

2007 TRAC HOV Public Opinion Survey Results

In January of 2007, the Washington State Transportation Center (TRAC) conducted its periodic survey of freeway travelers as part of its ongoing HOV lane evaluation project for WSDOT. The results presented in this report are based on data collected between January and March of 2007. The surveys were mailed to registered owners of vehicles identified as HOVs and SOVs by traffic observers in the field, as well as owners of vehicles using a Park and Ride. The response rate was approximately 22% (1064 returned surveys of 5249 delivered). Since the process of identifying travelers and mailing surveys does not generate a random sample, conclusions drawn from these data should not be considered completely representative of either the traveling public, or the driving population, but are simply descriptive of those people who filled out the survey.

COMMUTE CHARACTERISTICS

- The respondents were asked to describe their commute characteristics, including:
- their frequently used freeways
 - their typical commute mode
 - whether they had ever used HOV lanes to commute, and in which corridor.

Figure 1 shows the frequently used freeways of the survey respondents. The percentages represent the use of a given corridor by the survey population. Figure 2 displays the usual commute mode of the survey respondents. The majority of respondents are SOV, representing 57 percent. Thirty-nine percent of respondents rideshare (carpool, vanpool, or bus).

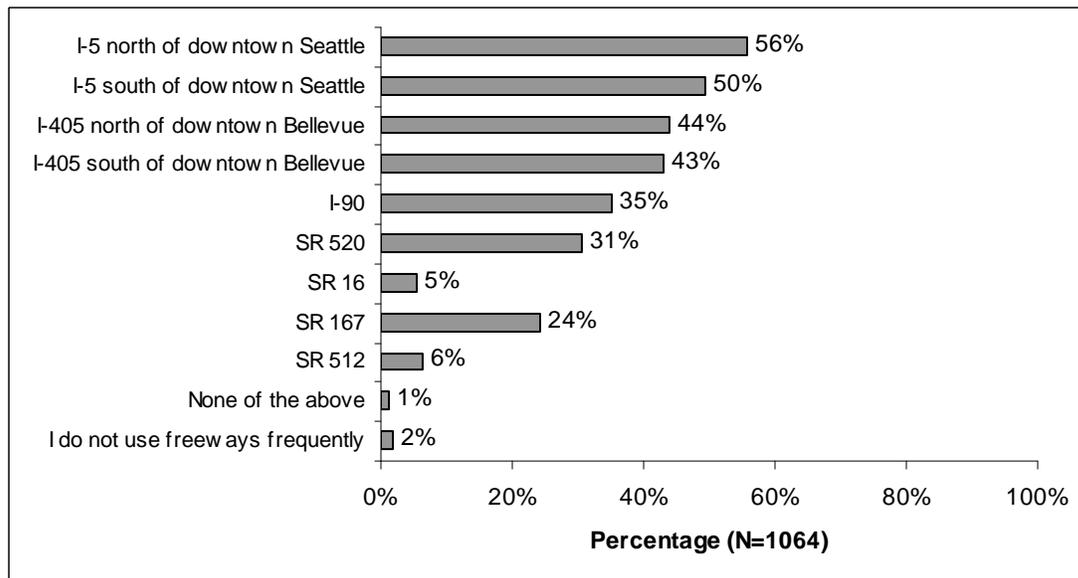


Figure 1. Frequently used freeways

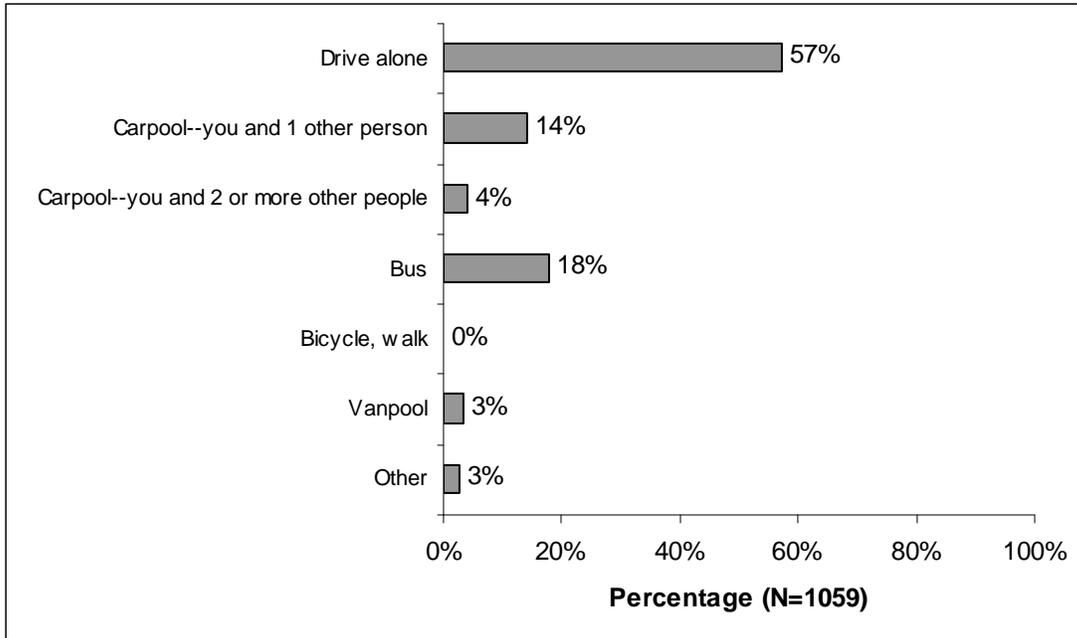


Figure 2. Usual mode of travel between 6:00 to 9:00 AM and 3:00 to 6:00 PM

The survey also addressed the frequency of HOV lane use of respondents. Figure 3 shows that approximately 40 percent of respondents typically use HOV lanes in the Puget Sound area two or more times per week per week. Figure 4 displays the mode of travel while using these HOV lanes.

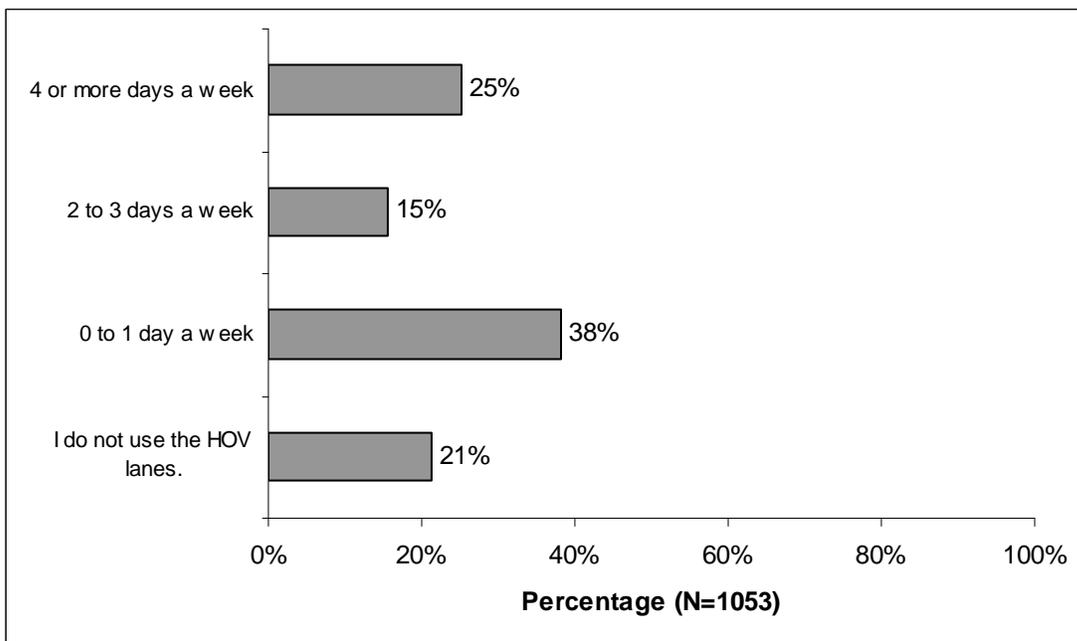


Figure 3. Typical weekly use of HOV lanes

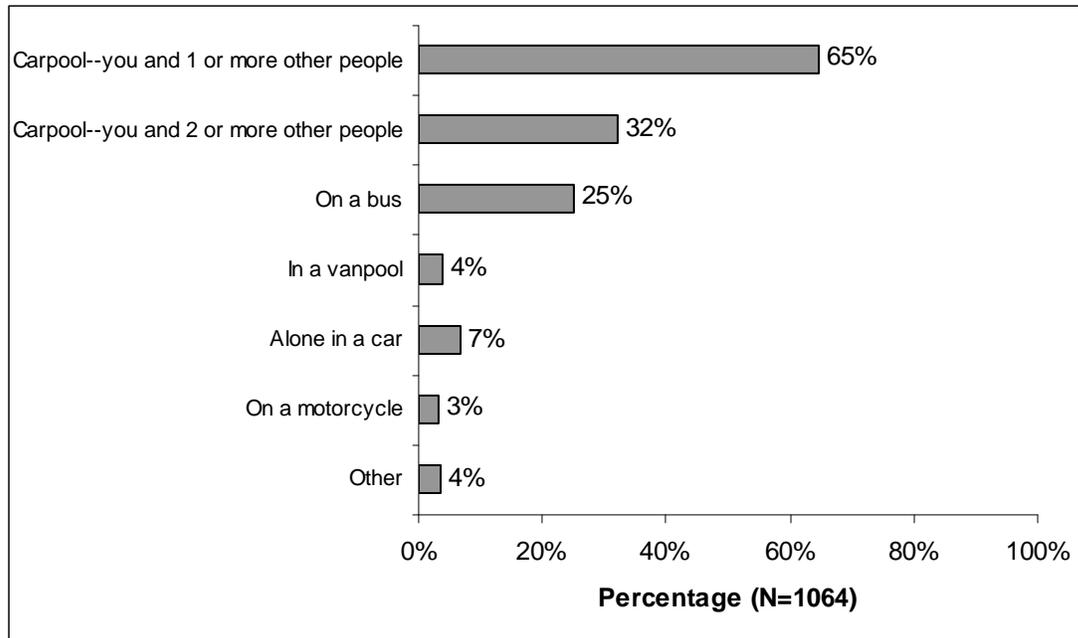


Figure 4. Past use of HOV lanes

The 2007 HOV Survey also included additional questions regarding the destination of travelers while they were using HOV lanes and the relationship and ages of carpoolers. Figures 5, 6, and 7 display the responses to these questions. Figure 5 shows that thirty-nine percent of respondents use HOV lanes for commuting to and from work. Figure 6 shows that of the respondents who carpool, 70% usually carpool with members of their own household. Carpoolers were also asked the ages of the passengers while carpooling during the peak periods. Seventy-one percent of respondents typically travel with adults only during the peak periods.

