



**NATIONAL CAPITAL REGION  
TRANSPORTATION PLANNING BOARD  
COMMUTER CONNECTIONS PROGRAM**

**CARSHARE SURVEY  
2008**

*Prepared for:*



Metropolitan Washington Council of Governments  
777 North Capitol Street, NE, Suite 300  
Washington, DC 20002-4239

*Prepared by:*

*LDA Consulting  
Washington, DC 20015  
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*In conjunction with:*

*CIC Research, Inc.  
San Diego, CA*

**January 27, 2009**

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## ABSTRACT

- TITLE:** National Capital Region Transportation Planning Board (TPB) Commuter Connections Carshare Survey.
- DATE:** January 27, 2009
- AUTHORS:** Nicholas Ramfos, Director, Alternative Commute Programs  
Lori Diggins, Principal, LDA Consulting
- AGENCY:** The National Capital Region Transportation Planning Board (TPB) is the federally designated Metropolitan Planning Organization (MPO) for the region, and plays an important role as the regional forum for transportation planning. The TPB prepares plans and programs that the federal government must approve in order for federal-aid transportation funds flow to the Washington region. The TPB became associated with the Metropolitan Washington Council of Governments (COG) in 1966. COG was established in 1957 by local jurisdictions to address regional concerns including growth, air quality, public health, transportation, and housing. Although the TPB is an independent body, its staff is provided by COG's Department of Transportation Planning.
- ABSTRACT:** This document provides results of an analysis of regional carsharing services conducted for the Commuter Connections program administered by the TPB at the Metropolitan Washington Council of Governments. Several entities in the region were interested in learning more about the experiences of carshare users and the impact carsharing has on travel patterns in the region. This report examines characteristics of carshare trips, travel changes made in response to carshare availability, and auto ownership and use changes in response to carshare availability. Data for this analysis was collected through an online Internet survey of 28,000 Zipcar carshare members. The survey data collection period occurred in March 2008.
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## SECTION 1 INTRODUCTION

### Overview and Survey Objectives

This report presents the results of the regional Carshare Survey conducted for the Commuter Connections program administered by the National Capital Region Transportation Planning Board (TPB) at the Metropolitan Washington Council of Governments (COG). Commuter Connections provides a wide range of transportation information and assistance services in the Washington metropolitan area designed to inform commuters of the availability and benefits of alternatives to driving alone and to assist them to find alternatives that fit their commute needs. COG administers these services, called Transportation Emission Reduction Measures (TERMs), in a regional effort to reduce vehicle trips, vehicle miles of travel, and emissions resulting from commute travel.

Several jurisdictions and agencies in the Washington Metropolitan region, including Washington, DC; Arlington County, VA; City of Alexandria, VA; Montgomery County, MD; and the Washington Metropolitan Area Transit Authority (WMATA), sponsor or support the operation of carshare program in the region. These entities were interested in learning more of carshare users' experience with the program and exploring the impact of carsharing on travel patterns in the region. The Carshare survey was conducted for three primary purposes:

- Examine characteristics of carshare trips
- Examine travel changes made in response to carshare availability
- Examine auto ownership and use changes in response to carshare availability

### Survey Methodology Summary

Sample Selection – The Carshare survey was administered online to registered members of the Zipcar carshare program. On March 6, 2008, Zipcar sent an email to its approximately 28,000 members that informed them of the online survey and provided the link to the survey website. The email indicated that Zipcar was offering a prize drawing for five half-hour carshare use credits to members who completed the survey. To increase the response rate further, Zipcar send a reminder email to all members on March 26. During the approximately four week period that the survey website was active, 6,060 members accessed the site and 5,568 answered at least one question.

Of these responses, 4,379 were complete. An additional 553 respondents had completed a sufficient portion of the questionnaire to allow their responses to be used for key analysis purposes, so these responses also were retained. This resulted in a total of 4,932 usable responses, for a total response rate of 17.6%. The remaining responses were insufficiently complete and were discarded.

The original survey methodology would have administered the survey to all persons who were known to have registered or participated in either of two carshare programs in the Washington region, Zipcar and Flexcar. The two carshare organizations had agreed to assist with distribution of an announcement of the survey and to encourage their members to complete the survey. But in November 2007, just before the survey pre-test was to occur, the two companies merged.

The arrangements of the merger made it impossible to contact Flexcar members after this time, thus the pre-test was conducted only with Zipcar members. Further, administration of the full survey was de-

layed until the spring, after Zipcar's outreach to Flexcar members to convert their membership to Zipcar was completed. When the full survey was conducted in March 2008, Flexcar members who converted their membership to Zipcar following the merger were included, but Flexcar members who did not join Zipcar could not be identified, so were not included. As noted, about 28,000 persons were registered in Zipcar in March 2008.

Questionnaire Development – The survey questionnaire was developed jointly by COG/TPB staff, LDA Consulting, and CIC Research, with assistance from a Carshare Survey review panel comprised of members of Commuter Connections' jurisdiction partners and Zipcar and Flexcar staff. The questionnaire also was reviewed by the Commuter Connections TDM Evaluation Group and the Commuter Connections Subcommittee.

The questionnaire collected data on seven major topics:

- Carshare participation background
- General carshare use patterns
- Details of last carshare use/trip
- Work travel patterns
- Travel pattern changes since joining carshare
- Changes in vehicle ownership and residential/work location since joining carshare
- Carshare satisfaction
- Demographics

The questionnaire was designed for online self-administration. Prior to conducting the full survey, an invitation was sent to a random sample of 300 carshare members. Forty-nine members accessed the site and 32 (10%) completed the questionnaire. An analysis of the termination points of incomplete surveys suggested the low response rate could be due, in part, to the length of the questionnaire. Therefore, numerous questions were deleted from the questionnaire to reduce its length. A copy of the final questionnaire is presented in Appendix A

Survey Data Expansion – COG originally planned to review the demographic distribution of the survey respondents and determine if the sample should be weighted to reflect the population accurately. The only variable that appeared available for weighting purposes was respondent home jurisdiction. An initial examination of several survey variables indicated that responses differed by jurisdiction. Unfortunately, due to privacy concerns, Zipcar was unable to provide any information on the distribution of carshare members by geographic area. Thus the results could not be tested or adjusted on this measure. This is noted to alert readers that the results might not be representative of the full carshare member population.

## Survey Analysis

The balance of this report presents key results of the survey (Section 2) and general conclusions about the survey results (Section 3).

## SECTION 2 SURVEY RESULTS

This section presents an overview of the survey findings. The findings shown in this section are presented for the frequencies of respondents. The raw numbers of respondents who answered each question are shown as (n=\_\_\_).

The survey collected data in several primary topic areas. Results for these topics are presented below:

- Demographic characteristics
- Carshare program membership characteristics
- Typical carshare use
- Most recent carshare trip
- Commute travel patterns
- Other travel patterns
- Vehicle ownership and Home / Work Location
- Satisfaction with Carsharing

### Demographic Characteristics

The demographic characteristics of respondents are presented below. When data were available, results also are presented from the State of the Commute survey conducted by Commuter Connection in 2007 (2007 SOC). Although the SOC survey interviewed only employed residents of the Washington metropolitan region, it provides a reasonable dataset for demographic comparisons because 93% of the carshare survey respondents said they were employed, either full-time or part-time.

Sex – Slightly over half (56%) of the respondents were female. This was very close to the 54% of regional employees who were female.

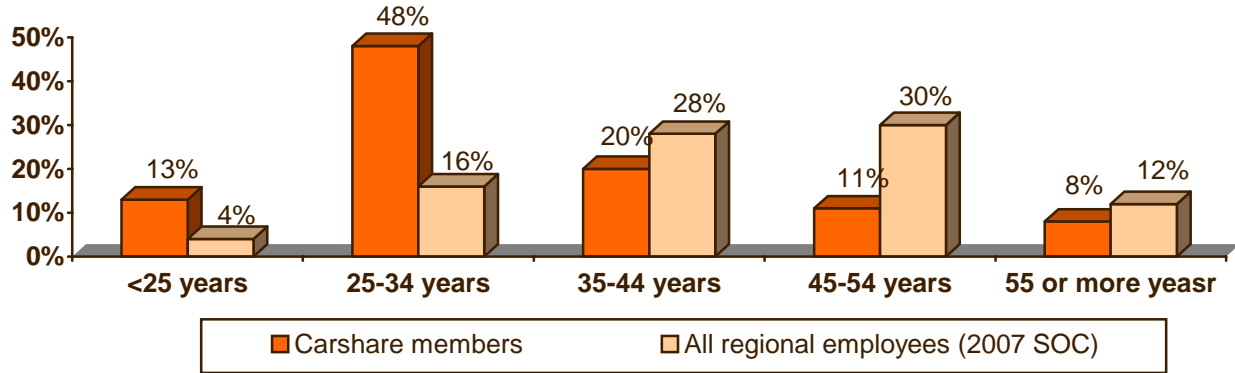
Age – As shown in Figure 1, carshare survey respondents were considerably younger than were all regional employees, as measured through the 2007 SOC survey. One in ten (13%) carshare respondents were under 25 years old and more than six in ten (61%) were under 35 years old. By comparison, only 20% of the regional employee population was under 35 years old.

Age distributions also were examined for the two jurisdictions that represent the dominant share of carshare members, Washington, DC and Arlington, VA. The SOC survey data showed that 24% of all commuters who lived in Arlington and 26% of those who lived in Washington were under 35 years of age. These percentages were not statistically different from the 20% of all commuters region-wide in this age group. But the percentage of carshare members who were young people was dramatically higher in both of these jurisdictions when compared to the total SOC respondents who lived in these two jurisdictions; 63% of Arlington carshare members and 66% of Washington carshare members were under 35 years old. Thus, with respect to age, carshare members were more like each other, regardless of their home area, than they were like other commuters in their home jurisdictions.



**Figure 1**  
**Respondent Age Distribution – Carshare Members and All Regional Employees**

(Carshare n = 4,932, 2007 SOC n = 6,359)



**Ethnic Background** – Caucasians represented, by far, the largest ethnic group of carshare survey respondents; accounting for 75% of respondents. African-Americans, Asians, and Hispanic/ Latino respondents accounted for about ten percent, seven percent, and five percent, respectively, of respondents. These results are shown in Table 1. The table also shows the ethnic background distribution of all regional employees. Carshare members were disproportionately Caucasian and African-Americans and Hispanics were underrepresented, compared to the regional employee population.

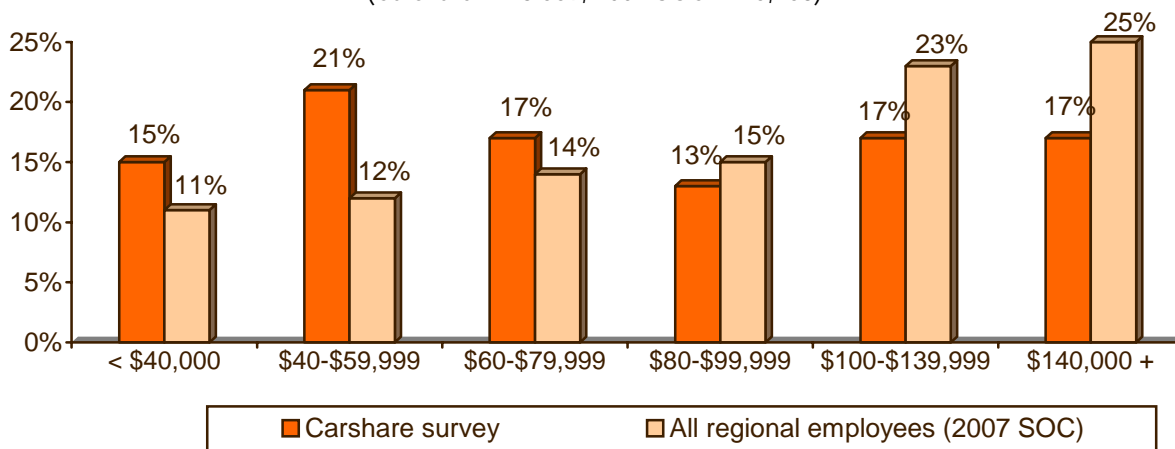
**Table 1**  
**Ethnic Background – Carshare Members and All Regional Employees**

<b>Ethnic Group</b>	<b>Carshare Survey (n = 3,851)</b>	<b>2007 SOC Survey (n = 6,183)</b>
White/Caucasian	75%	62%
African-American	10%	22%
Asian	7%	4%
Hispanic/Latino	5%	9%
Other / Mixed	3%	3%

**Income** – Figure 2 shows that a slightly over a third of respondents (36%) had household incomes of less than \$60,000 per year, 30% had incomes of \$60,000 to \$99,999, and 34% had incomes of \$100,000 or more per year. Carshare survey respondents had lower household incomes than did the regional employee population, as measured by the 2007 SOC survey. More than half (53%) of carshare respondents had household incomes under \$80,000, while 37% of all regional employees had incomes of this level.

**Figure 2**  
**Income Distribution – Carshare Members and all Regional Employees**

(Carshare n = 3,559, 2007 SOC n = 5,258)



**Home and Work Locations** – Table 2 presents the distributions of respondents by their home and work jurisdictions. Two-thirds of respondents said they live in the District of Columbia. Arlington County, VA and Montgomery County, MD were the home locations of 13% and seven percent of respondents, respectively. Small percentages of respondents said they lived in other jurisdictions.

The distribution of respondents by work jurisdictions was similar to that for home location, but slightly more concentrated in Washington DC. Almost three-quarters of respondents said they work in the District of Columbia, nine percent worked in Arlington County and seven percent worked in Montgomery County.

**Table 2**  
**Home and Work Locations**

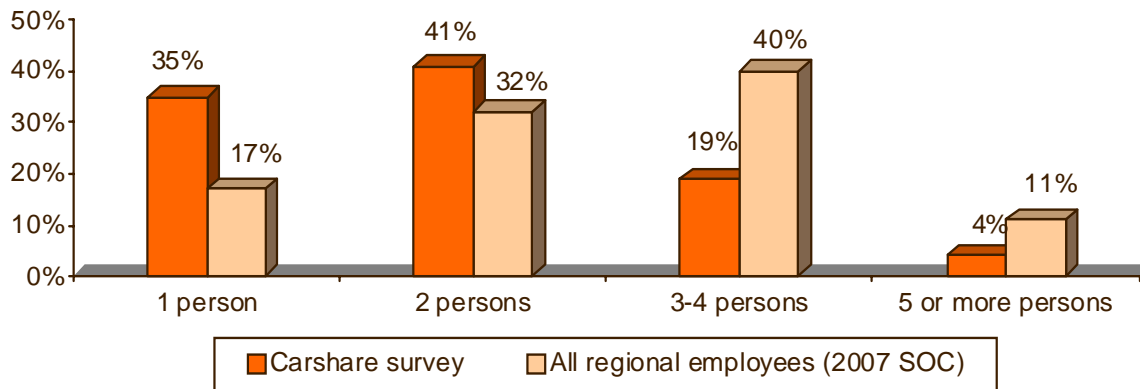
State/County	Home Location* (n = 4, 269)	Work Location** (n = 3,641)
District of Columbia	67%	73%
Arlington County (VA)	13%	9%
Montgomery County (MD)	7%	7%
Prince Georges County (MD)	4%	3%
Alexandria City (VA)	3%	3%
Fairfax County (VA)	2%	2%
Other *	4%	3%

\* Each response in the “Other” category was mentioned by less than one percent of respondents.

**Household Size and Number of Drivers in the Household** – Respondents were asked how many people lived in their households and how many of those members were licensed drivers. Carshare members' households were relatively small, when compared to households of all employed persons across the Washington metropolitan region. A third (35%) of carshare respondents lived alone and 41% said their household had only two persons. Only 49% of all regional employees lived in households with one or two members.

**Figure 3**  
**Household Size – Carshare Members vs All Regional Employees**

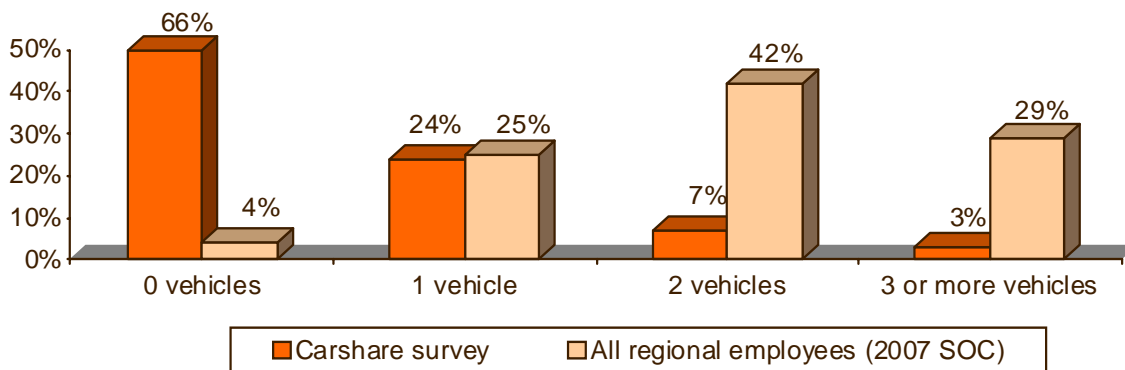
(Carshare n = 4,106, 2007 SOC n = 6,434)



**Household Vehicles and Vehicles Per Licensed Driver** – It would be reasonable to expect carsharing to be most popular among people who do not own a personal vehicle, because it offers vehicle access that doesn't otherwise exist. The survey results support that theory. Two-thirds of the carshare survey respondents said their household did not own or lease any vehicle for household members' use. About a quarter of carshare users had one vehicle per household and only 10% had two or more vehicles. As shown in Figure 4, the carshare population differed dramatically in vehicle ownership from the regional population of all employed persons.

**Figure 4**  
**Household Vehicles – Carshare Members and All Regional Employees**

(Carshare members n = 4,363, 2007 SOC n = 6,529)



The State of the Commute survey conducted by Commuter Connections in 2007 found that only about four percent of all employed people in the region had no household vehicles, while two-thirds of carshare users said they had no vehicle in the household. The share of one-car households was the same for both carshare users and all regional employees, about a quarter of respondents. Carshare users were much less likely than were all regional employees to have two or more vehicles per household, but this is due in part to the smaller household sizes of carshare users.

A comparison of household vehicle availability in Arlington, VA and Washington, DC, the two dominant carshare areas, showed that carshare users in these jurisdictions were far more likely to live in a no vehicle household than were non-carshare users. Data from the 2007 SOC survey indicated that about seven percent of Arlington commuters and 19% of Washington DC commuters did not have a household vehicle. The carshare survey indicated that 55% of Arlington carshare members and 76% of Washington DC carshare members lived in a no vehicle household.

Licensed Drivers and Vehicles per Licensed Driver— Perhaps more important than total household vehicle count, however, in determining vehicle access, is the number of vehicles available per licensed driver in the household. Four in ten carshare survey respondents said there was one licensed driver in the household and another 44% said there were two drivers. The remaining 16% reported three or more drivers.

But the distribution of number of vehicles per driver (calculated by dividing the number of household vehicles by the number of licensed drivers) clearly shows that most carshare members do not have access to a vehicle for everyday use. As shown in Table 3, only 12% of carshare users said there was a vehicle available for each licensed driver in the household. Twenty-one percent said there was at least one vehicle in the household, but that there were fewer vehicles than drivers.

**Table 3**  
**Household and Vehicles per Driver**  
(n = 4,253)

<b>Vehicles per Licensed Driver</b>	<b>Percentage</b>
No vehicles in household	67%
Less than one vehicle per driver	21%
One vehicle per driver	10%
More than one vehicle per driver	2%

Distance from Home to Bus Stop – Conventional wisdom of carshare programs also suggests that car-sharing is more popular and feasible when users have easy and close access to transit for non-carshare trips. A large majority of respondents (81%) lived less than ½ mile from the nearest bus stop. Another 14% lived between ½ mile and 1 mile away. The remaining five percent lived more than 1 mile away. Table 4 shows this distribution for carshare survey respondents.

Table 4  
Distance from Home to Bus Stop

n = 4,263

Distance	Percentage
Less than ½ mile	81%
½ mile to 1 mile	14%
More than 1 miles but less than 2 miles	3%
2 miles or more	2%

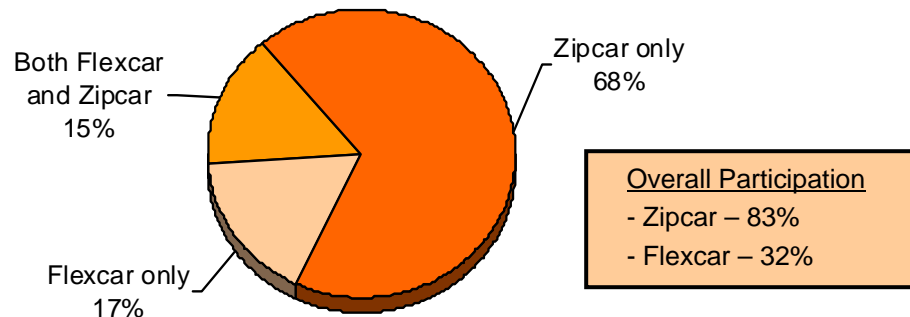
### Program Membership Characteristics

One section of the survey asked respondents about their carshare membership, such as when and why they joined carsharing and how they heard about carshare programs. Although Flexcar was no longer operating by the time the survey was administered, this section asked respondents about both programs.

**Registration by Program** – Two-thirds of respondents said they had registered only in Zipcar and 15% said they had registered in both Zipcar and Flexcar. Nearly two in ten (17%) said they had registered only in Flexcar. These results are presented in Figure 5. But Zipcar sent the email only to members who had registered with Zipcar either during the Flexcar-Zipcar merger or prior to that time. Thus, respondents who said they had registered only in Flexcar likely did not consider their conversion to Zipcar as a “registration.” When dual-registration participants were counted in both programs, it was found that 83% of registrants participated at some time in Zipcar and 32% participated in Flexcar.

Figure 5  
Carshare Program Registration

(n = 4,920)



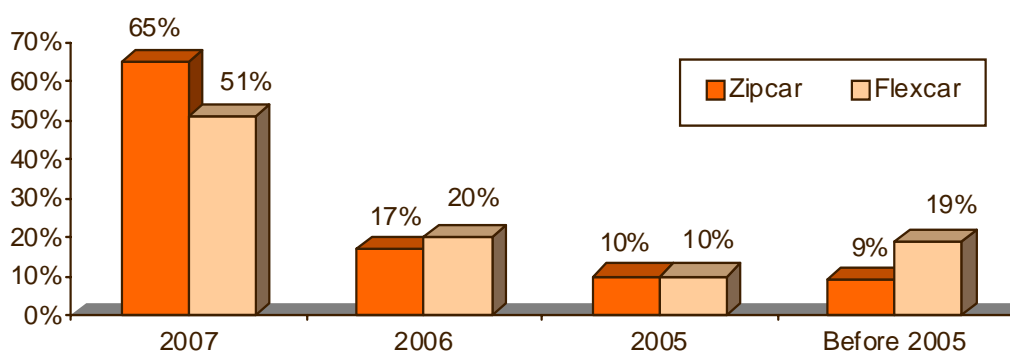
**Current Participation Status** – All respondents reported that they current carshare members. As expected, 99% reported being current Zipcar members. One percent of respondents said they were “currently participating” only in Flexcar and another 17% said they were currently participating in both Zipcar and Flexcar. Again, this was likely confusion related to the recent conversion from Flexcar to Zipcar after the merger. These respondents might not have understood that their previous Flexcar membership was no longer active and had been replaced by a Zipcar membership.

**Reasons for Participating in Both Carshare Programs** – Two-thirds (63%) of respondents who participated in both programs said they did so because the companies merged. But some respondents had been participating in both programs even before the merger and cited other reasons for dual registration, primarily related to enhancing the flexibility or options they enjoyed in carshare use. The most common reasons included (n = 750, multiple responses permitted):

- 30% To have access to carshare in multiple locations or neighborhoods
- 30% Gives me more options / opportunities / flexibility for reserving cars
- 26% Have access to all carshare vehicles at home, work, or school
- 10% Programs offer different types of vehicles
- 5% Programs have different rates and/or membership policies
- 4% One account is personal and the other through employer or school

**Year Joining Carshare** – Respondents were asked when they joined either or both of the carshare companies. These results are shown in Figure 6. Eighty-one percent of respondents who participated in Flexcar joined that program in the past three years, with half joining in 2007. Two in ten registered before 2005.

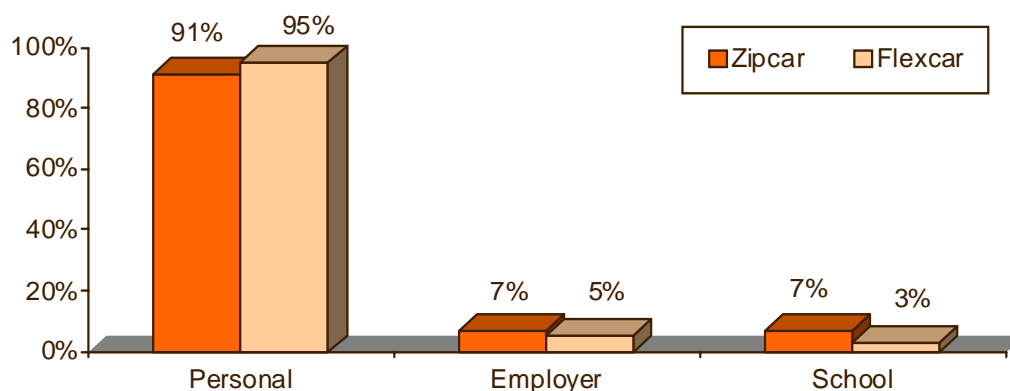
**Figure 6**  
**Year Joining Carshare – by Company**  
(Flexcar n = 1,569, Zipcar n = 4,572)



Over 90% of Zipcar members joined carsharing in the past three years, with most of these members joining in 2007 (or the first two months of 2008). The higher share of recent membership for Zipcar is certainly related to the conversion of Flexcar members to memberships in Zipcar after the merger of the two companies. But Flexcar also was the first of the two companies to begin operations in the region, in 2001; Zipcar initiated service in 2003. So the higher share of “before 2005” registrants is reasonable.

**Personal Vs Organizational Account** – As illustrated in Figure 7, both Flexcar and Zipcar accounts were overwhelmingly personal; 95% of Flexcar members and 91% of Zipcar members said they had personal carshare accounts. A much smaller percentage of respondents, about five percent of Flexcar members and seven percent of Zipcar members said they had accounts through their employers. Similarly small percentages said they had a school-based account. These percentages add to more than 100% because some respondents have multiple accounts.

**Figure 7**  
**Carshare Account Holder – by Company**  
 (Flexcar n = 1,691, Zipcar n = 4,870)



These percentages were consistent with results of a question about who pays for carshare expenses. Nearly nine in ten (89%) respondents said they paid all carshare costs. Three percent said their employer or another entity pays all of the costs. The remaining eight percent of respondents said they paid some of the costs and their employer paid some.

**How Heard About Carshare** –Table 5 presents the sources of information noted by Flexcar and Zipcar members for how they heard of the programs. Respondents cited very similar sources of information, regardless of the program in which they participated. The primary source of information was word of mouth or referral from a friend or family member, cited by at least a quarter of respondents in Flexcar (26%) and Zipcar (30%). About two in ten respondents in both programs said they saw a carshare vehicle, parked in a carshare parking space on the street (Flexcar 12%, Zipcar 15%), parked in another location, such as a Metro lot or garage (Flexcar 4%, Zipcar 4%), or being driven on the road (Flexcar 4%, Zipcar 8%). The other most common source was advertisements (Flexcar 17%, Zipcar 16%).

