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FINAL REPORT

## L RTP PUBLIC OPINION SURVEY



55 Railroad Row  
White River Junction, VT 05001  
802.295.4999  
[www.rsginc.com](http://www.rsginc.com)

**PREPARED FOR:**  
VERMONT AGENCY OF TRANSPORTATION

**SUBMITTED BY:**  
RSG





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## 1.0 EXECUTIVE SUMMARY

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### 1.1 | STUDY BACKGROUND AND PURPOSE

In 2016, the Vermont Agency of Transportation (VTTrans) will update the 2009 Long Range Transportation Plan (LRTP) to guide multimodal plans for Vermont's transportation system over the next 25 years. As part of the public participation process for the LRTP, VTTrans contracted Resource Systems Group, Inc. (RSG), to design and conduct a public opinion survey of Vermont residents. The objective of the public opinion survey was to gather necessary information to understand statewide transportation issues and opportunities, and to inform and prioritize the vision, goals and policies, and investment priorities to sustain Vermont's transportation system for the future.

### 1.2 | METHODOLOGY

The methodology and survey questionnaire balanced the diverse needs of consistency with past surveys to track behavior and attitudes over time, comprehensiveness in addressing current and emerging transportation topics, brevity to reduce respondent burden and entice balanced participation, consistency with future travel behavior surveys, and cost effectiveness in data collection.

The questionnaire collected data on respondents' current travel behaviors, their satisfaction with transportation infrastructure and services, and their opinions on policy and funding mechanisms. Additionally, the survey collected data on emerging trends and technology.

The survey approach employed address-based sampling with invitations distributed by mail to recruit Vermonters into the survey. Respondents were given the option of completing the survey online using computer-assisted self-interview (CASI) instrument or completing a paper survey instrument and returning it to VTTrans in a postage-paid envelope. This hybrid approach allowed citizens without Internet access or with a preference for completing the paper survey to participate in the research. In addition to the address-based sampling approach, supplemental recruitment occurred through a statewide advertisement posted on Front Porch Forum (FPF), an email newsletter distributed to FPF members in every town in Vermont.

A total of 2,496 Vermont residents over the age of 18 completed the survey from January 16 to March 25, 2016. The final survey data was weighted by geography, age, gender, and income to accurately reflect the population of the five geographical regions in Vermont. Population totals from the 2014 5-year American Community Survey served as the control for data weighting. After weighting, descriptive tabulations of the data were prepared for responses to each question and selected cross-tabulations were prepared to evaluate relationships among key variables.

This report documents the development and administration of the survey questionnaire and summarizes the findings. The full text of the survey questionnaire, survey screen captures, response tabulations, and respondents' comments appear as appendices to this report.



### 1.3 | KEY FINDINGS

- Automobile is the primary mode of transportation for most Vermonters, with 80% reporting that they drive a personal vehicle frequently (multiple times per week), and 88% of workers reporting driving alone or carpooling as their primary mode to work.
- The average total distance traveled by car on the most recent weekday was 58.5 miles and median distance was 30 miles.
- Respondents who commute to work reported living an average of 16.6 miles from work with a median distance of 10 miles.
- When asked what might encourage them to drive their vehicle less in Vermont, 30% reported that nothing could do so. A further 28% reported that improvements to transit or other alternate modes could get them to drive less, although many thought that the rural nature of the state made such improvements unrealistic.
- A small town or village (38%) or a rural area (42%) were respondents' most preferred types of areas in which to live.
- A majority of respondents are satisfied with winter highway maintenance (69% very satisfied or satisfied), traveler information (62%), DMV services (61%) and the physical conditions of Vermont's highways (61%).
- The largest sources of dissatisfaction are the availability of bike lanes (42% dissatisfied or very dissatisfied), the availability of sidewalks (31%), and Amtrak service in the State (30%).
- Respondents do not perceive traffic congestion in Vermont to have a significant impact on their overall quality of life, with 93% reporting no negative effect or a slight/moderate negative effect on their quality of life.
- Of those listed, the most important transportation services and issues were winter snow and ice removal (85% selected extremely or very important), ensuring the safety of the traveling public (84%) and roadway and pavement conditions (82%).
- Respondents reported that the most acceptable alternative funding mechanism to the current state motor fuel tax is a tax based on vehicle carbon emissions, while the least acceptable funding mechanism is a fee based vehicle miles traveled.



## 2.0 QUESTIONNAIRE

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Resource Systems Group, Inc. (RSG) worked closely with the Vermont Agency of Transportation (VTTrans) to develop a survey questionnaire that would provide valuable public feedback necessary to inform the Long Range Transportation Plan (LRTP).

The 2016 survey is the fourth public opinion survey focused specifically on transportation in Vermont since 1995, when the state published its first LRTP. Subsequent surveys were conducted in 2000 and 2006 for plan updates in 2002 and 2009, respectively. RSG and VTTrans used the 2006 LRTP Public Opinion Survey as the base for the questionnaire while also reviewing other relevant transportation questionnaires. After careful review of the previous questionnaire, the team strategically revised or removed particular questions to ensure that the survey results would be aligned with information crucial to the LRTP planning process for 2016 and the future. As a result of the questionnaire revisions to provide information more relevant to the 2016 LRTP, comparisons with previous survey iterations are limited.

The survey was designed to collect information from respondents on a variety of topics, and survey questions were grouped into five main sections:

1. Travel behavior questions
2. Customer satisfaction questions
3. Policy and funding questions
4. Questions about emerging trends
5. Demographic questions

The complete set of survey questions as they appeared in the paper survey and on-screen in the web-based survey is included in **Appendix A**.

### 2.1 | TRAVEL BEHAVIOR QUESTIONS

At the beginning of the survey, respondents were asked a series of questions about the characteristics of their neighborhood and their travel behavior. Respondents were asked about the place that they live, what types of areas they would like to live, and if they were considering moving in the next five years. After indicating their employment status, respondents who reported working were asked if they work outside the home. Those who reported that they commute to work were asked how many miles they travel to work and what modes of transportation they use, including their primary and supplementary commuting modes. All respondents were asked to indicate their vehicle miles traveled on the most recent weekday and to indicate how often they use a number of transportation options or services on a five-point frequency scale from ‘never’ to ‘very frequently.’

## 2.2 | CUSTOMER SATISFACTION QUESTIONS

Following the questions about travel behavior, respondents were asked to indicate their level of satisfaction with transportation infrastructure and services on a five-point scale from ‘very dissatisfied’ to ‘very satisfied’ with an option of ‘don’t know’. The topics included:

- Highway conditions;
- Sidewalk availability;
- Biking facility availability;
- Amtrak service;
- Park-and-ride lot availability;
- Winter maintenance;
- Public bus service convenience;
- Dedicated bus or van service;
- Traveler information;
- DMV services and;
- DMV’s Real ID instructions.

In addition, respondents were asked an open-ended question about what would encourage them to drive their car less in Vermont, and answered questions about how often they experience traffic congestion and how congestion impacts their quality of life.

## 2.3 | POLICY AND FUNDING QUESTIONS

After providing their level of satisfaction with transportation services and infrastructure in Vermont, respondents answered a series of questions focused on gathering opinions about how VTTrans should focus transportation planning and financial resources. Respondents were asked how important the following services were to them on a scale of ‘not at all important’ to ‘extremely important’ with a ‘don’t know’ option:

- Minimize cost to taxpayers;
- Support job creation and retention;
- Support Vermont’s downtowns and village center;
- Protect the environment;
- Ensure the safety of the traveling public;
- Reduce traffic congestion;
- A transportation system that can withstand extreme weather events;
- Roadway/pavement conditions;
- Winter snow and ice removal;
- Bicycle and pedestrian facilities;
- Public Transit services and;
- Amtrak services.

Next, respondents were asked about the acceptability of a variety of funding mechanisms for transportation projects including:

- A fee based on how many miles a vehicle is driven;
- A tax based on vehicle carbon emissions;

- Raising the general sales tax;
- An annual registration fee tied to the value of the vehicle and;
- Raising the Vermont gas tax.

## 2.4 | EMERGING TRENDS AND TECHNOLOGY QUESTIONS

In the next section, respondents answered a series of question about their current and future vehicle ownership and interest in purchasing alternative fueled vehicles. Additionally, respondents were asked how they access the internet and obtain traffic and travel information.

## 2.5 | DEMOGRAPHIC QUESTIONS

The final section of the survey gathered information about respondents' demographics in order to classify responses and ensure the makeup of the sample was representative of the population attributes in the five geographic regions of Vermont. Respondents were asked to provide their home and work zip code, their home and work street address (which was not mandatory) and the following demographic information:

- Household type;
- Number of adults and children in household;
- Number of licensed drivers in household;
- Number of household members with physical or mental impairment;
- Gender;
- Age;
- Education level;
- Race and ethnicity;
- English as first language and;
- 2015 household income before taxes.

At the conclusion of the survey, respondents recruited through the address-based mailing were able to enter into a prize drawing for a chance to win a Visa gift card. Before finishing the survey, respondents were given the opportunity to leave open-ended comments about transportation in Vermont. These open-ended comments are presented in **Appendix C**.

### 3.0 SAMPLING PLAN AND SURVEY ADMINISTRATION

RSG worked closely with the project team to develop a sampling plan to produce a representative sample of adult full-time and part-time residents in the state of Vermont. RSG used an address-based sampling approach supplemented with email-based public outreach to recruit respondents to participate in the survey.

#### 3.1 | SURVEY POPULATION AND SAMPLING FRAME

The survey population included adult (18 years old or older) full-time and part-time residents in the state of Vermont. While visitors are another important user group of the Vermont transportation system, this population is unique in terms of their travel characteristics, attitudes about travel in Vermont, and stake in the statewide transportation system. Because of this, the visitor population was not included in the scope of the public opinion survey.