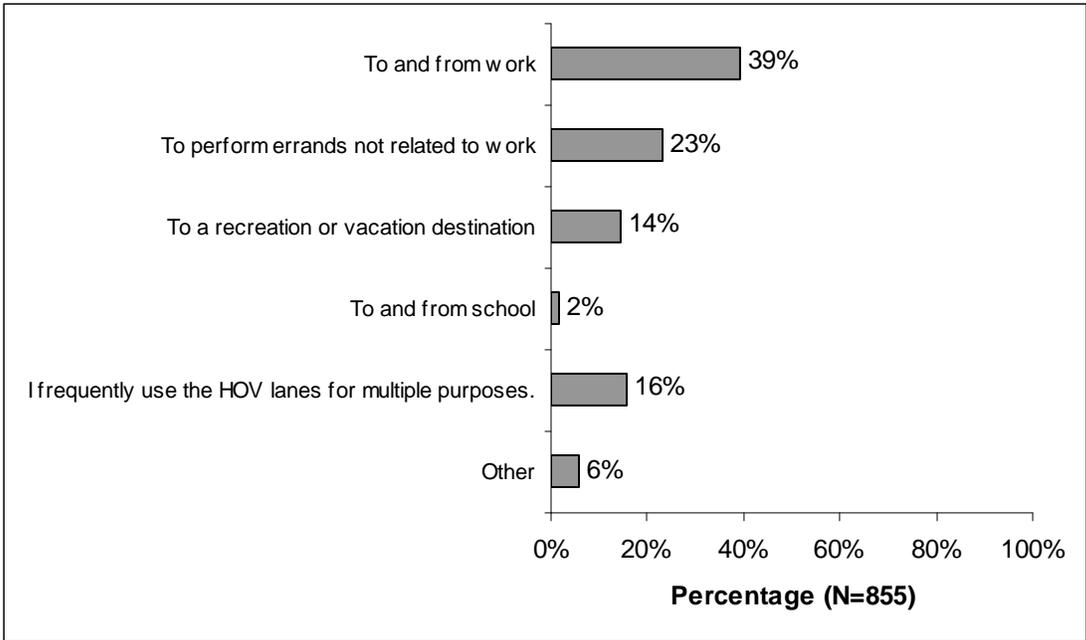


Figure 5. Typical destination while using HOV lanes

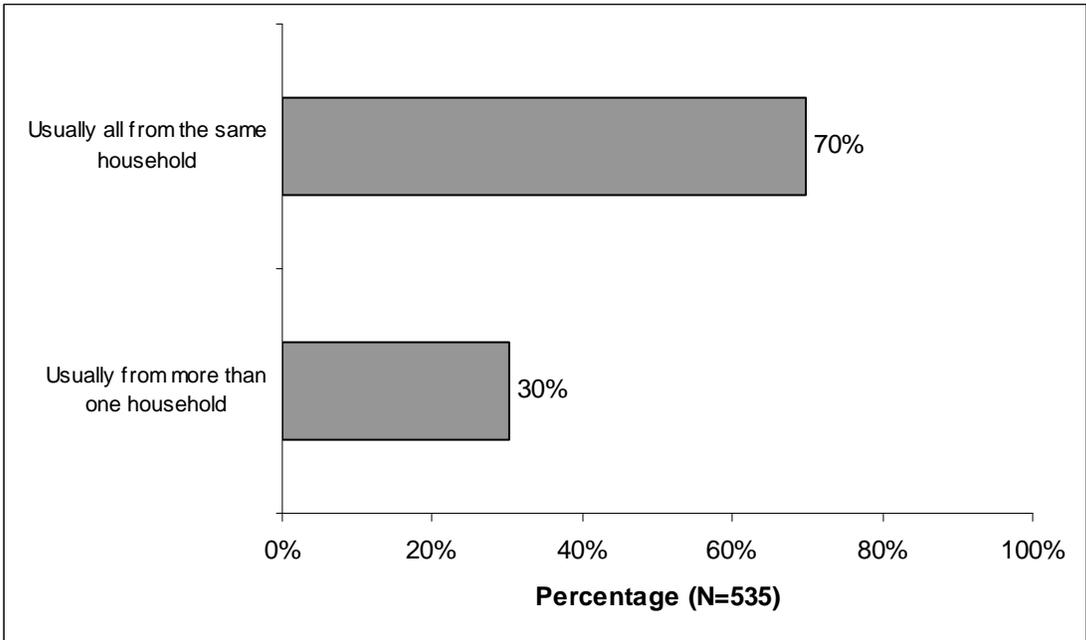


Figure 6. Relationship of carpool/vanpool users

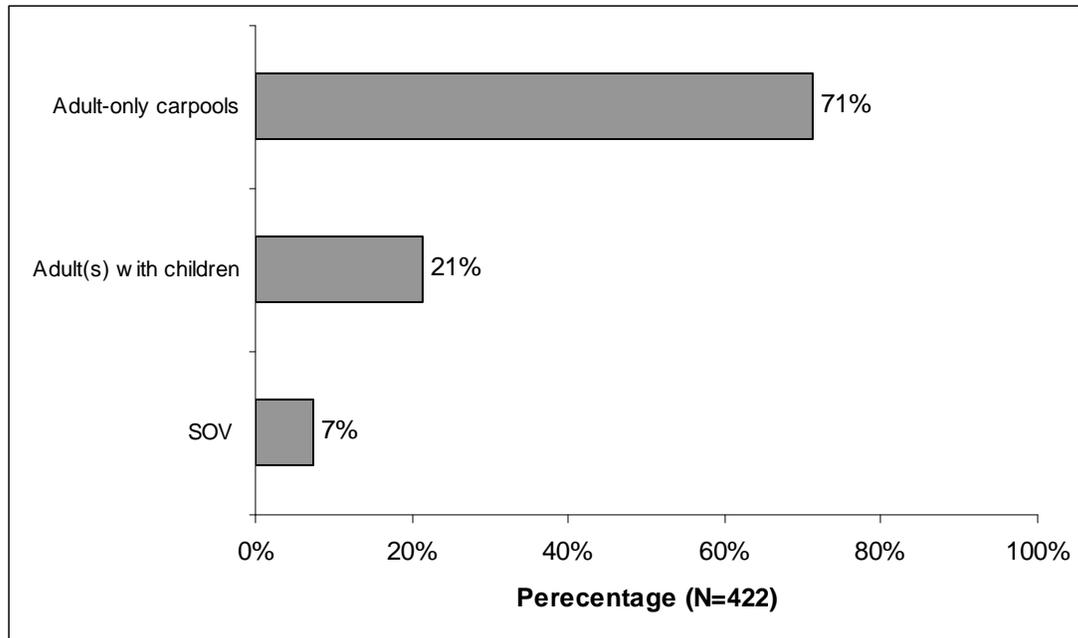


Figure 7. Ages of passengers in carpools

While 70 percent of frequent carpool users report forming carpools “usually all from the same household” this percentage shrinks somewhat (to 59 percent) if responses are limited to carpool users traveling to and from work during the peak periods. Despite this reduction, this survey result supports the contention that a significant portion of peak period, work trip oriented carpools are made up of persons from the same household. The small number of work related carpool users responding to this survey (85 responses), means that the 59 percent figure is not a conclusive estimate of the actual percentage of peak-period, work oriented carpools that are made up of family members, but this survey result is consistent with that conclusion. Figure 8 illustrates the make-up of carpools that use the HOV lane at least 2 days per week, and typically use the HOV lanes for traveling to and from work.

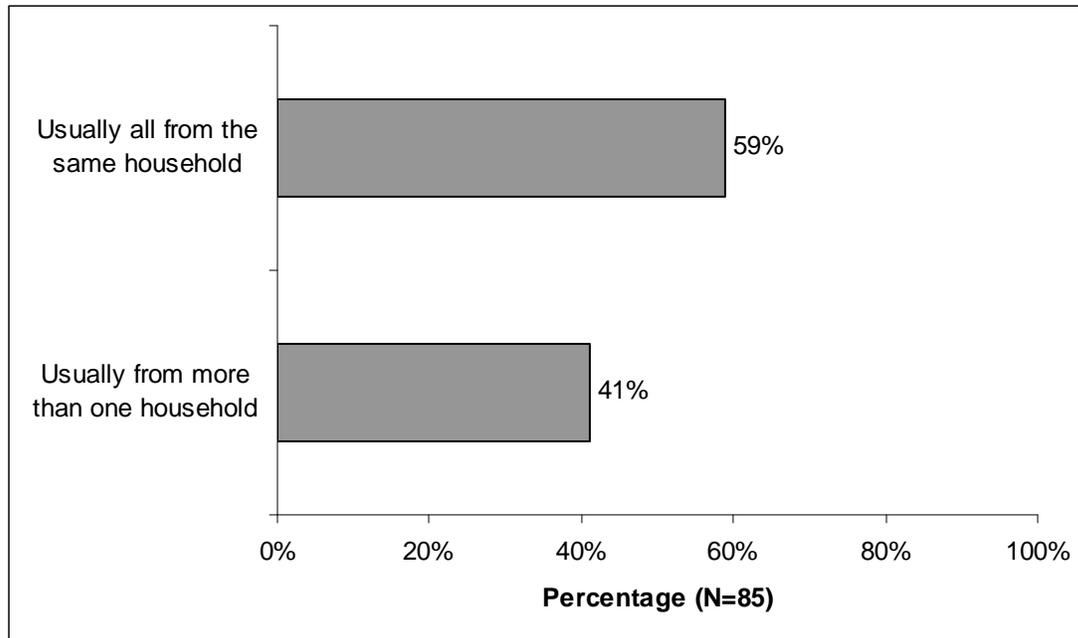


Figure 8. Relationship of frequent peak period carpoolers traveling to and from work

CHOOSING TO RIDESHARE

In order to test the importance of the HOV lanes in shifting mode choice to shared ride modes, the survey asked whether carpoolers would change their mode if the HOV lanes were not available. Figure 9 shows that the majority of respondents who currently carpool or vanpool would continue to do so, even if the HOV lanes were no longer available. But twenty percent of survey respondents indicate that they would likely not carpool or vanpool if the HOV lanes were unavailable, indicating that removing the HOV lanes could lead to a significant increase in vehicle volumes on the freeways.

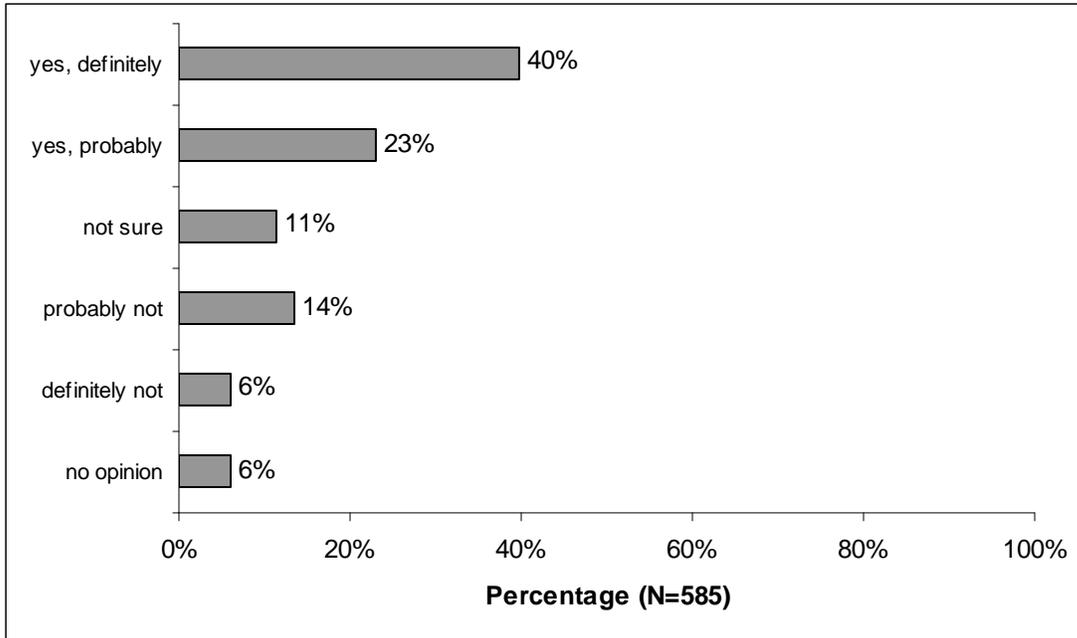


Figure 9. Decision to still choose to rideshare without HOV lanes

The subset of data from Figure 8 (frequent peak period carpoolers traveling to and from work) was used to determine if the decision to continue to carpool even without HOV lanes was related to the relationship of the members of the carpool. Although it is a small sample, the data indicates that work carpools consisting of household members are much more likely to continue carpooling without HOV lanes than carpools with members from more than one household (Figure 10).

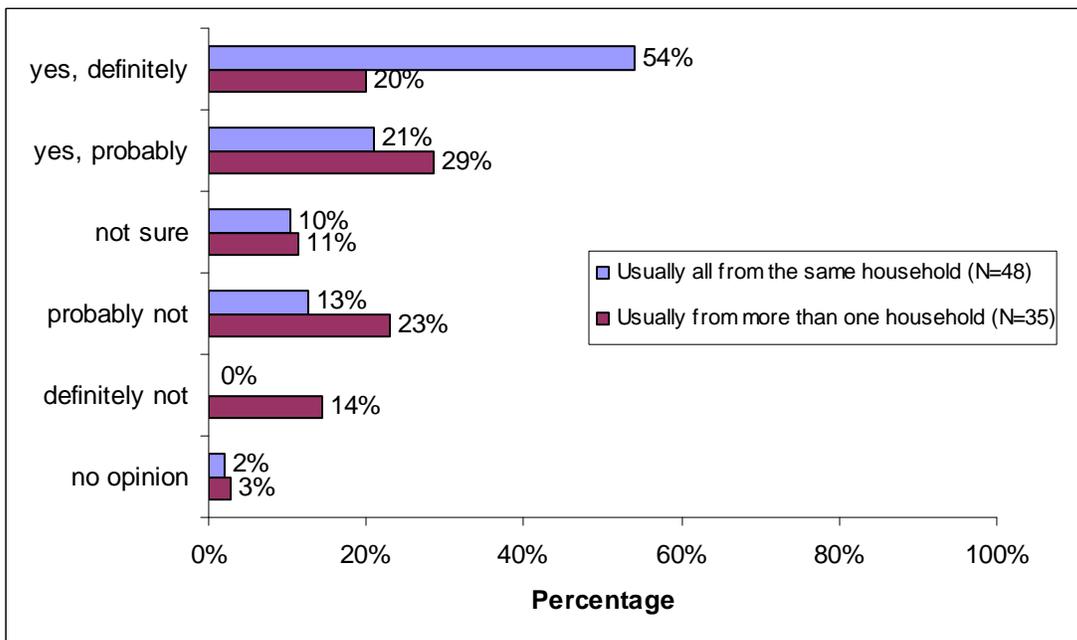


Figure 10. Decision to still choose to rideshare without HOV lanes vs. the relationship of frequent peak period carpoolers traveling to and from work

The survey included questions about respondents' reasons for carpooling and how congestion impacts their decisions. Figure 11 displays respondents' reasons for choosing to carpool. The results show that respondents choose to carpool for a variety of reasons, including money savings, convenience, and travel time savings.

