ITEM #6

National Capital Region
Transportation Planning Board
COMMUTER CONNECTIONS PROGRAM

2019 STATE OF THE COMMUTE SURVEY
Technical Survey Report

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EXECUTIVE SUMMARY

Introduction

This report presents the results of the State-of-the-Commute (SOC) survey conducted for the Commuter Connections program of the Metropolitan Washington Council of Governments (COG).[1] Commuter Connections provides a wide range of transportation information and assistance services in the Washington metropolitan area to inform commuters of the availability and benefits of alternatives to driving alone and to assist them to find alternatives that fit their commute needs. COG administers these services, called Transportation Demand Management (TDM) services, as part of a regional effort to reduce vehicle trips, vehicle miles of travel, and emissions resulting from commute travel.

The SOC survey serves several purposes. First, it documents trends in commuting patterns, such as commute mode shares and distance traveled, and prevalent attitudes about transportation services that are available in the region. Second, the survey examines how commute alternative programs and marketing efforts might influence commute travel behavior of workers in the region. In particular, the SOC survey collects data needed to estimate, as part of a triennial analysis, the impacts of several such services offered by Commuter Connections. Finally, the survey explores commuters' opinions about and interest in current transportation initiatives.

The 2019 survey was conducted in two components. The first, and largest component, was a web-based survey. This component used an address-based sampling (ABS) method to select the sample of potential respondents, a postcard survey invitation sent through postal mail to selected addresses, and an Internet interview format for respondents to complete the survey. This method was consistent with the approach used for the Internet pilot component of the 2016 SOC survey. The 2016 Internet pilot demonstrated that the ABS/Internet combination produced high-quality, statistically valid data at a lower cost than for a random-digit dial telephone survey, making it a feasible option for the 2019 SOC survey.

The second component of the 2019 SOC survey was a telephone "follow-up" survey to a sample of residents who had received the postcard survey invitation, but who did not complete the survey via the Internet. The research team matched landline and cell phone numbers to addresses and contacted Internet non-respondents by telephone to encourage them to complete the survey by telephone.[2]

Both survey components were conducted with employed adult residents. A total of 8,246 interviews were completed for the survey, 7,808 from the Internet survey and 438 through the telephone survey.

Upon completion of the interviews, the Internet and telephone survey data were combined and responses were expanded to represent the employed population of the jurisdictions that make up the Washington metropolitan region. The results also were adjusted to align survey results to known race/ethnicity and age distributions, an adjustment that also had been applied in the 2016 SOC survey. Analysis of the 2019 survey data indicated a slight under-representation of respondents who were younger than 35 years old and slight over-representation of respondents who were 55 years of age or older, compared with American Community Survey (ACS) data compiled by the U.S. Census. ACS population statistics for combinations of employment status, race/ethnicity, and age by jurisdiction were used to calculate values that expanded the sample to counts of employed residents with correct representations by age and race/ethnicity.

[1] Commuter Connections is administered through the National Capital Region Transportation Planning Board (TPB) at COG and funded through the District Department of Transportation, the Maryland Department of Transportation, and the Virginia Department of Transportation, with state and federal funds.

[2] The primary purpose of the telephone survey was to collect data about commuters who had not participated in the Internet survey and determine if they were statistically similar to or different from commuters who completed the Internet survey. This analysis helps to identify possible non-bias in survey results

Highlights of Results

Following is a summary of results on the following topics:

- Commute patterns
- Commute changes, commute ease, and commute satisfaction
- Telework
- Availability of and attitudes toward transportation options
- Transportation satisfaction
- Awareness and impacts of commute advertising
- Awareness and use of commuter assistance resources
- Employer-provided commuter assistance services
- Technology-based applications and driverless cars

In developing the questionnaire, the study team retained the 2016 questions whenever possible to allow trend analysis with past SOC survey results. New questions also were added in 2019 to explore topics of current interest, such as use of ride-hailing and scooter services, tolled Express lanes, trip/travel information applications, and awareness and opinions about driverless cars.

Commute Patterns

The share of commute trips made by driving alone fell 13 percentage points between 2004 and 2019. Use of transit and telework continued to increase.

- Commuters made fewer than six in ten (58.3%) of their weekly commute trips by driving alone. Drive alone continued to be the most popular commute mode in the Washington metropolitan region, but the drive alone mode share continued the long-term decline from 71.4% in 2004 to 58.3% in 2019. This represented a drop of 13 percentage points over the 15-year period.
- Alternative modes accounted for an increasing share of commute trips in 2019. Transit was used for nearly one-quarter (24.1%) of weekly commute trips, four percentage points above the 2016 percentage (20.1%) and more than seven percentage points above the 16.8% mode share observed in the 2004 SOC survey. Biking/scooter/walking retained the 3.3% mode share estimated in 2016. The 4.6% carpool/vanpool mode share represented a continued decline from the peak 7.1% mode share estimated in the 2007 survey.
- Use of telework/compressed work schedules, which had increased in each of the previous surveys since 2004, leveled off in 2019 at 9.7%, statistically the same rate as in 2016. When considered as a long-term regional trend, the share of weekday trips eliminated by these modes has more than doubled over the past 15 years, from 3.6% of weekday commute trips to 9.7% in 2019.
- Commuters exhibited generally consistent mode patterns; 67% used the same commute mode all of their work days and 81% used the same mode four or five days. One-third (33%) of regional workers used an alternative mode (carpool, vanpool, transit, bike/walk) as their primary mode, that is, the mode they used most days in a typical week. An additional 7% of commuters used an alternative mode as a secondary mode (one or two days per week).
- About three-quarters of the 24.1% transit mode share was in a train (16.6% Metrorail and 1.6% commuter rail). The remaining one-quarter (5.9%) of transit trips were made by bus. Among respondents who carpooled or vanpooled, regular carpooling dominated. Three-quarters of carpool/vanpool trips were in regular carpools (3.4% of total 4.6% carpool/vanpool use). Casual carpools/"slugs" accounted for about two in ten carpool/vanpool trips and one in twenty trips in this mode group was made by vanpool.
- Ride-hail services, such as Uber, Lyft, and Via, accounted for 1.0% of weekly commute trips. Ride-hailing services are relatively new travel modes in the region, but appear to be growing. When asked how they likely would have made these commute trips if ride-hailing were not available, about half would have driven in a

personal vehicle (28%) or taken a taxi (20%). But 59% said transit would have been a likely option, 16% likely would have walked, and 9% likely would have bicycled.[3] Thus, while ride-hailing seems to be substituting for driving alone in some cases, it also is pulling riders from all other modes.

- The 3.3% of weekly commute trips made by biking/scooter/walking were evenly divided between the two modes (1.7% walk and 1.6% bike/scooter). More than eight in ten (85%) of respondents who biked or rode scooters to work used a personal bike for the trip, but nearly one in four used a rented bike, either a Capital Bikeshare bicycle (16%) or a dockless bike (7%) on some days. About one in ten bike/scooter commuters typically used a scooter, either a personal scooter (6%) or a rented scooter (5%).[4]
- Nearly four in ten (38%) commuters who used alternative modes to get to work walked to the transit station/stop or location where they met a carpool/vanpool partner, 14% took transit, and 1% bicycled to the meeting point. One-third (32%) drove alone and parked their car during the day.

Alternative mode use was much higher for respondents who lived and/or worked in the central portion of the region than for those who lived/worked outside the regional core.

- Less than four in ten (37%) commuters who lived in the Inner Core area (Alexandria, Arlington, and District of Columbia) drove alone. This was much lower than the 64% drive alone rate for the Middle Ring (Fairfax, Montgomery, and Prince George's counties) and the 75% rate for the Outer Ring (Calvert, Charles, Frederick, Loudoun, and Prince William counties). The mode pattern for employment area was similar; fewer than four in ten (38%) commuters who worked in the Inner Core area drove alone, dramatically lower than the drive alone rates for Middle Ring workers (78%) and Outer Ring workers (87%).

The average commute distance remained about the same as in 2016.

- The 2019 average commute distance was 17.1 miles, about the same as the 17.3 miles average measured in the 2016 survey. The average 2019 commute time (43 minutes), however, was longer than the times measured in 2016 (39 minutes) and in 2013 (36 minutes) and nine minutes longer than the 34-minute average observed 15 years earlier in the 2004 SOC survey.

Commute Changes, Commute Ease, and Commute Satisfaction

While many commuters were long-time users of their mode, commuters continued to shift among modes.

- Commuters who drove alone to work had used this mode an average of 7.9 years and one-third (32%) had been driving alone for 10 years or more. Four in ten (38%) started driving alone within the past three years. By contrast, 48% of train riders, 53% of bus riders, 57% of bike/walk commuters, and 58% of carpoolers started using these modes within the past three years.
- Almost four in ten (39%) commuters who started using a new alternative mode within the past three years previously drove alone to work. Twenty-two percent of alternative mode users previously rode a train and 13% previously used a bus. Ten percent rode a bicycle or walked before switching to their current alternative mode and 5% previously carpooled or vanpooled. About one-third did not have a previous mode to report because they were not working in the Washington region then or had only ever used their current mode.
- Commuters who shifted to alternative modes did so primarily to save money (16%) or save time (14%) or because they had a change in their personal circumstances, such as changing jobs or work hours (12%), moving to a new residence (12%), or because they lived close to work or to a transit pick-up location, so using the alternative mode was convenient.

[3] Total of likely other modes will add to more than 100%, because respondents were permitted to choose more than one mode.
[4] Total of bike/scooter use will add to more than 100%, because respondents were permitted to choose more than one mode.

Half of commuters were satisfied with their current commute. Overall satisfaction continued a decline that started in 2013, but Metrorail commuters' satisfaction increased between 2016 and 2019.