Only one information source, “information from Metro,” showed a difference between the two programs. It was cited by 13% of Flexcar members and eight percent of Zipcar members as their first source of carshare information. Six percent of respondents said they learned of Zipcar through the merger. Since more than 30% of respondents were former Flexcar members who had converted their memberships to Zipcar, this suggests that most of the former Flexcar members knew of Zipcar before the merger.

Table 5  
Carshare Information Sources – by Company

Carshare Information Source	Flexcar (n = 1,581)	Zipcar (n = 4,594)
<b>Referral from friend/family member</b>	<b>26%</b>	<b>30%</b>
<b>Saw carshare vehicle</b>	<b>18%</b>	<b>21%</b>
- Parked in carshare space	12%	15%
- Parked in other location (e.g. Metro lot)	4%	4%
- Being driven	4%	8%
<b>Advertisement</b>	<b>17%</b>	<b>16%</b>
<b>Information from Metro</b>	<b>13%</b>	8%
Internet	6%	6%
Saw orange carshare pole	4%	3%
Employer told me	3%	3%
Received information in the mail	2%	2%
Table / promotion at event	3%	1%
Media article (newspaper, magazine, TV)	3%	1%
Information from local jurisdiction	2%	1%
From Zipcar during merger	---	6%

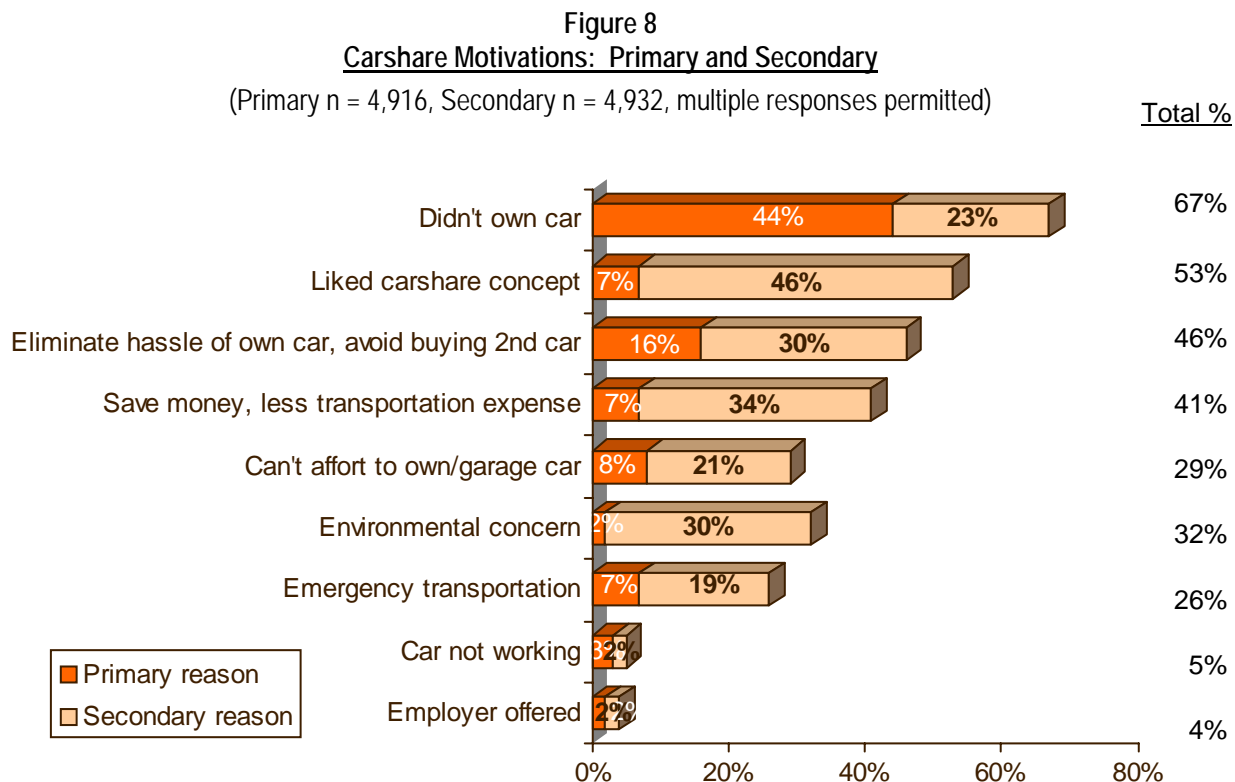
Percentages might add to more than 100%, multiple responses permitted

**Reasons for Joining Carshare – Primary and Secondary** – Respondents were asked why they joined a carshare program at the time that did join. They were permitted to offer multiple reasons, then were asked which of the reasons was their primary reason. Figure 8 presents the percentages of respondents who noted various reasons and the percentages who noted the reasons as primary or secondary motivations.

Many of the reasons cited indicated either absence of a vehicle at the time they joined carsharing or a desire to reduce or eliminate the costs associated with car ownership. More than four in ten (44%) respondents said their primary reason for joining a carshare program was that they didn't own a car. Another 23% said this was a secondary reason for their carshare membership. About one in eight (16%) said they joined a carshare program primarily to eliminate the hassle of owning a car or avoid buying a second car. This was a secondary reason for about three in ten respondents.

About 15% of respondents said they joined carsharing primarily for economic or cost saving reasons – to save money or pay less in transportation costs (7%) or because they couldn't afford to own or garage a car (8%). But saving money also was a secondary motivation for a significant number of respondents; more than two thirds of respondents mentioned one or more cost-saving motivation.





Smaller percentages of respondents noted non-financial reasons for carshare membership. Seven percent started carsharing because they liked the philosophy or concept of carsharing. But the motivating influence of this reason is actually much higher than this small percentage suggests; an additional 46% of respondents who cited another primary reason also mentioned this as a secondary reason.

Seven percent of respondents started carsharing for access to emergency transportation. Another 19% mentioned this as a secondary reason. And a third (32%) of respondents said concern for the environment was a motivation to join carsharing, but it was the primary motivation for just 2% of respondents.

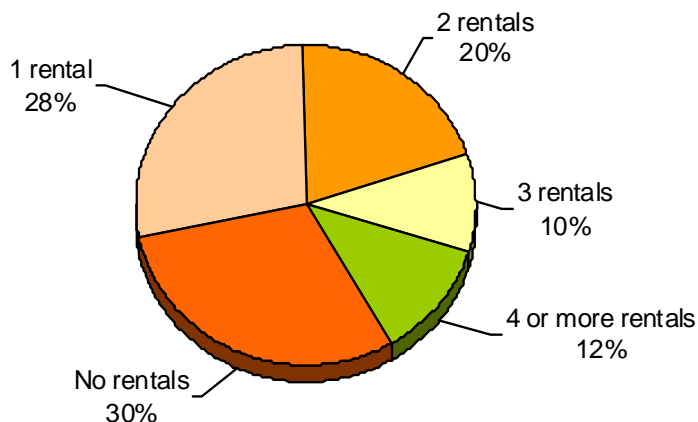
## Typical Carshare Use

Another section of the questionnaire asked respondents about their typical carshare use, including the frequency of carshare rentals, the days and times they typically used carsharing, and the types of trips for which they rented carshare vehicles.

**Frequency of Carshare Use** (Figure 9) –Three in ten respondents said they did not rent a carshare vehicle at all. About half (48%) said they rented carshare vehicles one or two times. Ten percent rented three times and 12% rented four or more times. This results in an average rental of 1.7 times in the past month. But when respondents who did not make any trips are removed from the calculation, the average number of rentals by those who did rent a vehicle rises to 2.4 trips per month.

Figure 9  
Carshare Rentals in Past Month

(n = 4,886)



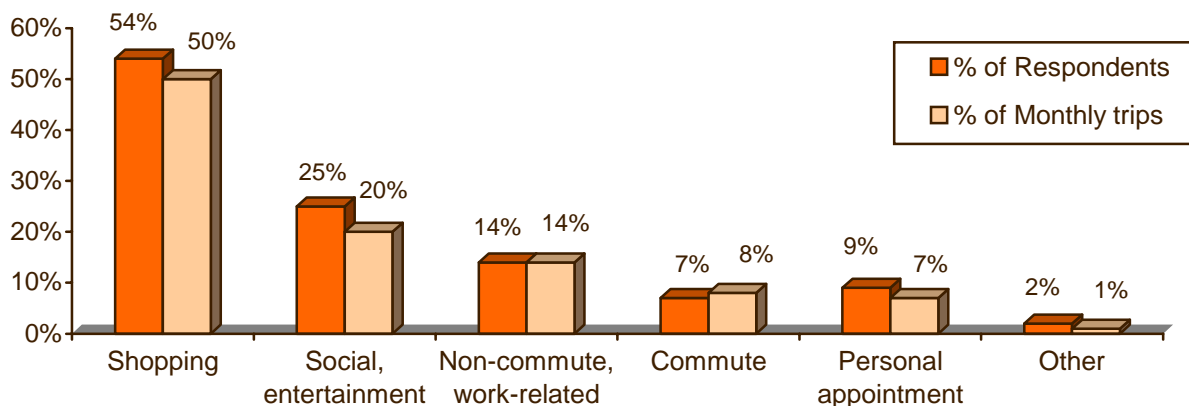
*Rentals Frequency by Carshare Member Characteristics* – Frequent and infrequent carshare users were distributed across all demographic characteristics. For example, there were no significant differences in rental frequency by age, income, or ethnicity. And respondents rented at about the same frequency regardless of the type of carshare parking facility (e.g., street parking, off-street, garage, etc.). But a few differences were noted in users who rented more or less often. For example:

- Account Type – 33% of respondents whose accounts were established through their employers used carsharing three or more times in the previous month, compared with 20% of respondents who had personal or school-based accounts.
- Personal vs Business Use – 33% of respondents who used carshare for business travel only and 32% who used carshare for both business and personal trips rented three or more times per month, compared to only 19% of respondents who used carshare exclusively for personal trips.
- Distance to Pick-up Location – 75% of respondents who lived within 2 blocks of the carshare location rented at least once in the previous month, compared with only 60% of respondents who lived one mile or more from the pick-up location.
- Home Jurisdiction – About 70% of respondents who lived in the carshare “core” jurisdictions of Alexandria, Arlington County, Montgomery County, and Washington, DC rented at least once in the past month, compared with only 60% of respondents in Prince George’s County and 54% of respondents who lived in Fairfax County.
- Household Vehicles per Driver – 76% of respondents who said they had no household vehicles made at least one carshare trip in the previous month, compared with only 54% of respondents who had one or more vehicles per driver in the household.

**Carshare Trip Purposes** – As noted earlier, 28% of respondents said they used their accounts for both personal and work-related trips. The majority of respondents (69%) used carsharing for personal trips only and the remaining three percent said they used their account only for business-related trips.

Figure 10 portrays the specific trip purposes for which carsharing was used during the past month. The figure shows two types of trip distributions, 1) “percentage of respondents,” that is, the percentage of respondents who made at a trip for the stated purpose during the past month, and 2) “percentage of monthly trips,” the percentage of carshare trips during the past month that were made for the stated purpose. This distinction is shown because some types of trips are made more frequently than others.

**Figure 10**  
**Carshare Trip Purposes – by Respondent and by Share of Monthly Trips**  
(n = 4,885)



**Average trips per month by trip purpose – Respondents who made trips**

Shopping – 1.5	Social, entertainment – 0.6	Non-commute work-related – 0.4
Commute – 0.2	Personal appointment – 0.2	Other – < 0.1

As expected from the business vs personal use results noted above, personal types of trips were made most often. The most common carshare trip purpose was *shopping*. More than half (54%) of respondents used carshare for a shopping trip in the past month and shopping trips accounted for 50% of all carshare trips made. Respondents who made carshare trips used carshare an average of 1.5 times per month for this purpose.

The second most common use was for *social and entertainment trips*. A quarter (25%) of respondents rented a carshare vehicle for this purpose in the past month and social/entertainment trips accounted for 20% of all carshare trips. These trips were made 0.6 times per month.

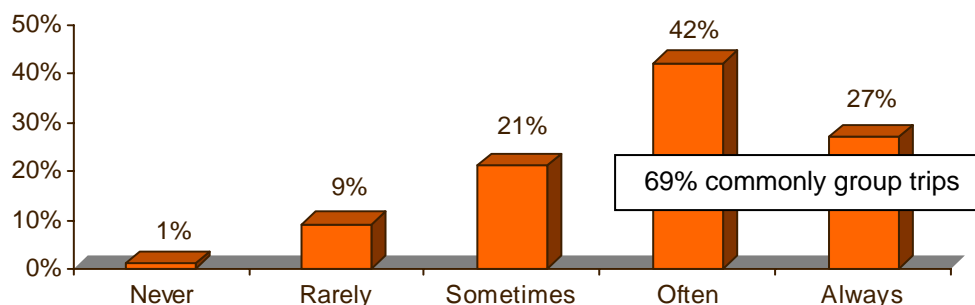
Non-commute, *work-related trips*, such as for a travel to a meeting, were made by 14% of respondents and accounted for the same percentage of carshare trips. Respondents who made carshare trips made about 0.4 trips for this purpose per month.

Carsharing was used by about seven percent of respondents to make a *commute trip*, that is, trips for travel from home to work or school, but commute trips accounted for a slightly higher share, eight percent, of total carshare trips made. And nine percent of respondents made a *personal appointment trip* by carshare, with seven percent of the previous month's carshare trips made for this purpose. About 0.2 trips were made for each of these purposes per month.

**Multiple Stops During Carshare Trips** – The “percentages by respondents” shown in Figure 10 add to more than 100%, because some respondents indicated that they used carsharing for more than one purpose. And the sum of the average trips per month for each purpose (e.g., 1.5 shopping trips per month) adds to more than the average of 2.4 rentals per month per carshare user. This is because some carshare users grouped or “chained” trips when they were carsharing. In other words, they made trips or stops for several purposes in one carshare rental.

As shown in Figure 11, nearly seven in ten (69%) said they “always” or “often” made multiple stops when they rented a carshare vehicle. About two in ten said they “sometimes” made multiple stops. Only 10% said they “rarely” or “never” made multiple stops.

Figure 11  
Frequency of Multiple Stops on Carshare Rentals  
(n = 4,768)



**Timing of Carshare Use – Weekend vs Weekday** – Carshare rentals were about evenly divided between weekday (Monday through Friday) and weekend use; 52% of the previous month's carshare trips were made on weekdays and 48% of trips were made on weekends. But because there are five weekdays and only two weekend days, carshare use was actually concentrated on weekends. On average 10% of weekly carshare trips were made each weekday and 24% were made per weekend day.

**Carshare Pickup Locations** – Respondents were asked where they picked up carshare vehicles, how far these locations were from their homes, work, or school, and the type of parking facility that was used for these vehicles.

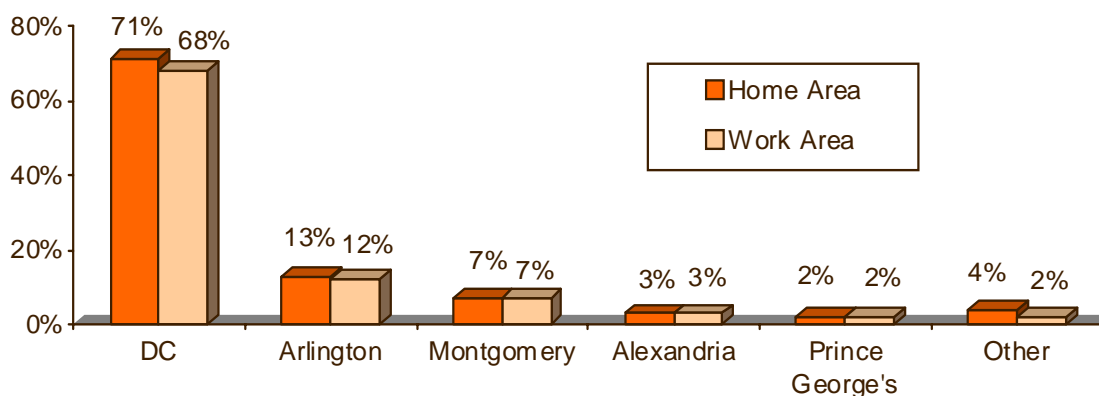
**Home and Work Pick-up** – As illustrated by Figure 12, the primary location for carshare pick-up was in the home neighborhood; 90% of respondents said they picked up carshare vehicles at a home-area location. About three in ten (28%) picked up vehicles near their work, and seven percent picked up vehicles near their school. About 14% said they picked up a car in “another location.” In most cases, these locations were Metrorail stations that were not near the respondents' homes but were near the destination loca-

tion. These percentages add to more than 100% because a large share of respondents picked up cars in multiple locations.

The primary home pick-up area was Washington DC. Seven in ten respondents said their nearest home area carshare location was in Washington. About 13% of respondents named Arlington County and 7% named Montgomery County.

**Figure 12**  
**Home and Work Pickup Locations**

(Home n = 4,871, Work n = 1,401, multiple responses permitted)



Common home-end pick-up neighborhoods in Washington DC included: Dupont Circle (7%), Capitol Hill/Union Station/Eastern Market (7%), Adams-Morgan (5%), Columbia Heights (5%), Logan Circle (4%), Shaw/U Street (4%), Foggy Bottom / GWU (3%), Mount Pleasant (3%), Cleveland Park (2%), and Van Ness / UDC (2%). Outside of Washington, DC, only two locations were named by two percent or more of respondents; the Ballston area of Arlington County, VA (3%) and the Court House area of Arlington County (2%).

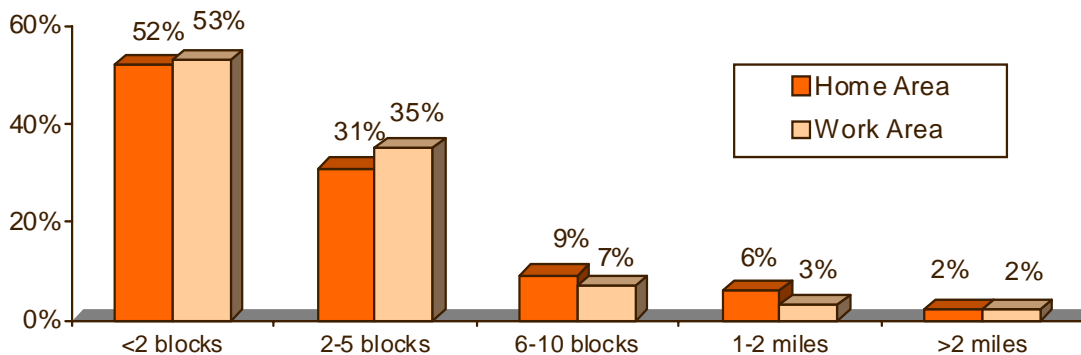
The work pick-up area distribution was similar to the home distribution. Washington was the most named location of those who said they picked-up cars near work; 68% of respondents said their closest work-area carshare location was in this city. About 12% of respondents named Arlington County and seven percent named Montgomery County as the carshare location closest to their work.

Common work-end pick-up neighborhoods included: in Washington DC – Downtown Washington (i.e., K Street area) (12%), Dupont Circle (9%), Foggy Bottom / GWU (7%), Capitol Hill/Union Station/Eastern Market (6%), Georgetown (2%), Metro Center (2%), Penn Quarter / Chinatown (2%), Tenley Circle / AU Park (2%). In Arlington County, VA, four locations were noted by two percent or more respondents picked-up cars at work; Rosslyn (4%), Ballston (2%), Court House (2%), and Crystal City (2%). One location in Montgomery County, MD, Bethesda, was the pick-up area for two percent of work-area carshare users.

**Distance to Carshare Pickup Location** – Carshare locations were quite close to most members' homes and work locations. More than half (52%) of respondents who picked up cars near home said they lived within two blocks of the carshare parking location and another 31% lived between two and five blocks

away. Only eight percent said they lived one mile or more from the parking location. The distribution for distance to work pick-up locations was similar to that for the home locations; 53% worked within two blocks of the location and 35% worked between two and five blocks away. About five percent worked more than one mile from the pick-up location. These results are displayed in Figure 13.

**Figure 13**  
**Distance to Home and Work Pick-up Locations**  
(Home n = 4,402, Work n = 1,314)



Respondents whose home pick-up location was in Washington or Arlington County reported the shortest carshare access distances. Ninety percent of Washington carshare members and 82% of Arlington County members said they lived within five blocks of the pick-up location. More than half of Montgomery County members lived within five blocks and about a third of members in Alexandria and Prince George's County were within this distance.

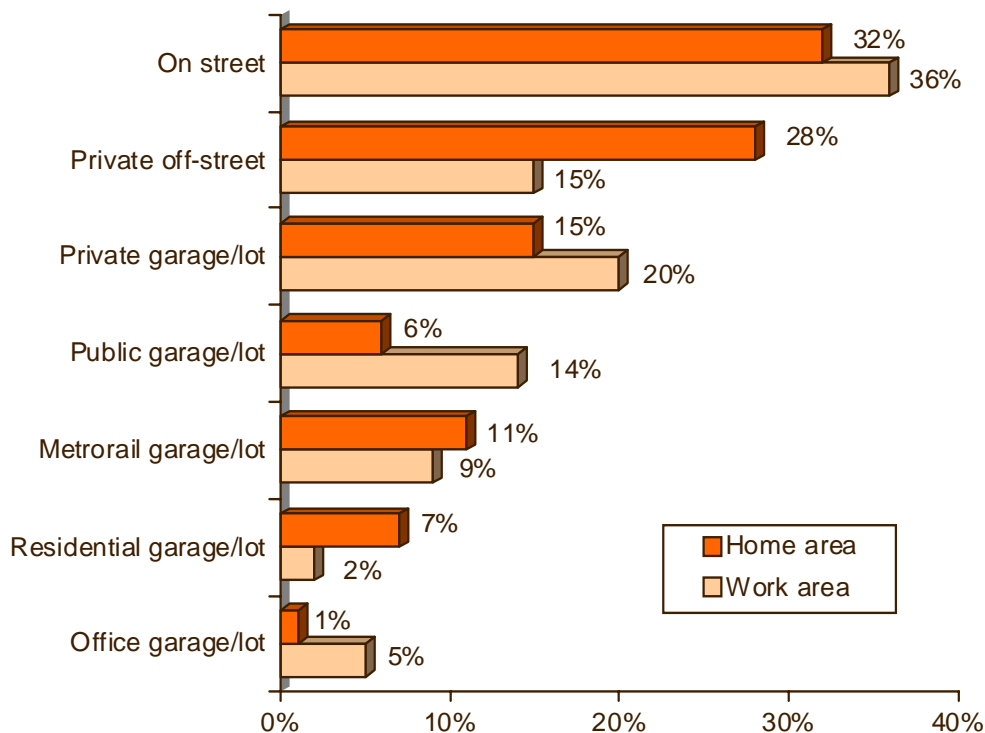
#### Jurisdiction

#### Percent within 5 blocks

- |                                    |     |
|------------------------------------|-----|
| • Washington DC (n = 3,141)        | 90% |
| • Arlington County (n = 601)       | 82% |
| • Montgomery County (n = 301)      | 56% |
| • Alexandria City (n = 133)        | 37% |
| • Prince George's County (n = 113) | 31% |
| • Fairfax County (n = 32)          | 16% |

**Type of Parking Location** – Carshare vehicles are parked in a variety of locations, including on the street and in public and private garages and lots. Respondents were asked in what type or types of facilities the vehicles they used were parked. As shown in Figure 14, the dominant facility was on-street parking spaces for both home (32%) and work (36%) pick-up locations. Private, off-street spaces were noted as the parking facility for 28% of home-area carshare vehicles and for 15% of work-area vehicles.

Figure 14  
 Parking Facility type - Home and Work Pickup Locations  
 (Home n = 4,364, Work n = 1,297)



Public or private garages were named as the locations for 21% of home-area vehicles and 34% of work-area vehicles. And about one in ten vehicles in both the home area and work area were parked in Metrorail lots or garages. Seven percent of respondents who picked-up cars at home said the cars were parked in a lot or garage at a residential building. Five percent of respondents who picked-up cars at work said the cars were parked in an office lot or garage.

Respondents who lived in different jurisdictions noted quite different patterns in the types of parking facilities for the carshare vehicles that they used. Table 6 presents the parking facility distribution for the five jurisdictions with 100 or more survey respondents. Eight in ten respondents who lived in Arlington County picked up cars from on-street spaces, while about eight in ten Alexandria and Prince George's County respondents picked up cars from private off-street spaces. Private, off-street spaces also predominated in Montgomery County, but a third of respondents in these areas picked up cars parked in lots or garages. Respondents from Washington, DC noted the most balanced mix of parking locations; private off-street and lots/garages each represented about four in ten parking spaces and two in ten said they picked up cars in on-street spaces.

Table 6  
Type of Parking Facility by Home Location

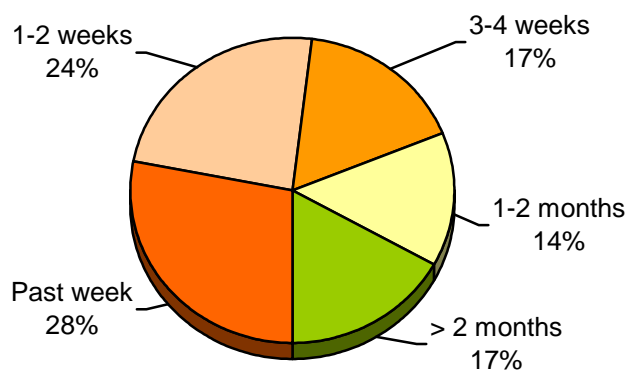
Home Location	Type of Parking Facility		
	On Street	Private off-street	Lot or garage
Alexandria (n = 132)	7%	<b><u>83%</u></b>	11%
Arlington (n = 602)	<b><u>79%</u></b>	9%	12%
Montgomery (n = 297)	6%	<b><u>58%</u></b>	<b><u>36%</u></b>
Prince George's (n = 110)	9%	<b><u>75%</u></b>	15%
Washington (n = 3,108)	22%	<b><u>38%</u></b>	<b><u>41%</u></b>

### Most Recent Carshare Use

One purpose of the carshare survey was to examine the characteristics of carshare trips. For this purpose, the survey included questions exploring the details of respondents' "last carshare rental." It was expected that respondents would be able to recall this last rental in sufficient detail to provide accurate information from which overall characteristics of all trips could be discerned. Highlights of these results are shown below.

**Timing of Last Carshare Rented** – About three in ten (28%) respondents said they rented a carshare vehicle recently, within the past week. Another quarter (24%) said their last rental was one to two weeks ago. And 17% had rented a carshare vehicle three to four weeks ago. The remaining 31% had last used carsharing at least one month ago. These results are shown in Figure 15

Figure 15  
Timing of Most Recent Carshare Rental  
 (n = 4,680)





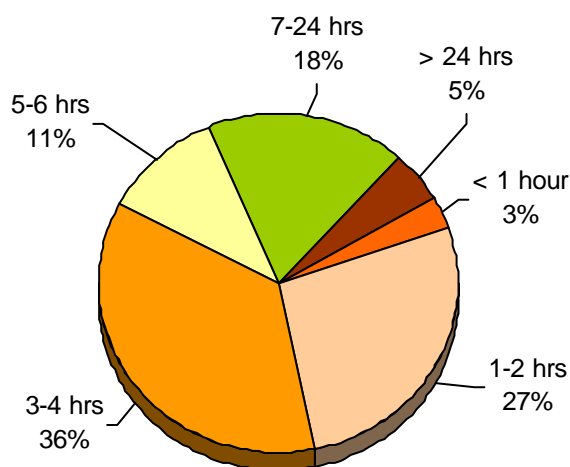
**Day of Last Rental** – About half (53%) of respondents said they last rented a carshare vehicle on a weekday. A third (32%) of respondents' most recent rental was on a Saturday. The remaining 15% rented last on a Sunday. These results closely tracked the results respondents reported for their carshare trips during the "last month;" about 52% of respondents reported that they had rented a carshare vehicle on a weekday during the past month and 48% said they had rented a carshare vehicle on a weekend day.

