2016 Capital Bikeshare Member Survey Report

Prepared by:
LDA Consulting
Washington, DC 20015
(202) 548-0205

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EXECUTIVE SUMMARY

Overview

This report presents the results of the November 2016 Capital Bikeshare Customer Use and Satisfaction Survey conducted for the Capital Bikeshare service (Capital Bikeshare), a service jointly owned and sponsored by the District of Columbia, Arlington County, VA, the City of Alexandria, VA, Montgomery County, MD, and Fairfax County, VA. The service, which is operated by Motivate International, Inc., offers short-term use of more than 3,500 bicycles to registered members and day-pass users at over 400 stations in the District of Columbia, Arlington County (VA), the City of Alexandria (VA), Fairfax County (VA), and Montgomery County (MD).

Users register for an annual or 30-day membership and receive a Capital Bikeshare key that allows them to unlock a bike at any station. Users can return the bike to the same station or to any other station in the network, facilitating both return and one-way trips.

Capital Bikeshare's management was interested in examining users' experience with the service and bikeshare's impact on users' travel patterns. The survey was conducted for the following primary purposes; to explore:

- Demographic characteristics of Capital Bikeshare users
- Characteristics of Capital Bikeshare trips
- Travel changes made in response to Capital Bikeshare availability
- Users' satisfaction with Capital Bikeshare features

In October 2016 Capital Bikeshare opened the survey for members to complete. Capital Bikeshare staff announced the survey through the monthly newsletter and sent an email to the approximately 31,700 current annual/30-day members and 35,100 former members. The email informed them of the online survey and provided the link to the survey website. To increase the response rate, Capital Bikeshare sent a reminder email to all members. During the approximately one-month period that the survey website was active, 5,564 current and 544 former members completed the survey. An additional 287 current members completed a sufficient portion of the survey that their partial surveys were retained. These interviews represented response rates of 18% for current members and 2% for former members.

Key Conclusions

Several overall conclusions, generally related to the personal travel benefits and travel impacts of bikesharing rise to the top of importance.

- **Capital Bikeshare (CB) members benefit through easier, faster access to destinations and access to a wider range of destinations** – Nine in ten respondents said they joined Capital Bikeshare to get around more easily and quickly. And when asked about the primary reason for using bikeshare for the most recent trip, 56% of respondent chose bikeshare because it was a faster or easier way to reach their destination. About two in ten named an issue related to travel to the particular destination; 8% chose bikeshare because it was too far to walk to the destination, 5% said parking was limited or expensive at that destination, and 4% said public transportation was either not available or inconvenient to that destination at that time of day. For these respondents, bikeshare expanded their destination options.
- **Capital Bikeshare makes travel fun and more flexible** – More than half of bikeshare members said they were motivated to join Capital Bikeshare to have access to a one-way travel option (57%) or to have access to another form of transportation (54%). And 69% joined simply because biking is a fun way to travel. The opportunity to make one-way trips by bikeshare was particularly valuable to many members, who had a wealth of travel options – bikeshare, transit, taxi, walking, carshare – that they could choose "in the moment," increasing their travel flexibility.

- **The "transit access" role that bikeshare offers expands travel range even further** – Seven in ten (71%) respondents used Capital Bikeshare at least occasionally to access a bus, Metrorail, or commuter rail; 18% used bikeshare six or more times per month for this purpose.
- **Bikeshare serves both work-related and personal travel needs** – Two-thirds (65%) of respondents said commuting to work was a primary bikeshare purpose. Bikeshare use also was common for non-work travel; 55% of respondents reported that social/entertainment was a primary bikeshare trip purpose and about four in ten used bikeshare for personal appointments (42%) and shopping/errands (40%). One-third (33%) used bikeshare to go to a restaurant/out for a meal.
- **Bikeshare allows members to get around without the cost and hassle of car ownership and driving** – More than four in ten (44%) Capital Bikeshare members didn't have access to a car or other personal vehicle. And 20% of respondents said they reduced their driving miles since joining Capital Bikeshare. These respondents each reduced an average of 1,565 annual driving miles, equating to about 9.9 million fewer driving miles by the 31,700 bikeshare members (in November 2016).

- **Bikeshare members shift some trips to bicycle from other travel modes** – Eighty-two percent of respondents increased their use of bicycling since joining Capital Bikeshare and 49% said they ride a bike much more often. By comparison, respondents reduced use of all other transportation modes; 54% drove a personal motor vehicle less often, 65% used a taxi less often, and 60% reduced their use of Uber/Lyft ride-hailing services. Nearly six in ten (58%) rode Metrorail less often, 55% rode a bus less often, and 35% decreased their use of walking, suggesting some shifts from each of these modes to biking.
- **Bikeshare members who used Capital Bikeshare frequently reported the greatest reduction in use of non-bicycle modes** – For example, 73% of respondents who made 11 or more CB trips in the past month reduced their use of Metrorail, compared with 46% of respondents who made between one and five CB trips in the past month, a net additional reduction of 27 percentage points for frequent riders. The results were similar for other non-bike mode groups.
- **Capital Bikeshare members save on personal travel cost** – Respondents reported saving an average of $631 per year ($12.13 per week) on personal transportation costs as a result of their bikeshare use. Across the estimated 31,700 bikeshare members in November 2016, the collective annual saving was nearly $20 million.
- **Respondents give high marks to most bikeshare features** – At least half of all respondents gave ratings of 4 or 5 (Excellent) to each of 15 bikeshare features. At least eight in ten respondents gave high ratings for online registration, key activation, Spotcycle app, and the online station map. They also rated several station and bike features highly; 85% gave a 4 or 5 rating for condition of stations and appearance of bikes. Respondents were less satisfied with nighttime lighting at stations, availability of bikes at docks, and availability of open docks when the respondent was returning a bike; about half of respondents rated these features as a 4 or 5.

- **Nine in ten CB members would increase their bikeshare use if bikeshare service was expanded and/or other service enhancements were made** – Fifty-five percent of respondents said they would ride more often if more docks/bikes were added to existing stations, indicating unmet demand for rides even within the current service area. Almost four in ten (39%) respondents would use bikeshare more if new stations were installed in residential neighborhoods, perhaps indicating a desire for greater access to bikeshare for short trips within a home neighborhood. Respondents also expressed significant interest in several non-expansion service enhancements. Nearly four in ten (38%) said they would use bikeshare more often if they could lock a bike near the stations when the station dock was full.

Bikeshare Users Demographic and Membership Characteristics

Bikeshare users did not mirror the adult population of the Washington metropolitan region – More than nine in ten survey respondents were employed, while the U.S. Census reports that only about seven in ten adults in the Washington region are employed. But bikeshare survey respondents also differed from the general employed population. Compared with all commuters in the region, they were, on average, considerably younger, more likely to be male, Caucasian, and slightly less affluent.

Bikeshare visibility and referrals were important marketing tools for Capital Bikeshare – Respondents were most likely to have learned about Capital Bikeshare by seeing a bikeshare station or bike (47%) or through a referral from a friend or family member (25%). These two sources have become more important as the service has matured; 51% of members who joined CB in 2015 or 2016 mentioned seeing a station or bike, compared with only 20% who joined in 2010. Referrals also have grown, with 28% of 2015-2016 new members mentioning this source, compared with 9% of members who joined in 2010.

The primary motivations for joining Capital Bikeshare were for greater ease of travel, enjoyment of biking, and one-way travel flexibility – Eighty-nine percent of respondents said they were motivated by the ability to get around more easily or more quickly. Seven in ten (69%) joined Capital Bikeshare because they liked to bike. And more than half said they joined to have a new or one-way travel option (57%) or access to another form of transportation (54%). More than half cited a desire for exercise (56%) or a desire to save money on transportation (53%).

Half of the current bikeshare members have been participating in the service for two or more years – Half (50%) of the respondents surveyed said they joined Capital Bikeshare before 2015 and nearly one-quarter joined before 2013.

Bikeshare Use Characteristics

Capital Bikeshare use was distributed evenly across frequency categories, showing demand for the service at many use levels – About 21% of respondents had made fewer than three bikeshare trips in the month before the survey, 21% made between three and five trips, and 19% made between six and ten trips. Four in ten members were frequent users, making 11 or more trips in the past month. Respondents made an average of 14 trips in the past month, about the same as the 13 trips per month average frequency noted in the 2014 bikeshare survey.

Nearly all members said they used bikeshare for personal/non-commute trips – Ninety-three percent of respondents said their top three bikeshare uses included non-commute trips and one-third of members used bikeshare solely for non-commute purposes. Top trip purposes included social/entertainment trips (55%), personal appointments (42%), shopping/errands (40%), and restaurants/meals (33%). Two in ten respondents said exercise/recreation trips were a top bikeshare trip purpose.

A large share of members used bikeshare for their trip to work – Commuting was an important bikeshare purpose also; 65% of respondents said commuting to or from work was a top bikeshare trip purpose. One in twenty members used bikeshare to get to or from school. Seven percent of respondents used bikeshare only for getting to or from work or school

Capital Bikeshare also served as a feeder service to reach transit stops – Seven in ten (71%) respondents said they used Capital Bikeshare at least "occasionally" to access a bus stop, a Metrorail station, or a commuter rail station. Nearly two in ten (18%) used bikeshare for this purpose at least six times per month. Frequent bikeshare users reported more frequent use of bikeshare to access transit. Three-quarters (76%) of respondents who made six or more bikeshare trips in the past month used bikeshare to access transit, compared with 64% of respondents who used bikeshare one to five times in the past month.

Bikeshare was the choice for most recent trips because it was the fastest and easier way to travel – Fifty-six percent of respondents chose bikeshare for the recent trip because it was a fastest or easiest way to reach their destination. Fifteen percent chose bikeshare to get exercise. About one in ten respondents said bikeshare was cheaper than other travel options (7%) or that the destination was too far way to walk (8%). One in ten respondents used bikeshare because the destination was difficult or inconvenient to reach by other types of transportation.

One-third (35%) of respondents would have ridden a bus or train if Capital Bikeshare had not been available for the most recent trip – Four in ten (39%) would have walked to their destination. Only 5% of respondents would have driven or ridden in a personal vehicle, but since 44% of respondents did not have a personal vehicle regularly available, this would not be an easy option for many. Fourteen percent would have used Uber/Lyft and 2% would have used a taxi. Three percent would have ridden a personal bike.

Nearly all respondents walked to where they picked up the bike for their most recent trip – Eighty-nine percent of respondents said they walked to the bikeshare station. About one in ten (9%) rode a bus or train. Two percent reached the bikeshare station by the Uber or Lyft ride-hailing service.

Use of Capital Bikeshare to "Induce" Trips

In the past month, 44% of respondents used bikeshare to make at least one trip they would not have made ("induced" trips) if bikeshare had not been available – Frequent bikeshare users were more likely to reported making induced trips. Frequent users also made a higher number of induced trips, but the induced trips represented a smaller proportion of their overall bikeshare trips. Among members who made at least 11 bikeshare trips in the past month, induced trips represented about one in ten of their total trips. Among members who made fewer than six bikeshare trips, induced trips accounted for one-quarter of their trips.

Capital Bikeshare access made establishments more attractive to Bikeshare members – More than eight in ten respondents said they were either much more likely (32%) or somewhat more likely (48%) to patronize an establishment that was accessible by Capital Bikeshare.

Respondents who gave high ratings for the value of bikeshare access made induced trips at a much higher rate than did those who gave lower ratings – Two-thirds (63%) of respondents who said they were much more likely to patronize a Capital Bikeshare-accessible establishment made an induced trip in the past month, compared with 41% who said they were somewhat more likely, and only 26% of those who said they were not more likely to patronize the establishment. This suggests the decision to make some, and perhaps many, induced trips was motivated by the establishments' accessibility.

Change in Mode Use Since Joining Capital Bikeshare

Bikeshare members substantially increased their bicycle use since they joined Capital Bikeshare – More than eight in ten respondents said they bicycled more often since joining; 33% said they bicycled "somewhat more often" and 49% bicycled "much more often." About one-third of respondents said they had increased their bikeshare use due to the WMATA SafeTrack track maintenance program, which reduced Metrorail hours of service and added travel time to Metrorail trips.

Bikeshare members substantially reduced their car. ride-hailing, and taxi use since they joined Capital Bikeshare – More than half (55%) of all survey respondents drove a car less often. Two-thirds (65%) said they used a taxi less often and 60% reduced use of ride-hailing services such as Uber/Lyft (60%) since they joined Capital Bikeshare. Bikeshare members also substantially reduced their use of public transit; 58% rode Metrorail less often and 55% rode a bus less often. One-third (35%) of respondents decreased their walking trips.

Bikeshare members who used Capital Bikeshare frequently reported the greatest reduction in use of non-bicycle modes – For example, 73% of respondents who made 20 or more bikeshare trips in the past month said they reduced their use of Metrorail, compared with 46% of respondents who made fewer than six CB trips, a net additional reduction of 27 percentage points. The results were similar for other non-bike mode groups; the share of respondents who reduced use of a non-biking mode since they joined Capital Bikeshare increased steadily as their bikeshare use increased. The change was most pronounced for Metrorail and bus (net differences of 27 points and 30 points, respectively). The differences were less dramatic for use of walking (17 points), driving a car (16 points), taxi (16 points), and Uber/Lyft (14 points), suggesting that bikeshare was substituted less often for these modes.

Two in ten respondents reduced their annual driving miles – Respondent also were asked approximately how many miles they drove per year in the Washington region at the time of the survey and how many miles they drove in the year before they joined Capital Bikeshare. Twenty percent reduced their driving miles; 9% reduced driving by more than 1,000 miles.

Capital Bikeshare members reduced 9.9 million driving miles annually – On average, survey respondents who reported both a current and pre-Capital Bikeshare mileage drove about 3,995 miles per year before joining Capital Bikeshare and 2,430 miles per year at the time of the survey, for a reduction of about 1,565 miles annually. When these survey results were applied to the estimated 31,700 bikeshare member population in November 2016, the month in which the survey was conducted, the results were as follows:

- Number of Capital Bikeshare members (November 2016) 31,667
- Percentage of respondents who reduced driving miles 20%
- Estimated annual VMT reduced per member 1,565
- Estimated total annual VMT reduced **9,912,000** **annual miles (rounded)**

On average, each Capital Bikeshare member saved $631 per year on personal travel cost – More than three-quarters (77%) of respondents said they saved money on weekly travel costs by using Capital Bikeshare. About six in ten said they saved between $1 and $20 per week, 13% saved between $21 and $40, and 4% saved more than $40. Across all respondents, the average weekly saving would be $12.13, or about $631 annually. Collectively, the estimated 31,700 Capital Bikeshare members in November 2016 were saving nearly $20 million per year:

- Number of bikeshare members (November 2014) 31,667
- Estimated annual cost saving per member $631
- Estimated total annual cost saving **$19,982,000** **annually (rounded)**

Bikeshare Members' Commute Travel Patterns

Bikeshare members traveled an average of 6.4 miles to work one-way, well under the average 17.3 miles distance of commuters region-wide – Two in ten bikeshare respondents traveled fewer than two miles to work and 59% traveled fewer than five miles. By contrast, only 17% of all regional commuters traveled fewer than five miles.

Capital Bikeshare members drove alone to work much less than did commuters region-wide – The overwhelming majority of employed respondents used a non-drive-alone mode of travel to get to work: 40% of Capital Bikeshare members primarily used public transit to get to work, 29% primarily biked to work, and 13% commuted by walking. Only 13% primarily drove alone to work. Bike commute use was particularly high for members who lived close to work; 31% of bikeshare members who traveled less than two miles to work bicycled to work and 44% of members who commuted between 2.0 and 4.9 miles used primarily commuted by bicycle.

Satisfaction with Capital Bikeshare

Respondents gave generally high marks to bikeshare features – At least half of respondent gave ratings of 4 or 5 (Excellent) to each of the 15 features presented in the survey. They gave particularly high ratings for registration and customer support features. Each of the five features in this category was rated as a 4 or 5 by at least three-quarters of respondents. And nearly nine in ten gave high ratings for online registration (89%) and key activation (88%).

About eight in ten respondents also rated the condition of stations (85%) and appearance of bicycles (81%) highly. Respondents were less satisfied with other station and bike features. About half of respondents gave high ratings to nighttime lighting at stations (51%), availability of bikes at docks (51%), and availability of open docks when the respondent was returning a bike (49%).

Some groups of respondents gave higher ratings for service features – Respondents who joined early in the service (2010-2012) generally gave higher ratings for service features. Older respondents (45 year or older) and white respondents also gave higher ratings for some features. District of Columbia members and frequent bikeshare users gave lower ratings for several features, in particular the availability of bikes at docks and open docks to return bikes.

Nine in ten CB members would increase their bikeshare use if bikeshare service was expanded and/or other service enhancements were made – Fifty-five percent of respondents said they would ride more often if more docks/bikes were added to existing stations, indicating unmet demand for rides even within the current service area. About four in ten (39%) respondents would use bikeshare more if new stations were installed in residential neighborhoods, perhaps indicating a desire for greater access to bikeshare for short trips within a home neighborhood. Respondents also expressed significant interest in several non-expansion service enhancements. Nearly four in ten (38%) said they would use bikeshare more often if they could lock a bike near the stations when the station dock was full.

Both frequent and infrequent riders cited service improvements that would increase their bikeshare use –Frequent riders were much more likely to be motivated by more docks/bikes at existing stations; 73% of respondents who made 30 or more trips in the past month and two-thirds who made between 11 and 29 trips said this would motivate them to make more bikeshare trips. Infrequent riders expressed greater interest in two non-expansion changes. More than one-quarter (27%) of respondents who made fewer than six trips in the past month said they would be motivated by a longer free-use period. And one-quarter of members who rode between one and five times in the past month would be motivated by combining the SmarTrip card with their bikeshare key.

TABLE OF CONTENTS

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SECTION 1 INTRODUCTION

Overview and Survey Objectives

This report presents the results of the November 2016 Capital Bikeshare Customer Use and Satisfaction Survey conducted for the Capital Bikeshare service (Capital Bikeshare), a service jointly owned and sponsored by the District of Columbia, Arlington County, VA, the City of Alexandria, VA, Montgomery County, MD, and Fairfax County, VA. The service, which is operated by Motivate International, Inc., offers short-term use of more than 3,500 bicycles to registered members and day-pass users at over 400 stations in the District of Columbia, Arlington County (VA), the City of Alexandria (VA), Fairfax County (VA), and Montgomery County (MD).

Users register for an annual or 30-day membership and receive a bikeshare key that allows them to unlock a bike at any station. Use of a bike is free for the first 30 minutes of any trip. Trips lasting longer than 30 minutes incur trip fees that increase as the length of the trip increases. This pricing system encourages the use of bikes for short trips. Users can return the bike to the same station or to any other station in the network, facilitating both return and one-way trips.

Several governmental and community organizations in the Washington Metropolitan region, including the District of Columbia Department of Transportation, Arlington County Commuter Services and BikeArlington, goDCgo, GoAlex (City of Alexandria), Fairfax County Bike Program, the Virginia Department of Rail and Public Transportation, and the Federal Highways Administration, sponsor or support Capital Bikeshare. These entities were interested in learning more of bikeshare users' experience with the service and exploring Capital Bikeshare's impact on users' travel patterns. The survey was conducted for the following primary purposes, to examine:

- Demographic characteristics of Capital Bikeshare users
- Characteristics of Capital Bikeshare trips
- Travel changes made in response to Capital Bikeshare availability
- Users' satisfaction with Capital Bikeshare features

Survey Methodology Summary

Sample Selection

In October 2016 Capital Bikeshare opened the survey for members to complete. Capital Bikeshare staff announced the survey through the monthly newsletter and sent an email to the approximately 31,700 current annual/30-day members and 35,100 former members. The email informed them of the online survey and provided the link to the survey website. To increase the response rate, Capital Bikeshare sent a reminder email to all members. During the approximately one-month period that the survey website was active, 5,564 current and 544 former members completed the survey. An additional 287 current members completed a sufficient portion of the survey that their partial surveys were retained. The completed interviews represented a response rate of 18% for current members and 2% for former members.

Questionnaire Development

The survey questionnaire was developed jointly by Capital Bikeshare staff and the consultant. A copy of the final questionnaire is presented in Appendix A. The questionnaire, which was designed for online self-administration, collected data on the following major topics:

- Capital Bikeshare participation background and motivation for registering
- Capital Bikeshare use patterns
- Information about respondents' most recent Capital Bikeshare trip
- Trips made by Capital Bikeshare that would not have been made without the service
- Changes in use of bike and other types of transportation since joining Capital Bikeshare

- Changes in driving miles since joining Capital Bikeshare
- Work travel patterns
- Ratings for quality of Capital Bikeshare features
- Suggestions for Capital Bikeshare expansion and other improvements
- Demographics

Survey Analysis

Section 2 presents key results of the survey. The findings present the percentages of respondents who gave each response. Figures and tables also show the base for the percentages, the number of respondents who actually answered the question, presented as (n = [*number of respondents*]).

The total number of completed survey interviews was substantial enough that it was possible to examine results for various sub-groups of the total respondent population. Several respondent characteristics, including age, sex, home location, year in which the respondent joined Capital Bikeshare, frequency of Capital Bikeshare use, and other characteristics, were found to be important in this analysis.

When comparable data were available, results also are presented from the State of the Commute survey conducted by the Commuter Connections program of the Metropolitan Washington Council of Governments in 2016 (2016 SOC). Although the SOC survey interviewed only employed residents of the Washington metropolitan region, it provides a reasonable dataset for demographic comparisons because 95% of the Capital Bikeshare survey respondents said they were employed.

SECTION 2 SURVEY RESULTS

This section presents an overview of the survey findings. The survey collected data in several primary topic areas. Results for these topics are presented below:

- Demographic characteristics
- Capital Bikeshare participation background and motivation for registering
- Capital Bikeshare use patterns
- Information about respondents' most recent Capital Bikeshare trip
- Trips made by Capital Bikeshare that would not have been made without the service
- Changes in use of bike and other types of transportation since joining Capital Bikeshare
- Changes in driving miles since joining Capital Bikeshare
- Work travel patterns
- Ratings for quality of Capital Bikeshare features
- Suggestions for Capital Bikeshare expansion and other improvements

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 the Metropolitan Washington Council of Government's Commuter Connection program in 2016 (2016 SOC).

In general, bikeshare users did not mirror the adult population of the Washington metropolitan region. More than nine in ten bikeshare survey respondents were employed, while the U.S. Census reports that only about seven in ten Washington metropolitan region adults are employed. But bikeshare survey respondents also differed from the general employed population. Compared with all commuters in the region, bikeshare members were, on average:

- Younger
- Slightly more likely to be male
- Much more likely to be Caucausian
- 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

Employment

Nearly all (95%) respondents said they were employed; 90% were employed full-time and 5% were employed part-time. The remaining 5% said they were not currently employed.

Home and Work Locations

Table 1 presents the distributions of Capital Bikeshare survey respondents by their home and work jurisdictions. In the November 2016 survey, more than two-thirds (68%) of respondents said they lived in the District of Columbia. Arlington County, VA and Montgomery County, MD each was home to about 11% of respondents. Smaller percentages of respondents said they lived in Fairfax County, VA; Prince George's County, MD; or the City of Alexandria, VA.

The distribution of respondents by work jurisdictions was similar to the home distribution; the majority (74%) of respondents worked in the District of Columbia, 10% worked in Arlington County, and 7% worked in Montgomery County.

Table 1
Home and Work Locations
2011, 2012, 2014, and 2016 Capital Bikeshare Surveys

State/County	2011 Survey	2012 Survey	2014 Survey	2016 Survey
Home Location	(n = 5,159)	(n = 5,367)	(n = 3,600)	(n = 5,498)
District of Columbia	83%	78%	75%	**68%**
Arlington County (VA)	7%	11%	10%	**11%**
Montgomery County (MD)	3%	4%	6%	**11%**
City of Alexandria (VA)	1%	2%	3%	**4%**
Fairfax County (VA)	2%	2%	3%	**3%**
Prince George's County (MD)	1%	1%	1%	**1%**
Other *	3%	2%	2%	**2%**
Work Location	(n = 4,931)	(n = 4,821)	(n = 3,395)	(n = 5,394)
District of Columbia	80%	77%	76%	**74%**
Arlington County (VA)	6%	10%	10%	**10%**
Montgomery County (MD)	7%	5%	6%	**7%**
City of Alexandria (VA)	2%	2%	2%	**3%**
Fairfax County (VA)	3%	3%	3%	**3%**
Prince George's County (MD)	<1%	2%	2%	**1%**
Other *	1%	1%	1%	**2%**

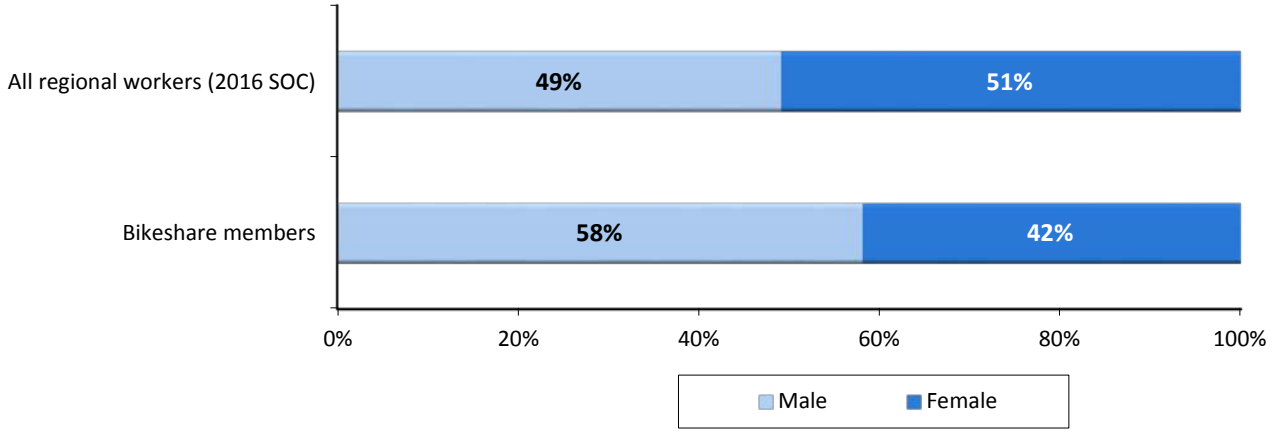
* Each response in the "Other" category was mentioned by less than one percent of respondents.