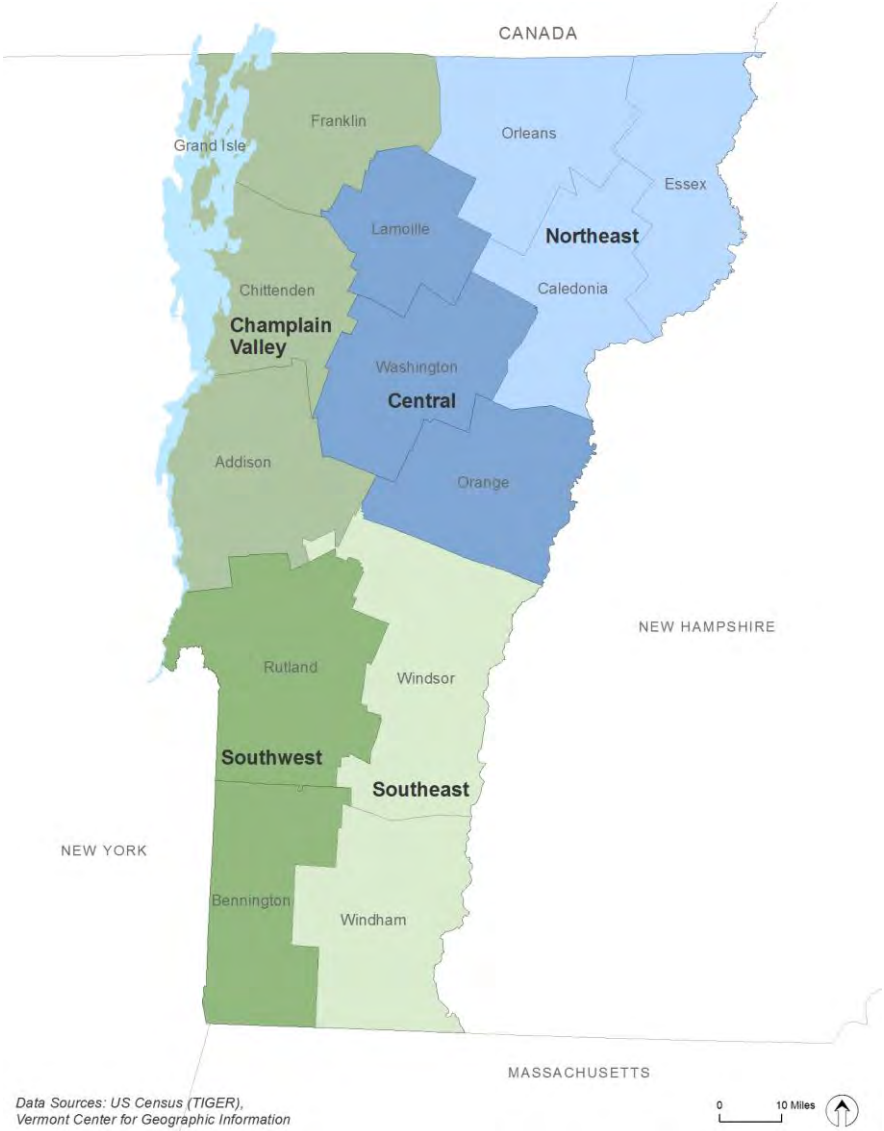
RSG used an address-based sampling frame supplemented with public outreach to sample full-time and part-time residents of Vermont. Address-based sampling was preferred for this study because it provides near-total coverage of the full-time and seasonal resident population in Vermont and is increasingly considered an important element of best practices in survey sampling, especially when combined with web-based completion options.

The address-based sampling frame was obtained from the U.S. Postal Service's Computerized Delivery Sequence (CDS) File, an electronic database that provides and continually updates all mailing addresses served by the USPS, with the exception of general delivery. The CDS File contains address information for all other varieties of addresses, including addresses that receive (or have received) mail delivery, addresses only delivered on a seasonal basis, vacant addresses, and throwback addresses (addresses not delivered to because of PO boxes). The CDS File contains households with all types of telephone service (e.g., no-telephone, landline only, cell phone mostly, cell phone only, and combinations therein).

RSG worked with Marketing Systems Group (MSG) to obtain a random sample of household addresses from the CDS File. The sample was selected randomly among all existing residential addresses throughout the State of Vermont, proportional to the number of households in five geographic regions of Vermont.

The geographic regions—Champlain Valley, Central, Northeast, Southeast, and Southwest—are comprised of Vermont's 14 counties (**Figure 3-1**). It should be noted that these regions were revised slightly from the regions used in the 2006 Long Range Transportation Plan survey. Franklin County was moved from the Northern Tier region to the Champlain Valley region given that the development patterns and transportation characteristics of that county is more reflective of the Champlain Valley communities than communities in the Northeast region. The other three regions, including Central, Southeast, and Southwest, are consistent with the 2006 survey.

**FIGURE 3-1: GEOGRAPHIC REGIONS**



**3.2 | RECRUITMENT METHODOLOGY**

Respondents were recruited to participate in the survey using two methods:

1. Postcard and paper survey mailings to a random sample of households residing within the five designated geographic areas of Vermont. The postcard was followed-up by a paper survey mailed to the same households.
2. An email blast sent to members of all Front Porch Forum (FPF) list serves in Vermont.

**POSTCARD AND PAPER SURVEY MAILING**

Respondents were recruited into the survey using invitations sent in the mail. To increase response rates and drive participation to the web, RSG conducted a two-stage invitation and

outreach process. First, a pre-notification postcard was sent to the sampled households on Monday, January 11. The pre-notification postcard included a description of the study, along with a link and a password to the online survey (**Figure 3-2** and **Figure 3-3**). The postcard was followed by a second mailing on Tuesday, January 25. The second invitation included the online link and the paper version of the survey with a Business Reply Mail envelope to return the completed paper survey. RSG worked with Advertiser's Press to provide printing and mailing services for the postcard invitation and paper survey.

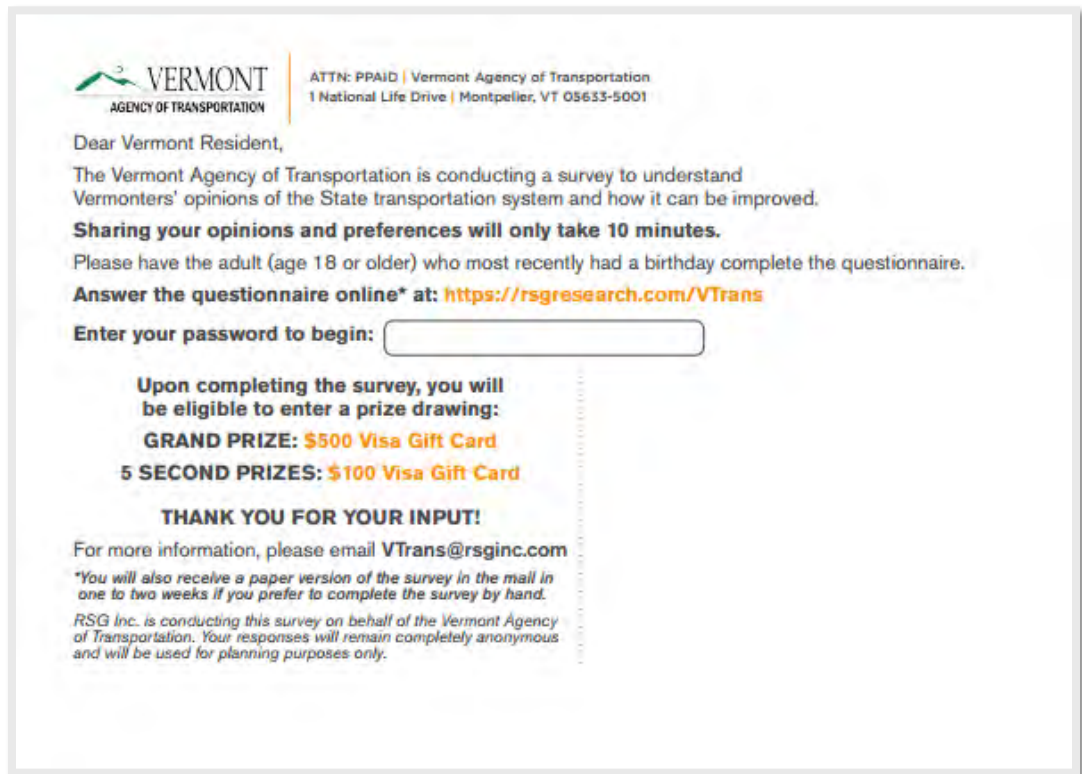
The targeted minimum sample size for the survey was 1,200 complete responses at the statewide level through the address-based sample outreach, which would allow for a 95% confidence level with a confidence interval of +/- 3% (for a yes/no question with 50/50 response) for the state's population of 626,000. Secondary sample size targets were set for 400 responses from the Champlain Valley region and 200 responses from each of the four other regions. A larger sample size was desired in the Champlain Valley region to better cover the greater heterogeneity of the population in that region compared to other regions of the state.

The assumed response rate for this survey was 10% based on similar research conducted by RSG in other regions of Vermont. To obtain a targeted sample size of 1,200 completed surveys, approximately 12,000 postcards and paper surveys were distributed, 4,000 to the Champlain Valley region and 2,000 to each of the other four regions.

**FIGURE 3-2: POSTCARD MAILING - FRONT**



FIGURE 3-3: POSTCARD MAILING - BACK



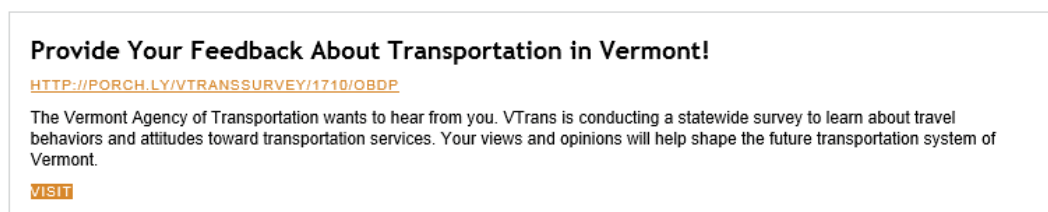
This approach allowed respondents who did not wish to complete the survey online or do not have access to the Internet an opportunity to participate. Because unique passwords helped discern who had already taken the survey, the second mailing was only sent to households who had not completed the survey online, where possible. Unique passwords also prevented respondents from taking the survey more than once. Both mailings explained the LRTP survey and invited the adult member of the household with the most recent birthday to participate in the survey. This method allowed for a random selection of an adult participant, and is consistent with past recruitment methodology. The paper-based surveys were scanned by Tab Service Company and the data was entered into the survey database to allow the paper data to be fully integrated with the web data. RSG collected 935 completed surveys through the initial postcard invitation and 1,297 valid paper survey returns using this two-stage process. After accounting for approximately 940 invitations that were returned as undeliverable by the USPS, the response rate during the survey administration period was approximately 20.2%.

### SUPPLEMENTAL PUBLIC OUTREACH TO FRONT PORCH FORUM MEMBERS

RSG collaborated with VTrans to post a description of the study and a link to the online survey in Front Porch Forum (FPF). FPF is a highly distributed email newsletter available in every city, town, and neighborhood in Vermont that helps people connect with their neighbors and learn about what is happening in their community. VTrans posted a statewide

advertisement on FPF that included a link to the survey website. The advertisement was posted starting on Sunday, March 13<sup>th</sup> and continued to circulate throughout different neighborhoods through Saturday, March 19<sup>th</sup>. This timing was approximately 6 weeks after the paper-based survey reached residents' mailboxes, which was intended to limit the potential overlap between the different recruitment approaches. This convenience sampling approach was intended to supplement the sample collected through the address-based sampling approach in an efficient and cost-effective manner. Respondents recruited through FPF who were also recruited through the address-based sampling frame were instructed to complete the survey only one time. A total of 616 FPF members clicked on the link in the advertisement, and 225 respondents successfully completed the survey.