- Half (50%) of commuters rated their commute satisfaction as a 4 or 5 (very satisfied) on a 5-point scale, where 5 meant very satisfied. But 24% rated their commutes as a 1 (not at all satisfied) or 2. Commute satisfaction in 2019 was 8 percentage points lower than in 2016, when 58% were satisfied with their trip to work, and fully 14 percentage points below 2013, when 64% of respondents were satisfied.
- Bus riders, commuter train riders, and Metrorail riders were about equally satisfied, with about six in ten rating their commute as a 4 or 5. Carpoolers/vanpoolers and drive alone commuters reported the lowest satisfaction; 48% of ridesharers and just 45% of commuters who drove alone were satisfied.
- Several mode groups reported notably different commute satisfaction in 2019 than in previous SOC surveys. Commute satisfaction among Metrorail riders, which had fallen dramatically between 2013 (67%) and 2016 (48%), rebounded somewhat in 2019 (56%). The 2016 drop likely was related to the SafeTrack trackwork maintenance efforts, which affected both frequency and reliability of train service. Carpool/vanpool commute satisfaction was stable between 2010 (63%) and 2016 (66%), but experienced a marked decline in 2019 (48%). Finally, drive alone commuters, which had expressed a slight increase in satisfaction between 2013 (51%) and 2016 (57%), completely reversed the gain in 2019, with a 12-percentage point drop to just 45% satisfied.
- Commute satisfaction also differed by where the respondent lived and worked. Respondents who lived in the Inner Core were more satisfied (63% satisfied) than were respondents who lived in the Middle Ring (50%) or Outer Ring (37%). Respondents were about equally satisfied, regardless of where they worked, with about half of respondents in each of the three work areas rating their commute satisfaction as a 4 or 5.
- Commute satisfaction declined dramatically as commute length increased. Nine in ten (92%) respondents who commuted 10 minutes or less gave a 4 or 5 rating for satisfaction. When the commute was between 21 to 30 minutes, satisfaction dropped to 59% and when travel time exceeded 60 minutes, only 26% rated their commute a 4 or 5.

Commuting got more difficult in the past year for nearly three in ten commuters. Many respondents considered commuting factors when making job or home location decisions and took actions to improve their commutes.

- Fifteen percent of respondents said their commute was easier than one year ago, but 28% said their commute was more difficult. Respondents who drove alone to work, those who carpooled/vanpooled, and those who traveled more than 30 minutes to work were particularly likely to report a more difficult commute than last year. Easier commutes were most common among commuters who biked/walked to work, those who rode a train, and those who commuted 20% or less to work.
- Respondents' commute satisfaction was influenced by the ease of the commute. Nearly eight in ten (78%) respondents who had an easier commute than last year and 58% whose commutes had not changed were satisfied with their commute, compared with only 17% who said their commutes had become more difficult.
- Respondents who made a home or work location change in the past year were more likely to report an easier commute (29%) than were commuters who did not make a move (9%). This suggests a move could have played a role in improving the commute.
- More than half (52%) of respondents who moved said they considered a commuting factor, such as the length, ease, or cost of commuting to the new location, when making their location decision. One-third (33%) said commute ease was more important than other factors or was the only factor in their decisions.
- More than half (53%) of respondents who made a home or work location change considered how close their new location would be to transportation services such as Park & Ride lots, HOV/Express lanes, protected bike lanes, transit stations/stops, and bikeshare and carshare services. Among respondents who said commute factors were either the only factors they considered or more important than other factors, 58% had explored availability of various services at the new location.

Telework

The percentage of workers who telework grew between 2016 and 2019, continuing a steady upward trend observed since 2004. But even with this growth, potential exists for additional teleworking.

- More than one-third (35%) of regional commuters said they teleworked at least occasionally. "Commuters" were defined as workers who were not self-employed and would otherwise travel to a worksite outside their homes if not teleworking. These teleworkers represented 1,073,000 regional workers.
- The percentage of regional telework has more than doubled since 2004 and telework incidence grew in nearly every demographic and occupational segment in which telework was feasible.
- The 2016 survey showed that an additional 25% of all commuters who did not telework "could and would" telework if given the opportunity. These respondents said their job responsibilities would allow them to telework and they would like to telework. Of these interested respondents, about six in ten would like to telework "occasionally;" the remaining four in ten would like to telework "regularly." These potential teleworkers totaled 771,000 regional workers.
- The percentage of commuters who said their jobs were incompatible with telework dropped, from 65% in 2004 to 34% in 2019. Because it seems unlikely that the regional composition of jobs changed substantially, these results suggest a shift in commuters' perception of their ability to perform work away from their primary work location. This could be related to increasing availability of communication and computer technology or perhaps from a broader definition of what work was "telework-compatible."

The share of respondents who self-defined as "teleworkers" likely underrepresented the true share of telework activity in the region because 22% of regional commuters worked at home occasionally, but did not consider themselves teleworkers.

- Nearly three-quarters of respondents who said they were not "teleworkers" but who had telework-appropriate jobs said they had worked at home all day on a regular work day at least once in the past year. These respondents represented 692,000 commuters or about 22% of all commuters in the region. When added to the 35% of commuters who self-defined as teleworkers, the total percentage of commuters who telework/work at home at least occasionally rises to 57%.
- The average work at home frequency of these "non-teleworkers" was low, about five days per year, or 0.11 days per week. By contrast, self-defined teleworkers teleworked an average of 1.20 days per week.
- On a typical work day, approximately 272,700 regional workers telework/work at home. Nearly 6% of the telework/work at home days would be from commuters who do not consider themselves teleworkers occasionally working at home.
- The "typical day" telework count likely underestimates the true traffic-reduction benefit because commuters telework more often on days when traffic is likely to be heavier or more difficult than normal. More than nine in ten teleworkers said they were somewhat likely (21%) or very likely (72%) to telework on a day when traffic in the region is likely to be disrupted by a weather event or major/special event in the region. Non-teleworkers were not asked this question in 2019, but it seems likely they also would choose to work at home on such a day if possible. Thus, teleworking/work at home likely provides a higher than average benefit for regional traffic conditions on days when traffic is likely to be at its worst

The percentage of teleworkers who worked under "formal" telework arrangements exceeded the percentage who teleworked under informal arrangements with supervisors.

- One-third (34%) of all respondents (both teleworkers and non-teleworkers) said their employer had a formal telework program and 27% said telework was permitted under informal arrangements between a supervisor and employee. Formal programs were most common at Federal agencies and among respondents who worked for large employers.

- Six in ten (60%) teleworkers teleworked under a formal arrangement. This represented a significant shift from 2004, when only 32% of teleworkers had a formal agreement, and a steady increase in formal programs in the years since 2004. This appears to signal a continually growing acceptance of formal telework.

Teleworkers got information on telework from a variety of sources.

- The largest source of telework information, by far, was "special program at work/employer," named by 79% of respondents. The percentage increased in 2019, from about seven in ten since the 2010 SOC survey and was considerably higher than in 2007, when only 55% of teleworkers cited their employer as the source of information.
- Seven percent of teleworkers said they received telework information directly from Commuter Connections or MWCOG, a slightly lower percentage than mentioned Commuter Connections/MWCOG in 2016 (9%) and 2013(10%), but about the same percentage as noted in 2010 (6%) and 2007 (7%).

Availability of and Attitudes Toward Transportation Options

Most respondents reported access to some transit service in their home area.

- Four in ten (37%) respondents said they lived less than ½ mile from a bus stop and 47% said they lived less than one mile away. Train station access was less convenient; only 17% lived less than one mile from a train station. Nearly one-quarter (24%) of respondents said they did not know how far they lived from the bus stop and train station.
- Among respondents who could provide a distance, the average distances were 1.5 miles to the nearest bus stop and 4.8 miles to the nearest train station. But respondents who lived in the Inner Core area said the closest bus stop was an average of 0.5 miles away and a train station was 1.4 miles away. Two-thirds (66%) of Inner Core residents lived less than ½ mile from a bus stop.
- At the time of the survey seven in ten respondents were using modes other than transit to get to work, but 35% of these respondents said they had used transit for commuting within the past three years. When asked why they stopped riding, 23% of past rider respondents said they had moved either their home or work location and no longer had transit service available. Past riders also cited the cost of transit (11%) and the unreliability of transit (9%) as reasons to stop using transit. And about two in ten (18%) past riders mentioned travel time as a reason.

One in ten commuters region-wide had used an HOV lane for their trip to work and a similar share had used an Express lane. But nearly three-quarters of commuters who used the Express lanes said they typically drove alone while using the lane. Thus, these lanes offer only modest benefits for congestion relief along those corridors.

- One-third (34%) of respondents said there was an HOV lane along their route to work and one-third of these commuters, equating to about 11% of all commuters, had used the lanes. Fewer respondents (18%) had access to Express lanes, which are open to drive alone commuters for a fee. But four in ten respondents who had the lanes available had used them, representing 8% of all commuters region-wide.
- Nearly three-quarters (73%) of Express lane users said they typically drove alone while riding in the lanes. Driving alone was most common on the Capital Beltway and on I-66 outside the Beltway; 86% of Beltway Express lane users and 85% of I-66 Express lane users drove alone, at least some of the time. By contrast, only about half of commuters who used I-95 and I-395 Express lanes typically drove alone; four in ten carpooled or vanpooled and about two in ten rode transit some days. This is likely a carry-over from the long history of robust carpool and vanpool use on HOV lanes on I-95 and I-39, dating back to the 1970s. Although the HOV lanes now operate as Express lanes, carpools/vanpools of three or more occupants travel for free, providing an incentive for commuters to start or continue using carpool and vanpool.

Nearly half of HOV lane users made a travel change influenced by availability of the lanes. Among those who used only the Express lanes, 15% made a change influenced by the lane availability.

- About one-third of respondents who used an HOV lane said they stared carpooling/vanpooling (24%) or started riding transit (9%) to be able to use the HOV lanes. About two in ten (17%) said they changed their work schedule to avoid the HOV restricted hours. Express lane users were less likely to have made travel changes; among respondents who used only Express lanes, only 3% started ridesharing and 2% started riding transit. One in ten changed their work schedule to avoid the time restriction and 5% started or increased driving alone, presumably shifting from alternative modes.
- The role of HOV/Express lanes on mode choice is borne out by a comparison of rideshare mode use with and without the lanes. Carpool/vanpool was the primary mode of 9% of respondents who said they had access to HOV but not Express lanes and 11% who said they had both HOV and Express lanes available. By comparison, the carpool/vanpool mode share was just 3% for commuters who had access to Express lanes only and the same 3% for commuters who had neither HOV nor Express available.
- Respondents who used the HOV/Express lane for commuting estimated that they saved an average of 19 minutes for each one-way trip when they used the lanes. HOV/Express lane users who lived in the outer jurisdictions of the region saved an average of 24 minutes one-way.