Table 1 also shows the distributions of home and work locations for the three previous Capital Bikeshare surveys, conducted in 2011, 2012, and 2014. The share of respondents who lived in the District of Columbia dropped between 2011 and 2016, reflecting the growth in bikeshare stations in jurisdictions outside the District. The drop in the District generally was distributed among the other jurisdictions; only Montgomery County, MD reported a statistically significant increase in home location. The share of respondents who worked in the District also fell between 2011 and 2016, but it was a smaller drop than was noted for home jurisdiction.

Sex

Nearly six in ten (58%) bikeshare survey respondents were male; 42% were female (Figure 1). Among the 2016 SOC survey respondents, males and females were approximately equally represented.

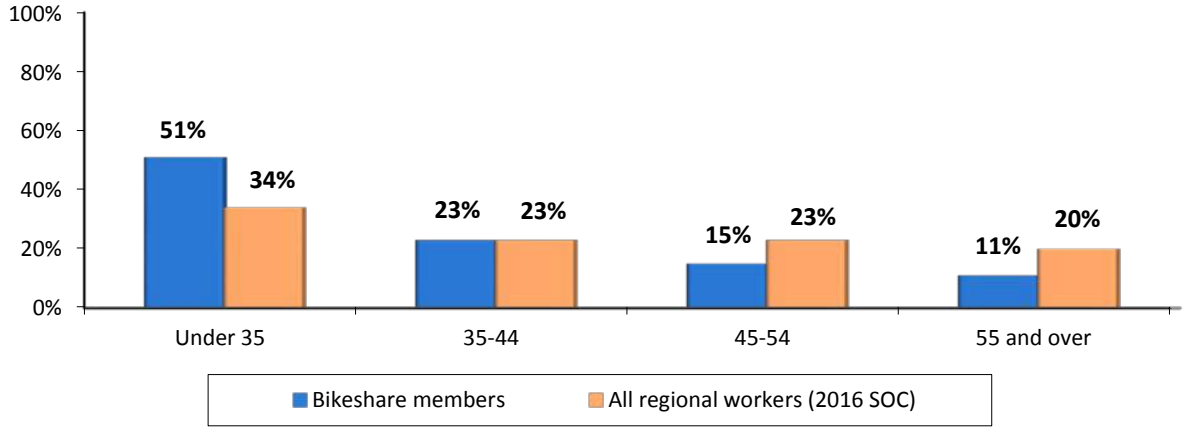
Figure 1
Respondent Sex Distribution – Bikeshare Members and All Regional Employees
(Bikeshare n = 5,451, 2016 SOC n = 5,682)



Age

Capital Bikeshare survey respondents were younger than were all regional employees, as measured through the 2016 SOC survey (Figure 2). Half (51%) of bikeshare survey respondents were under 35 years old. By comparison, only one-third (34%) of the regional employee population were under 35 years of age.

Figure 2
Respondent Age Distribution – Bikeshare Members and All Regional Employees
(2016 Bikeshare n = 5,440, 2016 SOC n = 5,682)



Age by Home Location – But, with the single exception of the District of Columbia, the percentage of bikeshare members who were young was not substantially different from the percentages of young respondents in the jurisdictions where bikeshare was available. As shown below, nearly six in ten (59%) bikeshare members who lived in the District of Columbia were younger than 35 years old. By comparison, 45% of all employed residents of the District were younger than 35 years (2016 SOC). Accounting for the fact that some District bikeshare members might be non-employed students who would not have been included in the SOC survey, the shares of young respondents in the two surveys are likely closer than they appear.

Respondents' Home Jurisdiction	Percentage of Respondents Who Were Younger Than 35 Years	
	2016 Bikeshare	2016 SOC*
• District of Columbia (n = 3,659)	59%	45%
• Arlington County, VA (n = 569)	52%	46%
• City of Alexandria, VA n = (196)	32%	40%
• Fairfax, VA (n = 138)	31%	31%
• Montgomery County, MD (n = 580)	26%	30%

* Note – 2016 State of the Commute (SOC) survey included only employed residents

For other jurisdictions, the percentages of bikeshare respondents who were younger than 35 were much closer to the corresponding percentages in the SOC survey. About half (52%) of the bikeshare survey respondents who lived in Arlington were under 35, compared with 46% of Arlington respondents in the 2016 SOC survey. So, while bikeshare members were younger, overall, than were regional workers, this was due in part to the fact that bikeshare operates in areas where young residents tend to live.

Race/Ethnicity

Whites/Caucasians represented, by far, the largest ethnic group of bikeshare survey respondents; accounting for 80% of respondents. Asian, Hispanic/Latino, and African-American respondents accounted for about 7%, 7%, and 4% of respondents, respectively (Table 2). The distribution was very similar to that observed in the November 2014 survey, in which 84% of respondents were White/Caucasian.

The table also shows the ethnic background distribution of all regional employees (2016 SOC). Bikeshare members were disproportionately Caucasian when compared with the regional employee population; African-Americans, Hispanics, and Asians all were underrepresented, compared with the regional employee population.

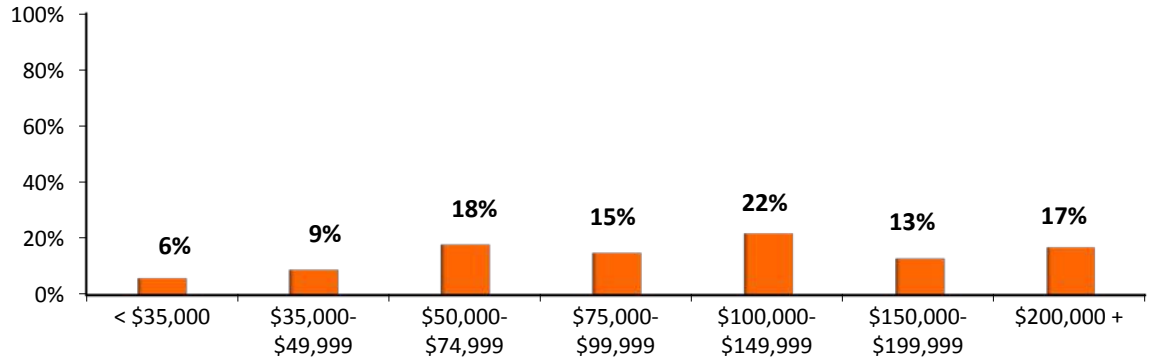
Table 2
Ethnic Background – Bikeshare Members and All Regional Employees

Ethnic Group	2016 Bikeshare Survey (n = 5,546)	2016 SOC Survey (n = 5,384)
White/Caucasian	80%	45%
Asian	7%	13%
Hispanic/Latino	7%	14%
African-American	4%	23%
Other / Mixed	2%	5%

Income

Fewer than two in ten (15%) respondents reported household incomes of less than $50,000 per year, 31% had incomes of $50,000 to $99,999, and 52% had incomes of $100,000 or more per year (Figure 3). Bikeshare survey respondents had lower household incomes than did employees region-wide, as measured by the 2016 SOC survey. About two-thirds (67%) of all regional workers had incomes of $100,000 or more, compared with 52% of bikeshare members.

Figure 3
Annual Household Income – Bikeshare Members
(n = 4,874)



Changing Member Profile

It is reasonable to expect that the people who were attracted to bikeshare when it was new might be different in various respects from those who joined at a later time. This idea was tested for the Capital Bikeshare survey respondents by comparing the demographic profiles for respondents in the 2016 survey with the profiles of respondents in the three previous CB surveys (2011, 2012, and 2014).

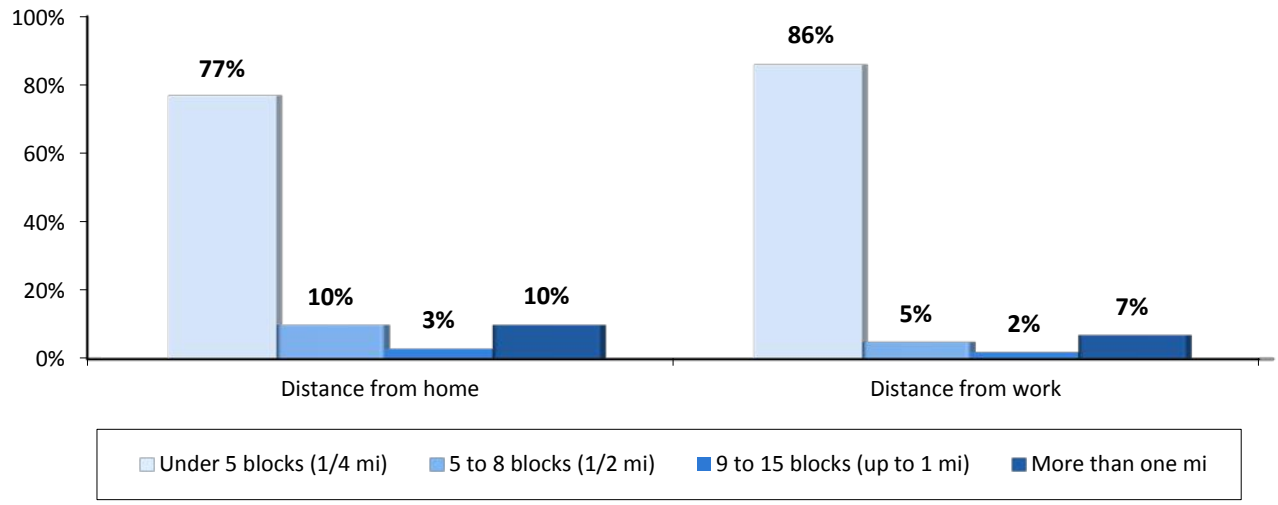
The conclusion from this analysis is that the profile of a bikeshare member has remained predominantly white, but has changed to become more predominantly male and affluent, but less young and more diverse in home location:

- *Ethnicity* – In 2011, respondents who reported being of Caucasian race/ethnicity were a significant majority, comprising 81% of total respondents. In 2016 Caucasians represented 80% of the survey respondents.
- *Sex* – Of the members who participated in the 2011 CB survey, 55% were male and 45% were female. In the 2012 survey, 57% of respondents were male and 43% were female. This trend continued in 2014 and 2016, when males comprised 59% and 58% of respondents, respectively.
- *Household Income* – In the 2011 CB survey, 39% of respondents reported a household income of $100,000 or more per year. In the 2012 survey, respondents with incomes of $100,000 or more comprised a larger group, 45% of the total. Incomes were higher still in the 2014, with 50% reporting an income of $100,000 or more. And in the 2016 survey, 52% reported incomes of $100,000 or more. Even accounting for some wage inflation, this seems to suggest the service is attracting and/or retaining higher income respondents.
- *Age* – In the 2011 survey, 66% of survey respondents were under 35 years of age. The share of young respondents has declined since this first CB survey. In 2012, 63% of respondents were younger than 35 and in 2014, 59% were younger than 35. In the 2016 survey, the share of young respondents was 51%. The share of respondents who were between 35 and 44 did not change substantially since the first survey, indicating that the growth has been among members who were 45 years or older.

Distance to Bikeshare Station

Survey respondents generally reported excellent access to Capital Bikeshare stations (Figure 4). More than three-quarters lived within ¼ mile of a bikeshare station and 87% lived within ½ mile. They reported similar access where they work; 86% of employed respondents worked within ¼ mile of a bikeshare station and 91% said the closest bikeshare station was within ½ mile of their work location.

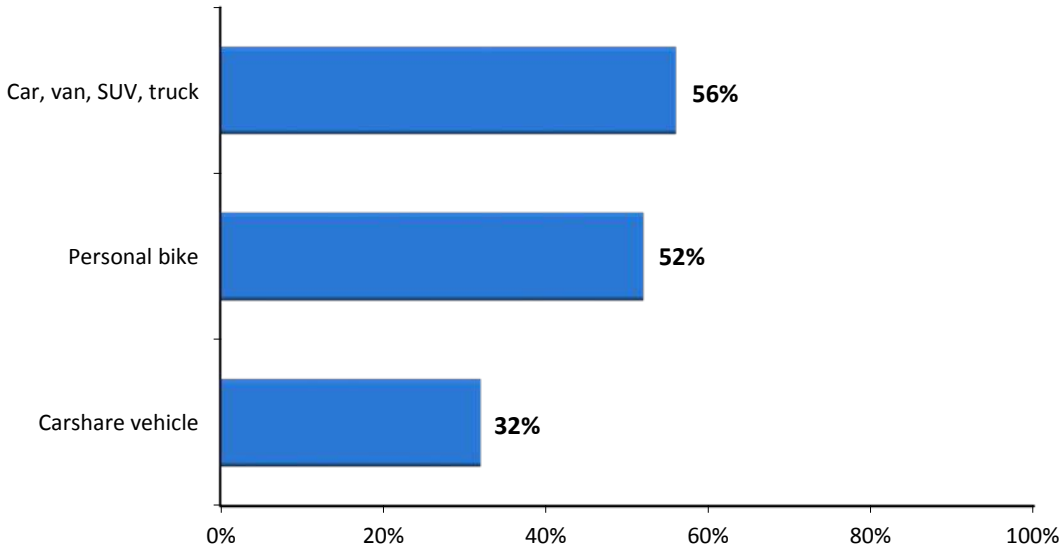
Figure 4
Distance from Home and Work to Nearest Bikeshare Stations
(Distance from home n = 5,501, Distance from work n = 5,256)



Availability of Vehicles and Other Personal Transportation Options

The survey asked respondents if they had access to any of three types of personal transportation on a regular basis for their travel: car/van/SUV/truck, personal bike, and carshare vehicle (Figure 5).

Figure 5
Vehicles and Other Personal Transportation Options Regularly Available for Travel
(n = 5,851, multiple responses permitted)



More than eight in ten (84%) respondents said they had access to at least one of the three type of transportation. More than half (56%) had regular access to a car, van, SUV, or truck, essentially the same share as noted access in the 2014 bikeshare survey. But this percentage was well below the rate of vehicle availability in the Washington Metropolitan region. According to the 2008 Household Travel Survey conducted by Metropolitan Washington Council of Governments, 94% of households in the region had at least one vehicle and 84% of household had a vehicle for each driver in the household. But bikeshare members' vehicle availability rate was similar to the rate for the District of Columbia, where a large majority of bikeshare users lived. The MWCOG Household Travel Survey found that 52% of households in the District of Columbia had a vehicle for each driver in the household.

About half (52%) of bikeshare survey respondents said they had access to a personal bike. Again, this was consistent with the 2014 bikeshare survey results. And 32% of respondents had access to a carshare vehicle, that is, they were members of a carshare program, which offers short-term rental of vehicles to registered members. This percentage was slightly below the 39% rate noted in the 2014 bikeshare survey.

Vehicle Availability by Demographic Characteristic – It was expected that Capital Bikeshare membership would be more attractive and influential to respondents who had fewer travel options than to those who had many options,. Thus, the analysis examined differences in availability of personal vehicles and personal bicycles by various demographic characteristics. These results are presented in Table 3.

Availability differed by where the respondent lived. Residents of the District of Columbia were much less likely to have a personal vehicle than were residents of other jurisdictions; only 47% of District bikeshare members had a personal vehicle, compared with at least seven in ten members who lived in the other bikeshare jurisdictions. Personal bike availability also was substantially higher among residents of Alexandria and Montgomery County, when compared with availability in the District of Columbia (49%), but Arlington County residents also reported lower personal bike availability (53%).

Male respondents were slightly more likely than were females to have access both to a personal vehicle (Male – 59%, Female – 53%) and a personal bicycle (Male – 55%, Female – 50%). Respondents who were white were more likely than were non-white respondents to have both a personal vehicle (White – 58%, Non-white – 47%) and a personal bicycle (White – 56%, Non-white – 40%).

The most striking differences were related to respondents' age and income, with vehicle and bicycle availability increasing steadily as age and income increased. Among respondents who were under 25 years of age, only one-quarter (24%) had a personal vehicle available for regular travel, compared with 47% of those who were 25 to 34 years of age, 63% of respondents who were between 35 and 44 years old, and about three-quarters of respondents who were 45 years of age or older.

Availability of a personal bicycle was similarly tied to respondents' age; 24% of respondents who were under 25 years old had a personal bicycle, compared with 45% who were 25 to 34 years of age and about six in ten who were 35 years of age or older.

A similar pattern was noted by respondents' annual household income, with vehicle availability increasing as income increased. Vehicle availability ranged from a low of 28% for respondents whose incomes were under $50,000 to a high of 76% among respondents with incomes of $150,000 or more. Availability of a personal bicycle showed a less dramatic but similar pattern; only one-third of respondents with incomes under $50,000 had a personal bicycle available, compared with 66% of respondent with incomes of $150,000 or more.

Table 3
Personal Vehicle and Bicycle Availability by Respondents' Demographic Characteristics

Respondent Characteristic	Percentage with Personal Vehicle Available	Percentage with Personal Bicycle Available
Home location		
Arlington County (n = 584)	70%	53%
Alexandria (n = 201)	81%	69%
Montgomery County (n = 601)	79%	69%
District of Columbia (n = 3,717)	47%	49%
Sex		
Male (n = 3,158)	59%	55%
Female (n = 2,293)	53%	50%
Race / Ethnicity		
Non-white (n = 703)	47%	40%
White (n = 4,147)	58%	56%
Age		
Under 25 years (n = 353)	24%	24%
25 – 34 years (n = 2,443)	47%	45%
35 – 44 years (n = 1,235)	63%	58%
45 – 54 years (n = 796)	75%	69%
55 and older (n = 613)	74%	67%
Income		
Under $50,000 (n = 748)	28%	34%
$50,000 - $74,999 (n = 874)	41%	43%
$75,000 - $99,999 (n = 752)	51%	50%
$100,000 - $149,999 (n = 1,064)	62%	56%
$150,000 or more (n = 1,436)	76%	66%

(Statistically higher percentages are shaded)

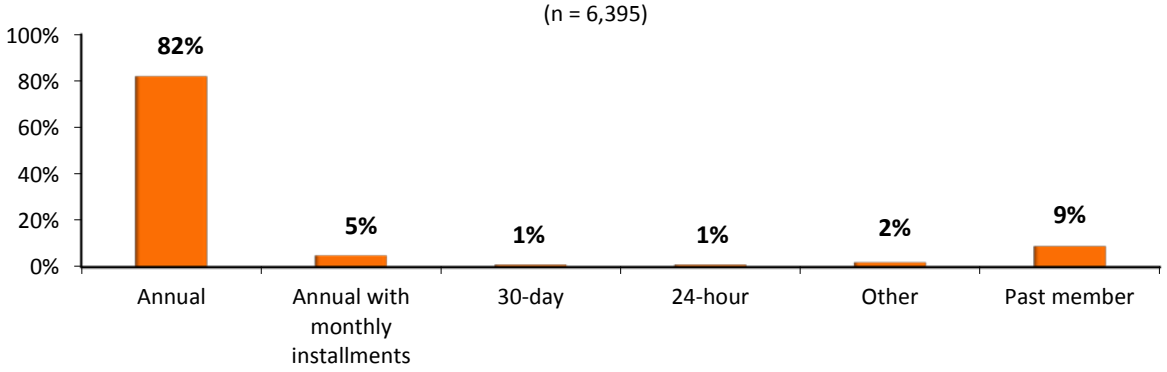
Participation and Service Membership Characteristics

An early section of the survey asked respondents when and why they joined Capital Bikeshare and how they heard about the service. Responses to these questions also were compared for various subgroups of survey respondents, to identify differences that might guide future marketing efforts.

Current vs Past Membership

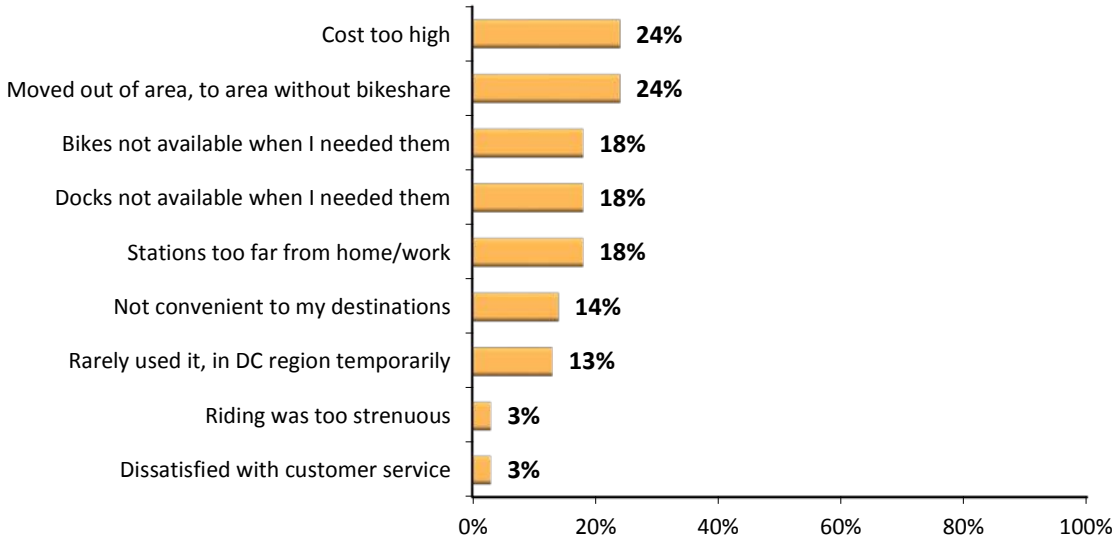
The first question in the survey asked respondents what type of membership they currently held. Nine in ten (91%) of the total respondents said they were current Capital Bikeshare members (Figure 6). About eight in ten were annual members and another 5% were annual members with a monthly installment payment. Small shares participated through another membership level.

Figure 6
Capital Bikeshare Membership Level
(n = 6,395)



The remaining 9% of respondents said they were no longer members. These respondents were asked why they had not renewed their membership. Responses are shown in Figure 7

Figure 7
Why No Longer a Capital Bikeshare Member (Past Members)
(n = 544, multiple responses permitted)

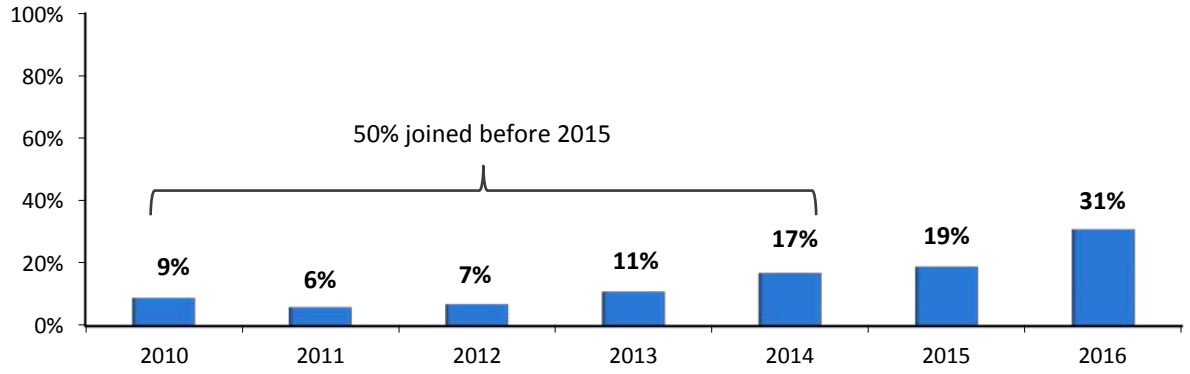


Two reasons were named by about one-quarter of part members; 24% said the cost was too high and 24% said they had moved out of the Washington region or had moved to a neighborhood in the region that did not have bikeshare available. About two in ten named each of three reasons: bikes not available when the respondent wanted to ride (18%), docks were not available when the respondent wanted to return a bike (18%), and stations were too far from where the respondent lived or worked (18%). Fourteen percent said bikeshare was not convenient for the respondents' typical destinations and 13% said they rarely used the service. Three percent said it was too strenuous to ride and 3% were dissatisfied with customer service. Past members were not asked any further questions in the survey.

When Joined Bikeshare

Membership growth has been steady since the August 2010 start, but as Figure 8 shows, many members have been registered for multiple years. Half (50%) of the respondents said they joined Capital Bikeshare before 2015 and nearly one-quarter joined before 2013. About two in ten (17%) first joined in 2014 and a similar share (19%) joined in 2015. Three in ten (31%) joined in 2016, so had been members for less than one year.

