Way To Go! Missoula

DOWNTOWN MISSOULA COMMUTE SURVEY - 2024

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1. Introduction

Cities across the United States are working towards more livable communities, but environmentally unfriendly transportation modes remain a significant barrier to improving the quality of life. Understanding how residents commute to work is essential for developing effective transportation policies and commuter support programs. Therefore, Missoula in Motion, a local organization promoting sustainable modes of transportation, wanted to explore commuting patterns among employees working in the downtown region of Missoula, MT.

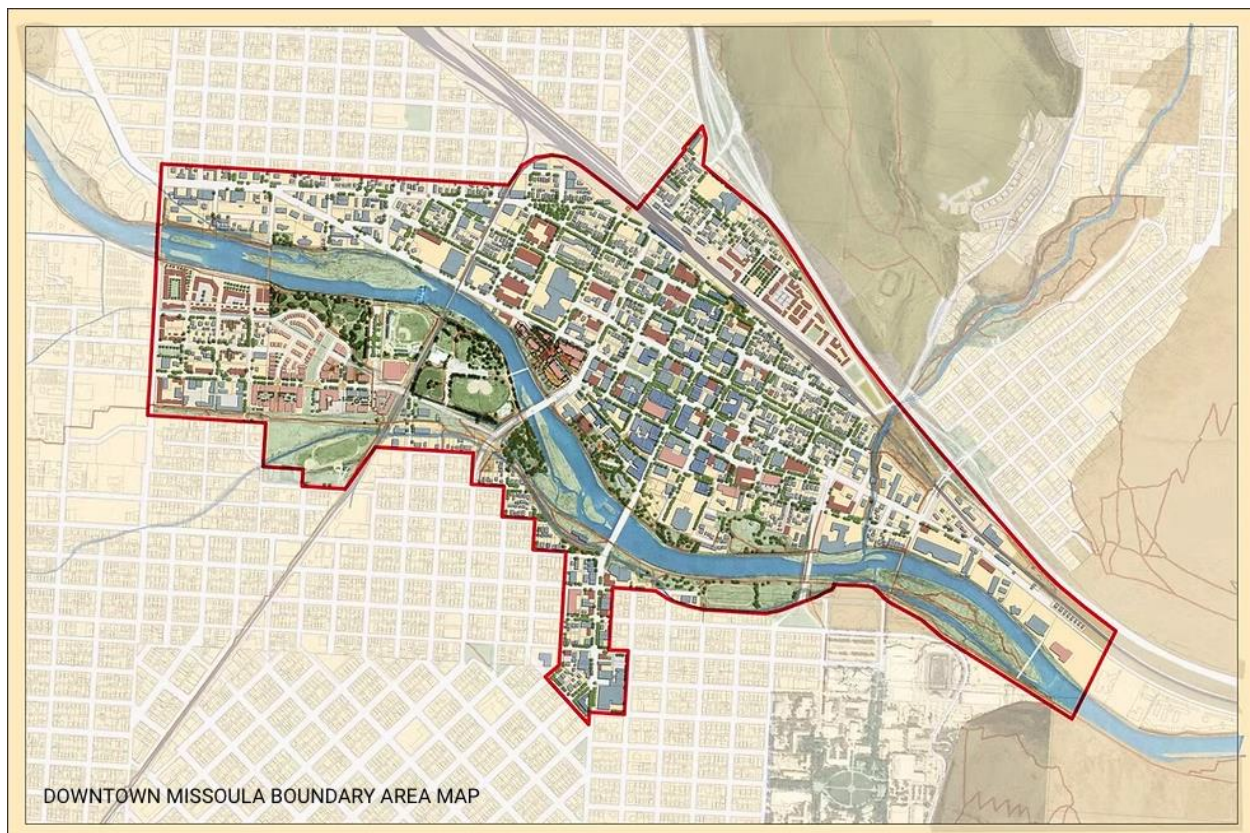
DOWNTOWN MISSOULA BOUNDARY AREA MAP

Figure 1.) Map of Downtown Missoula

They surveyed nearly 900 employees across a range of workplaces in downtown Missoula to identify patterns in commuter behavior, highlight demographic differences, explore

perceived barriers and motivations to sustainable commuting, and evaluate the feasibility of a predictive model to determine interest in a commute-focused mobile app.

The analysis focused on three core research questions:

1. How do commute priorities (e.g., time, cost, flexibility) vary across demographic groups?

2. What are the incentives that encourage a shift toward more sustainable commuting options?

3. Could I build a predictive model to estimate whether a respondent is interested in using an app to improve their commute?

To answer these questions, I combine descriptive statistics, exploratory data analysis, and a basic machine learning approach, drawing on the rich responses collected through the survey.

2. Methodology

2.1 Survey Design and Collection

The survey consisted of 20 questions spanning commute behavior, perceived barriers, employer policies, demographic information, and open-ended responses. It was distributed electronically via participating employers and community organizations in downtown Missoula.

Most questions were multiple-choice or Likert-scale-based. Key variables of interest included:

- Primary commute mode

- Remote work frequency and policy

- Commute priority rankings (time, cost, flexibility, etc.)

- Perceived value of various employer benefits

- Interest in using a sustainable commute app

2.2 Data Cleaning and Processing

Raw responses were cleaned using Python and Pandas, and geocoding was completed to enable spatial commute mapping (see companion mapping report). Responses were

filtered to remove incomplete entries, yielding a final dataset of approximately 870 valid responses.

Key preprocessing steps included:

- Recoding Likert scale responses into numeric values
- Handling missing values through listwise deletion (for model training) or imputation (for descriptive statistics)
- Collapsing text responses into categorical variables when appropriate

2.3 Tools Used

All analyses were conducted in Python, with key packages including:

- Pandas and NumPy for data wrangling and modeling
- Text-wrap and re for parsing open-text responses
- OpenStreetMap, OpenAI API and Qualtrics

3. Descriptive Analysis

This section presents an overview of commuting behavior and demographics based on responses from Missoula-based employees working downtown. It includes an analysis of commute modes, remote work frequency, seasonal variability, and key demographic indicators such as age, income, and household size.

3.1 Demographic Snapshot

Three demographic questions regarding age, income, and race were asked in the survey. The results are as follows:

Figure 2.) Age range of respondents
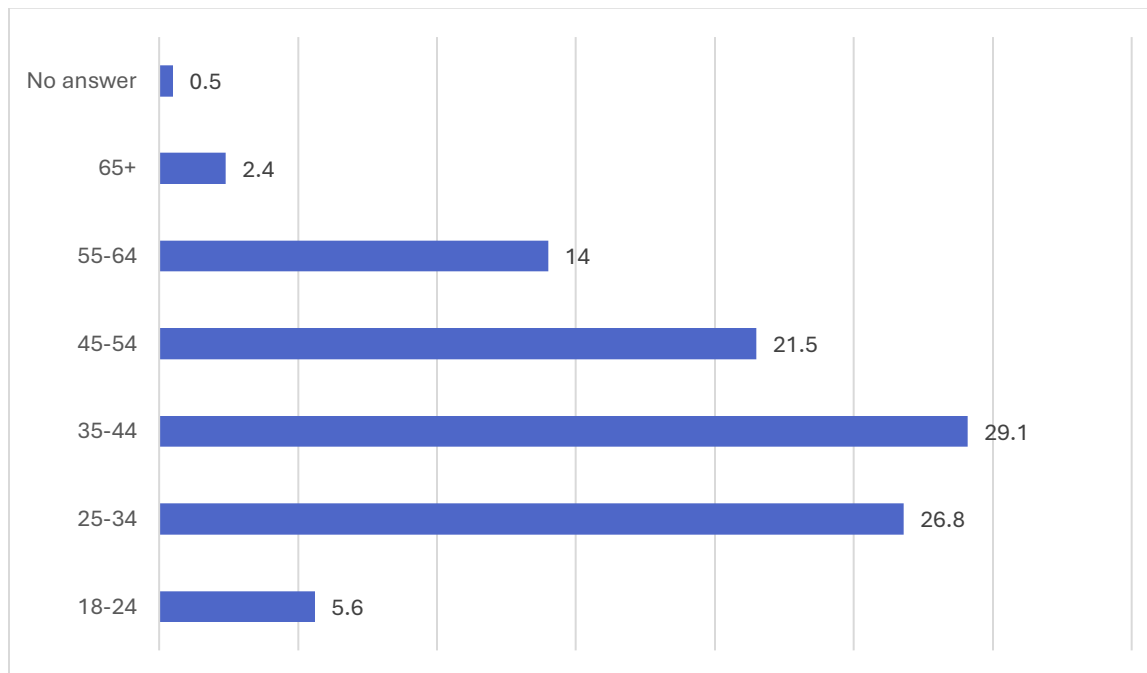
Almost a third of respondents (29.1%) fell within the 35–44 age range, followed by the 25-34 age range (26.8%) and the 45-54 years age range (21.5%). The oldest group, 55 to 64 years old, contributed to 14% of the surveyed population, and the youngest group, 18 to 24 years old, contributed to 5.6%. People over 65 were 2.4% of the surveyed population and 0.5% preferred not to answer.
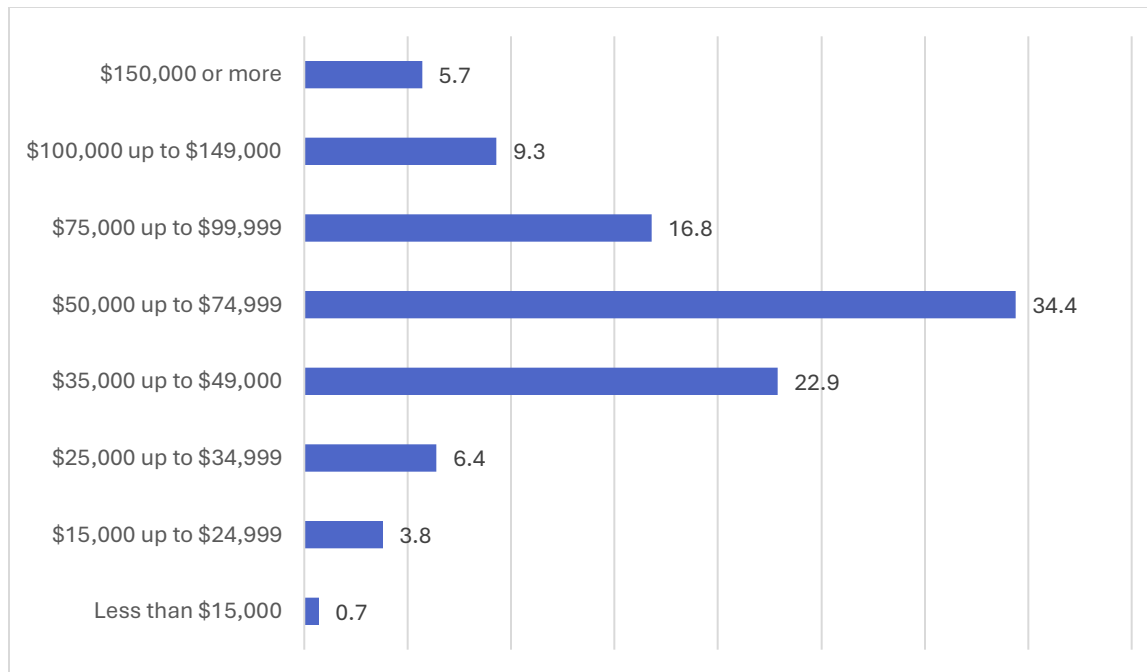
Figure 3.) Income range of respondents