Transportation Satisfaction

About one-third of respondents were satisfied with the region's transportation system, the same percentage as in 2016. But transportation satisfaction declined since 2013.

- Thirty-six percent of respondents reported being satisfied with the regional transportation system (rating of 4 or 5). Three in ten (29%) said they were not satisfied (rating of 1 or 2). Satisfaction ratings were essentially the same in 2019 as in 2016, but commuters were less satisfied with regional transportation than they had been in either 2013, when 44% of commuters were satisfied, or in 2010, when 40% of regional commuters rated their transportation satisfaction as a 4 or 5.

Transportatation satisfaction appeared to be related to numerous factors, including home and work locations, commute mode and distance, and proximity to public transit.

- Respondents who lived in the Inner Core gave higher ratings for transportation satisfaction than did other respondents; 48% of Inner Core respondents rated transportation satisfaction as a 4 or 5, compared with 35% of Middle Ring respondents and 25% of Outer Ring respondents.
- Respondents who drove alone and those who rode carpooled/vanpooled gave lower ratings for transportation satisfaction than did transit riders and bike/walk commuters. Only 29% of drive alone commuters and 37% of carpoolers/vanpoolers were satisfied, compared with 49% of train riders, 52% of bus riders, and 54% of commuters who biked/walked to work.
- Satisfaction among commuter who drove alone and those who carpooled/vanpooled fell between 2013 and 2019. Satisfaction increased among train and bus riders, both of which reported 11 percentage points higher satisfaction in 2019 than in 2016. But 2019 satisfaction among transit riders still was lower than the 58% who were satisfied with these modes in 2013.
- Respondents' satisfaction with transportation appeared strongly linked to their satisfaction with their commute to work. More than half (55%) of respondents who were satisfied with their trip to work also were satisfied with the regional transportation system. Conversely, only 11% of respondents who were dissatisfied with their commute were satisfied with transportation.
- Long commutes also were associated with decreasing transportation satisfaction; 44% of respondents who commuted 10 minutes or less were satisfied, compared with 31% of respondents who traveled more than an hour to work. Increasing travel time showed an even strong pattern with transportation dissatisfaction. More than one-third (35%) of commuters who traveled longer than 45 minutes to work were not satisfied (rating of 1 or 2), compared with just 16% of commuters who traveled 10 minutes or less.

Commuters recognized both personal and societal benefits of alternative mode use and commuters who used alternative modes made productive use of their travel time.

- When asked what personal benefits alternative modes users received from using alternative modes, 76% of respondents named at least one benefit. Nearly seven in ten (69%) respondents said that use of alternative modes could reduce traffic congestion and 47% said it could reduce air pollution.
- Nine in ten (89%) respondents who used alternative modes for their commute said they received personal benefits from using these modes. Saving money topped the list; 32% of alternative mode users mentioned this benefit. Respondents also cited benefits that had a connection to quality of life. Three in ten (29%) respondents said use of alternative modes helped them avoid stress or relax while commuting and 20% said they could use their travel time productively when they used an alternative mode. Two in ten said they could avoid traffic (19%) or save time/travel to work faster (18%).
- More than half of respondents who carpooled, vanpooled, or rode transit to work said they performed work-related tasks during the commute; 34% performed work-related tasks "most days" and 21% performed work-related tasks "some days." Conducting work-related business during the commute was more common among transit riders; 58% of train riders and 58% of bus riders said they performed work-related tasks during their commute, compared with 38% of carpoolers.

Awareness and Impact of Commute Advertising

General awareness of commute information advertising remained high; about seven in ten could cite a specific message.

- Nearly half (45%) of all respondents said they had seen, heard, or read advertising for commuting in the six months prior to the survey and 59% of these respondents could cite a specific advertising message. Both general recall of advertising and specific message recall were lower than were observed in the 2016 survey (54% general recall and 67% message recall).
- Half (49%) of respondents who had heard ads could name the sponsor. WMATA was named by 31% as the advertising sponsor. Commuter Connections was named by 10%, slightly lower than the 13% who named Commuter Connections in 2016.

Commute advertising appears to influence commuters' consideration of travel options.

- Two in ten (18%) respondents who saw or heard advertising said they were more likely to consider ridesharing or public transportation after seeing or hearing the advertising. This was a lower percentage than was noted in the 2016 (25%) and 2013 (25%) SOC surveys.
- But about 20% of respondents who recalled an advertising message said they took some action after hearing the ad to try to change their commute, more than double the 9% of commuters who took an action in 2016. Thus, despite the lower overall recall of commute advertising in 2019 than 2016 and the lower share of 2019 commuters who said they were more likely to consider using an alternative mode after hearing the ads, twice as many respondents actually took an action in 2019 than in 2016.
- About 10% of respondents who recalled ad messages sought more information, from a personal referral or from a commute or transit service. Ten percent of respondents who recalled an ad message said they tried or started using an alternative mode for commuting. While these respondents equaled just 2.7% of all regional respondents, they represent more than 82,000 commuters region-wide.
- More than four in ten (43%) respondents who took an action to change their commute said the advertising they saw or heard encouraged the action. And 46% of respondents who made a mode change drove alone for their commute before they made the change. This suggests that the advertising, although having a small impact on mode shifts, acquainted drive alone commuters with other commuting opportunities and encouraged them to seek more information on these options.

Awareness and Use of Commute Assistance Resources

About half of regional commuters were aware of commute information and assistance resources.

- About one-third (32%) of respondents said they knew of a telephone number or web site they could use to obtain commute information. Awareness of regional commute information resources continued to fall from the peak 66% rate measured in the 2010 SOC survey.
- Awareness was substantially higher among respondents who saw or heard commute advertising in the past year (41%) than for respondents who did not recall advertising (21%). And commuters who had heard of Commuter Connections reported higher awareness of regional commute resources (44%) than did commuters who were not aware of Commuter Connections (21%).
- About one-third of respondents who said they knew of a specific number or web site had used it; these respondents represented about 12% of all regional commuters. Six percent a Metro/WMATA phone number or website and 1% mentioned Metro/WMATA, but did not specify the number or website. One percent named a phone number or website administered by Commuter Connections.

Awareness of Commuter Connections fell between 2016 and 2019, but continues to be high.

- In 2016, 48% of all regional commuters said they had heard of an organization in the Washington region called Commuter Connections. This was a smaller percentage than knew about the program in 2016 (61%), 2013 (62%), and 2010 (64%), and about the same as knew of Commuters Connections in 2007 (53%).
- One in ten (11%) respondents who knew of Commuter Connections had contacted the program or visited a Commuter Connections or MWCOG website in the past year. These commuters represented about 5% of all employed residents of the region.

Most local jurisdiction services were known to at least a quarter of their target populations.

- Respondents were asked about local commute assistance services provided in the counties where they lived and worked. Awareness of these programs ranged from 7% to 64% of respondents who were asked the questions. Four of the ten local programs were known to at least half of the target respondents and three other programs were known to about three in ten target respondents. One notable, positive finding was that seven of the 11 programs recorded increases in awareness among the target market between 2016 and 2019.
- Use of the services ranged from 1% to 13% of the target audience. Use was generally higher for programs in outer jurisdictions and for programs associated with transit agencies or with a strong transit component. The relationship to the location in region was likely because outer jurisdiction commuters encountered more congestion in their travel and had longer commute times and distances, which could encourage them to seek options for travel to work.

Employer-provided Commuter Assistance Services

Availability of worksite commute assistance services rose between 2016 and 2019, perhaps indicating that commute service cut-backs made by employers during the economic recession years have been reversed.

- Six in ten (60%) of respondents said their employers offered one or more alternative mode benefits or services to employees at their worksites. This was a notable increase over the percentage in 2016 and nearly as high as the 61% noted in the 2010 survey.
- The most commonly offered services were SmarTrip/subsidies for transit/vanpool, available to 45% of respondents, and information on commuter transportation options, available to 26% of respondents. Two in ten (22%) respondents said their employers offered services for bikers and walkers and 17% said their employers offered preferential parking for carpools and vanpools.
- Respondents who worked for Federal agencies were most likely to have benefits/services available (85%), compared with 44% to 66% of respondents who worked for other types of employers. Respondents who worked for large firms also reported greater access to benefits/services than did respondents who worked for

small firms. Benefits/services were far more common among respondents who worked in the Inner Core area; 76% of these respondents had access to services compared with 51% who worked in the Middle Ring and 28% who worked in the Outer Ring.

- SmartBenefit transit/vanpool subsidies and information on commute options were the most widely used commuter assistance services, used by 60% and 39%, respectively, of respondents who had access to the services. One-quarter of respondents who had access to carpool subsidies and 22% whose employers offered bicycle/walking support had used these services.

Most commuters continue to have free worksite parking.

- The majority of respondents (60%) said their employers offered free, on-site parking to all employees, a slightly lower percentage as had reported free parking in 2016 (64%), 2013 (63%), and 2010 (63%). An additional 5% of respondents said their employers did not provide free parking to all employees, but that they personally had free parking.
- Federal agency workers and respondents who worked for non-profit organizations were least likely to have free parking at work; only 44% of Federal workers and 42% of non-profit workers had free parking, compared with 63% who worked for private firms and 65% who worked for state/local governments. Free parking also was much less common in the Inner Core; only 23% of Inner Core workers had free parking, compared with 80% of Middle Ring workers and 84% of Outer Ring workers.
- The availability of commute benefits/services was inversely related to the availability of free parking at the worksite. Less than half (46%) of respondents who said free parking was offered to all employees said their employers also offered commute benefits/services that would encourage or help them use alternative modes for commuting. By contrast, 76% of respondents who said free parking was not available reported having access to commute benefits/services at work.

Worksite commuter assistance services appeared to encourage use of alternative modes.