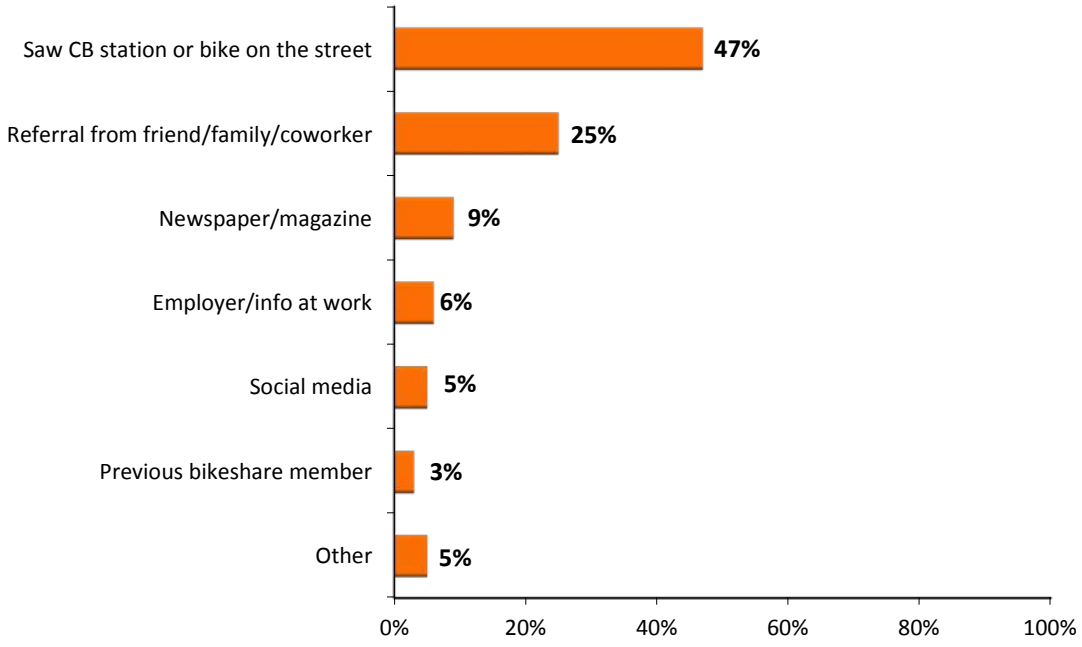
Figure 8
When Joined Capital Bikeshare
(n = 5,573)



How Heard About Bikeshare

Figure 9 presents the sources of information noted by Capital Bikeshare members for how they "first learned" of the service. The top source was related to seeing Capital Bikeshare in action; 47% of respondents learned of the service by seeing a bikeshare station or seeing someone riding a Capital Bikeshare bike. About a quarter (25%) said a friend or family member referred them. Other common sources, each named by at least one in twenty respondents, included newspaper or magazine (9%), employers (6%), and social media (5%). Three percent said they participated in a previous bikeshare service or in a bikeshare service in another area. The wide range of sources indicates success with a broad marketing pattern and perhaps the role of multiple service partners.

Figure 9
How First Learned of Capital Bikeshare
(n = 5,662)



Change in Sources – Table 4 shows the percentages of respondents who learned about Capital Bikeshare from six sources by the year in which they joined the service: 2010, 2011-2012, 2013-2014, and 2015-2016. The six sources shown were the only sources for which there were significant differences by year.

Two sources, "referral from friend or family member" and "saw bikeshare station/bikeshare bike" demonstrated substantially increased importance. Clearly, this shows how word of mouth and visibility of the service have been important marketing tools.

Four sources seem to have declined in importance since the early months of the service. "Newspaper or magazine," named by 21% of respondents who joined during 2010, was noted by a declining percentage of respondents; only 5% of respondent who joined during 2015-2016 cited this source. Social media, which was noted by 12% of respondents who joined in 2010, was named by only 3% of recent members. A similar result was noted for respondents who said they knew of bikeshare because they had participated in another bikeshare service. And local government or partner program, named as the source by 12% of 2010 members, was named by only 2% of recent members. This suggests that some of the marketing and promotion for the service, which was important during service rollout, has ended or is reaching fewer people.

Table 4
Bikeshare Information Sources – First Source By When Joined Capital Bikeshare

Bikeshare Information Source	When Joined Capital Bikeshare			
	2010 (n = 474)	2011-2012 (n = 744)	2013-2014 (n = 1,496)	2015-2016 (n = 2,706)
Increased Importance				
Referral from friend/family	9%	24%	28%	28%
Saw bikeshare station or bike	20%	40%	48%	51%
Decreased Importance				
Newspaper or magazine	21%	13%	8%	5%
Social media	12%	8%	4%	3%
Previous bikeshare members	12%	2%	3%	2%
Local government, partner program	6%	3%	2%	1%

Sources Noted by Demographic Sub-groups – There also were some differences in how respondents learned of Capital Bikeshare by where they lived and by their ages, races, and sexes. Some differences also were noted for different income groups, but these largely paralleled the age patterns.

Home Location:

- *Referrals* – Respondents who lived in the District of Columbia noted referrals (30%) at a higher rate than did respondents who lived in Arlington (17%), Alexandria (17%) or Montgomery (14%).
- *Newspaper or Magazine Article* – This was a more common source for residents of Montgomery County (14%) than for residents of Arlington County (10%), Alexandria (9%), and the District of Columbia (8%).
- *Employer* – Respondents who lived in Montgomery County mentioned learning about Capital Bikeshare from an employer at a higher rate (11%) than did residents of other bikeshare jurisdictions (District of Columbia – 5%, Alexandria – 6%, Arlington – 7%).

Sex:

- *Referrals* – Women were more likely to mention referral (30%) than were men (22%).
- *Newspaper/Magazine* – Men (11%) were more likely than were women (6%) to mention a media source.

Race/ethnicity:

- *Newspaper or Magazine Article* – white (10%) respondents were twice as likely to mention this source as were non-white (5%) respondents.
- *Employer* – Conversely, non-white (12%) respondents named an employer as their source at twice the rate as did whites (5%).

Age:

- *Referrals* – Referrals declined substantially with increasing age. One-third (34%) of respondents who were younger than 25 years old and 31% who were between 25 and 34 mentioned referrals, compared with 23%

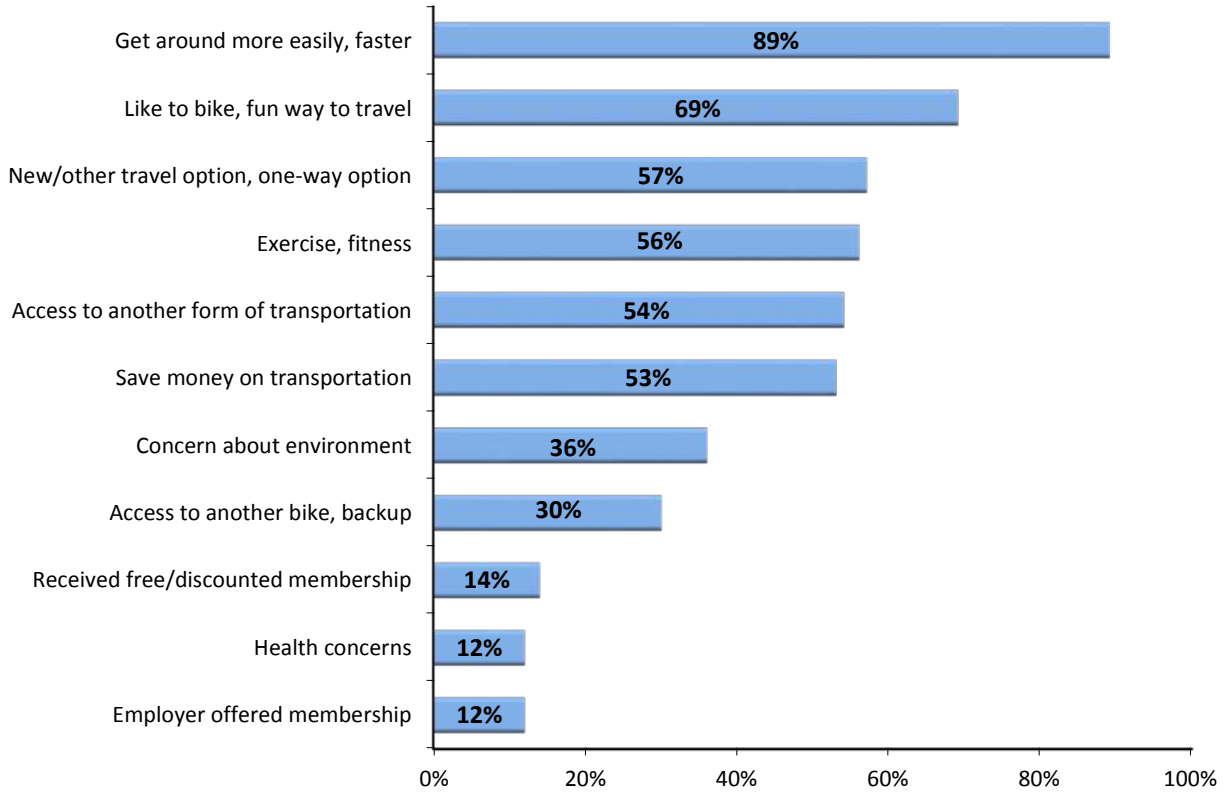
of respondents who were between 35 and 44, 18% of respondents who were between 45 and 54, and only 13% of respondents who were 55 or older.

- *Saw Bikeshare Station or Bike* – Mentions for this source also declined as age increased. More than half (52%) of respondents who were younger than 25 years old named this source, compared with 46% who were between 25 and 34, and 43% of those who were 35 or older.
- *Newspaper or Magazine Article* – This source showed an increasing trend with increasing age. Only 4% of respondents under 35 years old mentioned a newspaper or magazine article as a source, compared with 9% of respondents between 35 and 44 years old, 13% of respondents between 45 and 54, and 22% of respondents who were 55 or older.

Reasons for Joining Bikeshare

To identify what motivated members to join Capital Bikeshare at the time that they did, respondents were shown a list of 11 possible motivations and asked to check all that applied. The primary reason was clearly access and speed; 89% of respondents said their ability to get around more easily or more quickly was a motivation (Figure 10). Another important motivation was enjoyment of biking; 69% said they liked to bike or found biking a fun way to travel. About six in ten (57%) joined to have a new travel option or a one-way travel option. And slightly more than half of respondents mentioned three motivations: to get exercise (56%), to have access to another form of transportation (54%), and to save money on transportation (53%).

Figure 10
Reasons for Joining Capital Bikeshare
(n = 5,848, multiple responses permitted)



About one third (36%) cited a concern about the environement as a motivation and 30% wanted access to another bike or a back-up bike, in case they couldn't use or didn't want to use a personal bike. And about one in ten mentioned that they had received a free or discounted membership (14%), that their employer offered a membership (12%), or were motivated by a health concern (12%)

Importance of Motivations by Member Sub-group – Several notable, statistically significant differences were noted across demographic and membership categories in why respondents joined Capital Bikeshare.

When Joined Capital Bikeshare – One motivation gained in importance between 2010 and 2016; several other reasons seem to have become less prominent:

- *Employer Benefit* – Among respondents who joined in the early years from 2010 to 2012, only 7% noted this motivation. By contrast, 15% of respondents who joined in 2015 or 2016 cited this as a motivation.
- *Like to Bike/Fun Way to Travel* – This motivation was cited as important by 76% of respondents who joined between 2010 and 2012 and by 72% of respondents who joined in 2013 or 2014. Only 64% of 2015-2016 new members said it was a motivation for joining.
- *Concern about Environment* – This motivation was cited as important by 43% of respondents who joined between 2010 and 2012 and 39% of respondents who joined in 2013 or 2014. But only 32% of members who joined in 2015 or 2016 said the environment was an important reason.
- *Access to Another Bike/Back-up Bike* – This also seemed to be a less important motivation for recent members. Nearly four in ten (38%) early year members (2010-2012) mentioned this reason, compared with just 24% of members who joined in 2015 or 2016.
- *Have New Travel Option/One-way Travel Option* – Finally, recent members seemed less motivated by having wider travel options. Among early members (2010-2012), nearly two-thirds (65%) mentioned this as a reason to join. Six in ten members who joined in 2013 or 2014 cited this reason. Only 52% of recent members (2015-2016) said this was a motivation for joining.

Frequency of Capital Bikeshare Use – Respondents who used Capital Bikeshare frequently reported distinctly different motivations for joining than did respondents who rode bikeshare infrequently:

- *Save Money* – The motivation to save money was much more important to frequent riders than to those who rode infrequently. Seven in ten members who made 30 or more trips in the past month and 61% who made between 11 and 29 trips said saving money was important, while only 54% who made between six and ten trips and 41% of respondents who made between one and five trips in the past month rated saving money as an important motivation.
- *Get Exercise* – Frequent riders also were more likely to report this as an important motivation; 62% of members who made 11 or more CB trips last month rated this motivation as important, compared with 57% who made between six and ten trips and 50% who made fewer than six trips.
- *Access to Another Bike/Back-up Bike* – This was more important to infrequent riders; 32% who made fewer than 20 trips rated this motivation as important, compared with 21% who made 30 or more trips.
- *Discounted/Free Membership* – Infrequent riders also noted this motivation more than did frequent riders. Seventeen percent of members who made fewer than six bikeshare trips in the past month named this motivation, compared with 12% who made between six and 49 trips and 9% of members who rode 50 or more times.

Personal Vehicle Available – Respondents who said they did not have a personal vehicle available for their travel were much more likely to cite saving money on travel as a motivation for joining Capital Bikeshare; 62% of members who did not have a vehicle named this motivation, compared with 46% of members who had a personal vehicle. They noted other reasons at similar rates.

Home Location:

- *Save Money* – Almost six in ten (57%) respondents who lived in the District of Columbia and 49% who lived in Arlington mentioned wanting to save money. By contrast, this was mentioned by only 43% of Montgomery residents and 37% of members who lived in Alexandria.
- *Get Around More Easily* – District members also were more likely to join to get around more easily or faster; 96% of District residents mentioned this reason, compared with 83% of Arlington and Montgomery residents and 80% of Alexandria members. Since most bikeshare trips are quite short, this likely reflects the greater level of traffic congestion in the District, compared with other residential location.
- *Have New Travel Option/One-way Travel Option* – District residents and Arlington residents also named this reason more commonly than did other members. About six in ten residents of these jurisdictions mentioned this motivation, compared with 53% of Alexandria residents and 49% of Montgomery residents. This suggests bikeshare plays less of a role as "basic transportation" for respondents who lived outside the District and Arlington.
- *Employer Benefit* – Members who lived outside the District cited this reason more often than did District residents. Only 10% of District members named this motivation, compared with 15% of residents of Alexandria and Arlington residents and 17% of Montgomery residents.

Age – Several motivations showed pronounced trends as a function of respondents' ages, with several decreasing with age and others increasing:

- *Save Money* – Two-thirds (64%) of respondents who were younger than 35 years old mentioned a desire to save money on transportation, compared with 47% of respondents who were between 35 and 54, and only 39% of respondents who were 55 or older. This was likely due, in part, to younger respondents' lower level of income.
- *Get Around More Easily and Have New Travel Option/One-way Travel Option* – These two related reasons also were named more often by young respondents. Nine in ten (90%) respondents under 45 years of age mentioned getting around more easily as a motivation, compared with 85% who were 45 or older. Six in ten (60%) respondents who were younger than 45 cited having a new travel option as a reason to join. Among respondents who were 45 or older, only 50% named this as a motivation. These results might be due to other factors however, such as availability of a car and characteristics of the areas where they typically traveled.
- *Get Exercise and Health Concern* – These two motivations were more important to older respondents. Six in ten (61%) respondents who were 45 years or older cited getting exercise as an important reason to join, compared with 54% of younger respondents. And 17% of respondents 45 years and older rated health concerns as a motivation, compared with 10% of respondents in younger age groups.
- *Environmental Concerns* – Older respondents also reported greater importance of environmental concerns; 42% of respondents who were 45 years or older named environmental concerns as important, compared with 45% of respondents who were younger than 45 years old.

Sex

- *Health Concern, Get Around More Easily, and Save Money* – These three reasons were more important motivations to male respondents than to females. Male respondents (14%) were more likely than female respondents (9%) to rate health a concern as a motivation. Male respondents (91%) also noted getting around more easily more often than did female respondents (86%). And a slightly higher share of male respondents (56%) cited saving money as a reason than did female respondents (50%).
- *Employer Benefit and Discounted/Free Membership* – Female respondents named two related motivations more often than did male respondents. Fifteen percent of female respondents said receiving an employer benefit was a motivation, compared with 10% of males. And 17% of females said they were motivated by a discounted/free membership, while only 12% of male respondents gave this motivation.

Income – The results showed a distinct downward pattern as respondents' income increased for one motivation – a desire to save money on transportation. Three-quarters (74%) of respondents with incomes of less than $50,000 said this was an important motivation for joining Capital Bikeshare. Among respondents whose incomes were between $50,000 and $74,999, 65% rated saving money as important. The share of respondents who noted this reason dropped still further for the next two income groups; 58% who had an income of between $75,000 and $149,999 and 47% of those with incomes of $150,000 or more said saving money was an important motivation.

Ethnicity – Statistically significant differences were noted on several motivations.

- *Get Around More Easily/Faster* – White respondents mentioned this reason at a higher rate than did non-white respondents; 90% of whites said this was important, compared with 85% of non-white respondents.
- *Have New Travel Option and Access to Another Bike/Back-up Bike* – These two motivations also were more important to white respondents. Six in ten (60%) white respondents rated having a new travel option as important, compared with 46% of non-white respondents. And 32% of whites mentioned having a back-up bike, versus 24% of non-white respondents.
- *Health Concerns* – This motivation also was more important to non-white respondents. Seventeen percent of non-white respondents rated health concerns as important, compared with 10% of white respondents.
- *Employer Benefit and Discounted/Free Membership* – Non-white respondents named these two related motivations at about twice the rate as did white respondents. Twenty percent of non-white respondents said receiving an employer benefit was a motivation, compared with 11% of whites. And 24% of non-whites said they were motivated by a discounted/free membership, while only 12% of white respondents gave this motivation.

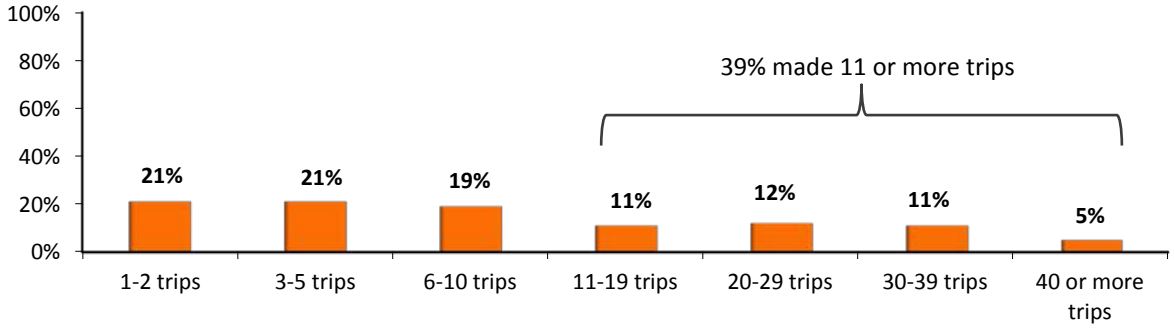
Typical Bikeshare Use

Another section of the questionnaire asked respondents about their frequency of bikeshare use and trip purposes for which they used bikeshare. The survey also asked several follow-up questions to explore the characteristics of respondents' most recent bikeshare trip.

Frequency of Bikeshare Use

A small percentage of respondents made no bikeshare trips in the past month. Of those who did make trips, 42% made between one and five trips and 19% made between six and ten trips (Figure 11). Four in ten respondents were frequent users, with 11 or more trips in the past month. And 28% made at least 20 trips. This use distribution resulted in an average use of about 14 trips per user in the past month. This was approximately the same as the 13 trips per month average calculated in 2014 bikeshare survey.

Figure 11
Bikeshare Trips Made in Past Month
(n = 5,802)



The 39% share of respondents who were frequent users is approximately the same as the 40% share estimated in the 2014 bikeshare survey, but the percentage of frequent users represents an increase over the early years of the service. In the first Capital Bikeshare survey in 2011, 26% of respondents said they made 11 or more trips in the past month. In 2012, the percentage of frequent users was 35%. The growth in frequent use could reflect the expansion of the service to new neighborhoods, with more destination opportunities for members. It also could simply mean that members are relying on bikeshare for a larger share of their daily trips.

Trip Frequency by Demographic Characteristics – Several demographic characteristics were associated with more frequent bikeshare use. Use was more frequent among respondents who lived and/or worked in the District of Columbia or Arlington County than for residents or workers of other locations (Table 5). This seems a reasonable outcome, considering that the majority of bikes and bike stations are located in these two jurisdictions.

Table 5
Bikeshare Trips in Past Month by Respondents' Home and Work Location: Percentage who Made 6 or more Capital Bikeshare Trips in Past Month

Jurisdiction	Percentage with 6 or More Trips
Home Location	
District of Columbia (n = 3,697)	62%
Arlington County, VA (n = 578)	54%
City of Alexandria, VA (n = 201)	48%
Montgomery County, MD (n = 594)	43%
Work Location	
District of Columbia (n = 3,964)	61%
Arlington County, VA (n = 502)	58%
City of Alexandria, VA (n = 147)	50%
Montgomery County, MD (n = 389)	43%

(Statistically higher percentages are shaded)

Other characteristics associated with higher use included being male, younger than 35 years old, being employed, not having access to a personal vehicle, and not having access to a personal bicycle (Table 6). At least six in ten respondents in each of these categories said they had used bikeshare six or more times in the past month.

Table 6
Bikeshare Trips in Past Month by Respondents' Demographic Characteristics: Percentage who Made 6 or more Capital Bikeshare Trips in Past Month

Respondent Characteristic	Percentage with 6 or More Trips
Sex	
Male (n = 3,140)	63%
Female (n = 2,271)	51%
Age	
16 to 24 years old (n = 352)	74%
25 to 34 years old (n = 2,428)	62%
35 to 44 years old (n = 1,222)	56%
45 to 54 years old (n = 793)	50%
55 years and older (n = 605)	52%
Employed	
Yes (n = 5,454)	59%
No (n = 255)	49%
Access to a Personal Vehicle	
No (n = 2,765)	64%
Yes (n = 3,037)	53%
Access to a Personal Bicycle	
No (n = 2,549)	66%
Yes (n = 3,253)	52%

(Statistically higher percentages are shaded)

Trip Frequency by When Respondent Joined Capital Bikeshare and the Motivations for Joining – Bikeshare frequency differences also were noted by when the respondents joined Capital Bikeshare and what motivated them to join. Table 7 presents the results to the first question and Table 8 shows results to the questions on motivation.

When Joined Capital Bikeshare – Respondents who joined most recently made more trips in the past month than did respondents who joined earlier; more than six in ten (62%) respondents who registered during 2015 or 2016 made six or more bikeshare trips in the past month, compared with 56% of respondents who joined earlier.

Table 7
Bikeshare Trips in Past Month by When Respondent Joined Capital Bikeshare: Percentage who Made 6 or more Capital Bikeshare Trips in Past Month

When Joined Capital Bikeshare	Percentage with 6 or More Trips
2010 to 2012 (n = 1,240)	56%
2013 to 2014 (n = 1,531)	56%
2015 to 2016 (n = 2,758)	62%

(Statistically higher percentages are shaded)

Motivations for Joining Capital Bikeshare – As shown in Table 8, some motivations for joining Capital Bikeshare were associated with higher bikeshare use. Across all respondents, 58% made at least six trips in the past month. But respondents who mentioned five motivations used bikeshare at higher than average rates. These included respondents who reported saving money, health concerns, desire to get exercise, concern about the environment, and getting around more easily or faster as reasons to join. At least six in ten respondents who mentioned each of these reasons used bikeshare six or more times in the past month.

Table 8
Bikeshare Trips in Past Month by Respondents' Motivations to Join Capital Bikeshare: Percentage who Made 6 or more Capital Bikeshare Trips in Past Month

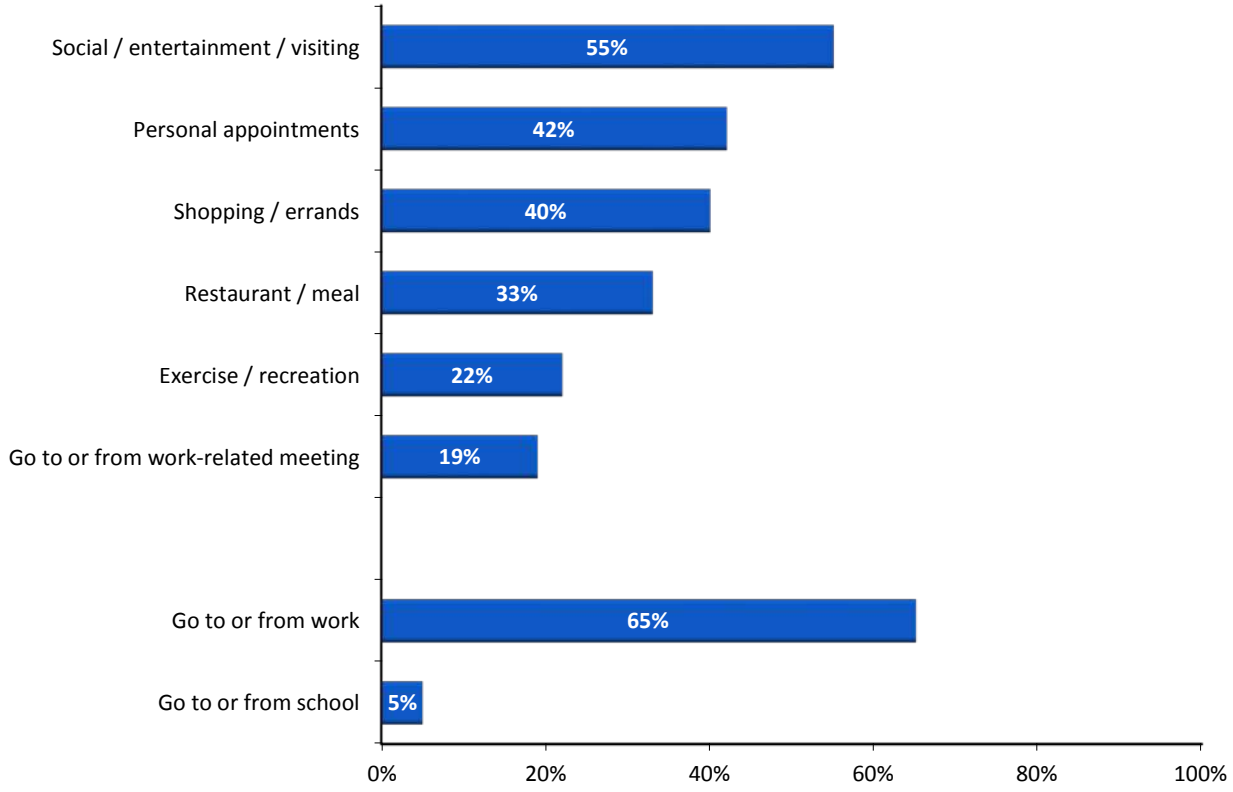
Motivation to Join	Percentage with 6 or More Trips
All respondents – average (n = 5,802, multiple responses permitted)	**58%**
Above average bikeshare use	
Saving money (n = 3,086)	68%
Health concern (n = 676)	66%
Get exercise (n = 3,225)	63%
Concern about environment (n = 2,116)	62%
Get around more easily, faster (n = 5,162)	61%
Like to bike, fun way to travel (n = 4,003)	59%
New travel option/one-way option (n = 3,309)	58%
Access to other form of transportation (n = 3,120)	57%
Below average bikeshare use	
Access to another bike/back-up bike (n = 1,720)	54%
Received employer benefit (n = 692)	50%
Discounted/free membership (n = 810)	49%

Three motivations were associated with lower than average use; access to another bike/back-up bike, received employer benefit, and discounted/free membership. Respondents who mentioned these motivations were less likely to use bikeshare often, suggesting bikeshare was less important or necessary to them as a basic transportation mode. But note that respondents were permitted to mention more than one reason for joining, so there is overlap across the reasons.