More than a third of the population (34.4%) that answered this question (N=707) fell in the $50,000 to $74,999 income group. The second largest group (22.9%) was the $35,000 to $49,000 income group, followed by the $75,000 to $99,999 income group (16.8%). 9.3% of the survey population makes about $100,000 to $149,000, and 5.7% make $150,000 or more. On the other end of the spectrum, we have $25,000 to $ 34,999 (6.4%) followed by $15,000 to $24,999 (3.8%), and finally, the less than $15,000 income group makes 0.7% of our survey population.
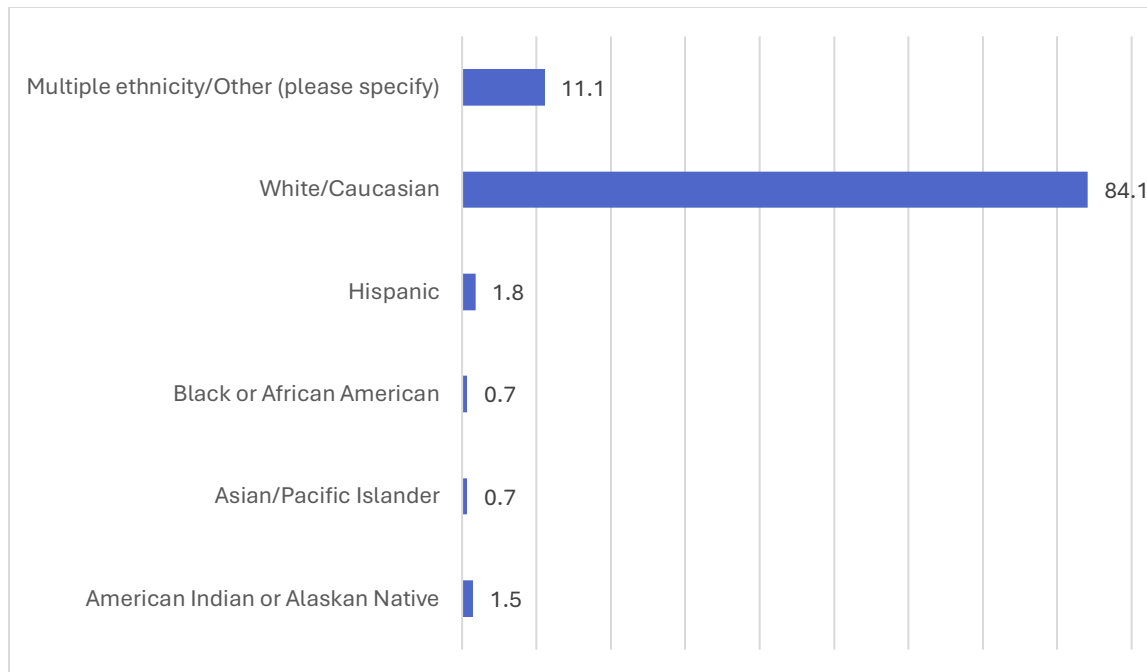
Figure 4.) Race of respondents

When it comes to the question of race, 84.1% of our respondents (N= 719) were White/Caucasian. The second largest group (11.1%) was people from multiple ethnic groups. The third largest group was Hispanic, followed by American Indian or Alaskan Native. The last place was a tie (0.7%) between Asian/Pacific Islander and Black or African American racial/ethnic groups.

3.2 Commute Mode Overview
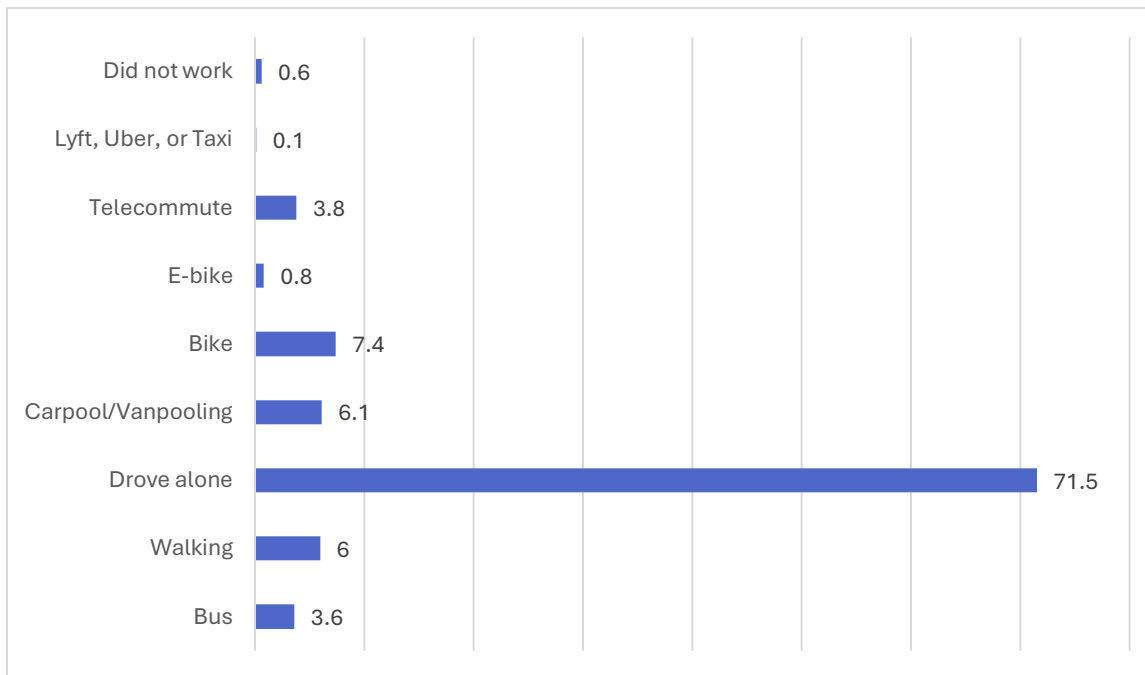
Figure 5.) Most used commute mode

The most common primary mode of commuting reported was driving alone, with over 71.1% of respondents selecting it as their usual method. This was followed by biking, carpooling/vanpooling, walking, telecommuting, and taking the bus. A small portion of respondents reported using other forms of commuting, such as e-bikes, Uber/Lyft, or taxis.

3.3 Remote Work Patterns
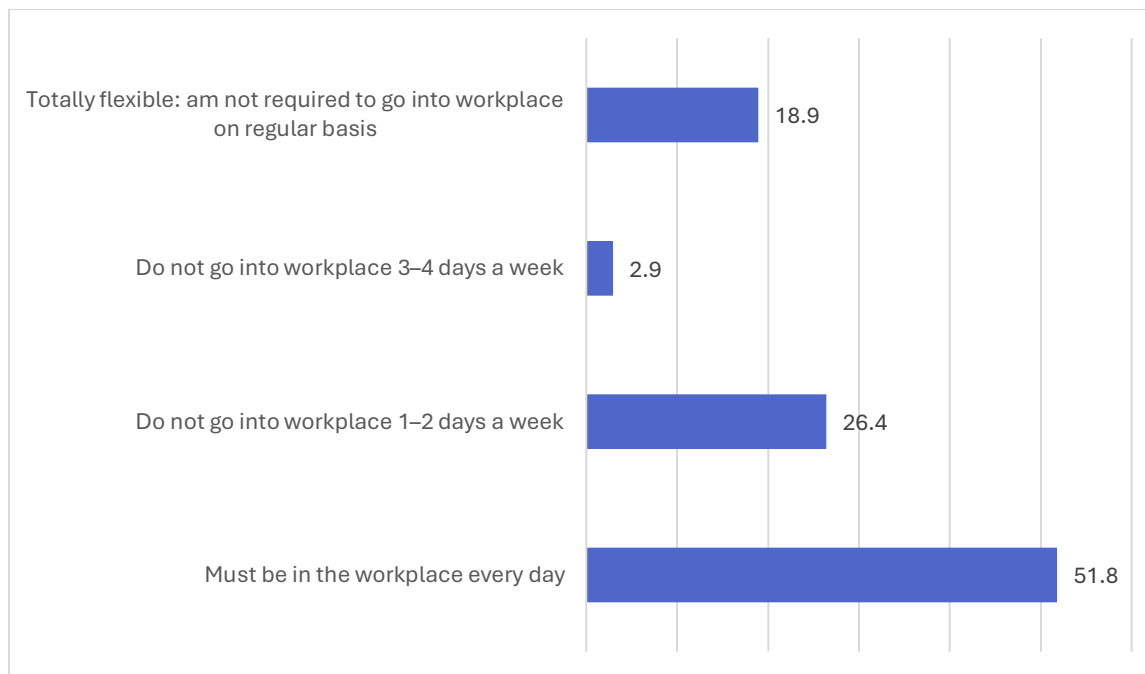
Figure 6.) Workplace policy

Roughly one-third of respondents reported working remotely at least one day per week. Of those, most had some formal remote work policy through their employer.
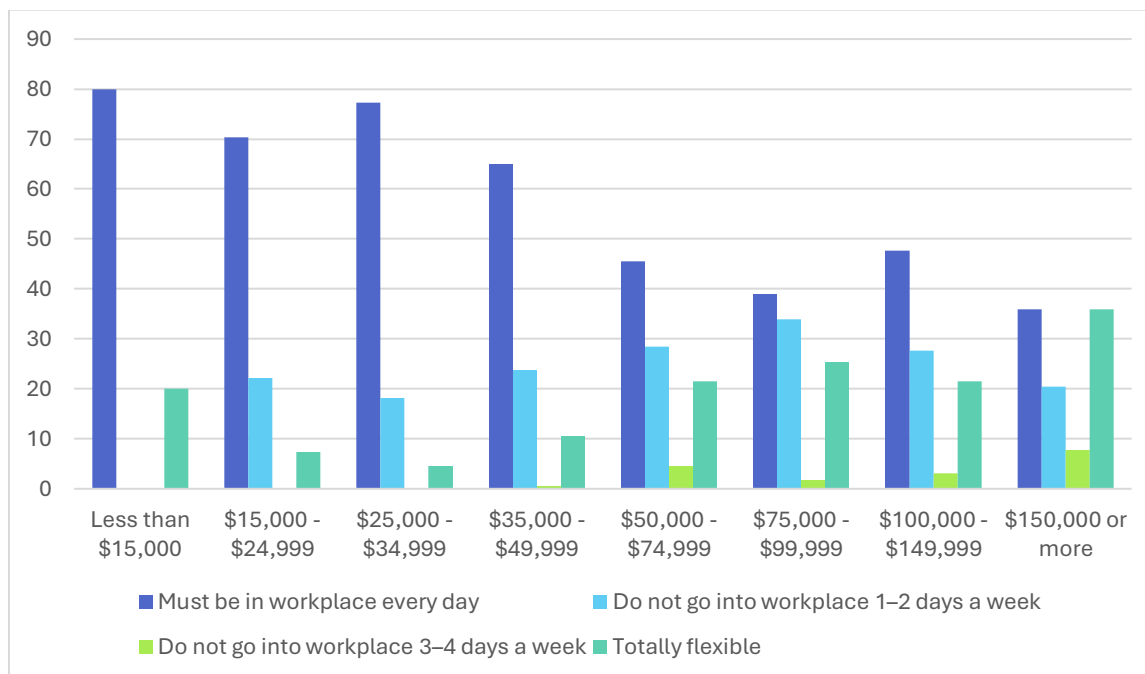
Figure 7.) Income vs Work policy

Remote work frequency was notably higher among higher-income individuals. For example, 39.4% of people who said they work remotely make about $50,000 to $74,999 in annual income, and 35.9% of people who make $150,000 or more said they work remotely.