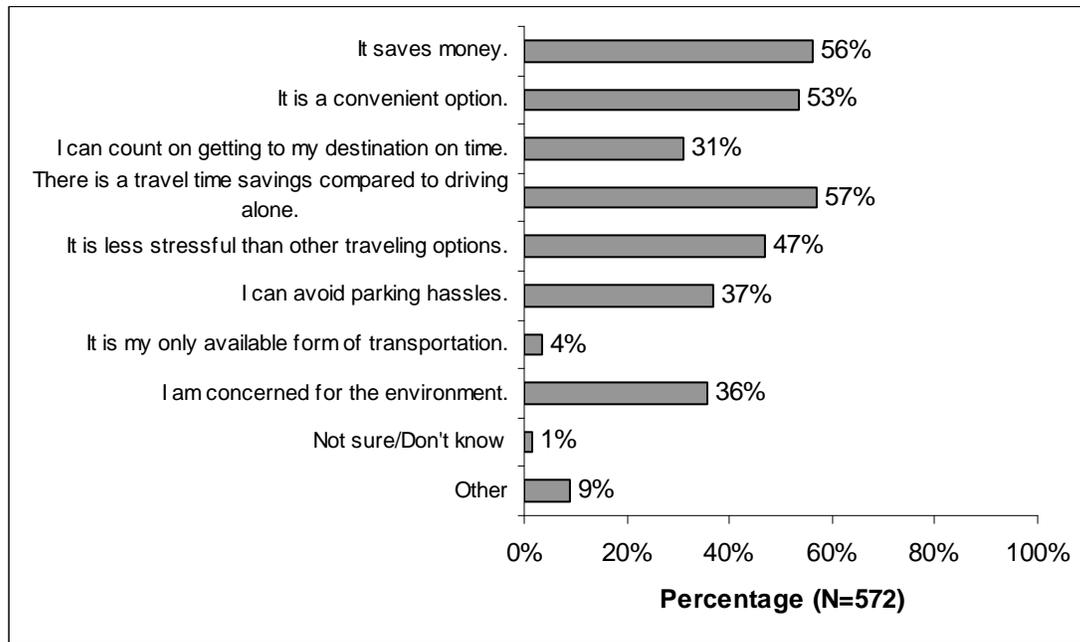


Figure 11. Reasons for using a carpool/vanpool/transit

Figure 12 displays the results of a question regarding increased congestion in the HOV lanes during the peak periods. Forty-three percent of respondents said that increased congestion would not change their travel choices. The survey also included a question to learn about the use of HOV lanes for commuting between home and work. Respondents were asked if their travel choices for commuting between home and work would change if HOV lanes were open to all traffic, all of the time. Forty-six percent of respondents said that removal of HOV lane restrictions would not affect their travel choices (Figure 13), but seventeen percent of respondents said they would drive alone more often.

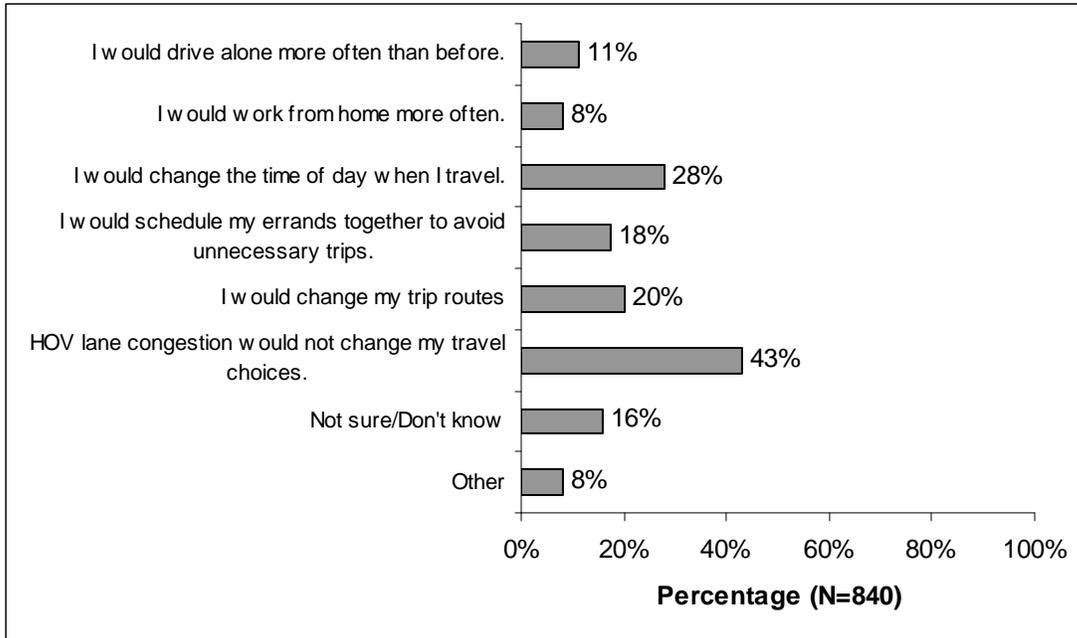


Figure 12. Driving decisions based on increased congestion in the HOV lane during the peak periods

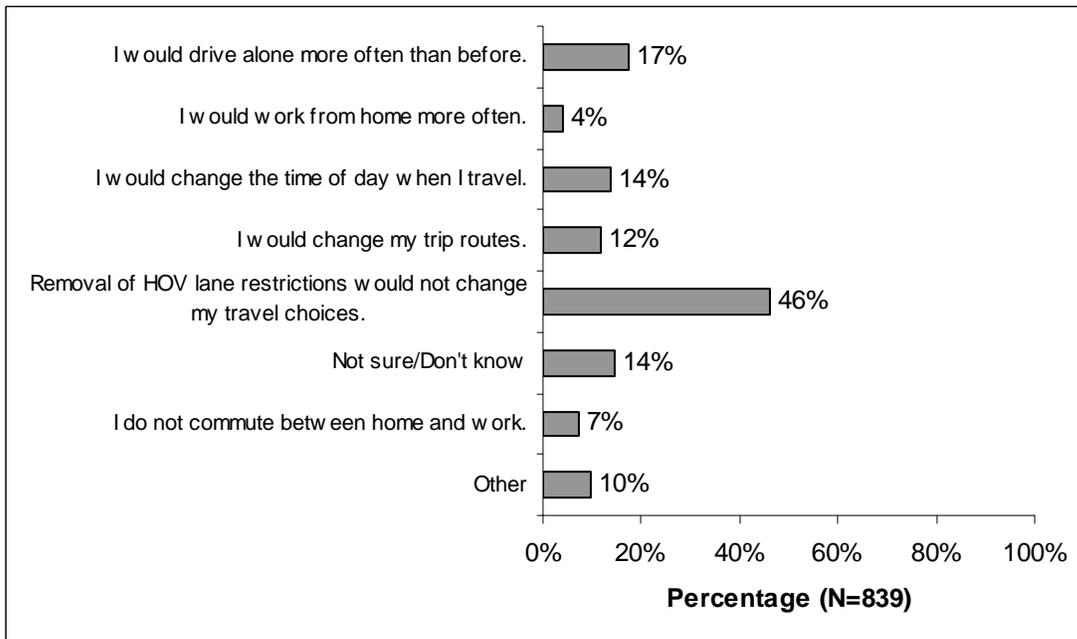


Figure 13. Driving decisions for commuting between home and work if HOV lanes were open to all traffic, all of the time

In addition to questions about commuting, the survey included questions regarding trips during the midday as part of work activities. Figure 14 shows that the

majority of respondents rarely make work trips during the day. Of those who do make work trips, 87% use the HOV lanes for work trips less than once per week (Figure 15).

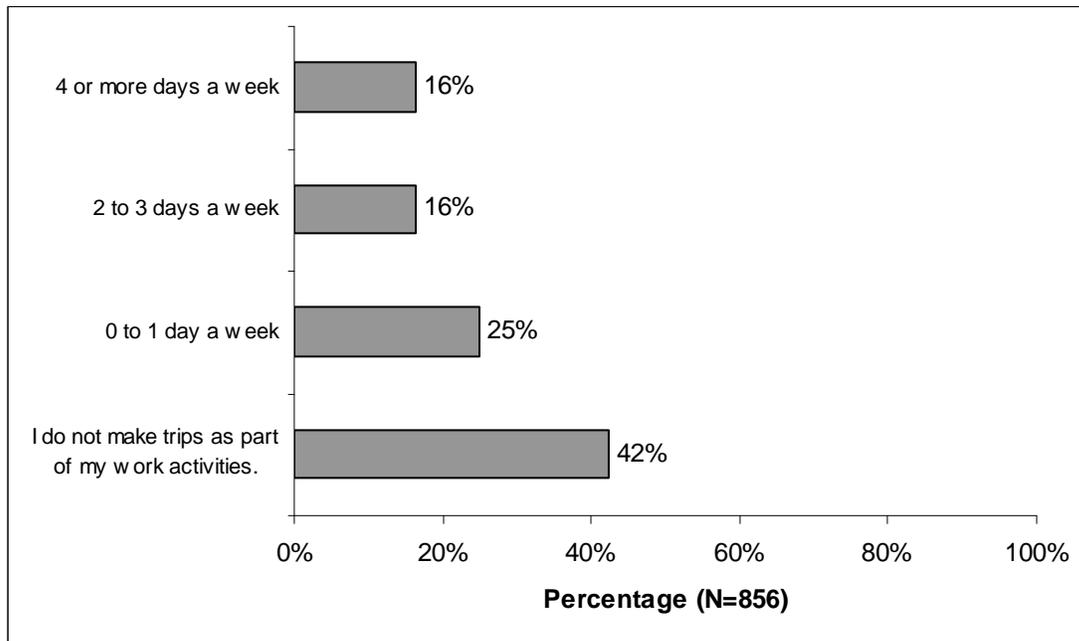


Figure 14. Frequency of trips during the day as part of work activities

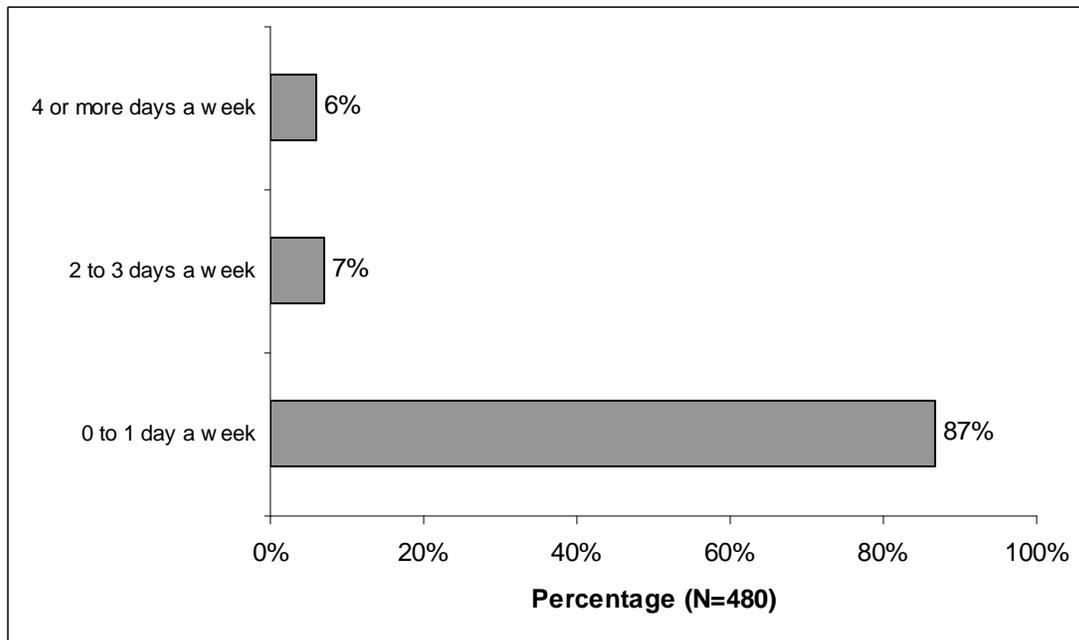


Figure 15. Frequency of HOV lane use for work trips during the day

GENERAL TRAVEL CHOICES

The 2007 survey also included questions about respondents' general travel choices, decisions that are not necessarily HOV lane specific. One question referred to traveler decisions based on increased gas prices. Figure 16 displays the results of how travelers feel their decisions have changed. Respondents were asked to mark all changes that apply. Many respondents have reduced their number of trips by driving less than before or scheduling errands together. However, thirty-nine percent said that the increased gas prices have not changed their travel choices.

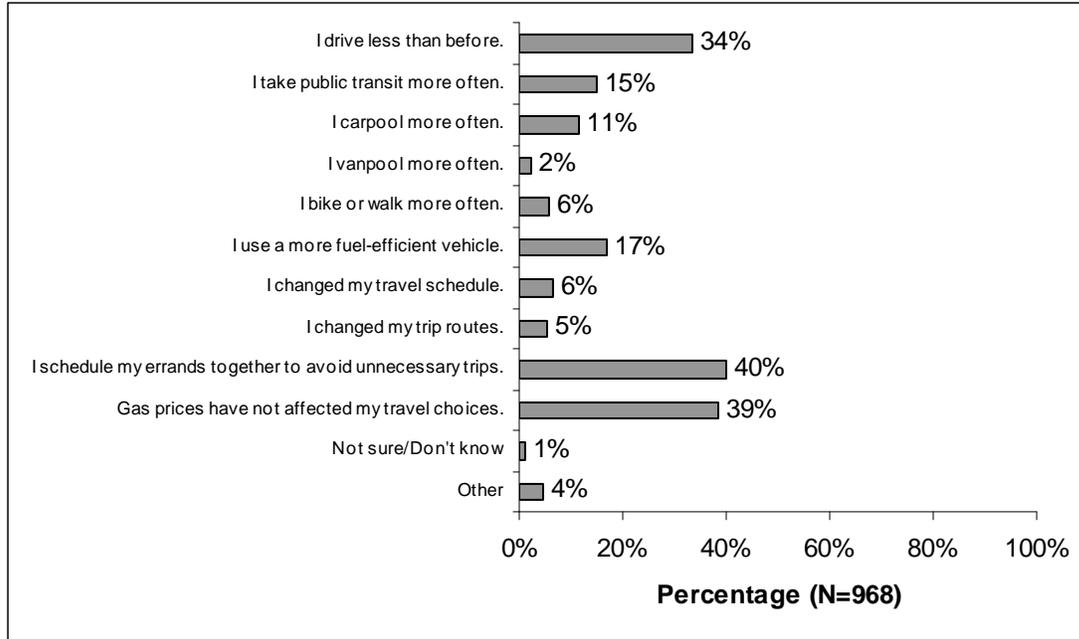


Figure 16. Effect of increasing gas prices on travel choices

The survey also asked how respondents have changed their travel choices based on the increased congestion during the peak period. Figure 17 displays these results. Significant numbers of respondents are changing their travel choices based on congestion. These changes include driving less than before, scheduling errands together, and changing their travel schedule and trip routes.