Trip Purposes

Respondents were shown a list of eight trip purposes and asked to indicate the top three purposes for which they used Capital Bikeshare. Figure 12 details the results for this question, with the results divided into non-commute and commute (go to or from work/school travel) purposes.

Figure 12
Top Bikeshare Trip Purposes
(n = 5,825, multiple responses permitted)

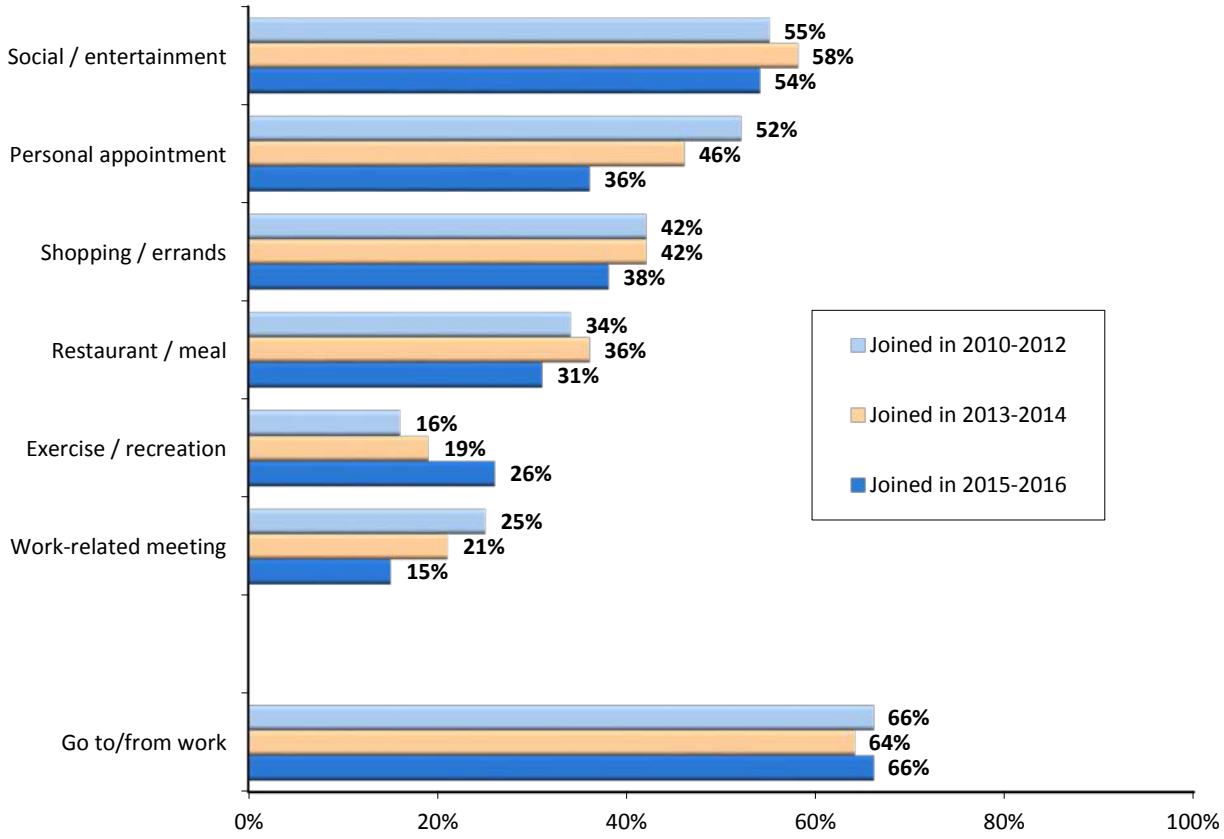


Non-commute Travel – The six trip purposes shown at the top of Figure 12 are for personal, non-commute purposes. Nearly all (93%) respondents said they used Capital Bikeshare for one of these purposes and one-third used bikeshare only for non-commute trips. The top non-commute bikeshare trip purpose was social/entertainment' 55% of respondents reported this as a top bikeshare trip purpose. About four in ten respondents reported commonly riding to go to a personal appointment (42%) and to shop/run errands (40%). One third (33%) commonly used bikeshare to go to a restaurant or other location where they had a meal and 22% used bikeshare for an exercise or recreation trip. Two in ten (19%) commonly used bikeshare to go to a work-related meeting.

Commute-related Travel – The two trip purposes shown in the bottom portion of Figure 12 are for commuting trips to go to or from work or school. Two-thirds (65%) of respondents said going to or from work was a top bikeshare trip purpose and 5% said they commonly used bikeshare for a school trip. But many of the respondents who named commuting as a top bikeshare trip purpose reported transit as their primary commute mode in a later question of the survey. This suggests they might use bikeshare as a "first mile or last mile" mode to get to a bus stop or train station. For these respondents, bikeshare might make transit a more feasible commuting option than it otherwise would be.

Trip Purposes by When Joined Capital Bikeshare – The analysis examined whether respondents who joined Capital Bikeshare in the past two years (2015-2016) used bikeshare for different trip purposes than did respondents who joined earlier. Figure 13 presents the percentages of respondents from three time periods, 2010-2012, 2013-2014, and 2015-2016, who noted that they commonly used Capital Bikeshare for the specified trip purpose.

Figure 13
Bikeshare Trip Purposes By When Joined Capital Bikeshare
(Year joined: 2010-2012 n = 1,242, 2013-2014 n = 1,537, 2015-2016 n = 2,772, multiple responses permitted)

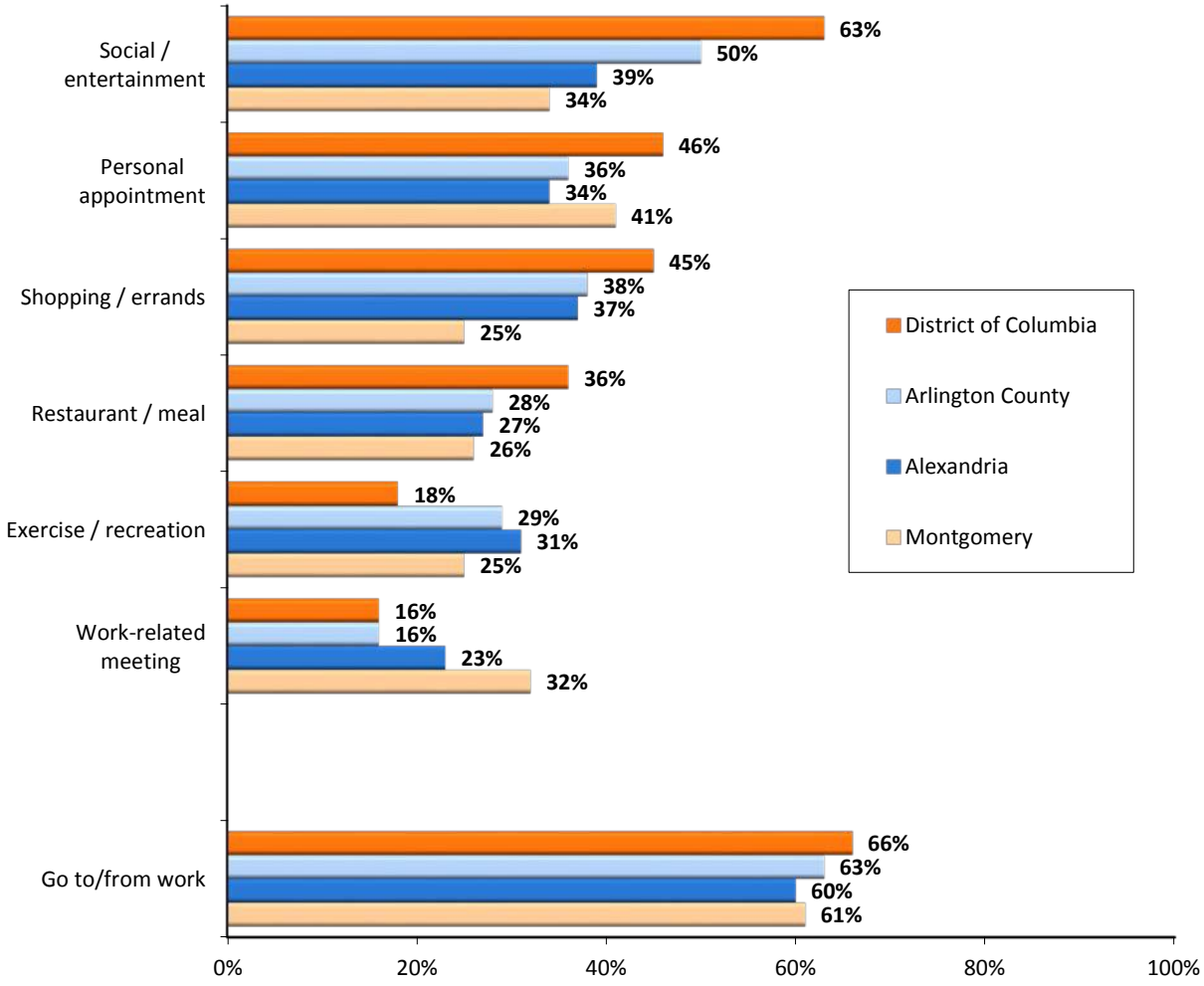


Use for two trip purposes, personal appointments and work-related meetings, was distinctly lower for respondents who joined Capital Bikeshare recently than for respondents who joined in an earlier time period. Use by recent members also was slightly lower for shopping/errands and for restaurants/meals. This was likely due, at least in part, to the greater opportunity long-time members had to make trips of multiple purposes, compared with respondents who had been in the service for a shorter period of time. It also could indicate a greater interest in bicycling overall among early adopters, a greater need for bikeshare as basic transportation, or other factors.

Three exception to the declining pattern were for exercise/recreation trips and for social/entertainment and commute (go to/from work) trips. Use for social and commute purposes was essentially the same across the three time periods. Use for exercise/recreation purposes was notably higher among recent members.

Trip Purposes by Home Location – The analysis next examined bikeshare trip purposes for respondents in the four home jurisdictions for which a sufficient number of survey responses were collected: District of Columbia, Arlington County, VA, City of Alexandria, VA, and Montgomery County, MD (Figure 14).

Figure 14
Bikeshare Trip Purposes By Home Jurisdiction
(District of Columbia n = 3,710, Arlington n = 581, Alexandria n = 201, Montgomery n = 597, Multiple responses permitted)



Bikeshare use for commute trips (go to/from work) was similar for members, regardless of their home location, but respondents who lived in the District used bikeshare at a higher rate for many other trip purposes than did respondents who lived in other jurisdictions. The vast majority of Capital Bikeshare bikes are located in the District, thus this result likely was related to the greater opportunity that these members had to use bikes to reach a greater number of destinations.

Three trip purposes for which this pattern did not hold were personal appointments, exercise/recreation, and work-related meetings. Residents of Montgomery County reported using bikeshare for work-related meetings at twice the rate of District and Arlington respondents and made personal appointment trips at a high rate. Residents of Alexandria also used bikeshare commonly for personal appointments, work-related meetings, and exercise/recreation. Arlington residents also noted high bikeshare use for exercise/recreation.

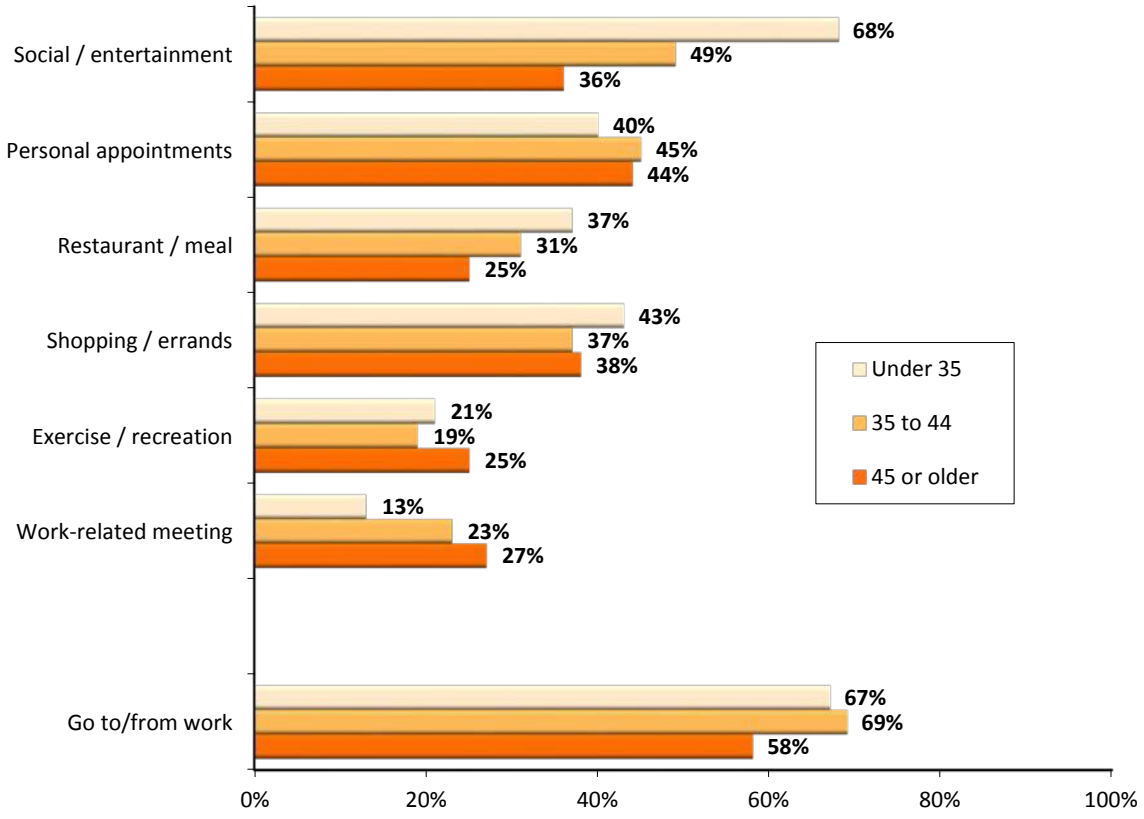
Trip Purposes by Demographic Characteristics – Next, the analysis examined differences in bikeshare trip purpose for respondents in different demographic subgroups. The top trip purposes varied by respondents' ages and races/ethnicities. Some differences also were noted by income, but these largely tracked with differences in age. There were no significant differences in trip purpose between male and female respondents.

Age – Younger respondents used Capital Bikeshare for most trip purpose more than did older respondents (Figure 15). This was particularly the case for social/entertainment trips and trips to restaurants/meals. More than two-thirds (68%) of respondents who were under 35 years old commonly used bikeshare for a social or entertainment trip, compared with 49% of respondents who were between 35 and 44 years old and 36% of those who were 45 years of age or older. And 37% of respondents who were under 35 used bikeshare to reach a restaurant, compared with 31% of those who were between 35 and 44 and 25% who were 45 or older. A similar, although less extreme, pattern was evident for errand/ shopping trips.

Two trip purposes exhibited a different pattern by age. The oldest group of respondents used bikeshare for exercise/recreation trips at about the same rate as did the youngest respondents. And older respondents were more likely to mention work-related meetings as a trip purpose than were younger respondents.

Figure 15
Bikeshare Trip Purposes By Age

(Under 35 years old n = 2,792, 35 – 44 years old n = 1,231, 45 or older n = 1,397, Multiple responses permitted)



Race / Ethnicity – Overall, white and non-white respondents used bikeshare at about the same rate for each trip purpose. White respondents were slightly more likely to use bikeshare for a social/entertainment trip (White – 56%, Non-white – 51%), while non-white respondents reported greater use of bikeshare for exercise/recreation (White – 19%, Non-white – 28%).

Trip Purposes by Access to Alternative Transportation Option – Finally, the analysis explored bikeshare trip purposes for respondents who had access to a personal vehicle or a personal bicycle, compared with those who did not have these personal transportation options (Table 9).

Table 9
Bikeshare Trip Purposes – by Access to Personal Vehicle and Personal Bicycle

Trip Purpose	Personal Vehicle Available		Personal Bicycle Available	
	Yes (n = 3,262)	No (n = 2,563)	Yes (n = 3,052)	No (n = 2,773)
Non-commute Trips				
Social / entertainment	50%	63%	54%	56%
Personal appointment	42%	43%	45%	39%
Go to a restaurant / meal	32%	33%	34%	31%
Shopping / errands	35%	47%	40%	40%
Exercise / recreation	22%	21%	16%	28%
Work-related meeting	23%	15%	24%	14%
Commute Trips				
Go to/from work	63%	68%	64%	66%

(Statistically higher percentages are shaded)

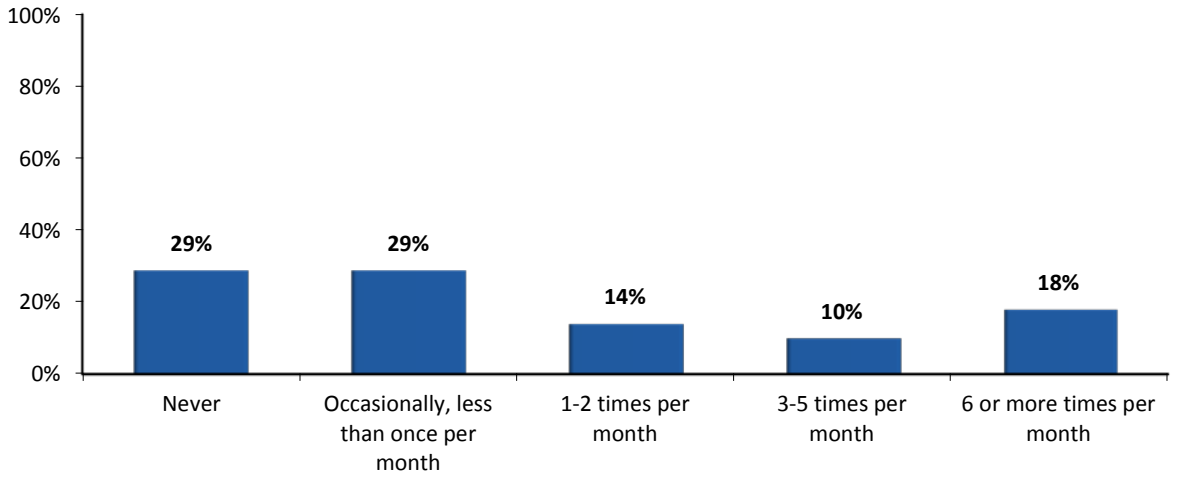
Personal Vehicle – Respondents who did not have a personal vehicle available used Capital Bikeshare for a wider range of trip purposes than did respondents who had a vehicle available. They particularly used bikeshare more often for social/entertainment, shopping/errand, and commute trips. But they were less likely to report work-related meetings as a common bikeshare trip purpose.

Personal Bicycle – There was very little difference in bikeshare use by whether or not a respondent had a personal bicycle. Respondents who had a personal bicycle were slightly more likely to cite personal appointment and work-related meting trips as primary bikeshare purposes than were those without a personal bicycle. Bikeshare use for exercise or recreation trips was higher among those who did not have a personal bicycle, but this is reasonable if we assume that many respondents who had a personal bicycle used it primarily for exercise and for trips that did not require them to leave the bicycle unattended.

Use of Bikeshare to Access Transit

The preceding section reported on "destination" trips for which respondents used Capital Bikeshare. But another use of bikeshare could be as an access mode to reach public transportation. The survey explored how often the respondent used Capital Bikeshare to access a public transit mode, such as a bus/shuttle, Metrorail, or commuter train (Figure 16).

Figure 16
Use of Capital Bikeshare to Access Public Transit
(n = 5,820)



Seven in ten (71%) respondents said that at they used Capital Bikeshare at least "occasionally" to access public transit. Three in ten respondents (29%) used bikeshare for this purpose less than once per month and 14% used bikeshare one or two times per month to access transit. Nearly two in the (18%) used bikeshare for this purpose at least six times per month.

Transit Access by Bikeshare Member Sub-groups – Use of bikeshare to access transit was quite consistent across respondent sub-groups. But frequent bikeshare users also reported more frequent use of bikeshare to access transit. Three-quarters (76%) of respondents who made six or more bikeshare trips in the past month used bikeshare to access transit, compared with 64% of respondents who used bikeshare one to five times in the past month.

A higher share of men used bikeshare to access bus (Male – 75%, Female – 65%). And respondents who lived in the District of Columbia and Arlington County were less likely to use bikeshare to access transit than were residents of other jurisdictions; about seven in ten District and Arlington residents accessed transit at least once per month, compared with eight in ten residents of the City of Alexandria and Montgomery County.

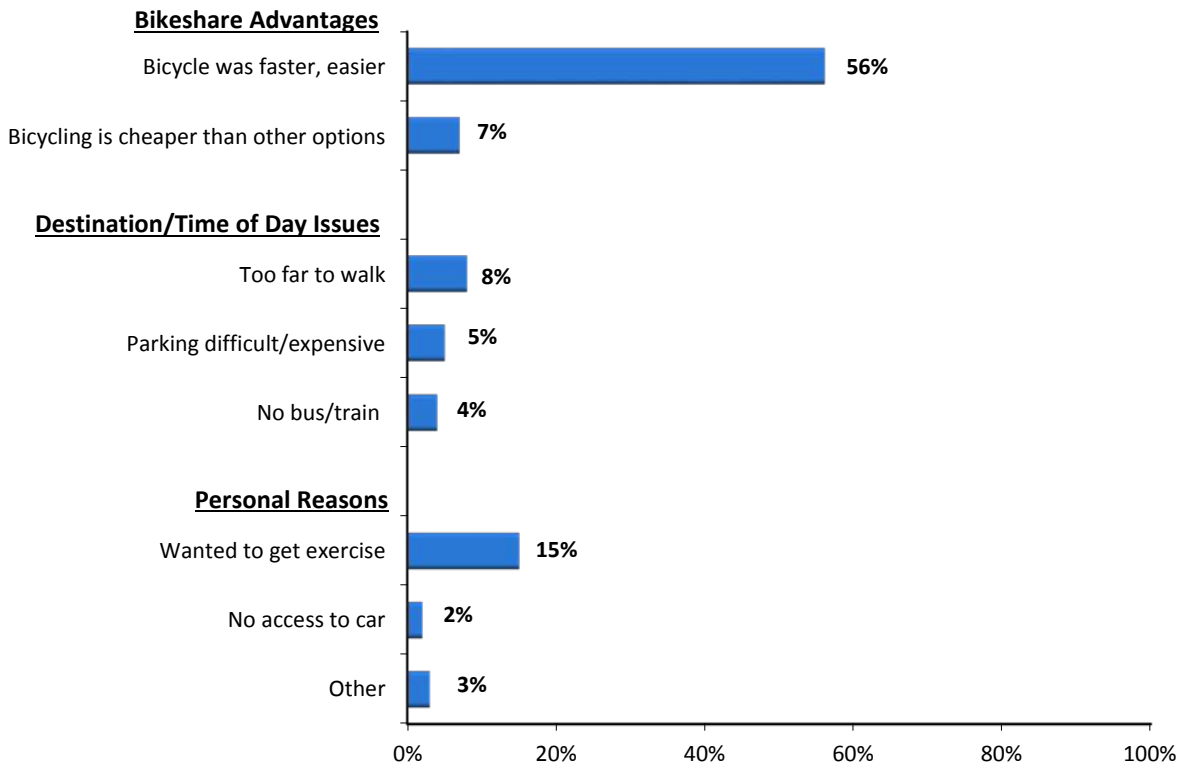
Most Recent Bikeshare Use

One purpose of the Capital Bikeshare survey was to examine the characteristics of bikeshare trips. For this purpose, the survey included questions exploring the details of respondents' "most recent Capital Bikeshare trip." It was expected that respondents would be able to recall this last trip in sufficient detail to provide accurate information. Highlights of these results are shown below.

Reasons for Using Bikeshare for Most Recent Trip

Respondents were first asked why they chose Capital Bikeshare for their most recent trip, instead of another type of transportation. Figure 17 displays these results, divided into three categories: bikeshare advantages, issues related to the trip destination or the time of day the trip was made, and other personal reasons.

Figure 17
Primary Reason for Choosing Bikeshare for Most Recent Trip
(n = 5,838)



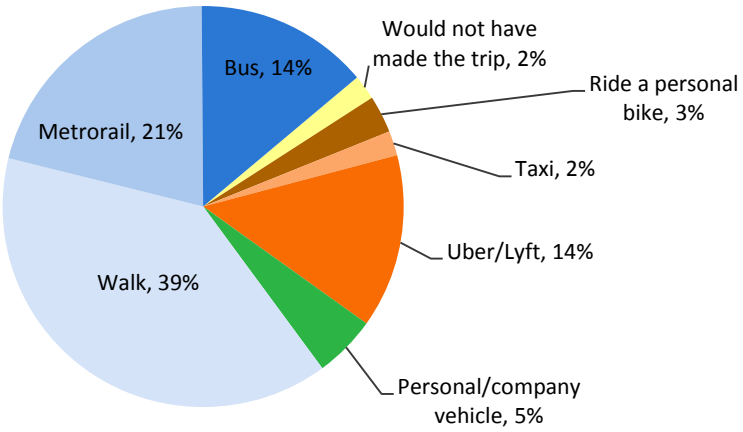
Overwhelmingly, respondents chose bikeshare because it was a faster or easier way to reach their destination; 56% of respondents said this was their primary reason. About two in ten respondents named an issue related to travel to that destination or at that time of day; 8% chose bikeshare because it was too far to walk to the destination, 5% said parking was limited or expensive at that destination, and 4% said public transportation was either not available or inconvenient to that destination at that time of day. The remaining respondents mentioned reasons related to personal preferences or personal constraints. Fifteen percent chose bikeshare to get exercise, 2% said they did not have a car, and 3% named another reason.