Table 1.) Chi-Square test results

Chi-Square Tests

	Value	df	Asymptotic Significance (2-sided)
Pearson Chi-Square	61.573[a]	21	<.001
Likelihood Ratio	65.960	21	<.001
Linear-by-Linear Association	34.645	1	<.001
N of Valid Cases	700		

a. 10 cells (31.3%) have expected count less than 5. The minimum expected count is .14.

I performed a chi-square test (a statistical method used to determine whether there's a relationship between two categorical variables) to explore the relationship between income level and work agreement to uncover how different groups think about commuting. The Chi-squared statistic measures how far off the observed data is from what we'd expect if there were no relationship, and the p-value (Asymptotic Significance of < .001) tells us the probability that this pattern happened by chance.

Then I wanted to explore the relationship between income and the transportation mode choice made, and the remote work policy.
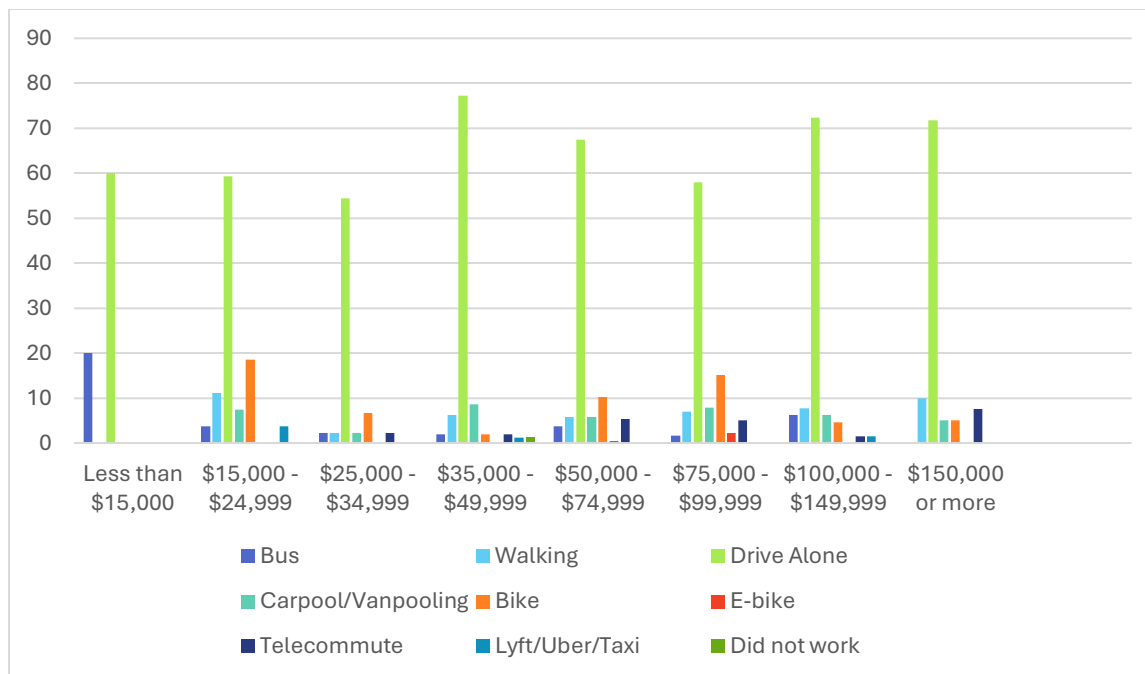
Figure 8.) Income vs preferred transport mode

Higher-income respondents were more likely to bike and work remotely, while lower-income respondents often relied on driving alone or taking the bus. For example, the largest group (20%) that took the bus to work last week were people who make less than $15,000 in annual gross income. Similarly, 80% of the people who make less than $15,000 must be in the workplace every day. On the other hand, the largest group of people who have the privilege of having flexible work schedules and are not required to go into the office every day (35.9%) are people who make $150,000 or more. There is one similarity that was found between these two groups at the other ends of the income spectrum. That is, 11.1% of the people who walk to work make $15,000 to $24,999 in annual income, while 10% of the people who walk make $150,000 or more in annual income.

3.4 Seasonal Variability

To learn about people's seasonal change in transportation modes, the survey posted the question, "Does the mode that you use to travel to work change seasonally? If so, explain below. (i.e., I bike to work during the warmer months and drive alone once it starts to snow)". And so, 746 survey respondents had explained it in a sentence or two. Many respondents reported that their commute mode changes with the seasons. Many indicated a preference for biking or walking in the spring, summer, and early fall, shifting to driving or bussing in winter due to snow, darkness, and safety concerns. Some comments noted that maintained bike paths significantly increased willingness to ride year-round.

Thanks to recent innovations made in AI, extracting the essence of these 745 open-ended text responses about the change in their seasonal transportation modes was possible in a few minutes. This column alone was extracted from the survey data and fed to OpenAI API to summarize the answers in this column into 12 categories. The categories were obtained based on reading a few of the responses and in collaboration with GPT 4o and the prompt was designed based on inspiration from John Chandler's work. The prompt given to GPT was as follows.

"You are an expert in survey response analysis. You will categorize survey responses about seasonal commuting behavior into standardized labels. The possible labels are: Always Drive, Seasonal Biker, Year-Round Biker, Public Transit User, Carpooler, Year-Round Walker, Seasonal Walker, Multimodal – Seasonal, Multimodal – Year-Round, Telecommuter/Remote Worker, No Seasonal Change, and Other.

Classification Instructions:

1. Identify the main commuting behavior described.

2. Choose the most appropriate label, even if multiple modes are mentioned.

- If multiple modes are clearly used **based on season/weather**, use "Multimodal – Seasonal".

- If multiple modes are used **regularly year-round**, use "Multimodal – Year-Round".

- If the person works primarily or always from home, use "Telecommuter/Remote Worker".

- If the response is simply "No", "no change", or implies consistent behavior, use "No Seasonal Change".

3. If the response is unclear or involves rare/unusual commuting types (e.g., electric unicycle), use "Other".

4. Return only the label, nothing else."

A few examples of what the raw response was and what the categorization was are given in the appendix.
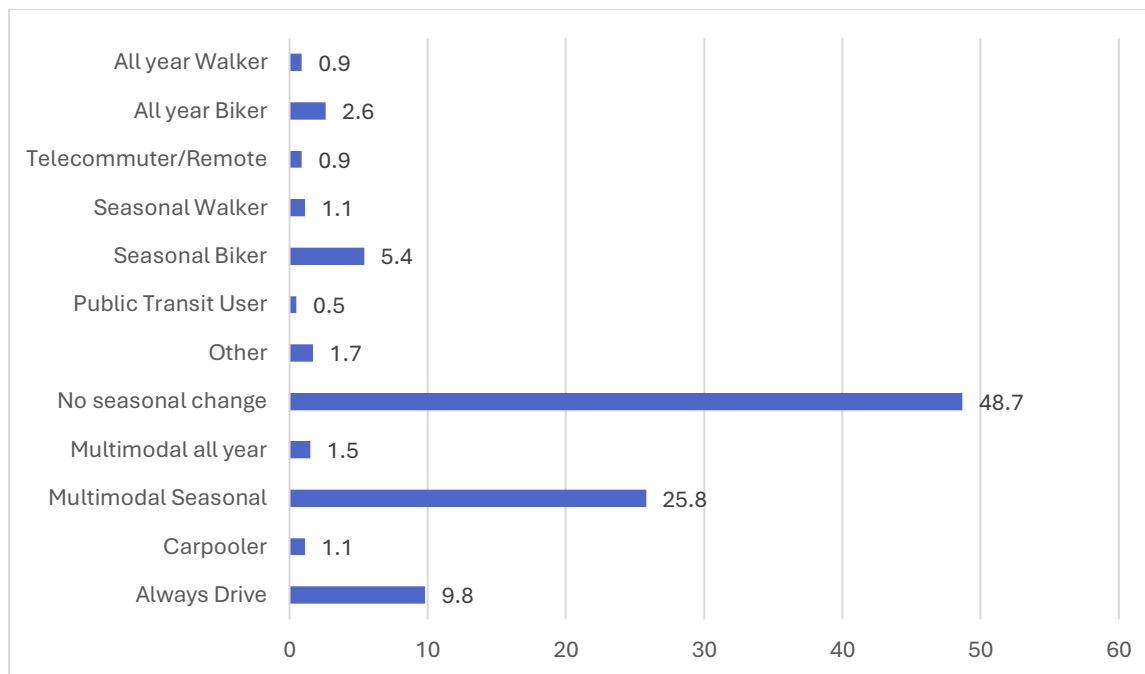
Figure 9.) Does the transport mode you use to travel to work change seasonally?

Almost half the respondents (48.7%) said they don't change their transportation modes seasonally, 9.8% said they always drive regardless of the season, and 1.1% said they carpool. In the multimodal category, people use a mix of all transportation options. They are further classified into Seasonal Multimodal (25.8%) and year-round multimodal (1.5%) groups. A few of the responses that were categorized as multimodal are shown below.

I really just mostly bike. Is it's too snowy I'll just walk.
Drive in winter— can bike/walk/carpool warmer months
Walk to work during warmer weather. Drive alone when cold and rainy. Will walk in snow if not bitter cold.
I bike until it snows, and then I walk.
I bike in the summer and take the bus in the winter
mostly bike, during particularly bad winter weather I ride the bus

2.6% of respondents said they bike all year round regardless of the season, and 5.4% said they bike in warmer seasons. 1.1% of respondents said they walk in warmer months, and 0.9% walk all year round. Another 0.9% said they telecommute or are a remote worker, and 0.5% said they use public transit. Finally, the OpenAI API classified 13 responses into the inconclusive group, which are shown below.

I try to ride my Electric Unicycle (EUC) most often. I'll drive alone in wet, snowy, or icy conditions. Additionally, if I have cargo bigger than a backpack, I have to drive.
Yes
Yes. Occasionally ride a motorcycle during the summer.
Sometimes
Sometimes but not often
not usually but will now that I live in Missoula. Lived in Stevensville prior to 1/1/24
na
variable
Not currently however, when I lived closer to my workplace and had a safer commute, I biked to work during warmer months.
Not since I moved onto Reserve.
not so much. My activities after work dictate my riding schedule.
Not recently due to child/daycare travel needs
yes

4. Exploratory Analysis

This section explores the relationships between commuter priorities and demographic characteristics and summarizes key incentives that would motivate respondents to adopt more sustainable modes of transportation.