**Time of Day** – The pick-up times for respondents' last carshare rentals were distributed throughout the day, but the majority of vehicle pick-ups were during the late morning to midday hours. Four in ten rental pick-ups were made between 10:00 am and 2:59 pm. About three in ten rentals occurred in the late afternoon or early evening:

<u>Rental Pick-up time</u>	<u>Percentage</u>
• 5 am – 9:59 am	18%
• 10 am – 2:59 pm	42%
• 3 pm – 7:59 pm	32%
• 8 pm – 11:59 pm	8%
• Midnight – 4:59 am	1%

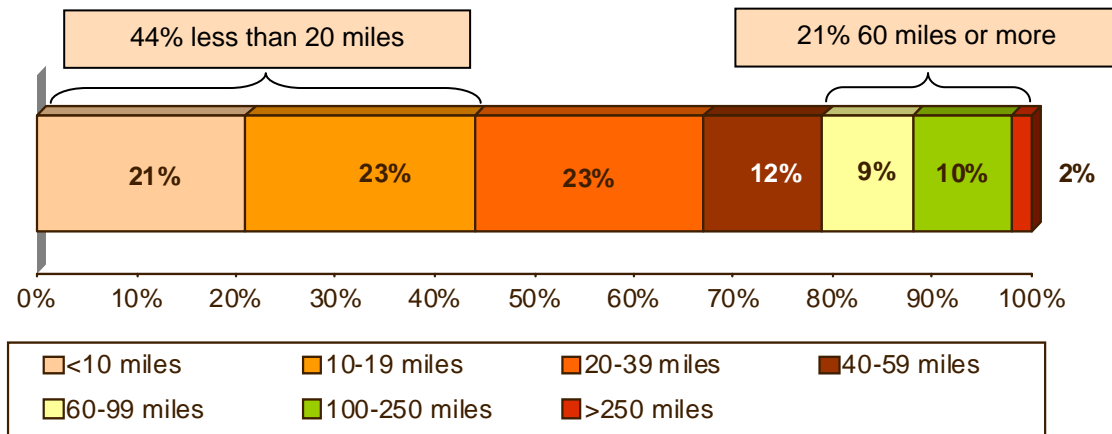
**Duration of Rental** – A large share of carshare rentals were of short duration. As illustrated in Figure 16, three in ten (30%) of respondents reported they returned the carshare vehicle for their last rental within two hours of the pick-up time and another 36% returned the car three or four hours after pick-up. About a quarter (23%) of rentals lasted longer than six hours and five percent kept the car for more than a full day.

**Figure 16**  
**Duration of Most Recent Carshare Rental (hours)**  
(n = 4,605)



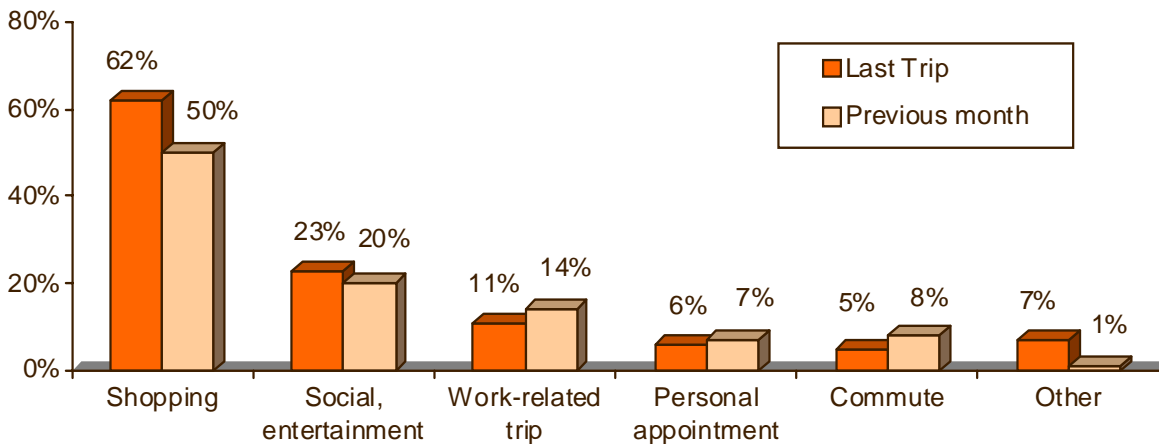
**Length of Carshare Trip** (Figure 17) – More than four in ten (44%) carshare rentals covered fewer than 20 miles and 67% covered fewer than 40 miles. But as shown in Figure 17, one in ten (10%) trips was between 100 and 250 miles and two percent of rentals were more than 250 miles. With these very long distance rentals, the average carshare rental was 48 miles. But when these extreme rentals were removed from the calculation, the average rental covered 36 miles.

Figure 17  
**Distance Traveled on Most Recent Carshare Rental (miles)**  
 (n = 3,063)



**Most Recent Carshare Trip Purpose** – The section of the questionnaire that explored the last carshare rental asked for what purpose or purposes the carshare vehicle had been rented. Figure 18 shows the results for this question.

Figure 18  
**Distribution of Trip Purposes – Most Recent Carshare Rental and Last Month’s Trips**  
 (Most recent rental n = 4,852, Last month’s trips n = 4,885, multiple responses permitted)



This question permitted respondents to report more than one purpose, and about two-thirds of respondents (63%) said they made at least two stops during the rental period. About half (52%) of respondents said they made two or three stops on the trip and 11% said they made four or more stops. The remaining 37% said they made just one stop on the last carshare rental.

*Shopping* was the most popular rental purpose; 62% of respondents said they made a trip or stop for shopping on their last carshare rental. Two in ten (23%) said their last carshare rental included a trip or stop for social or entertainment purposes and six percent used carsharing last for a personal appointment. About one in ten (11%) respondents noted making a work-related trip and five percent said their last carshare rental was for a trip from home to work or school.

Figure 18 also shows the trip purposes for all trips reported by respondents over the past month (repeated from Figure 10). Respondents noted a higher percentage of recent shopping trips compared to the percentage of shopping trips reported in the last month total. The survey was conducted during March and early April, well after the December holiday period, so it's unlikely that holiday shopping constituted a large share of "last trips" except for the small number of respondents whose last trip was more than 2 months ago. It's more likely that some respondents forgot to count some shopping trips or stops when they were reporting trips in the previous monthly count.

*Carshare Trip Purpose Differences by Demographic Groups* – The distribution of trip purposes was quite similar for respondents in different demographic group; there were no significant differences by income, ethnic group, or gender. Slight differences were noted for respondents of different age groups. Work related trips were more prevalent among older respondents. About one in ten trips was made for a work-related purpose, but 16% of the trips made by respondents who were 45 years of age or older were for this purpose. Younger respondents were most likely to use carsharing for shopping and social / entertainment trips. Sixty percent of all trips were made for shopping, but 65% of the trips made by respondents who were under 35 years old were for shopping.

Carshare trip purpose also appeared to differ by the number of vehicles available to respondents at home. Respondents who did not have a vehicle in the household were more likely to have made a shopping trip than were other respondents. Two-thirds of car-less households made a shopping trip in the past month, while only 51% of respondents who had at least one vehicle in the household (51%) used carsharing for a shopping trip. Respondents who had greater access to household vehicles were more likely to have used carsharing for a work-related trip; 17% of respondents who had a vehicle in the household made a work-related carshare trip in the past month, compared to only eight percent of respondents who were from car-less households.

A third difference in carsharing trip purpose was that respondents who lived in the Washington region's core jurisdictions of Alexandria, Arlington County, and Washington, DC were less likely to make work-related trips (11%) than were respondents who lived outside the core (17%). They also were less likely to use carsharing for personal appointments; about six percent of these respondents made a personal appointment trip by carshare, compared with 14% of respondents who lived outside these jurisdictions.

Differences in Trip Purpose by Trip Characteristics – Carshare trips of different purposes also differed in other trip characteristics. Notable differences included:

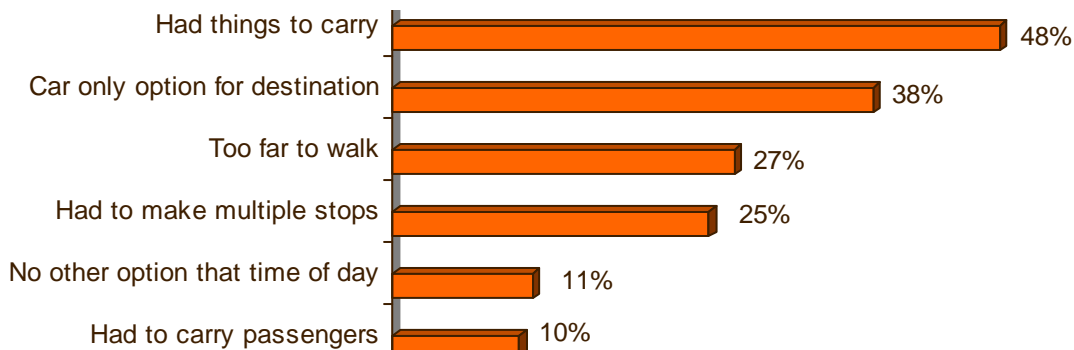
- Number of Stops/Destinations on Carshare Trip – Shopping and social/entertainment trips were combined with other trip purposes more often than were other trip purposes. Work-related trips were more likely to be “single destination” trips that were not linked to or combined with other trip purposes.
- Day of Week – As might be expected, work-related trips and personal appointment trips were more likely to be made on weekdays. Eighty-five percent of work-related trip and 87% of personal appointment trips were made on weekdays. Shopping and social / entertainment trips were concentrated on weekends; 55% of shopping trips and 62% of social / entertainment trips occurred on either Saturday or Sunday.
- Time of Day – Trip purposes also varied by the time of day at which they occurred. A third of commute trips, work-related trips, and personal appointment trips were made during the early morning hours of 5:00 a.m. to 9:59 a.m., while only 13% of shopping trips and 16% of social trips were made this early in the day. Trips made between 10:00 a.m. and 2:59 p.m. were more balanced. Four in ten of trips for work-related, shopping, social/entertainment, and personal appointments were made at this time. Late evening and night trips were disproportionately social / entertainment trips. Forty percent of trips made between 8:00 p.m. and 4:59 a.m. were for this purpose.
- Duration of Trip – Trips made for work-related purposes and social purposes were more likely to be of longer duration. Forty-six percent of work-related trips and 56% of social/entertainment trips lasted five or more hours, compared to only 26% of shopping trips and 29% of trips made for personal appointment purposes.
- Trip Distance – Trip distance also varied by the trip purpose. Work-related and social / entertainment trips tended to be longer distance, while shopping trips were on the shorter side. Two-thirds (67%) of work-related trips and 73% of social / entertainment trips were 20 or more miles; only half (49%) of shopping trips traveled this far. Trips made for “other” purposes also tended to be longer distance; 85% were 20 or more miles and 55% were 60 or more miles. This trip purpose group included trips respondents described as “out-of-town” or “road trips.”

Reasons for Using Carshare for this Trip (Figure 19) – Respondents were asked why they used carsharing for their most recent carshare rental. The most common reasons focused on characteristics of the trip purpose or trip location that made it difficult to travel by means other than a personal vehicle. About half (48%) reported that they needed to carry or transport items and 10% said they needed to carry passengers. The second most common reason was that a vehicle was the only option for this destination, because public transit did not serve the destination (38%). About a quarter (27%) of respondents said the trip was too far to walk and 25% said they had to make multiple stops. About one in ten (11%) respondents said no other option was available at the time of day they needed to travel.

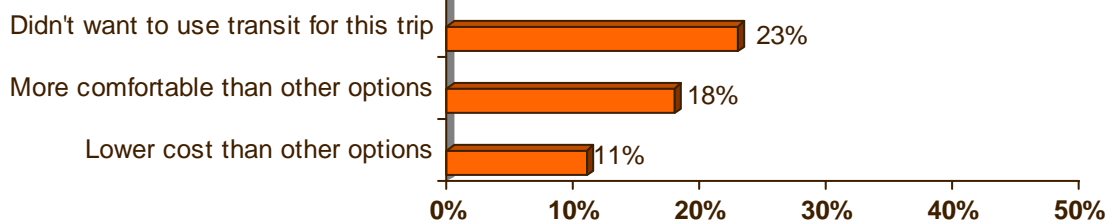
Some respondents reported personal preference reasons for using carsharing. About a quarter (23%) said they used carsharing for this trip because they didn’t want to use public transit, although presumably, transit was an option. Two in ten (18%) used carshare because it was more comfortable than other options they could have used and 11% said they used carsharing because it was lower cost than other options.

Figure 19  
Reasons for Using Carshare for the Most Recent Carshare Rental  
 (n = 4,828)

**Trip Characteristics Reasons**



**Personal Preference Reasons**

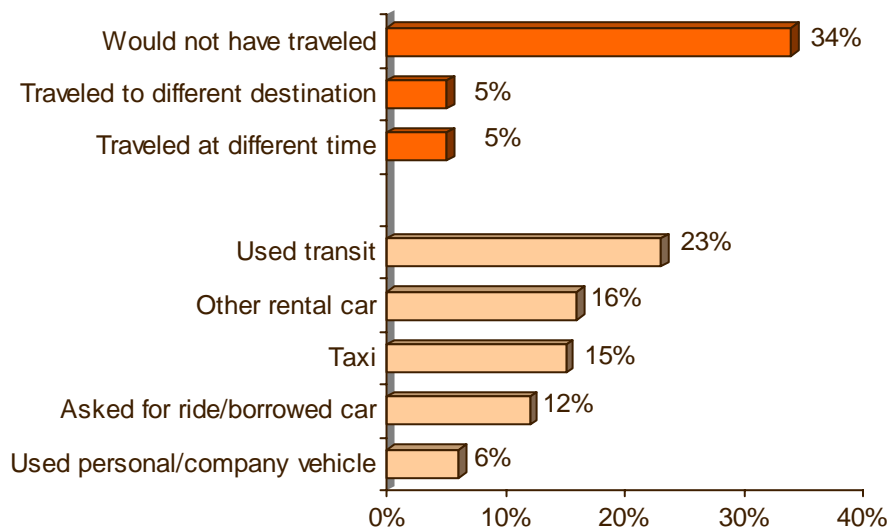


**Travel Options if Carshare Not Available** – A related question asked about the most recent trip was how the respondent would have made that particular trip if carsharing had not been available. Consistent with the finding that some trips could be made only using a vehicle, a significant number of respondents would not have made the trip in its current form if carsharing had not been available. As illustrated by Figure 20, a third (34%) said they would not have traveled at all, five percent would have traveled to a different destination, and five percent would have traveled at a different time of day. Thus carsharing broadened not just mode options, but also destination and trip options.

The remaining respondents said they would have made the trip but would have used a different type of transportation, most likely transit (23%), another rental car (16%), or a taxi (15%). About one in ten would have asked someone for a ride or borrowed a car from a friend or family member who had a vehicle. Only six percent said they would have used a personal or company car. As noted earlier, 67% of respondents said they had no household vehicles and 21% said they had fewer vehicles than drivers, so this was likely not an option for the majority of respondents.

Respondents' options for making these trips differed by the type of trip they were making. Overall, only six percent of respondents said they would have used a personal or company car, but 27% of respondents whose last trip was work-related said they would have made the trip this way. Respondents who had made shopping and social/entertainment trips were mostly likely to have said they "would not have traveled" if they could not have used carsharing. More than half of respondents who made these trips gave this response, suggesting these were discretionary trips rather than trips of necessity.

Figure 20  
Travel Options for Most Recent Trip if Carshare Not Available  
 (n = 4,828)

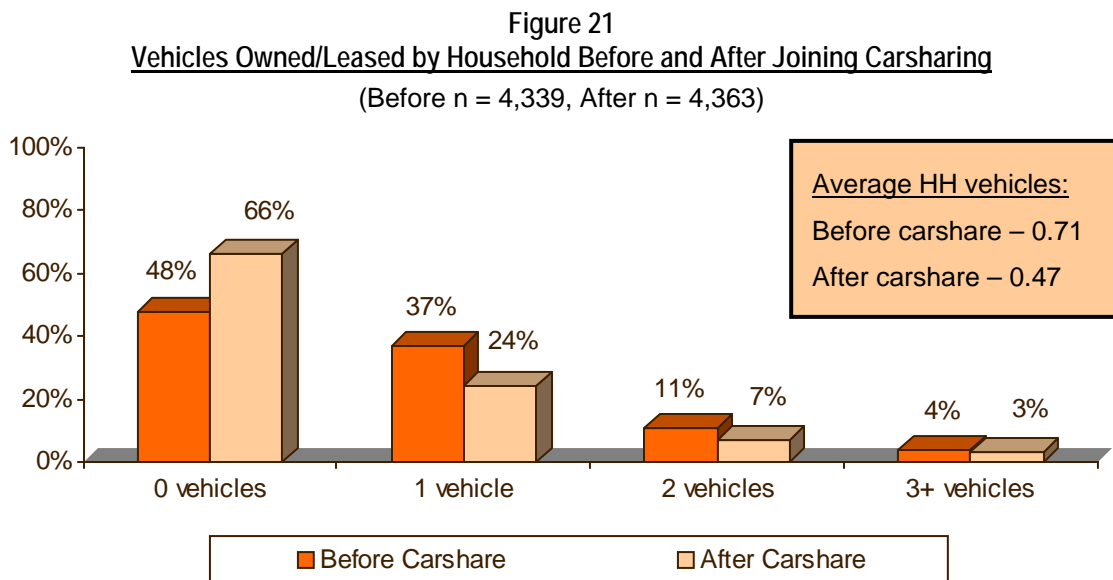


### Changes in Auto Ownership Since Joining Carsharing

The survey included various questions about various travel changes they might have made since joining carsharing. These included auto ownership, annual miles driven, number of weekly trips typically made by driving alone and by other modes, and changes in commuting behavior since joining carsharing. The purpose of these questions was to estimate travel impacts related to carsharing.

It is important to note that, with the exception of questions about household vehicle ownership, the survey asked only about travel changes made by the respondent. It did not ask about travel made by other household members. Carsharing by one household member could result in increased travel by another member, if a vehicle previously used by the carshare user now is available to another household member. On the other hand, if the availability of carsharing eliminates a household vehicle, other household members could have diminished access to a vehicle, thus drive less. The data do not permit an analysis of this type, but it is noted here that carshare use could have implications beyond the travel of the carshare member.

One travel change explored was in the number of vehicles owned or leased in the households. As noted before, two-thirds (67%) of carshare survey respondents do not currently own or lease a car for personal use. When asked how many vehicles they owned before joining carsharing, about half (52%) of respondents said they owned or leased one or more vehicles and 48% said they did not have any household vehicles. Thus, since joining carsharing, 18% of respondents eliminated the only vehicle in the household. The majority of the drop appears to have been in one-vehicle households, but a drop was observed in two-vehicle households also. These results are displayed in Figure 21.



Before joining carsharing, respondents owned or leased an average of 0.71 vehicles per household. After joining carsharing, the average vehicles per household dropped to 0.47, a reduction in 0.24 vehicles per household.

The net drop in vehicle ownership reflected a small percentage of respondents who increased their household vehicles. Table 7 indicates that five percent of respondents added at least one vehicle to the household. But this was more than offset by the 27% of respondents who reduced the number of vehicles the household owned or leased.

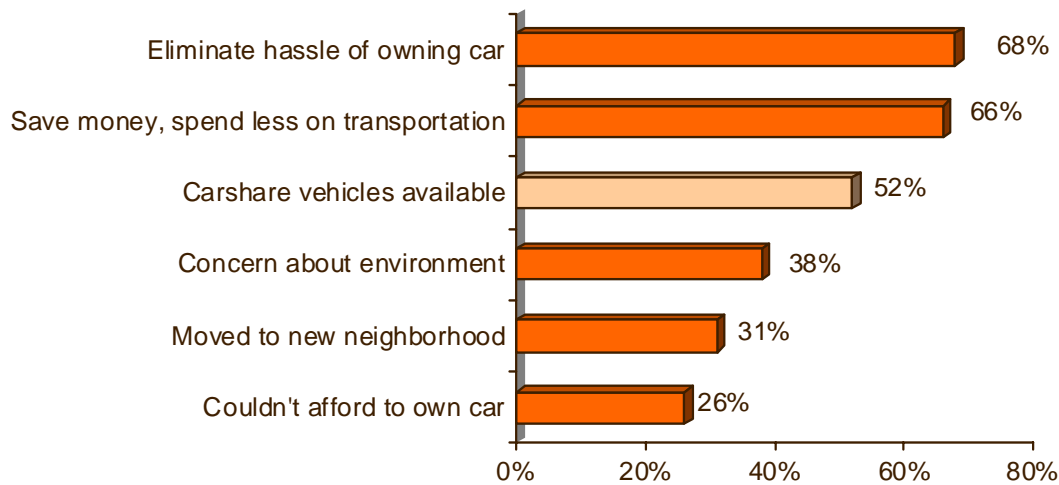
**Table 7**  
**Change in Vehicle Ownership Since Joining Carshare**  
(n = 4,534)

Household Vehicles Change	Percentage
Reduced number of vehicles	27%
Made no change	68%
Increased number of vehicles	5%

**Reasons for Reducing Vehicles in Household** – Respondents who had eliminated a household vehicle were asked why they had done so and if the availability of carsharing had influenced their decision. Figure 22 displays respondents' answers to the first of these questions.

Figure 22  
Reasons for Eliminating Household Vehicle

(n = 1,140)



Avoiding the hassles of car ownership (68%) and saving money (66%) were the most common reasons to eliminate a household vehicle. But more than half of respondents cited availability of carshare vehicles as a motivation for reducing car ownership. Nearly four in ten cited concern for the environment as one motivation. Three in ten said their reason was that they had moved to a new neighborhood. This could suggest at least two related motivations; that it was difficult to own a vehicle in their new neighborhood or that they had sufficient transportation options, including carsharing, in the new neighborhood, so did not need a vehicle.

More than four in ten respondents who reduced a household vehicle said that carsharing had influenced this decision. Two in ten (19%) said they were somewhat unlikely and 24% said they were very unlikely to have eliminated a household vehicle if carsharing had not been available.

**Avoided Purchasing Vehicle** – Another potential impact of carsharing is to enable carshare members to avoid the purchase of a vehicle that they might have needed if carsharing were not available. Respondents who said they had not changed their number of household vehicles were asked if they *bought or considered buying* a vehicle since becoming a carshare member.

A quarter (26%) of respondents said they considered buying a vehicle after they became a carshare member, but didn't do so. Carsharing also appeared influential in these decisions not to buy a vehicle. Six in ten said they were either very likely (21%) or somewhat likely (40%) to have purchased a vehicle if carsharing had not been available.

The results above suggest that carsharing can influence car ownership decisions, however, it is important to note that a large share of carshare members did not own a vehicle prior to becoming carshare members, so ownership changes were made by a minority of members. About one in ten (11%) of total carshare members reduced their household vehicle ownership and 15% of total carshare members avoided buying a second vehicle.

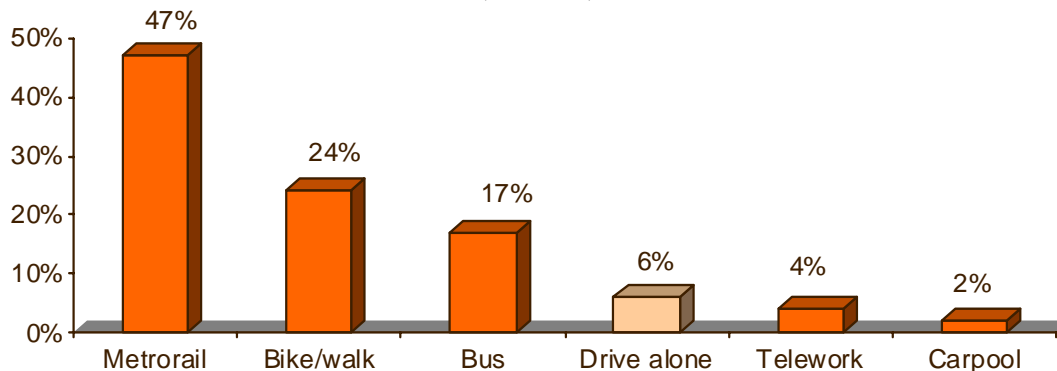


## Commute Patterns of Carshare Users and Change Since Joining Carsharing

More than nine in ten (93%) respondents said they were employed, either full-time or part-time. Another three percent of respondents were college or university students who lived off campus. These respondents were asked about their current travel from home to work or to school and about any changes they might have made in their travel since they started carsharing. As shown in Figure 23, the overwhelming majority of respondents reported that they used a non-drive-alone mode of travel to get to work or school.

Figure 23  
Commute Mode of Carshare Respondents

(n = 4,654)



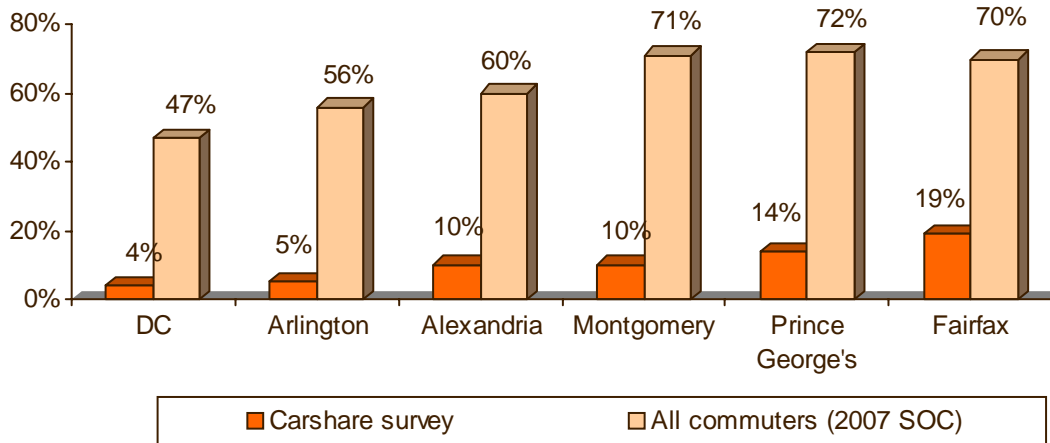
Respondents made nearly half (47%) of their work/ school commute trips by Metrorail, 17% by bus and a quarter (24%) by biking or walking. Only six percent of commute trips were made by driving alone and only two percent of trips were carpool. Another four percent of work days were non-travel days because respondents teleworked.

The share of commute trips that are made by drive-alone modes is dramatically lower for carshare users than for all commuters in the Washington metropolitan region. Over the entire region, drive alone trips account for about 67% of weekly work day trips (2007 State of Commute survey). Even accounting for the fact that the majority of carshare respondents live in Washington, Arlington County, or Montgomery County, the drive alone rate of carshare users is quite low. This reflects the low vehicle ownership of carshare members.

Figure 24 shows the drive alone rates by home area for carshare users and for all commuters in these jurisdictions, as found in the 2007 State of the Commute Survey conducted by Commuter Connections. As shown, only four percent of carshare users who live in Washington DC drive alone to work, compared to 47% of all commuters who live in Washington. The disparities in drive alone rate are similarly striking for the other five jurisdictions that had measurable carshare use.