Travel Options if Bikeshare Not Available

Respondents also were asked how they would have made the most recent trip if Capital Bikeshare had not been available. Two percent of respondents said they would not have made the trip at all without bikeshare. Thus, for a small share of trips, bikeshare broadened the range of trip, destination, or time of day options.

But most respondents said they would have made the trip, using a different type of transportation (Figure 18). Four in ten (39%) would have walked to their destination and about one-third would have used public transit (14% bus and 21% Metrorail). Fourteen percent would have used a ride-hailing service such as Uber or Lyft and 2% would have ridden in a taxi. One in twenty (5%) would have driven or ridden in a personal or company vehicle, but since more than half of the respondents did not have a personal vehicle regularly available, driving would not have been an easy option for many respondents. Three percent would have ridden a personal bike.

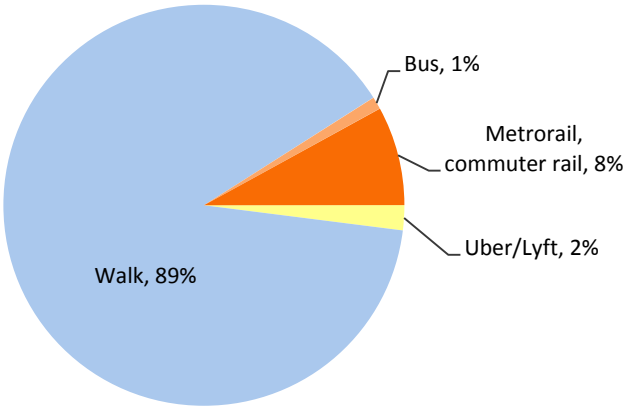
Figure 18
Travel Options for Most Recent Trip if Bikeshare Not Available
(n = 5,832)



Access to Bikeshare

The final question in this section asked respondents how they got to the station where they picked up the bicycle for their most recent trip. The overwhelming method was to walk; 89% walked to the station (Figure 19). Eight percent rode either Metrorail or a commuter train, 1% rode a bus, and 2% used a ride-hailing service (Uber or Lyft).

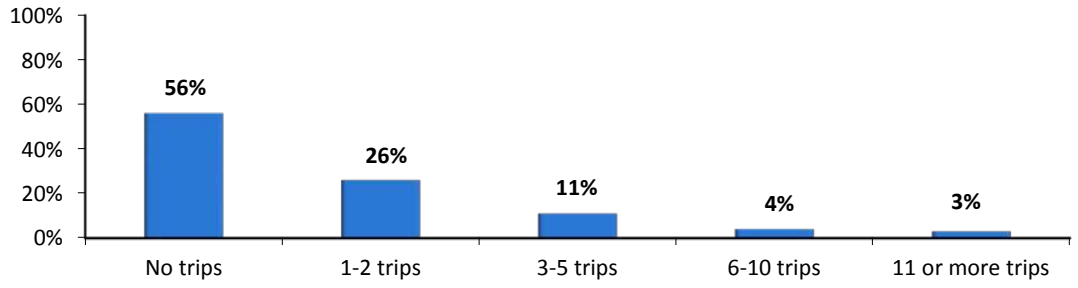
Figure 19
Mode of Access for Most Recent Bikeshare Trip
(n = 5,832)



Use of Capital Bikeshare to "Induce" Trips

The survey included several questions related to the role Capital Bikeshare could play in encouraging respondents to make trips they otherwise would not have made, referred to in this section as "induced" trips. Forty-four percent of all respondents said they used Capital Bikeshare in the past month to make at least one "induced" trip (Figure 20). One-quarter (26%) made one or two induced bikeshare trips, 11% made between three and five trips, and 7% made six or more trips. These results were very similar to those from the 2014 bikeshare survey; in 2014, 49% of respondents had made at least one induced trip in the month before the survey was conducted.

Figure 20
Number of "Induced" Bikeshare Trips Made in Past Month
(n = 5,826)



Differences in Induced Trips by Member Subgroup

Respondents made induced trips at about the same rate regardless of when they joined Capital Bikeshare and where they lived, but several differences were noted in the rate at which other member subgroups made induced Capital Bikeshare trips:

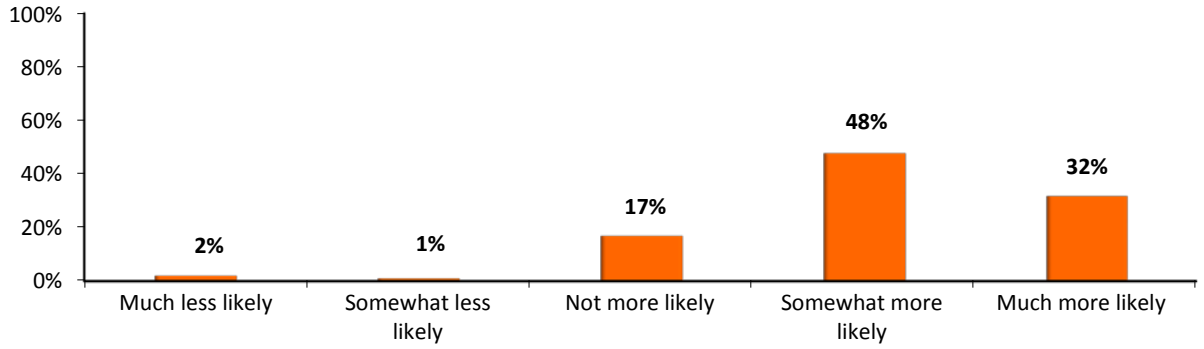
- Frequency of Capital Bikeshare Use – Frequent bikeshare users were more likely to reported making induced trips; 56% of respondents who made at least 11 bikeshare trips in the past month made an induced trip during that time period, while only 37% of respondents who made fewer than six bikeshare trips in the past month made an induced trip. Frequent bikeshare users also made a higher number of induced trips, but the induced trips represented a smaller proportion of their overall bikeshare trips. Among members who made at least 11 bikeshare trips in the past month, induced trips represented about one-tenth of their total trips. Among members who made fewer than six bikeshare trips, induced trips accounted for one-quarter of their trips.
- Sex – About 48% of male respondents made an induced trip, versus 39% of female respondents.
- Age – A higher share of young respondents made induced trips; 48% of respondents who were younger than 35 years old made an induced trip, compared with 40% of respondents who were 35 to 44 years old, and 39% of respondents who were 45 or older.
- Income – Half (51%) of respondents with incomes of less than $75,000 per year made an induced trip, versus 41% of respondents with incomes of $75,000 or more.
- Personal Vehicle Available – Lack of access to a personal motor vehicle seemed related to respondents' likelihood to make induced trips. Half (50%) of respondents who did not have access to a personal vehicle made an induced trip in the past month, compared with 39% of respondents who had a personal vehicle available.
- Personal Bike Available – A slightly higher share of respondents who did not have a personal bicycle made induced trip (47%), compared with respondents who had a personal bicycle (42%).

Capital Bikeshare Encouraging Patronage of Bikeshare-accessible Establishments

Several of the earlier results indicate that the availability of bikeshare broadened the range of destinations to which members could travel. To examine this further, the survey included a question that asked, “if a commercial or retail business, restaurant, or shop is easily accessible by Capital Bikeshare, does that access make you more or less likely to patronize that establishment?"

Figure 21 clearly shows that Capital Bikeshare access made establishments more attractive to most bikeshare members. Eight in ten respondents said they were either much more likely (32%) or somewhat more likely (48%) to patronize a bikeshare-accessible establishment. Seventeen percent said access was not a factor in their choice of establishments. Bikeshare access certainly did not appear to be detrimental to an establishment; only 3% of the respondents said they would be less likely to patronize a bikeshare-accessible establishment.

Figure 21
Likelihood to Patronize Establishment if Accessible by Capital Bikeshare
(n = 5,553)

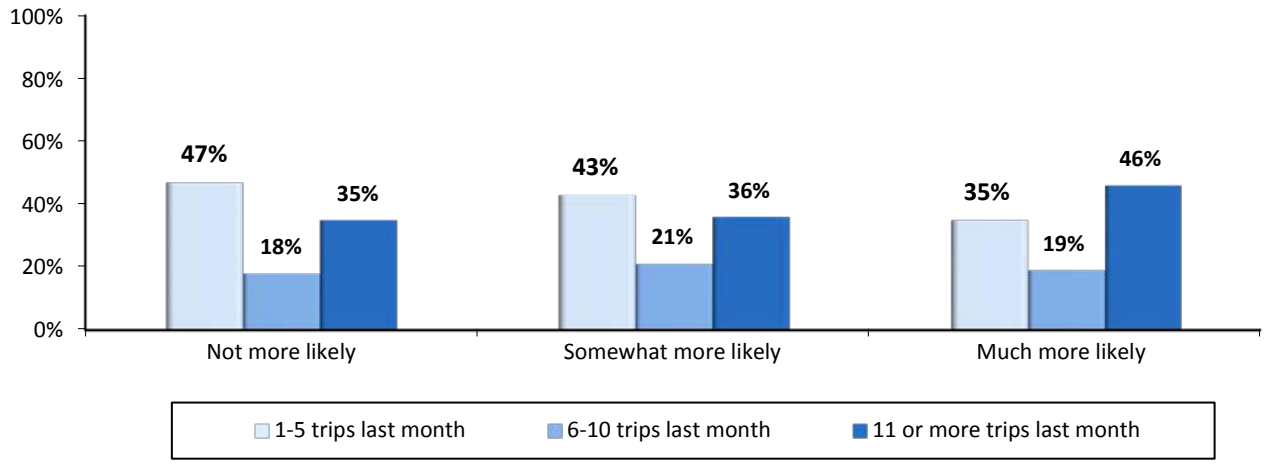


Frequency of Bikeshare Use by Importance of Capital Bikeshare Accessibility

Given the overwhelming support for Capital Bikeshare-accessibility across all survey respondents, it is not surprising that this result was consistent across nearly all respondent subgroups. One interesting result, however, was that respondents who reported greater likelihood to patronize a bikeshare-accessible establishment made more bikeshare trips in the past month.

Among respondents who said they were much more likely to patronize a bikeshare-accessible establishment, 65% made at least six bikeshare trips in the past month and 46% made at least 11 bikeshare trips (Figure 22). Among respondents who said they were somewhat more likely to patronize a bikeshare-accessible establishment, 57% made six or more bikeshare trips and 36% made 11 or more bikeshare trips. The results were similar for respondents who said they were not more likely to patronize the bikeshare-accessible establishment; 53% made at least six trips and 35% made 11 or more bikeshare trips in the past month.

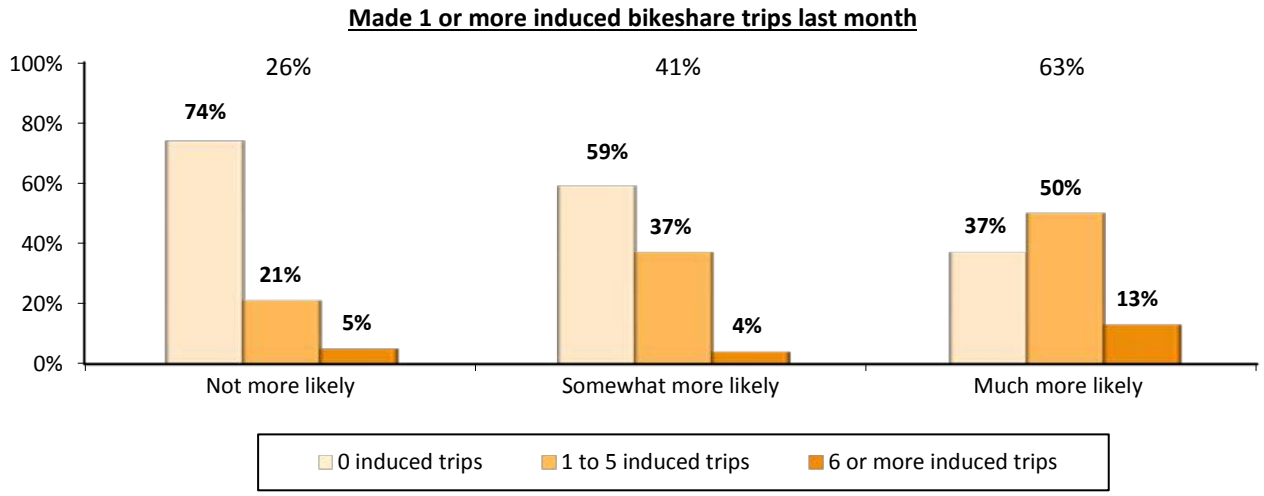
Figure 22
Trips Made in Past Month By Likelihood to Patronize Establishment if Accessible by Capital Bikeshare
(Not more likely n = 1,071, Somewhat more likely n = 2,657, Much more likely n = 1,782)



Induced Trips by Importance of Capital Bikeshare Accessibility

Respondents who said bikeshare access was a motivating factor also made induced trips at a much higher rate (Figure 23). Two-thirds (63%) of respondents who said they were much more likely to patronize a Capital Bikeshare-accessible establishment made an induced trip in the past month, compared with 41% who said they were somewhat more likely, and only 26% of those who said they were not more likely to patronize the establishment. This suggests the decision to make some, and perhaps many, induced trips was motivated by the establishments' accessibility.

Figure 23
Made Induced Trip in Past Month By Likelihood to Patronize Establishment if Accessible by Capital Bikeshare
(Not more likely n = 1,081, Somewhat more likely n = 2,669, Much more likely n = 1,796)



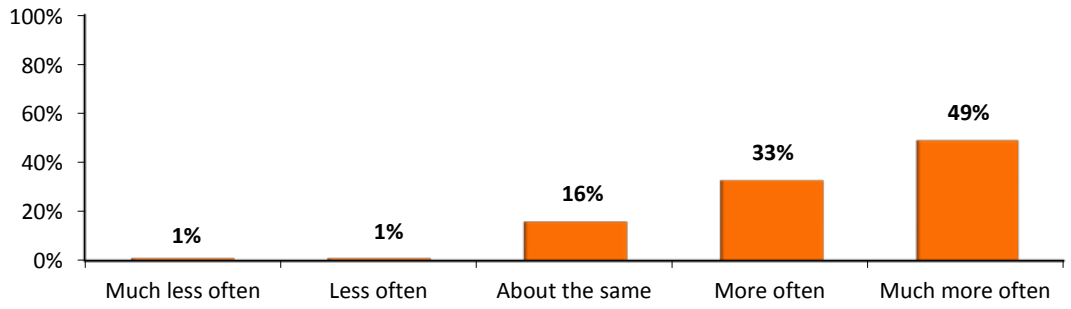
Changes in Use of Biking and Non-Biking Modes Since Joining Capital Bikeshare

One expected impact of bikeshare is to encourage members to shift travel from other modes to bicycling. To explore this possibility, the survey asked respondents if, as a result of their use of Capital Bikeshare, they had increased, decreased, or made no change in how often they rode a bicycle and how often they used other forms of transportation.

Change in Bicycle Use

More than eight in ten respondents said they bicycled more often since joining Capital Bikeshare; 33% said they bicycled "somewhat more often" and 49% bicycled "much more often" (Figure 24). Sixteen percent made no change in how often they bicycled and two percent said they reduced their bicycle use.

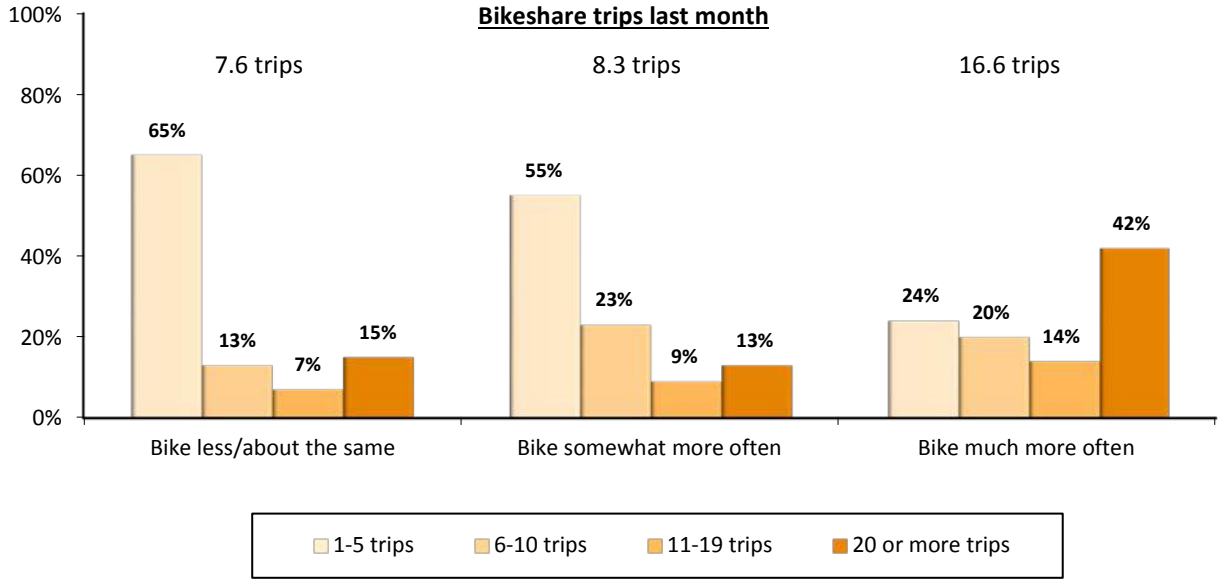
Figure 24
Change in Bicycle Use Since Joining Capital Bikeshare
(n = 5,750)



Presumably, respondents' bikeshare use was the reason they increased their bicycling. But the question asked respondents to consider both their use of bikeshare and personal bicycle when answering about changes in bike use, so some new bicycle use could be with a personal bike. To examine the role bikeshare played in encouraging greater use of bicycle, the survey analysis examined the number of Capital Bikeshare trips the respondents made in the past month by their reported change in bicycle use (Figure 25).

Respondents who reported the greatest increase in bike use also reported the most frequent Capital Bikeshare use. Respondents who said they biked "much more often" reported making an average of 16.6 bikeshare trips in the past month, compared with 8.3 trips for respondents who said they biked "somewhat more often," and 7.6 trips for those who reported no increase in bike use. And 56% of "much more often" respondents made at least 11 Capital Bikeshare trips in the past month, compared with 23% of the "somewhat more often" respondents and 21% of those who reported no increase in bike use.

Figure 25
Capital Bikeshare Trips Made Last Month By Change in Bicycle Use Since Joining Capital Bikeshare
(Bike less often/about the same n = 1,004, Bike somewhat more often n = 1,895, Bike much more often n = 2,803)



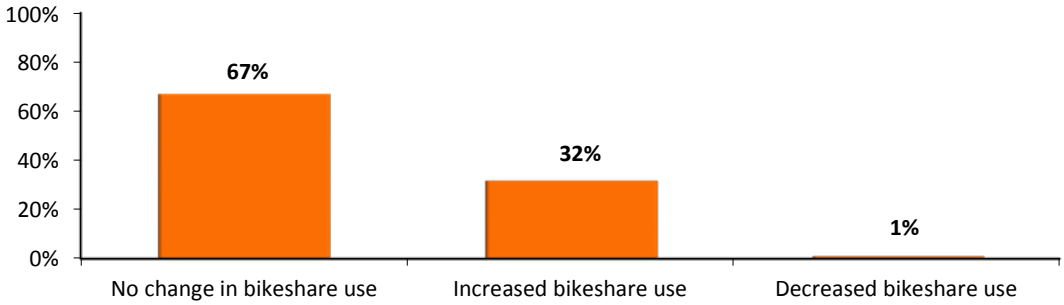
Change in Bicycle Use Due to WMATA's Safe Track Program

The 2016 survey asked a new question to determine if the WMATA SafeTrack program, which reduced Metrorail hours of service and added travel time to Metrorail trips, had influenced bikeshare members' use of bikeshare:

> *"WMATA recently started the 12-month safety program SafeTrack, an accelerated track work plan to rehabilitate the Metrorail system and address safety issues. Has the SafeTrack program changed how often you use Capital Bikeshare for your travel?"*

One-third of all respondents said they increased their Capital Bikeshare use in response to the SafeTrack service cut-backs (Figure 26). One percent of respondents said they had decreased bikeshare use. The majority (67%) of respondents did not make any changes in their bikeshare use as a result of the SafeTrack program.

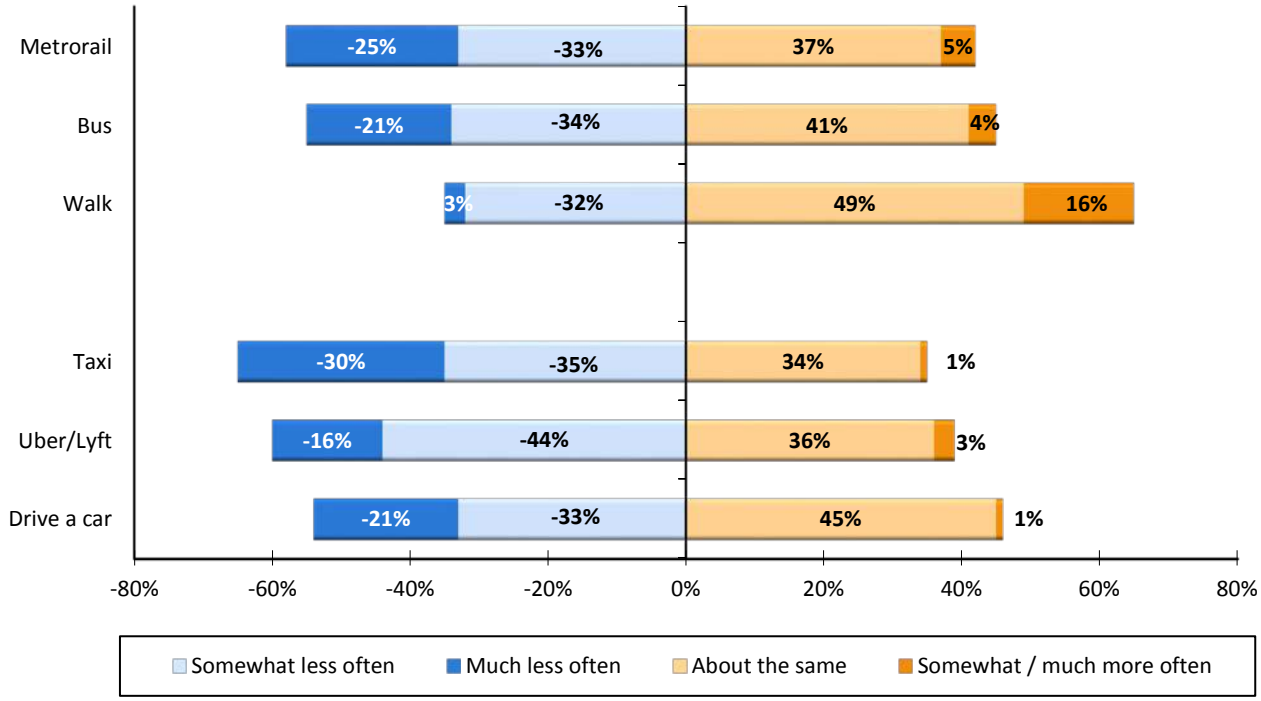
Figure 26
Change in Bicycle Use in Response to WMATA's SafeTrack Program
(n = 5,665)



Change in Use of Transit, Walking, and Auto Modes

The survey also asked respondents if they had changed their use of any of six non-bicycle types of transportation: Metrorail, bus, walking, driving a car, ride-hailing (Uber/Lyft), and taxi. These results are illustrated in Figure 27.

Figure 27
Change in Use of Non-bicycle Modes Since Joining Capital Bikeshare
(Metrorail n = 5,475, Bus n = 4,666, Walk n = 5,733, Taxi n = 4,189, Uber/Lyft n = 4,813, Car n = 4,256)



Respondents substantially reduced their use of both Metrorail and bus since they joined Capital Bikeshare. Nearly six in ten reduced their use of Metrorail; 33% rode Metrorail somewhat less often and 25% rode much less often. About half rode a bus somewhat less often (34%) or much less often (21%). Only 5% of respondents increased use of Metrorail and 4% increased bus use. Respondents also decreased their use of walking; about one-third walked either somewhat less often (32%) or much less often (3%). But 16% of respondents said they walked more often.

Finally, the survey asked respondents about changes they made in how often they drove a car and how often they rode in a taxi or used a ride-hailing service (e.g., Uber/Lyft). Respondents substantially reduced their use of all three of these modes. Nearly two-thirds reduced their taxi use; 35% said they used a taxi somewhat less often and 30% used a taxi much less often. Six in ten respondents reduced their use of Uber/Lyft; 44% used the mode somewhat less often and 16% used it much less often. And more than half of respondents reduced how often they drove a car; 33% drove somewhat less often and 21% drove much less often. Very few respondents increased use of these modes; 1% increased taxi use, 1% increased driving/car use, and 3% increased used of Uber/Lyft.

Change in Use of Non-bicycling Modes by Frequency of Capital Bikeshare Use

The preceding figures showed that, overall, survey respondents increased their use of biking and decreased use of other modes. As also noted earlier, many respondents said they used Capital Bikeshare to make some trips they would not otherwise have made. For these trips, bikeshare would not substitute for another mode. But presumably, some trips now made by bikeshare would have been made previously by a different type of transportation.

To examine possible shifts in mode use, the analysis compared changes in respondents' use of each non-biking mode against their frequency of bikeshare use (Table 10). Each mode column in the table presents the percentage of respondents who reduced use of that mode by the frequency with which they used Capital Bikeshare. For example, the Metrorail column shows that 46% of respondents who made between one and five trips by bikeshare in the past month reduced their bus use after joining the service.