4.1 Commute Priorities by Demographics

Respondents were asked to rank various factors influencing their commute decisions: travel time, cost, flexibility, commute stress & enjoyment, reliability, environmental & community impact, and others. Only 680 respondents answered this question. Travel time was ranked as the No.1 factor by 53.3% of the respondents, followed by flexibility (12.9%) at the No.2 spot. The third highest-ranked factor was commuting stress/enjoyment (10.2%), followed by reliability (8.8%), which was followed by other (5.5%) and cost (4.8%). The lowest-ranked factor, unfortunately, was Environmental and community impact (4.5%).

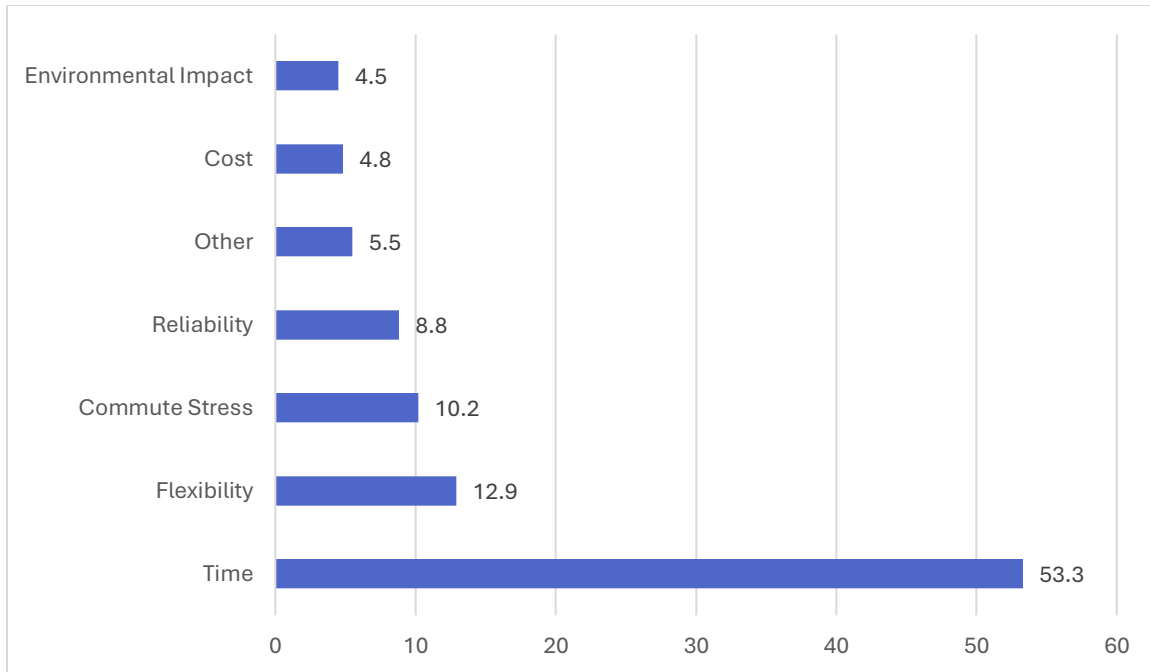*Figure 10.) Please rank items that you consider when deciding what mode to use to commute to work*
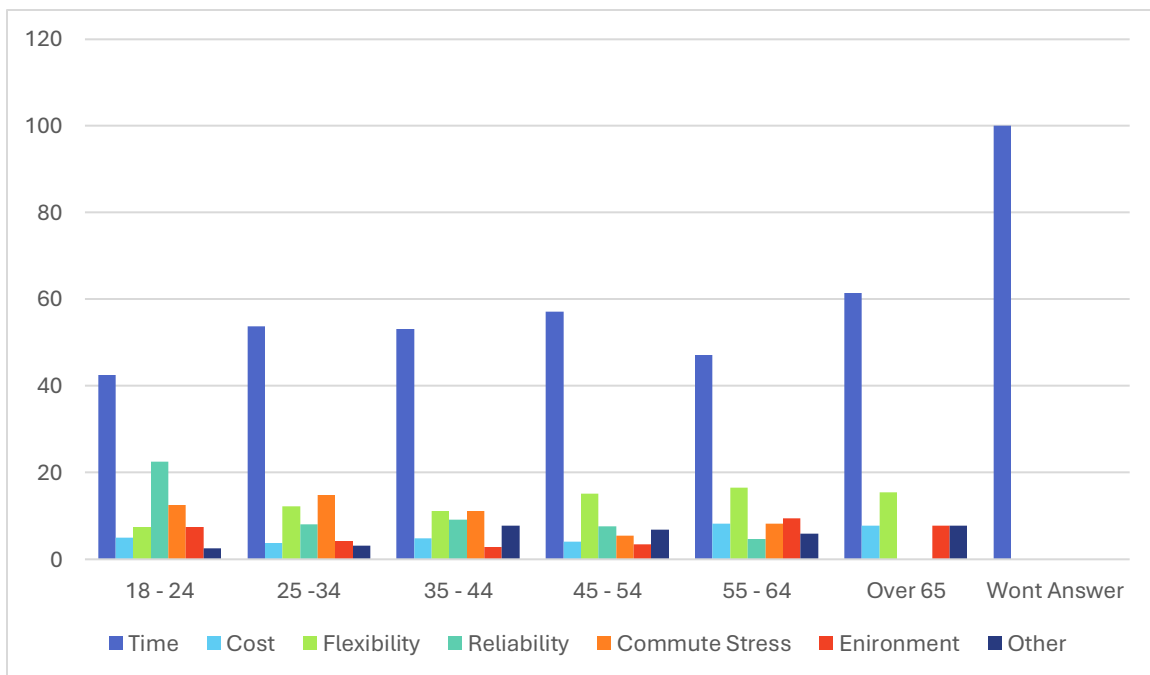
Figure 11.) Age vs deciding factor for transport mode

All age groups ranked time as the No.1 factor. When we look at the second rank that each age group picked, the 18 - 24 and 25 - 34 age groups picked commute stress while the rest of the age groups picked flexibility as the second most important factor. The largest age

group to rank environmental impact as the third most important factor were the 55 – 64-year-olds (9.4%), followed by over 65 years of age (7.7%) and 18 – 24-year-olds (7.5%).

The smallest group to rank time at the first spot were the 18 – 24 years group, and the largest group to rank time at the first spot were people over 65 years of age.
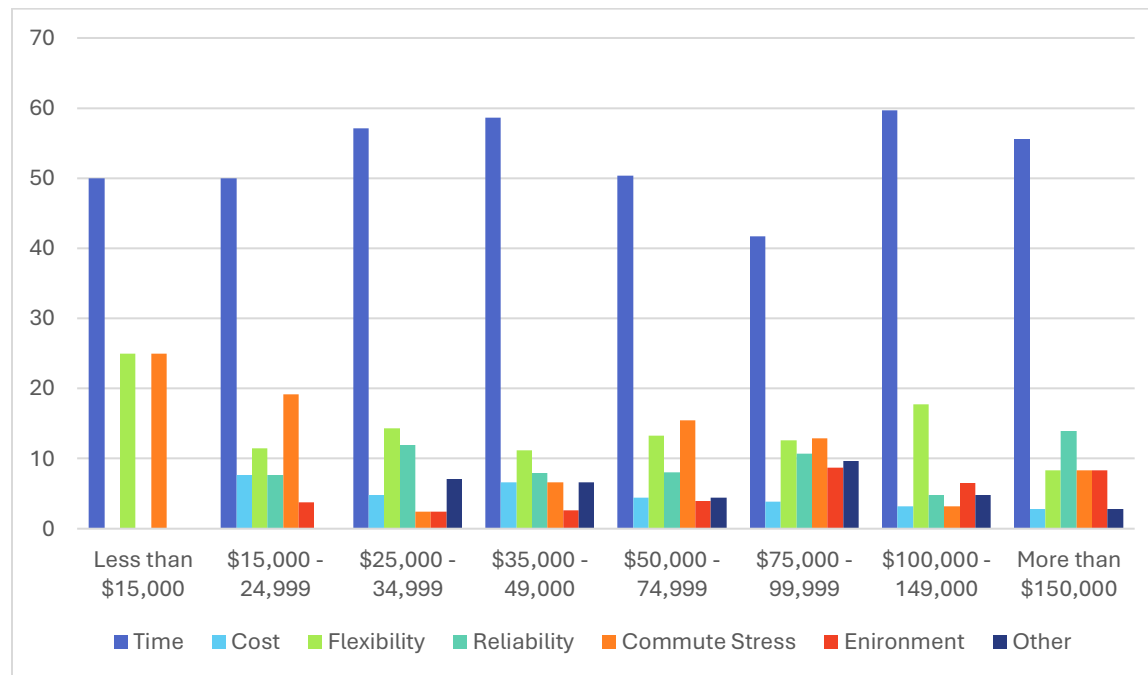
Figure 12.) Income vs deciding factor for transport mode

All income groups also ranked time as the No.1 factor. The group that valued time the most were those earning $100,000 – $149,999 (59.7%), followed closely by $35,000 – $49,000 (58.6%) and $25,000 – $34,999 (57.1%). The income group that valued time the least were those earning $75,000 – $99,999 (41.7%). When it comes to the second most important factor, the patterns vary by income. The < $15,000 group had a tie between commute stress (25%) and flexibility (25%). The $15,000 – $24,999 and $50,000 – $74,999 groups ranked commute stress as their second most important factor. Most other groups, including $100,000 – $149,999, $25,000 – $34,999, and $35,000 – $49,000, chose flexibility as their second priority.

The income group most concerned with environmental impact were those earning $75,000 – $99,999 (8.7%), followed by the > $150,000 group (8.3%). All income groups rated the environment significantly lower, around 2.4% to 2.6%. Notably, the < $15,000 group had 0% concern for cost, reliability, or environment and placed all their emphasis on time, flexibility, and commute stress. This reminds me of Maslow's hierarchy, which says that humans are motivated to fulfill basic needs before moving on to higher-level psychological

or self-fulfillment needs. Individuals facing economic hardship are likely focused on physiological and safety needs such as reliable transportation to maintain employment rather than broader concerns like environmental sustainability, which fall into higher-order needs such as belonging, esteem, or self-actualization. Simply put, you can't worry about saving the planet if you're still trying to save your job.