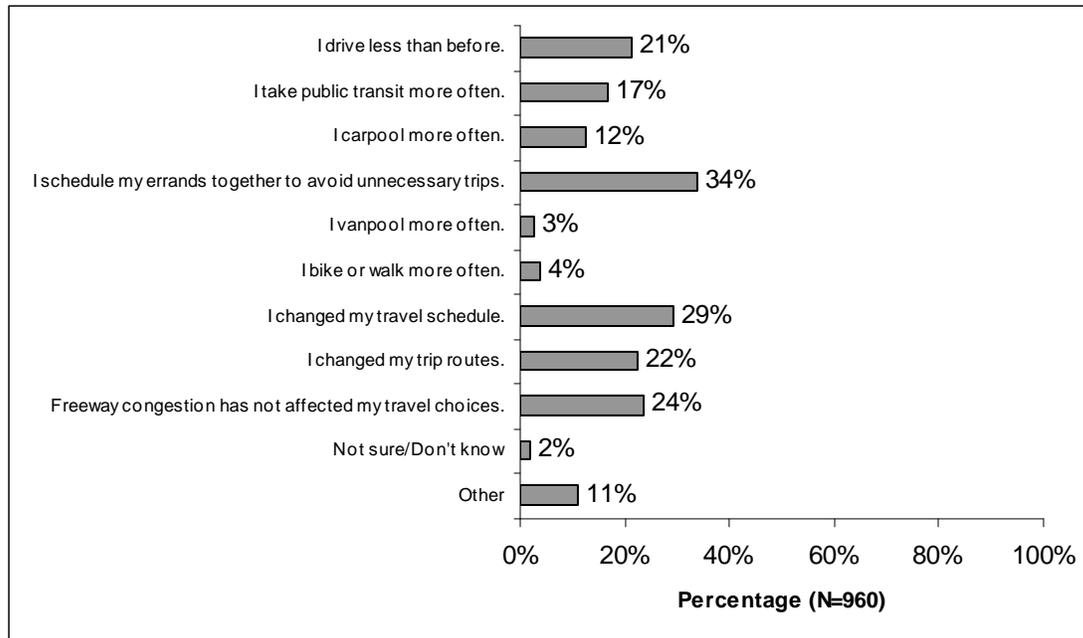


Figure 17. Effect of congestion on peak period travel choices

PUBLIC OPINIONS ON VARIOUS HOV ISSUES

The survey also included a section on the opinions of freeway users towards the HOV system. The results are grouped as follows: General Perception, HOV Lane Operation, HOV Lane Violations, and HOV Lane Safety. The survey responses are broken down by usual mode of travel during the peak periods (6-9 AM and 3-7 PM) and by the degree to which respondents agree to certain assertions. The SOV group contains those respondents who answered, “Drive alone,” as their usual mode of travel during the peak period. The HOV group contains those respondents who answered either, “Carpool-you and 1 other person,” “Carpool-you and 2 or more other people,” “Vanpool,” or “Bus” as their usual mode of travel during the peak period.

General Perception

The support for HOV lanes remains high among all commuters. Figure 18 shows that support for HOV lanes is high amongst both SOV and HOV drivers. A large majority of both groups agree that HOV lanes are convenient to use, as displayed in Figure 19. Respondents were also asked about utilization of HOV lanes. The majority of HOV respondents feel that the HOV lanes are saving commuters a lot of time (Figure 20). Figure 21 shows mixed perceptions from SOV respondents about whether or not HOV lanes are being adequately used.

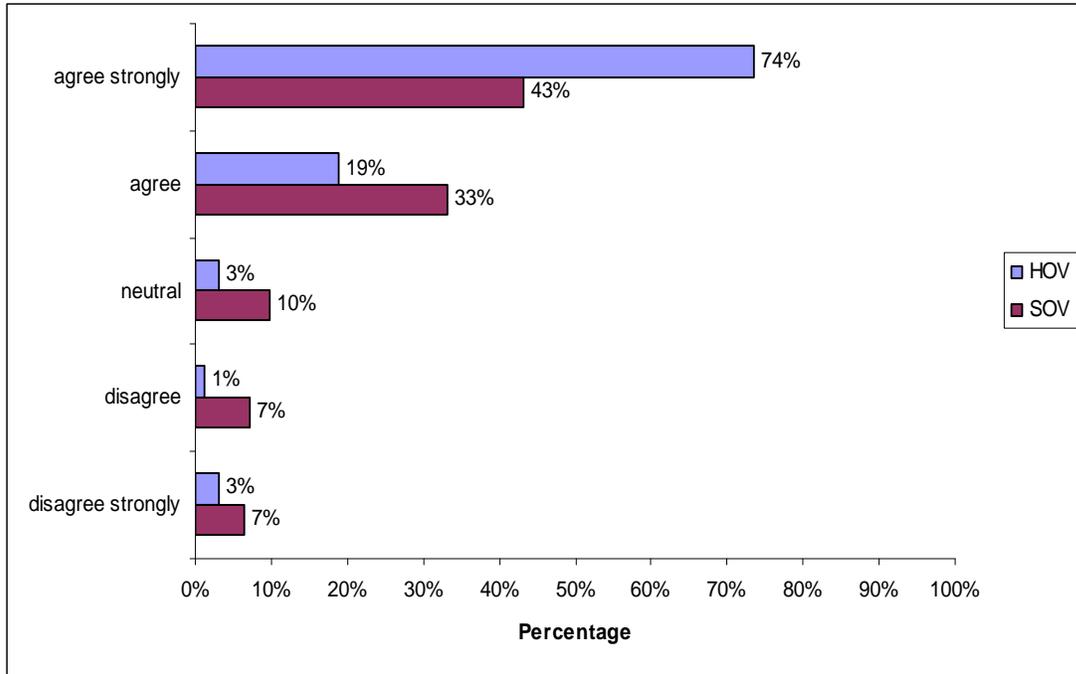


Figure 18. HOV lanes are a good idea

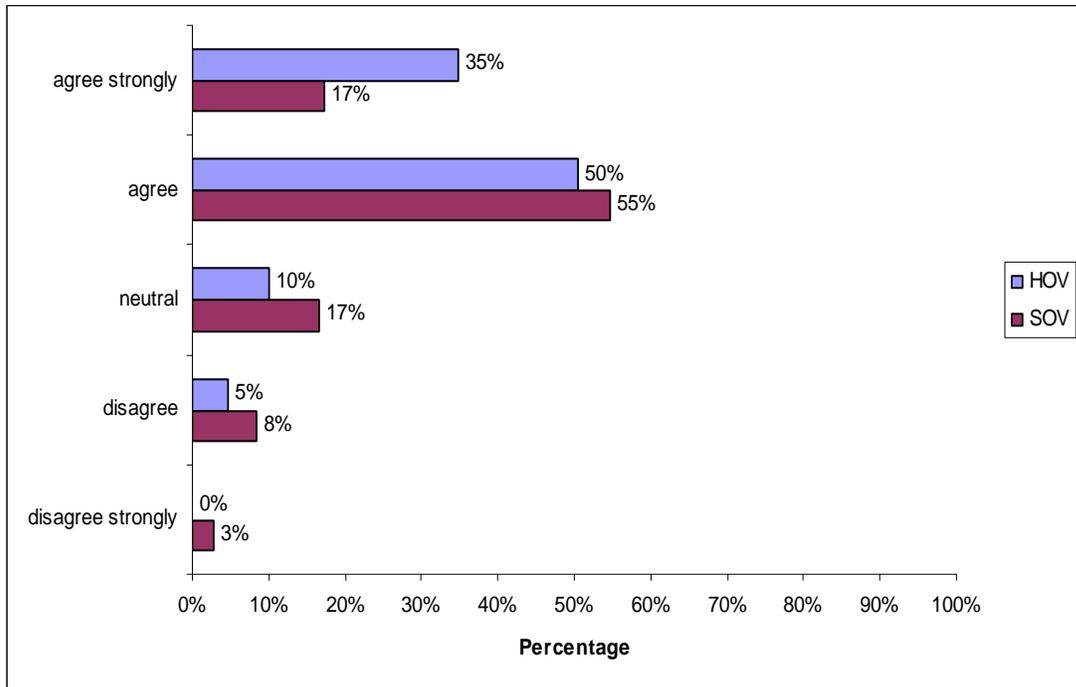


Figure 19. HOV lanes are convenient to use

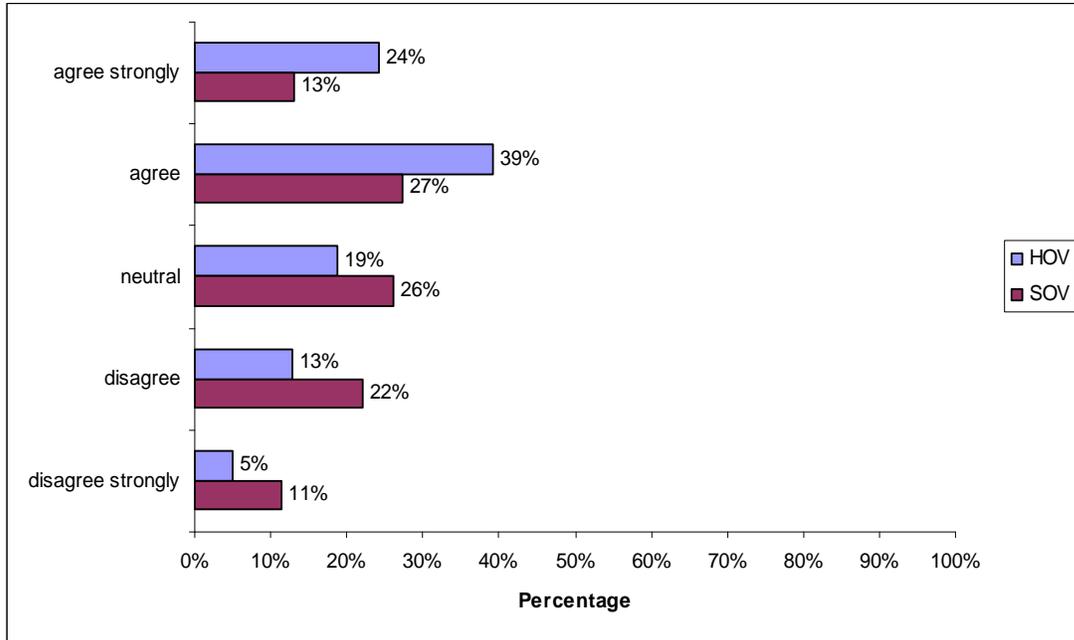


Figure 20. HOV lanes help save all commuters a lot of time

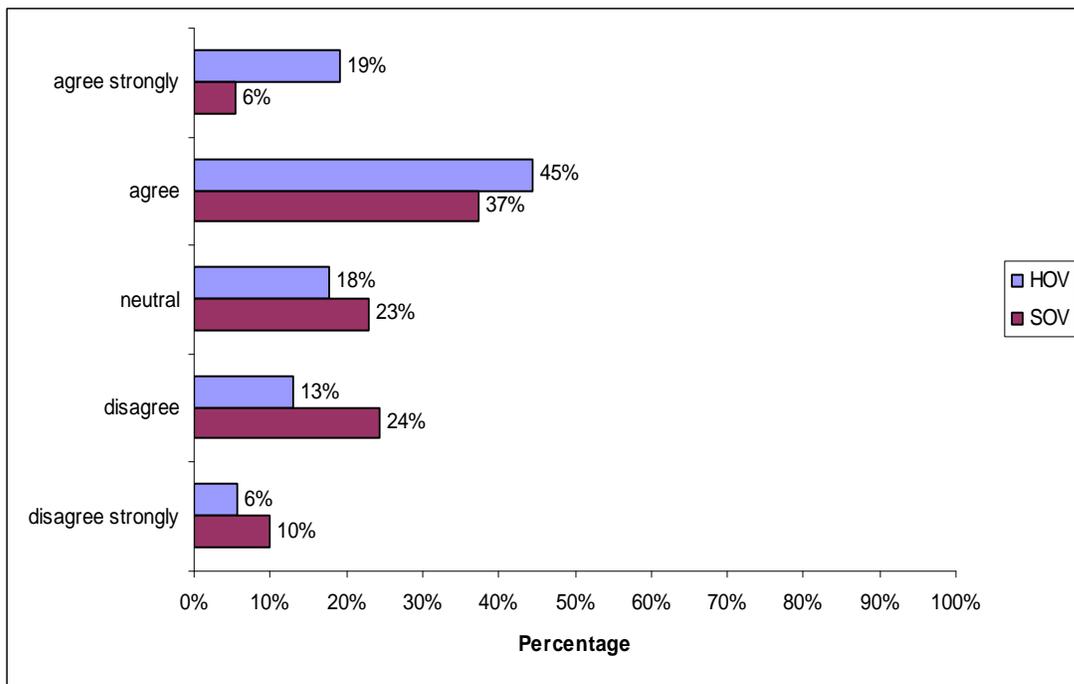


Figure 21. Existing HOV lanes are being adequately used

The results displayed in Figure 21 were also broken down by corridor, to see if respondents' perception of HOV lane use varied depending on what corridors they frequently travel. Opinions were fairly consistent regardless of corridor, although SR 167 users were slightly less likely to agree that HOV lanes are being adequately used. This

opinion is consistent with collected freeway loop data, which indicate that HOV lane vehicle volumes on SR 167 are significantly less than the average adjoining GP lane.