Table 10
Respondents Who Reduced Use of Modes Other than Bicycle By Frequency of Capital Bikeshare Use
(1-5 trips n = 2,343, 6-10 trips n = 1,114, 11-19 trips n = 628, 20 or more trips n = 1,602)

Capital Bikeshare Trips in Past Month	Percentage of Respondents who Reduced Use of Mode					
	Metrorail	Bus	Walk	Drive a Car	Taxi	Uber/Lyft
1-5 trips	46%	41%	27%	46%	57%	52%
6-10 trips	61%	58%	37%	58%	71%	66%
11-19 trips	64%	63%	41%	61%	69%	68%
20 or more trips	73%	71%	44%	62%	73%	66%
Net reduction	**27%**	**30%**	**17%**	**16%**	**16%**	**14%**

Among respondents who made six to ten bikeshare trips in the past month, 61% had reduced Metrorail use since joining bikeshare. The percentage of respondents who reduced Metrorail use was even greater among those who made 11 to 19 bikeshare trips (64%) and 20 or more trips (73%). The "Net reduction" row shows that the percentage of respondents in the most frequent bikeshare use group (20 or more trips = 73%) who reduced Metrorail use was 27 percentage points higher than for the most infrequent bikeshare use group (1 to 5 trips = 46%).

The results were similar for the other modes; the share of respondents who reduced use of a non-biking mode since they joined Capital Bikeshare increased as their bikeshare use increased. The change was most pronounced for Metrorail and bus. The differences were less dramatic for use of walk, driving a car, taxi, and the Uber/Lyft ride-hailing services, suggesting that bikeshare was substituted less often for these modes.

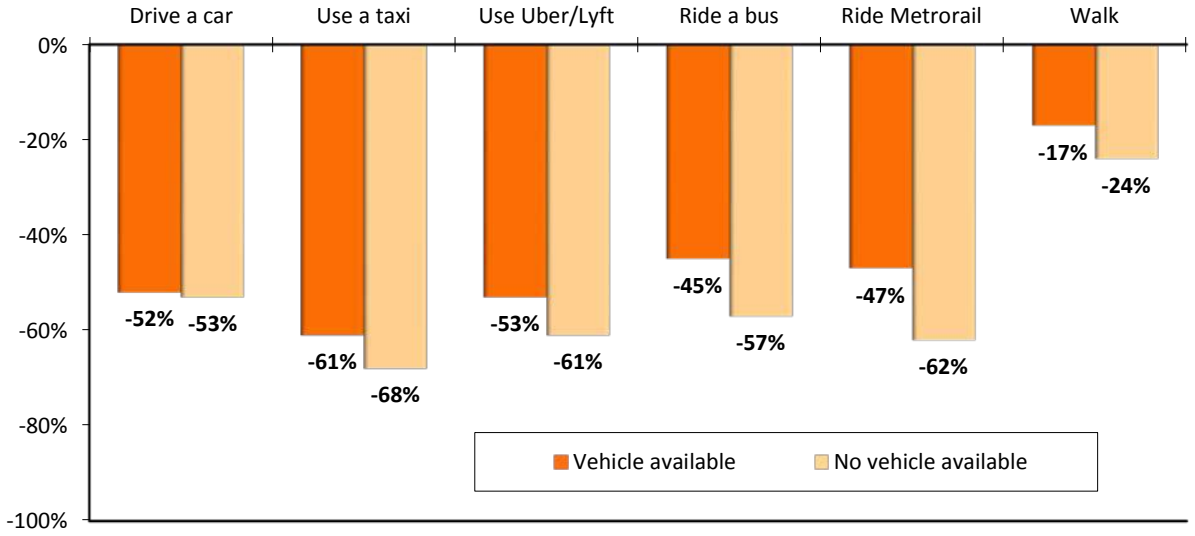
Net Change in Use of Non-bike Modes by Motor Vehicle Availability

It seems reasonable to expect that car-free respondents would have made different mode changes than those who had a vehicle option. Figure 28 compares the "net change" in use of the six non-bike modes for respondents who had a personal motor vehicle available for regular travel with the net change for those who did not have a vehicle. In this chart the "net change" percentage for each mode was calculated as the percentages of respondents who said they reduced use of that mode since joining Capital Bikeshare minus the percentage who said they increased use of the mode.

Both the "with vehicle" and "no vehicle" respondent subgroups reported significant net reductions in driving a car, but the reductions were essentially the same for the two groups: -52% net reduction for those who had a personal motor vehicle and -53% net reduction for those who did not have a vehicle. For all other modes, respondents who did not have a vehicle regularly available for their travel showed greater mode use reductions, although respondents who had a vehicle available also reported substantial net reductions in these modes.

Figure 28
Net Change in Use of Car, Taxi, Uber/Lyft, Bus, Metrorail, and Walk Since Joining Capital Bikeshare By Vehicle Available

(Vehicle available n = 3,212, No vehicle available n = 2,193)

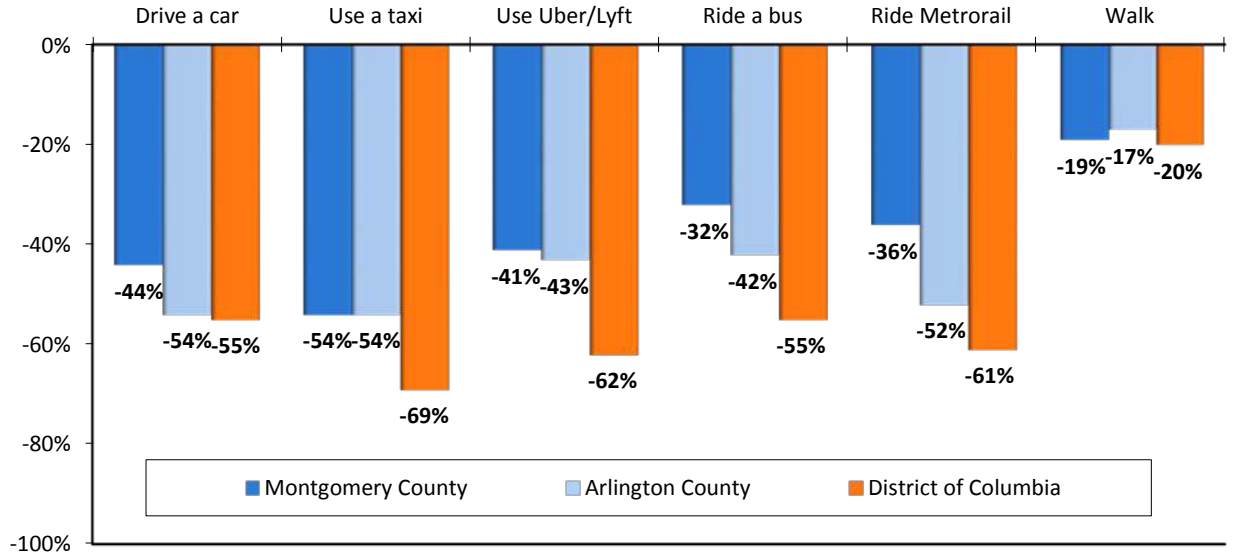


Net Change in Use of Non-bike Modes by Home Locations

The mode use "net change" comparison in Figure 29 compares mode changes for respondents who lived in three of the jurisdictions where Capital Bikeshare stations are located: District of Columbia, Arlington County, and Montgomery County. The other jurisdictions had smaller sample sizes, so were not included in the chart.

Figure 29
Net Change in Use of Car, Taxi, Uber/Lyft, Bus, Metrorail, and Walk Since Joining Capital Bikeshare By Home Location

(Montgomery County n = 601, Arlington County n = 584, District of Columbia n = 3,717)



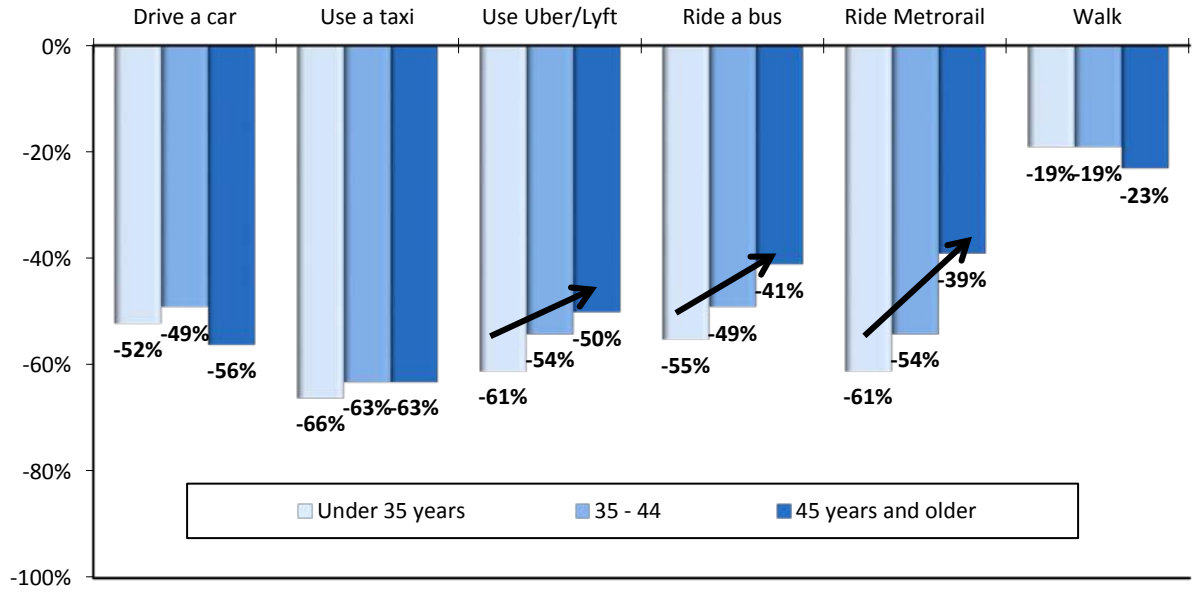
Respondents in each jurisdiction had net reductions in use of all six modes. Reductions in the use of walking were not statistically different for the three groups. But District of Columbia respondents reported much greater net reductions than did Arlington County respondents or Montgomery County respondents in their use of four modes: taxi, Uber/Lyft, bus, and Metrorail. And Arlington residents had greater reductions than did Montgomery residents for bus and Metrorail. For drive a car use, the reductions were similar for residents of the District (-55%) and Arlington County (-54%) and only slightly lower (-44%) for Montgomery residents.

Net Change in Use of Non-bike Modes by Demographic Characteristics

Finally, the analysis examined changes in mode use for demographic sub-groups. No significant differences were found by sex, race, or income, but change in mode use did appear related to age. Figure 30 displays the mode use "net change" comparison for respondents of three age groups: younger than 35 years old, 35 to 44 years old, and 45 years and older.

The figure shows a clear age-related pattern for Uber/Lyft, bus, and Metrorail – substantial mode use reduction across all categories, but with declining reductions as age increased. Reductions in use of a car, taxi, and walk did not show distinct patterns by age; they were not statistically different for the three groups.

Figure 30
Net Change in Use of Car, Taxi, Uber/Lyft, Bus, Metrorail, and Walk Since Joining Capital Bikeshare By Age
(Under 35 years n = 2,595, 35 - 44 n = 1,005, 45 and older n = 911)



Reduction in Driving Miles Since Joining Capital Bikeshare

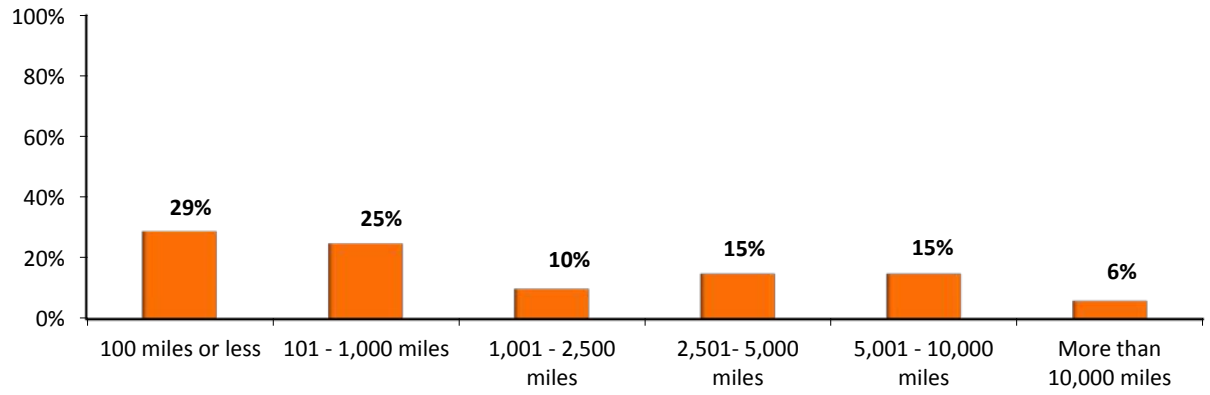
The previous section described the results of a qualitative question about Capital Bikeshare members' change in use of driving a car since joining the service. The survey also included questions to examine change in the annual number of miles respondents drive since joining Capital Bikeshare. All respondents were first asked how many miles they drove per year in the Washington metropolitan region at the time of the survey and then were asked a follow-up question to identify respondents who had decreased their driving miles since joining Capital Bikeshare. Respondents who had reduced their driving miles were then asked how many miles they drove in the region prior

to joining Capital Bikeshare and how much their use of bikeshare had contributed to the driving miles change. The results of these questions were used to examine the influence of bikeshare on annual driving miles.

Annual Miles Traveled by Driving

All respondents were asked how many miles they drove per year at the time of the survey. On average, respondents were driving 3,018 miles per year. This average was considerably below the more than 14,000 average driving miles of U.S. residents. Only 6% of bikeshare members drove more than 10,000 miles per year and more than half (54%) drove 1,000 miles per year or less (Figure 31).

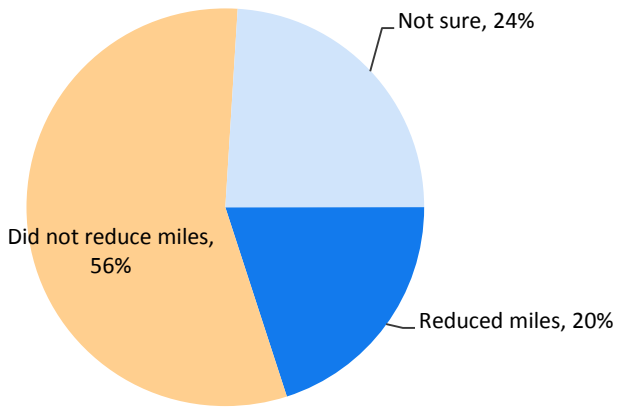
Figure 31
Total Annual Vehicle Miles Driven at the Time of the Survey (After Joining Capital Bikeshare)
(n = 5,435)



Reduction in Annual Driving Miles Since Joining Capital Bikeshare

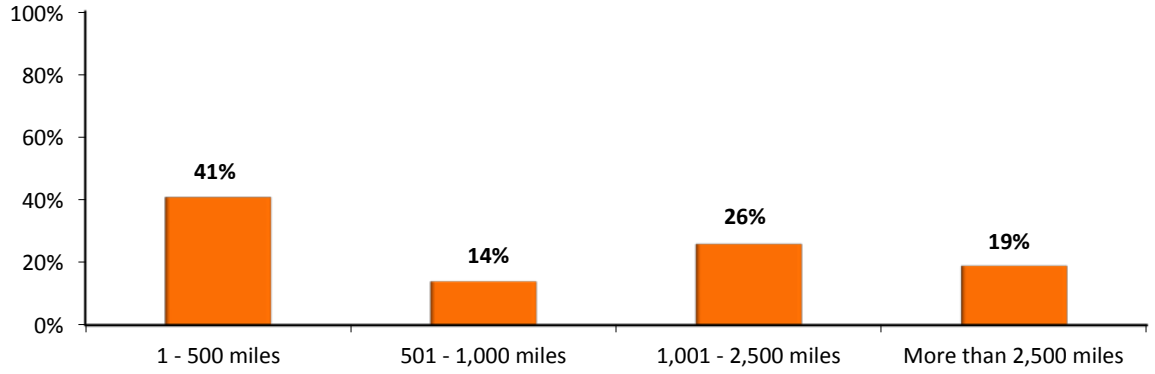
In a follow-up question about a possible reduction in driving, 20% of respondents said they had reduced the number of miles they drove per year in the Washington metropolitan region (Figure 32). About half (56%) said they had not reduced their local driving. One-quarter (24%) did not know if they had made a change in driving miles.

Figure 32
Reduction in Driving Miles Since Joining Capital Bikeshare
(n = 5,832)



The 20% of respondents who had reduced driving miles were asked how many miles they drove before joining Capital Bikeshare. Among respondents who reduced driving miles, 41% reduced from one to 500 miles, 14% eliminated between 501 and 1,000 miles, 26% reduced between 1,001 and 2,500 miles, and 19% reduced more than 2,500 annual driving miles (Figure 33).

Figure 33
Change in Annual Vehicle Miles Driven Since Joining Capital Bikeshare
(Respondents who reduced driving miles n = 1,151)



On average, the respondents who reported both a before bikeshare and after bikeshare mileage drove 2,430 miles per year at the time of the survey and 3,995 miles per year before they joined Capital Bikeshare. Thus, they each reduced an average of 1,565 miles per year.

Changes in Driving Miles by Various Groups of Respondents – Changes in driving miles were not uniformly distributed across all respondents. Table 11 shows the percentages of various respondent groups who decreased driving miles. The change in the number of driving miles after joining Capital Bikeshare appeared connected to:

- Frequency of Capital Bikeshare Use – Frequent bikeshare users were more likely to report reduced driving miles than were respondents who used bikeshare less often. One-quarter (25%) of respondents who made 20 or more bikeshare trips in the past month reduced their annual driving miles compared with 17% of those who made fewer than six bikeshare trips in the past month.
- Age – Driving reductions were noted in all age groups, but older respondents were more likely than were younger respondents to have reduced their driving miles. Only 13% of respondents who were under 25 years old reported a reduction, compared with about two in ten respondents who were between 25 and 44 years old and 26% of respondents who were 45 or older.
- Sex – A higher proportion of male respondents decreased driving miles (24% of men vs 18% of women).
- Race/Ethnicity – White respondents reduced driving miles at a higher rate (22%) than did non-white respondents (18%).
- Availability of a Personal Vehicle – A higher share (24%) of respondents who had a personal motor vehicle available decreased driving miles; only 16% of respondents who did not have a vehicle available reduced driving miles.

Table 11
Respondents Decreased Annual Driving Miles Since Joining Bikeshare
By Age, Sex, Race / Ethnicity, and Frequency of Bikeshare Use

Respondent Characteristic	Percentage Who Decreased Driving Miles
Capital Bikeshare trips in Past Month	
1 – 5 trips (n = 2,303)	17%
6 – 10 trips (n = 1,049)	24%
11 – 19 trips (n = 594)	22%
20 or more trips (n = 1,459)	25%
Age	
Less than 25 years old (n = 310)	13%
25 – 34 years old (n = 2,278)	19%
35 – 44 years old (n = 1,135)	21%
45 or older (n = 1,266)	26%
Sex	
Female (n = 2,131)	18%
Male (n = 3,007)	24%
Race/Ethnicity	
Non-white (n = 633)	18%
White (n = 3,958)	22%
Have Personal Vehicle Available	
No (n = 2,304)	16%
Yes (n = 3,242)	22%

(Statistically higher percentages are shaded)

Impact of Driving Miles Changes Overall

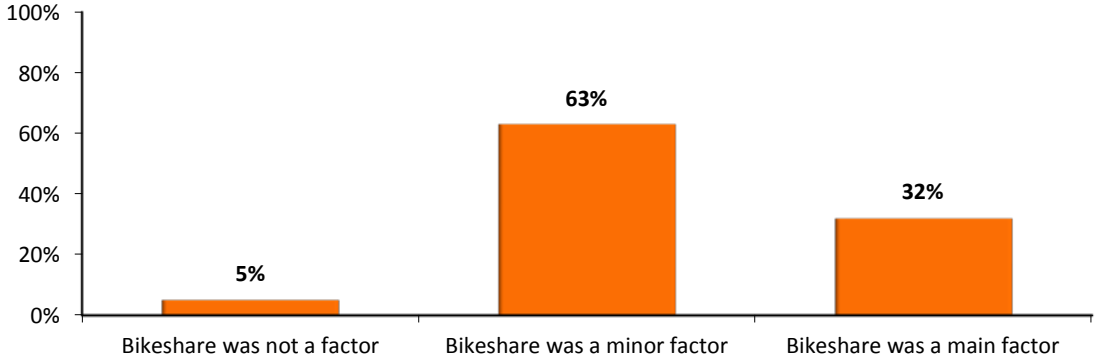
As noted earlier, respondents who reduced driving miles and who reported both a current and pre-bikeshare mileage drove about 2,430 miles per year at the time of the survey and 3,995 miles per year before they joined Capital Bikeshare, a reduction of about 1,565 miles annually.

When these survey results were applied to the estimated Capital Bikeshare member population in November 2016, the month in which the survey was conducted, the results show that members reduced about 9.9 million driving miles annually:

- Number of Capital Bikeshare members (November 2016) 31,667
- Percentage of members who reduced driving miles 20%
- Estimated annual VMT reduced per member 1,565
- Estimated total annual VMT reduced **9,912,000 annual miles**

Contribution of Capital Bikeshare to Reduction in Driving – It is likely that not all of the 9.9 million driving miles reduction was directly due to or influence by Capital Bikeshare. Respondents who said they decreased their driving miles since joining Capital Bikeshare were asked to what extent Capital Bikeshare contributed to the change (Figure 34). Overall, 95% of respondents who reduced their driving miles indicated that bikeshare had been at least somewhat of a factor contributing to the reduction. Three in ten (32%) said it was the *main factor* influencing their reduced driving and 63% said it was a *minor factor*.

Figure 34
Role of Capital Bikeshare in Contributing to Reduced Driving
(n = 1,271)



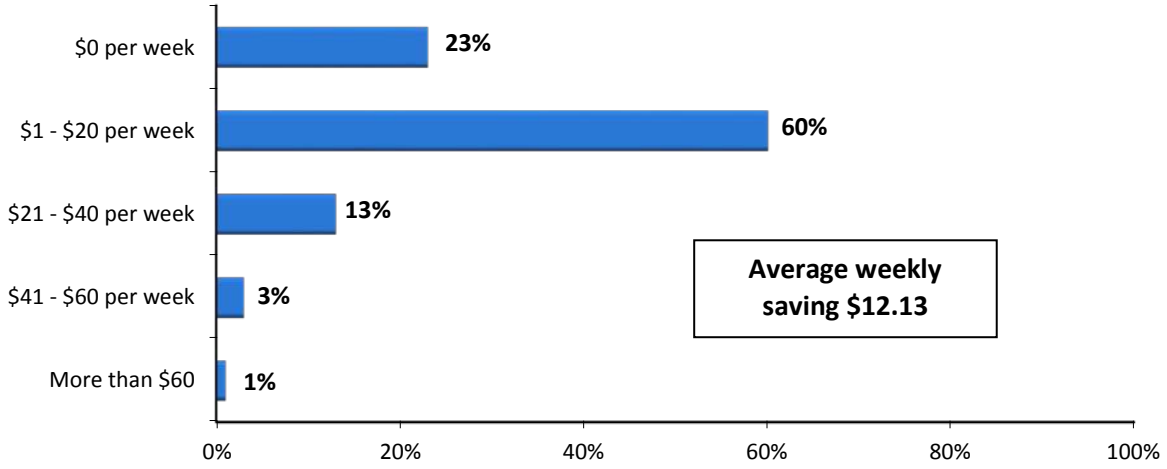
Capital Bikeshare Members' Cost Saving by Using Capital Bikeshare

One possible personal outcome of a members' use of Capital Bikeshare would be to reduce his or her transportation costs. Capital Bikeshare service is free for the first 30 minutes of any trip, so trips shifted from public transit, taxi, or even personal vehicle would result in a personal cost saving. Respondents were asked how much money Capital Bikeshare saved them weekly on their travel costs, compared with what they spent before they joined.

More than three-quarters (77%) of respondents said Capital Bikeshare saved them money (Figure 35). Six in ten they saved between one dollar and $20 per week, 13% saved between $21 and $40, and 4% saved more than $40. Across all respondents, the average weekly saving was $12.13, or about $631 over the course of a year.

Not surprisingly, respondents who used bikeshare more frequently reported higher cost savings. Respondents who made at least 11 trips in the previous month reported an average weekly saving of $17.75, for an annual total of $923. And District of Columbia residents ($680 saving per year) and members who were younger than 35 years ($683) saved more per year than did residents of other jurisdictions and older members, likely due to their greater use of the service.

Figure 35
Weekly Travel Cost Saving Since Joining Capital Bikeshare
(n = 5,368)



When the average travel cost saving is applied to the 31,667 Capital Bikeshare members in November 2016, the collective saving was nearly $20 million dollars each year.