4.2 Top Incentives for Sustainable Commuting

Respondents were asked to choose from 6 options, if they were to receive incentives (e.g. cash, paid time off, etc.) to use commute modes other than driving alone, which sustainable commute mode would they be most likely to consider?
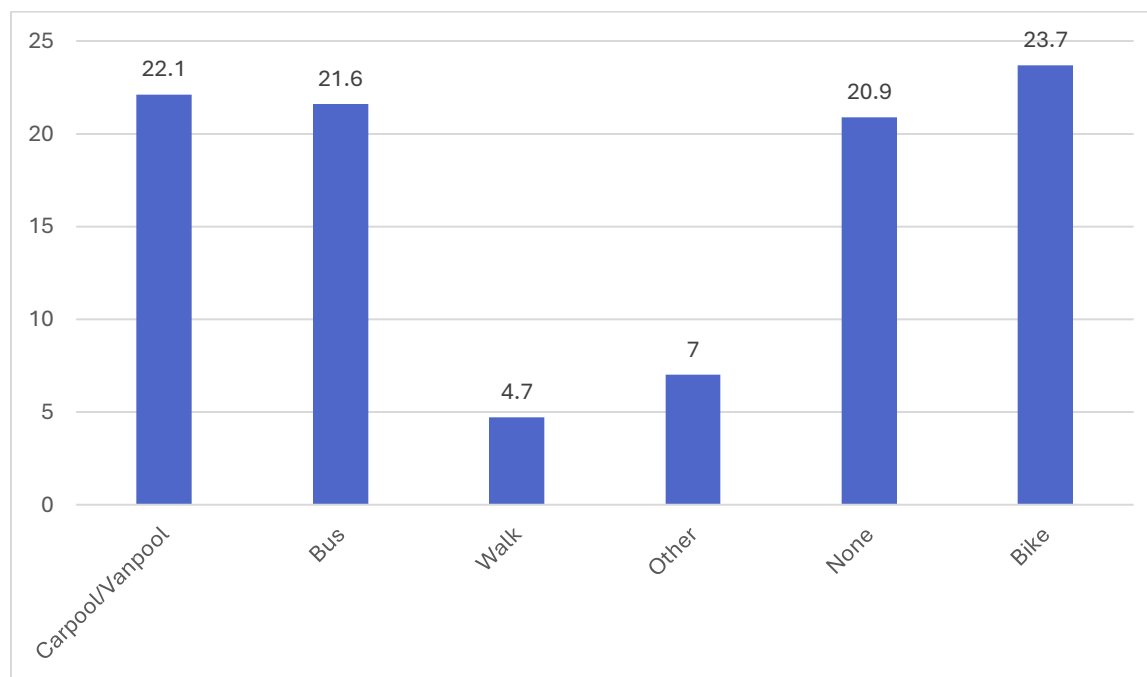
Figure 13.) If you were to receive incentives, which sustainable commute mode would you be most likely to consider?

Only 556 respondents answered this question, but the top answer was Bike (23.7%), followed by Carpool/Vanpool at 22.1%, which was followed very closely by Bus with 21.6%. Interestingly, 4.7% of respondents said they would walk (probably because they live downtown), but more interestingly, 20.9% of respondents replied none. Did they choose none because they can't be swayed away from driving no matter what, or was there a different reason behind their choice? At this point, it would be beneficial to compare results from a different question. The survey asked respondents how they traveled to work last week and what incentives they would choose if they had to travel sustainably. I posed the question, "Of all the respondents who said they drove alone to work, how many of them

said an incentive would encourage them to bike or, say take the bus?". The answer to this question shows some potential in reducing single-occupancy vehicles on the road.
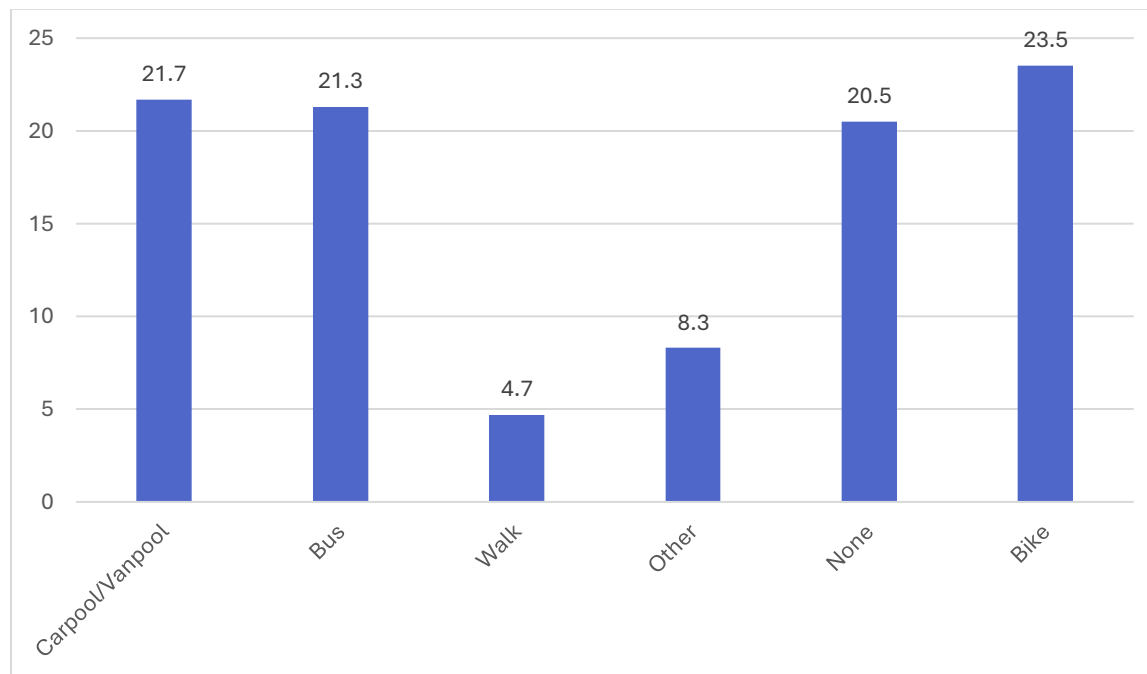
Figure 14.) Among all the respondents who said they drove alone to work, what % of them said an incentive would encourage them to choose a sustainable transportation option?

If incentives were offered, 23.5% of respondents who drove alone to work last week said they would consider biking. Close behind, 21.7% said they would consider carpooling or vanpooling, and 21.3% indicated they would take the bus. A smaller share, 4.6%, said they would consider walking, while 6.9% selected another option not listed. Notably, 20.5% of solo drivers said they would not consider any other alternative commute mode, even with incentives.

This takes us to the question, what are the top reasons for people choosing to drive to work?
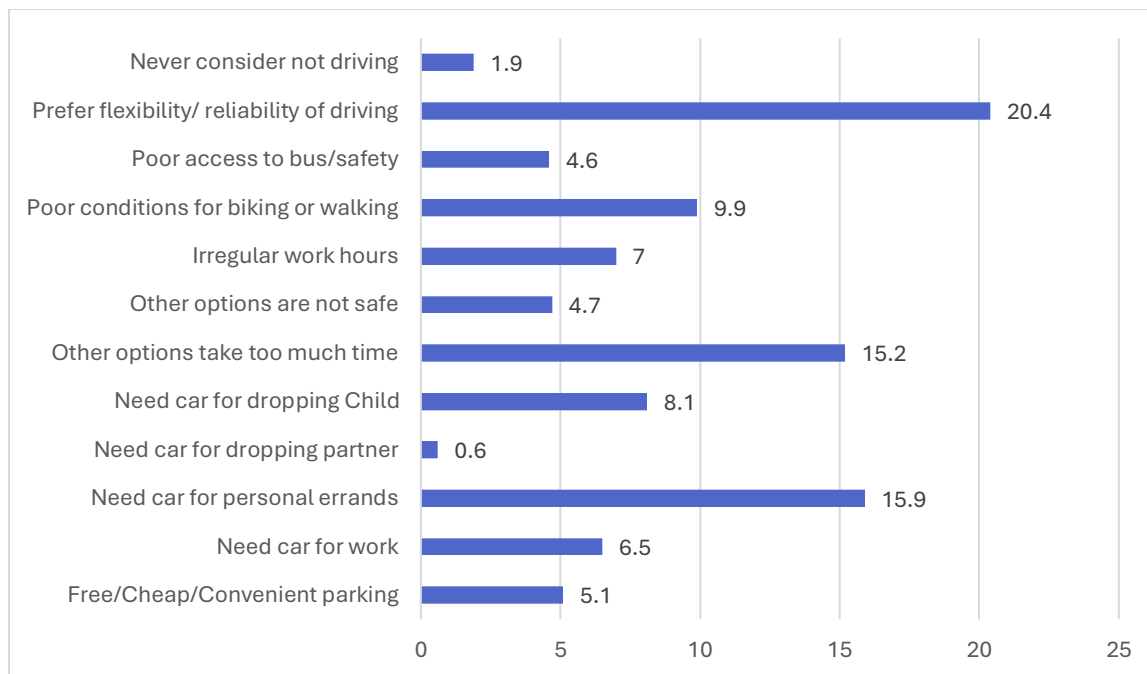
Figure 15.) Respondent's reasons as to why they choose to drive to work

The most common reason for driving to work was: "Prefer flexibility and reliability of driving alone", selected by 20.4% of respondents. This highlights the strong personal value placed on independence and predictability in commuting. Next, two other high-ranking reasons were: "Need a car for personal errands" chosen by 15.9%, and "Other options take too much time" chosen by 15.2%. These results suggest that many commuters rely on driving not just for work, but for additional convenience and efficiency in managing daily responsibilities. Other frequently cited reasons include:

- Poor safety, access, or conditions for biking or walking. (9.9%)
- Need a car for daily child transportation. (8.1%)
- Irregular work hours. (7%)
- Need a car for work. (6.5%)

These reflect structural or logistical constraints that discourage sustainable commuting. Less common but still notable reasons include:

- Poor safety/access to bus. (4.6%)
- Other options do not feel safe. (4.7%)
- Availability of free/cheap parking. (5.1%)

Finally, a small portion of respondents (1.9%) said they have never considered alternatives to driving, indicating potential room for awareness-building interventions regarding the importance of protecting the environment.

Now, we move on to a different question. Respondents were also asked to rate how helpful certain incentives would be in encouraging more sustainable commuting. The exact question was, "If you usually drive alone, choose TWO incentives that would influence you to take a carpool or vanpool to/from work.". This question was repeated two more times with the carpool replaced by bus and then walking/biking.

Respondents who reported typically driving alone were asked to select up to two incentives that might encourage them to carpool or vanpool to work. Among the 121 respondents who answered this question, the most frequently selected incentive was "Assistance in finding a carpool partner", chosen by 17.4% of participants. This result highlights the role those logistical barriers, specifically the difficulty of identifying compatible carpool partners play in discouraging shared commuting.
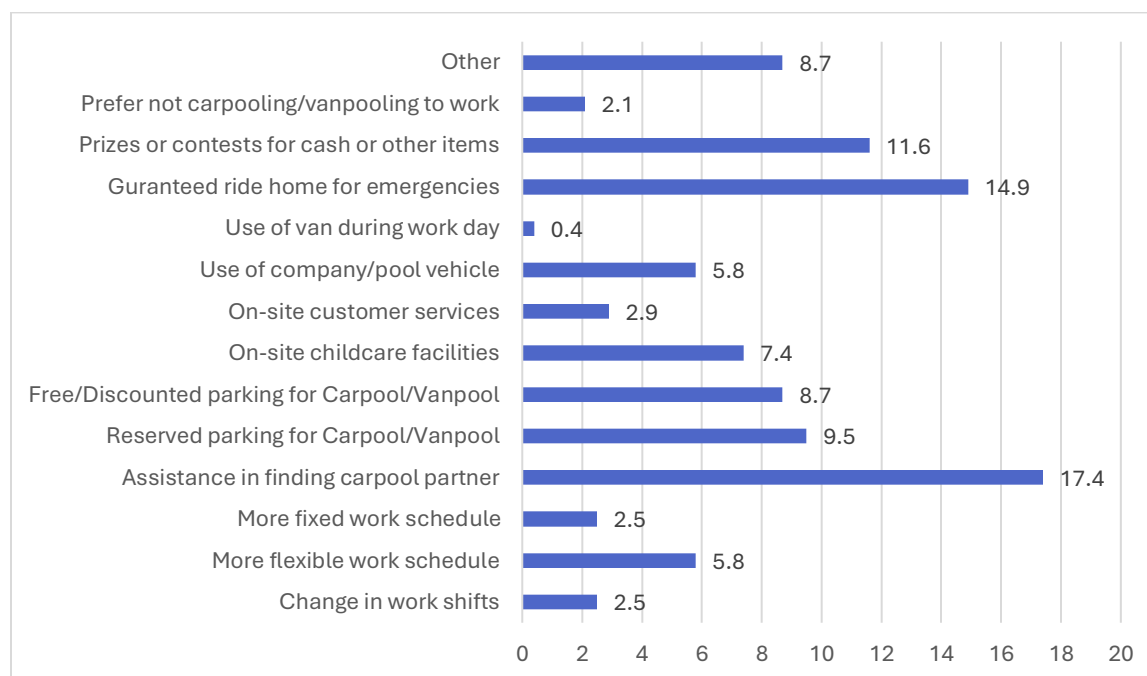
Figure 16.) If you usually drive alone, choose TWO incentives that would influence you to take a carpool or vanpool to/from work