#### FIGURE 3-4: FRONT PORCH FORUM ADVERTISEMENT



### 3.3 | DATA RETRIEVAL

#### WEB-BASED INSTRUMENT

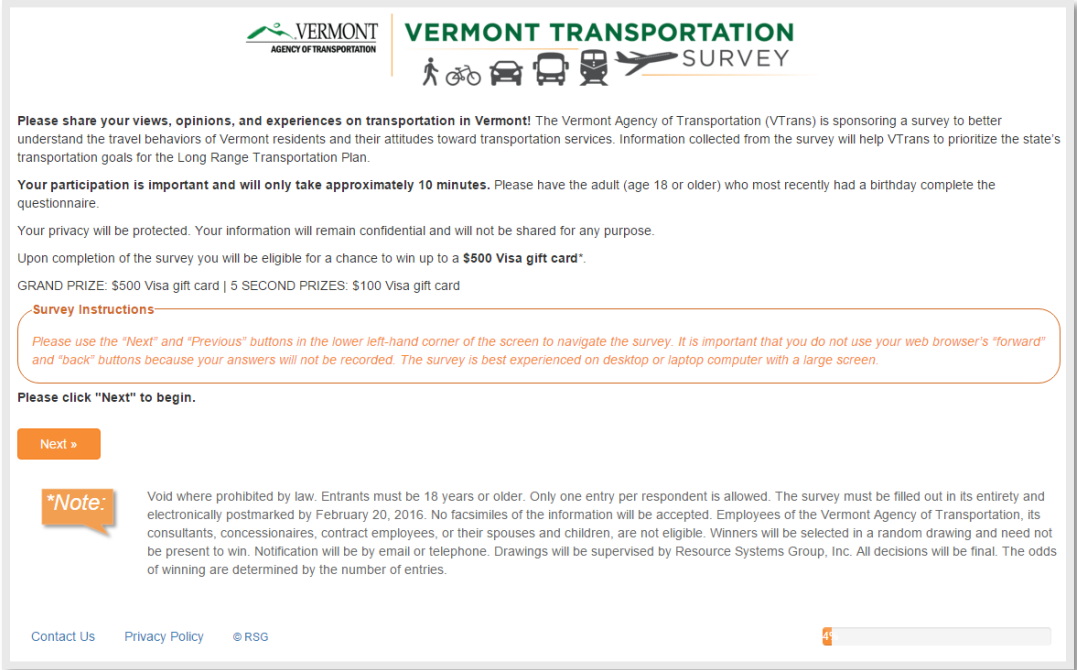
RSG developed an intuitive and easy-to-follow online survey using its custom survey software platform. Survey questions and language were modified based on respondents' previous answers. The online instrument also allowed for answers to be validated to ensure an answer was given and that the answer made logical sense (e.g., a text response was not given in a numeric field, the range of a numeric response was reasonable). The validation ensured all surveys completed using the online instrument were 100% complete.

Respondents recruited through the address-based sample accessed the online-instrument by entering the survey URL into a web-browser's address bar and then typing in their unique password to begin the survey. Respondents recruited through the Front Porch Forum advertisement could click on the included hyperlink or copy and paste the link into their browser's address bar. Front Porch Forum respondents did not need to enter a password to begin the survey.

All respondents were presented with an introduction screen at the beginning of the survey that described the purpose of the survey, the time required to complete the questionnaire, and instructions for how to navigate the online instrument. Respondents were also able to contact a member of the survey team with any technical questions about the survey via email through the 'Contact Us' option included on all survey screens (Figure 3-5).



**FIGURE 3-5: SAMPLE SURVEY SCREEN – INTRODUCTION & INSTRUCTIONS**



**PAPER-BASED INSTRUMENT**

The paper-based survey was created to match the online version in a way such that the responses from both instruments could be combined into a single integrated dataset. Consideration was given to the cost of the paper survey, the ease of survey navigation, the clarity of the instructions, and a layout that compared to the online instrument. The final version of the survey was printed on six pages, the first of which included instructions for completing the survey. **Figure 3-6** shows the layout of a question used in the paper-version of the survey.

FIGURE 3-6: SAMPLE SURVEY QUESTION

**8. How often do you use the following transportation options or services?** *Please include all activities such as commuting, running errands, leisure travel, etc.*

	NEVER	VERY INFREQUENTLY (ONE TIME PER YEAR OR LESS)	INFREQUENTLY (MULTIPLE TIMES PER YEAR)	FREQUENTLY (MULTIPLE TIMES PER MONTH)	VERY FREQUENTLY (MULTIPLE TIMES PER WEEK)
Drive a personal vehicle	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Travel as a passenger in a personal vehicle	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Walk	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Bike	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Commercial airline	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Amtrak	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Greyhound, Megabus, or other intercity bus	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Public transit bus	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Park-and-ride lots	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Taxi	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Rideshare service (e.g. Uber, Lyft, etc.)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Car share	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

2 PLEASE OPEN SURVEY FLAP TO PAGE 3 →

The primary difference between the online and paper survey instruments was that there was no way to validate responses or prevent a respondent from skipping a question, either accidentally or deliberately, in the paper instrument.

### 3.4 | PARTICIPATION INCENTIVES

RSG and VTTrans developed an incentive plan to increase participation rates in the survey and to reduce survey administration costs. The incentive plan offered respondents the opportunity to enter into a drawing for one of several cash prizes after successfully completing the survey. The prize drawing included one grand prize in the form of a \$500 Visa Gift Card and 5 runner-up prizes in the form of \$100 Visa Gift Cards.

## 4.0 DATA PROCESSING AND RESULTS

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### 4.1 | DATA PROCESSING

After closing data collection on March 25, 2016, RSG combined the dataset from the paper survey instrument with the dataset from the web survey instrument. The initial, raw dataset included 2,496 records—935 online responses from the postcard distribution, 225 online responses from the FPF advertisement, and 1,336 responses from the returned paper surveys. After reviewing and analyzing the responses from each recruitment method, the following responses were removed:

- 225 responses collected through Front Porch Forum: While the FPF outreach was intended to supplement the address-based sampling approach, the response rate for the address-based outreach was sufficiently high (twice as high as anticipated) to mitigate the need for any supplemental sample. Given the methodological differences in sampling approach and convenience-based nature of the FPF sample, these respondents were removed entirely from the analysis.
- 31 paper surveys that were returned with duplicated passwords as an online survey: The multiple data retrieval methods allowed the possibility that some respondents could complete the survey online and return a completed paper survey by mail. These duplicate paper survey responses were removed from the dataset.
- 8 papers surveys that were returned with no questions answered.

The final dataset used in the subsequent analyses included 2,232 surveys—935 online responses from the postcard distribution and 1,297 responses from the returned paper surveys. Summary tabulations are presented in the following section for select survey questions. Because the paper survey instrument lacked the response validation available in the online survey instrument, paper survey data can be missing responses to one or more questions. In addition, questions that asked respondents to rate satisfaction, importance, acceptability, and likelihood included a “don’t know” option. These missing responses and “don’t know” selections are excluded from each applicable question, resulting in varying response totals for each tabulation. Other than removing the eight paper surveys with no responses, no minimum was set for the required number of question responses to be included in the tabulations. A complete set of survey tabulations by region for each question can be found in **Appendix B**.

### 4.2 | WEIGHTING

In order to more closely reflect the true population of the residents of the five geographic regions of Vermont, the collected survey data was weighted by age, gender, and annual household income for each region. The control data was based on the most recent available American Community Survey (ACS) dataset, the 2014 5-year ACS estimates. Weighting helps to correct for segments of the population that may have been underrepresented or overrepresented in the sample. Prior to weighting, RSG removed records with a missing value for age or gender, and used an expectation maximization regression approach to

impute an income value for respondents who did not answer the income question. This imputed income value was only used for the purposes of weighting. An iterative proportional fitting process was used to weight the sample for each region by gender, age, and the imputed income variable. The largest differences were observed by age, with young adults underrepresented in the sample and older adults overrepresented.

**TABLE 4-1: SUMMARY OF WEIGHTS BY AGE, GENDER, AND INCOME**

Demographic		Region				
		Central	Champlain Valley	Northeast	Southeast	Southwest
Gender	Male	1.198	1.024	1.042	1.127	1.199
	Female	0.824	0.959	0.949	0.916	0.880
Age	18–34	2.253	2.158	3.071	2.047	3.314
	35–44	1.486	1.267	1.522	2.265	1.614
	45–54	1.195	1.157	1.167	1.318	1.013
	55–64	0.666	0.655	0.691	0.714	0.746
	65- 74	0.525	0.447	0.593	0.464	0.515
	75 or older	0.631	0.723	0.613	0.875	0.688
	Income	1 Less than \$15,000	1.568	1.957	1.423	1.297
2 \$15,000 to \$24,999		1.230	1.862	1.168	1.073	1.829
3 \$25,000 to \$34,999		0.891	1.122	0.917	1.091	1.235
4 \$35,000 to \$49,999		1.105	0.933	0.865	0.713	0.722
5 \$50,000 to \$74,999		0.833	0.766	0.845	0.880	0.706
6 \$75,000 to \$99,999		0.834	0.796	0.942	1.095	0.867
7 \$100,000 to \$149,999		1.225	0.952	1.367	0.888	0.843
8 \$150,000 to \$199,999		2.027	0.915	0.875	2.428	1.163
9 \$200,000 or more		1.176	1.703	1.329	1.041	1.615

Respondents with a missing value for gender or age were assigned the average sample weight (1.0) and each region was then weighted to match the actual population proportions at the statewide level by region. The final weight applied to each respondent was the product of the applicable gender, age, and income weights presented in **Table 4-1** and the region weights presented in **Table 4-2**.

**TABLE 4-2: SUMMARY OF WEIGHTS BY REGION**

Region	Sample Percent	Control Percent	Weight
Central	18.6%	17.9%	0.9617
Champlain Valley	33.1%	39.9%	1.2064
Northeast	16.8%	10.2%	0.6059
Southeast	15.5%	16.2%	1.0401
Southwest	15.9%	15.8%	0.9935
<b>Total</b>	<b>100.0%</b>	<b>100.0%</b>	<b>--</b>

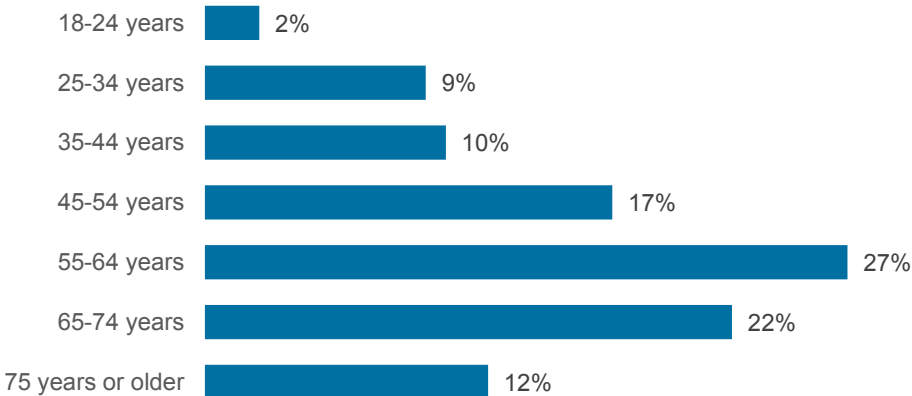
### 4.3 | RESULTS

#### PARTICIPANT PROFILE

As described above, the demographic characteristics of the sample were weighted to the control totals to ensure the sample reflects the demographic characteristics of each of the five geographic regions and the statewide population of Vermont. This section summarizes the unweighted demographic and household characteristic information reported by respondents.