- Number of bikeshare members (November 2016) 31,667
- Estimated annual cost saving per member $631
- Estimated total annual cost saving **$19,982,000 annually**

Commute Travel of Bikeshare Users

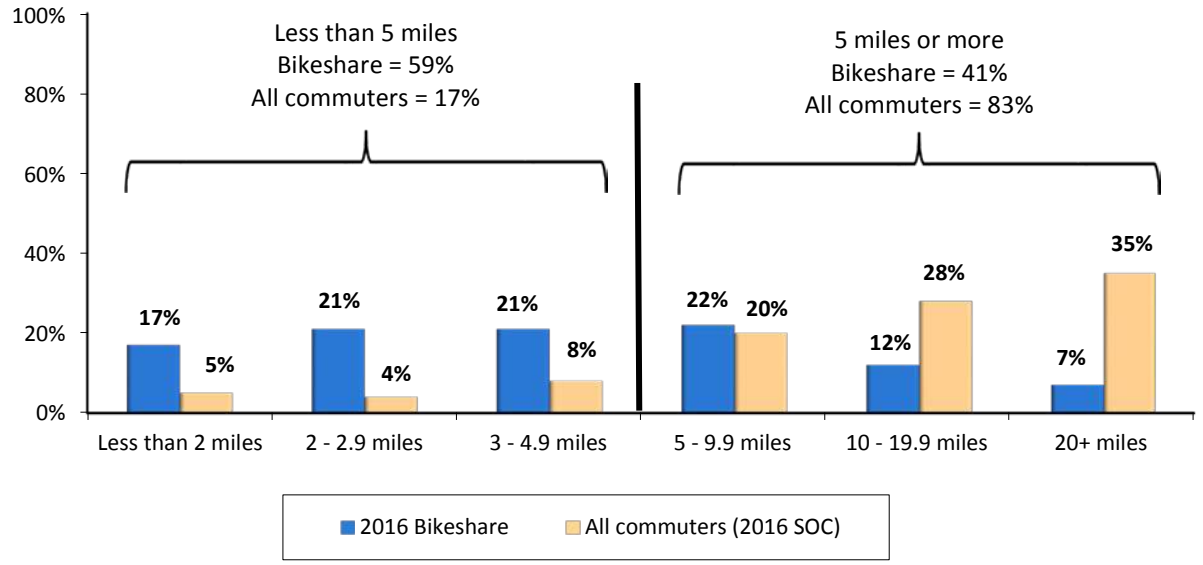
Nearly all (95%) respondents said they were employed. These respondents were asked about their current travel from home to work.

Commute Distance to Work

Bikeshare members traveled much shorter distances to work than did all commuters in the Washington metropolitan region (Figure 36). Nearly six in ten bikeshare survey respondents traveled fewer than five miles to work and 38% traveled fewer than three miles. Only 19% traveled 10 miles or more. On average, bikeshare survey respondents traveled 6.4 miles to work, one-way, approximately the same as the distances estimated in the three previous bikeshare surveys (2014 – 6 2 miles, 2012 – 6.3 miles, and 2011 – 6.2 miles).

The figure also shows the distance distribution for all commuters in the region (2016 SOC survey). The bikeshare distance was dramatically shorter than the distance for all commuters in the region. Only 17% of all regional commuters traveled five miles or fewer and 63% of all regional commuters traveled 10 or more miles. The average commuter in the Washington metropolitan region traveled 17.3 miles one-way to work, about 11 miles farther than the distance traveled by the average Capital Bikeshare respondent.

Figure 36
Commute Distance – Bikeshare Users and All Commuters
(November 2016 Capital Bikeshare respondents n = 5,407, 2016 SOC All Commuters n = 4,766)



Bikeshare respondents who lived in the District of Columbia traveled shorter distances than did respondents who lived in other jurisdictions; 74% of District bikeshare respondents commuted fewer than five miles, while only 47% of Arlington bikeshare respondents, 24% of Alexandria respondents, and 13% of Montgomery County resident members had such a short trip.

Young bikeshare respondents also were more likely to have short commutes; 67% of respondents who were younger than 35 years traveled fewer than five miles to work, compared with 55% of respondents who were between 35 and 44 years and 43% of respondents who were 45 years of age or older.

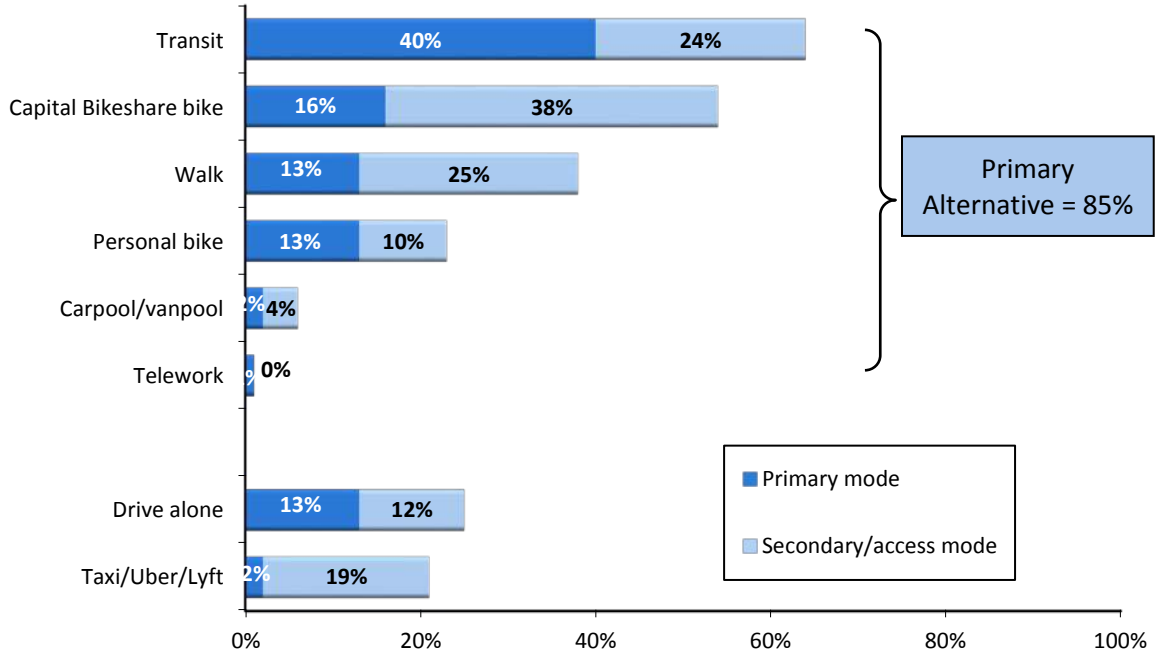
Travel Mode Used to Get to Work

The survey asked respondents what types of transportation they used to get to work over the course of a "typical week" and what type they used "most days for the longest distance part" of their trip. In combination, these questions indicated the primary mode (most used mode) and other modes that respondents used as secondary modes.

Figure 37 shows percentages of respondents who used each of eight modes as primary modes and the percentages who used them as secondary modes. The figure includes seven "on the road" modes for travel to job locations outside the home: transit (train/Metrorail/commuter rail and bus), Capital Bikeshare bike, personal bike, walk, carpool/vanpool, drive alone, and taxi/Uber/Lyft. The figure also includes the mode share for telework. This is not actually a travel mode, but is included to show the percentage of weekly work trips that were eliminated through use of this work location option.

"Primary" Commute Mode – The overwhelming majority (85%) of respondents used a mode other than driving alone or taxi/Uber/Lyft as the primary mode. Four in ten (40%) respondents primarily rode public transit (Metrorail, bus, or commuter rail) and 29% primarily bicycled (16% used Capital Bikeshare and 13% used a personal bicycle). Equal shares of respondents walked (13%) and drove alone (13%) as their primary mode. Two percent of respondents primarily carpooled or vanpooled and 2% rode in a taxi/Uber/Lyft vehicle. The remaining 1% of respondents primarily teleworked (worked at home).

Figure 37
Commute Modes – Primary and Secondary Mode
(n = 5,193)



These results were very similar to the results found in the 2014 and 2012 CB surveys. In 2016, 15% of respondents drove alone or used a taxi/Uber/Lyft, essentially the same as the 13% of respondents who used these modes in 2014 and 2012. Among alternative mode users, the percentages of mode use also were consistent:

Primary Commute Mode	2012	2014	2016
• Public transit	41%	43%	40%
• Bicycle	30%	29%	29%
• Walk	12%	12%	13%
• Carpool/vanpool	2%	2%	2%
• Telework	3%	3%	1%

"Secondary" Commute Mode – Figure 37 also shows the percentages of respondents who used each mode as a secondary mode, in addition to their primary mode. Secondary modes could be modes used regularly one or two days per week, but also would include modes used to access a primary mode, such as walking to a bus stop or riding a bicycle to a Metrorail station. And since bikeshare offers a one-way trip option, secondary use of modes also could include using the mode occasionally for either a trip to work or a trip home from work when the other trip was made using transit, walking, taxi, or another one-way option.

Capital Bikeshare was the most common secondary mode; 38% of respondents reported using bikeshare in addition to their primary mode. About one-quarter of respondents reported walking (25%) and using public transit (24%) as secondary modes. Two in ten (19%) rode in a taxi/Uber/Lyft and 12% drove alone. Ten percent used a personal bike and 4% carpooled/vanpooled as a secondary mode.

Table 12 displays the secondary modes that respondents reported using, associated with their primary modes. Capital Bikeshare bicycle was a secondary mode for many respondents. More than half (55%) of respondents who primarily rode a personal bicycle and 73% who primarily walked or ran to work said they used bikeshare as a secondary mode. And 67% of respondents who primarily rode a bus or train to work and 53% who primarily carpooled or vanpooled to work used bikeshare as a secondary mode.

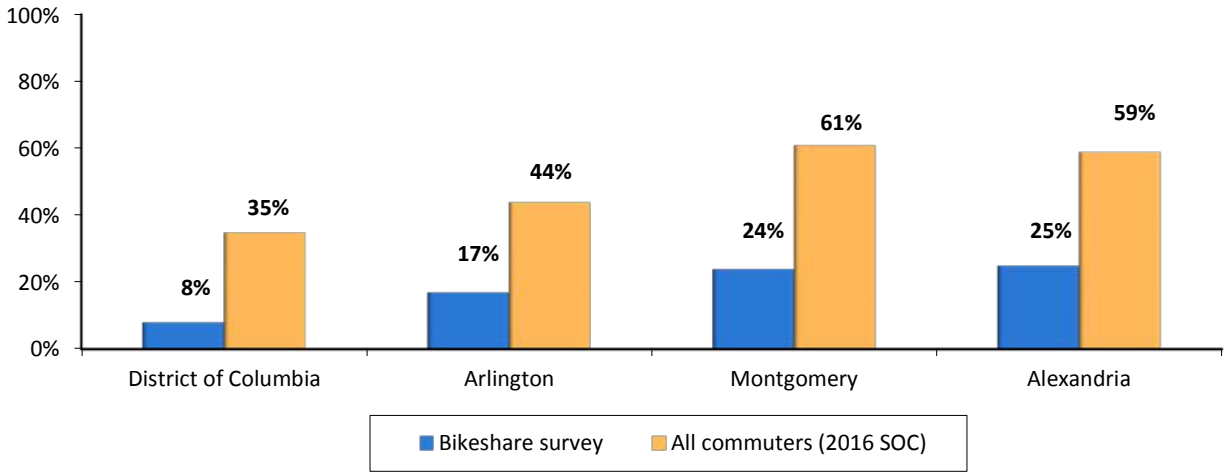
Table 12
Secondary Modes used for Commuting by Primary Mode
(Multiple secondary modes were permitted and rows will not add to 100%)

Primary Mode	Secondary Modes					
	Personal bicycle	CB bicycle	Walk/ run	Bus/ train	Uber/ Lyft	Drive alone
Personal bicycle (n = 535)	0%	55%	30%	59%	13%	17%
Capital Bikeshare bike (n = 785)	9%	0%	55%	60%	25%	11%
Walk or run (n = 451)	14%	73%	0%	40%	24%	10%
Bus or train (n = 1,641)	16%	67%	34%	0%	24%	21%
Drive alone/taxi/Uber/Lyft (n = 316)	22%	40%	23%	49%	16%	11%
Carpool/vanpool (n = 88)	11%	53%	23%	63%	17%	22%

Primary Commute Mode for Capital Bikeshare Members vs All Regional Commuters – The 11% share of survey respondents who primarily drove alone to work was well below the drive alone mode share for all commuters in the Washington region. According to the 2016 State of Commute survey, about 61% of all commuters in the Washington metropolitan region primarily drove alone to work. Even accounting for the fact that the majority of bikeshare respondents lived in the District of Columbia, Arlington County, Montgomery County, or the City of Alexandria, the drive alone rate of bikeshare users was quite low.

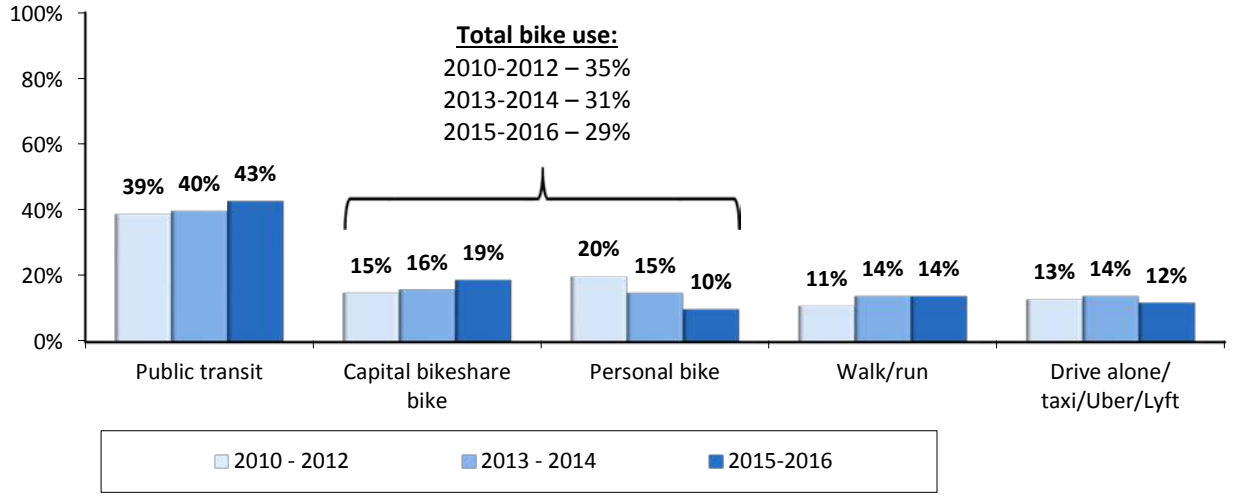
Figure 38 compares the drive alone rates by home area for bikeshare survey respondents and for all commuters in these four jurisdictions. Only 8% of bikeshare survey respondents who lived in the District of Columbia drove alone to work, compared with 35% of all commuters who lived in the District. The disparities in drive alone rates were similarly striking for the three other jurisdictions; the percentage of bikeshare respondents who drove alone to work was less than half the rate for commuters overall in those jurisdictions.

Figure 38
Drive Alone Mode Share – Bikeshare Respondents vs All Commuters By Home Location
(Bikeshare: DC n = 3,364, Arlington n = 528, Alexandria n = 191, Montgomery n = 556)
(2016 SOC survey: DC n = 599, Arlington n = 549, Alexandria n = 506, Montgomery n = 569)



Commute Mode by When Joined Capital Bikeshare – Bicycle commuting was more common among early-adopter bikeshare members than among members who joined more recently; 35% who joined Capital Bikeshare between 2010 and 2012 primarily bicycled to work, compared with 31% of respondents who joined during 2013 or 2014, and 29% who joined during 2015 or 2016 (Figure 39). But recent members used Capital Bikeshare bikes at a higher rate than did early adopters; members who joined earlier used personal bicycles at a higher rate.

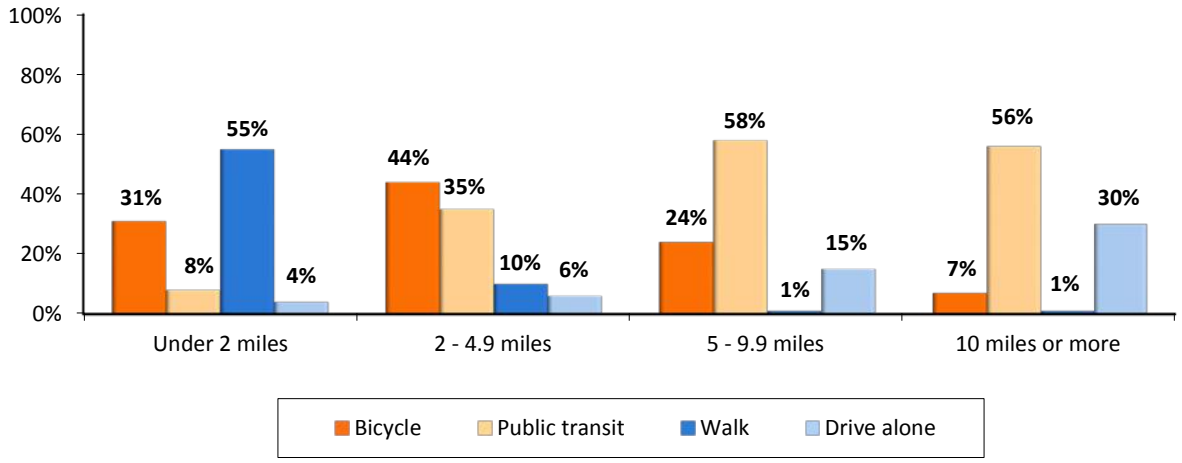
Figure 39
Primary Commute Mode of Bikeshare Respondents By When Joined Capital Bikeshare
(2010-2012 n = 1,127; 2013-2014 n = 1,379; 2015-2016 n = 2,454)



Recent members used transit at a slightly higher rate; 39% of the early adopters (2010-2012) rode transit to work, compared with 43% of respondents who joined in 2015 or 2016. Walking/running also was a more common commute mode among recent members. There was no significant difference among the three groups in the percentages of respondents who drove to work. These results suggest that early bikeshare adopters were disproportionately bicyclists but the mode distribution has since stabilized and Capital Bikeshare is attracting an increased share of transit riders.

Commute Mode by Travel Distance – The distance that respondents traveled to get to work also was a factor in their primary commute mode (Figure 40). Walking (55%) and bicycle (31%) were the top choices of respondents who lived less than two miles from work. Bicycling (44%) also was a common mode for respondents who lived between 2.0 and 4.9 miles from work, but a sizeable share (35%) of respondents in this group rode public transit. Six in ten (58%) respondents who traveled between 5.0 and 9.9 miles to work choose transit; the remaining respondents in this distance group were divided between driving alone (15%) and bicycling (24%). Respondents who traveled the longest distance, 10 miles or more, primarily used public transit (56%) or driving alone (30%), but 7% said they primarily bicycled.

Figure 40
Primary Commute Mode of Bikeshare Respondents By Commute Distance
(Under 2 miles n = 784, 2–4.9 miles n = 2,216, 5–9.9 miles n = 1,138, 10 miles or more n = 1,085)



Bicycle Commuting by Demographic Characteristics – A few differences were noted in bicycle commute use by respondents' demographic characteristics, but the differences were generally small:

- *Home Location* – District of Columbia bikeshare members bicycled to work at a higher rate (36%) than did respondents who lived in Arlington County (29%), Alexandria (26%), or Montgomery County (16%).
- *Sex* – Men were more likely than were women to bicycle to work; 34% of male respondents primarily bicycled, compared with 27% of female respondents.
- *Age* – A slightly higher proportion of young respondents reported bicycling; 32% of respondents who were younger than 35 said bicycle was their primary commuting mode, compared with 30% of respondents between 35 and 44 years old, and 28% of respondents who were 45 or older.
- *Race/Ethnicity* – White respondents bicycled to work at a higher rate (32%) than did non-white respondents (29%).

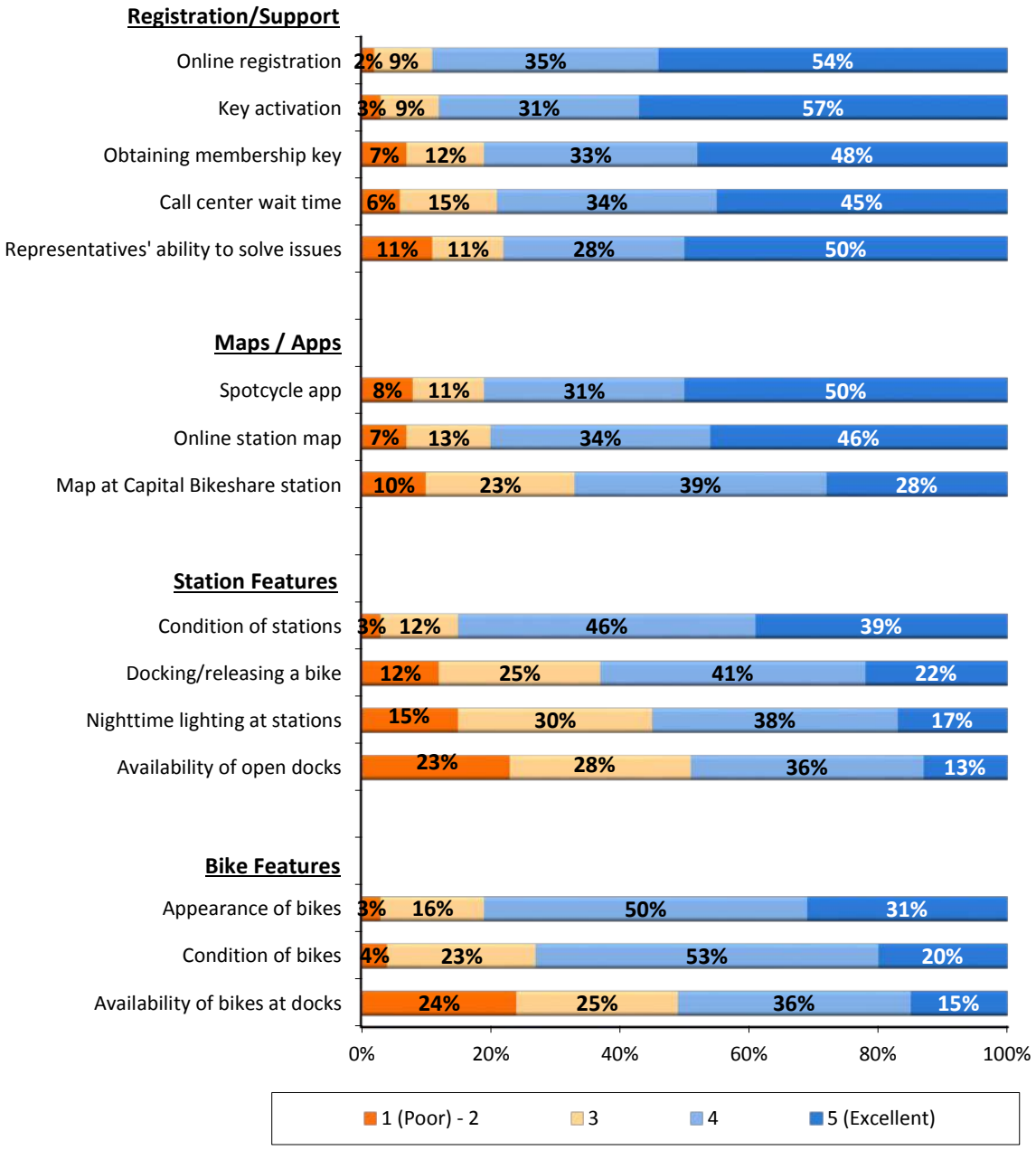
Satisfaction with Bikeshare Features

The survey also examined respondents' satisfaction with a set of individual Capital Bikeshare features. Figure 41 presents the ratings for 15 individual features, divided into four categories: registration and customer support, maps and apps, stations, and bikes, with ratings ranging from 1 (Poor) to 5 (Excellent). Note that the percentages exclude respondents who checked "not sure;" since most of these respondents would not have used that feature, they could not comment on it. Not sure responses ranged from less than 1% to 42%.

Figure 41

Capital Bikeshare Ratings on Service Features – Stations, Bikes, Maps/Apps, Registration/Support

(Sample sizes for individual features range from 3,222 to 5,613)



Respondents gave generally high marks to most bikeshare features; at least half of respondent gave ratings of 4 or 5 (Excellent) to each feature. They gave particularly high ratings for registration and customer support features. Nearly nine in ten gave high ratings for online registration (89%) and key activation (88%) and each of the five features in this category was rated as a 4 or 5 by at least three-quarters of respondents.

Maps and apps also were well-rated. Eight in ten rated the Spotcycle app (81%) and the online station map (80%) as a 4 or 5. Members were slightly less satisfied with the map at bikeshare stations; about two-thirds (67%) rated this feature as a 4 or 5.

One station feature, condition of stations, was particularly well-rated; 85% rated this feature as a 4 or 5. A similar share (81%) of respondents gave a high rating to one bike feature, appearance of bikes. Another bike feature, condition of bikes, was rated as a 4 or 5 by 73% of respondents. Respondents were less satisfied with other station and bike features. About half of respondents gave high ratings to nighttime lighting at stations (51%), availability of bikes at docks (51%), and availability of open docks when the respondent was returning a bike (49%). About one-quarter of respondents rated availability of bikes and availability of docks as a 1 (Poor) or 2.

Ratings for most features were quite consistent across all demographic and use groups. But notable statistical differences were found for some features:

<u>When Respondent Joined Capital Bikeshare</u> – Differences were noted for five features, with respondents who joined early in the service giving higher ratings:

- *Condition of Bikes* – Three-quarters (74%) of respondents who joined Capital Bikeshare between 2010 and 2012 rated condition of bikes as a 4 or 5, compared with 69% of members who joined in 2015 or 2016.
- *Appearance of Bikes* – Eighty-five percent of early-adopter members (2010-2012) gave high ratings for appearance of bikes, compared with 79% of recent members (2015-2016).
- *Representative's Ability to Solve Issues* – More than eight in ten (81%) early-adopters rated this feature as a 4 or 5, compared with 74% of recent members.
- *Online Station Map* – Eighty-four percent of members who joined in 2010-2012 rated the online station map as a 4 or 5, while only 76% of respondents who joined in 2015 or 2016 gave a high rating.
- *Spotcycle App* – The results were similar for the Spotcycle app; 85% who joined between 2010 and 2012 gave a rating of 4 or 5, compared with 77% who joined in 2015 or 2016.

<u>Frequency of Bikeshare Use</u> – Differences were noted for two features, with infrequent riders giving higher ratings:

- *Availability of Bikes at Docks* – Six in ten (59%) of respondents who made fewer than six monthly bikeshare trips and 51% who made between six and ten trips rated this feature a 4 or 5 rating, compared with just 44% of respondents who made 11 or more trips in the past month.
- *Availability of Open Docks* – Frequent riders also gave lower ratings for this feature. More than half (54%) of respondents who made between one and five bikeshare trips gave a 4 or 5 rating, compared with 47% of those who made between six and ten trips, and 43% who made 11 or more trips.