- Driving alone was less common for respondents who had access to benefits. Only 50% of respondents with these services drove alone to work, compared with 79% of respondents whose employers did not provide these services.
- Respondents whose employers did not offer free parking also used alternative modes at much higher rates. Less than four in ten (37%) respondents who did not have free parking drove alone, compared with 83% of respondents who had free parking.

Technology-based Applications, and Driverless Cars

Nearly nine in ten respondents said they had accounts with social networking applications and a similar share had used travel/trip information application.

- Eighty-five percent of all respondents had an account with at least one of the six social networking applications. The most common application was Facebook, used by seven in ten (71%) respondents. Linkedin, used primarily for work-related/professional interactions, was noted by 55% of respondents. About four in ten (43%) had an account with Instagram and 34% had a Twitter account.
- Use of social networking applications declined with increasing respondent age. More than nine in ten respondents who were younger than 35 had accounts, compared with about 85% of respondents who were between 35 and 54. Use of the apps dropped further among respondents who were between 55 and 64 years (77%) and respondents who were 65 years or older (69%).
- Eighty-five percent of all respondents had used at least one of 10 travel/trip information. Nearly two-thirds (63%) had used wayfinding or mapping applications, such as Google maps and Waze, and 50% had used traffic alerts delivered via text message or other means. About four in ten (44%) had used an application for a ride-hail service such as Uber, Lyft, or Via and 33% had used an application that tracked transit schedules or provided “next bus/train” information on arrival time.

- Use of travel/trip information applications also declined with increasing respondent age; 91% of respondents who were under 35 had accounts, compared with about 84-87% of respondents who were between 35 and 54, 82% of those who were between 55 and 64 years, and 78% of respondents who were 65 years or older.
- Respondents who were younger than 45 years were particularly more likely to have used transit schedule arrival applications, as well as bikeshare, carshare, and e-scooter service apps. Note that younger respondents were less likely to have access to a personal vehicle and more likely to live in the Inner Core, where these services are more widely available. The pattern for use of ride-hailing service apps and wayfinding applications declined steadily through all four age groups.

Commuters in the region have only a modest understanding of the concept of driverless cars. Three in ten respondents cited potential benefits of driverless cars, but two-thirds noted concerns about the concept.

- One-third (32%) of respondent said they were "very familiar" with the concept of driverless cars; they had heard or read a lot about them. But 58% of respondents said they were only "somewhat familiar" with the concept of driverless cars; they had heard or read something about them, but did not know much about them. The remaining one in ten either were "not at all familiar" (7%) or were not sure what they knew (3%).
- General awareness was similar among most demographic groups, but higher shares of men (44%), Non-Hispanic White respondents (39%), and respondents with household incomes above $160,000 (44%) said they were very familiar with the concept.
- About three in ten respondents (28%) thought that driverless cars could benefit themselves or other in the Washington region. More than seven in ten respondents could not describe a benefit, either because they did not feel there were any benefits (17%) or because they weren't sure that there were benefits (55%). The benefits that respondents mentioned generally fell into two categories: benefits that would result in easier or better regional travel conditions and benefits that would accrue to individual travelers who used driverless cars: potential reduction in vehicle crashes (13%), better traffic flow (9%), and productive use of time while traveling (4%).
- Respondents were more likely to mention concerns about driverless cars than they were to cite potential benefits; 66% noted at least one concern that they had with driverless cars versus 28% who had mentioned a benefit. The primary concerns were related to safety of driving (39%) and pedestrian safety (5%), potential liability for accidents (11%), and a general concern for personal security and privacy (14%).

Nearly four in ten respondents said they were at least somewhat interested in using a driverless car, but only about one-quarter were interested in buying a driverless car.

- When asked how interested they would be in buying a driverless car, renting a driverless car or carshare vehicle, or riding in a driverless taxi/ride-hail vehicle or driverless bus, 37% of respondents rated their interest as a 4 or 5 (very interested) for at least one of the scenarios presented.
- About one-quarter of respondents said they were at least somewhat interested in four of the five scenarios, with 16% or 17% saying they were very interested. Interest was slightly lower for using a driverless carshare vehicle; 20% were at least somewhat interested and 12% were very interested. The relatively modest interest reported for using driverless vehicles could be related to the low level of familiarity many respondents indicated and the concerns that many respondents have about safety, privacy, and liability.
- Interest was notably higher among respondents who were more familiar with driverless cars. Nearly six in ten (58%) respondents who said were very familiar with the concept expressed interest in using them. Among respondents who said they had read or heard about driverless cars but did not know much about them, only 30% were interested. Interest was lower still for those who said they hadn't heard of driverless cars; only 20% were interested in using one.
- Interest also was notably higher among respondents who were younger than 45 years (43%), male respondents (47%), and respondents with incomes greater than $120,000 (45%).

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SECTION 1 – INTRODUCTION

Purpose of the State of the Commute (SOC) Survey

This report presents the results of the State-of-the-Commute (SOC) survey conducted for the Commuter Connections program of the Metropolitan Washington Council of Governments (COG).[5] Commuter Connections provides a wide range of transportation information and assistance services in the Washington metropolitan area to inform commuters of the availability and benefits of alternatives to driving alone and to assist them to find alternatives that fit their commute needs. COG administers these services, called Transportation Demand Management (TDM) services, as part of a regional effort to reduce vehicle trips, vehicle miles of travel, and emissions resulting from commute travel, as well as to support other regional transportation goals.

COG has a strong interest in evaluating the effectiveness of its commuter services programs. In 1997 Commuter Connections established an evaluation framework that outlined a methodology and data collection activities to evaluate several of its commuter programs. This framework was updated and revised seven times, in 2001, 2004, 2007, 2010, 2013, 2016, and 2019 to incorporate changes to the evaluation methodology[6] A major addition to the 2001 framework was the State of the Commute (SOC) survey, a random sample survey of 8,246 employed persons in the Washington metropolitan region. Subsequent frameworks also included the SOC survey as a major data collection effort for the Commuter Connections TDM evaluation.

The SOC survey serves several purposes. First, it documents trends in commuting patterns, such as commute mode shares and distance traveled, and use of and prevalent attitudes about transportation services that are available in the region. Wherever possible, questions used in previous SOC surveys were replicated to allow for trend analysis. Second, the survey examines how commute alternative programs and marketing efforts might influence commute travel behavior of workers in the region. In particular, the SOC survey collects data needed to estimate, as part of a triennial analysis, the impacts of several such services offered by Commuter Connections. Finally, the survey explores commuters' opinions about and interest in current transportation initiatives.

Summary of Survey Methodology

The geographic scope of COG's responsibility encompasses the 11 independent cities and counties that make up the Washington metropolitan region. All employed residents who lived within this geographic area and who were 18 years of age or older were eligible for selection in the study. Following is a brief summary of the interview, sampling, and weighting methodologies used for the survey. Appendix A provides additional details of the sampling and survey administration. Appendix B provides details of the data weighting/expansion procedures.

Dual Interview Method

The 2019 survey was conducted in two components: primary Internet and telephone follow-up. The first, and largest component, was a web-based survey. This component used an address-based sampling (ABS) method to select the sample of potential respondents, a postcard survey invitation sent through postal mail to selected addresses, and a respondent-administered Internet interview format for respondents to complete the survey. The postcards invited employed persons 18 years of age or older to participate in the survey by accessing the survey website link, www.TraveltoWork2019.org and entering one of two passwords printed on the card. Two passwords were provided to permit two adults in the household to take the survey. Appendix D presents the Internet questionnaire.

The second component of the 2019 SOC was a telephone "follow-up" survey to a sample of residents who had received the postcard survey invitation, but who did not complete the survey via the Internet. The primary

[5] Commuter Connections is administered through the National Capital Region Transportation Planning Board (TPB) at COG and funded through the District Department of Transportation, the Maryland Department of Transportation, and the Virginia Department of Transportation, with state and federal funds.

[6] For more information on the evaluation framework in effect at the time of this survey, readers may refer to *Transportation Emissions Reduction Measures (TERMs) Revised Evaluation Framework – FY2015 –FY2017*, available from COG.

function of this component was to test for any statistical differences between responses of Internet respondents and those who had not responded.

In SOC surveys conducted prior to 2016, all SOC interviewing was conducted via telephone, using random-digit-dial (RDD) to select respondents. The 2013 and 2016 SOC surveys included a cell phone component for the sample, to address the growing component of regional residents who used a cell phone as their only telephone. The 2016 SOC survey added a pilot test of the ABS sampling with Internet interview method to determine if this could be an acceptable alternative to the telephone methodology, which had become very costly due to the need to screen for employed residents and the difficulty of reaching willing respondents.

The ABS/Internet pilot was found to produce valid survey responses and a more demographically representative sample than the telephone survey, at a lower cost per completed interview. The ABS method also ensured full coverage of the regional residential population. For these reasons, the ABS/Internet approach was chosen as the primary method for the 2019 SOC survey.

To boost survey response rates, survey respondents who completed the survey were offered the opportunity to participate in a random drawing for one of fifty $250 Amazon gift cards. When interviewing was completed, names of drawing winners were randomly selected from among respondents who requested to participate in the drawing. Each winner was emailed a gift card voucher. Both Internet and telephone respondents were eligible for the drawing and 91% of all respondents requested to participate in the drawing.

Survey Sample

At the start of the project, the research team set a minimum target of 600 completed interviews in each of the 11 jurisdictions. As the interviewing progressed and the Internet response rate was higher than anticipated, the research team increased the targets in the six jurisdictions that were closest to the center of the region and increased targets for all jurisdictions to at least meet the numbers of interviews collected in the jurisdiction in the 2016 SOC survey.

A total of 8,246 interviews were completed for the survey, 7,808 from the Internet survey and 438 through the telephone follow-up survey. On the base of 316,928 postcards that had been distributed, this resulted in an initial response rate for the Internet survey of 2.47% and an overall response rate, when the telephone interviews were included, of 2.60%. The confidence interval for the regional sample was 95% $\pm$ 1.1%. Individual samples collected for each of the 11 jurisdictions ranged from a low of 664 to a high of 941. The confidence interval for the smallest jurisdiction sub-sample (664 interviews) was 95% $\pm$ 3.8%.