**Figure 24**  
**Drive Alone Mode Share – Carshare Respondents vs All Commuters by Home Area**

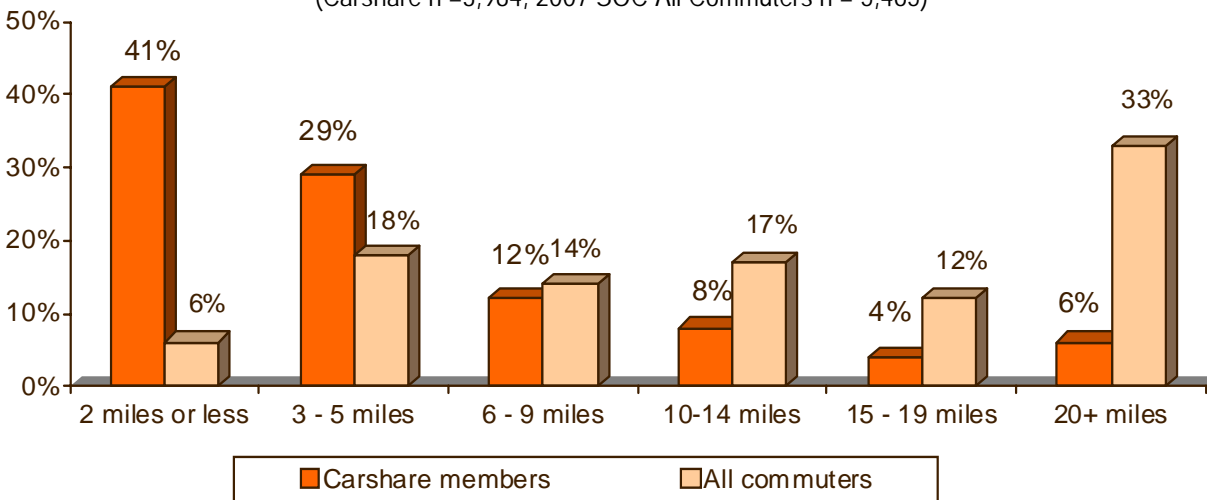
(Carshare: DC n = 2,959, Arlington n = 577, Alexandria n = 141, Montgomery n = 313, Prince Georges n = 153, Fairfax n = 89)  
 (2007 SOC survey: DC n = 600, Arlington n = 600, Alexandria n = 600, Montgomery n = 600, Prince Georges n = 600, Fairfax n = 601)



**Commute Distance for Carshare Users** – Carshare members also travel much shorter distances to work than do all commuters in the region. Figure 25 presents a comparison of the commute distance distribution for carshare users and for all commuters in the region.

**Figure 25**  
**Commute Distance – Carshare Users and All Commuters**

(Carshare n = 3,984, 2007 SOC All Commuters n = 5,465)



The distributions clearly are dramatically different for these two groups. Carshare users travel much shorter distances. Four in ten carshare users travel two miles or less to work and 70% travel five or fewer miles. By contrast, only 24% of all regional commuters travel five miles or fewer. On the other end of the distance scale, the figure shows that 10% of carshare user travel 15 miles or more, while more than four in ten (45%) commuters region-wide travel this far.

**Changes in Commuting Since Joining Carshare** – One survey objective was to identify changes carshare users had made in their travel since joining carshare. Table 8 shows the changes respondents said they made in commuting mode. A large majority (82%) said they had made no changes in their commuting, but 18% said they made one or more changes. About nine percent said they started using an alternative mode, either transit (5%), bicycle/walk (3%), or carpool (1%). Some respondents also said they increased the number of days they used alternative modes, either transit (10%) or bicycle/walk (9%). Some respondents noted more than one change.

Table 8  
**Commute Mode Change Since Joining Carshare**  
(n = 4,468, multiple responses permitted)

Commute Changes	Percentage
No changes	82%
Started riding transit	5%
Ride transit more often	10%
Started carpooling	1%
Started bicycling / walking	3%
Bicycle / walk more often	9%

**Impact of Commute Changes on Daily Commute Vehicle Trips and VMT** – A comparison of the changes respondents said they made to current travel showed that 82% had continued this change; the remaining respondents had not continued the changes.

Overall, the changes respondents made were quite small. The majority (71%) of respondents who made a commute shift had made shifts from one alternative mode to another. Only a quarter (24%) of “changers” had reduced the number of drive alone trips and five percent actually increased their drive alone trips. On average, respondents who made a change reduced 0.26 vehicle trips per day.

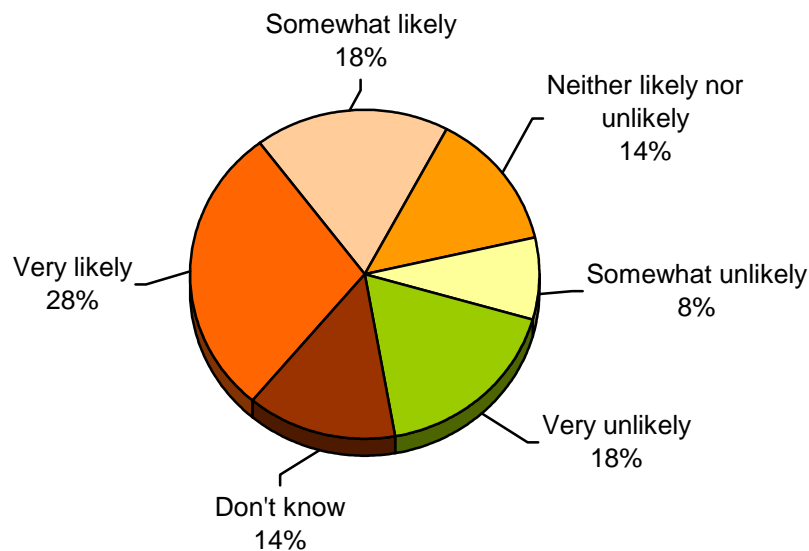
The impact of commute changes on commute vehicle miles traveled also was relatively small, primarily because carshare survey respondents traveled relatively short distances to work. On average, respondents who made commute changes reduced 3.0 miles per day for these trips.

When these survey results are applied to the estimated total carshare member population of 28,000 members, the results are as follows:

- Total carshare members 28,000
- Estimated commuting carshare members 26,425
- Estimated carshare members with change 4,700
  
- Estimated daily trips reduced 1,250 daily trips reduced
- Estimated annual trips reduced 31,000 annual trips reduced
  
- Estimated daily VMT reduced 14,000 daily VMT reduced
- Estimated annual VMT reduced 3,501,000 annual VMT reduced
  
- Estimated daily NO<sub>x</sub> reduced 7 daily kg NO<sub>x</sub> reduced
- Estimated daily VOC reduced 5 daily kg VOC reduced
- Estimated daily CO<sub>2</sub> reduced 6,384 daily kg VOC reduced

Respondents who made a change from driving alone, were asked how likely they were to make the change if carsharing had not been available. Figure 26 presents these results. About a quarter said they were either somewhat unlikely (8%) or very unlikely (18%) to have made the change without carsharing. Thus, about 26% of the impacts noted above, or 325 daily vehicle trips and 3,650 daily VMT, could reasonably be credited to a carshare influence.

**Figure 26**  
**Likelihood to Make Commute Change from Driving Alone to Alternative Mode Without Carshare**  
(n = 314)



*Changes in Commuting by Respondents Demographics* – Analysis of the survey data showed some differences in the incidence of commute change among various demographic groups. Table 9 presents the percentages of respondents who did not make any travel changes and the percentages of respondents who started or increased use of alternative modes after joining carsharing.

Table 9  
**Commute Mode Change Since Joining Carshare – By Respondent Demographics**

Respondent Characteristic	Change in Use of Alternative Modes for Commuting	
	No Change	Started or Increased Use
<b>Household vehicles per driver</b>		
Zero (car-free household) (n = 2,699)	83%	17%
Less than one per driver (n = 841)	81%	19%
One or more (n = 447)	79%	21%
<b>Age</b>		
Less than 25 years old (n = 516)	88%	12%
25 – 34 years old (n = 2,002)	83%	17%
35 or older (n = 1,478)	79%	21%
<b>Home jurisdiction</b>		
Washington, DC (n = 2,964)	83%	17%
Arlington Co, VA (n = 567)	82%	18%
Montgomery Co, MD (n = 315)	79%	21%
Fairfax Co, VA (n = 91)	76%	24%
Alexandria, VA (n = 141)	75%	25%
Prince George's Co., MD (n = 154)	73%	27%
<b>Gender</b>		
Female (n = 2,202)	84%	16%
Male (n = 1,670)	79%	21%
<b>Ethnicity</b>		
White (n = 2,759)	84%	16%
Non-white (n = 882)	79%	21%

Increased use of alternative modes after joining carsharing appeared connected to:

- Ratio of household vehicles to drivers – Respondents who had at least one household vehicle per driver were more likely to have made a commute change than were respondents who had fewer vehicles in the household. This is likely because most respondents in zero-car households had no other option except alternative modes even before they joined carsharing.
- Age – Commute change rate increased as age increased. As for vehicles per driver, this could be related to a higher level of pre-carshare use of alternative modes among younger respondents.
- Home Jurisdiction – Respondents who lived in Washington, DC and Arlington County, VA were less likely to have made a commute change than were respondents in other jurisdictions. But data from the State of the Commute survey indicated these jurisdictions had lower drive alone rates than did other jurisdictions, thus it seems likely these areas had higher use of alternative modes even before carsharing.
- Gender – A higher proportion of men than women started or increased use of alternative modes.
- Ethnicity – Non-white respondents were more likely to have made commute changes.

*Changes in Commuting by Respondents' Travel Characteristic* – The incidence of commute changes also seemed related to several characteristics of respondents' travel patterns. These comparisons are presented in Table 10.

Table 10  
Commute Mode Change Since Joining Carshare – By Travel Pattern Characteristic

Respondent Characteristic	Change in Use of Alternative Modes for Commuting	
	No Change	Started or Increased Use
<b>Distance from home to transit</b>		
Less than ½ mile (n = 3,214)	83%	17%
Between ½ and one mile (n = 577)	80%	20%
More than one mile (n = 191)	76%	24%
<b>Commute distance</b>		
Less than 10 miles (n = 3,199)	83%	17%
10 miles or more (n = 717)	74%	26%
<b>Moved residence or work location</b>		
No change (n = 2,333)	84%	16%
Change in home or work (n = 1,770)	80%	20%

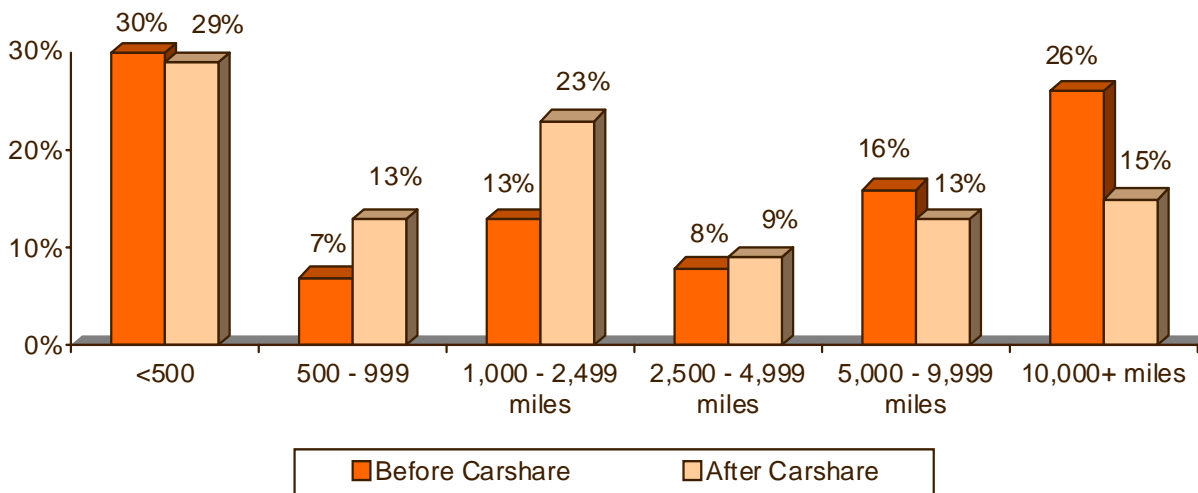
Increased use of alternative modes for commuting after joining carsharing appeared connected to:

- Distance from Home to Transit Stop – Respondents who lived farther from transit were more likely to have made a commute change than were respondents who lived closer to transit. This seems counter-intuitive, but likely reflects higher pre-carsharing use of alternative modes by respondents who lived closer to transit.
- Commute Distance – A higher percentage of respondents who had longer commute distances made commute changes, compared to respondents whose trips were short.
- Moved Residence or Work Location – Respondents who said they made a change in either their work or home location since joining carsharing were more likely to increase use of alternative modes. This is consistent with research that indicates commuters are most open to shifting commute modes when they are making personal changes that disrupt previous commute patterns.

### Changes in Driving Miles Since Joining Carsharing

Annual Miles Traveled by Driving – Respondents were asked how many miles they drove annually before they joined carsharing and how many they drive now. Figure 27 presents the distribution of respondents by their annual miles driven. Before carsharing, about four in ten (42%) respondents drove 5,000 or more mile per year. After joining carsharing, only 28% of respondents drove this far in a year.

Figure 27  
Total Annual Vehicle Miles Driven Before and After Joining Carsharing  
(Before carshare n = 2,473, After carshare n = 2,513)



The biggest change was in the 500 to 2,499 miles groups. Before carshare, about 20% of respondents drove this far; after joining carshare this group expanded to include more than a third (36%) of respondents. A large drop was noted in the percentage of respondents who traveled at least 10,000 miles an-

nually. Before carsharing, 26% of respondents drove this many miles in a year; after carsharing, only 15% drove 10,000 or more miles annually.

Note that the “n =” sample sizes indicate that only about half (2,473 / 4,932) of the respondents answered these questions. This suggests that these might have been difficult questions for some respondents to answer. So these results should be interpreted cautiously, both because the results do not include data from a sizeable portion of the respondents and because respondents’ who did answer the questions could have inaccurate estimates of their driving miles.

Additional analysis on change in driving miles was performed for respondents who reported both a current and pre-carshare annual driving mileage. These results are presented in Table 11. About 35% of respondents said they made no change in their annual driving miles after joining carsharing. A similar percentage said they decreased annual driving miles. Almost three in ten respondents said they increased their annual driving miles, but these increases tended to be modest, compared to decreases; 25% added fewer than 1,500 miles, while 20% of the 36% who decreased miles reduced 3,500 or more miles.

Table 11  
Change in Annual Driving Miles Since Joining Carshare  
(n = 2,231)

<b>Drive Alone Miles Change</b>	<b>No Change</b>	<b>Decrease</b>	<b>Increase</b>
<b>No change in annual miles</b>	<b>35%</b>		
<b>Made a change in DA miles</b>		<b>36%</b>	<b>29%</b>
1 to 1,499 miles		9%	25%
1,500 to 3,499 miles		7%	2%
3,500 miles or more		20%	2%

It should be noted that these mileage changes were reported only for the respondent, not for the household. Thus, it is possible that changes in carshare members’ travel patterns might not be mirrored by others in the household. Carsharing by one household member could result in increased travel by another member, if a vehicle previously used by the carshare user now is available to another household member. Conversely, if the availability of carsharing eliminates a household vehicle, other household members could have diminished access to a vehicle, thus drive less. So the annual driving miles and/or number of driving trips could be different if the questions were applied to the entire household, rather than simply to the respondent.

Changes in Driving Miles by Various Groups of Respondents – As was observed in the previous section, changes in commute travel patterns were not uniformly distributed across all respondents; change occurred more often in some respondents groups than in others. A similar pattern was noted in the change in driving miles. Table 12 shows the percentages of various respondent groups who decreased driving miles, increased driving miles, and made no changes.



Table 12  
 Change in Annual Driving Miles Since Joining Carshare – By Respondent Demographics

Respondent Characteristic	Change in Annual Driving Miles		
	Reduced	No Change	Increased
<b>Number of household members</b>			
1 person (n = 714)	42%	30%	28%
2 persons (n = 876)	38%	33%	29%
3 or more (n = 483)	27%	45%	28%
<b>Household vehicles per driver</b>			
Zero (car free household) (n = 1,302)	41%	22%	37%
Less than one per driver (n = 492)	33%	50%	17%
One or more (n = 336)	24%	64%	12%
<b>Age</b>			
Less than 25 years old (n = 228)	25%	25%	50%
25 – 34 years old (n = 986)	39%	28%	33%
35 – 44 years old (n = 425)	35%	42%	23%
45 or older (n = 475)	38%	49%	13%
<b>Gender</b>			
Female (n = 1,009)	35%	32%	33%
Male (n = 1,056)	38%	38%	24%
<b>Age</b>			
Less than 25 years old (n = 228)	25%	25%	50%
25 – 34 years old (n = 986)	39%	28%	33%
35 – 44 years old (n = 425)	35%	42%	23%
45 or older (n = 475)	38%	49%	13%

The number of driving miles after joining carsharing appeared connected to:

- Number of Household Members – The percentage of respondents who increased driving miles after joining carsharing was the same across all household sizes, but respondents were more likely to have reduced their annual driving miles if they lived in smaller households. Respondents who lived in households with three or more members were more likely to have made no change in their driving miles.

- Ratio of Household Vehicles to Drivers – The connection of driving miles in relationship to the number of vehicles per driver in the household was interesting. Respondents in zero vehicle households were more likely than were respondents who had some vehicle access to have *reduced* driving miles, but also were more likely to have *increased* miles. Only 22% of these respondents said they made no change in their annual miles driven, compared to at least half of respondents who had greater access to a personal vehicle. The increased miles likely are due to new vehicle access by carshare members who were car-free before joining carsharing, while the reduced miles appear to be concentrated among respondents who had a vehicle before carsharing but reduced the number of vehicles after joining carsharing.
- Gender – A higher proportion of women than men increased driving miles. Men were more likely to have maintained their driving miles. The differences in reduced miles were not significant.
- Age – The percentage of respondents who increased driving miles declined with increasing age, but with the exception of very young respondents, the drop was not balanced by a greater percentage of respondents who reduced miles, but by greater percentage of maintained driving miles.

Changes in Driving Miles by Respondents' Travel Characteristic – Several travel pattern characteristics appeared to be linked to changes in annual driving miles. These comparisons are presented in Table 13.

Changes in driving miles after joining carsharing appeared connected to:

- Distance from Home to Transit Stop – Respondents who lived closer to transit were more likely to have increased their driving miles than were respondents who lived farther away. This likely is related to the availability of a personal vehicle in the household; a higher percentage of respondents who lived close to transit were zero-car households. Thus, the connection is likely that these respondents had no access to a vehicle before joining carsharing, so carsharing increased their driving opportunities.
- Vehicle Purchase or Consideration of Purchase – Respondents were asked if they purchased a vehicle or considered buying a vehicle since they joined carsharing. Respondents who bought a vehicle were most likely to say they maintained their driving miles, while respondents who did not buy a vehicle, even if they considered buying one, were more likely to have reduced driving miles.
- Change in Household Vehicles – A significant difference was noted in the reduction of driving miles among respondents who reduced the number of vehicles owned or leased by the household. Eight in ten of these respondents reduced driving miles, compared to only two in ten respondents who did not reduce household vehicles.
- Made Commute Mode Change – A significant difference in driving miles also was found for respondents who increased use of alternative modes for commuting. Two-thirds of these respondents reduced their annual driving miles, while only 28% of respondents who had not made a commute mode change reduced driving miles. This suggests that, at a minimum, the commute driving miles were reduced, but it's possible these respondents also decreased non-commute miles.

- Moved Residence or Work Location – Respondents who said they made a change in either their work or home location since joining carsharing had higher rates of reduced miles, but also higher rates of increased miles. This likely means the move enhanced opportunities to make trips by modes other than driving for some respondents, but decreased non-driving opportunities for others. On average, respondents who made a move reduced 1,825 miles annually, compared to an annual reduction of 1,550 miles for respondents who did not make a move.

Table 13  
Commute Mode Change Since Joining Carshare – By Travel Characteristics

Travel Characteristic	Change in Annual Driving Miles		
	Reduced	No Change	Increased
<b>Distance from home to transit</b>			
Less than ½ mile (n = 1,696)	36%	34%	30%
Between ½ and one mile (n = 311)	40%	36%	24%
More than one mile (n = 114)	34%	47%	19%
<b>Bought or considered buying vehicle</b>			
Bought a vehicle (n = 148)	24%	48%	28%
Considered, did not buy (n = 518)	40%	29%	31%
Did not consider buying (n = 2,140)	37%	35%	28%
<b>Reduced number of household vehicles</b>			
Reduced vehicles (n = 663)	79%	15%	6%
No change in vehicles (n = 1,405)	18%	45%	37%
Increased vehicles (n = 32)	22%	34%	44%
<b>Made commute mode change</b>			
Increased alt mode use (n = 438)	67%	17%	16%
No change in alt mode use (n = 1,667)	28%	40%	32%
<b>Moved residence or work location</b>			
No change (n = 1,213)	34%	41%	25%
Change in home or work (n = 953)	39%	28%	33%

Impact of Driving Miles Changes Overall – On average, survey respondents who reported both a current and pre-carshare mileage drove an average of about 5,100 miles per year before carsharing. After joining carsharing, respondents drove an average of 3,425 miles, a reduction of about 1,675 miles annually.

When these survey results are applied to the estimated total carshare member population of 28,000 members, the results are as follows:

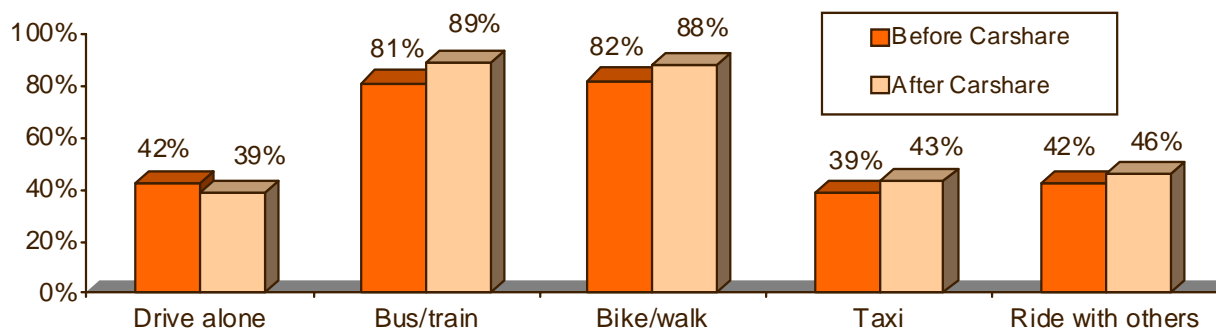
- Number of carshare members 28,000
- Estimated VMT reduced per member 1,675
- Estimated total daily VMT reduced 129,000 daily VMT reduced
- Estimated total annual VMT reduced 46,900,000 annual VMT reduced

As noted earlier, carshare members reduced about 14,000 daily VMT from changes in commuting. This represented about 11% of the total 129,000 daily VMT reduction observed by carshare members overall. The remaining 89% of VMT reduction would be from non-commute trips.

### Changes in Other Mode Trip Patterns Since Joining Carsharing

Use of Various Travel Modes Before and After Joining Carshare – Respondents also were asked about the numbers of trips they made in a typical week by various travel modes before and after joining carshare. Figure 28 shows the percentages of respondents who made at least one trip by each of the five modes during a typical week. The percentage of respondents who made a drive alone trip dropped slightly, from 42% before carsharing to 39% after carsharing.

Figure 28  
Percentage of Carshare Members who Made Weekly Trips by Mode  
Before and After Joining Carsharing  
 (Before n = 3,882, After n = 4,001)



The percentages of respondents who used each of the other modes rose after they joined carsharing. About eight in ten respondents made a transit trip in a typical week before carsharing and nine in ten made a transit trip after joining carsharing. Slight increases were noted in the other modes; the percentage of respondents who made bike/walk trips increased from 82% to 88%, taxi use rose from 39% to 43%, and riding with others grew from 42% of respondents before carsharing to 46% after carsharing.

But as shown in Table 14, the changes in mode use reflected some increased use and some decreased use of each mode by various carshare users. More than four in ten respondents reduced the number of weekly drive alone trips that they made, but 23% increased drive alone trips. This still resulted in an overall decrease in the percentage of respondents making drive alone trips. The net percentage of respondents who made transit trips rose, because while 11% of respondents reduced their weekly transit trips, 22% increased these trips. Bike / walk use rose similarly, because 17% of respondents increased these trips, more than balancing the nine percent of respondents who decreased their bike/walk trips.

Table 14  
Percentages of Respondents Who Made Change in Weekly Trips  
by Mode Since Joining Carshare

Travel Mode	Percentage of Respondents who:			Net Change
	Made no Change in Weekly Trips	Reduced Weekly Trips	Increased Weekly Trips	
Any mode (n = 4,395)	51%	30%	19%	- 22%
Drive alone (n = 2,314)	32%	45%	23%	- 22%
Bus / train (n = 3,944)	67%	11%	22%	+ 11%
Bike / walk (n = 3,404)	74%	9%	17%	+ 8%
Taxi (n = 2,037)	61%	19%	20%	+ 1%
Ride with others (n = 2,239)	54%	22%	24%	+ 1%

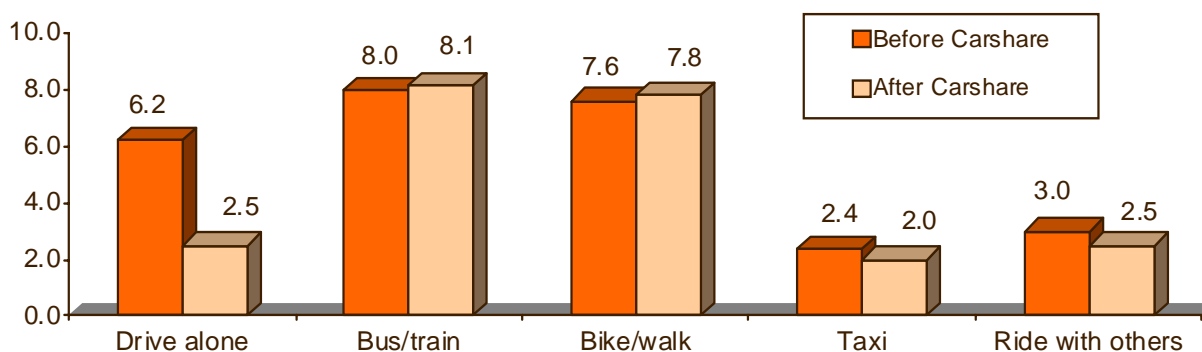
Number of Trips Made Weekly by Various Travel Modes Before and After Joining Carshare – Respondents were asked how many trips they make in a typical week by each of five modes of travel. Overall, respondents made an average of 16.7 trips weekly at the time of the survey, that is, after joining carsharing. This represented a 13% reduction from the pre-carsharing trip making, when respondents made 19.3 trips per week.

How those trips were distributed across travel modes also changed. As illustrated in Figure 29, the average number of weekly drive alone trips experienced a marked decline after respondents joined carsharing. Respondents made an average of 6.2 drive alone trips before carsharing and 2.5 drive alone trips after joining carsharing, an average drop of 3.7 weekly drive alone trips per carshare member.

Respondents also said they slightly decreased the numbers of trips they made weekly by taxi (2.4 weekly trips before to 2.0 trips after) and by riding with others (3.0 weekly trips before to 2.5 trips after). Respondents did not make significant changes in the number of trips by other modes. This suggests they eliminated trips, rather than replacing them with other modes of travel.

Figure 29  
Weekly Trips by Mode Before and After Joining Carsharing

(Before: DA n = 1,849, Bus/train n = 3,581, B/W n = 3,501, Taxi n = 1,702, Ride with others n = 1,849)  
 (After: DA n = 1,715, Bus/train n = 3,902, B/W n = 3,189, Taxi n = 1,903, Ride with others n = 2,023)



Changes in Drive Alone Trips by Respondent Characteristics – Changes in the number of drive alone trips by respondents' demographic and travel pattern characteristics closely tracked the patterns observed for the number of annual driving miles described earlier.