<u>Age</u> – Differences were noted for four features, with older respondents giving higher ratings:

- *Availability of Bikes at Docks* – Just 46% of respondents under 35 years old gave a high rating for this feature, compared with 52% of respondents 35 to 44 years, and 61% of respondents 45 year or older.
- *Availability of Open Docks* – The age pattern noted above was evident also for this feature; 54% of respondents who were 45 years and older gave a 4 or 5 rating, compared with 46% of respondents who were younger than 35 years old.
- *Map at Capital Bikeshare Stations* – Seven in ten (71%) respondents who were 45 years or older rated this feature a 4 or 5, while only 65% of respondents who were under 35 gave a high rating.

- *Nighttime Lighting at Stations* – More than six in ten (62%) respondents 45 years and older gave a 4 or 5 rating, compared with 51% of respondents who were under 35 years old.

Race/Ethnicity – Differences by race/ethnicity were noted for five Capital Bikeshare features, with white respondents always giving higher ratings:

- *Condition of Bikes* – Three-quarters (74%) of white respondents gave a rating of 4 or 5, compared with 66% of non-white respondents.
- *Appearance of Bikes* – More than eight in ten (83%) white respondents gave a high rating, compared with 76% of non-white respondents.
- *Nighttime Lighting at Stations* – Nearly six in ten (58%) white respondents rated this feature as a 4 or 5, compared with 47% of non-white respondents.
- *Online Station Map* – Eighty-two percent of white respondents rated the online station map as a 4 or 5, while only 76% of non-white respondents gave a high rating.
- *Spotcycle App* – The results were identical for the Spotcycle app; 82% of white respondents gave a rating of 4 or 5, compared with 76% of non-whites.

Home Location – Differences were noted for two features, with District residents giving much lower ratings:

- *Availability of Bikes at Docks* – Only 43% of District residents gave a high rating for this feature, compared with 69% of Arlington residents and at least three-quarters of respondents who lived in other jurisdictions.
- *Availability of Open Docks* – Only 44% of District residents gave a rating of 4 or 5 for dock availability, compared with six in ten respondents from other jurisdictions.

Commute by Capital Bikeshare – Respondents who used Capital Bikeshare to get to or from work gave lower ratings for two features than did respondents who used bikeshare only for non-commute purposes:

- *Availability of Bikes at Docks* – Six in ten (60%) respondents who used Capital Bikeshare solely for non-commute trips were satisfied with this feature. By comparison, only 47% of respondents who used bikeshare to get to or from work gave this feature a rating of 4 or 5.
- *Availability of Open Docks* – The results were similar for dock availability; 52% who made only non-commute trips by bikeshare rated this feature as a 4 or 5, compared with 47% of respondents who used bikeshare to commute to/from work.

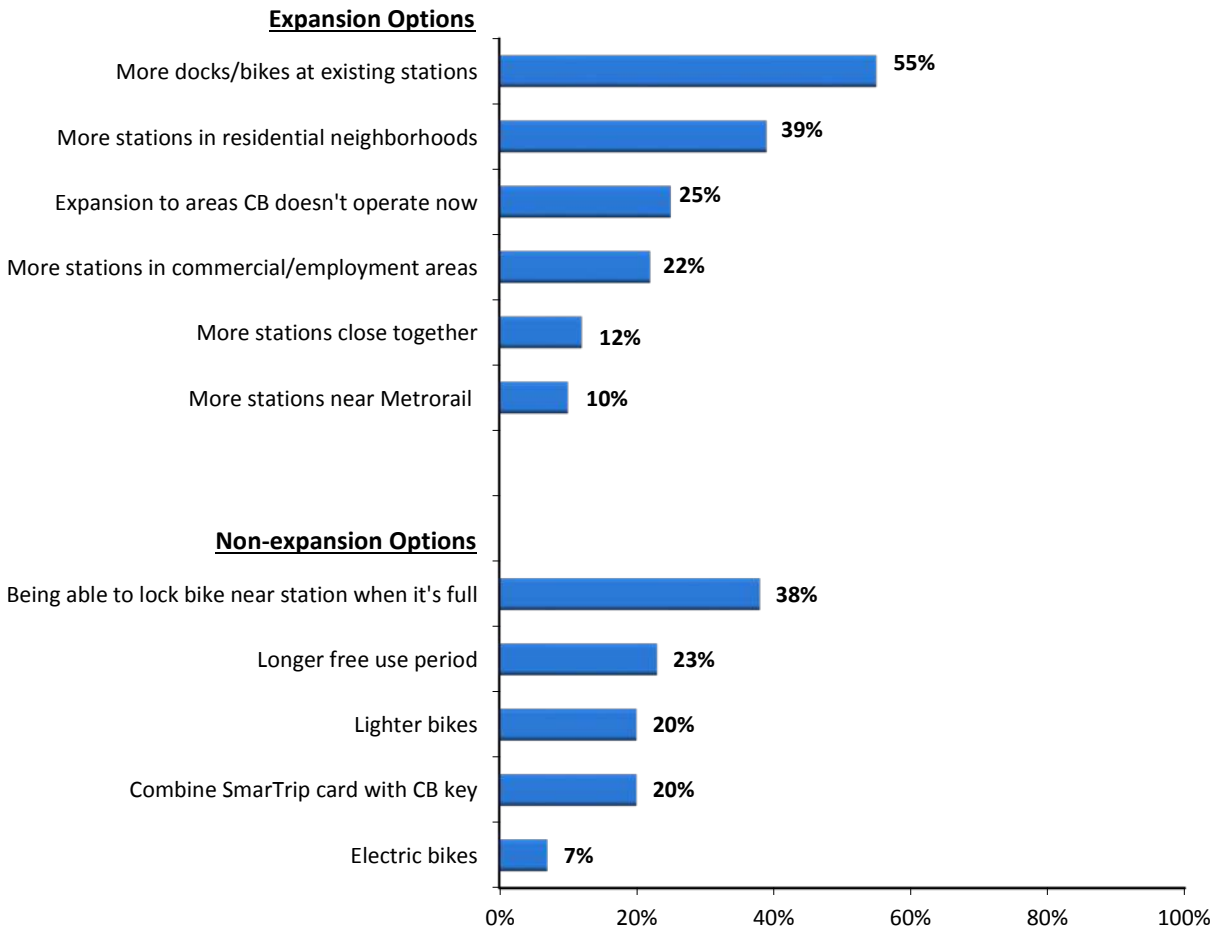
Have Personal Vehicle Available – Respondents who had a personal vehicle available gave higher ratings for two features:

- *Availability of Bikes at Docks* – More than half (56%) of respondents who had a vehicle available gave a high rating for this feature. Among respondents who did not have a vehicle available, 45% gave a high rating.
- *Availability of Open Docks* – Similarly, 51% of respondents who had a vehicle available gave a high rating to dock availability, while only 45% who did not have a vehicle available gave a high rating.

Capital Bikeshare Enhancements

In the 2014 CB surveys, respondents were asked to report on "most needed expansion options." The 2016 survey expanded on this question by asking what changes in Capital Bikeshare, both service expansions and other types of service changes, would encourage them to use Capital Bikeshare more often. Respondents were permitted to check multiple responses from a list of 11 items. More than nine in ten (92%) respondents indicated that at least one of the listed changes would encourage them to use bikeshare more. Figure 42 presents the results for individual service enhancements, with changes divided into two categories: Capital Bikeshare expansion options and non-expansion improvements.

Figure 42
Capital Bikeshare Changes that Would Encourage Greater Use of Bikeshare
(n = 5,575, multiple responses permitted)



Bikeshare Expansion – The most attractive expansion option, cited by 55% of respondents, was for greater access to bikes and docks at existing stations. Since only current members answered this question, this indicates unmet demand for rides within the current service area. About four in ten (39%) respondents said they would use bikeshare more if new stations were installed in residential neighborhoods, perhaps indicating a desire for greater access to bikeshare for short trips within a home neighborhood. One-quarter (25%) said they would use bikeshare more if it was expanded to areas that bikeshare doesn't serve now (greater coverage). A similar percentage (22%) wanted more stations in commercial and employment areas. One in ten respondents said having more stations closer together (2%) or more stations near Metrorail (10%) would encourage greater bikeshare use.

Non-Expansion Enhancements – Respondents expressed significant interest in several non-expansion service enhancements. Nearly four in ten (38%) would use bikeshare more often if they could lock a bike near the stations when the station dock was full. About two in ten mentioned each of three service enhancements: 23% were interested in a longer free use period, 20% said lighter bikes would encourage them to ride more often, and 20% said they would use bikeshare more if their SmarTrip transit card could be used as their Capital Bikeshare key. Seven percent would use bikeshare more if the bikes were electric-assist to make riding easier.

Service Change Priorities by Home Location – Respondents who lived in different jurisdictions indicated significantly different preferences for Capital Bikeshare changes (Table 13).

Table 13
Priority in Service Changes by Home Location

Capital Bikeshare Changes	Home Location			
	DC (n = 3,715)	Arlington (n = 584)	Alexandria (n = 201)	Montgomery (n = 601)
Expansion Options				
More docks/bikes at existing stations	65%	34%	23%	33%
More stations in residential neighborhoods	43%	30%	38%	43%
Expansion to areas where CB doesn't operate now (greater coverage)	18%	31%	32%	45%
More stations near Metrorail stations	7%	11%	13%	19%
Non-Expansion Options				
Lock bike near stations when docks are full	41%	30%	30%	29%
Longer free use period	21%	33%	32%	24%
Lighter bikes	20%	27%	26%	14%
Combine SmarTrip card with CB key	19%	25%	30%	20%

(Statistically higher percentages are shaded)

Respondents who lived in the District of Columbia indicated a strong preference for more docks/bikes at existing stations and more stations in residential neighborhoods (Table 13). Respondents who lived outside the District had different priorities; they wanted to expand bikeshare to areas the service didn't serve and to add new stations near Metrorail. This supports the role that bikeshare plays in facilitating access to transit. Montgomery County residents also expressed an interest in expansion to residential areas.

Respondents in the four jurisdictions also had different requests for non-expansion service enhancements. District of Columbia respondents wanted to be able to lock bikes near a station when all the docks at the station were full. By contrast, Arlington and Alexandria residents were more interested in having a longer free-use period and having lighter bikes. They also expressed the greatest interest in a combined SmarTrip card and Capital Bikeshare key fob.

Service Change Priorities by Age – Respondents of different ages also noted markedly different preferences in service chances (Table 14). Respondents who were younger than 35 years old expressed the greatest interest in expansion at existing stations and expansion to residential neighborhoods. They also were more likely than were older respondents to be motivated by a longer free-use period and lighted bikes. Respondents who were 45 years or older expressed greater than average interest in bikeshare expansion to areas where bikeshare doesn't operate now, to commercial/employment areas, and to areas around Metrorail stations.

Table 14
Priority in Service Changes by Age

Capital Bikeshare Changes	Age		
	Under 35 years (n = 2,794)	**35 to 44 years** (n = 1,235)	**45 or more years** (n = 1,408)
Expansion Options			
More docks/bikes at existing stations	61%	53%	48%
More stations in residential neighborhoods	41%	44%	34%
Expansion to areas where CB doesn't operate now (greater coverage)	21%	28%	29%
More stations in commercial/employment areas	20%	20%	26%
More stations near Metrorail stations	9%	9%	14%
Non-Expansion Options			
Longer free use period	26%	19%	22%
Lighter bikes	24%	18%	13%

(Statistically higher percentages are shaded)

Service Change Priorities by Frequency of Capital Bikeshare Use – Frequent and infrequent bikeshare users gave very similar responses for the motivating influence of most service changes. They differed only on three possible service changes. Frequent riders were much more likely to be motivated by more docks/bikes at existing stations; 73% of respondents who made 30 or more trips in the past month and two-thirds who made between 11 and 29 trips said this would motivate them to make more bikeshare trips. Among members who made between one and five trips, only 41% said having more docks/bikes at existing stations would influence their bikeshare use.

By contrast, infrequent riders expressed greater interest in two non-expansion changes. More than one-quarter (27%) of respondents who made fewer than six trips in the past month said they would be motivated by a longer free-use period, compared with only 18% of those who rode 30 or more trips in the past month. And one-quarter of members who rode between one and five times in the past month would be motivated by combining the Smar-Trip card with their bikeshare key, compared with 13% of those who rode 20 or more times in the past month.

APPENDIX A – SURVEY QUESTIONNAIRE

General Information

1. Which of the following best reflects your current Capital Bikeshare membership level?

   1 Annual
   2 Annual with monthly installments
   3 30-day
   4 3–day
   5 24-hour
   6 Day key
   7 Not currently a member – Former member of Capital Bikeshare **(CONTINUE WITH Q2)**

IF Q1 = ANY OF 1-6, SKIP TO Q3

2. Why are you no longer a member of Capital Bikeshare? (Select all that apply) **(SKIP TO END WHEN RESPONDENT CLICKS "NEXT," EVEN IF RESPONDENT DID NOT ENTER ANY RESPONSE TO THIS QUESTION)**

   1 Riding Capital Bikeshare was too strenuous
   2 Docks were not available when I needed them
   3 Cost was too high, didn't use enough to justify the cost
   4 Bikes were not available when I needed them
   5 Not convenient for traveling to my intended destination(s)
   6 I prefer to use a personal bike instead of Capital Bikeshare
   7 Moved/moving out of the area or to home/work area without bikeshare stations
   8 Dissatisfied with customer service, customer service issue
   9 Bikeshare stations were too far away from my current home / work
   10 Used CB only rarely, was in the DC region only temporarily
   11 Other (please specify) _____

3. How did you first learn about Capital Bikeshare? (Select only one answer)

   1 Employer, information at work
   2 Referral from friend, family member, co-worker
   3 Community event
   4 Social media
   5 Newspaper or magazine, radio/TV news
   6 Saw a Capital Bikeshare station or bike on street
   7 Previous member of other bikeshare program (DC or elsewhere)
   8 Living Social deal
   9 Local government
   10 Area non-profit
   11 Community Partner / MCLiberty/BankonDC access program
   12 Other (please specify) _____

4. When did you first join Capital Bikeshare?

   1 2010
   2 2011
   3 2012
   4 2013
   5 2014
   6 2015
   7 2016
   9 Not sure

5. What motivated you to join Capital Bikeshare? (Select all that apply)

   1 Save money on transportation
   2 Get around more easily, faster
   3 Like to bike, fun way to travel
   4 Exercise, fitness
   5 Concern about environment
   6 Health concern
   7 Access to another bike/backup bike
   8 Access to other form of transportation,
   9 New travel option/one-way travel option
   10 Employer benefit
   11 Discounted or free membership
   12 Other (specify)_____

6. In the past month, about how many Capital Bikeshare trips did you make? If you are not sure, provide your best estimate. (Please enter numerical value, with no commas).

   _____ trips

7. How often do you use bikeshare to access a bus/shuttle, Metrorail, or commuter rail?

   1 Never
   2 Occasionally, but less than once per month
   3 1 to 2 times per month
   4 3 to 5 times per month
   5 6 or more times per month

8. What are the <u>top three trip types</u> for which you use Capital Bikeshare? (Select up to three options)

   1 Go to or from work
   2 Go to or from school
   3 Go to a personal appointment
   4 Social / entertainment / visiting
   5 Restaurant, meal
   6 Exercise, recreation
   7 Shopping or errands
   8 Go to or from a work-related meeting/appointment
   9 Other (please specify) _____

9. Thinking about your most recent Capital Bikeshare trip, what was the primary reason that you chose Capital Bikeshare for that trip over other travel options? (Select only one)

ROTATE RESPONSES

1 It was the fastest way to get there
2 It was the cheapest way to get there
3 To get some exercise on my trip
4 Parking is difficult at that time or at that destination
5 No bus/train at that time or to that destination
6 Don't have a car
7 Too far to walk
8 Other (please specify) _____

10. If Capital Bikeshare had not been available for your last trip, how would you have made that trip? (please select only one)

1 Walk
2 Bus
3 Metrorail
4 Drive a personal vehicle, carshare vehicle, or other motor vehicle
5 Taxi
6 Uber, Lyft
7 Ride with/dropped off by a friend, family member, or other person
8 Personal bike
9 Other (please specify) _____
10 Would not have made this trip

11. Still thinking of your most recent bikeshare trip, how did you get TO the station where you picked up the bicycle? (please select only one)

1 Walk
2 Bus
3 Metrorail
4 Drove a personal vehicle, carshare vehicle, or other motor vehicle
5 Taxi
6 Uber, Lyft
7 Rode with/dropped off by a friend, family member, or other person
8 Personal bike
9 Other (please specify) _____

12. In the PAST MONTH, how many times did you use Capital Bikeshare to make a trip you would not have made if Capital Bikeshare had not been available?

1 0 times
2 1-2 times
3 3-5 times
4 6-10 times
5 11 or more times

13. If a commercial / retail business, restaurant, or shop is easily accessible by Capital Bikeshare, does that access make you more or less likely to patronize that establishment?

    1 Much less likely
    2 Somewhat less likely
    3 Not more likely or less likely
    4 Somewhat more likely
    5 Much more likely
    9 Not sure

14. On a weekly basis, how much money do you estimate Capital Bikeshare saves you on your travel compared with what you were spending before you joined?

    1 $0
    2 $1-20 per week
    3 $21-40 per week
    4 $41-60 per week
    5 More than $60 per week
    9 Not sure

VEHICLE ACCESS AND USE

15. As a result of your use of Capital Bikeshare, do you ride a bicycle more often, less often, or about the same as before you joined Capital Bikeshare? Please include your use of Capital Bikeshare AND any personal bicycles.

    1 Much less often
    2 Somewhat less often
    3 About the same
    4 Somewhat more often
    5 Much more often

16. As a result of your use of Capital Bikeshare, do you use each of the following types of travel options more often, less often, or about the same as before you joined Capital Bikeshare? (Select one for each row)

		1 **Much less often**	2 **Somewhat less often**	3 **About the same**	4 **Somewhat more often**	5 **Much more often**
1	Walk	___	___	___	___	____
2	Bus	___	___	___	___	____
3	Metrorail	___	___	___	___	____
4	Drive car	___	___	___	___	____
5	Taxi	___	___	___	___	____
6	Uber, Lyft	___	___	___	___	____

16a WMATA recently started the 12-month safety program SafeTrack, an accelerated track work plan to rehabilitate the Metrorail system and address safety issues. Has the SafeTrack program changed how often you use Capital Bikeshare for your travel?

    1 No, SafeTrack has not changed my use of bikeshare
    2 I have increased my use of bikeshare because of SafeTrack
    3 I have decreased my use of bikeshare because of SafeTrack
    9 Not sure – I was not aware of SafeTrack before taking this survey

17. Do you have any of the following vehicles available to you on a regular basis for your travel? (Select all that apply)

1 Personal bike (other than Capital Bikeshare)
2 Personal motor vehicle (e.g., car, SUV, truck, motorcycle, motorbike)
3 Zipcar or car2go membership

18 Approximately how many miles do you drive PER YEAR in the Washington metro region, including miles in vehicles you own, rent, or borrow? If you're not sure, enter your best estimate. (Please enter numerical value, with no commas).

_____ **(NOTE TO PROGRAMMER – DO NOT ALLOW TEXT ENTRIES – NUMERICAL ENTRIES ONLY – if text or comma is used in the entry, show message: "Please enter a numerical value, with no commas."**

19 Since you joined Capital Bikeshare, have you reduced your annual driving miles in the Washington metro region?

1 Yes, reduced annual driving miles in the metro region
2 No, did NOT reduce annual driving miles in the metro region **(SKIP TO Q22)**
3 Not sure **(SKIP TO Q22)**

20 Before you joined Capital Bikeshare, approximately how many miles did you drive per year in the Washington metro region? (Please enter numerical value, with no commas).

_____ **(NOTE TO PROGRAMMER – DO NOT ALLOW TEXT ENTRIES – NUMERICAL ENTRIES ONLY – if text or comma is used in the entry, show message: "Please enter a numerical value, with no commas."**

21 To what extent did Capital Bikeshare contribute to your reduction in annual driving miles?

1 Capital Bikeshare was a main factor
2 Capital Bikeshare was a minor factor
3 Capital Bikeshare was not a factor
4 Did not reduce driving miles

TRAVEL TO WORK

22 Are you currently employed, either full-time or part-time?

1 Employed full-time
2 Employed part-time
8 Not employed **(SKIP TO Q28)**

23 What is your Zip Code at work?

_____
99999 Prefer not to answer

24 About how many miles is it from your home to your usual work location? (Please enter numerical value, with no commas or decimal points). If your trip is less than one mile, enter 1.

_____ miles **(NOTE TO PROGRAMMER – DO NOT ALLOW TEXT ENTRIES – NUMERICAL ENTRIES ONLY)**

25 Last week, what type or types of transportation did you use to get to/from work? (Select all that apply)

1 Personal bicycle
2 Capital Bikeshare bicycle
3 Walk or run (entire trip from home to work)
4 Public transit (bus, Metrorail, or commuter train)
5 Drive alone in a car, van, SUV, truck, motorcycle
6 Carpool, casual carpool (slug) or vanpool
7 Taxi
8 Uber, Lyft
9 Other (Specify) _____
10 Did not travel to work last week

26 Of the transportation options you just mentioned, which did you use MOST OFTEN last week to get to/from work? Select only ONE option. If you used more than one, check the option you used most days for the longest distance part of your trip.

1 Personal bicycle
2 Capital Bikeshare bicycle
3 Walk or run
4 Public transit (bus, Metrorail, or commuter train)
5 Drive alone in a car, van, SUV, truck, motorcycle
6 Carpool, casual carpool (slug) or vanpool
7 Taxi
8 Uber, Lyft
9 Other (Specify) _____
10 Did not travel to work last week

IF Q25 INCLUDES RESPONSE 2 (CAPITAL BIKESHARE), ASK Q27, OTHERWISE, SKIP TO Q28

27 When you use Capital Bikeshare for a work trip, do you …?. (Select all that apply)

1 Use it for entire distance between home and work
2 Use it to access bus, Metrorail, commuter rail
3 Use it to access other type of transportation (carshare, carpool, taxi, Uber/Lyft, etc.)

CUSTOMER SERVICE

28 How do you rate each of the following features of Capital Bikeshare bikes and stations? Please rate each on a scale of 1 to 5, where 1 is Poor and 5 is Excellent. (Select one option for each row)

	1 (Poor)	2	3	4	5 (Excellent)	9 Not Sure
1 Availability of bikes	1	2	3	4	5	9
2 Availability of docks	1	2	3	4	5	9
3 Condition of bikes	1	2	3	4	5	9
4 Appearance of bikes	1	2	3	4	5	9
5 Spotcycle app	1	2	3	4	5	9
6 Online station map	1	2	3	4	5	9
7 Condition of stations	1	2	3	4	5	9
8 Docking/releasing a bike	1	2	3	4	5	9
9 Map at station	1	2	3	4	5	9
10 Nighttime lighting at station	1	2	3	4	5	9

28a How do you rate each of the following features of Capital Bikeshare registration and call center?

	1 (Poor)	2	3	4	5 (Excellent)	9 Not Sure
1 Online registration	1	2	3	4	5	9
2 Obtaining your membership key	1	2	3	4	5	9
3 Key activation	1	2	3	4	5	9
4 Call center wait time	1	2	3	4	5	9
5 Representative's ability to solve issues	1	2	3	4	5	9

29 What Capital Bikeshare changes would encourage you to use the service more often? (Select up to three options)

1 More docks/bikes at existing stations
2 More stations in residential neighborhoods
3 More stations in commercial/employment areas
4 More stations near Metrorail stations
5 More stations closer together
6 Expand to areas where bikeshare doesn't operate now (greater coverage)
7 Longer free use period
8 Lighter bikes
9 Electric bikes
10 Being able to lock your bike near a station when it is full
11 Combine your SmarTrip card with your Capital Bikeshare key
12 Other (please specify) _____
90 None of these changes would encourage me to use the service more often

TELL US ABOUT YOURSELF

30 How far is it from your home to the nearest bikeshare station?

1 1 to 4 blocks (about 1/4 mile)
2 5 to 8 blocks (about 1/2 mile)
3 9 to 12 blocks (about 3/4 mile)
4 13 to 15 blocks (about 1 mile)
5 More than 1 mile
9 Not sure

31 How far is it from your work to the nearest bikeshare station?

1 1 to 4 blocks (about 1/4 mile)
2 5 to 8 blocks (about 1/2 mile)
3 9 to 12 blocks (about 3/4 mile)
4 13 to 15 blocks (about 1 mile)
5 More than 1 mile
8 I'm not employed
9 Not sure

32 What is your home Zip Code?

_____
00000 Prefer not to answer

33 Are you male or female?

1 Male
2 Female
3 Other
9 Prefer not to answer

34 What is your age?

1 16 – 17 years old
2 18 - 24
3 25 - 34
4 35 - 44
5 45 - 54
6 55 - 64
7 65 years or older
9 Prefer not to answer

35 Approximately what was your total household income last year? (If you live with roommates or other persons who are unrelated to you, please report your individual income).

1 less than $10,000
2 $10,000 - $14,999
3 $15,000 - $24,999
4 $25,000 - $34,999
5 $35,000 - $49,999
6 $50,000 - $74,999
7 $75,000 - $99,999
8 $100,000 – $124,999
9 $125,000 - $149,999
10 $150,000 - $199,999
11 $200,000 or more
99 Prefer not to answer

36 Which categories best describe your race/ethnicity? (You may select multiple options)

1 White
2 Hispanic, Latino, or Spanish origin
3 Black or African-American
4 Asian
5 American Indian or Alaska Native
6 Middle Eastern or North African
7 Native Hawaiian or other Pacific Islander
8 Other (please specify) _____
9 Prefer not to answer

37 Do you have any suggestions to improve Capital Bikeshare?

Open-ended text box

Thank you for participating in the survey.