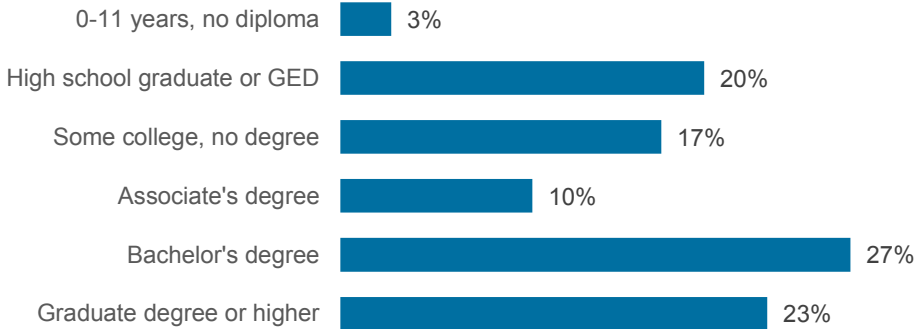
The majority (97%) of respondents indicated they were full-time residents of Vermont. A quarter (25%) of respondents live in a single person household, 40% in a couple household, and 32% in a family household. The majority (96%) of respondents who completed the survey indicated they were a licensed driver and 8% reported having one person in their household who has a physical or mental impairment that restricts their ability to make trips outside of the home. Fifty-three percent of the sample identified as female, and 47% identified as male. The median age of the sample falls in the 55-64-year-old category, as shown in **Figure 4-1**.

**FIGURE 4-1: AGE**



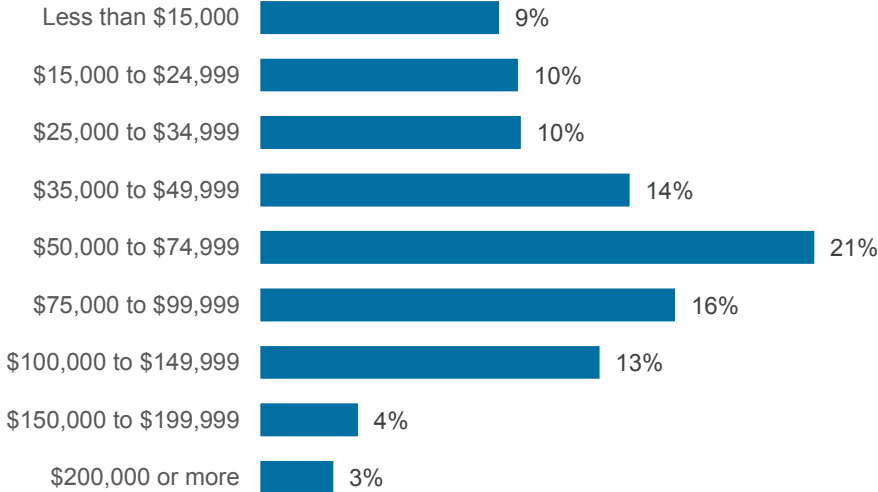
Respondents also reported their highest level of education. As shown in **Figure 4-2**, 27% of respondents indicated they earned a bachelor’s degree.

**FIGURE 4-2: EDUCATION LEVEL**



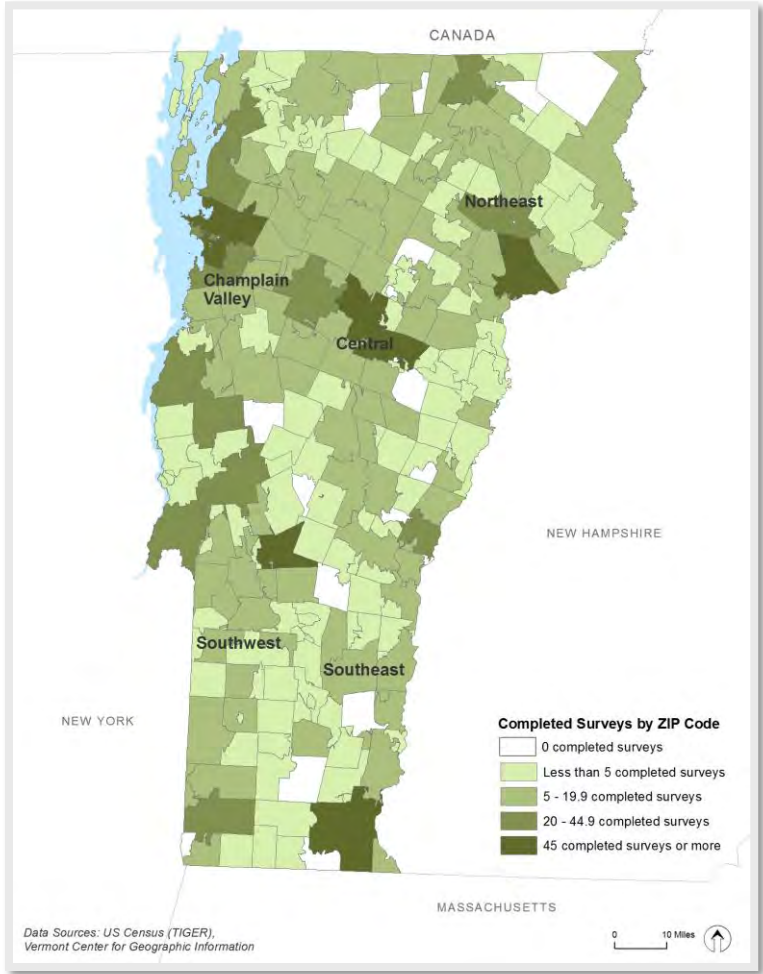
Regarding race and ethnicity, 93% of the sample identified as white and 94% as not of Hispanic, Latino, or Spanish origin. Additionally, 96% reported English as their first language. Median income of the sample fell in the \$50,000-\$74,000 category (**Figure 4-3**).

**FIGURE 4-3: INCOME**



Responses were geographically distributed across the state with larger numbers of responses collected from the more densely populated parts of each of the five regions, including the surrounding areas of Barre-Montpelier, Brattleboro, Burlington, Saint Johnsbury, and Rutland. **Figure 4-4** presents the distribution by respondents' reported home zip code. Paper survey respondents who did not report a home zip code are not included in this summary.

**FIGURE 4-4: COMPLETED SURVEYS BY REPORTED HOME ZIP CODE**



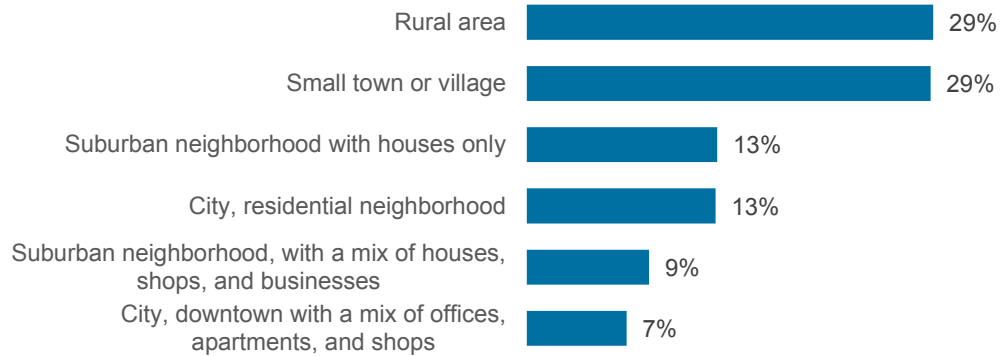
**TRAVEL BEHAVIOR**

The Travel Behavior section of the questionnaire focused on respondents’ neighborhood characteristics and travel behaviors. The data presented in this and subsequent analysis sections is weighted using the procedure described in Section 4.2 above.

When asked to indicate which best describes the place where they live, 29% of respondents at the statewide level indicated the place where they live is rural and 29% reported the place where they live is a small town or village (Figure 4-5). At the regional level, 20% of respondents from Champlain Valley reported living in a suburban neighborhood with houses only, compared with 8% for Central Valley, 7% for Northeast, 8% for Southeast, and 12% for Southwest.

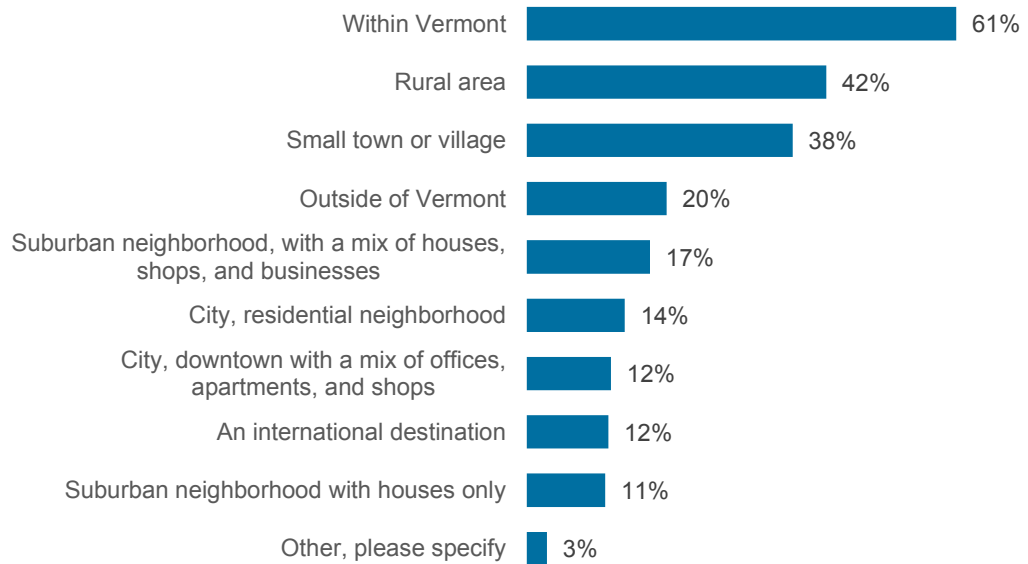
There were also significant differences in the type of residency location by age, with 32% of 18-34 year-olds living in a city downtown or residential neighborhood, compared to 16% of 34-64 year-olds and 17% of respondents 65 years-old or older.

**FIGURE 4-5: NEIGHBORHOOD CHARACTERISTICS**



After selecting the characteristics that best describe where they live, respondents reported the types of areas they would like to live. At the statewide level, 61% of respondents selected “Within Vermont,” and 42% selected “Rural area” as a place they would like to live (Figure 4-6). Respondents in the 18-34 age group were most likely to want to live in a city downtown (21%), a city residential neighborhood (24%), or a mixed-use suburban neighborhood (31%) compared with other age groups.

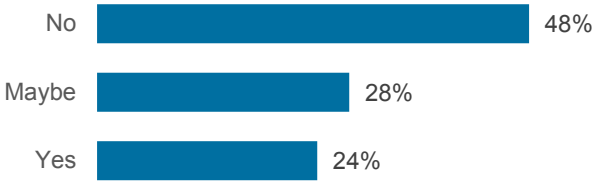
**FIGURE 4-6: DESIRED TYPES OF AREAS TO LIVE (SELECT ALL THAT APPLY)**



Slightly more than half (52%) of respondents at the statewide level indicated they were considering moving their place of residence in the next 5 years. (Figure 4-7) The percentage of respondents likely to move was highest in the Champlain Valley region (67%) and lowest in the Northeast region (42%). Younger residents were much more likely to consider moving within the next five years; 75% of 18-34 year-olds indicated they are considering moving compared to 49% of 35-64 year-olds and 32% of those 65 or older.