Existing HOV lanes are being adequately used.				
Corridor		agree	neutral	disagree
I-5 north of downtown Seattle	HOV	59%	21%	21%
	SOV	42%	22%	36%
I-5 south of downtown Seattle	HOV	63%	18%	19%
	SOV	41%	22%	37%
I-405 north of downtown Bellevue	HOV	66%	19%	15%
	SOV	40%	20%	40%
I-405 south of downtown Bellevue	HOV	65%	17%	18%
	SOV	38%	22%	39%
I-90	HOV	61%	19%	20%
	SOV	40%	23%	37%
SR 520	HOV	60%	15%	25%
	SOV	34%	21%	44%
SR 167	HOV	54%	19%	27%
	SOV	36%	16%	48%

Figures 22 and 23 display that the majority of commuters believe that constructing HOV lanes is a fair use of taxpayers' money and that HOV lane construction should continue. Figure 24 displays a positive response to the addition of direct access entrance and exit ramps for left side HOV lanes. The large number of neutral responses could be the result of unfamiliarity with this type of ramp and its effect on traffic, particularly for SOV drivers who have not utilized a direct access ramp.

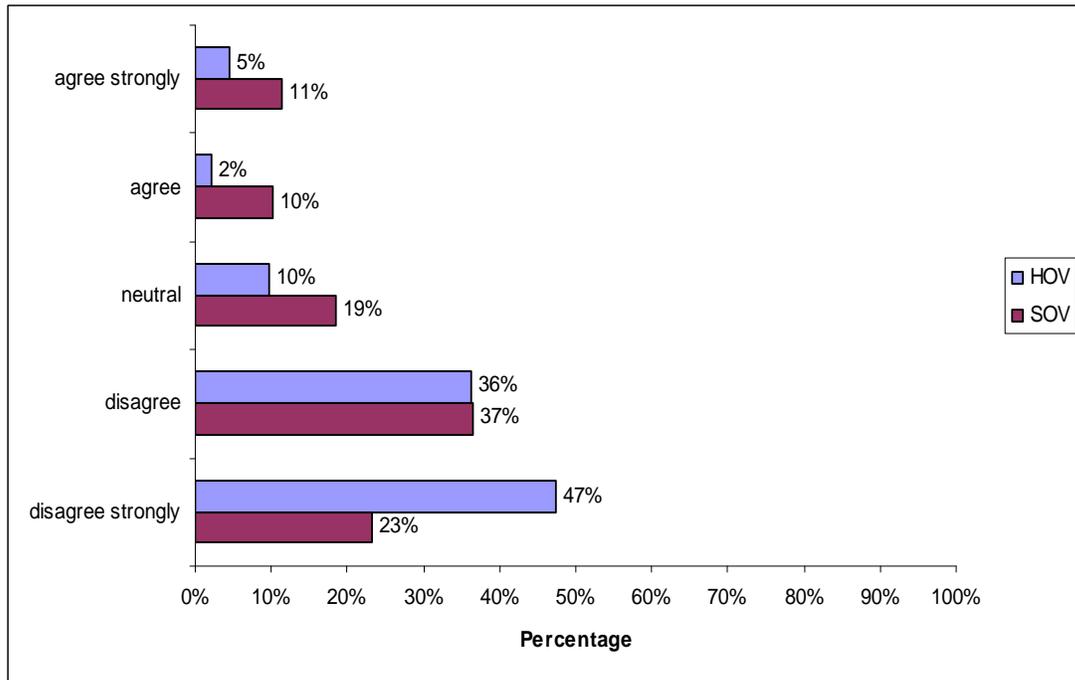


Figure 22. Constructing HOV lanes is unfair to taxpayers who choose to drive alone

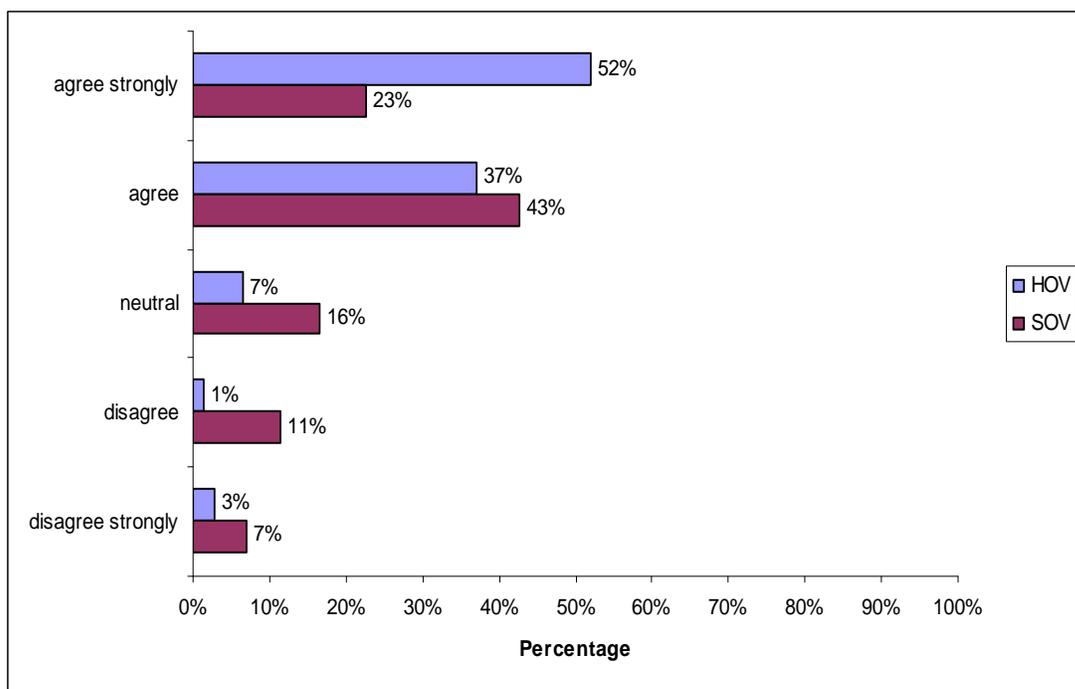


Figure 23. HOV lane construction should continue

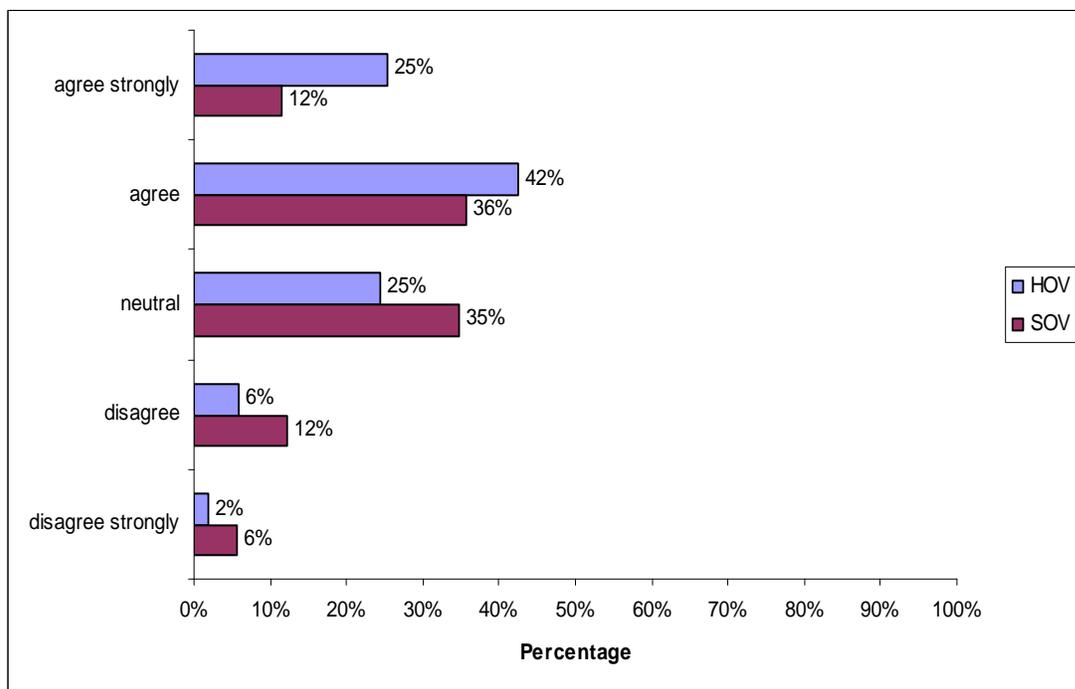


Figure 24. Direct HOV entrance and exit ramps that connect with inside (left side) HOV lanes are improving the freeway system

HOV Lane Operation

Most respondents felt that the HOV lanes should not be open to all traffic, all the time (see Figure 25). Eighty-eight percent of HOV drivers and 62 percent of SOV drivers shared this opinion. Figure 26 shows that most SOV users favor opening HOV lanes during non-commute hours, with 75 percent agreeing. HOV drivers remain slightly more neutral on this issue. A question was also asked regarding the eastside HOV lanes, where the HOV lanes have been open to all traffic during the hours of 7:00 PM to 5:00 AM. As seen in Figure 27, the responses to this question are similar to responses in Figure 26. Drivers seem to be finding the experience to be favorable and are interested in extending the policy to other corridors. Seventy-eight percent of SOV drivers think that the eastside hours of operation policy is a good idea. The 2007 survey also included a question regarding HOT lanes, i.e. whether single-occupant vehicles should be allowed to pay a fee to drive in free-flowing HOV lanes. Figure 28 shows that the majority of respondents, both SOV and HOV, do not favor this idea.