Weighting of Survey Data

Because the jurisdiction-level samples were not collected proportionately, the combined Internet/telephone survey results were expanded at the jurisdiction level to match counts of employed residents in each sample jurisdictions. The results also were adjusted to align survey results to known race/ethnicity and age distributions, an adjustment that also had been applied in the 2016 SOC survey. Analysis of the 2016 survey results showed a significant over-collection of older age groups and an under-collection of younger age groups. The age distribution in the 2019 survey also over-represented older respondents and under-represented young respondents, but to a considerably lesser extent than in 2016; the ABS sample frame and Internet survey captured a considerably larger share of young respondents. For this reason, the age adjustment, while still necessary in 2019, was less extensive than had been needed in 2016.

Population statistics from the U.S. Census Bureau's American Community Survey (ACS) for combinations of employment status, race/ethnicity, and age by jurisdiction were used to calculate expansion values for each jurisdiction in the survey sample. Age categories included 18-34 years, 35-44 years, 45-54 years, and 55 years and older. Race/ethnicity categories included Hispanic, Non-Hispanic Black, Non-Hispanic White, and Other. Details of the weighting/expansion process are found in Appendix B.

This methodology was the same as had been used for the 2016 survey, however it replaced use of employment numbers obtained from the Bureau of Labor Statistics, Local Area Unemployment Statistics (LAUS) that had been used in the 2013 SOC and earlier SOC surveys. The need for available employment statistics broken down by race/ethnicity and by age groups was the overlying reason for the change from LAUS to ACS figures.

Conventions Used in Presentation of Results

The sections following this Introduction present key findings of the survey. As noted in the description of the survey weighting, the data were expanded to represent the number of employed residents of the metropolitan region and to correct for under- or over-representation of some racial/ethnic groups and age groups in the sample. The expansion methodology allows the proper representation of employed residents in each of the 11 jurisdictions in the survey area and in the region. Each table and figure in the results sections shows the raw number of respondents (e.g., n=__) who answered the question, but the percentage results presented in the tables and figures show percentages expanded to the total working population for the geographic areas referenced.

Note also that the term "respondent," when used in the text of the document, refers to expanded data, unless otherwise noted. Other terms, such as "commuter," "employee," "worker," and "resident," also are used, when it is necessary or helpful to distinguish subsets of the total surveyed population. The term "alternative mode" refers to any non-drive alone mode of travel, including public transit (bus, Metrorail, commuter train), carpool (traditional carpool, casual carpool/slug), vanpool, bicycle/bike, and walk. In some analysis cases, telework and compressed work schedules also are considered alternative modes, because they eliminate the need to make commute trips.

Where relevant, survey results are compared for sub-groups of respondents. Data also are compared against results from past SOC surveys, when these data were available and notable. Sub-group and year-to-year results that are statistically different from those of other groups/years are highlighted.[7] Appendix F also presents comparisons of 2019 results with those of SOC surveys beginning with 2004.

Geographic Analysis

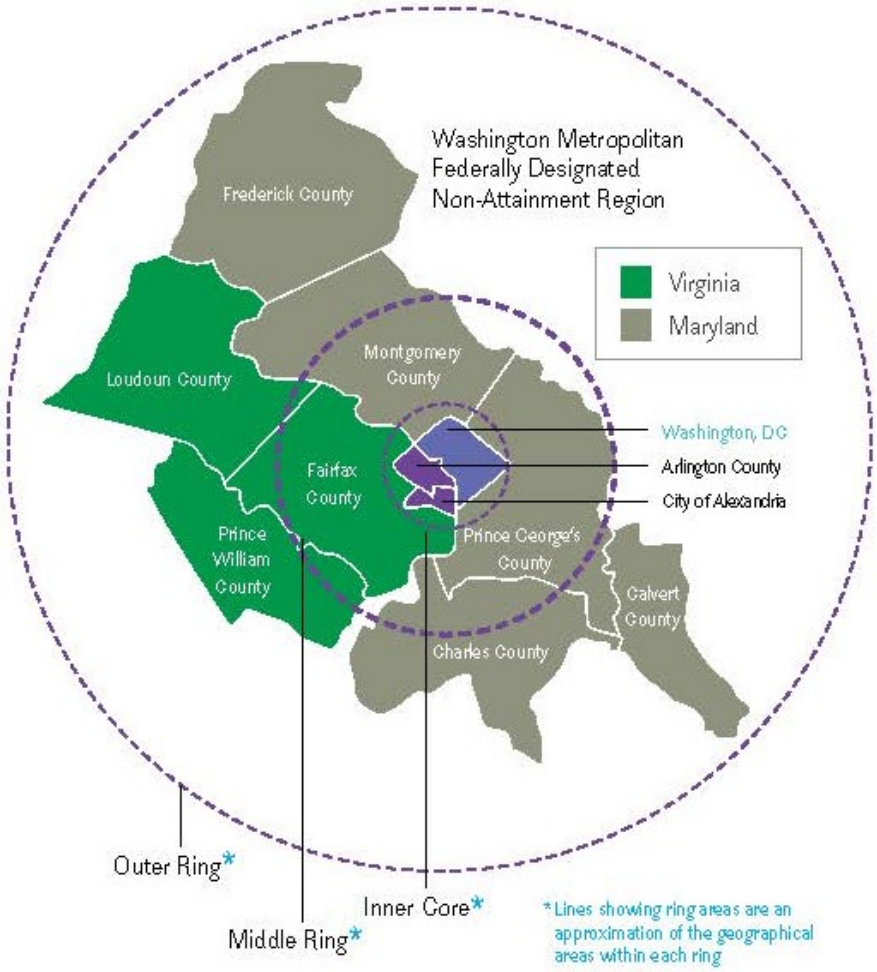
The SOC analysis focused primarily on the region as a whole. However, the survey collected robust samples for each of the 11 jurisdictions in the region, to enable analysis at multiple geographic levels. For some questions, the analysis examined results for individual jurisdictions, for the three states (District of Columbia, Maryland, and Virginia) represented in the survey, or other geographic sub-areas of the region. Datasets for individual jurisdictions also will be provided to transportation agencies in their respective areas, for additional analysis to be conducted locally.

A primary sub-area categorization used in the analysis divided the region into three categories roughly representing concentric rings around the central core (Figure 1). The Inner Core area includes the City of Alexandria (VA), Arlington County (VA), and the District of Columbia. The Middle Ring, surrounding the core, includes Fairfax County (VA), Montgomery County (MD), and Prince George's County (MD). The Outer Ring includes Calvert County (MD), Charles County (MD), Frederick County (MD), Loudoun County (VA), and Prince William County (VA).

Past SOC surveys have shown that these groupings combine jurisdictions with roughly similar travel patterns and similar transportation infrastructure. These aggregate groupings result in excellent sample sizes, facilitating analysis of many regional and sub-regional transportation planning topics.

[7] Statistical differences noted in tables or figures were measured using the t-test, with a significance threshold set at $p < .05$. For simplicity, values that are significantly higher in value are indicated.

Figure 1
Geographic Sub-Areas – Inner Core, Middle Ring, Outer Ring



Organization of Survey Results

The remaining sections of the report present key survey findings. The report is divided into the following sections

Section 2	Commute patterns
Section 3	Recent commute changes, commute ease, and commute satisfaction
Section 4	Telework
Section 5	Availability of and attitudes toward transportation options
Section 6	Transportation satisfaction and benefits of alternative modes
Section 7	Awareness and impact of commute advertising
Section 8	Awareness and use of commuter assistance resources
Section 9	Employer-provided commuter assistance services
Section 10	Technology-based applications and driverless cars
Section 11	Characteristics of the sample

Sections 2 through 10 present results on commute travel and respondents' awareness, attitudes, and opinions on various transportation topics. These topics were the main focus of the analysis. Section 11 of the report details demographic characteristics of the survey sample. At the end of the survey interview, respondents were asked a series of questions about their age, race/ethnicity, sex, income, household size, vehicle ownership, home and work locations, type of employer, size of employer, and occupation. These sample characteristics are referenced throughout the findings of Sections 2 through 10 when the analysis indicated relevant and practical differences among sub-groups of respondents.

Following these main sections are six appendices dealing with survey procedures and methodology:

Appendix A – Survey Methodology

Appendix B – Survey Data Expansion

Appendix C – Final Dialing Dispositions

Appendix D – Survey Questionnaire

Appendix E – Instructions and Definitions of Terms

Appendix F – Comparison of Key 2019 SOC Results with 2016, 2013, 2010, 2007, and 2004 SOC Results

SECTION 2 COMMUTE PATTERNS

An important focus of the survey was to examine trends in commute patterns. Commute questions in the survey included:

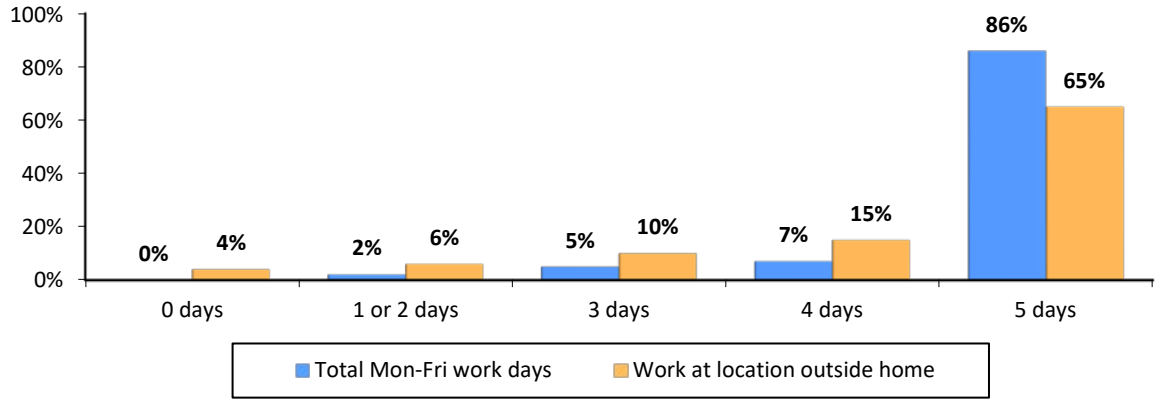
- Number of days worked per week and work schedules
- Current commute mode
- Length of commute
- Alternative mode characteristics

Number of Days Worked Per Week and Work Schedules

Work Days and Work at Home Days

More than eight in ten (86%) respondents worked five weekdays per week (Figure 2). Seven percent worked four weekdays, 5% worked three weekdays, and 2% worked one or two weekdays. A very small share (0.1%) of respondents worked all their work days on weekends. Respondents were assigned to work an average of 4.8 weekdays per week. The average was less than five days per week because some respondents worked part-time and some worked one or more of their work days on the weekend.