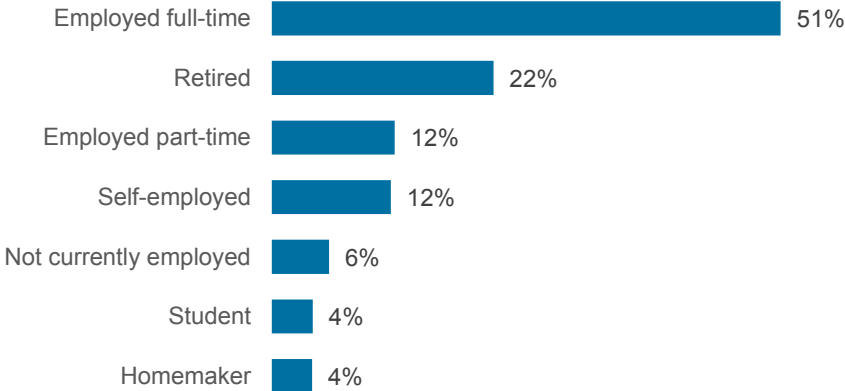


**FIGURE 4-7: CONSIDERING MOVING PLACE OF RESIDENCE**



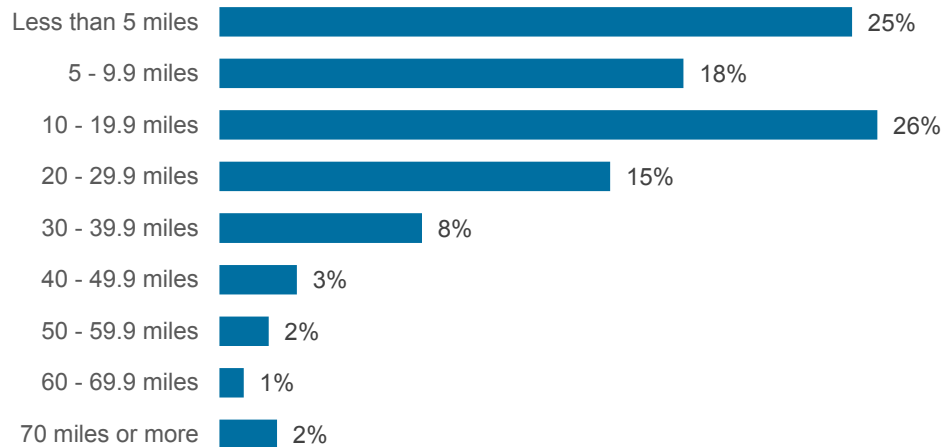
Next, respondents answered a series of questions about their employment status and commuting patterns. As shown in **Figure 4-8**, approximately half of respondents at the statewide level indicated they were employed full time, while 22% of respondents reported being in retirement.

**FIGURE 4-8: EMPLOYMENT STATUS (SELECT ALL THAT APPLY)**



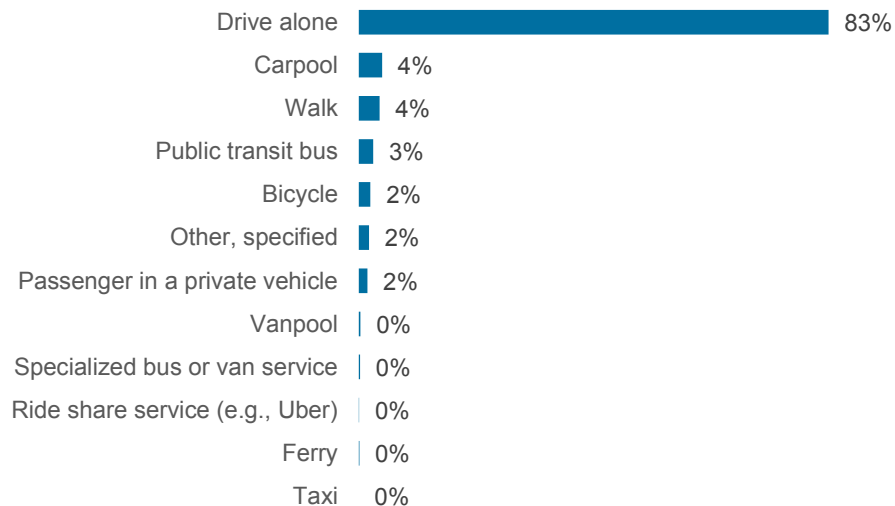
Of those that indicated full-time employment, part-time employment, or self-employment, the majority (89%) indicated leaving home to travel to work on a regular basis. The majority (69%) of respondents at the statewide level reported a distance to work of less than 20 miles, with a quarter of respondents reporting a distance to work of 5 miles or less (**Figure 4-9**). The average distance reported to work is 16.6 miles and the median is 10 miles.

**FIGURE 4-9: DISTANCE TO WORK**



Respondents who commute to work then indicated their primary and additional commute modes. At the statewide level, 83% of employed respondents who commute to work drive alone as their primary transportation mode, as shown in **Figure 4-10**. The Champlain Valley region had the lowest percentage of respondents who drove alone (79%) in comparison with the rest of the regions. Additionally, the Champlain Valley region had the highest percentage of respondents who walked, biked, or took public transit bus.

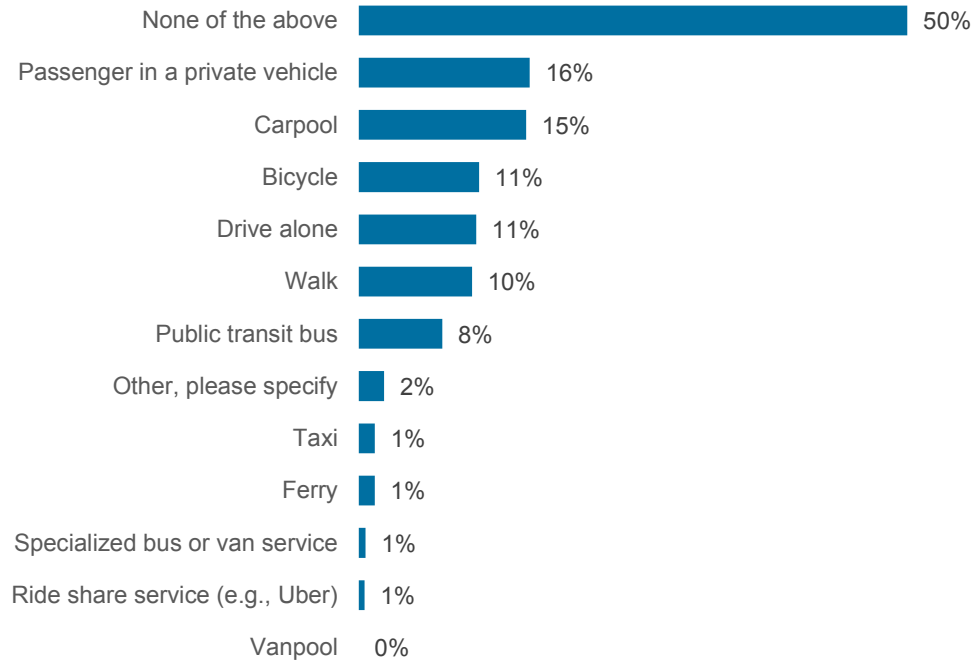
**FIGURE 4-10: PRIMARY COMMUTE MODE**



Respondents also reported other modes of transportation they have used to commute to work. While 50% of respondents at the statewide level indicated they did not use any modes other than their primary mode, 16% reported they rode in a private vehicle as a passenger and 15% reported they carpooled to work. Few respondents reported biking, walking, or

using public transit as their primary mode, but 11%, 10% and 8% indicated they have used these alternative transportation options in the past year to travel to work (**Figure 4-11**).

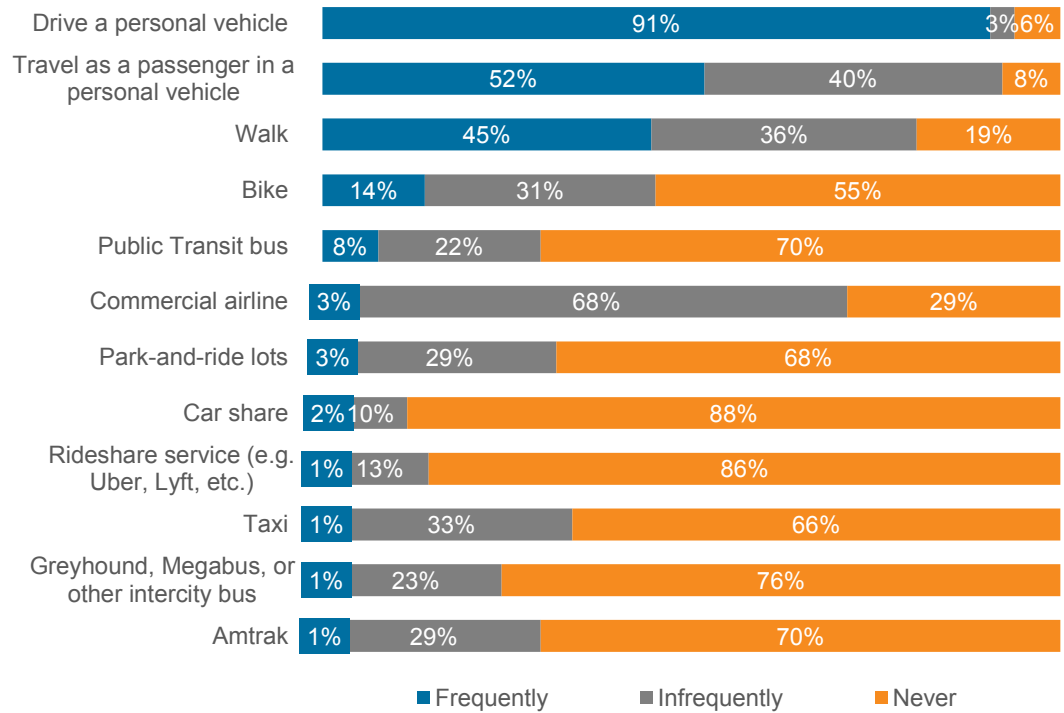
**FIGURE 4-11: OTHER COMMUTE MODES (SELECT ALL THAT APPLY)**



Next, all respondents reported how frequently they use a variety of transportation options or services for all activities including commuting or leisure. At the statewide level, 91% of respondents reported driving in a personal vehicle frequently and 52% reported traveling as a passenger in a personal vehicle frequently. Other frequently-used transportation modes included walking, with 45% reporting walking frequently (**Figure 4-12**). At the regional level, respondents from the Northeast region were least likely to use Greyhound, Megabus, or other intercity bus with 1% of respondents reporting using the service frequently and 10% reporting using the service infrequently. Twenty percent of respondents from Champlain Valley reported biking frequently, compared with 14% at the statewide level.