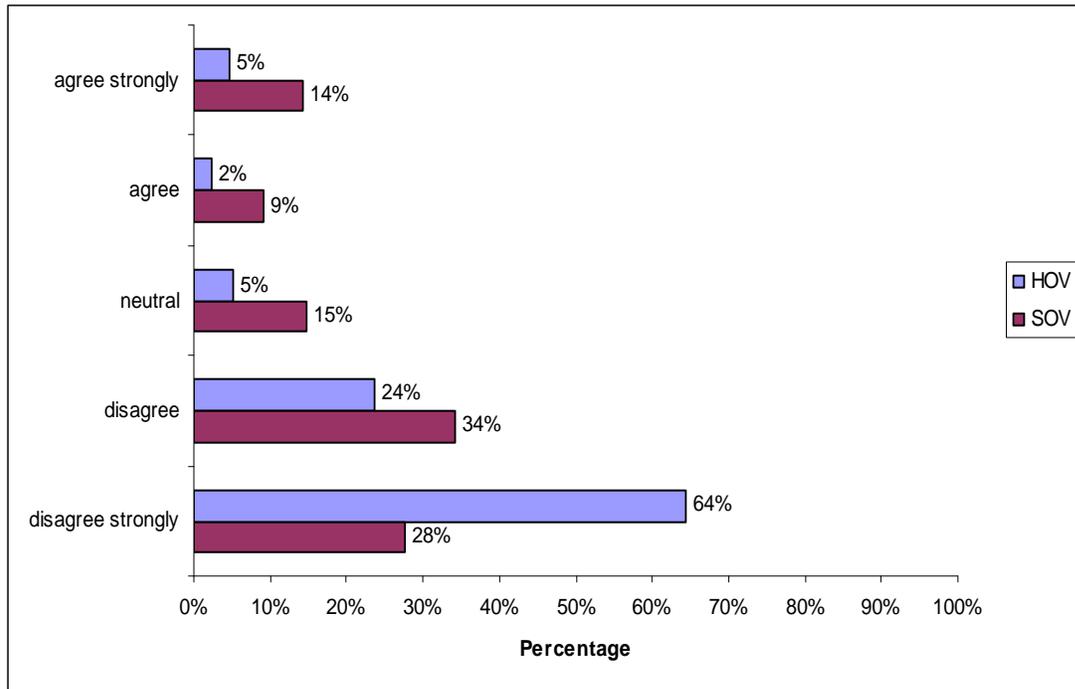


Figure 25. HOV lanes should be open to all traffic, all the time

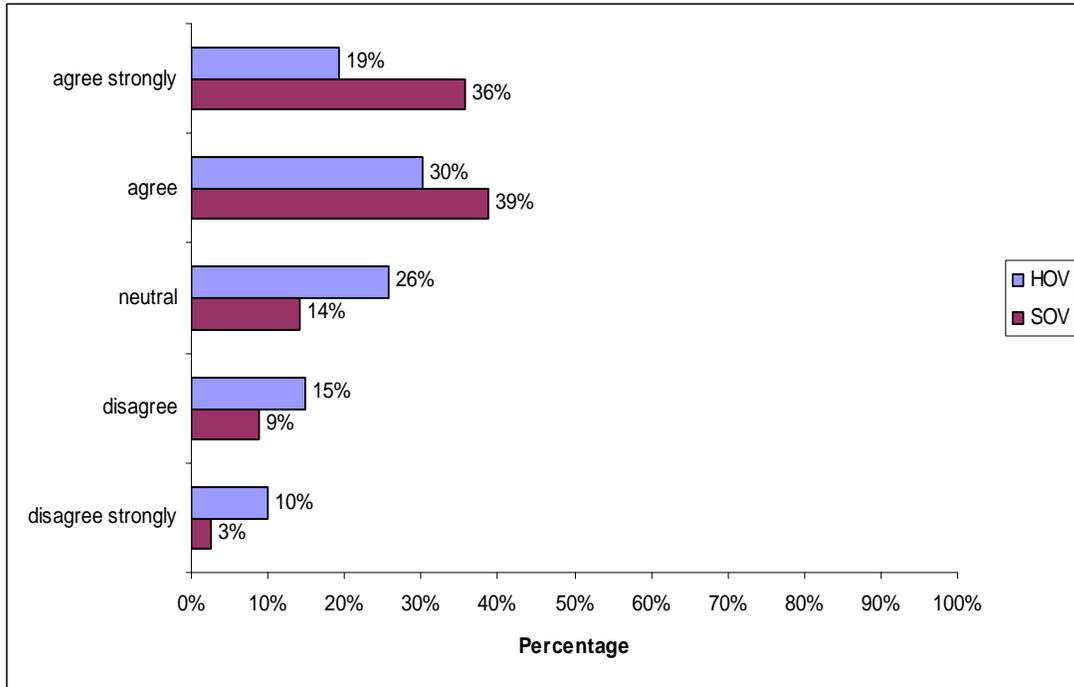


Figure 26. HOV lanes should be opened to all traffic during non-commute hours

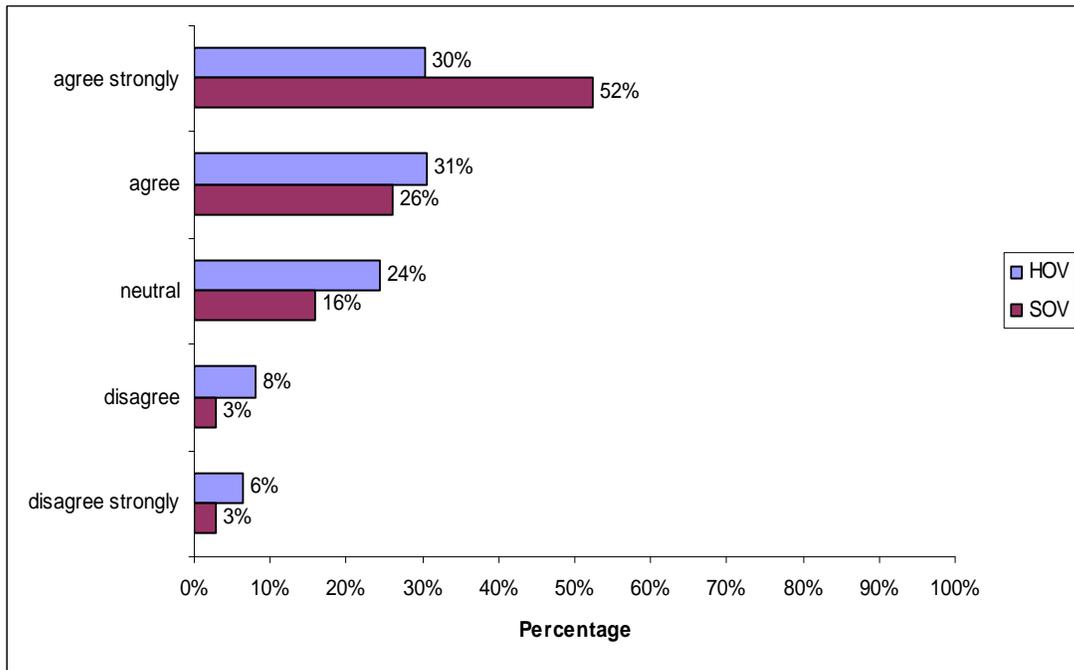


Figure 27. Based on your experience, opening the Eastside HOV lanes to all vehicles during the hours of 7:00 PM to 5:00 AM is a good idea

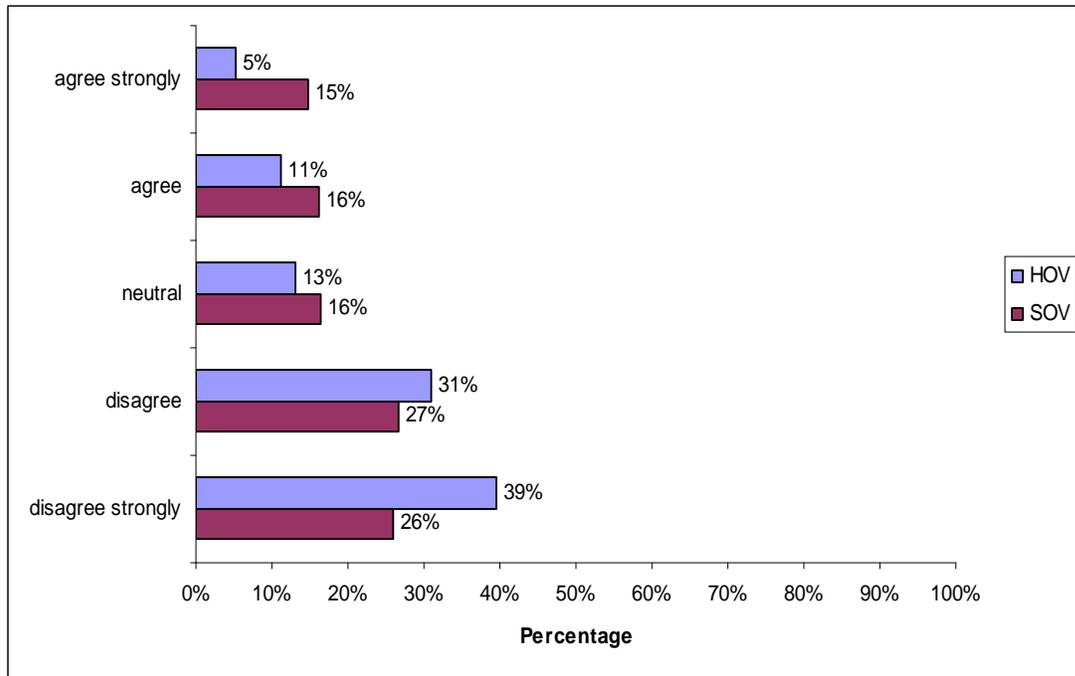


Figure 28. Allowing drivers of single-occupant vehicles to pay a fee to use available space in free-flowing HOV lanes is a good idea

HOV Lane Violations

HOV and SOV users share common opinions about how common HOV lane violations are during commute hours (Figure 29).

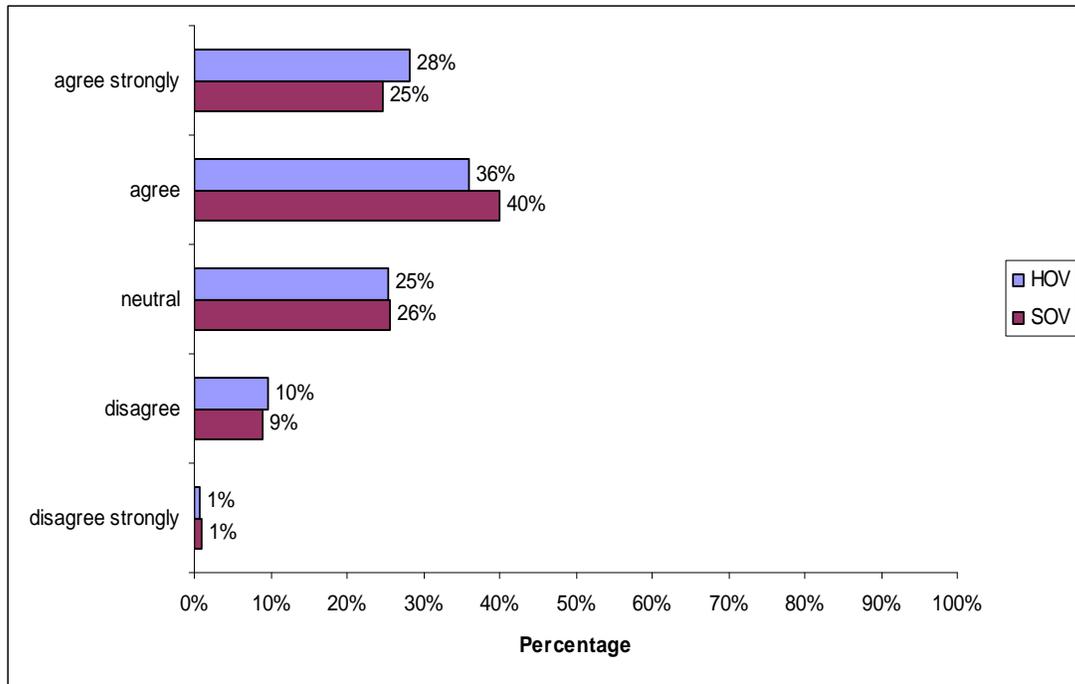


Figure 29. HOV lane violations are common during the commute hours

Figure 29 shows that over 60 percent of HOV and SOV respondents feel that HOV lane violations are common during the commute hours. This question was also broken down by corridor to determine if respondents feel that violations are more common on certain corridors. The following table shows that the majority of respondents feel that HOV lane violations are common, regardless of the corridors they frequently travel.

HOV lane violations are common during the commute hours.			
Corridor	agree	neutral	disagree
I-5 north of downtown Seattle	63%	28%	9%
I-5 south of downtown Seattle	64%	25%	11%
I-405 north of downtown Bellevue	68%	23%	9%
I-405 south of downtown Bellevue	66%	24%	10%
I-90	64%	26%	10%
SR 520	69%	22%	9%
SR 167	66%	23%	10%

The opinions about HOV violations from the 2007 survey were also compared to the same question in the 2005 survey to see if people feel that violations have become

more common. The table below compares the responses from 2005 to 2007. The percentage of HOV users who agree strongly that violations are common has increased by 12 percent. More SOV users also agreed with the statement in 2007. If respondents' perceptions are correct, HOV violations are possibly becoming more common. Another possibility is frustration with congestion leading respondents to notice violators more.

HOV violations are common during the commute hours.					
Survey	Agree strongly	Agree	Neutral	Disagree	Disagree strongly
HOV 2005	16%	42%	30%	11%	1%
HOV 2007	28%	36%	25%	10%	1%
SOV 2005	21%	38%	26%	13%	1%
SOV 2007	25%	40%	26%	9%	1%

Three other questions were also asked about HOV violations. Figure 30 demonstrates that both groups appear to resent HOV lane violators, considering it to be a serious traffic violation. The majority of commuters were neutral about the usefulness of the HERO program to report HOV lane violations (Figure 31). This result suggests that further public education is still necessary to provide commuters with a better understanding of the 764-HERO program. Figure 32 shows that the majority of commuters agree or are neutral about the need for more police enforcement of HOV lanes. This opinion is consistent with the evidence that commuters believe HOV lane violations are serious traffic violations.