Figure 2
Total Weekdays Worked and Weekdays Worked at a Location Outside the Home
(Total weekdays worked n = 8,246; Weekdays worked outside the home n = 8,225)



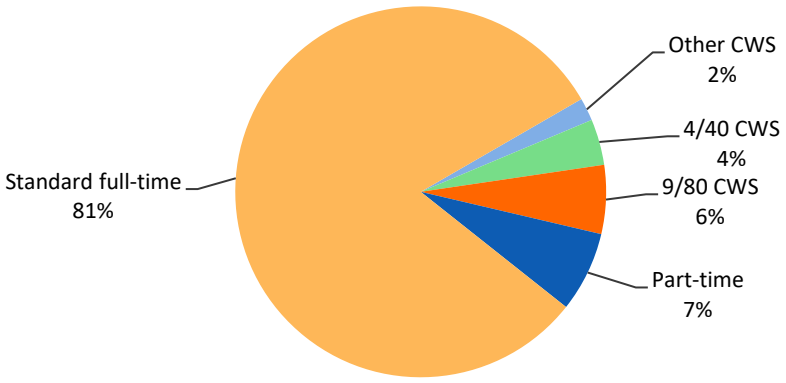
Work at Home – Respondents who worked at least one weekday were asked on how many of those days they traveled to a work location outside their homes, in essence, how many days they commuted to an outside workplace. Figure 2 also shows the results of this question. Nearly all (96%) traveled to an outside work location at least one weekday per week. Two-thirds (65%) commuted to an outside work location five weekdays, 15% commuted four days per week, 10% commuted three days per week, and 6% commuted to an outside work location one or two days per week.

About 4% said they never commuted to a work location outside their homes, that is, they worked all of their Monday through Friday work days at home. These respondents were about equally divided between respondents who were self-employed and had no other work location and those who teleworked from home every day they worked. These two groups of respondents were not asked further questions about commute patterns, but were included in questions about awareness of commute advertising and demographics. Additionally, respondents who teleworked full-time were asked questions about their telework experience.

Non-Standard Work Schedules Used

Figure 3 shows the distribution of work schedules for respondents who said they commuted to an outside work location. Eight in ten (81%) of these respondents said they worked a "standard" full-time schedule, defined as five or more days per week. Seven percent of respondents worked part-time and the remaining respondents worked a compressed work schedule, in which they worked a full-time work week in fewer than five days per week. Six percent worked a 9/80 schedule (80 hours over nine days in two weeks), 4% worked a 4/40 schedule, with four 10-hour days per week, and 2% worked another compressed schedule.

Figure 3
Non-Standard Schedule Types Used
(n = 8,091)



Availability of Flexible Work Schedules

Some employers also permit employees to work a "flexible" work schedule, in which they can choose their work start and end times, so long as they meet a minimum number of weekly or daily work hours. More than half (54%) of commuters said their employers offered at least some degree of work schedule flexibility and 81% of respondents who had access to a flexible schedule had used it.

Current Commute Mode

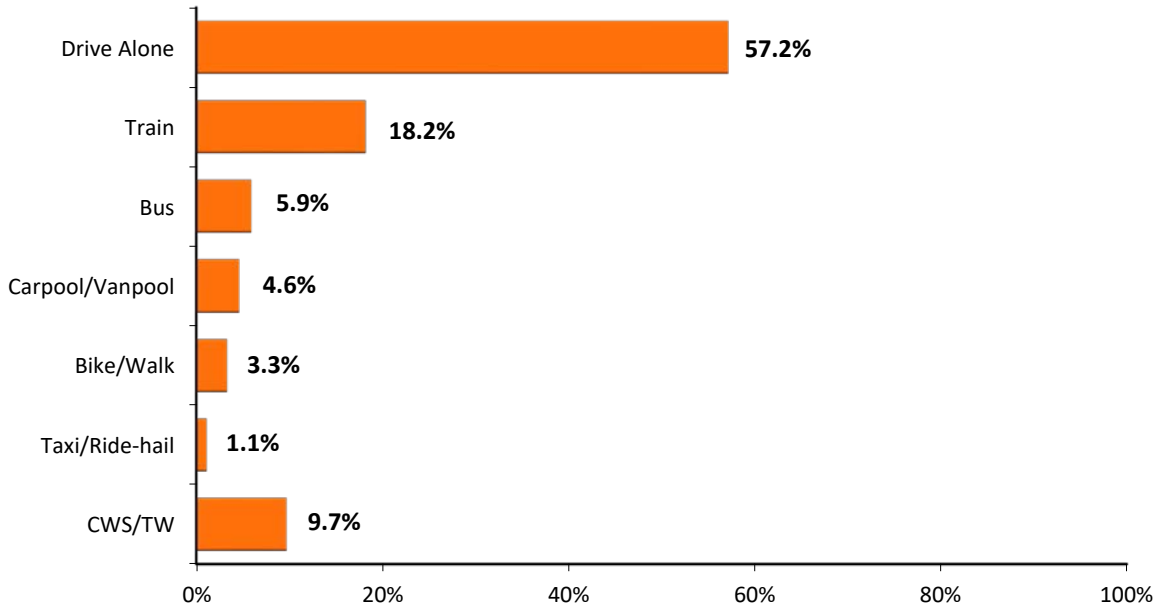
Respondents were asked what modes they used to travel to work each weekday (Monday-Friday) during a typical work week. By asking about an entire week, rather than simply "usual" travel mode, the survey captures use of modes that are used just one or two days per week. Figures 3 and 4 present two views of modal distribution.

Weekly Work Days by Mode in 2019

Figure 4 presents mode shares as a percentage of commuters' weekly work days for six "on the road" travel mode groups: drive alone (personal vehicle), train (Metrorail/commuter rail), carpool/vanpool (traditional carpool, casual carpool/slug, vanpool), bus (local bus, express bus, shuttle, and buspool), bike/scooter/walk, and taxi/ride-hail (e.g., Uber, Lyft, Via). The figure also includes the mode share for compressed work schedule and telework (CWS/TW). These are not actually travel modes, but are included to show the percentage of weekly work trips eliminated through use of these work schedule options.

Commuters drove alone to work on 57.2% of their total work days. They rode on a train for 18.2% of work days and used a bus for 5.9%. Respondents carpooled or vanpooled to work on 4.6% of work days and bicycled, rode a scooter, or walked for 3.3% of trips.

Figure 4
Weekly Commute Trips by Modes – 2019
(n = 8,107)



About 1.1% of weekly commute trips were made by riding as a passenger in a taxi or ride-hail vehicle (Uber, Lyft, Via). Note that in past SOC surveys, use of taxi/ride-hail was reported within the drive-alone mode group. While they are still considered "driving alone" for purposes of vehicle use, the 2019 survey tracked and reported ride-hail use separately group to define a baseline for use of this growing service.

Compressed work schedule days off and telework days (CWS/TW) eliminated 9.7% of weekly work trips. These days are officially assigned as part of the work week and commuters would make a trip if they did not use these work arrangements. If the telework and compressed schedule days off were excluded, to estimate the "on the road" mode share of commute trips that actually were made, the percentage use of each of the travel modes would be higher. Without telework and CWS, the drive alone share would rise to 63.4% of weekly commute trips.

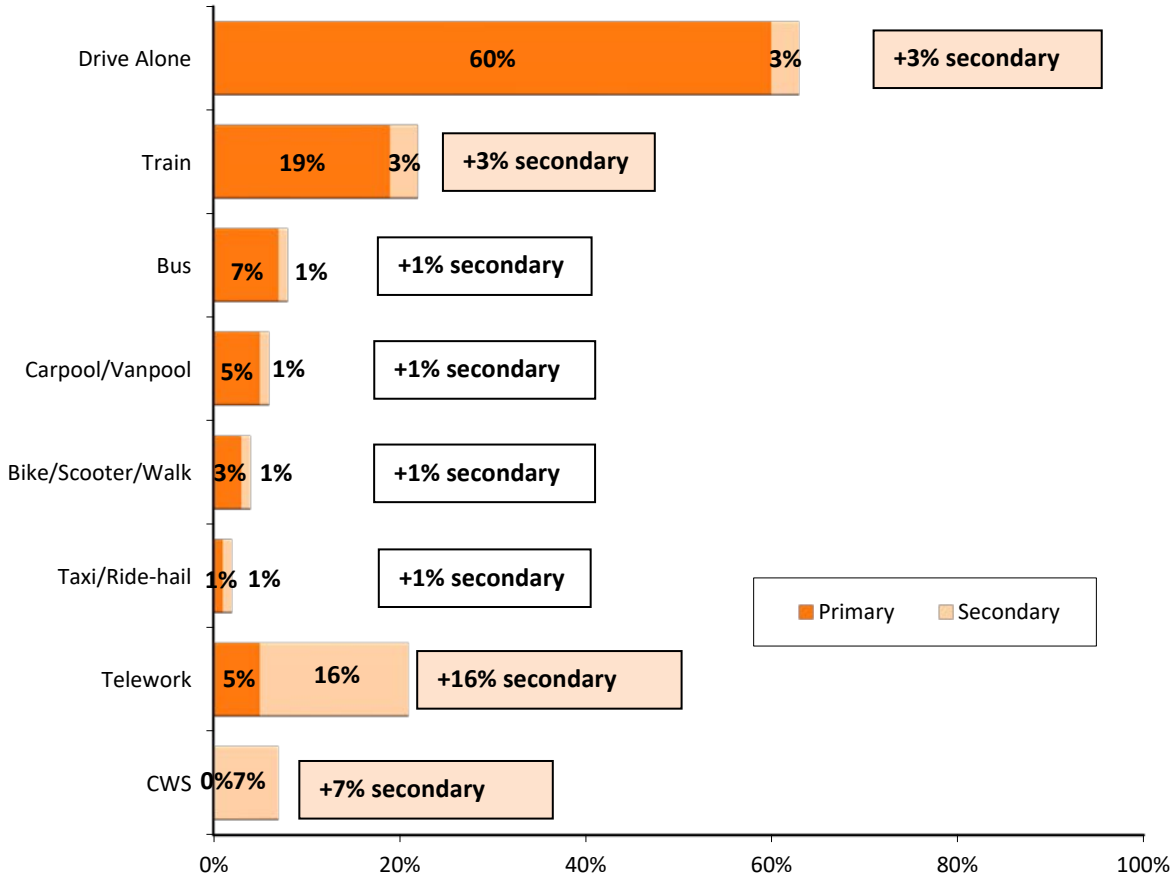
Excluding telework and CWS, the weekly commute trip distribution for all travel modes would be:

- Drive alone (including motorcycle) 63.4%
- Train 20.2%
- Carpool/vanpool 5.1%
- Bus 6.5%
- Bike/scooter/walk 3.6%
- Taxi/Ride-hail 1.2%

Frequency of Current Mode Use

Primary Mode – Mode split also can be portrayed as the percentage of respondents who use each mode. Figure 5 presents the percentage of respondents who used a mode as their "primary" mode, defined as the mode used the greatest number of days per week. Most respondents worked five weekdays per week, so primary mode generally equated to use three or more days per week. For a small percentage of respondents who worked fewer than five weekdays or who used more than two modes, the primary mode could be used just two days per week.

Figure 5
Primary Modes and Secondary Modes
(n = 8,107)



As with mode split by weekly trips, the most common primary mode was drive alone, used by 60% of respondents. The second most common primary mode, used by 19% of respondents, was train. Seven percent said they primarily rode a bus and 5% rode in a carpool or vanpool. Three percent of respondents primarily biked, rode a scooter, or walked and 1% rode in a taxi or ride-hail vehicle. Five percent primarily teleworked. No commuters worked a primary compressed work schedule, but that is because CWS schedules eliminate at most two of the regular work days, so commuters would have at least one other mode during the week.

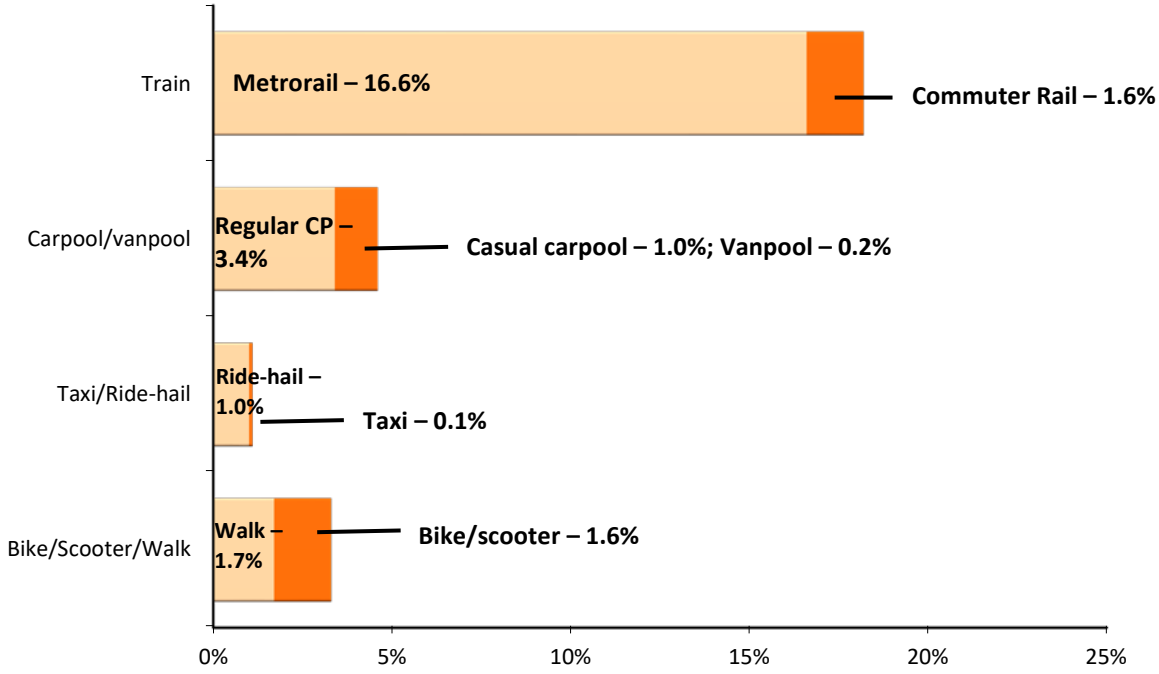
Secondary Modes – Figure 5 also shows the percentages of respondents who used a mode as a secondary mode, meaning they used it one or two days per week, in addition to their primary mode. The mode with the greatest secondary use was telework; 16% of respondents teleworked one or two days per week. Seven percent had a compressed schedule day off one or two days per week or one day off every two weeks. Three percent of respondents drove alone as a secondary mode and 3% rode a train. The remaining four modes were used by just 1% of respondents as secondary modes.

In most cases, the percentage of respondents who used a mode as their primary mode was higher than the percentage of total work days on which commuters actually used that mode. For example, 19% of respondents primarily rode a train to work but only 18.2% of weekly work trips were made by train. The difference was largely due to the incidence of telework and compressed work schedule as secondary schedules.

Mode Use within Mode Groups

The mode groupings shown in Figures 4 and 5 each is comprised of several related individual modes. The large sample size of the SOC survey enables some analysis not only of grouped modes, but also of individual modes. Figure 6 shows the relative use of individual modes within the four main combined mode groups: train, carpool/vanpool, taxi/ride-hail, and bike/scooter/walk.

Figure 6
Composition of Combined Mode Groupings – Percentage of Weekly Commute Trips
(n = 8,107)
(Note: scale extends only to 25% to highlight mode group components)



Train – The train mode group was comprised of Metrorail and three commuter rail companies: MARC (Maryland commuter rail), Virginia Railway Express (VRE), and Amtrak. Metrorail dominated this category, with nine in ten train riders using this mode (16.6% of total 18.2% train ridership). The balance of train ridership was in commuter rail (1.6% of total train use).

Carpool/Vanpool – Regular carpooling dominated the carpool/vanpool mode group. Three-quarters of carpool/vanpool trips were in regular carpools (3.4% of total 4.6% carpool/vanpool use). Casual carpools (also called ”slugs”) accounted for about two in ten carpool/vanpool trips. Vanpool trips accounted for very small share (0.2% of 4.6%) of trips in this mode group.

Taxi/Ride-hail – Within the taxi/ride-hail group, ride-hailing was by far the more common mode. About nine in ten of the taxi/ride-hail mode group trips were made in Uber, Lyft, Via, and other ride-hail services (1.0% of 1.1%). Traditional taxi accounted for just one in ten trips in this group (0.1% of 1.1%).

Ride-hailing services are relatively new travel modes in the region, but appear to be expanding quickly, thus commuters who used ride-hailing to get to work during their typical week were asked several follow-up questions. First, they were asked which ride-hailing services they had used. Note that respondents were permitted to check more than one of these types of transportation, so the total will add to more than 100%. Lyft and Uber (riding

alone as a passenger) were reported by similar share of respondents; 61% used Lyft for commuting and 58% used Uber. Nearly half (48%) said they used UberPool or Uber Express Pool, in which they rode with another passenger. Five percent used Via for their ride-hail commute trips.

Ride-hail users also were asked how they would have made these commute trips if the ride-hail service has not been available. As shown below, about half of these commuters said they would have driven in a personal vehicle (28%) or ridden in a taxi (20%). But six in ten (59%) said transit would have been a likely option, 16% likely would have walked, and one in ten (9%) likely would have bicycled. Note that respondent were permitted to select more than one option, so the percentages will add to more than 100%.

Mode Used if Ride-hail Not Available	Percentage of Ride-hail Respondents (n = 105)
• Drive alone in personal vehicle	28%
• Taxi	20%
• Public transit (train, bus)	59%
• Walk	16%
• Bicycle	9%
• Carpool/casual carpool	4%
• Not sure	0%

Bike/Scooter/Walk – Walking and biking were equally represented in the bike/walk mode group. Walking accounted for 1.7% of the total 3.3% trips in this group and 1.6% of trips were made by bicycle or scooter.

In recent years, numerous new shared-bike and shared-scooter options have been introduced in the metropolitan Washington region. Commuters who reported one or more days of bike/scooter use were asked what type(s) of bike/scooter they used. This distribution is shown below. Note that respondents were permitted to check more than one of these types of transportation, so the total will add to more than 100%:

Bike/Scooter type	Percentage of bike/scooter Respondents (n = 195)
• Personal bike	85%
• Capital Bikeshare bike	16%
• Dockless bike	7%
• Personal scooter/e-scooter	6%
• Rented scooter/e-scooter	5%

Commuters who reported using a bike or scooter users overwhelmingly rode personal bikes for their commute; 85% said they had ridden a personal bike on some or all of their bike/scooter commute days. Nearly one in four used a rented bike, either a Capital Bikeshare bicycle (16%) or a dockless bike (7%). About one in ten bike/scooter commuters typically used a scooter, either a personal scooter (6%) or a rented scooter (5%).

Use of both personal bikes and rented bikes and scooters was strongly related to respondents' demographics and home and work locations. Seven in ten (70%) commuters who used a rented bike/scooter lived in the Inner Core, 68% worked in the Inner Core, and 81% traveled less than five miles to work (Table 1). Rented bike/scooter users also were predominantly young (56% under 35 years old), male (75%), and higher income (63% with household income of $160,000 or more). Commuters who used personal bikes/scooters followed a generally similar profile, although personal bike/scooter users were less likely to be as young and traveled somewhat farther to work.