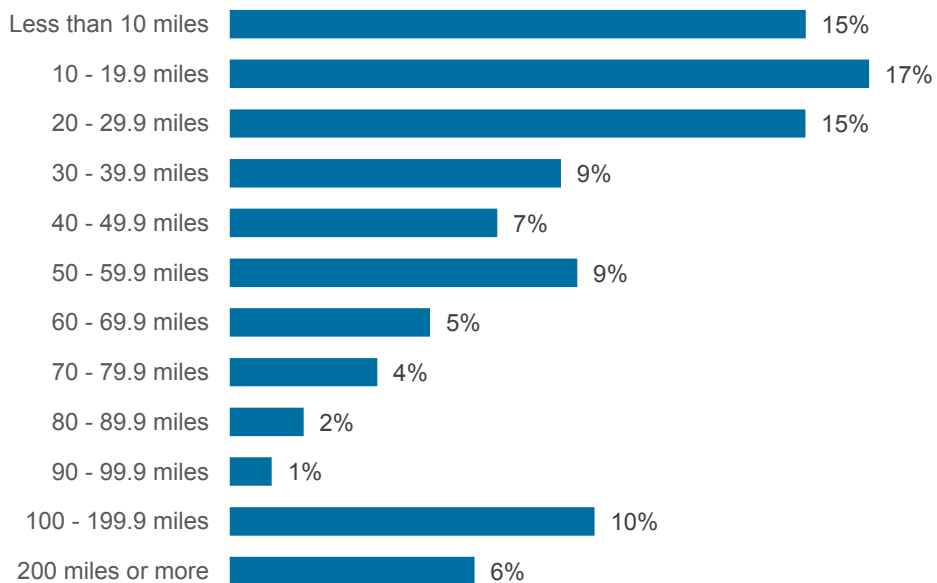
Younger respondents (18-34 year-olds) reported using non-auto modes such as walking, biking, intercity bus, public transit bus, taxi, and rideshare services more frequently than older respondents, likely related to the greater proportion of young respondents living in more densely developed regions of the state.

**FIGURE 4-12: USE FREQUENCY OF TRANSPORTATION OPTIONS AND SERVICE**



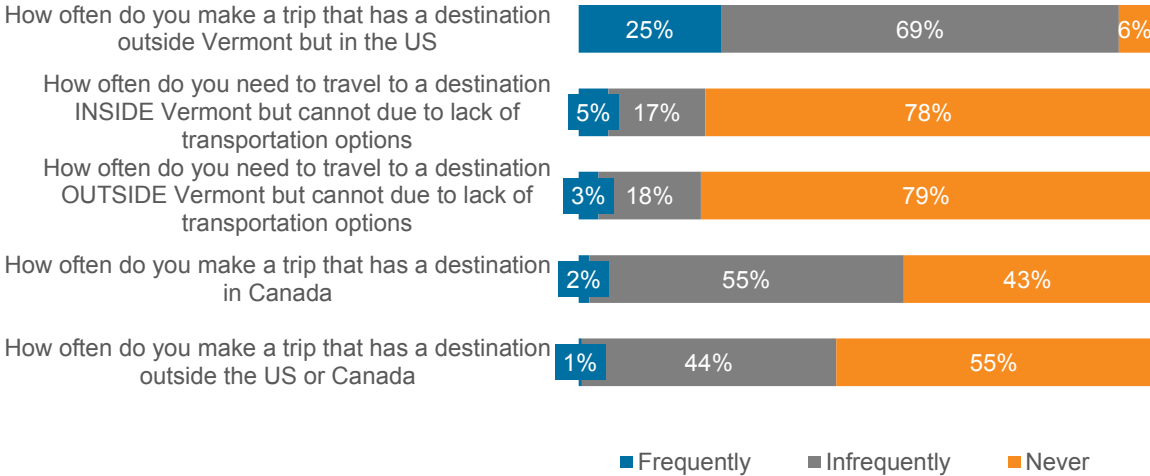
Respondents were then asked to indicate how many miles they traveled on the most recent weekday in an automobile. At the statewide level, 47% of respondents traveled less than 30 miles as displayed in **Figure 4-13**. The average total distance traveled by car on the most recent weekday was 58.5 miles and the median distance was 30 miles.

**FIGURE 4-13: WEEKDAY VEHICLE MILES TRAVELED**



To conclude the travel behavior section of the questionnaire, respondents were asked to indicate how often they made a variety of trip types, including trips within and outside Vermont and the United States. A quarter of respondents at the statewide level indicated making trips outside Vermont but in the US frequently, while a majority reported never being in a situation where they had to make a trip within or outside of Vermont and did not have a transportation option. (Figure 4-14). At the regional level, 57% of respondents in the Southeastern region indicated that they make frequent trips to destinations outside of Vermont but within the United States, compared with 25% at the statewide level.

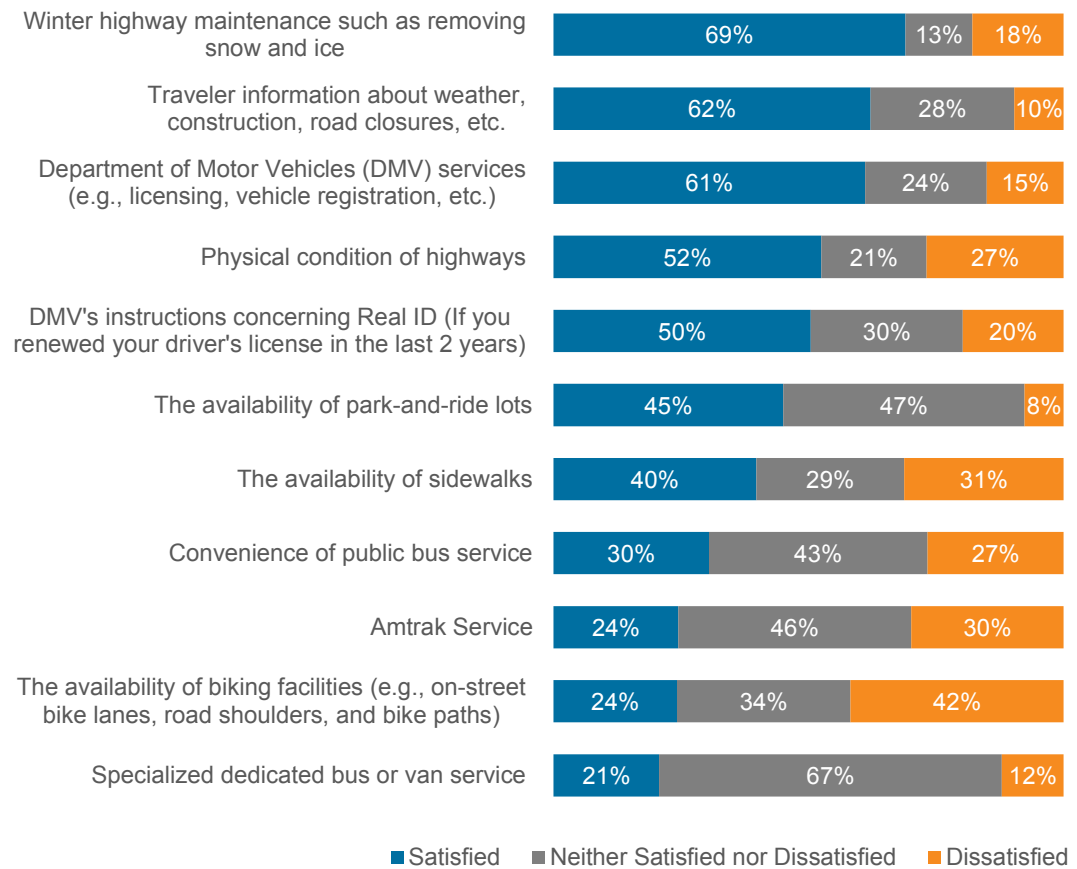
**FIGURE 4-14: LONG DISTANCE TRAVEL QUESTIONS**



**CUSTOMER SATISFACTION**

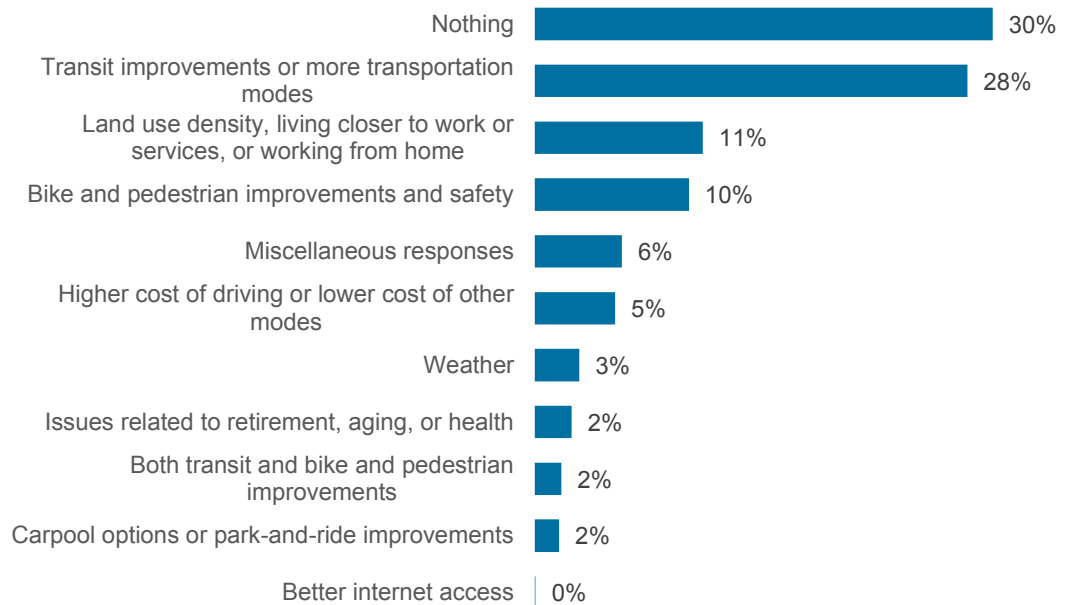
In the customer satisfaction section of the questionnaire, respondents were presented with questions about their satisfaction with transportation services and the frequency and impact of traffic congestion. Respondents were asked to rate how satisfied they were with 11 aspects of infrastructure or transportation services. At the statewide level, 69% of respondents were satisfied with winter highway maintenance and 62% were satisfied with traveler information about weather and construction. At the regional level, while 59% of respondents from the Southwest region were satisfied with winter maintenance, this region had the highest level of dissatisfaction at 28% compared with the 15% to 20% dissatisfaction in the other regions. With regard to satisfaction with infrastructure, 42% of respondents were dissatisfied with the availability of biking facilities and 31% were dissatisfied with the availability of sidewalks. Figure 4-15 presents the results of the customer satisfaction questions with “Very satisfied” and “Satisfied” collapsed into a single “Satisfied” category and “Very dissatisfied” and “Dissatisfied” collapsed into a single “Dissatisfied” category.

**FIGURE 4-15: SATISFACTION WITH TRANSPORTATION SERVICES AND INFRASTRUCTURE**



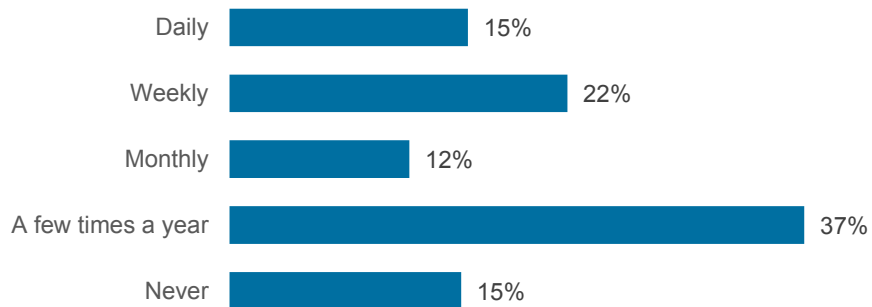
Respondents were asked to indicate what might encourage them to drive their car less in Vermont. These open-ended responses were coded into categories based on the primary theme of the response (**Figure 4-16**). Thirty percent of respondents at the statewide level indicated that nothing would reduce their automobile use, while 28% of respondents named transit improvements or access to other modes of transportation as factors that would lead them to drive less. However, many respondents thought that the rural nature of the state made such transit improvements unrealistic. Other factors frequently mentioned were related to land use density, such moving closer to work, finding a job closer to home, or having more services available near their home, and improvements to bicycle and pedestrian facilities and safety related to these modes.