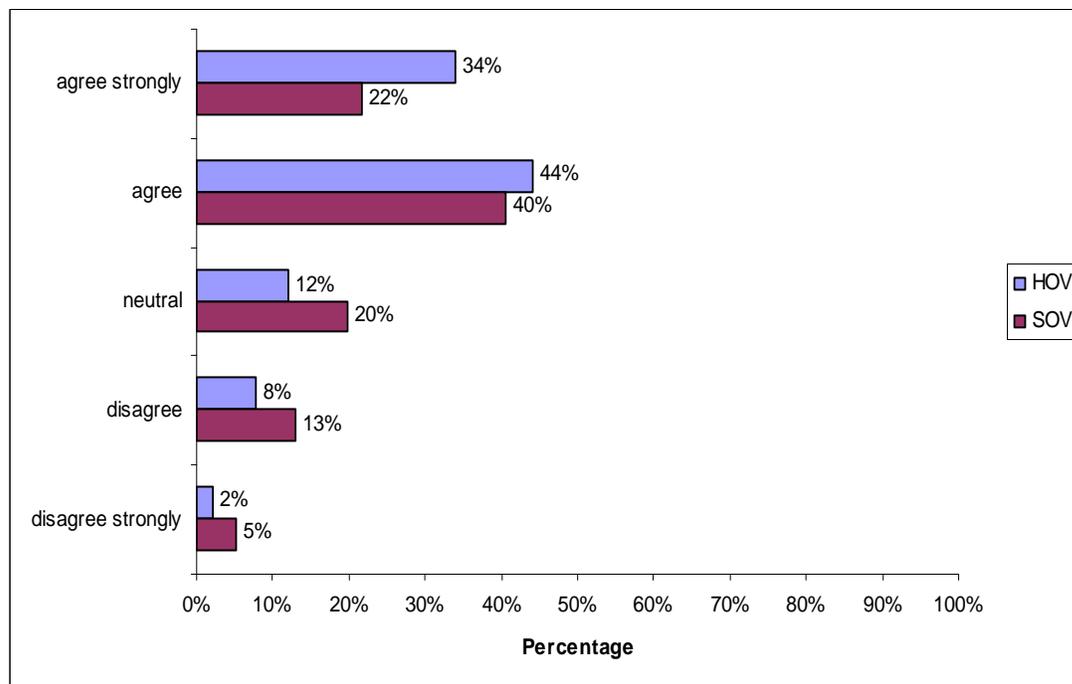


Figure 30. HOV lane violators commit a serious traffic violation

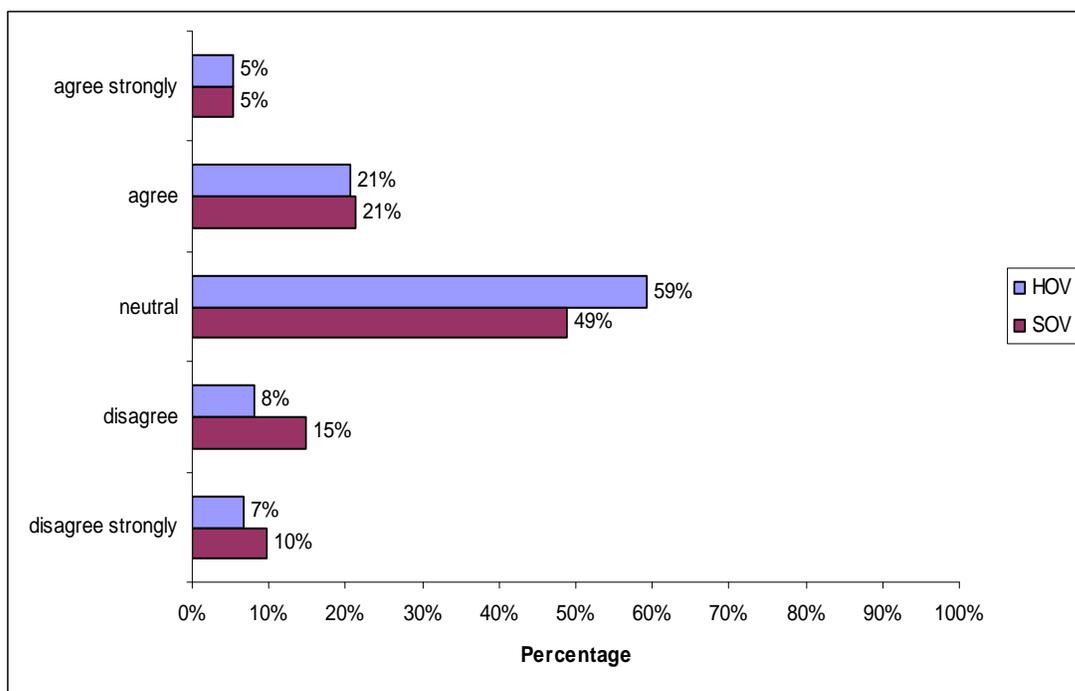


Figure 31. The HERO program helps reduce HOV lane violations [by encouraging commuters to report HOV lane violators at (206) 764-HERO]

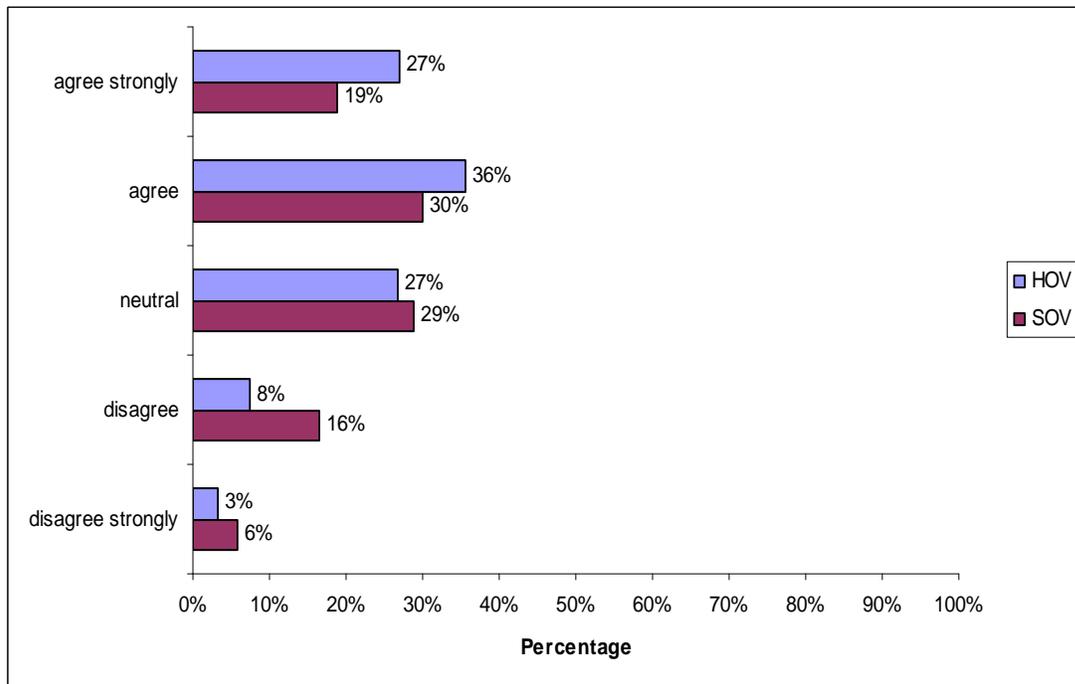


Figure 32. More police enforcement is needed for HOV lanes

HOV Lane Safety

The survey also addresses safety issues in the HOV and GP lanes. Respondents were asked to compare safety levels in the two types of lanes. Over a third of respondents felt that the lanes are equally safe, but 42% of HOV drivers and 30% of SOV drivers felt that HOV lanes are safer (Figure 33).

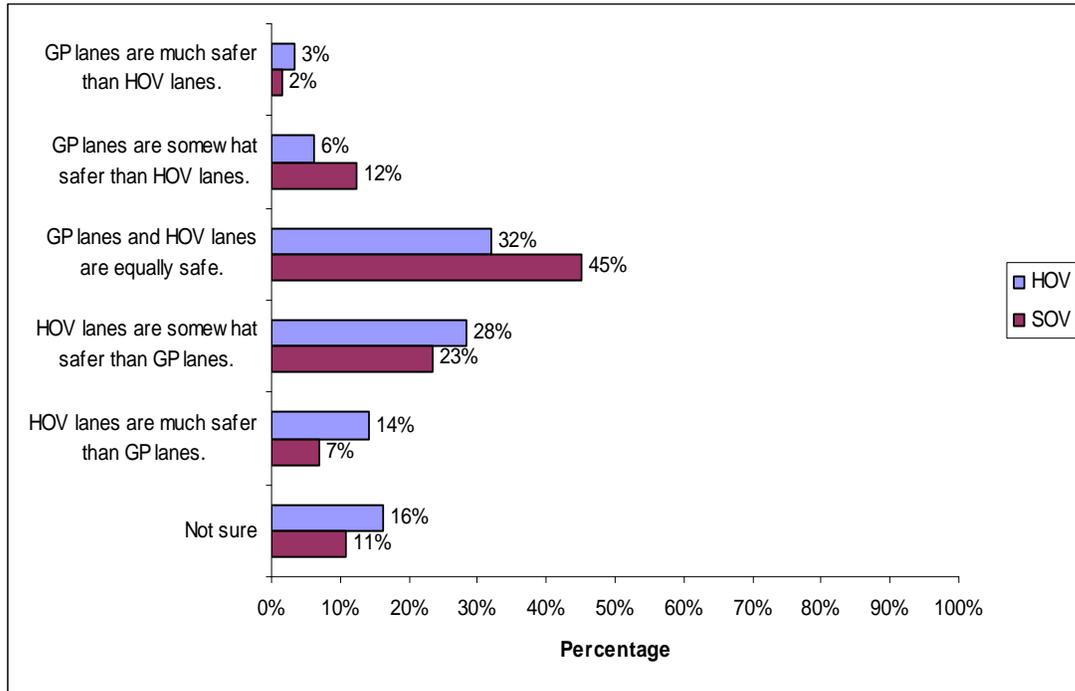


Figure 33. Vehicle safety in HOV lanes versus General Purpose lanes

Comparison to WSDOT HOV Survey

The WSDOT's Urban Planning Office (UPO) surveyed 30,000 freeway HOV users during the winter of 2005/6 and received responses from 5,700 people. The survey focused on carpoolers, bus riders, and vanpoolers, targeting users from different locations and different times of the day. The study's main goals were to determine if HOV lanes provide an incentive to share rides or take the bus and to see if mid-day HOV users are different than those using the HOV lanes during the peak commuting periods.

Comparisons can be made between the UPO survey and the TRAC survey, although it is important to note several differences between the surveys. The UPO survey had a larger sample size than the TRAC survey, and the UPO survey respondents were divided into categories based on how they were identified to participate in the survey. For example, HOV users were identified by license plates of vehicles traveling in the HOV lane. TRAC also used license plates to identify potential HOV users, but then used the response to a question regarding typical mode of travel during the peak periods to classify respondents into the carpool, vanpool, and transit categories. The UPO survey also divided the questions up by time of day and collected different responses for peak

period versus midday travel. The TRAC survey includes separate questions about travel during the midday as part of work activities, but the general focus is peak period travel. In addition, the questions in the two surveys were worded differently and the respective lists of possible responses were not identical. Although the two surveys had different methodologies, they contained overlapping themes about HOV lanes and traveler attitudes.

Both surveys asked about HOV users' reasons for choosing to rideshare. The TRAC survey was analyzed based on the respondents' usual mode of travel during the peak periods to see how the reasons for ridesharing differed between carpoolers, vanpoolers, and transit users. Figure 34 shows these results.

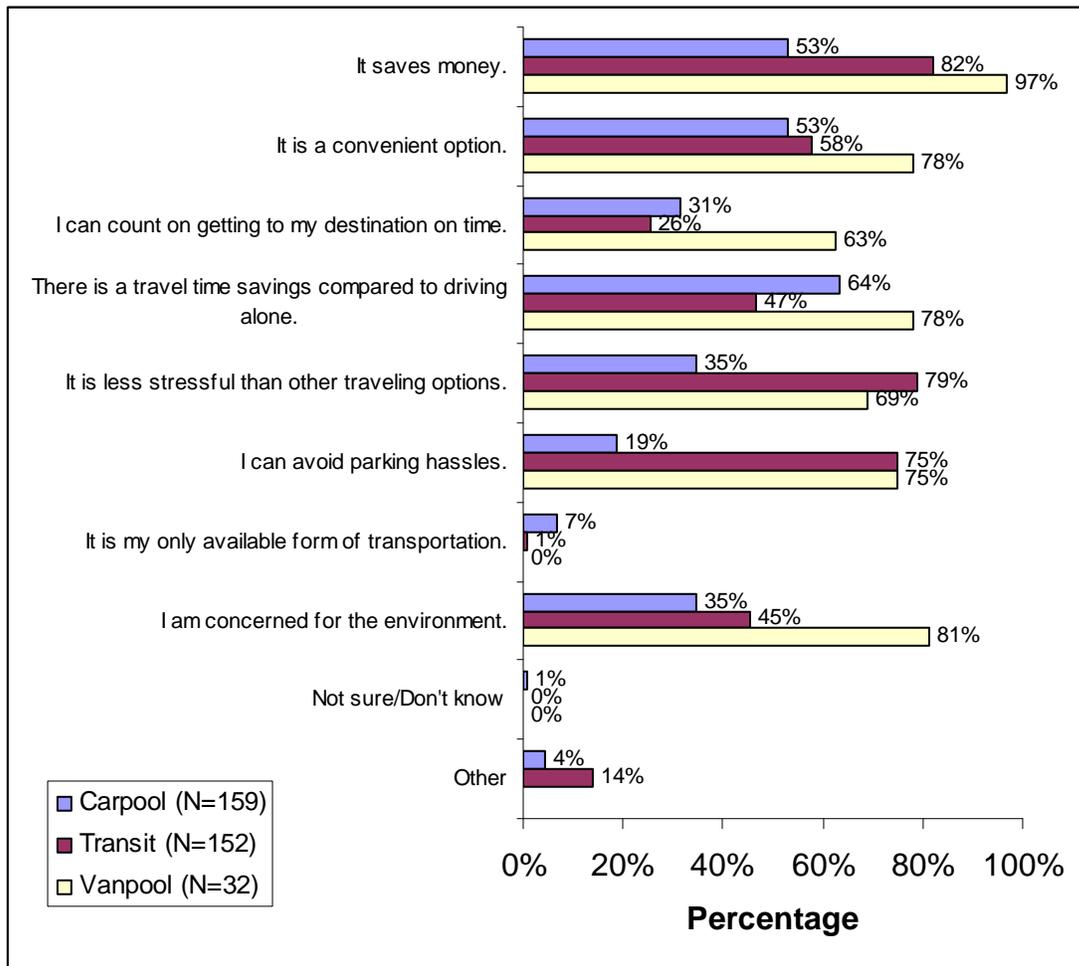


Figure 34. Reasons for using carpool/vanpool/transit based on typical mode of travel during the peak period (TRAC Survey)

The following table compares those responses from the TRAC survey to those from a similar question in the UPO survey.