Overall, 45% of respondents said they reduced driving alone trips, but respondents were more likely to have reduced drive alone trips if they:

- Were members of households with one or two persons (50% reduced DA trips)
- Were older than 25 years old (47% reduced DA trips)
- Had zero vehicles in the household (61% reduced DA trips)
- Reduced the number of household vehicles since joining carshare (81% reduced DA trips)
- Increased use of alternative modes for work trips (73% reduced DA trips)
- Had changed either their home or work location (49% reduced DA trips)
- Lived within ½ mile of a bus stop or train station (48% reduced DA trips)

Overall 23% of respondents said they had increased trips by driving alone, but respondents were most likely to have made this change if they:

- Were younger than 25 years old (45% increased DA trips)
- Had zero vehicles in the household (27% increased DA trips)
- Increased the number of household vehicles since joining carshare (53% increased DA trips)
- Moved home location since joining carshare (30% increased DA trips)
- Bought a vehicle since joining carshare (38% increased DA trips)
- Had a household income of less than \$50,000 (35% increased DA trips)

*Changes in Numbers of Alternative Mode Trips by Respondent Characteristics* – Changes in the number of weekly alternative mode trips differed by only a few respondent characteristics. For example, respondents who used carsharing for both business and personal trips increased their weekly transit trips by 29% compared to 19% for respondents who used carsharing for personal trips only. And, as would be expected, respondents who said they has started or increased use of alternative modes for commuting after joining carshare increased their weekly transit trips by 55%, compared to only a 15% increase for respondents who said they had not made a commute mode change.

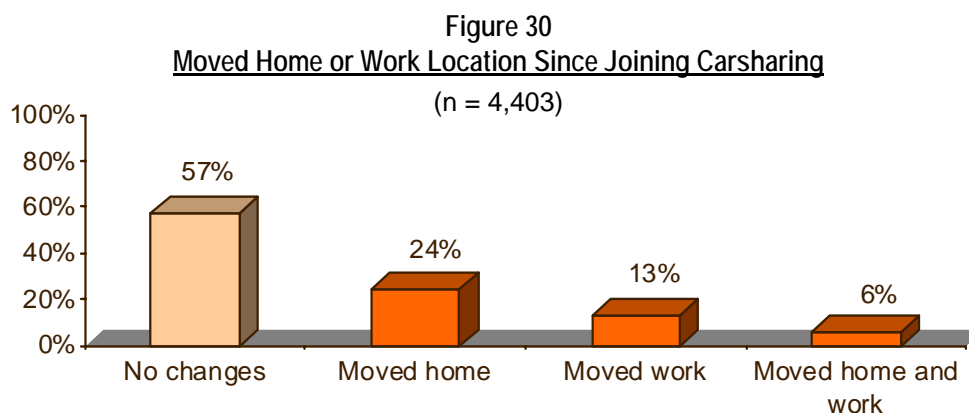
One respondent characteristic that was associated with increases in several non-drive alone modes was a change in the number of household vehicles. As Table 15 indicates, respondents who decreased the number of vehicles they had available in the household were much more likely to increase their use of transit, bike/walk, and taxi trips than were respondents who either did not make a change in the number of vehicles or increased the number of vehicles in the household.

Table 15  
Change in Weekly Alternative Mode Trips Since Joining Carshare –  
By Change in Number of Household Vehicles

Change in trip patterns	Change in Household Vehicles		
	Reduced	No Change	Increased
<b>Change in weekly TRANSIT trips</b>	n = 1,047	n = 2,558	n = 158
Reduced trips	8%	11%	44%
No change in trips	43%	78%	37%
Increased trips	<b>49%</b>	11%	19%
<b>Change in weekly BIKE/WALK trips</b>	n = 948	n = 2,240	n = 140
Reduced trips	6%	10%	31%
No change in trips	46%	81%	50%
Increased trips	<b>47%</b>	9%	19%
<b>Change in weekly TAXI trips</b>	n = 543	n = 1,330	n = 73
Reduced trips	14%	20%	52%
No change in trips	44%	69%	37%
Increased trips	<b>42%</b>	12%	11%

## Changes in Home/Work Location Since Joining Carsharing

The carshare survey explored one additional possible change that could have been influenced by availability of carsharing – home or work location changes. Four in ten 43% of respondents said they had moved their home and/or work locations since joining carsharing. This result is illustrated by Figure 30.



### Changes Made by Respondents Who Moved vs Respondents Who Did Not Move

Previous sections of the report examined changes in vehicle ownership, commute travel, and driving miles by carshare users. Although changes in all of these variables were measured for carshare users, questions about the motivation for the changes suggested that carsharing was not a dominant reason for the changes. Another factor that could have influenced changes is moving the home and/or work location. It is reasonable to assume that users who made work or home location changes might have made more travel changes, associated with the move, than did users who did not move.

Table 16 presents the results on key variables for the three changes noted above. These results indicate that those who moved made slightly more changes than did non-movers, but with the exception of annual driving miles, the changes were not dramatically different. Additionally, they were not uniformly in the direction that would reduce vehicle trips or VMT.

Vehicle Ownership – Three in ten (30%) respondents who moved said they had reduced their number of household vehicles, compared with about a quarter (24%) of those who had not moved. Respondents who moved also were slightly more likely to have added new household vehicles (6%) compared to those who had not moved (3%). Taking all three possible actions (reduce, no change, and increase vehicles) into account, the net change in household vehicles was essentially the same for the two groups: reduction of 0.26 vehicles per household for respondents who moved and net reduction of 0.23 vehicles for respondents who had not moved.

Commute Mode Changes – The second section of Table 16 shows the commute mode changes. One in five (20%) respondents who moved said they either started or increased their use of alternative modes for commuting, compared to 16% of respondents who did not move. This was a statistically significant difference, but the trip and VMT impacts of changes of those who moved were smaller than those of non-movers. Respondents who moved reduced an average of 0.24 vehicle trips and 1.7 VMT per day, while respondents who did not move reduced 0.29 trips per day and 3.2 VMT daily.



Table 16  
Travel Changes for Respondents by Move

<b>Travel Changes</b>	<b>Moved Home/Work</b>	<b>Did Not Move</b>
<b>Vehicle ownership</b>	n = 1,828	n = 2,428
Reduced household vehicles	30%	24%
No change in household vehicles	64%	72%
Increased household vehicles	6%	3%
Net change in household vehicles	- 0.26	- 0.23
<b>Commute change</b>	n = 1,795	n = 2,373
Started or alt mode use	20%	16%
Average change in daily vehicle trips	- 0.24	- 0.29
Average change in daily commute VMT	- 1.7 miles	- 3.2 miles
<b>Annual miles driving</b>	n = 953	n = 1,213
Decreased annual driving miles	39%	34%
No change in annual driving miles	28%	41%
Increased annual driving miles	33%	25%
Net change in annual driving miles	-1,825	-1,540

Annual Miles Driven – Finally, Table 16 presents results for annual miles of driving. Respondents who moved were more likely to have made a driving miles decrease (39%) than were non-movers (34%). They also were more likely to have increased driving miles; 33% of movers vs 25% of non-movers increased annual driving miles, but on net, the changes for movers resulted in greater mileage reductions. Respondents who did not move reduced an average of 1,825 annual miles, 285 miles more reduction than for respondents who did not move (1,540 annual miles reduced). Thus, moving might have been a factor in at least a portion of the driving reduction observed for carshare users.

### **Importance of Carsharing in Decision to Move**

Carsharing appears to have had only a modest influence on respondents' decisions to move. As shown in Table 17, when asked what factors were important in deciding whether and where to move, respondents mentioned several-transportation related factors, such as access to transit (16%) and wanting to be close to work/school (11%). Only three percent mentioned carsharing. Further, only 14% said they were either somewhat or very unlikely to have made the move without carsharing.

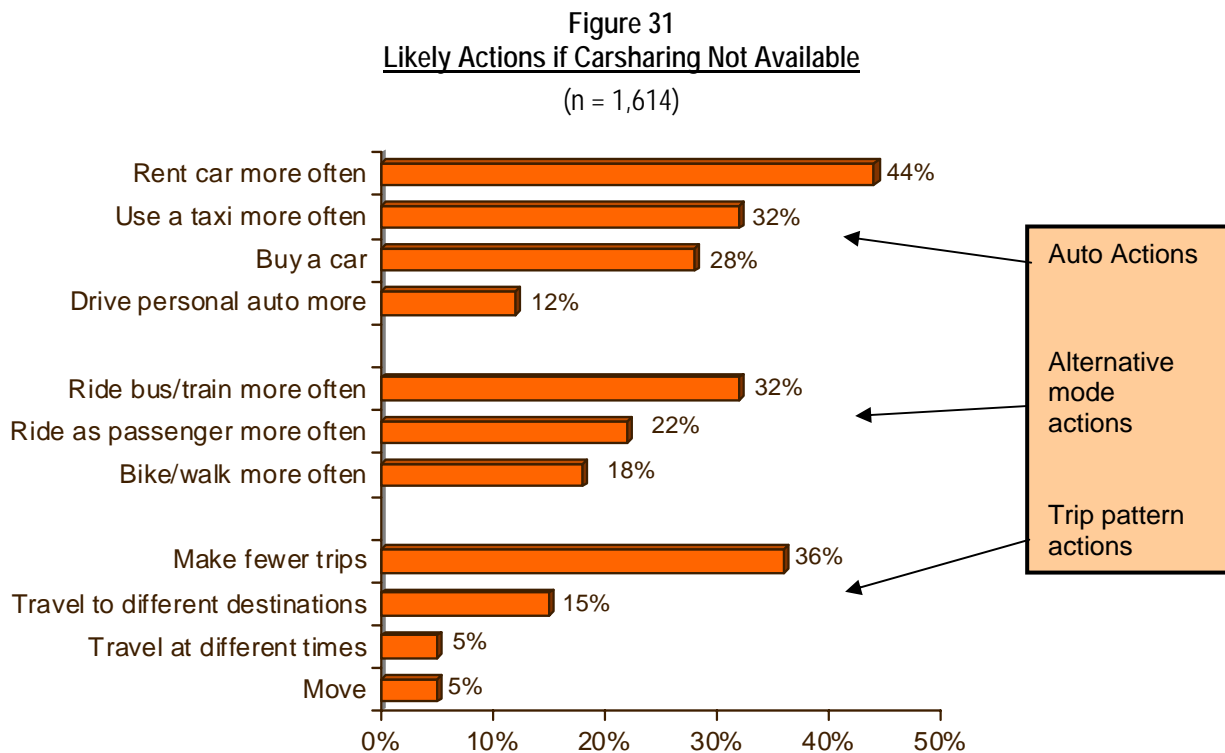
**Table 17**  
**Factors Important to Decision to Move**  
 (n = 1,614)

Factors	Percentage
New job, better job, new school, job availability	20%
Access to transit	16%
Housing affordability, cheaper housing	16%
Close to work / school	11%
Better neighborhood, liked neighborhood or location	10%
Bought a house/condo	7%
Access to shopping, recreation	6%
Bigger house	6%
Personal situation changed (e.g., married, divorced)	4%
<b>Carshare was available</b>	<b>3%</b>
Urban environment	3%
Close to city	3%
Graduated	2%
Lease ended / had to move	2%

**Expected Action if Carsharing Was No Longer Available** – Finally, respondents were asked a general and open-ended question about actions they might take if carsharing was no longer available to them. Responses fell into three primary types: 1) use other auto option, 2) use alternative modes, and 3) alter trip-making behavior. These results are displayed in Figure 31.

A large segment of respondents said they would take actions that afforded them continued vehicle access. About a third (32%) said they would use a taxi more often, 28% said they would buy a car, and 12% would drive more often in a vehicle they currently own. A sizeable percentage of respondents also said they would use alternative transportation options more often, including riding a bus or train (32%), riding as a passenger (22%), or biking or walking (18%). In essence, these respondents would continue to make current trips but, with some accommodation of mode use.

But numerous respondents reported that the loss of carsharing would alter their ability to make the types of trips they now make or when they make those trips. More than a third (36%) said they would make fewer trips, 15% said they would travel to different destinations, and five percent said they would travel at different times of day. An additional five percent said they would move.



Not surprisingly, the degree of access the respondent had to a personal vehicle influenced the types of actions they were likely to take if carshare was not available. As illustrated in Table 18, respondents who had one or more vehicles per driver in the household were least likely to note any possible changes in their travel. The one change they would make more often than would respondents who had fewer vehicles available was “drive in personal auto more.” Respondents who had no vehicles available noted changes that would allow them continued use of automobiles, such as “rent a car more often,” “use taxi more often,” or “buy a car.” But they also were more likely than were other respondents to mention changes that resulted in greater use of alternative modes or greater alterations in the number of trips they made or the destinations to which they traveled.

Somewhat surprisingly, the distance respondents lived from the nearest bus stop or train station had no impact on their likelihood to make more bus or train trips if carshare was not available. A third of respondents overall said they would be more likely to use transit and the percentages were the same regardless of the distance respondents lived from a bus stop or train station.

<u>Distance to bus stop/train station</u>	<u>Likely to Increase transit trips</u>
• Less than ½ mile (n = 1,059)	32%
• Between ½ mile and 1 mile (n = 187)	32%
• More than 1 mile (n = 63)	31%

Table 18  
Likely Changes in Travel if Carsharing not Available by Household Vehicles per Driver

Changes in Travel	None	Less than one vehicle per driver	One or more vehicle per driver
<b>Auto Actions</b>			
Rent car more often	<b><u>49%</u></b>	39%	34%
Use taxi more often	<b><u>35%</u></b>	27%	21%
Buy a car	<b><u>30%</u></b>	<b><u>27%</u></b>	14%
Drive in personal auto more	3%	29%	<b><u>38%</u></b>
<b>Alternative Mode Actions</b>			
Use bus / train more often	<b><u>35%</u></b>	<b><u>28%</u></b>	20%
Ride as passenger more	23%	25%	13%
Bike / walk more often	19%	18%	20%
<b>Trip Pattern Actions</b>			
Make fewer trips	<b><u>42%</u></b>	30%	21%
Travel to different destinations	<b><u>18%</u></b>	10%	6%

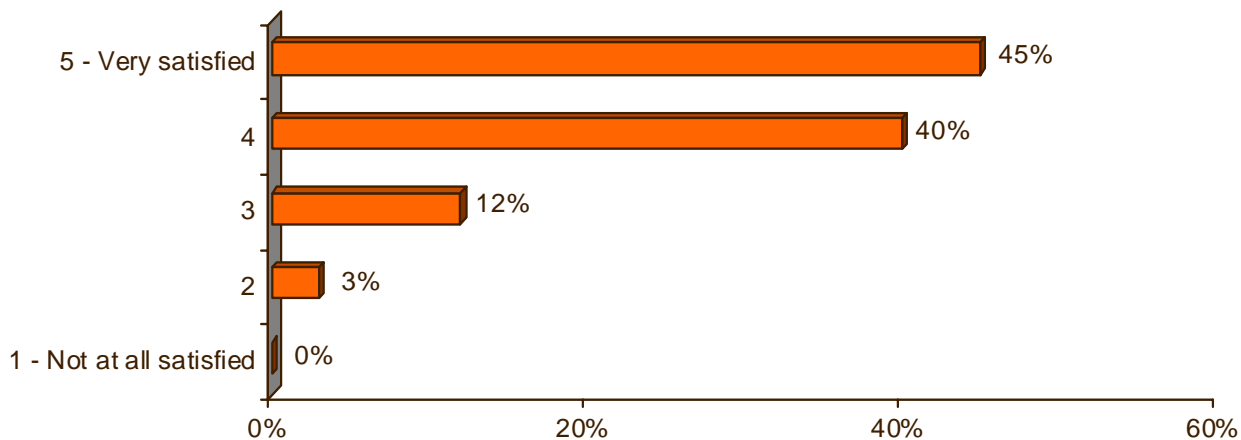
## Carshare Satisfaction

The final section of the survey included questions about respondents' satisfaction with their carshare membership and any issues or problems they had experienced. These results are summarized below.

Overall Satisfaction (Figure 32) – Respondents had quite high satisfaction with carshare programs. Eighty-five percent of respondents said they were either satisfied (rating of 4 on a 5-point scale) or very satisfied (rating of 5). Only three percent (110 respondents) said they were unsatisfied with carsharing (rating of 1 or 2). These respondents gave the following reasons for not being satisfied with carsharing:

- Cost too high/Zipcar raised price 55%
- Availability of cars/cars not available when booked 17%
- Cars dirty/need maintenance 11%
- Scheduling problems/no half-hour reservation/one-way trips 11%
- Parking issues/don't like pick-up/drop-off point 8%
- Poor customer service 8%
- Cars not close 4%
- No gas in vehicle 3%

Figure 32  
Overall Satisfaction with Carsharing  
 (n = 4,932)



Three quarters (76%) of respondents said they were very likely to recommend carsharing to others and 20% said they were somewhat likely to recommend it. Only two percent said they were somewhat or very unlikely to recommend carsharing.

Satisfaction by Respondent Characteristics – Respondent satisfaction was generally high across all demographic and user groups. Only one demographic characteristic, age, was associated with differences in overall satisfaction. As indicated in Table 19, satisfaction increased with increasing age. Ninety-one percent of respondents who were 55 year or older gave carsharing a rating of 4 or 5, compared to 84% of respondents who were younger than 35 years old. There were no significant differences in ratings or weighted score for income, gender, ethnicity, or home jurisdiction.

Table 19  
Overall Satisfaction with Carsharing – By Respondent Age

Respondent Age	Percentage Rating 4 or 5	Weighted Score
<b>Age</b>		
Less than 35 years old (n = 2,578)	84%	4.22
35 – 44 years old (n = 831)	85%	4.29
45 – 54 years old (n = 429)	88%	4.39
55 or older (n = 333)	91%	4.51

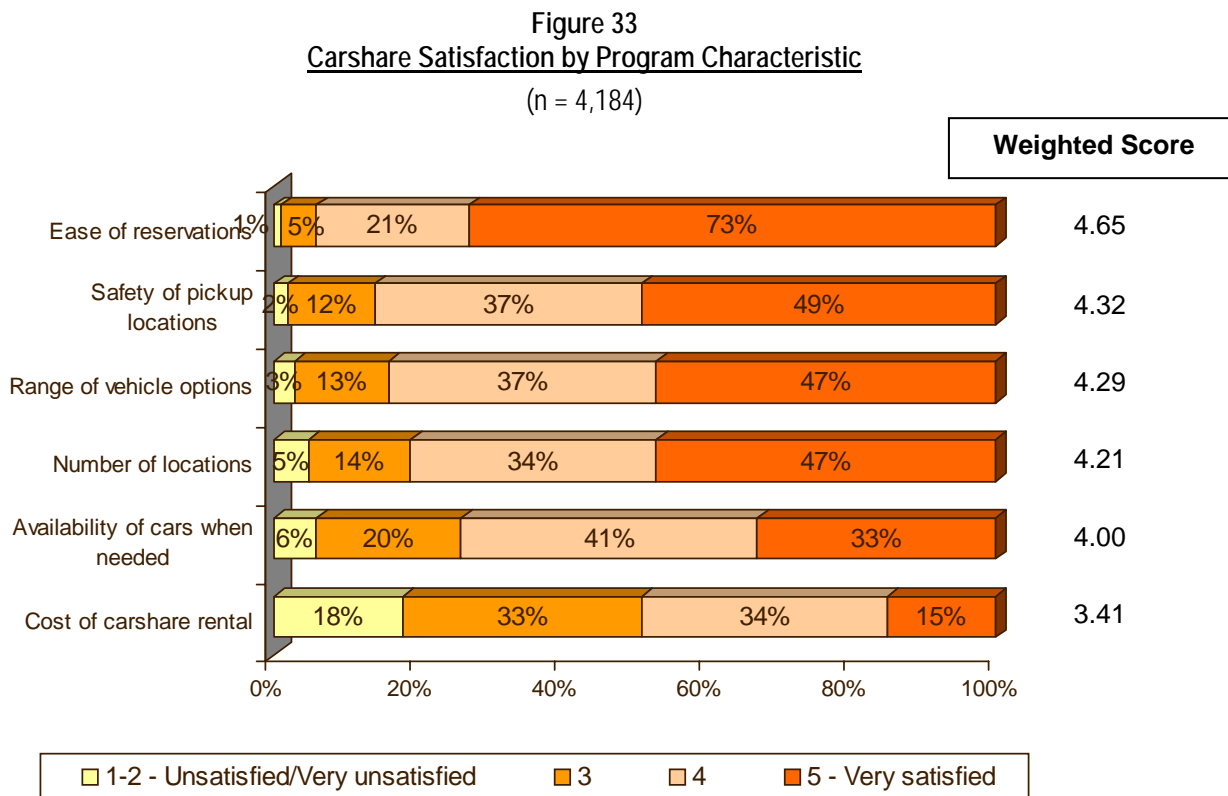
Satisfaction by Carshare use Characteristics – The analysis also examined satisfaction as a function of carshare use characteristics and again, satisfaction was quite uniform across all user groups. Table 20 shows comparison results for three carshare features: frequency of rentals, type of carshare parking facility, and the distance to carshare pick-up locations.

- Frequency of Rentals – Satisfaction appeared to be related to the frequency of rentals. Respondents who said they had not rented a carshare vehicle in the past month were less satisfied than were respondents who had rented at least one time during the month. There was no significant difference in satisfaction for more frequent rentals, however. Respondents who rented one or two times were equally satisfied as respondents who had rented three or more times.
- Carshare Parking Facility – No differences were found in satisfaction among respondents who picked up cars on the street, picked up cars from private off-street spaces, or picked up cars in garages or lots.
- Distance to Carshare Pick-up Locations – But the distance respondents had to travel to the carshare pick-up location did seem related to overall satisfaction. Satisfaction declined as distance to the pick-up locations increased.

Table 20  
Commute Mode Change Since Joining Carshare – By Travel Characteristics

<b>Respondent Characteristic</b>	<b>Percentage Rating 4 or 5</b>	<b>Weighted Score</b>
<b>Rental frequency (past month)</b>		
Zero (n = 1,266)	80%	4.17
1-2 rentals (n = 2,081)	87%	4.29
3 or more (n = 982)	88%	4.34
<b>Carshare parking facility type</b>		
On-street (n = 1,169)	85%	4.26
Private off-street (n = 1,509)	85%	4.26
Garage or lot (n = 1,500)	86%	4.29
<b>Distance to carshare pick-up location</b>		
Less than 2 blocks (n = 2,106)	87%	4.32
2 to 5 blocks (1,200)	84%	4.23
6 to 10 blocks (n = 336)	84%	4.21
1 mile or more (n = 309)	81%	4.16

**Satisfaction with Carshare Features** – Respondents also were asked to rate their satisfaction with a set of individual carshare features. The ratings for each feature are shown in Figure 33.



Respondents gave generally high marks to most carshare features. More than eight in ten gave ratings of 4 or 5 to “ease of reservation,” “safety of pickup location,” and “range of vehicle options.” And at least three-quarters were satisfied with the number of locations and the availability of cars. Respondents were much less satisfied with the cost of carshare rentals. Only about half (49%) of respondents gave a rating of 4 or 5 to this feature.

Ratings on these features were quite consistent across all demographic groups: income, gender, ethnicity, age, and home jurisdiction. Ratings also were consistent even when it might be assumed some difference would exist. For example, the following characteristics appeared to be unimportant in determining carshare feature satisfaction:

**Satisfaction with carshare feature by: Respondent or carshare program characteristic**

- Safety of pick-up location by: Distance to carshare pick up location
- Safety of pick-up locations by: Home jurisdiction
- Safety of pick-up locations by: Type of carshare parking facility (e.g., on street, etc.)
- Cost of carshare rental by: Number of rentals in past month
- Availability of vehicles when needed by: Number of vehicles per driver in the household

*Importance of Individual Carshare Features to Overall Satisfaction* – The analysis examined whether **satisfaction** ratings for individual features were related to overall satisfaction with carsharing. Table 21 details this connection for each of the six carshare features noted in Figure 33 above. The table lists features from highest overall satisfaction (ease of carshare rental, weighted score of 4.65) to lowest overall satisfaction (cost of carshare rentals, weighted score 3.41).

Table 21  
Overall Ratings on Satisfaction – By Satisfaction on Carshare Feature

Individual Carshare Features Satisfaction Ratings	Overall Carshare Satisfaction		
	Rating 4 or 5	Weighted Score	Gap- low to high score
<b>Ease of making carshare reservations</b>			
1 (not at all satisfied) (n = 11)	36%	3.09	<b><u>1.34</u></b>
2 (n = 40)	35%	3.15	
3 (n = 210)	60%	3.60	
4 (n = 872)	79%	3.99	
5 (very satisfied) (n = 3,023)	90%	4.43	
<b>Safety of carshare pick-up locations</b>			
1 (not at all satisfied) (n = 14)	50%	3.43	1.02
2 (n = 93)	63%	3.71	
3 (n = 475)	78%	4.00	
4 (n = 1,523)	84%	4.17	
5 (very satisfied) (n = 2,034)	90%	4.45	
<b>Range of vehicle options</b>			
1 (not at all satisfied) (n = 14)	36%	3.07	<b><u>1.41</u></b>
2 (n = 103)	58%	3.63	
3 (n = 536)	74%	3.92	
4 (n = 1,521)	85%	4.19	
5 (very satisfied) (n = 1,974)	91%	4.48	



Table 21 (cont)  
Overall Ratings on Satisfaction – By Satisfaction on Carshare Feature

Individual Carshare Features Satisfaction Ratings	Overall Carshare Satisfaction		
	Rating 4 or 5	Weighted Score	Gap- low to high score
<b>Number of vehicle pick-up locations</b>			
1 (not at all satisfied) (n = 39)	44%	3.44	1.05
2 (n = 180)	58%	3.59	
3 (n = 587)	76%	3.98	
4 (n = 1,422)	88%	4.21	
5 (very satisfied) (n = 1,931)	91%	4.49	
<b>Availability of vehicles when needed</b>			
1 (not at all satisfied) (n = 48)	44%	3.19	<u>1.39</u>
2 (n = 199)	60%	3.59	
3 (n = 832)	75%	3.96	
4 (n = 1,702)	89%	4.30	
5 (very satisfied) (n = 1,372)	93%	4.58	
<b>Cost of carshare rentals</b>			
1 (not at all satisfied) (n = 177)	29%	2.99	<u>1.79</u>
2 (n = 572)	62%	3.71	
3 (n = 1,410)	87%	4.21	
4 (n = 1,408)	95%	4.51	
5 (very satisfied) (n = 604)	98%	4.78	

For each feature, the table shows the percentage of respondents who gave a score of 4 or 5 for overall satisfaction at various levels of satisfaction for the feature noted. The table also indicates the weighted overall satisfaction score given by respondents who rated the individual feature as shown. For example, 36% of respondents who gave a score of 1 to “ease of carshare rental” gave a rating of 4 or 5 for overall carshare satisfaction and the weighted overall satisfaction score for these respondents was 3.09. The table also shows the gap between the highest and lowest weighted score. The larger the gap, the more important the feature is to overall satisfaction.