**FIGURE 4-16: FACTORS TO ENCOURAGE DRIVING LESS**



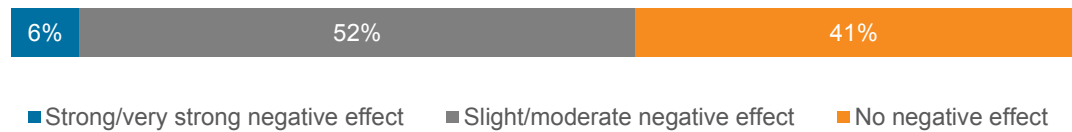
When asked how often they experienced traffic congestion in Vermont, 15% of respondents at the statewide level indicated they never experienced congestion and 37% reported only experiencing congestion a few times a year. Only 15% reported experiencing congestion daily. At the regional level, respondents in the Northeast region were the least likely to experience daily congestion (8%) and the most likely to never experience congestion (29%).

**FIGURE 4-17: CONGESTION FREQUENCY**



Respondents also reported how traffic congestion affected their quality of life. At the statewide level, only 6% reported a strong to very strong negative effect, whereas 52% indicated a slight or moderate negative effect, and 41% indicated no negative effect. The proportion of respondents reporting that traffic congestion has no negative effect on their overall quality of life was greatest in the Northeast region (59%) and lowest in the Champlain Valley region (32%).

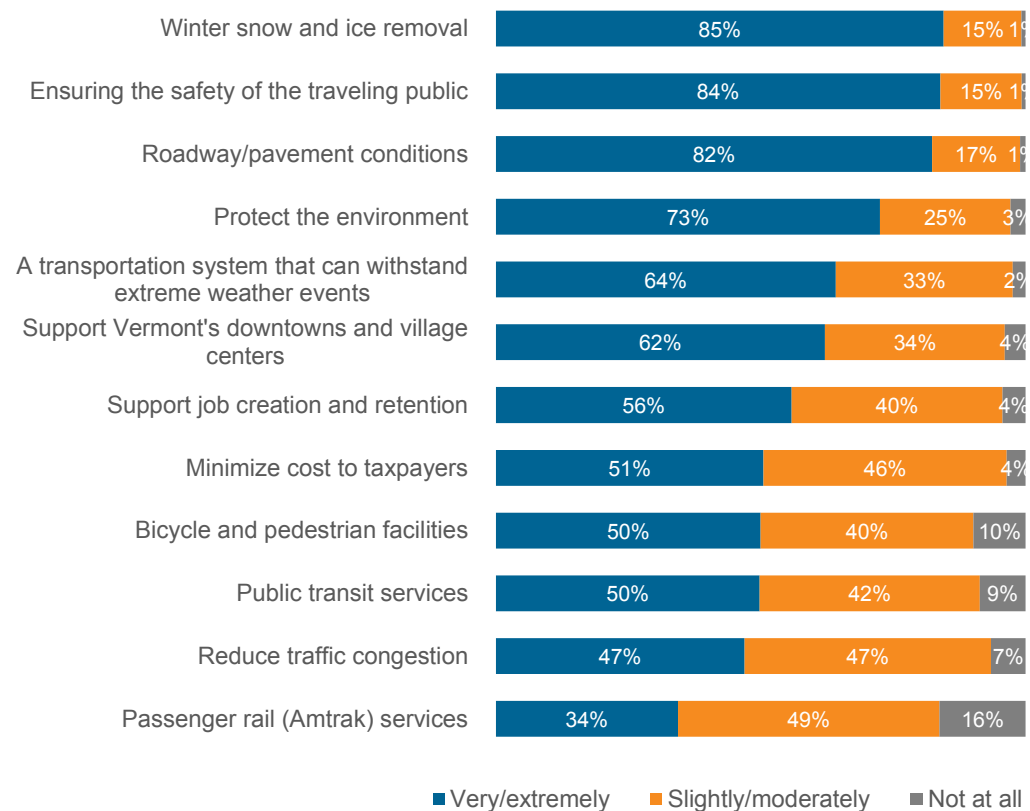
**FIGURE 4-18: IMPACT OF TRAFFIC ON QUALITY OF LIFE**



**POLICY AND FUNDING**

The Policy and Funding section of the questionnaire focused on prioritizing transportation planning and financial resources. Respondents were asked to rate the importance of 12 services or issues. **Figure 4-19** presents the results, with responses group into categories of very or extremely important, slightly or moderately important, or not at all important. At the statewide level, winter snow and ice removal was the service or issue most frequently selected as “very important” or “extremely important,” followed closely by safety and roadway/pavement conditions. These items were selected as the top three most important issues in all five regions. In the Champlain Valley region, safety was most frequently selected as being very or extremely important.

**FIGURE 4-19: IMPORTANCE OF TRANSPORTATION SERVICES/ISSUES**

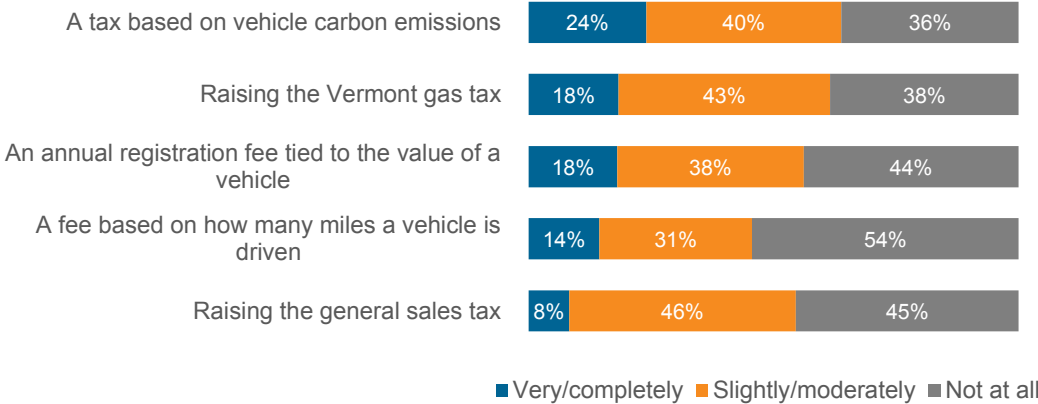




Respondents were asked to report how acceptable five potential funding mechanisms would be to them as an alternative to the current Vermont gas tax. Of the five presented, the mechanism perceived as being the most acceptable was a tax based on vehicle carbon emissions, while the least acceptable was a fee based on annual VMT (**Figure 4-20**). These attitudes were generally consistent among the five regions, although the Southwest and Northeast regions were less likely to view any of the proposed funding mechanisms as acceptable.

Younger respondents were less likely to view a VMT fee as acceptable. Sixty-two percent of those in the 18-34 age group indicated a VMT fee was not at all acceptable, compared with 54% of those in the 35-64 group and 44% of those in the 65 or older group. Conversely, younger respondents were slightly more likely to support raising the general sales tax, an annual registration fee tied to the value of the vehicle, or raising the Vermont gas tax.

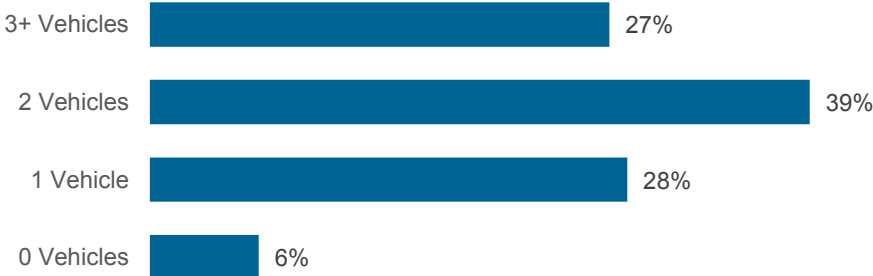
**FIGURE 4-20: ACCEPTABILITY OF TRANSPORTATION FUNDING MECHANISMS**



**EMERGING TRENDS AND TECHNOLOGY**

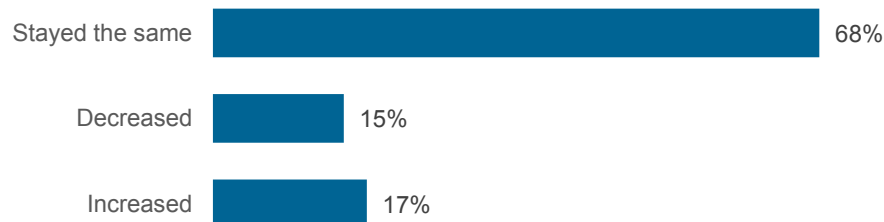
Approximately 6.4% of Vermonters reported having no vehicles in their household. The proportion of households with no vehicles was highest in the Champlain Valley (8%) and Southwest (8%) regions, and lowest in the Central (4%) region.

**FIGURE 4-21: HOUSEHOLD VEHICLES**



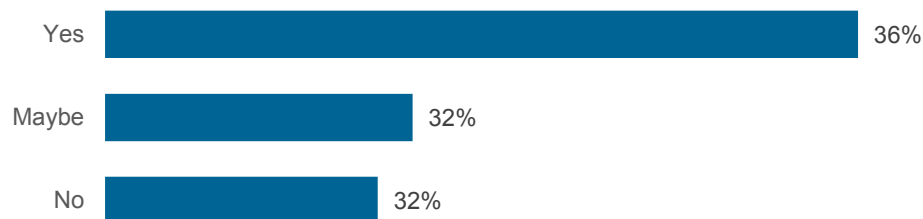
About two-thirds (68%) of respondents reported that the number of vehicles in their household had remained constant over the past five years, while approximately equal numbers decreased and increased their vehicle holdings (15% and 17% respectively). These proportions were consistent across all five regions of the state.

**FIGURE 4-22: CHANGE IN HOUSEHOLD VEHICLES**



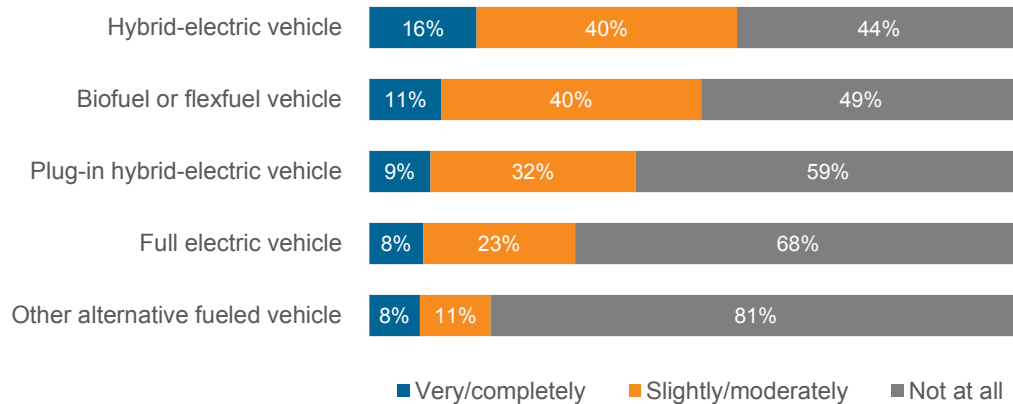
Thirty-six percent of respondents expect to purchase a vehicle within the next five years, with another 32% considering a vehicle purchase. Respondents 65 years old or older were least likely to purchase a vehicle in the next five years, with 47% indicating they do not plan to do so, compared with 27% of 35-64 year-olds and 28% of 18-34 year-olds.

