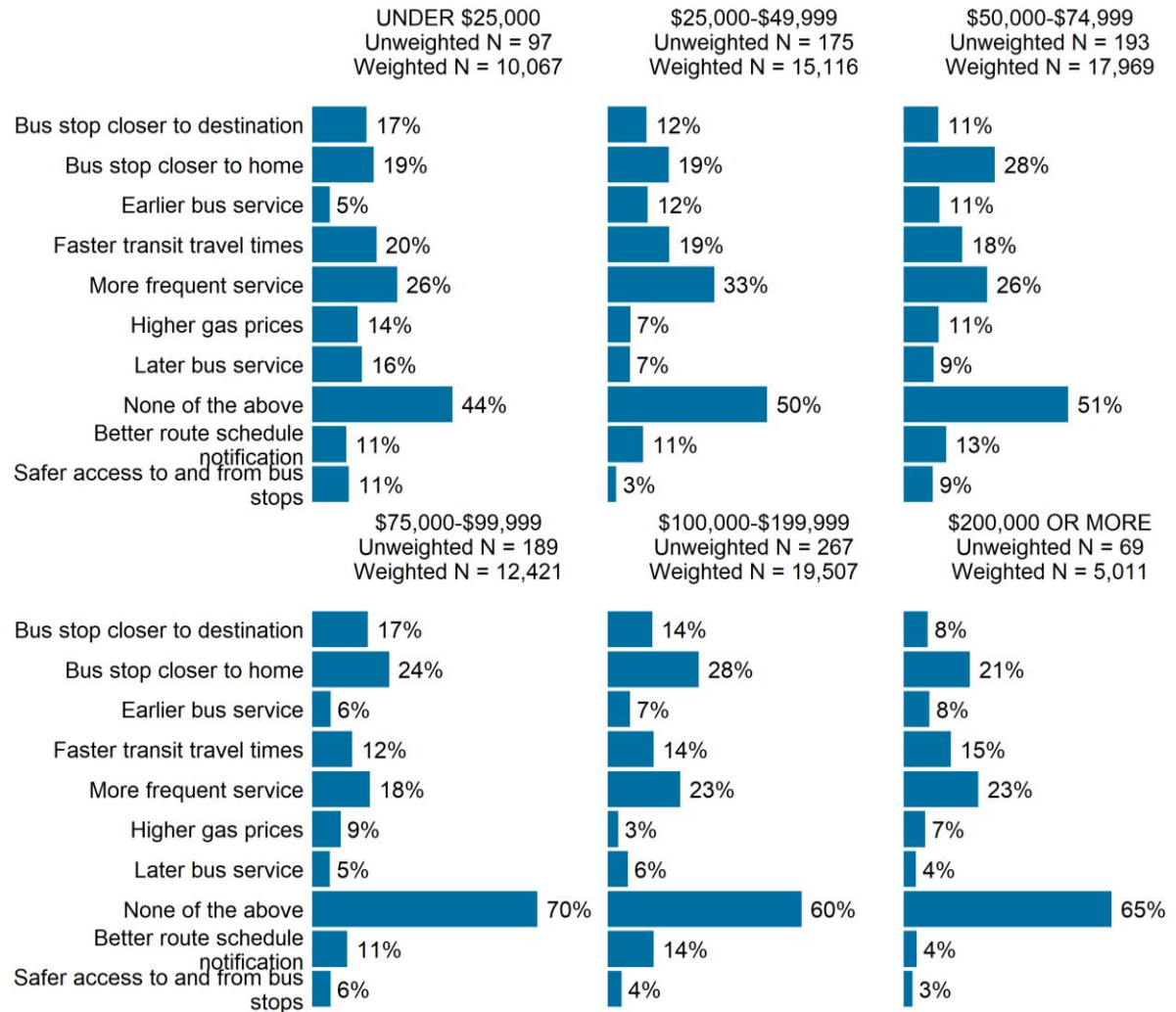
# Lower income groups are more likely to increase their transit usage (with the right factors in place).



The survey asked respondents who use transit fewer than five days per week (including never) which factors – if any – would encourage them to increase their use of Skagit Transit fixed route services.

Lower income levels were more likely to report factors that would encourage them to increase transit usage.