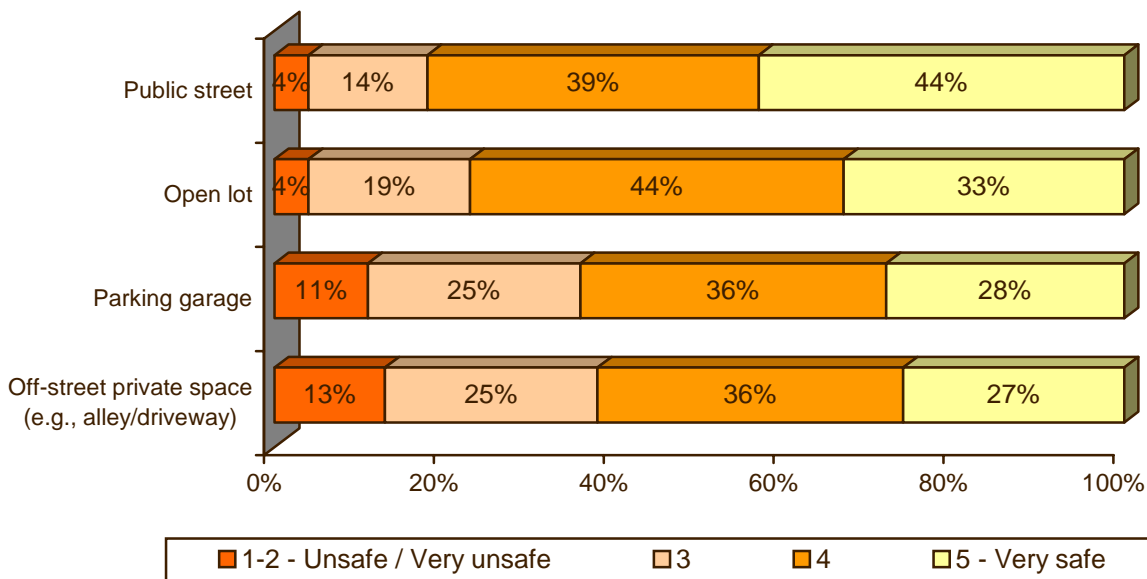
Table 21 shows that the largest gap between high and low overall satisfaction is for the cost of carshare rentals. Respondents who rated this feature a “1 (not at all satisfied)” gave a rating of 2.99 for overall

satisfaction, the lowest weighted score for any feature, while respondents who rated cost a “5” (very satisfied) rated overall satisfaction a 4.78, the highest rating for all features. The range of vehicle options, availability of vehicles when needed, and ease of making carshare reservations also showed gaps of 1.3 or greater between the highest and lowest weighted score.

The remaining two features showed less disparity between high and low ratings, safety of carshare pick-up locations and number of pick-up locations, with gap scores of 1.02 and 1.05, respectively. This suggests these are less influential to overall carshare satisfaction. However, it is possible that these features are of less concern to respondents because they do not see them as issues or problems.

**Safety of Pickup Locations** – As described earlier, some carshare vehicles are parked on the street and others are parked in lots or garages. Respondents were asked how safe they would feel picking up cars in various types of parking facilities, including street spaces, open lots, garages, and off-street parking. These ratings are displayed in Figure 34.

Figure 34  
Ratings for Safety of Carshare Pick-up Locations  
(n = 3,883)



Respondents gave the highest safety marks to on-street parking; 83% of respondents rated these spaces at least a 4 on a 5-point scale. Respondents also considered open-lot parking to be quite safe; 77% gave a rating of 4 or 5 to this type of parking facility. By contrast, less than two-thirds of respondents gave ratings of 4 or 5 to either parking garages (64%) or off-street private spaces (63%).

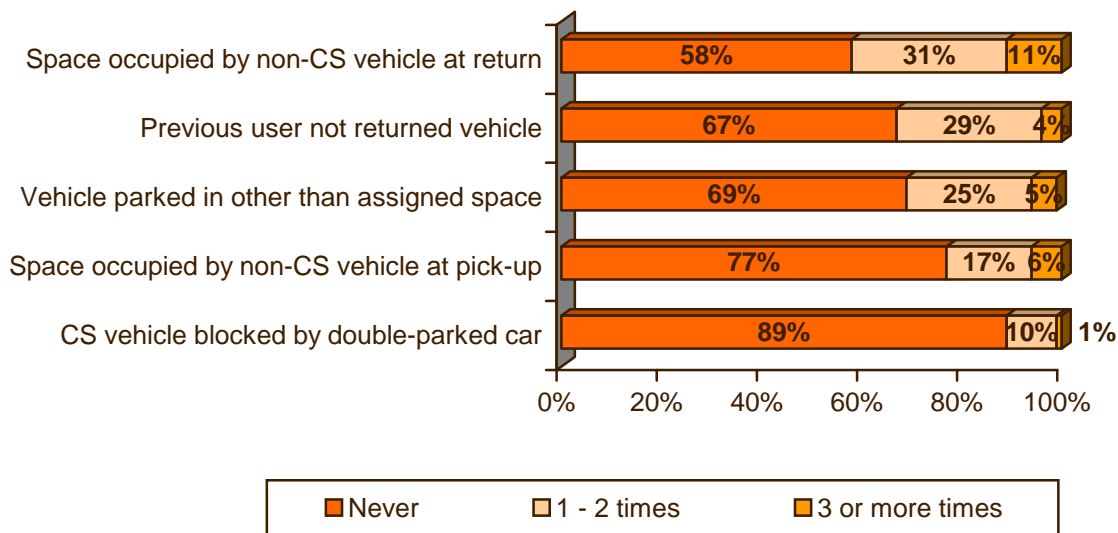
The high safety ratings for on-street parking appeared to support the motivation to join carsharing. As shown in Table 22, nearly half of respondents said the availability of carshare vehicles in highly trafficked and visible on-street locations either greatly influenced (17%) or somewhat influenced (30%) respondents' decisions to become a carshare member,

**Table 22**  
**Influence of On-Street Location in Decisions to Become Carshare Member**  
 (n = 4,151)

<b>Influence on Carshare Membership</b>	<b>Percentage</b>
Greatly influenced decision to join carsharing	17%
Somewhat influenced decision to join	30%
Did not influence decision to join	53%

**Carshare Street Parking Issues (Figure 35)** – The survey tested the incidence of several possible pickup and drop-off situations that respondents could have encountered that would make it difficult for the respondent to pick-up or return the vehicle as scheduled. These situations were assumed primarily to affect cars parked in on-street spaces, so respondents who said they picked-up vehicles parked on the street were asked how often each situation had occurred. Figure 35 shows for each possible situation, the percentage of respondents who said the situation “never” had occurred and the percentages who said it had occurred one or two times or three or more times.

**Figure 35**  
**Incidence of Street parking Pick-up and Drop-off Issues**  
 (n = 1,421)



The most common problem was that the designated space was occupied by a non-carshare vehicle when the respondent returned the vehicle, making it impossible to park there. Three in ten (31%) respondents noted that this had happened one or two times and 11% said it had happened three or more times.

A second issue was that the previous carshare user had not returned the vehicle on time, so the next user could not pick it up as scheduled. About three in ten (29%) respondents said they had experienced this problem one or two times and four percent said it had happened three or more times. This could affect vehicles parked in other locations also, but the question was not asked about other parking locations.

Similar percentages of respondents said they had found the carshare vehicle parked in other than its assigned space. A quarter of respondents noted this had happened one or two times and five percent said it had occurred three times or more. Presumably, these respondents had been able to find the car parked nearby, so other than an initial issue of locating where the car was parked, were not unduly inconvenienced.

About a quarter of respondents said they had experienced the problem of the space being occupied by a non-carshare vehicle when trying to pickup the car, making it difficult to find the carshare vehicle. About two in ten (17%) said this had happened one or two times and six percent said they encountered this issue three or more times.

Finally, respondents were asked if the space had been blocked by a double-parked car, making it difficult to pick-up or return the car. Only 10% of respondents said it had ever happened and only one percent of respondents said it had happened three or more times.

*Frequency of Parking Issues by Frequency of Rentals* – Not surprisingly, respondents were more likely to say they had encountered one or more of these issues if they were more frequent carshare renters. As indicated in Table 23, respondents who said they encountered street parking issues three or more times had rented an average of at least 2.48 times per month. Respondents who encountered these issues one or two times rented slightly less frequently and respondents who said they never encountered these issues had rented 1.35 to 1.60 times per month.

Table 23  
Average Rental Frequency (Rentals in past Month)  
by Frequency of Encountering Street Parking Issues

Street Parking Issue	Frequency of Encountering Street Parking issue		
	Never	1 – 2 times	3 or more times
Space occupied by non-CS vehicle at return	1.35	2.15	2.48
Space occupied by non-CS vehicle at pick-up	1.53	2.21	2.72
Previous user not returned vehicle	1.43	2.24	3.08
Vehicle parked in other than assigned space	1.47	2.12	2.76
Carshare vehicle blocked by double-parked car	1.60	2.36	2.60

## SECTION 3 CONCLUSIONS

The preceding section of this report detailed specific results from the survey. This section presents conclusions about the following topics:

- Characteristics of carshare users and their memberships
- Typical and recent carshare trips
- Impact of carsharing on auto ownership
- Impact of carsharing on commute patterns
- Impact of carsharing on other travel patterns
- Satisfaction with carsharing

Overall, several conclusions related to the travel impacts of carsharing rise to the top of importance. Carshare availability appears to influence net reductions in car ownership, driving miles, and driving trips by carshare users, several travel-related changes that are desirable from a TDM perspective.

Overall these changes are relatively small, however, because many carshare users did not own personal vehicles before they joined carsharing. But about 27% of carshare users reduce their number of household vehicles after joining carsharing, and carsharing appears to have influenced this reduction for about four in ten of these carshare members.

About two in ten carshare users either started or increased their use of non-drive alone modes after joining carsharing. But many of these respondents were using alternative modes already for most or all of their commute trips, thus only about one in five reduced driving trips. And only one in four said they would not have made these commute changes if carsharing had not been available. When these changes are translated into daily impacts, they result in estimated reductions of about 325 daily vehicle trips reduced and about 3,650 daily VMT reduced.

Carshare users appear to reduce their total annual driving miles, for all trip purposes, by about 1,675 miles per carshare user. About 29% of carshare users actually increase their annual miles, because for members who did not own a car before joining carsharing, carsharing represents increased vehicle access. But 36% reduce driving miles and the per person reductions tend to be higher than the per user increases, resulting in a net decrease in miles across all carshare users.

Carshare users also appear to reduce their weekly driving trips by about 3.7 trips and make a small additional number of trips by non-driving modes. The driving trip reductions are greater than the replacement alternative mode trips, however, resulting in a net reduction in all trips.

### Characteristics of Carshare Users and their Memberships

Demographics – Carshare users do not mirror the adult population of the Washington metropolitan region. More than 90% of the survey respondents were employed, while the U.S. Census reports that only about seven in ten Washington metropolitan region adults were employed. But carshare survey respondents also differ from the general employed population.

Compared to all commuters in the region, they are, on average,

- Considerably younger,
- Slightly more likely to be Caucasian, and
- Slightly less affluent than the regional employee population.
- Much more likely to live and work in the urban core of the region – Washington DC, Arlington County, VA, or Alexandria, VA.

**Personal Vs Organizational Account** – Carshare accounts were overwhelmingly personal; more than nine in ten respondents said they had personal carshare accounts. About five percent said they had accounts through their employers and about three percent said they had a school-based account. These percentages add to more than 100% because some respondents have multiple accounts.

**How Heard About Carshare** – Respondents were most likely to have heard about carsharing through word of mouth or referral from a friend or family member (30%), through a carshare advertisement (16%), or by seeing a carshare vehicle parked in an on-street space (15%) or in a Metro lot or garage (4%), or being driven on the road (8%)

**Reasons for Joining Carshare** – Many of the reasons cited for joining carshare indicated either a need for greater transportation options or a desire to reduce or eliminate car ownership costs. Two-thirds of respondents said they joined in part because they didn't own a car; for 44% of respondents, this was their primary reason for joining a carshare program. About one in eight (16%) said they joined a carshare program primarily to eliminate the hassle of owning a car or avoid buying a second car. This was a secondary reason for about three in ten respondents. Saving money also was a motivations for a significant number of respondent; more than two-thirds of respondents mentioned wanting to save money or pay less in transportation costs, or that they couldn't afford to own or garage a car; 15% reported one of these reasons as their primary motivation.

Smaller percentages of respondents noted non-financial reasons for carshare membership, such as liking the philosophy or concept of carsharing, wanting access to emergency transportation, or concerns about the environment.

## **Typical and Recent Carshare Use**

**Frequency of Carshare Use** – Most respondents said they used carsharing occasionally; 48% had rented carshare vehicles one or two times in the past month. Only 22% said they rented a carshare vehicle three or more times in the past month and 30% said they had not rented at all within the past month.

Overall, respondents rented vehicles an average of 1.7 times in the past month. But when respondents who did not make any trips are removed from the calculation, the average number of rentals by those who did rent a vehicle rises to 2.4 trips per month. Frequent renters were most likely to be business users, respondents who had no vehicle available in the household, and respondents who lived closer to carshare locations.

**Carshare Pickup Locations** – The primary location for carshare pick-up was in the home neighborhood; 90% of respondents said they picked up carshare vehicles at a home-area location. About three in ten

(28%) picked up vehicles near their work, and 7% picked up vehicles near their school. About 14% said they picked up a car in “another location.” In most cases, these locations were Metrorail stations that were not near the respondents’ homes but were near the destination location. These percentages add to more than 100% because a large share of respondents picked up cars in multiple locations.

**Distance to Carshare Pickup Location** – Carshare locations were quite close to most members’ homes and work locations. More than half (52%) of respondents who picked up cars near home said they lived within two blocks of the carshare parking location and 83% lived within five blocks. The distribution for distance to work pick-up locations was similar to that for the home locations; 53% worked within two blocks of the location and 88% worked within five blocks.

**Type of Parking Facility** – Carshare vehicles are parked in a variety of locations. The dominant facility was on-street parking spaces for both home (32%) and work (36%) pick-up locations. Private, off-street spaces were noted as the parking facility for 28% of home-area carshare vehicles and for 15% of work-area vehicles. Public or private garages were named as the locations for 21% of home-area vehicles and 34% of work-area vehicles. And about one in ten vehicles in both the home area (11%) and work area (9%) were parked in Metrorail lots or garages.

Respondents who lived in different jurisdictions noted quite different patterns in carshare parking

- 79% of Arlington County respondents picked up cars from on-street spaces
- 83% of Alexandria and 75% of Prince George’s County respondents picked up cars from private off-street spaces
- Private, off-street spaces also predominated in Montgomery County (58%), but 36% of Montgomery respondents picked up cars parked in lots or garages.
- Respondents from Washington, DC noted the most balanced mix of parking locations.

**Carshare Trip Purposes** – The majority of respondents (69%) used carsharing for personal trips only, three percent said they used their account only for business-related trips, and 28% said they used their accounts for both personal and work-related trips. When asked about their most recent carshare rentals:

- 62% of respondents said they made a trip or stop for shopping
- 23% said the rental included a trip or stop for social or entertainment purposes
- 11% of respondents noted making a non-commute, work-related trip
- 6% used carsharing for a personal appointment.
- 5% said the rental included a commute trip, from home to work or school
- 7% indicated they made an “other” purpose trip, such as an out-of-town “road trip, for moving, or to pick-up someone at an airport.

About two-thirds of respondents (63%) said they made at least two stops during the rental period and 11% said they made four or more stops. A third said they made just one stop on the last carshare rental.

The distribution of carshare trip purposes was quite similar for different respondent groups; there were no significant differences by income, ethnic group, or gender. Two exceptions include:

- Non-commute, work-related trips were more prevalent among respondents who were 45 year of age or older. Younger respondents were most likely to use carshare for shopping and social / entertainment trips.
- Respondents who did not have a vehicle in the household were more likely to have made a shopping trip than were other respondents. Respondents who had greater access to household vehicles were more likely to have used carsharing for a work-related trip.

**Day and Time of Most Recent Carshare Rental** – About half (53%) of respondents said they last rented a carshare vehicle on a weekday (Monday through Friday). A third (32%) of respondents' most recent rental was on a Saturday. The remaining 15% rented last on a Sunday. Work-related trips and personal appointment trips were more likely to be made on weekdays. Shopping and social / entertainment trips were concentrated on weekends.

The majority of vehicle pick-ups were during the late morning to midday hours and in the afternoon/early evening. Four in ten rental pick-ups were made between 10:00 am and 2:59 pm and 32% occurred in the late afternoon or early evening, between 3:00 pm and 7:59 p.m. A third of commute trips, work-related trips, and personal appointment trips were made during the early morning hours, while only 13% of shopping trips and 16% of social trips were made during this time. Late evening and night trips were disproportionately social / entertainment trips.

**Duration of Rental and Length of Carshare Trip** – A large share of carshare rentals were of short duration. Three in ten (30%) of respondents reported they returned the carshare vehicle for their last rental within two hours of the pick-up time and another 36% returned the car three or four hours after pick-up. Trips made for work-related purposes and social purposes were more likely to be of longer duration.

Carshare rentals also typically were of short distance. More than four in ten (44%) carshare rentals covered fewer than 20 miles and 67% covered fewer than 40 miles. But one in ten (10%) trips was between 100 and 250 miles and 2% were more than 250 miles. With these very long distance rentals, the average carshare rental was 48 miles. But when these extreme rentals were removed from the calculation, the average rental covered 36 miles.

**Reasons for Using Carshare for this Trip** – Respondents were asked why they used carsharing for their most recent carshare rental. The most common reasons focused on characteristics of the trip purpose or trip location that made it difficult to travel by means other than a personal vehicle. Other common reasons were related to personal preferences in travel:

- 48% needed to carry or transport items and 10% needed to carry passengers
- 25% said they had to make multiple stops
- 38% said public transit did not serve the destination and 27% said the trip was too far to walk
- 23% didn't want to use public transit (presumably when it was available)
- 18% said carshare was more comfortable than other options and 11% said carshare was lower cost

**Travel Options if Carshare Not Available** – Carsharing broadened mode options for carshare users, but also destination and trip options. A significant number of respondents said they would not have made their most recent carshare trip in its current form if carsharing had not been available.



Other respondents said they would have made the trip but using a different type of transportation:

- 34% would not have traveled at all
- 5% would have traveled to a different destination
- 5% would have traveled at a different time of day
- 23% would have used transit
- 16% would have used another rental car
- 15% would have taken a taxi
- 11% would have asked someone for a ride or borrowed a car
- 6% would have used a personal or company car

Respondents' options for making these trips differed by the type of trip they were making. Overall, only six percent of respondents said they would have used a personal or company car, but 27% of respondents whose last trip was work-related said they would have made the trip this way. Respondents who had made shopping and social/entertainment trips were mostly likely to have said they "would not have traveled" if they could not have used carsharing. More than half of respondents who made these trips gave this response, suggesting these were discretionary trips rather than trips of necessity.

## Impact of Carsharing on Auto Ownership

Change in Auto Ownership – Carsharing appeared to facilitate the reduction or avoidance of vehicle ownership. Five percent of respondents increased the number of vehicles in their households since they joined carsharing, but 27% said they reduced the number of vehicles.

Two-thirds (66%) of carshare survey respondents had zero cars in the household at the time of the survey and about half (48%) of respondents said they had no household vehicles before carsharing. Thus, 18% of respondents eliminated the only vehicle in the household.

More than four in ten respondents who reduced a household vehicle said carsharing had influenced this decision. Two in ten (19%) said they were somewhat unlikely and 24% said they were very unlikely to have eliminated a household vehicle if carsharing had not been available.

Before carsharing, respondents owned or leased an average of 0.71 vehicles per household. After joining carsharing, the average vehicles per household dropped to 0.47, a reduction in 0.24 vehicles.

Reasons for Reducing Vehicles in Household – Respondents cited various reasons for why they eliminated a household vehicle, primarily related to cost or difficulty of auto ownership, but availability of carshare appeared to be important to many respondents:

- 68% wanted to avoid the hassles of car ownership
- 66% wanted to save money
- 52% cited the availability of carshare vehicles as a motivation
- 38% noted concern for the environment
- 31% said their reason was that they had moved to a new neighborhood
- 26% couldn't afford to own a car

**Avoided Purchasing Vehicle** – Respondents who said they had not changed their number of household vehicles were asked if they replaced an existing vehicle or considered buying a vehicle but did not buy one. A quarter (26%) of these respondents said they did consider buying a vehicle after they became a carshare member, but didn't do so. Carsharing appeared influential in these decisions; 21% said they were very likely and 40% said they were somewhat likely to have purchased a vehicle if carsharing had not been available.

## **Impact of Carsharing on Commute Travel Patterns**

**Commute Patterns of Carshare Users** – Nearly all respondents said they made regular commute trips for either work (93%) or to college or university (3%). The overwhelming majority of these respondents said they used a non-drive-alone mode of travel to get to work or school: 47% by Metrorail, 17% by bus, and 24% by biking or walking. Only 6% of commute trips were made by driving alone and 2% were carpool. Four percent of work days were non-travel days because respondents teleworked.

Carshare members' trip distances are relatively short and are much shorter than are the commute distances for all commuters in the region. Four in ten carshare users travel two miles or less to work and 70% travel five or fewer miles. By contrast, only 24% of all regional commuters travel five miles or fewer. On the other end of the distance scale, the figure shows that 10% of carshare users travel 15 miles or more, while more than four in ten (45%) commuters region-wide travel this far.

**Changes in Commuting Since Joining Carshare** – About 18% of commuting respondents said they had started or increased use of alternative modes since joining carshare. Most of these changes were to transit or to bicycle / walk.

Some differences were noted in rates of change by various respondent groups, as shown below. Although these results may seem counter-intuitive in some cases, it is likely they reflect already high rates of alternative mode use for other respondent groups pre-carshare. Respondents who were most likely to have made commute changes included:

- Respondents who had at least one household vehicle per driver
- Respondents who were older, male, and non-white
- Respondents who lived outside Washington, DC and Arlington County, VA
- Respondents who lived farther from a transit stop or station
- Respondents who had longer commute distances made commute changes
- Respondents who made a change in either their work or home location since joining carsharing

**Impact of Commute Changes on Daily Commute Vehicle Trips and VMT** – Overall, the commute changes respondents made were quite small. The majority (71%) of respondents who made a commute change shifted from one alternative mode to another. Only a quarter (24%) of “changers” had reduced the number of drive alone trips and five percent actually increased their drive alone trips. On average, respondents who made a change reduced 0.26 vehicle trips per day and 3.0 miles per day.

When these survey results are applied to the estimated total carshare member population of 28,000 members, the results are as follows:

- Estimated carshare members with change                    4,700
- Estimated daily trips reduced                                    1,250 daily trips reduced
- Estimated annual trips reduced                                    31,000 annual trips reduced
- Estimated daily VMT reduced                                      14,000 daily VMT reduced
- Estimated annual VMT reduced                                    3,501,000 annual VMT reduced
- Estimated daily NOx reduced                                      7 daily kg NOX reduced
- Estimated daily VOC reduced                                      5 daily kg VOC reduced
- Estimated daily CO2 reduced                                      6,384 daily kg VOC reduced

About a quarter of respondents who made a change said they were either somewhat unlikely (8%) or very unlikely (18%) to have made the change if carsharing had not been available. Thus, about 26% of the impacts noted above, or 325 daily vehicle trips and 3,650 daily VMT, could reasonably be credited to a carshare influence.

## Impact of Carshare on Other Travel Patterns and on Home / Work Location Choice

**Annual Miles Traveled by Driving** – Respondents were asked how many miles they drove annually before they joined carsharing and how many they drive now. Only about half of respondents answered both of these questions. This suggests that these might have been difficult questions for some respondents to answer. So these results should be interpreted cautiously, both because the results do not include data from a sizeable portion of the respondents and because respondents' who did answer the questions could have inaccurate estimates of their driving miles.

Slightly more than a third (35%) of respondents said they made no change in their annual driving miles after joining carsharing. A similar percentage said they decreased annual driving miles. Almost three in ten respondents said they increased their annual driving miles, but these increases tended to be modest, compared to decreases; 25% of the 29% added fewer than 1,500 miles, while 20% of the 36% who decreased miles reduced 3,500 or more miles.

Before carsharing, about four in ten (42%) respondents drove 5,000 or more mile per year. After joining carsharing, only 28% of respondents drove 5,000 or more miles per year. The biggest change was in the 500 to 2,499 miles groups. Before carshare, about 20% of respondents drove this far; after joining carshare this group expanded to include more than a third (36%) of respondents. A large drop was noted in the percentage of respondents who traveled at least 10,000 miles annually. Before carsharing, 26% of respondents drove this many miles in a year; after carsharing, only 15% drove 10,000 or more miles annually.

**Impact of Driving Miles Reductions Overall** – On average, survey respondents who reported both a current and pre-carshare mileage drove an average of about 5,100 miles per year before carsharing. After joining carsharing, respondents drove an average of 3,425 miles, a reduction of about 1,675 miles annually.

When these survey results are applied to the estimated total carshare member population of 28,000 members, the results are as follows:

- Number of carshare members 28,000
- Estimated VMT reduced per member 1,675
- Estimated daily VMT reduced per member 4.6 miles per day
  
- Estimated total daily VMT reduced 129,000 daily VMT reduced
- Estimated total annual VMT reduced 46,900,000 annual VMT reduced

**Drive Alone Trips Before and After Joining Carshare** – Respondents also were asked about the numbers of trips they made in a typical week by various travel modes before and after joining carshare. More than four in ten (45%) respondents reduced the number of weekly drive alone trips that they made, but 23% increased drive alone trips. This still resulted in an overall decrease in the percentage of respondents making drive alone trips; 42% of respondents said they made a drive alone trip in a typical week before carsharing and 39% said they made a drive alone trip after carsharing. Respondents made an average of 6.2 drive alone trips before carsharing and 2.5 drive alone trips after joining carsharing, an average drop of 3.7 weekly drive alone trips per carshare member.

**Non-Drive Alone Trips Before and After Joining Carshare** The net percentage of respondents who made transit trips rose after carsharing, from 81% to 89%, because while 11% of respondents reduced their weekly transit trips, 22% increased these trips. Bike / walk use rose similarly, from 82% to 88% of respondents, because 17% of respondents increased these trips, more than balancing the 9% of respondents who decreased their bike/walk trips. Taxi use rose from 39% to 43% and riding with others grew from 42% of respondents before carsharing to 46% after carsharing.

Changes in the total number of these non-driving trips were slight. Respondents also said they slightly decreased the numbers of trips they made weekly by taxi (2.4 weekly trips before to 2.0 trips after) and by riding with others (3.0 weekly trips before to 2.5 trips after). Respondents did not make significant changes in the number of trips by other modes. Since driving alone trips declined, this suggests respondents eliminated trips entirely, rather than replacing them with other trips made by non-drive alone modes.

**Changes in Home/Work Location Since Joining Carsharing** – The carshare survey explored one additional possible change that could have been influenced by availability of carsharing, home or work location changes. Four in ten 43% of respondents said they had moved their home and/or work locations since joining carsharing. Carsharing appears to have had only a modest influence on respondents' decisions to move. When asked what factors were important in deciding whether and where to move, only three percent mentioned carsharing. Further, only 14% said they were either somewhat or very unlikely to have made the move without carsharing.

**Expected Action if Carsharing Was No Longer Available** – Finally, respondents were asked a general and open-ended question about actions they might take if carsharing was no longer available to them. Responses fell into three primary types: 1) use other auto option, 2) use alternative modes, and 3) alter trip-making behavior. A large segment of respondents said they would take actions that afforded them

continued vehicle access. Nearly four in ten (44%) respondents said they would use a taxi more often, 28% said they would buy a car, and 12% would drive more often in a vehicle they currently own. A sizeable percentage of respondents also said they would use alternative transportation options more often, including riding a bus or train (32%), riding as a passenger (22%), or biking or walking (18%). In essence, these respondents would continue to make current trips but, with some accommodation of mode use.

But numerous respondents reported that the loss of carsharing would alter their ability to make the types of trips they now make or when they make those trips. More than a third (36%) said they would make fewer trips, 15% said they would travel to different destinations, and 5% said they would travel at different times of day.

## Satisfaction with Carsharing

**Overall Satisfaction** – Respondents reported quite high satisfaction with carshare programs. Eighty-five percent of respondents said they were either satisfied (rating of 4 on a 5-point scale) or very satisfied (rating of 5). Only three percent (110 respondents) said they were unsatisfied with carsharing (rating of 1 or 2). These respondents were primarily unhappy about the cost of carsharing (55%) and the availability of cars/cars not available when booked (17%).

Three quarters (76%) of respondents said they were very likely to recommend carsharing to others and 20% said they were somewhat likely to recommend it. Only two percent said they were somewhat or very unlikely to recommend carsharing.