**FIGURE 4-23: LIKELIHOOD OF VEHICLE PURCHASE OR LEASE WITHIN THE NEXT 5 YEARS**



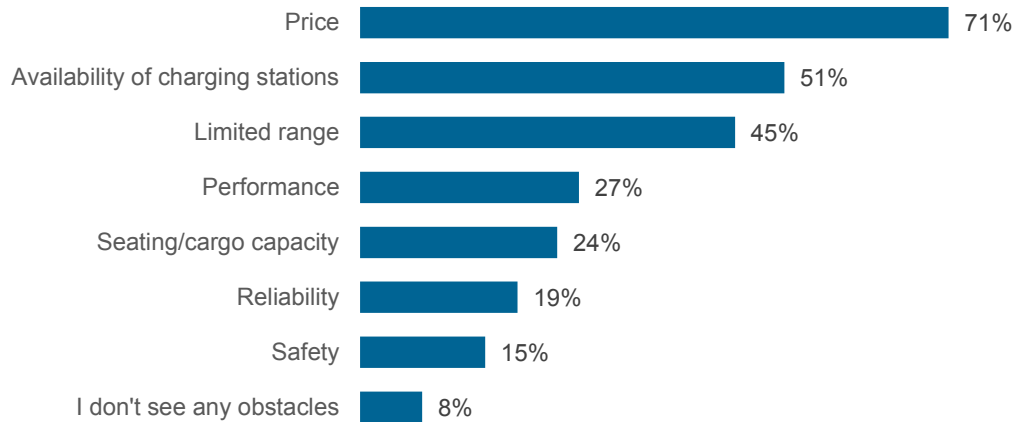
Those respondents considering a vehicle purchase in the next five years were asked about their consideration of four alternative-fuel vehicles for their next purchase. In general, respondents were most likely to consider purchasing a hybrid vehicle and least likely to consider purchasing an electric vehicle (**Figure 4-24**). Respondents in the Champlain Valley and Central regions were most likely to consider purchasing an alternative-fuel vehicle, while respondents in the Northeast and Southwest regions were least likely to consider purchasing an alternative-fuel vehicle.

**FIGURE 4-24: LIKELIHOOD OF ALTERNATIVE-FUEL VEHICLE PURCHASE**



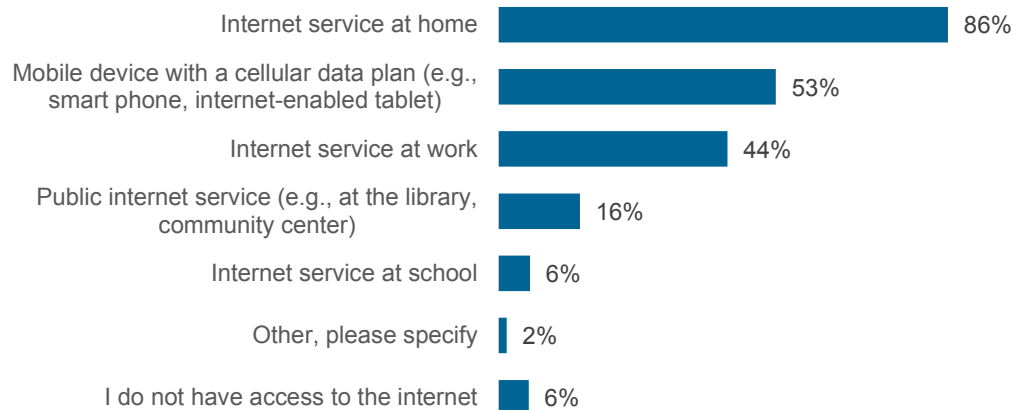
Vehicle price was the most frequently-cited obstacle for purchasing a hybrid or electric vehicle with little variation by region. This was followed by the limited range of electric vehicles and the limited availability of charging stations in the state.

**FIGURE 4-25: OBSTACLES TO PURCHASING HYBRID OR ELECTRIC VEHICLES (SELECT ALL THAT APPLY)**



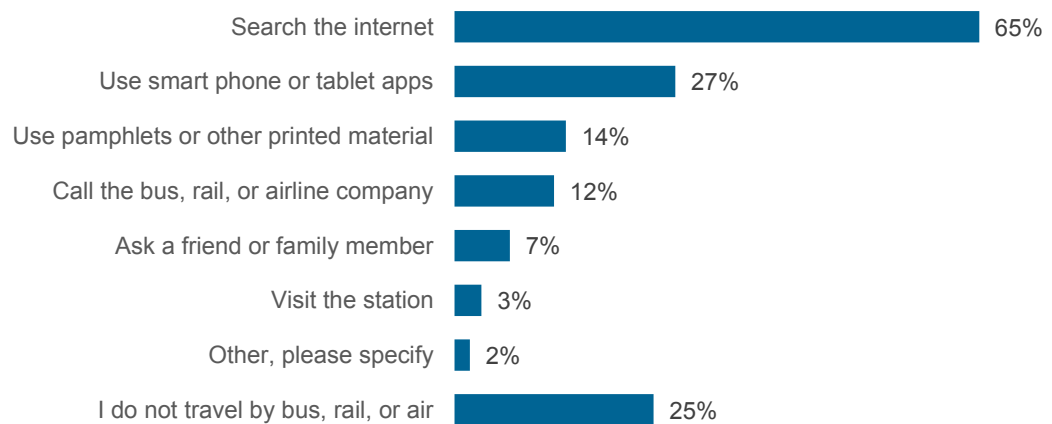
A majority of respondents (86%) reported having internet service at home, while about 6% of respondents reported having no internet access at any location. This proportion was highest in the Northeast region (11%) and lowest in the Champlain Valley region (4%). There were also significant differences in internet access and the type of internet access by age; no respondents in the 18-34-year-old group reported having no access to the internet, while 4% of 35-64 year-olds and 17% of those 65 or older reported having no internet access. Similarly, 75% of 18-34 year-olds reported having a mobile device with a cellular data plan, compared with 57% of 35-64 year-olds and only 18% of those 65 or older.

**FIGURE 4-26: INTERNET ACCESS (SELECT ALL THAT APPLY)**



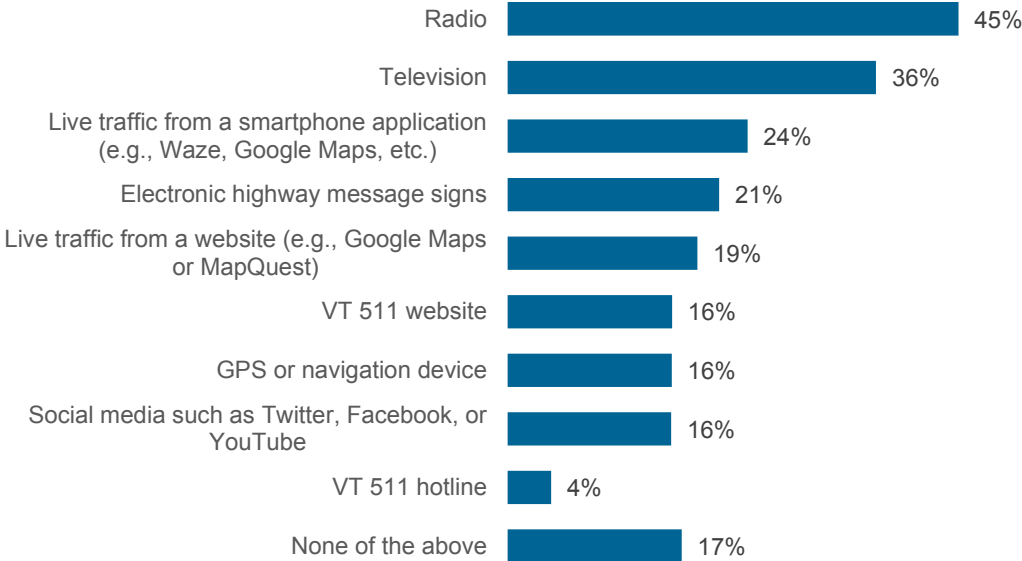
A majority of respondents reported using the internet to get route and schedule information. Consistent with the internet access question, this proportion was highest in the Champlain Valley region (73%) and lowest in the Northeast region (47%). The Northeast region also had the highest proportion of respondents who do not travel by bus, rail, or air, at 44%.

**FIGURE 4-27: BUS, RAIL, AND AIR SCHEDULE INFORMATION (SELECT ALL THAT APPLY)**



In contrast to route and schedule information, more respondents get real-time traffic information from traditional media sources such as radio (45%) and television (36%) than mobile devices or the internet. While 24% of respondents reported using a smartphone application to get real-time traffic information, this share was highest in the Champlain Valley region (30%) and lowest in the Northeast region (11%).

**FIGURE 4-28: REAL-TIME TRAFFIC INFORMATION (SELECT ALL THAT APPLY)**



## 5.0 SUMMARY AND CONCLUDING OBSERVATIONS

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The 2016 LRTP survey was conducted to collect information to understand statewide transportation issues and opportunities, and to inform and prioritize the vision, goals and policies, and investment priorities to sustain Vermont's transportation system for the future.

The survey used address-based sampling and a mail-out recruitment approach to collect information from 2,232 Vermont residents from all 5 regions of the state. A summary of general findings at the statewide level includes the following:

- Automobile is the primary mode of transportation for most Vermonters, with 80% reporting that they drive a personal vehicle frequently (multiple times per week), and 88% of workers reporting driving alone or carpooling as their primary mode to work.
- The average total distance traveled by car on the most recent weekday was 58.5 miles and median distance was 30 miles.
- Respondents who commute to work reported living an average of 16.6 miles from work with a median distance of 10 miles.
- When asked what might encourage them to drive their vehicle less in Vermont, 30% reported that nothing could do so. A further 28% reported that improvements to transit or other alternate modes could get them to drive less, although many thought that the rural nature of the state made such improvements unrealistic.
- A small town or village (38%) or a rural area (42%) were respondents' most preferred types of areas in which to live.
- A majority of respondents are satisfied with winter highway maintenance (69% very satisfied or satisfied), traveler information (62%), DMV services (61%) and the physical conditions of Vermont's highways (61%).
- The largest sources of dissatisfaction are the availability of bike lanes (42% dissatisfied or very dissatisfied), the availability of sidewalks (31%), and Amtrak service in the State (30%).
- Respondents do not perceive traffic congestion in Vermont to have a significant impact on their overall quality of life, with 93% reporting no negative effect or a slight/moderate negative effect on their quality of life.
- Of those listed, the most important transportation services and issues were winter snow and ice removal (85% selected extremely or very important), ensuring the safety of the traveling public (84%) and roadway and pavement conditions (82%).
- Respondents reported that the most acceptable alternative funding mechanism to the current state motor fuel tax is a tax based on vehicle carbon emissions, while the least acceptable funding mechanism is a fee based vehicle miles traveled.

The VTrans Policy and Planning unit will use the information collected in this survey to inform the development of the State Long Range Transportation Plan for 2016.