The second most selected incentive was a "Guaranteed ride home program for emergencies", identified by 14.9% of respondents. Extrinsic motivators such as "Prizes, drawings, or contests for cash or other items" were also influential, selected by 11.6% of respondents. Additionally, workplace-related perks, including "Reserved parking for carpool/vanpool vehicles" (9.5%) and "Free or discounted parking" (8.7%) were moderately appealing. Family and convenience-related incentives were also notable. "On-site childcare facilities" were selected by 7.4%, while "Use of a company vehicle during the workday" was chosen by 5.8%, underscoring the need for midday flexibility among some

commuters. In contrast, 2.1% reported they would prefer not to carpool/vanpool at this time, indicating a portion of the population resistant to this commute mode regardless of incentive.
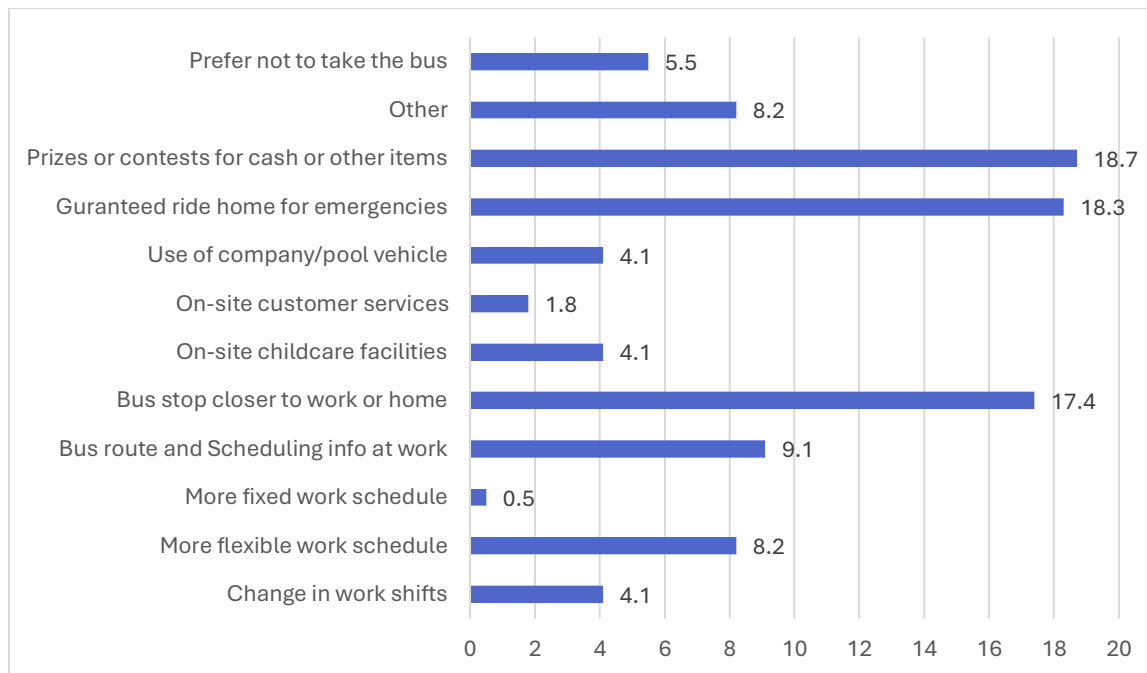
Figure 17.) If you usually drive alone, choose TWO incentives that would influence you to take the bus to/from work

Of the 119 respondents who typically drive alone and answered the question regarding bus-related incentives, the most frequently cited motivators were:

- Prizes, drawings, or contests for cash or other items. (18.7%)
- Guaranteed ride home program for emergencies. (18.3%)
- Bus stops closer to work or home. (17.4%)

Additional motivators included:

- Bus route and scheduling information at work. (9.1%)
- Flexible work schedule. (8.2%)
- Other, please specify. (8.2%)

Incentives related to workplace services and on-site amenities were selected at lower rates: "On-site childcare", "Company vehicle use during the day", and "Safe access" were each selected by fewer than 8% of respondents. A relatively small group (10.1%) explicitly indicated that they do not wish to take the bus, suggesting some underlying resistance to public transportation regardless of available incentives.
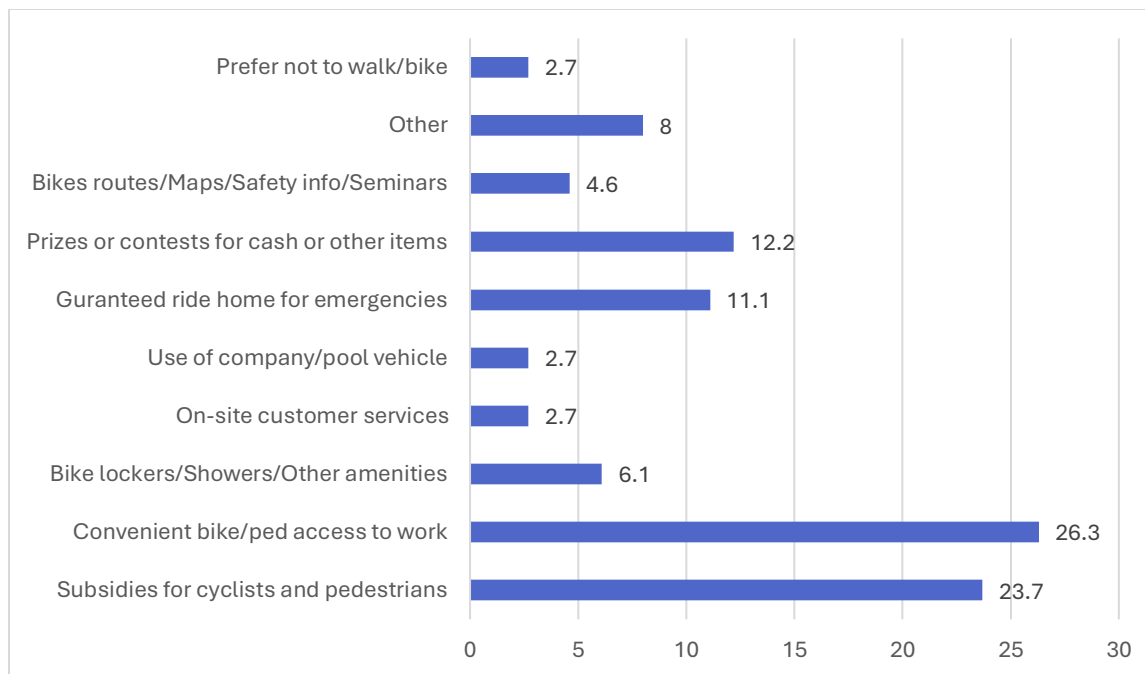
Figure 18.) If you usually drive alone, choose TWO incentives that would influence you to walk/bike to/from work

Among the 154 respondents who answered the incentive question for walking or biking, the top motivators were primarily centered around infrastructure and safety improvements: Safe, convenient bike/pedestrian access to work was the most selected option (44.8%), followed by subsidies for cyclists and pedestrians (40.3%).

Other frequently selected incentives included:

- Prizes, drawings, or contests. (20.8%)
- Guaranteed ride home program for emergencies. (18.8%)
- Bike/ped amenities such as lockers and showers. (10.4%)
- Other. (13.6%)
- Bike route maps and safety information. (7.8%)

A small number (4.5%) indicated they would prefer not to walk or bike, reflecting a baseline of resistance to active modes similar to carpool and bus trends.

5. Predictive Modeling

5.1 Model Objective

To explore the feasibility of a predictive tool, I developed a classification model to determine whether a respondent would be interested in using a mobile app to assist with sustainable commuting.

5.2 Data Preparation

I included all questions asked in the survey as predictors in the model. The reasoning behind this was that I was trying to approach it in a way where I could see which questions did a good job of predicting if someone would be interested in an app. This could be used to improve the survey in the future. All variables were treated as categorical except one numeric variable, Q5 (days worked per week), which was explicitly cast as an integer.

The target variable was a binary response to the question: *"Would you be interested in using an app to offer better commuting options (e.g., route planning, carpool matches, transit alerts)?".* This variable contained four original response levels: Yes, Maybe, No, and I don't know. These were encoded using Label Encoder. Blank responses were removed from the target variable to prevent skewed or null classifications.

All categorical variables were transformed using one-hot encoding, with drop_first=True to mitigate multicollinearity. The numeric variable (Q5) was scaled using StandardScaler. At this point, the full feature set included all survey questions, aligning with the exploratory goal of identifying the most predictive variables.

5.3 Model Type and Performance

I built three supervised classification models: Logistic Regression, Random Forest, and XGBoost to predict responses to the question: "Would you be interested in an app that will help you choose more sustainable modes of transport?" (Q23). Our goal was to evaluate model performance and understand which variables most influenced interest in sustainable commuting technologies. All models were trained using an 80/20 stratified train-test split.

I first ran a multinomial Logistic Regression using all encoded features. The model yielded 0.3733 accuracy on the test set. I then extracted feature coefficients and selected only those with positive weights, assuming they contributed more favorably to predicting interest in sustainable commuting tools. Using the filtered subset of positively weighted features (from Logistic Regression), I retrained the model with a 3-level target. This improved performance significantly, with test accuracy rising to 0.4933.

I wanted to see if other models were better at predicting the target variable. So, I repeated these steps by training a Random Forest classifier using all features and evaluated its performance (accuracy = 0.5000). I then retrained the Random Forest using only the positively weighted features. Interestingly, the accuracy remained unchanged at 0.5000, suggesting Random Forest's ability to internally rank features effectively.

I also trained an XGBoost classifier on all features, achieving 0.4267 accuracy. Repeating the process with only the important (positive) features produced the same accuracy, again indicating robustness to feature pruning.

Among all models, Random Forest with either the full or filtered features performed the best in predicting the target variable, with a top accuracy of 0.5000. Logistic Regression came close when filtered for important variables, while XGBoost underperformed slightly in comparison. The most predictive variables across models included features related to:

- Interest in reducing environmental impact.
- Specific transportation patterns, i.e. Current use of sustainable modes such as biking or walking. (Frequency of biking, how do you typically get to work during the months that you are not biking?)
- Socioeconomic indicators (Income).
- Interest in incentives like gift cards or raffle entries.