Respondent satisfaction was generally high across all demographic and user groups. Satisfaction increased with increasing age, but there were no significant differences in ratings or weighted score for income, gender, ethnicity, or home jurisdiction.

Satisfaction also appeared to be related to the frequency of rentals. Respondents who said they had not rented a carshare vehicle in the past month were less satisfied than were respondents who had rented at least one time during the month. There was no significant difference in satisfaction for more frequent rentals, however. Respondents who rented one or two times were equally satisfied as respondents who had rented three or more times.

**Satisfaction with Carshare Features** – Respondents also gave generally high marks to most carshare features. More than eight in ten gave ratings of 4 or 5 to “ease of reservation,” “safety of pickup location,” and “range of vehicle options.” And at least three-quarters were satisfied with the number of locations and the availability of cars. Respondents were much less satisfied with the cost of carshare rentals. Only about half (49%) of respondents gave a rating of 4 or 5 to this feature.

**Safety of Pickup Locations** – Respondents were asked how safe they would feel picking up cars in various types of parking facilities, including street spaces, open lots, garages, and off-street parking. Respondents gave the highest safety marks to on-street parking; 83% of respondents rated these spaces at least a 4 on a 5-point scale. Respondents also considered open-lot parking to be quite safe; 77% gave a rating of 4 or 5 to this type of parking facility. By contrast, less than two-thirds of respondents gave ratings of 4 or 5 to either parking garages (64%) or off-street private spaces (63%).

Carshare Street Parking Issues – The survey tested the incidence of several possible pickup and drop-off situations that respondents who picked-up cars from on-street locations could have encountered that would make it difficult for the respondent to pick-up or return the vehicle as scheduled. The most common problem was that the designated space was occupied by a non-carshare vehicle when the respondent returned the vehicle, making it impossible to park there. Four in ten (42%) respondents noted that this had happened at least once. About 33% of respondents said they had encountered the problem that the previous carshare user had not returned the vehicle on time.

A similar percentage of respondents (30%) said they had found the carshare vehicle parked in other than its assigned space. And 23% said the carshare space had been occupied by a non-carshare vehicle when trying to pickup the car, making it difficult to find the carshare vehicle. Finally, 11% of respondents reported that the carshare space had been blocked by a double-parked car, making it difficult to pick-up or return the car.

# APPENDICES

Appendix A – Survey Questionnaire

# APPENDIX A – CARSHARE SURVEY QUESTIONNAIRE

## Online Intro

Commuter Connections, with assistance from Flexcar and Zipcar is conducting this brief online survey of Flexcar and Zipcar members to learn about members' experience with carsharing and identify ways to improve the service. Commuter Connections is aware that Zipcar and Flexcar have merged their car-sharing operations. We are interested in gathering information about your car-sharing experience both before and after the merger. Your answers will be confidential. It will take about 10-15 minutes. Please complete the survey and click on the "SUBMIT" button at the end. If you want to enter the drawing for the \$25 driving credit, please provide your email address in the space provided at the end of the survey. Thank you for your participation.

## Background

1. Do you recall registering in either the Flexcar or Zipcar carshare program?

- 1 Yes
- 2 No (**THANK AND TERMINATE**)
- 9 Don't know, don't remember (**THANK AND TERMINATE**)

2. In which carshare program or programs did you register?

- 1 Flexcar only
- 2 Zipcar only
- 3 Both Flexcar and Zipcar
- 9 Don't know, don't remember

3. Are you currently registered in either Flexcar or Zipcar?

- 1 Currently In Flexcar only
- 2 Currently in Zipcar only
- 3 Currently in both Flexcar and Zipcar
- 4 Not currently in either Flexcar or Zipcar
- 9 Don't know, don't remember

IF Q2 = 3, ASK Q3a, OTHERWISE, SKIP TO DEFINE PROGRAM STATUS

3a Why did you register in both Flexcar and Zipcar? Check all that apply (**ACCEPT MULTIPLES**)

- 1 To have access to carshare in multiple locations or neighborhoods (e.g., home, work, school)
- 2 To have access to all carshare vehicles in my home, work, or school neighborhood
- 3 One account is personal and the other is through my employer or through my school
- 4 Gives me more options / opportunities / flexibility for reserving cars
- 5 Programs offer different types of vehicles
- 6 Flexcar and Zipcar merged and I transferred my Flexcar membership to Zipcar
- 7 Other \_\_\_\_\_
- 9 Don't know, don't remember



## DEFINE PROGRAM STATUS

IF Q3 = 1 OR 3, FLEXSTAT = CURRENT

IF Q3 = 2 OR 3, ZIPSTAT = CURRENT

IF Q2 = 1 OR 3 AND Q3 = 2, 4, OR 9, FLEXSTAT = PAST

IF Q2 = 2 OR 3 AND Q3 = 1, 4 OR 9, ZIPSTAT = PAST

IF Q2 = 2 OR 9 AND Q3 = 2, 4, OR 9, FLEXSTAT = NEVER

IF Q2 = 1 OR 9 AND Q3 = 1, 4 OR 9, ZIPSTAT = NEVER

IF FLEXSTAT = NEVER AND ZIPSTAT = NEVER, THANK AND TERMINATE

IF Q2 = 9 AND Q3 = 9, THANK AND TERMINATE

### Branch for Current and Past Participants

IF FLEXSTAT = PAST OR NEVER AND ZIPSTAT = PAST OR NEVER, GO TO INSTRUCTIONS AFTER Q67 (P4)

IF FLEXSTAT = CURRENT OR PAST, CONTINUE TO Q4

IF FLEXSTAT = NEVER AND ZIPSTAT = CURRENT OR PAST, SKIP TO Q5

### Current Carshare Participants Section – Q3a – Q65.

(Note parallel section, P-4 – P-67, for respondents who are not currently in either Flexcar or Zipcar)

#### Flexcar Background

4 In what year did you become a Flexcar member?

- 1 Before 2002
- 2 2003
- 3 2004
- 4 2005
- 5 2006
- 6 2007
- 9 Don't know, don't remember

#### **IF FLEXSTAT = CURRENT, SKIP TO Q4b**

4a How long were you a Flexcar member?

- 1 Less than 6 months
- 2 6 to 11 months
- 3 1 to 2 years
- 4 3 to 4 years
- 5 5 to 6 years
- 6 More than 6 years
- 5 5 or more years
- 9 Don't know, don't remember

4b Which of the following describe your Flexcar account or accounts? If you have more than one account, please check all that apply.

- 1 Personal account
- 2 Account through employer
- 3 Account through school / university
- 4 Account through other organization (specify) \_\_\_\_\_
- 9 Don't know, don't remember

**IF Q4b NE 2, SKIP TO Q4d**

4c Does your employer maintain company cars or fleet cars for business or work-related travel?

- 1 Yes
- 2 No
- 9 Don't know

4d How did you first learn about Flexcar?

**ROTATE 1-9, SHOW 10 (other) AT THE END OF THE LIST**

- 1 Advertisement
- 2 Received information in the mail
- 3 Saw Flexcar vehicle
- 4 Saw an orange carsharing pole with information holder
- 5 Employer told me
- 6 Friend or family member told me, word of mouth
- 7 Internet
- 8 Information from local jurisdiction (e.g., County, City)
- 9 Information from Metro
- 10 Other \_\_\_\_\_
- 19 Don't know, don't remember

**IF Q4d NE 3, SKIP TO INSTRUCTIONS BEFORE Q5**

4e Where did you see the Flexcar vehicle?

- 1 Being driven on the road
- 2 Parked in a Flexcar parking space on the street
- 3 Parked in a Metrorail lot or garage
- 4 Parked in a lot or garage in a location other than Metrorail
- 5 Other \_\_\_\_\_
- 9 Don't know, don't remember

Zipcar Background

**IF ZIPSTAT = CURRENT OR PAST, CONTINUE TO Q5**

**IF ZIPSTAT = NEVER, SKIP TO Q6**

5 In what year did you become a Zipcar member?

- 1 Before 2002
- 2 2003
- 3 2004
- 4 2005
- 5 2006
- 6 2007
- 9 Don't know, don't remember

**IF ZIPSTAT = CURRENT, SKIP TO Q5b**

5a How long were you a Zipcar member?

- 1 Less than 6 months
- 2 6 to 11 months
- 3 1 to 2 years
- 4 3 to 4 years
- 5 5 or more years
- 9 Don't know, don't remember

5b Which of the following best describe your Zipcar account? If you have more than one account, please check all that apply

- 1 Personal account
- 2 Account through employer
- 3 Account through school / university
- 4 Account through other organization (specify) \_\_\_\_\_
- 9 Don't know, don't remember

**IF Q5b NE 2, SKIP TO Q5d**

5c Does your employer maintain company cars or fleet cars for business or work-related travel?

- 1 Yes
- 2 No
- 9 Don't know

5d How did you first learn about Zipcar?

**ROTATE 1-9, SHOW 10 (other) AT THE END OF THE LIST**

- 1 Advertisement
- 2 Received information in the mail
- 3 Saw Zipcar vehicle
- 4 Saw an orange carsharing pole with information holder
- 5 Employer told me
- 6 Friend or family member told me, word of mouth
- 7 Internet
- 8 Information from local jurisdiction (e.g., County, City)
- 9 Information from Metro
- 10 Other \_\_\_\_\_
- 19 Don't know, don't remember

**IF Q5d NE 3, SKIP TO Q6**

5e Where did you see the Zipcar vehicle?

- 1 On the road / being driven
- 2 Parked in a Zipcar parking space on the street
- 3 Parked in a Metrorail lot or garage
- 4 Parked in a lot or garage in a location other than Metrorail
- 5 Other \_\_\_\_\_
- 9 Don't know, don't remember

6 What motivated you to join a carsharing program? Please check all that apply. **(ALLOW MULTIPLES FOR 1-10)**

- 1 Didn't own a car
- 2 Car was not working, needed extensive repairs
- 3 Liked the philosophy / concept of carsharing
- 4 Couldn't afford to own, maintain, garage a car
- 5 Save money, spend less on transportation
- 6 Eliminated the hassle of owning a car, avoid buying a second car
- 7 Wanted another travel option for emergencies
- 8 My employer offered it at work
- 9 Concerned about the environment, global warming
- 10 Other \_\_\_\_\_
- 19 Don't know, don't remember

**IF Q6 = ONLY ONE RESPONSE, AUTOCODE Q6a = Q6, THEN SKIP TO Q10**

6a Of the reasons you just checked, which was your primary reason for joining carsharing at the time you joined?  
Please check only one answer.

SHOW ONLY RESPONSES 1-10 THAT WERE CHECKED IN Q6

- 1 Didn't own a car
- 2 Car was not working, needed extensive repairs
- 3 Liked the philosophy / concept of carsharing
- 4 Couldn't afford to own, maintain, garage a car
- 5 Save money, spend less on transportation
- 6 Eliminated the hassle of owning a car, avoid buying a second car
- 7 Wanted another travel option for emergencies
- 8 My employer offered it at work
- 9 Concerned about the environment, global warming
- 10 Other \_\_\_\_\_
- 19 Don't know, don't remember

General Car Share Use Patterns

10 Do you use carshare vehicles for personal trips, work-related trips, or both personal and work-related trips?

- 1 Exclusively for personal trips
- 2 Exclusively for business / work-related trips
- 3 Use for both types of trips
- 9 Don't know

11b When you rent carshare vehicles, how often do you stop at multiple destinations during your rental period?

- 1 Always
- 2 Often / usually
- 3 Sometimes
- 4 Rarely / seldom
- 5 Never
- 9 Don't know

11c In the past month, how many times have you rented a carshare vehicle?

\_\_\_\_\_ number of times

999 Don't know, don't remember

**IF Q11c = 0 or 999, SKIP TO Q14a**

12 In the past month, how many times did you make each of the following types of trips by carsharing?

Type of Trip	# times
1 Travel between home and work or between home and school	
2 Work-related meeting or errand	
3 Shopping or personal errand	
4 Social / entertainment / meals / recreation	
5 Medical / personal appointment	
6 Other purpose _____	

- 13 You said you rented a carshare vehicle <Q11c> times in the past month. How many of those rentals were on weekdays (Monday – Friday) and how many were on weekend days?

Days of the Week	# times
1 Weekday (Monday – Friday)	
2 Weekend (Saturday – Sunday)	

- 14a In which of the following locations do you ever pick up and return carshare vehicles? Check all that apply (**DO NOT ALLOW MULTIPLES WITH DK - 9**)

- 1 In or near my home neighborhood
- 2 In or near my work neighborhood
- 3 In or near the neighborhood of my school / university
- 4 Other location
- 9 Don't know (**SKIP TO Q18a**)

**IF Q14a = 1, ASK Q15**

**IF Q14a NE 1, SKIP TO INSTRUCTIONS BEFORE Q16**

- 15 How far from your home is the nearest carshare pick up location?

- 1 Less than 2 blocks
- 2 2 – 5 blocks
- 3 6 – 10 blocks
- 4 1 – 2 miles
- 5 More than 2 miles
- 9 Don't know

- 15a In what county / city and neighborhood/area is this vehicle located?

County \_\_\_\_\_ City \_\_\_\_\_ Neighborhood / area \_\_\_\_\_

- 15b In which of the following types of facilities is this vehicle parked?

- 1 On-street parking space
- 2 Private off-street space (e.g., driveway, private road)
- 3 Public garage or lot
- 4 Private garage or lot
- 5 Residential building garage (e. g., apartment, condo building)
- 6 Office or commercial building garage
- 7 Metrorail station garage or lot
- 8 Other \_\_\_\_\_
- 9 Don't know

**IF Q14a = 2, ASK Q16**

**IF Q14a NE 2, SKIP TO INSTRUCTIONS BEFORE Q17**

- 16 How far from your work place is the nearest carshare pick up location?

- 1 Less than 2 blocks
- 2 2 – 5 blocks
- 3 6 – 10 blocks
- 4 1 – 2 miles
- 5 More than 2 miles
- 9 Don't know

16a In what county / city and neighborhood/area is this vehicle located?

County \_\_\_\_\_ City \_\_\_\_\_ Neighborhood / area \_\_\_\_\_

16b In which of the following types of facilities is this vehicle parked?

- 1 On-street parking space
- 2 Private off-street space (e.g., driveway, private road)
- 3 Public garage or lot
- 4 Private garage or lot
- 5 Residential building garage (e. g., apartment, condo building)
- 6 Office or commercial building garage
- 7 Metrorail station garage or lot
- 8 Other \_\_\_\_\_
- 9 Don't know

**IF Q14a = 3, ASK Q17**

**IF Q14a NE 3, SKIP TO INSTRUCTIONS BEFORE Q18**

17 How far from your school / university is the nearest carshare pick up location?

- 1 Less than 2 blocks
- 2 2 – 5 blocks
- 3 6 – 10 blocks
- 4 1 – 2 miles
- 5 More than 2 miles
- 9 Don't know

17a In what county / city and neighborhood/area is this vehicle located?

County / city \_\_\_\_\_ Neighborhood / area \_\_\_\_\_

17b In which of the following types of facilities is this vehicle parked?

- 1 On-street parking space
- 2 Private off-street space (e.g., driveway, private road)
- 3 Public garage or lot
- 4 Private garage or lot
- 5 Residential building garage (e. g., apartment, condo building)
- 6 Office or commercial building garage
- 7 Metrorail station garage or lot
- 8 Other \_\_\_\_\_
- 9 Don't know

**IF Q14a = 4, ASK Q18**

**IF Q14a NE 4, SKIP TO Q18a**

18 In what other location(s) do you pick up carshare vehicles?

\_\_\_\_\_

18a Who pays for the expenses of your carsharing trips?

- 1 I pay all the costs
- 2 My employer pays all the costs
- 3 Someone else pays all the costs
- 4 I pay some and my employer or someone else pays some
- 5 Other \_\_\_\_\_
- 9 Don't know

### Details of Last Carshare Use

Please answer the following questions about the last trip you made in a carshare vehicle. Answer for this trip, even if it was not a typical carshare trip for you.

20 When did you make your last carshare trip?

- 1 Within the past week
- 2 1 - 2 weeks ago
- 3 3 - 4 weeks ago
- 4 1 – 2 months ago
- 5 More than 2 months ago
- 9 Don't know, don't remember

21 What was the purpose of that trip? Please check all that apply (**ALLOW MULTIPLES FOR 1-6**)

- 1 Travel between home and work or between home and school
- 2 Work-related meeting or errand
- 3 Shopping or personal errand
- 4 Social / entertainment / meals / recreation
- 5 Medical / personal appointment
- 6 Other purpose \_\_\_\_\_
- 9 Don't know, don't remember

22 In what county / city did you pick up the vehicle?

County \_\_\_\_\_ City \_\_\_\_\_

22a Did you have a single destination on this trip or did you make stops at more than one location?

- 1 Single destination only
- 2 Made stops at 2 – 3 locations
- 3 Made stops at 4 or more locations
- 9 Don't know, don't remember

23 On what day of the week did you make this trip?

- 1 Weekday (Monday-Friday)
- 2 Saturday
- 3 Sunday
- 9 Don't know, don't remember

23a At about what time did you pick up the car?

- 1 5:00 am – 9:59 am
- 2 10:00 am – 2:59 pm
- 3 3:00 pm – 7:59 pm
- 4 8:00 pm to 11:59 pm
- 5 12:00 midnight to 4:59 am
- 9 Don't know, don't remember

23b About how long did you keep the car?

- 1 Less than 1 hour
- 2 1 – 2 hours
- 3 3 – 4 hours
- 4 5 – 6 hours
- 5 7 – 24 hours
- 6 More than one day
- 9 Don't know, don't remember

24 About how many miles did you travel? \_\_\_\_\_

25 How did you get to the location where you picked up the vehicle?

- 1 Walked
- 2 Bicycled
- 3 Rode a bus or train
- 4 Dropped off, rode as passenger in someone's car
- 5 Taxi
- 6 Other \_\_\_\_\_
- 9 Don't know, don't remember

26 For what reason or reasons did you use carsharing for this particular trip? Check all that apply (**ACCEPT MULTIPLES**)

**ROTATE 1-10, SHOW 11, 19 AT THE END OF THE LIST**

- 1 Lower cost than for other travel options
- 2 More comfortable than other travel options
- 3 Had things to carry, transport
- 4 No other travel option at that time of day/night
- 5 Needed to pick up passengers
- 6 Had to make multiple stops
- 7 Car was the only option to get to that destination
- 8 Too far to walk
- 9 Didn't want to use bus or train for this trip
- 10 Company car was not available
- 11 Other \_\_\_\_\_
- 19 Don't know, don't remember

27 If a carsharing vehicle had not been available, how would you have made this trip? Check all that apply. (**DO NOT ALLOW MULTIPLES WITH 1 OR 9**)

- 1 Would not have traveled at all
- 2 Driven myself in a personal or company vehicle
- 3 Driven myself in a company vehicle
- 4 Used a different type of transportation
- 5 Traveled to a different destination
- 6 Traveled at a different time of day
- 7 Other \_\_\_\_\_
- 9 Don't know, don't remember

**IF Q27 = 4, ASK Q27a, OTHERWISE, SKIP TO Q30**

27a What other type of transportation would you most likely have used for this trip? Please check only one.

**ROTATE 1-7, SHOW 9 AT THE END OF THE LIST**

- 1 Ride as a passenger in a personal auto/vehicle
- 2 Metrorail
- 3 Walk or bicycle
- 4 Bus
- 5 Taxi
- 6 Rental car
- 9 Don't know, don't remember



Commute Travel Patterns

- 30 Are you currently employed, either full-time or part-time?
- 1 Yes, employed full-time **(SKIP TO INSTRUCTIONS BEFORE Q31)**
  - 2 Yes, employed part-time **(SKIP TO INSTRUCTIONS BEFORE Q31)**
  - 3 No
  - 9 Don't know, prefer not to answer

- 30a Are you a full-time student?
- 1 Yes
  - 3 No **(SKIP TO Q40)**
  - 9 Don't know, prefer not to answer **(SKIP TO Q40)**

- 30b Do you live on campus or off campus?
- 1 On campus **(SKIP TO Q40)**
  - 2 Off campus
  - 9 Don't know, prefer not to answer **(SKIP TO Q40)**

**IF Q30 = 1 OR 2, INSERT "get to work" IN Q31**

**IF Q30a = 1, INSERT "get to school" IN Q31**

- 31 In a typical week, how many weekdays (Monday-Friday) do you use each of the following types of transportation to [get to work, get to school]? If you use more than one type on a single day (e.g., walk to the bus stop, then ride the bus), count only the type you use for the **longest distance part** of your trip. If you telework one or more days per week, please report those days also.

Type of Transportation	Number of Weekdays Used (0 – 5)
1 Drive alone, motorcycle, taxi	
2 Ride a bus	
3 Ride Metrorail, subway train, or commuter train (VRE, MARC, Amtrak)	
4 Carpool or vanpool (ride or drive with others in a car, truck, van, or SUV, dropped off)	
5 Walk or bicycle	
6 Telework (work at home or at telework center all day)	
7 Other (describe) _____	

**IF Q30 = 1 OR 2, INSERT "usual work location" IN Q32**

**IF Q30a = 1, INSERT "school" IN Q32**

- 32 About how many miles is it from your home to your [usual work location, school]?
- \_\_\_\_\_
- 999 Don't know

**IF Q30 = 1 OR 2, INSERT "work" IN Q33a**

**IF Q30a = 1, INSERT "school" IN Q33a**

- 33a On days that you drive to [work, school], how much do you pay to park? If you don't usually drive, please enter what you would pay if you needed to drive. If you did not or would not pay to park, enter \$0 in the box.

\$\_\_\_\_\_ per: day / month (check one)

**IF Q30 = 1 OR 2, INSERT "work" IN Q35-Q35c**

**IF Q30a = 1, INSERT "school" IN Q35-Q35c**

35 Since you became a carshare member, have you made any of the following changes in how you get to [work, school]? Check all that apply (ALLOW MULTIPLES)

- 1 Started riding train or bus
- 2 Ride train or bus more often
- 3 Started carpooling or vanpooling
- 4 Carpool or vanpool more often
- 5 Started walking or bicycling
- 6 Bicycle or walk more often
- 9 No – did not make any of these changes

**IF Q35 = 1, 3, OR 5, ASK Q35a, OTHERWISE, SKIP TO Q40**

35a How did you typically travel to [work, school] before you made this change? (Please check only one)

- 1 Didn't [work then, go to school then]
- 2 Drove alone all or most days
- 3 Rode a train or bus all or most days
- 4 Carpooled or vanpooled all or most days
- 5 Walked or bicycled all or most days
- 6 Teleworked all or most days
- 7 Other \_\_\_\_\_

35c If carsharing had not been available to you, how likely would you have been to make this change in how you travel to [work, school]?

- 1 Very likely
- 2 Somewhat likely
- 3 Neither likely nor unlikely
- 4 Somewhat unlikely
- 5 Very unlikely
- 9 Don't know, prefer not to answer

Before / After Travel Patterns

40 About how many miles do you drive annually now, for all trip purposes? (Please include miles you drive in the Washington metropolitan area in carshare vehicles and in vehicles you own, rent, or borrow)

\_\_\_\_\_   
 999 Don't know

41 Before you joined carsharing, about how many miles did you drive annually? Please include miles you drove in the Washington metropolitan area in carshare vehicles and in vehicles you owned, rented, or borrowed

\_\_\_\_\_   
 999 Don't know

42 In a typical week, about how many trips do you make now by each of the following types of transportation?

<u>Type of transportation</u>	<u>Number of weekly trips</u>
1 Driving alone in a personal or rented/borrowed vehicle	_____
2 Driving or riding with someone in personal or rented/borrowed vehicle	_____
3 Riding a bus or train	_____
4 Taxi	_____

43 Before you joined carsharing, about how many trips did you make in a typical week by each of the following types of transportation?

Type of transportation

Number of weekly trips

- |   |   |       |
|---|---|-------|
| 1 | Driving alone in a personal or rented/borrowed vehicle                | _____ |
| 2 | Driving or riding with someone in personal or rented/borrowed vehicle | _____ |
| 3 | Riding a bus or train   | _____ |
| 4 | Taxi  | _____ |

44 Not counting trips you make solely for exercise or recreation, or to get to a bus or train stop, about how many trips do you make in a typical week by bicycle or walking?

\_\_\_\_\_ number of trips  
999 Don't know

45 Before you joined carsharing, about how many bicycle or walking trips did you make in a typical week, other than trips solely for exercise or recreation or to get to a bus or train stop?

\_\_\_\_\_ number of trips  
999 Don't know

47 If the carsharing service ended, would you be likely to make any of the following changes? Check all that apply. **(ACCEPT MULTIPLES FOR 1-12)**

ROTATE 1-12

- 1 Buy a car
- 2 Move to a different neighborhood
- 3 Drive in your personal auto/vehicle more
- 4 Ride more often as a passenger in a personal auto/vehicle
- 5 Use bus or train more often
- 6 Bicycle or walk more often
- 7 Use a taxi more often
- 8 Rent a car more often
- 9 Make fewer trips
- 10 Travel to different destinations
- 11 Travel at different times of day
- 12 Use a company vehicle or fleet car more often
- 19 Don't know

Impact on Vehicle Ownership / Residential Choice

50 How many cars, trucks, vans, or other personal vehicles do you or other members of your household own or lease now for household use?

\_\_\_\_\_   
99 Don't know, prefer not to answer

51 How many cars, trucks, vans, or other personal vehicles did you or other members of your household own or lease before you joined carsharing?

\_\_\_\_\_   
99 Don't know, prefer not to answer

Check change in vehicle ownership

**IF Q50 = 99 AND Q51 = 99, SKIP TO Q53**

**IF Q50 >= Q51, SKIP TO Q53**

- 52 You said you've reduced the number of household vehicles since you became a carshare member. What factors influenced your decision to make this change? (**ALLOW MULTIPLES FOR 1-7**)
- 1 Save money, spend less on transportation
  - 2 Carshare vehicles were available
  - 3 Moved to a new neighborhood
  - 4 Couldn't afford to own, maintain, garage a car
  - 5 Eliminate the hassle of owning a car
  - 6 Concerned about the environment
  - 7 Other \_\_\_\_\_
  - 19 Don't know, prefer not to answer
- 52a If carsharing had not been available, how likely would you have been to reduce the number of household vehicles?
- 1 Very likely
  - 2 Somewhat likely
  - 3 Neither likely nor unlikely
  - 4 Somewhat unlikely
  - 5 Very unlikely
  - 9 Don't know, prefer not to answer
- 53 After you joined carsharing, did you buy or consider buying a car, truck, van, or other personal vehicle?
- 1 Yes, bought a car, truck, van, or other vehicle (**SKIP TO Q54**)
  - 2 Considered buying but did not buy a vehicle
  - 3 No, did not consider buying or buy a vehicle (**SKIP TO Q54**)
  - 9 Don't know, prefer not to answer (**SKIP TO Q54**)
- 53a If carsharing had not been available, how likely would you have been to buy a vehicle?
- 1 Very likely
  - 2 Somewhat likely
  - 3 Neither likely nor unlikely
  - 4 Somewhat unlikely
  - 5 Very unlikely
  - 9 Don't know, prefer not to answer
- 54 Since you first learned about carsharing, have you moved your residence or changed your work location?
- 1 Yes, moved my residence
  - 2 Yes changed work location
  - 3 Yes, moved my residence and changed my work location
  - 4 No, did not make either of these changes (**SKIP TO Q60**)
  - 9 Don't know, prefer not to answer (**SKIP TO Q60**)
- 54a What factors were important in your decision to make this location change?
- OPEN-ENDED \_\_\_\_\_
- 55 Was carsharing available in your old home and/or work location?
- 1 Yes, available at home
  - 2 Yes, available at work
  - 3 Yes, available at both home and work
  - 4 No, not available at either home or work
  - 9 Don't know

55a Was carsharing available in the new home or work location?