TRAC Survey (2007)		
Carpoolers	Transit	Vanpoolers
1. Travel time savings 2. Money savings 3. Convenience	1. Saving money 2. Less stressful 3. Avoiding parking hassles	1. Saving money 2. Concern for the environment T3. Convenience T3. Travel time savings
UPO Survey (2006)		
Carpoolers	Transit	Vanpoolers
1. Travel time savings 2. Convenience 3. Less stressful	1. Saving money 2. Less stressful 3. Convenience	1. Saving money 2. Less stressful 3. Travel time savings

In both surveys the leading response was the same: carpoolers mentioned travel time savings most frequently, while transit and vanpool users mentioned saving money most often. Variances in the rest of the responses may be a result of the differences in the original question in each survey. The TRAC survey allowed respondents to select all options that factor into their decision to rideshare. The UPO survey, on the other hand, asked respondents to select their top three reasons for ridesharing. In addition, the option “I can avoid parking hassles” was only included in the TRAC survey.

Both surveys also examined the extent to which the HOV lane network influenced travelers’ choices about sharing rides, by asking what decisions HOV lane users would make if HOV lanes were no longer available. The UPO survey found that approximately 15-18% of peak period HOV users would probably switch to driving alone in that situation, and that carpoolers would be somewhat more likely to switch than transit and vanpool users.

The TRAC survey included two questions with results that can be compared to the UPO results. The first question asked whether carpoolers, vanpoolers, and transit users would continue to use that mode if there were no HOV lanes. This question was analyzed using a cross-tabulation with the usual mode of travel during the peak period, to determine the differences in response between the three modes. The table below shows that approximately 22 percent of carpoolers, 17 percent of vanpoolers, and 12 percent of transit users would potentially change their mode if there were no HOV lanes. These percentages are consistent with the 15-18 percent range determined in the UPO survey. Also, they support the conclusion that transit users and vanpoolers were more likely to continue to use their current mode than carpoolers.

TRAC Survey 2007	If you use a carpool/vanpool or transit, would you still do so if there were no HOV lanes?					
Usual mode during peak periods	Yes, definitely	Yes, probably	Not sure	Probably not	Definitely not	No opinion
Carpool (N=162)	38%	25%	10%	15%	7%	5%
Transit (N=154)	43%	26%	14%	12%	5%	1%
Vanpool (N=32)	47%	22%	19%	9%	3%	0%

The TRAC survey also asked a question regarding mode choice decisions specifically for commuting between home and work, if HOV lanes were no longer available. Again it is difficult to directly compare this question to the similar UPO survey question since the TRAC survey question deals specifically with commuters. Also, the TRAC question allowed respondents to select all decisions that may apply to their commute, whereas the UPO question instructed respondents to select the most likely option. The results of the TRAC survey were broken down by mode choice during the peak period. Figure 35 shows these results.

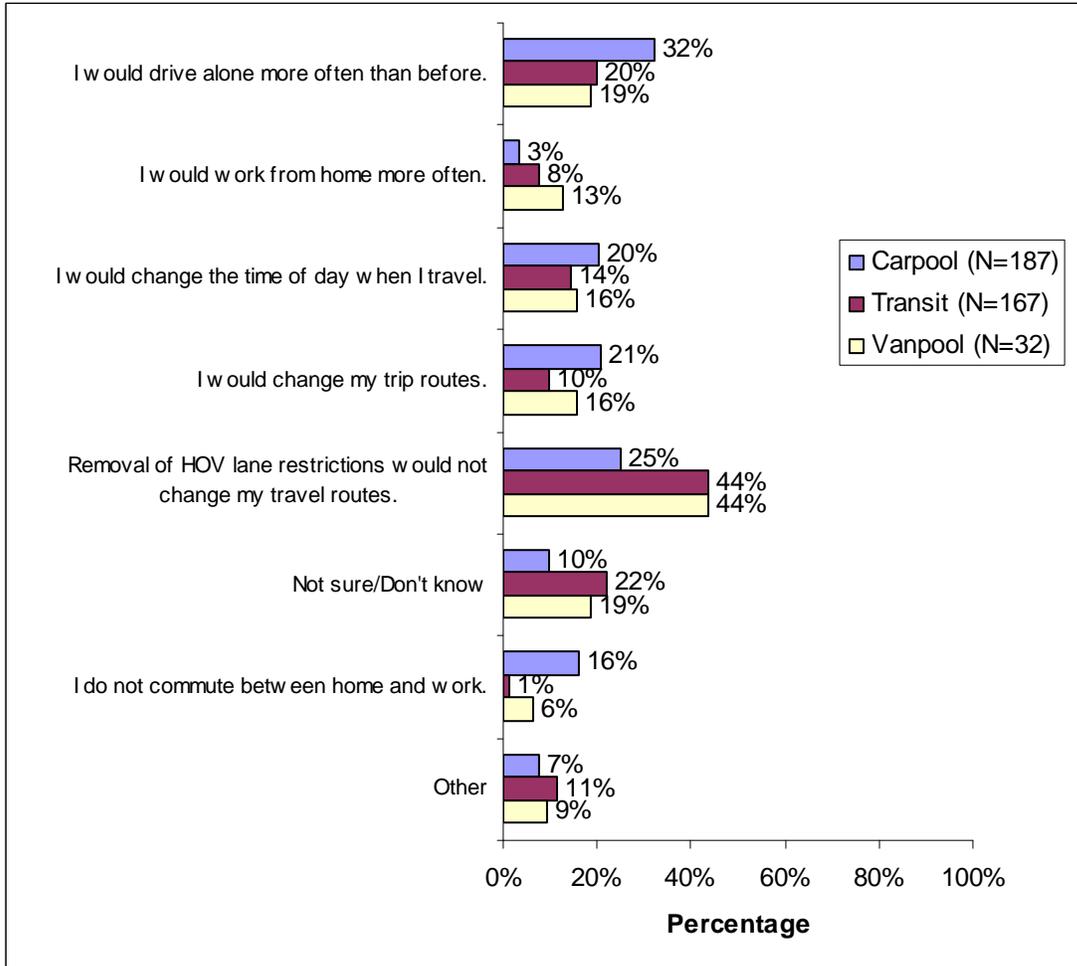


Figure 35. Driving decisions for commuting between home and work if HOV lanes were open to all traffic, all of the time (TRAC Survey)

The above results indicate that between 19-32 percent of respondents who carpool, vanpool, or use transit to commute between home and work would drive alone more often than before. These results suggest that respondents who rideshare for their commute are possibly more likely to switch modes than respondents who rideshare for other purposes. Since commuters are most likely to be traveling during the peak periods, a shift to driving alone could have a significant impact on traffic congestion in the Puget Sound region.

DEMOGRAPHIC CHARACTERISTICS

The survey respondents were closely divided between male and female. As shown in Figure 36, 53 percent of the respondents were male, whereas 47 percent were female. The age group of the respondents ranged primarily from 41 to 64, as seen in Figure 37. Figure 38 shows that the majority of survey respondents have a household income over \$50,000.

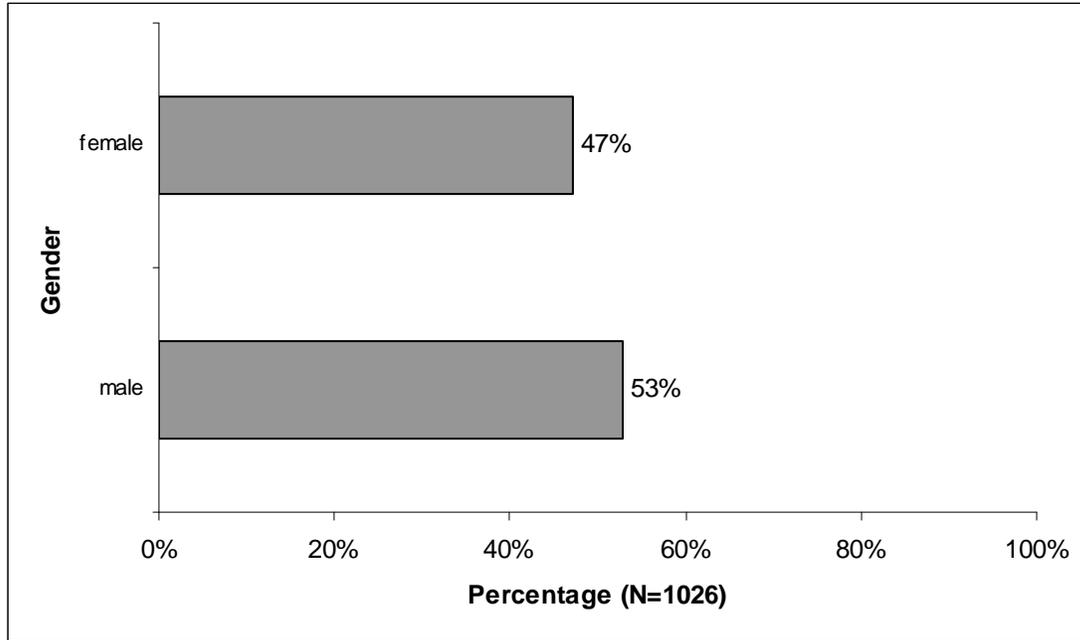


Figure 36. Gender of Respondents

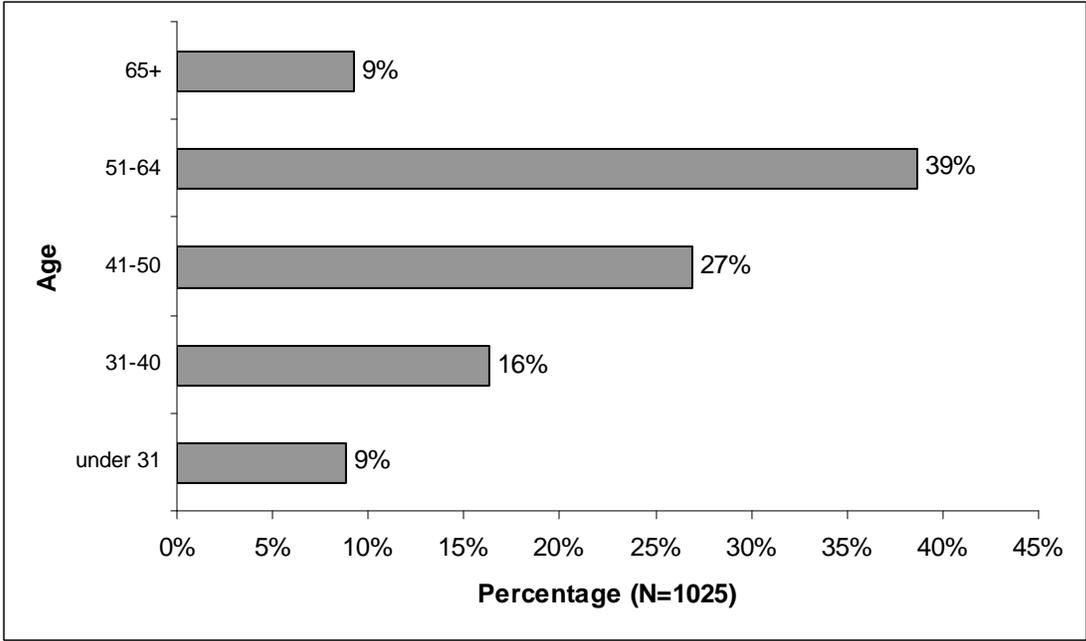


Figure 37. Age of Respondents

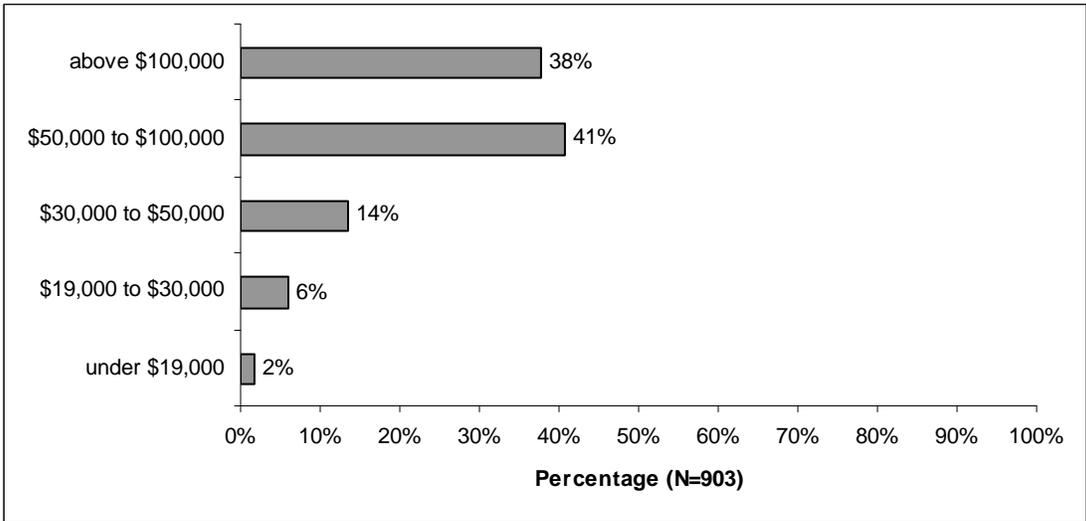


Figure 38. Approximate Household Annual Income