These variables consistently ranked high across Logistic Regression coefficients and Random Forest/XGBoost feature importances, suggesting that personal values, incentive preferences, and actual commuting behavior play the strongest role in predicting interest in a sustainable commuting app.

6. Conclusion

The survey data highlights the continued dominance of single-occupancy vehicle commuting in Missoula but also reveals a strong willingness among employees to shift behavior under the right conditions. While driving alone remains the most common mode, sustainable alternatives like biking, walking, and public transit see notable uptake, especially among higher & lower-income respondents, remote-capable workers, and during warmer months.

The predictive modeling provides deeper insight into what factors are most associated with interest in shifting commuting behavior. Variables related to employer incentives, environmental concerns, and existing non-car commute behaviors were among the strongest predictors of app interest. This suggests that personalized interventions, such as targeted features within a commuting app or tailored messaging, may be effective in encouraging sustainable shifts.

However, this study is not without limitations. The study relied on a convenience sample, meaning the survey was distributed to a voluntary group of employees rather than a randomly selected population. This introduces self-selection bias, where individuals who already have an interest in sustainability or commuting issues may be more likely to respond, potentially skewing the results. Moreover, the survey captured hypothetical interest in using a commuting app, not actual behavior. A more rigorous approach would involve a field experiment in which an app prototype is offered to a randomized group of employees, while a control group continues without it. By tracking actual commuting behavior over time through app usage logs, mode tracking, or follow-up surveys researchers could assess not just stated interest, but real-world changes in commuting patterns. Such a design would allow for more robust causal inference and a clearer picture of how and for whom sustainable commuting tools can be most effective.

7. Recommendations

Based on the survey analysis and modeling results, the following strategies are recommended:

- Expand protected and winter-maintained bike infrastructure, particularly in underserved neighborhoods and on routes connecting to employment hubs.

- Pilot a sustainable commute mobile app, integrating real-time transit data, trip planning, and behavior-based rewards
- Support flexible work arrangements, including remote work policies, to reduce peak-hour congestion and better accommodate long-distance commuters.
- Continue and expand bus fare subsidies, especially for lower-income employees, who remain most price-sensitive and benefit most from transit incentives.
- Use predictive modeling to inform outreach, focusing engagement efforts on individuals most likely to shift to sustainable modes based on their survey profile.

7. Appendix

What is your age group?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	18–24 years	41	5.2	5.6	5.6
	25–34 years	198	25.2	26.8	32.4
	35–44 years	215	27.4	29.1	61.5
	45–54 years	159	20.2	21.5	83.1
	55 to 64 years	103	13.1	14.0	97.0
	Over 65 years	18	2.3	2.4	99.5
	Prefer not to answer	4	.5	.5	100.0
	Total	738	93.9	100.0	
Missing	System	48	6.1		
Total		786	100.0		

What is your annual gross income bracket?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Less than $15,000	5	.6	.7	.7
	$15,000 up to $24,999	27	3.4	3.8	4.5
	$25,000 up to $34,999	45	5.7	6.4	10.9
	$35,000 up to $49,000	162	20.6	22.9	33.8
	$50,000 up to $74,999	243	30.9	34.4	68.2
	$75,000 up to $99,999	119	15.1	16.8	85.0
	$100,000 up to $149,000	66	8.4	9.3	94.3
	$150,000 or more	40	5.1	5.7	100.0
	Total	707	89.9	100.0	
Missing	System	79	10.1		
Total		786	100.0		

What race/ethnicity best describes you? – Selected Choice

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	American Indian or Alaskan Native	11	1.4	1.5	1.5
	Asian/Pacific Islander	5	.6	.7	2.2
	Black or African American	5	.6	.7	2.9
	Hispanic	13	1.7	1.8	4.7
	White/Caucasian	605	77.0	84.1	88.9
	Multiple ethnicity/Other (please specify)	80	10.2	11.1	100.0
	Total	719	91.5	100.0	
Missing	System	67	8.5		
Total		786	100.0		

How did you travel to work each day in the last week? Please select the mode that you use for the majority of the commute. *Driving children under 16 to school is NOT considered a carpool. Select "Drove Alone" for this scenario.

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Bus	28	3.6	3.6	3.6
	Walking	47	6.0	6.0	9.6
	Drove alone	559	71.1	71.5	81.1
	Carpool/Vanpooling	48	6.1	6.1	87.2
	Bike	58	7.4	7.4	94.6
	E-bike	6	.8	.8	95.4
	Telecommute	30	3.8	3.8	99.2
	Lyft, Uber, or Taxi	1	.1	.1	99.4
	Did not work	5	.6	.6	100.0
	Total	782	99.5	100.0	
Missing	System	4	.5		
Total		786	100.0		

What is your company's remote work policy?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Must be in the workplace every day	393	50.0	51.8	51.8
	Do not go into workplace 1-2 days a week	200	25.4	26.4	78.2
	Do not go into workplace 3-4 days a week	22	2.8	2.9	81.1
	Totally flexible: am not required to go into workplace on regular basis	143	18.2	18.9	100.0
	Total	758	96.4	100.0	
Missing	System	28	3.6		
Total		786	100.0		

What is your company's remote work policy? * What is your annual gross income bracket? Crosstabulation

						What is your annual gross income bracket?					
			Less than $15,000	$15,000 up to $24,999	$25,000 up to $34,999	$35,000 up to $49,000	$50,000 up to $74,999	$75,000 up to $99,999	$100,000 up to $149,000	$150,000 or more	Total
What is your company's remote work policy?	Must be in the workplace every day	Count	4	19	34	104	110	46	31	14	362
		% within What is your company's remote work policy?	1.1%	5.2%	9.4%	28.7%	30.4%	12.7%	8.6%	3.9%	100.0%
		% within What is your annual gross income bracket?	80.0%	70.4%	77.3%	65.0%	45.5%	39.0%	47.7%	35.9%	51.7%
	Do not go into workplace 1–2 days a week	Count	0	6	8	38	69	40	18	8	187
		% within What is your company's remote work policy?	0.0%	3.2%	4.3%	20.3%	36.9%	21.4%	9.6%	4.3%	100.0%
		% within What is your annual gross income bracket?	0.0%	22.2%	18.2%	23.8%	28.5%	33.9%	27.7%	20.5%	26.7%
	Do not go into workplace 3–4 days a week	Count	0	0	0	1	11	2	2	3	19
		% within What is your company's remote work policy?	0.0%	0.0%	0.0%	5.3%	57.9%	10.5%	10.5%	15.8%	100.0%
		% within What is your annual gross income bracket?	0.0%	0.0%	0.0%	0.6%	4.5%	1.7%	3.1%	7.7%	2.7%
	Totally flexible: am not required to go into workplace on regular basis	Count	1	2	2	17	52	30	14	14	132
		% within What is your company's remote work policy?	0.8%	1.5%	1.5%	12.9%	39.4%	22.7%	10.6%	10.6%	100.0%
		% within What is your annual gross income bracket?	20.0%	7.4%	4.5%	10.6%	21.5%	25.4%	21.5%	35.9%	18.9%
Total		Count	5	27	44	160	242	118	65	39	700
		% within What is your company's remote work policy?	0.7%	3.9%	6.3%	22.9%	34.6%	16.9%	9.3%	5.6%	100.0%
		% within What is your annual gross income bracket?	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%

What is your annual gross income bracket? * How did you travel to work each day in the last week? Please select the mode that you use for the majority of the commute. *Driving children under 16 to school is NOT considered a carpool. Select "Drove Alone" for this scenario. Crosstabulation

			How did you travel to work each day in the last week? Please select the mode that you use for the majority of the commute. *Driving children under 16 to school is NOT considered a carpool. Select "Drove Alone" for this scenario.									
			Bus	Walking	Drove alone	Carpool/Vanpooling	Bike	E–bike	Telecommute	Lyft, Uber, or Taxi	Did not work	Total
What is your annual gross income bracket?	Less than $15,000	Count	1	0	4	0	0	0	0	0	0	5
		% within What is your annual gross income bracket?	20.0%	0.0%	80.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	100.0%
		% within How did you travel to work each day in the last week? Please select the mode that you use for the majority of the commute. *Driving children under 16 to school is NOT considered a carpool. Select "Drove Alone" for this scenario.	4.2%	0.0%	0.8%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.7%
	$15,000 up to $24,999	Count	1	3	16	1	5	0	0	1	0	27
		% within What is your annual gross income bracket?	3.7%	11.1%	59.3%	3.7%	18.5%	0.0%	0.0%	3.7%	0.0%	100.0%
		% within How did you travel to work each day in the last week? Please select the mode that you use for the majority of the commute. *Driving children under 16 to school is NOT considered a carpool. Select "Drove Alone" for this scenario.	4.2%	6.5%	3.3%	2.1%	8.6%	0.0%	0.0%	100.0%	0.0%	3.8%
	$25,000 up to $34,999	Count	1	1	38	1	3	0	1	0	0	45
		% within What is your annual gross income bracket?	2.2%	2.2%	84.4%	2.2%	6.7%	0.0%	2.2%	0.0%	0.0%	100.0%
		% within How did you travel to work each day in the last week? Please select the mode that you use for the majority of the commute. *Driving children under 16 to school is NOT considered a carpool. Select "Drove Alone" for this scenario.	4.2%	2.2%	7.7%	2.1%	5.2%	0.0%	3.7%	0.0%	0.0%	6.4%
	$35,000 up to $49,000	Count	4	10	125	14	4	0	3	0	2	162
		% within What is your annual gross income bracket?	2.5%	6.2%	77.2%	8.6%	2.5%	0.0%	1.9%	0.0%	1.2%	100.0%
		% within How did you travel to work each day in the last week? Please select the mode that you use for the majority of the commute. *Driving children under 16 to school is NOT considered a carpool. Select "Drove Alone" for this scenario.	16.7%	21.7%	25.4%	29.8%	6.9%	0.0%	11.1%	0.0%	50.0%	23.0%
	$50,000 up to $74,999	Count	9	14	163	16	25	1	13	0	1	242
		% within What is your annual gross income bracket?	3.7%	5.8%	67.4%	6.6%	10.3%	0.4%	5.4%	0.0%	0.4%	100.0%
		% within How did you travel to work each day in the last week? Please select the mode that you use for the majority of the commute. *Driving children under 16 to school is NOT considered a carpool. Select "Drove Alone" for this scenario.	37.5%	30.4%	33.1%	34.0%	43.1%	16.7%	48.1%	0.0%	25.0%	34.3%
	$75,000 up to $99,999	Count	4	9	70	9	18	3	6	0	0	119
		% within What is your annual gross income bracket?	3.4%	7.6%	58.8%	7.6%	15.1%	2.5%	5.0%	0.0%	0.0%	100.0%
		% within How did you travel to work each day in the last week? Please select the mode that you use for the majority of the commute. *Driving children under 16 to school is NOT considered a carpool. Select "Drove Alone" for this scenario.	16.7%	19.6%	14.2%	19.1%	31.0%	50.0%	22.2%	0.0%	0.0%	16.9%
	$100,000 up to $149,000	Count	4	5	47	4	3	0	1	0	1	65
		% within What is your annual gross income bracket?	6.2%	7.7%	72.3%	6.2%	4.6%	0.0%	1.5%	0.0%	1.5%	100.0%
		% within How did you travel to work each day in the last week? Please select the mode that you use for the majority of the commute. *Driving children under 16 to school is NOT considered a carpool. Select "Drove Alone" for this scenario.	16.7%	10.9%	9.6%	8.5%	5.2%	0.0%	3.7%	0.0%	25.0%	9.2%
	$150,000 or more	Count	0	4	29	2	0	2	3	0	0	40
		% within What is your annual gross income bracket?	0.0%	10.0%	72.5%	5.0%	0.0%	5.0%	7.5%	0.0%	0.0%	100.0%
		% within How did you travel to work each day in the last week? Please select the mode that you use for the majority of the commute. *Driving children under 16 to school is NOT considered a carpool. Select "Drove Alone" for this scenario.	0.0%	8.7%	5.9%	4.3%	0.0%	33.3%	11.1%	0.0%	0.0%	5.7%
Total		Count	24	46	492	47	58	6	27	1	4	705
		% within What is your annual gross income bracket?	3.4%	6.5%	69.8%	6.7%	8.2%	0.9%	3.8%	0.1%	0.6%	100.0%
		% within How did you travel to work each day in the last week? Please select the mode that you use for the majority of the commute. *Driving children under 16 to school is NOT considered a carpool. Select "Drove Alone" for this scenario.	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%