- 1 Yes, available at home
- 2 Yes, available at work
- 3 Yes, available at both home and work
- 4 No, not available at the new location(s) (**SKIP TO Q60**)
- 9 Don't know (**SKIP TO Q60**)

56a If carsharing had not been available in the new location, how likely would you have been to make this home or work location change?

- 1 Very likely
- 2 Somewhat likely
- 3 Neither likely nor unlikely
- 4 Somewhat unlikely
- 5 Very unlikely
- 9 Don't know, prefer not to answer

General Carshare Satisfaction

60 Overall, how satisfied are you with your carshare experience? Please rate the service on a scale of 1 to 5, where 1 is not at all satisfied and 5 is very satisfied?

- 1 1 (not at all satisfied)
- 2 2
- 3 3 (**SKIP TO Q62**)
- 4 4 (**SKIP TO Q62**)
- 5 5 (very satisfied) (**SKIP TO Q62**)
- 9 Don't know, prefer not to answer (**SKIP TO Q62**)

61 Why are you not satisfied with the service? \_\_\_\_\_

62 Please rate the carshare service on each of the following features, using a scale of 1 to 5, where 1 means "very poor" and 5 means "very good."

**ROTATE RESPONSES**

Feature	1 – Very poor	2	3	4	5 – Very good	DK
1 Ease of making carshare reservations						
2 Cost of carshare rental						
3 Range of vehicle options						
4 Safety of carshare pick-up locations						
5 Availability of vehicles when needed						
6 Number of vehicle pick-up location						

62b Carshare vehicles can be parked in various types of parking locations. Using a scale of 1 to 5, where 1 means “not at all safe” and 5 means “very safe”, please rate how safe you would feel in picking up and returning cars at each of the following types of locations.

Feature	1 – Not at all safe	2	3	4	5 – Very safe	DK
1 Space on a public street						
2 Space in open lot						
3 Space in parking garage						
4 Private off-street parking space						

62c Did availability of carshare vehicles in highly trafficked and visible on-street locations influence your decision to become a carshare member?

- 1 Greatly influenced my decision to join
- 2 Somewhat influenced my decision to join
- 3 Did not influence my decision to join
- 9 Don't know

**IF Q15b = 1 OR Q16b = 1 OR Q17b = 1 (use cars parked on-street), ASK Q63, OTHERWISE, SKIP TO Q70 (demographics)**

63 You indicated earlier that you have used carshare vehicles that are parked in public, on-street parking spaces. How often have you encountered any of the following situations?

Situation	Never	1-2 times	3 or more times	DK
1 Space was occupied by a non-carshare vehicle when I arrived to pick up the carshare vehicle				
2 Previous carshare user had not returned the vehicle				
3 Vehicle had been parked in a location other than its assigned space				
4 Space was occupied by a non-carshare vehicle when I was returning the car				
5 Carshare vehicle was blocked by a double-parked vehicle				

**IF FLEXSTAT = CURRENT OR ZIPSTAT = CURRENT, SKIP TO Q70 (Demographics)**

**IF FLEXSTAT = PAST, CONTINUE TO QP-4**

**IF FLEXSTAT = NEVER AND ZIPSTAT = PAST, SKIP TO INSTRUCTIONS BEFORE QP-5**

**Past Participant Section**

Flexcar Background

P-4 In what year did you become a Flexcar member?

- 1 Before 2002
- 2 2003
- 3 2004
- 4 2005
- 5 2006
- 6 2007
- 9 Don't know, don't remember

P-4a How long were you a Flexcar member?

- 1 Less than 6 months
- 2 6 to 11 months
- 3 1 to 2 years
- 4 3 to 4 years
- 5 5 or more years
- 9 Don't know, don't remember

P-4b Which of the following described your Flexcar account or accounts? If you had more than one account, please check all that apply.

- 1 Personal account
- 2 Account through employer
- 3 Account through school / university
- 4 Account through other organization (specify) \_\_\_\_\_
- 9 Don't know, don't remember

**IF QP-4b NE 2, SKIP TO QP-4d**

P-4c Did your employer maintain company cars or fleet cars for business or work-related travel?

- 1 Yes
- 2 No
- 9 Don't know

P-4d How did you first learn about Flexcar?

**ROTATE 1-9 SHOW 10 (other) AT THE END OF THE LIST**

- 1 Advertisement
- 2 Received information in the mail
- 3 Saw Flexcar vehicle
- 4 Saw an orange carsharing pole with information holder
- 5 Employer told me
- 6 Friend or family member told me, word of mouth
- 7 Internet
- 8 Information from local jurisdiction (e.g., County, City)
- 9 Information from Metro
- 10 Other \_\_\_\_\_
- 19 Don't know, don't remember

**IF QP-4d NE 3, SKIP TO INSTRUCTIONS BEFORE QP-5**

P-4e Where did you see the Flexcar vehicle?

- 1 Being driven on the road
- 2 Parked in a Flexcar parking space on the street
- 3 Parked in a Metrorail lot or garage
- 4 Parked in a lot or garage in a location other than Metrorail
- 5 Other \_\_\_\_\_
- 9 Don't know, don't remember

Zipcar Background

**IF ZIPSTAT = PAST, CONTINUE TO QP-5**

**IF ZIPSTAT = NEVER, SKIP TO QP-6**

P-5 In what year did you become a Zipcar member?

- 1 Before 2002
- 2 2003
- 3 2004
- 4 2005
- 5 2006
- 6 2007
- 9 Don't know, don't remember

P-5a How long were you a Zipcar member?

- 1 Less than 6 months
- 2 6 to 11 months
- 3 1 to 2 years
- 4 3 to 4 years
- 5 5 or more years
- 9 Don't know, don't remember

P-5b Which of the following best described your Zipcar account? If you had more than one account, please check all that apply

- 1 Personal account
- 2 Account through employer
- 3 Account through school / university
- 4 Account through other organization (specify) \_\_\_\_\_
- 9 Don't know, don't remember

**IF QP-5b NE 2, SKIP TO QP-5d**

P-5c Did your employer maintain company cars or fleet cars for business or work-related travel?

- 1 Yes
- 2 No
- 9 Don't know



P-5d How did you first learn about Zipcar?

**ROTATE 1-9, SHOW 10 (other) AT THE END OF THE LIST**

- 1 Advertisement
- 2 Received information in the mail
- 3 Saw Zipcar vehicle
- 4 Saw an orange carsharing pole with information holder
- 5 Employer told me
- 6 Friend or family member told me, word of mouth
- 7 Internet
- 8 Information from local jurisdiction (e.g., County, City)
- 9 Information from Metro
- 10 Other \_\_\_\_\_
- 19 Don't know, don't remember

**IF QP-5d NE 3,SKIP TO QP-6**

P-5e Where did you see the Zipcar vehicle?

- 1 On the road / being driven
- 2 Parked in a Zipcar parking space on the street
- 3 Parked in a Metrorail lot or garage
- 4 Parked in a lot or garage in a location other than Metrorail
- 5 Other \_\_\_\_\_
- 9 Don't know, don't remember

P-6 What motivated you to join a carsharing program? Please check all that apply. (ALLOW MULTIPLES FOR 1-10)

- 1 Didn't own a car
- 2 Car was not working, needed extensive repairs
- 3 Liked the philosophy / concept of carsharing
- 4 Couldn't afford to own, maintain, garage a car
- 5 Save money, spend less on transportation
- 6 Eliminated the hassle of owning a car, avoid buying a second car
- 7 Wanted another travel option for emergencies
- 8 My employer offered it at work
- 9 Concerned about the environment, global warming
- 10 Other \_\_\_\_\_
- 19 Don't know, don't remember

**IF QP-6 = ONLY ONE RESPONSE, AUTOCODE QP-6a = QP-6, THEN SKIP TO QP-10**

P-6a Of the reasons you just checked, which was your primary reason for joining carsharing at the time you joined?  
Please check only one answer.

SHOW ONLY RESPONSES 1-10 THAT WERE CHECKED IN QP-6

- 1 Didn't own a car
- 2 Car was not working, needed extensive repairs
- 3 Liked the philosophy / concept of carsharing
- 4 Couldn't afford to own, maintain, garage a car
- 5 Save money, spend less on transportation
- 6 Eliminated the hassle of owning a car, avoid buying a second car
- 7 Wanted another travel option for emergencies
- 8 My employer offered it at work
- 9 Concerned about the environment, global warming
- 10 Other \_\_\_\_\_
- 19 Don't know, don't remember

General Car Share Use Patterns

P-10 When you were a carshare member, did you use carshare vehicles for personal trips, work-related trips, or both personal and work-related trips?

- 1 Exclusively for personal trips
- 2 Exclusively for business / work-related trips
- 3 Use for both types of trips
- 9 Don't know

P-11 How many times did you rent a carshare vehicle in a typical month?

\_\_\_\_\_ number of times

999 Don't know, don't remember

P-11a When you rented carshare vehicles, how often did you stop at multiple destinations during your rental period?

- 1 Always
- 2 Often / usually
- 3 Sometimes
- 4 Rarely / seldom
- 5 Never
- 9 Don't know

P-14a In which of the following locations did you ever pick up and return carshare vehicles? Check all that apply (**DO NOT ALLOW MULTIPLES WITH DK - 9**)

- 1 In or near my home neighborhood
- 2 In or near my work neighborhood
- 3 In or near the neighborhood of my school / university
- 4 Other location
- 9 Don't know (**SKIP TO QP-18a**)

**IF QP-14a = 1, ASK QP-15**

**IF QP-14a NE 1, SKIP TO INSTRUCTIONS BEFORE QP-16**

P-15 How far from your home was the nearest carshare pick up location?

- 1 Less than 2 blocks
- 2 2 – 5 blocks
- 3 6 – 10 blocks
- 4 1 – 2 miles
- 5 More than 2 miles
- 9 Don't know

P-15b In which of the following types of facilities was this vehicle parked?

- 1 On-street parking space
- 2 Private off-street space (e.g., driveway, private road)
- 3 Public garage or lot
- 4 Private garage or lot
- 5 Residential building garage (e. g., apartment, condo building)
- 6 Office or commercial building garage
- 7 Metrorail station garage or lot
- 8 Other \_\_\_\_\_
- 9 Don't know

**IF QP-14a = 2, ASK QP-16**

**IF QP-14a NE 2, SKIP TO INSTRUCTIONS BEFORE QP-17**

P-16 How far from your work place was the nearest carshare pick up location?

- 1 Less than 2 blocks
- 2 2 – 5 blocks
- 3 6 – 10 blocks
- 4 1 – 2 miles
- 5 More than 2 miles
- 9 Don't know

P-16a In what county / city and neighborhood/area was this vehicle located?

County \_\_\_\_\_ City \_\_\_\_\_ Neighborhood / area \_\_\_\_\_

P-16b In which of the following types of facilities was this vehicle parked?

- 1 On-street parking space
- 2 Private off-street space (e.g., driveway, private road)
- 3 Public garage or lot
- 4 Private garage or lot
- 5 Residential building garage (e. g., apartment, condo building)
- 6 Office or commercial building garage
- 7 Metrorail station garage or lot
- 8 Other \_\_\_\_\_
- 9 Don't know

**IF QP-14a = 3, ASK QP-17**  
**IF QP-14a NE 3, SKIP TO INSTRUCTIONS BEFORE QP-18**

P-17 How far from your school / university was the nearest carshare pick up location?

- 1 Less than 2 blocks
- 2 2 – 5 blocks
- 3 6 – 10 blocks
- 4 1 – 2 miles
- 5 More than 2 miles
- 9 Don't know

P-17a In what county / city and neighborhood/area was this vehicle located?

County / city \_\_\_\_\_ Neighborhood / area \_\_\_\_\_

P-17b In which of the following types of facilities was this vehicle parked?

- 1 On-street parking space
- 2 Private off-street space (e.g., driveway, private road)
- 3 Public garage or lot
- 4 Private garage or lot
- 5 Residential building garage (e. g., apartment, condo building)
- 6 Office or commercial building garage
- 7 Metrorail station garage or lot
- 8 Other \_\_\_\_\_
- 9 Don't know

**IF QP-14a = 4, ASK QP-18**  
**IF QP-14a NE 4, SKIP TO QP-18a**

P-18 In what other location(s) did you pick up carshare vehicles?

\_\_\_\_\_

P-18a Who paid for the expenses of your carsharing trips?

- 1 I paid all the costs
- 2 My employer paid all the costs
- 3 Someone else paid all the costs
- 4 I paid some and my employer or someone else paid some
- 5 Other \_\_\_\_\_
- 9 Don't know

Commute Travel Patterns

P-30 During the time you were a carshare member, were you employed, either full-time or part-time?

- 1 Yes, employed full-time (**SKIP TO INSTRUCTIONS BEFORE QP-31**)
- 2 Yes, employed part-time (**SKIP TO INSTRUCTIONS BEFORE QP-31**)
- 3 No
- 9 Don't know, prefer not to answer

P-30a Were you a full-time student while you were a carshare member?

- 1 Yes
- 3 No (**SKIP TO QP-40**)
- 9 Don't know, prefer not to answer (**SKIP TO QP-40**)

P-30b Did you live on campus or of-campus then?

- 1 On campus (**SKIP TO QP-40**)
- 2 Off campus
- 9 Don't know, prefer not to answer (**SKIP TO QP-40**)

**IF QP-30 = 1 OR 2, INSERT "get to work" IN QP-31**

**IF QP-30a = 1, INSERT "get to school" IN QP-31**

P-31 In a typical week during the time you were a carshare member, how many weekdays (Monday-Friday) did you use each of the following types of transportation to [get to work, get to school]? If you used more than one type on a single day (e.g., walked to the bus stop, then rode the bus), count only the type you used for the **longest distance part** of your trip. If you teleworked one or more days per week, please report those days also.

Type of Transportation	Number of Weekdays Used (0 – 5)
1 Drove alone, motorcycle, taxi	
2 Rode a bus	
3 Rode Metrorail, subway train, or commuter train (VRE, MARC, Amtrak)	
4 Carpooled or vanpooled (rode or drove with others in a car, truck, van, or SUV, dropped off)	
5 Walked or bicycled	
6 Teleworked (worked at home or at telework center all day)	
7 Other (describe) _____	

**IF QP-30 = 1 OR 2, INSERT "usual work location" IN QP-32**

**IF QP-30a = 1, INSERT "school" IN QP-32**

P-32 About how many miles was it from your home to your [usual work location, school]?

\_\_\_\_\_ Don't know  
999

**IF QP-30 = 1 OR 2, INSERT "work" IN QP-33a**

**IF QP-30a = 1, INSERT "school" IN QP-33a**

P-33a On days that you drove to [work, school], how much did you pay to park? If you didn't usually drive, please enter what you would pay if you needed to drive. If you did not or would not pay to park, enter \$0 in the box.

\$\_\_\_\_\_ per: day / month (check one)

**IF QP-30 = 1 OR 2, INSERT "work" IN QP-35 - QP-35c**  
**IF QP-30a = 1, INSERT "school" IN QP-35 - QP-35c**

P-35 After you became a carshare member, did you make any of the following changes in how you got to [work, school]? Check all that apply (ALLOW MULTIPLES)

- 1 Started riding train or bus-
- 2 Rode Ride train or bus more often
- 3 Started carpooling or vanpooling
- 4 Carpooled or vanpooled more often
- 5 Started walking or bicycling
- 6 Bicycled or walked more often
- 9 No – did not make any of these changes

**IF QP-35 = 1, 3, OR 5, ASK QP-35a, OTHERWISE, SKIP TO QP-40**

P-35a How did you typically travel to [work, school] before you made this change? (Please check only one)

- 1 Didn't [work, go to school] then
- 2 Drove alone all or most days
- 3 Rode a train or bus all or most days
- 4 Carpooled or vanpooled all or most days
- 5 Walked or bicycled all or most days
- 6 Teleworked all or most days
- 7 Other \_\_\_\_\_

P-35c If carsharing had not been available to you, how likely would you have been to make this change in how you traveled to [work, school]?

- 1 Very likely
- 2 Somewhat likely
- 3 Neither likely nor unlikely
- 4 Somewhat unlikely
- 5 Very unlikely
- 9 Don't know, prefer not to answer

Before / After Travel Patterns

P-40 About how many miles do you drive annually now, for all trip purposes? (Please include miles you drive in the Washington metropolitan area in carshare vehicles and in vehicles you own, rent, or borrow)

\_\_\_\_\_  
999 Don't know

P-41 Before you joined carsharing, about how many miles did you drive annually? Please include miles you drove in the Washington metropolitan area in carshare vehicles and in vehicles you owned, rented, or borrowed

\_\_\_\_\_  
999 Don't know

P-41a During the time you were a carshare member, about how many miles did you drive annually? (Please include miles you drove in the Washington metropolitan area in carshare vehicles and in vehicles you owned, rented, or borrowed)

\_\_\_\_\_  
999 Don't know

P-42 In a typical week, about how many trips do you make now by each of the following types of transportation?

<u>Type of transportation</u>	<u>Number of weekly trips</u>
1 Driving alone in a personal or rented/borrowed vehicle	_____
2 Driving or riding with someone in personal or rented/borrowed vehicle	_____
3 Riding a bus or train	_____
4 Taxi	_____

P-43 Before you joined carsharing, about how many trips did you make in a typical week by each of the following types of transportation?

<u>Type of transportation</u>	<u>Number of weekly trips</u>
1 Driving alone in a personal or rented/borrowed vehicle	_____
2 Driving or riding with someone in personal or rented/borrowed vehicle	_____
3 Riding a bus or train	_____
4 Taxi	_____

P-43a During the time you were a carshare member, about how many trips did you make in a typical week by each of the following types of transportation?

<u>Type of transportation</u>	<u>Number of weekly trips</u>
1 Driving alone in a personal or rented/borrowed vehicle	_____
2 Driving or riding with someone in personal or rented/borrowed vehicle	_____
3 Riding a bus or train	_____
4 Taxi	_____

P-44 Not counting trips you make solely for exercise or recreation, or to get to a bus or train stop, about how many trips do you make in a typical week by bicycle or walking?

\_\_\_\_\_ number of trips  
999 Don't know

P-45 Before you joined carsharing, about how many bicycle or walking trips did you make in a typical week, other than trips solely for exercise or recreation or to get to a bus or train stop?

\_\_\_\_\_ number of trips  
999 Don't know

P-45a During the time you were a carshare member, about how many bicycle or walking trips did you make in a typical week other than trips solely for exercise or recreation or to get to a bus or train stop?

\_\_\_\_\_ number of trips  
999 Don't know

P-47a Since you ended your carsharing membership, did you make any of the following changes? Check all that apply. (**ACCEPT MULTIPLES FOR 1-12**)

ROTATE 1-12

- 1 Bought a car
- 2 Moved to a different neighborhood
- 3 Drive in your personal auto/vehicle more
- 4 Ride more often as a passenger in a personal auto/vehicle
- 5 Use bus or train more often
- 6 Bicycle or walk more often
- 7 Use a taxi more often
- 8 Rent a car more often
- 9 Make fewer trips
- 10 Travel to different destinations
- 11 Travel at different times of day
- 12 Use a company vehicle or fleet car more often
- 19 Don't know

Impact on Vehicle Ownership / Residential Choice

P-50 How many cars, trucks, vans, or other personal vehicles do you or other members of your household own or lease now for household use?

\_\_\_\_\_

99 Don't know, prefer not to answer

P-51 How many cars, trucks, vans, or other personal vehicles did you or other members of your household own or lease before you joined carsharing?

\_\_\_\_\_

99 Don't know, prefer not to answer

P-51a How many cars, trucks, vans, or other personal vehicles did you or other members of your household own or lease while you were a carshare member? If you added or eliminated a household vehicle while you were a carshare member, please indicate the largest number of vehicles that were in the household.

\_\_\_\_\_

99 Don't know, prefer not to answer

Check change in vehicle ownership

**IF QP-51a = 99 OR QP-51 = 99, SKIP TO QP-53**

**IF QP-51a >= QP-51, SKIP TO QP-53**

P-52 You said you reduced the number of household vehicles while you were a carshare member. What factors influenced your decision to make this change? (**ALLOW MULTIPLES FOR 1-7**)

1 Save money, spend less on transportation (Ask how much? I'd like a dollar amount to quantify this.)

2 Carshare vehicles were available

3 Moved to a new neighborhood

4 Couldn't afford to own, maintain, garage a car

5 Eliminate the hassle of owning a car

6 Concerned about the environment

7 Other \_\_\_\_\_

19 Don't know, prefer not to answer

P-52a If carsharing had not been available, how likely would you have been to reduce the number of household vehicles?

1 Very likely

2 Somewhat likely

3 Neither likely nor unlikely

4 Somewhat unlikely

5 Very unlikely

9 Don't know, prefer not to answer

P-53 After you joined carsharing, did you buy or consider buying a car, truck, van, or other personal vehicle?

1 Yes, bought a car, truck, van, or other vehicle (**SKIP TO QP-54**)

2 Considered buying but did not buy a vehicle

3 No, did not consider buying or buy a vehicle (**SKIP TO QP-54**)

9 Don't know, prefer not to answer (**SKIP TO QP-54**)

P-53a If carsharing had not been available, how likely would you have been to buy a vehicle?

1 Very likely

2 Somewhat likely

3 Neither likely nor unlikely

4 Somewhat unlikely

5 Very unlikely

9 Don't know, prefer not to answer



P-54 Since you first learned about carsharing, have you moved your residence or changed your work location?

- 1 Yes, moved my residence
- 2 Yes changed work location
- 3 Yes, moved my residence and changed my work location
- 4 No, did not make either of these changes (**SKIP TO QP-60**)
- 9 Don't know, prefer not to answer (**SKIP TO QP-60**)

P-54a What factors were important in your decision to make this location change?

OPEN-ENDED \_\_\_\_\_

P-55 Was carsharing available in your old home and/or work location?

- 1 Yes, available at home
- 2 Yes, available at work
- 3 Yes, available at both home and work
- 4 No, not available at either home or work
- 9 Don't know

P-55a Was carsharing available in the new home or work location?

- 1 Yes, available at home
- 2 Yes, available at work
- 3 Yes, available at both home and work
- 4 No, not available at the new location(s) (**SKIP TO QP-60**)
- 9 Don't know (**SKIP TO QP-60**)

P-56a If carsharing had not been available in the new location, how likely would you have been to make this home or work location change?

- 1 Very likely
- 2 Somewhat likely
- 3 Neither likely nor unlikely
- 4 Somewhat unlikely
- 5 Very unlikely
- 9 Don't know, prefer not to answer

#### General Carshare Satisfaction

P-60 Overall, how satisfied were you with your carshare experience? Please rate the service on a scale of 1 to 5, where 1 is not at all satisfied and 5 is very satisfied?

- 1 1 (not at all satisfied)
- 2 2
- 3 3 (**SKIP TO QP-62**)
- 4 4 (**SKIP TO QP-62**)
- 5 5 (very satisfied) (**SKIP TO QP-62**)
- 9 Don't know, prefer not to answer (**SKIP TO QP-62**)

P-61 Why were you not satisfied with the service? \_\_\_\_\_

P-62 Please rate the carshare service on each of the following features, using a scale of 1 to 5, where 1 means “very poor” and 5 means “very good.”

**ROTATE RESPONSES**

Feature	1 – Very poor	2	3	4	5 – Very good	DK
1 Ease of making carshare reservations						
2 Cost of carshare rental						
3 Range of vehicle options						
4 Safety of carshare pick-up locations						
5 Availability of vehicles when needed						
6 Number of vehicle pick-up location						

P-62b Carshare vehicles can be parked in various types of parking locations. Using a scale of 1 to 5, where 1 means “not at all safe” and 5 means “very safe”, please rate how safe you would feel in picking up and returning cars at each of the following types of locations.

Feature	1 – Not at all safe	2	3	4	5 – Very safe	DK
1 Space on a public street						
2 Space in open lot						
3 Space in parking garage						
4 Private off-street parking space						

P-62c Did availability of carshare vehicles in highly trafficked and visible on-street locations influence your decision to become a carshare member?

- 1 Greatly influenced my decision to join
- 2 Somewhat influenced my decision to join
- 3 Did not influence my decision to join
- 9 Don't know

**IF QP-15b = 1 OR QP-16b = 1 OR QP-17b = 1 (use cars parked on-street), ASK QP-63, OTHERWISE, SKIP TO QP-66**

P-63 You indicated earlier that you used carshare vehicles that were parked in public, on-street parking spaces. How often did you encounter any of the following situations?

Situation	Never	1-2 times	3 or more times	DK
1 Space was occupied by a non-carshare vehicle when I arrived to pick up the carshare vehicle				
2 Previous carshare user had not returned the vehicle				
3 Vehicle had been parked in a location other than its assigned space				
4 Space was occupied by a non-carshare vehicle when I was returning the car				
5 Carshare vehicle was blocked by a double-parked vehicle				

P-66 You said you are not currently a carshare member. Why did you end your membership?

- 1 Bought a personal vehicle
- 2 Moved to a neighborhood where carsharing is not available
- 3 Changed jobs and carsharing not available now
- 4 Did not use vehicle enough to justify cost
- 5 Carsharing membership fee too high
- 6 Carsharing user (hourly or daily) fees too high
- 7 Dissatisfaction with carshare program
- 8 Other \_\_\_\_\_
- 9 Don't know

P-67 How likely are you to recommend carsharing to others?

- 1 Very likely
- 2 Somewhat likely
- 3 Neither likely nor unlikely
- 4 Somewhat unlikely
- 5 Very unlikely
- 9 Don't know, prefer not to answer

Demographics

70 In what year were you born?

19 \_\_\_\_

71 How many people live in your home? Please count yourself, family and friends, and anyone who may be unrelated to you such as live-in housekeepers or boarders.

\_\_\_\_\_ persons

99 Prefer not to answer (SKIP TO Q72)

71a How many of these household members are licensed to drive?

\_\_\_\_\_ household members

99 Prefer not to answer

72 What is your zip code at home? \_\_\_\_\_

**IF Q30 = 2 OR 9 OR QP-30 = 2 OR 9, SKIP TO Q74**

73 What is your zip code at work? \_\_\_\_\_

74 How far from your home is the nearest bus stop or train / subway station?

- 1 Less than ½ mile
- 2 Between ½ mile and 1 mile
- 3 More than 1 mile but less than 2 miles
- 4 2 or more miles
- 9 Don't know

75 Do you consider yourself to be Latino, Hispanic, or Spanish?

- 1 Yes
- 2 No
- 9 Prefer not to answer

75a Which of the following best describes your racial background. Please select only one response

- 1 White
- 2 Black or African-American
- 3 American Indian or Alaska Native
- 4 Asian
- 5 Native Hawaiian or Other Pacific Islander
- 6 Other (SPECIFY) \_\_\_\_\_
- 9 Prefer not to answer

76 Which category best represents your household's total annual income

- 1 Less than \$20,000
- 2 \$20,000 - \$29,999
- 3 \$30,000 - \$39,999
- 4 \$40,000 - \$49,999
- 5 \$50,000 - \$59,999
- 6 \$60,000 - \$79,999
- 7 \$80,000 - \$99,999
- 8 \$100,000 - \$119,999
- 9 \$120,000 - \$139,999
- 10 \$140,000 - \$159,999
- 11 \$160,000 or more
- 99 Prefer not to answer

77 Are you female or male?

- 1 Female
- 2 Male
- 9 Prefer not to answer

**Open-Ended Comment Box**

Is there anything else you'd like to comment on, related to your experience with carsharing or any program improvements you'd like to suggest? If so, please describe it here.

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**Thank you** for taking the time to fill out the survey. Your input is very important!

Drawing for \$25 driving credit

Zipcar will award \$25 in driving credit to 5 randomly-chosen survey respondents. If you would like to enter this drawing, please provide your name and phone number or email address below.

This contact information will be used only for this survey. We will not provide your contact information to any other organization for any purpose.

Name \_\_\_\_\_

Email or Phone number \_\_\_\_\_