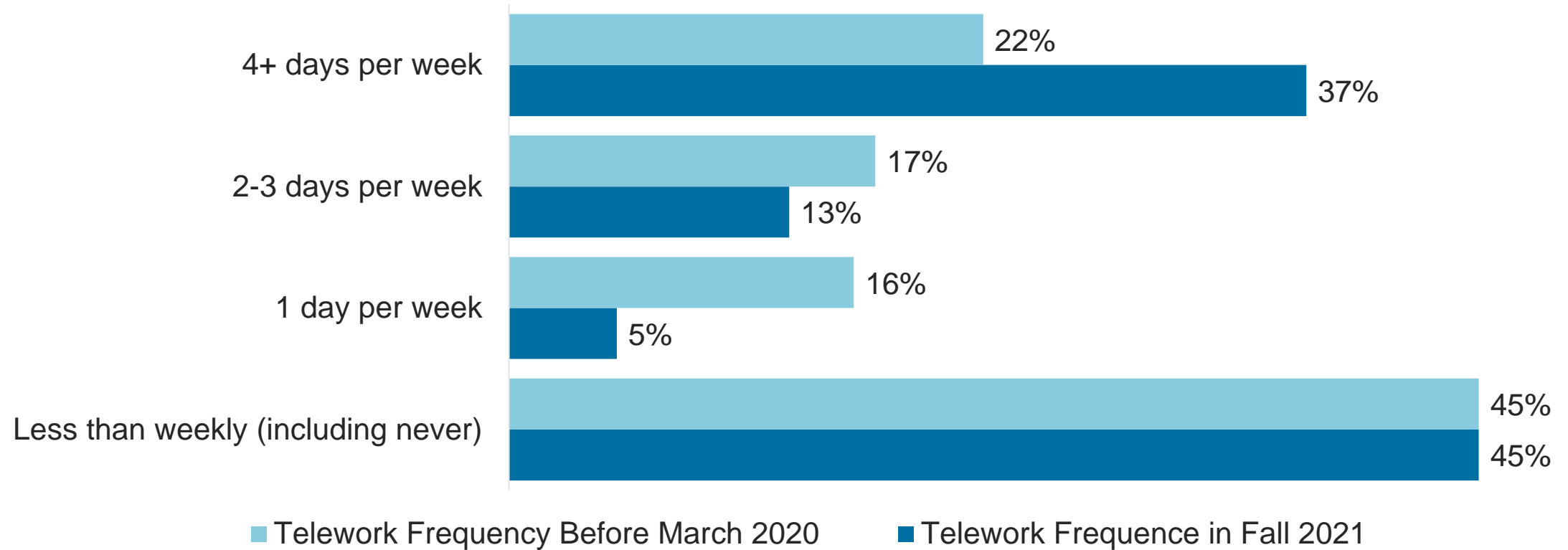
More frequent service (25%), bus stops closer to home (24%), and faster transit times (16%) were the top factors that would influence transit usage overall.



# The same share of people who teleworked before telework now (but more often than before).

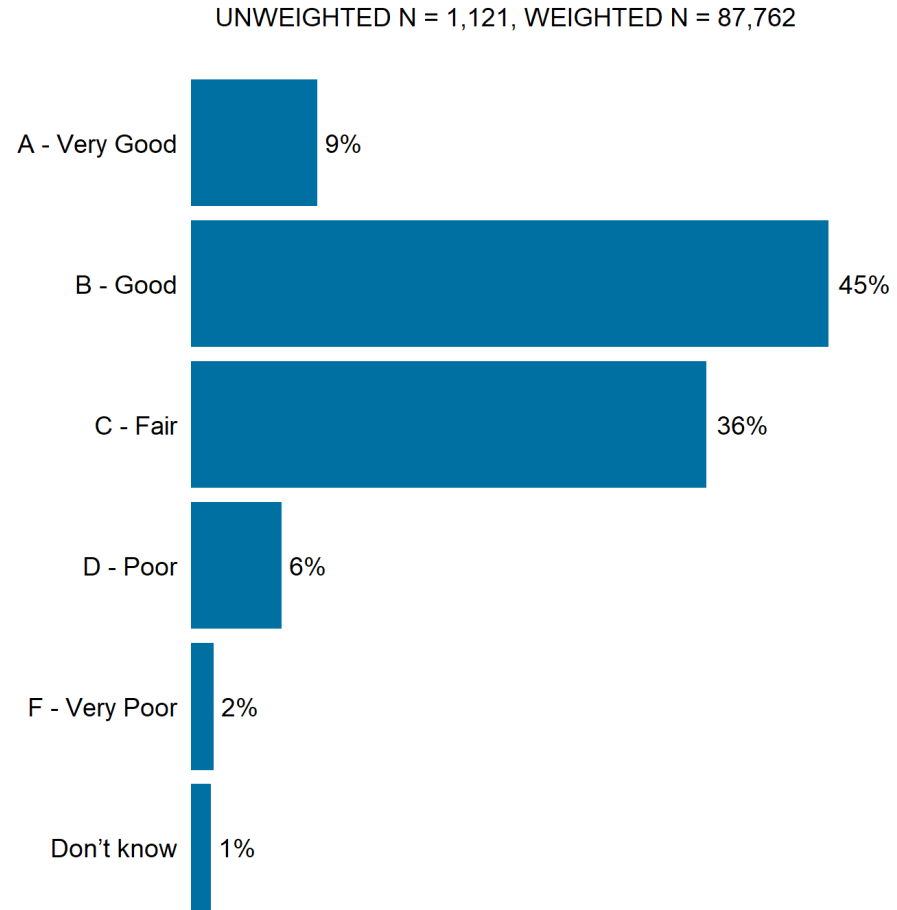


## Telework Frequency (Among Employed Adults)



# 54% of residents rate public roadways in Skagit County as “Good” or “Very Good.”

Q: What grade would you give the condition of public roadways within Skagit County?





# Residents prioritize maintenance and preservation over service expansion or safety and operations



Q: How would you spend \$100 in Skagit County in the following categories?

CATEGORY	WEIGHTED AVERAGE AMOUNT
Service Expansion	\$29.51
Maintenance and Preservation	\$40.97
Safety and Operations	\$29.52



# Residents prioritize roadways and walking highly in terms of spending on transportation projects



**Q:** As we prioritize spending on transportation projects, how should we rank the following areas? (1 = top priority, 7 = lowest priority)

CATEGORY	WEIGHTED AVERAGE RANK
Roadways	2.5
Walking	3.8
Bus Service	3.8
Multi-use Trail	4.1
Bicycling	4.1
Ferry Service	4.7
Carpooling	5.0





## Contacts

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