Standardized_Label

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Always Drive	73	9.8	9.8	9.8
	Carpooler	8	1.1	1.1	10.9
	Multimodal – Seasonal	192	25.8	25.8	36.6
	Multimodal – Year-Round	11	1.5	1.5	38.1
	No Seasonal Change	363	48.7	48.7	86.8
	Other	13	1.7	1.7	88.6
	Public Transit User	4	.5	.5	89.1
	Seasonal Biker	40	5.4	5.4	94.5
	Seasonal Walker	8	1.1	1.1	95.6
	Telecommuter/Remote Worker	7	.9	.9	96.5
	Year-Round Biker	19	2.6	2.6	99.1
	Year-Round Walker	7	.9	.9	100.0
	Total	745	100.0	100.0	

If you were to receive incentives (e.g. cash, paid time off, etc.) to use commute modes other than driving alone, which sustainable commute mode would you be most likely to consider? – Selected Choice

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Carpool/Vanpool	123	15.6	22.1	22.1
	Bus	120	15.3	21.6	43.7
	Walk	26	3.3	4.7	48.4
	Other: Please specify	39	5.0	7.0	55.4
	None	116	14.8	20.9	76.3
	Bike	132	16.8	23.7	100.0
	Total	556	70.7	100.0	
Missing	System	230	29.3		
Total		786	100.0		

$drivereasons Frequencies

		Responses		Percent of Cases
		N	Percent	
$drivereasons[a]	What are the top THREE reasons you choose to drive to work? Availability for free/cheap/convenient parking	72	5.1%	13.0%
	What are the top THREE reasons you choose to drive to work? Need car for work	91	6.5%	16.4%
	What are the top THREE reasons you choose to drive to work? Need car for personal errands	223	15.9%	40.3%
	What are the top THREE reasons you choose to drive to work? Need car for dropping off partner or friend on the way to work	9	0.6%	1.6%
	What are the top THREE reasons you choose to drive to work? Need car for daily child transportation	114	8.1%	20.6%
	What are the top THREE reasons you choose to drive to work? Other options take too much time	214	15.2%	38.6%
	What are the top THREE reasons you choose to drive to work? Other options do not feel safe	66	4.7%	11.9%
	What are the top THREE reasons you choose to drive to work? Irregular work hours	99	7.0%	17.9%
	What are the top THREE reasons you choose to drive to work? Poor safety, access or weather conditions for biking or walking	139	9.9%	25.1%
	What are the top THREE reasons you choose to drive to work? Poor safety, access to bus	64	4.6%	11.6%
	What are the top THREE reasons you choose to drive to work? Prefer flexibility and reliability of driving alone	287	20.4%	51.8%
	What are the top THREE reasons you choose to drive to work? Never considered an alternate to driving	27	1.9%	4.9%
Total		1405	100.0%	253.6%

a. Dichotomy group tabulated at value 1.

Case Summary

| | Cases | | | | | |
| | Valid | | Missing | | Total | |
	N	Percent	N	Percent	N	Percent
$CarpoolVanpool[a]	121	21.6%	438	78.4%	559	100.0%
$Bus[a]	119	21.3%	440	78.7%	559	100.0%
$Walk[a]	154	27.5%	405	72.5%	559	100.0%

a. Dichotomy group tabulated at value 1.

$CarpoolVanpool Frequencies

		Responses N	Responses Percent	Percent of Cases
$CarpoolVanpool[a]	If you usually drive alone, choose TWO incentives that would influence you to take a carpool or vanpool to/from work: – Selected Choice Change in work shift(s)	6	2.5%	5.0%
	If you usually drive alone, choose TWO incentives that would influence you to take a carpool or vanpool to/from work: – Selected Choice More flexible work schedule	14	5.8%	11.6%
	If you usually drive alone, choose TWO incentives that would influence you to take a carpool or vanpool to/from work: – Selected Choice More fixed work schedule	6	2.5%	5.0%
	If you usually drive alone, choose TWO incentives that would influence you to take a carpool or vanpool to/from work: – Selected Choice Assistance in finding a carpool partner	42	17.4%	34.7%
	If you usually drive alone, choose TWO incentives that would influence you to take a carpool or vanpool to/from work: – Selected Choice Reserved parking for carpool/vanpool vehicles	23	9.5%	19.0%
	If you usually drive alone, choose TWO incentives that would influence you to take a carpool or vanpool to/from work: – Selected Choice Free or discounted parking for carpool/vanpool vehicles	21	8.7%	17.4%
	If you usually drive alone, choose TWO incentives that would influence you to take a carpool or vanpool to/from work: – Selected Choice On–site childcare facilities	18	7.4%	14.9%
	If you usually drive alone, choose TWO incentives that would influence you to take a carpool or vanpool to/from work: – Selected Choice On–site customer services (food/beverage, convenience, postal, pharmacy, banking and other services)	7	2.9%	5.8%
	If you usually drive alone, choose TWO incentives that would influence you to take a carpool or vanpool to/from work: – Selected Choice Use of pool or company vehicle during the work day	14	5.8%	11.6%
	If you usually drive alone, choose TWO incentives that would influence you to take a carpool or vanpool to/from work: – Selected Choice Use of the van during the work day	1	0.4%	0.8%
	If you usually drive alone, choose TWO incentives that would influence you to take a carpool or vanpool to/from work: – Selected Choice Guaranteed ride home program for emergencies	36	14.9%	29.8%
	If you usually drive alone, choose TWO incentives that would influence you to take a carpool or vanpool to/from work: – Selected Choice Prizes, drawings or contests for cash or other items	28	11.6%	23.1%
	If you usually drive alone, choose TWO incentives that would influence you to take a carpool or vanpool to/from work: – Selected Choice Other, please specify	5	2.1%	4.1%
	If you usually drive alone, choose TWO incentives that would influence you to take a carpool or vanpool to/from work: – Selected Choice Prefer not carpooling/vanpooling to work at this time	21	8.7%	17.4%
Total		242	100.0%	200.0%

a. Dichotomy group tabulated at value 1.

$Bus Frequencies

		Responses N	Responses Percent	Percent of Cases
$Bus[a]	If you usually drive alone, choose TWO incentives that would influence you to take the bus to/from work – Selected Choice Change in work shift(s)	9	4.1%	7.6%
	If you usually drive alone, choose TWO incentives that would influence you to take the bus to/from work – Selected Choice More flexible work schedule	18	8.2%	15.1%
	If you usually drive alone, choose TWO incentives that would influence you to take the bus to/from work – Selected Choice More fixed work schedule	1	0.5%	0.8%
	If you usually drive alone, choose TWO incentives that would influence you to take the bus to/from work – Selected Choice Bus route and scheduling information at work	20	9.1%	16.8%
	If you usually drive alone, choose TWO incentives that would influence you to take the bus to/from work – Selected Choice Bus stop closer to work or home	38	17.4%	31.9%
	If you usually drive alone, choose TWO incentives that would influence you to take the bus to/from work – Selected Choice On-site childcare facilities	9	4.1%	7.6%
	If you usually drive alone, choose TWO incentives that would influence you to take the bus to/from work – Selected Choice On-site customers services (food/beverage, convenience, postal, pharmacy, banking and other services)	4	1.8%	3.4%
	If you usually drive alone, choose TWO incentives that would influence you to take the bus to/from work – Selected Choice Use of pool or company vehicle during the work day	9	4.1%	7.6%
	If you usually drive alone, choose TWO incentives that would influence you to take the bus to/from work – Selected Choice Guaranteed ride home program for emergencies	40	18.3%	33.6%
	If you usually drive alone, choose TWO incentives that would influence you to take the bus to/from work – Selected Choice Prizes, drawings or contests for cash or other items	41	18.7%	34.5%
	If you usually drive alone, choose TWO incentives that would influence you to take the bus to/from work – Selected Choice Other, please specify	18	8.2%	15.1%
	If you usually drive alone, choose TWO incentives that would influence you to take the bus to/from work – Selected Choice Prefer not to take the bus at this time	12	5.5%	10.1%
Total		219	100.0%	184.0%

a. Dichotomy group tabulated at value 1.

$Walk Frequencies

		Responses N	Responses Percent	Percent of Cases
$Walk[a]	If you usually drive alone, choose TWO incentives that would influence you to take the walk/bike to/from work – Selected Choice Subsidies for cyclists and pedestrians	62	23.7%	40.3%
	If you usually drive alone, choose TWO incentives that would influence you to take the walk/bike to/from work – Selected Choice Safe, convenient bike/ped access to work	69	26.3%	44.8%
	If you usually drive alone, choose TWO incentives that would influence you to take the walk/bike to/from work – Selected Choice Bike lockers, regular lockers, showers and other bike/ped amenities on side	16	6.1%	10.4%
	If you usually drive alone, choose TWO incentives that would influence you to take the walk/bike to/from work – Selected Choice On-site customer service (food/beverage, convenience, postal, pharmacy, banking and other services)	7	2.7%	4.5%
	If you usually drive alone, choose TWO incentives that would influence you to take the walk/bike to/from work – Selected Choice Use of pool or company vehicle during the work day	7	2.7%	4.5%
	If you usually drive alone, choose TWO incentives that would influence you to take the walk/bike to/from work – Selected Choice Guaranteed ride home program for emergencies	29	11.1%	18.8%
	If you usually drive alone, choose TWO incentives that would influence you to take the walk/bike to/from work – Selected Choice Prizes, drawings or contests for cash or other items	32	12.2%	20.8%
	If you usually drive alone, choose TWO incentives that would influence you to take the walk/bike to/from work – Selected Choice Bike Routes/maps and safety information/seminars	12	4.6%	7.8%
	If you usually drive alone, choose TWO incentives that would influence you to take the walk/bike to/from work – Selected Choice Other, please specify	21	8.0%	13.6%
	If you usually drive alone, choose TWO incentives that would influence you to take the walk/bike to/from work – Selected Choice Prefer not to bike/walk at this time	7	2.7%	4.5%
Total		262	100.0%	170.1%

a. Dichotomy group tabulated at value 1.