Table 1
Predominant Characteristics of Commuters Who Used Rented and Personal Bike/Scooters

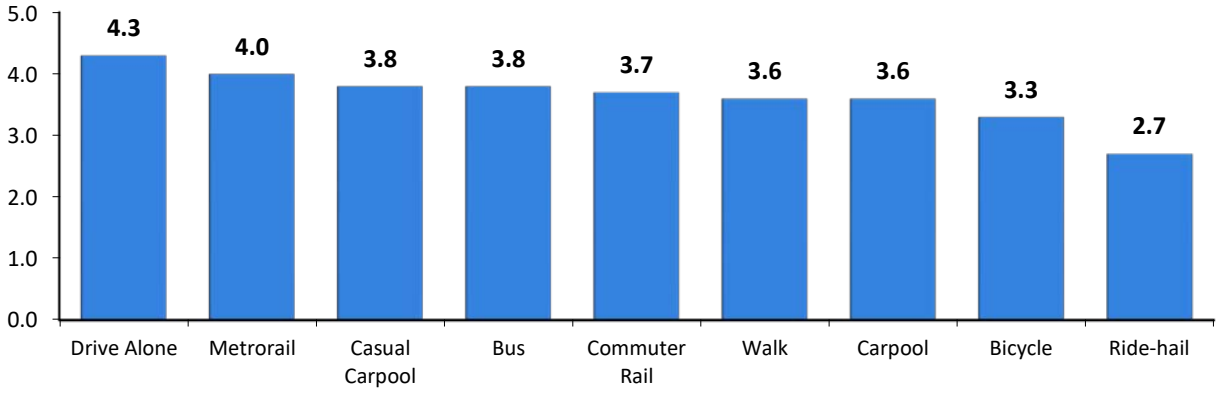
Respondent Characteristic	Rented (n = 43)	Personal (n = 179)
Lived in Inner Core	70%	64%
Worked in Inner Core	68%	77%
Travel distance less than 5 miles	81%	53%
Age under 35 years old	56%	36%
Income $160,000 or more	63%	53%
Male	75%	71%

Mean Days Used

Figure 7 details the average number of days each individual mode was used. All modes except ride-hail were used at least three days per week on average. Driving alone and Metrorail were used at least four days per week and five other modes were used at least 3.5 days per week. This is consistent with other results in the survey, which showed that 81% of commuters used a single mode four or more of their commute days and 62% used a single mode all of their commute days.

Figure 7
Average Days Modes Used

(Drive Alone n = 5,422, Metrorail n = 1,344, Casual Carpool n = 72, Bus n = 671, Commuter Rail n = 165 Walk n = 201, Carpool n = 362, Bicycle n = 195, Ride-hail n = 107; Note Vanpool and taxi not included due to insufficient sample sizes)
(Multiple responses permitted)



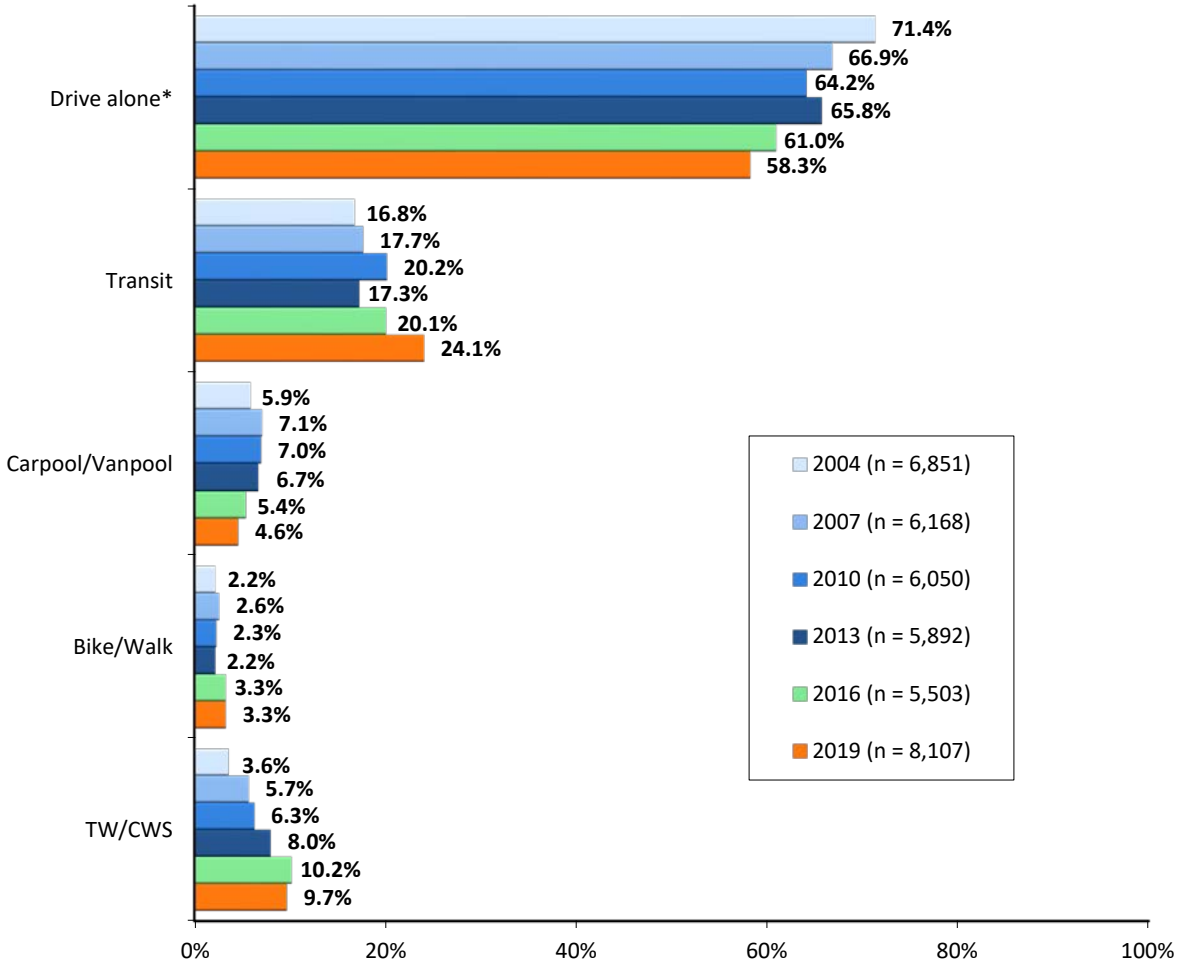
Weekly Trips by Mode – Trends from 2004 to 2019

Figure 8 presents mode shares as a percentage of weekly commute trips for 2019 and for four previous SOC surveys. The share of drive alone trips in 2019 (58.3%) was the lowest rate of all the SOC surveys shown, continuing a general decline since 2004. During the same time period, transit use has generally risen, from a low of 16.8% of weekly trips in 2004 to 24.1% in 2019. The carpool/vanpool mode share peaked in 2007 and 2010 and has fallen since that peak. Bike/walk mode share grew in 2016 when compared with past SOC surveys and remained at the 2016 level in 2019. All of these changes were statistically significant.

Figure 8
Percentage of Weekly Trips by Mode – 2004 to 2019

(Including telework and compressed schedules)

(*Note: taxi/ride-hail was reported as part of "drive alone" in the 2004-2016 surveys. For consistency, "drive alone" percentage shown for 2019 follows the same approach. In 2019, taxi/ride-hail accounted for 1.1% of the total 58.3% drive alone.)



Use of telework/compressed work schedules, which had increased in each of the previous surveys since 2004, leveled off in 2019 at about the same rate as in 2016; the growth from 2004 to 2019 was statistically significant, but the apparent decline from 10.2% to 9.7% was not significant. When considered as a long-term regional trend, the share of weekday trips eliminated by these modes has more than doubled over the past 15 years, from 3.6% of weekday commute trips to 9.7% in 2019.

Mode Use by Age of Respondent

In interpreting mode share trends since 2004, it is important to note that differences observed between 2013 and 2016 could have been affected by a change in the survey data weighting methods. As indicated by Table 2, 2019 survey respondents who were younger than 35 years old were less likely to drive alone and more likely to use a train and to bike/walk than were older respondents (Table 2). Use of these modes was consistent for respondents in the other age groups. Carpool/vanpool and bus use were approximately equal among all age groups.

Table 2
Primary Mode by Age – 2019 SOC
(Note: row totals might not add to 100% because telework is not included;
(Shading indicates statistically higher percentages of mode use)

Age	(n =__)	Primary Commute Mode				
		Drive Alone*	Carpool / Vanpool	Bus	Train	Bike / Walk
Under 35 years old	1,725	57%	5%	6%	23%	5%
35-44 years old	1,795	61%	5%	6%	20%	3%
45-54 years old	1,998	64%	5%	8%	16%	3%
55 years or older	2,297	65%	4%	6%	18%	2%

* Includes drive alone in personal vehicle or riding alone as a passenger in taxi or ride-hail vehicle

These differences by age are relevant because, as explained in Section 1, weighting factors were applied to the age distributions of the 2016 and 2019 survey data to correct for under-representation of respondents who were younger than 35 years of age and over-representation of respondents 55 years and older, when compared with the American Community Survey (ACS) data compiled by the U.S. Census. The consistent weighting for these two surveys allows the 2019 data to be compared against 2016 without difficulty; the age adjustment resulted in datasets with substantially equal age profiles, thus the decline in drive alone mode share and increase in transit mode share observed between 2016 and 2019 would be unrelated to age bias in sampling.

But the weighting change is noted here because it is relevant for comparisons between 2016 and 2013. A review of the 2013 SOC data against the ACS suggests young respondents also were under-represented in the 2013 survey, although to a much lesser extent than in 2016. Thus, some of the differences in mode use between 2013 and 2016 could be related to different age profiles for those surveys.

In the context of mode use trends between 2004 and 2019, the 2013 survey results seem inconsistent, particularly for drive alone and transit use. However, the results of the 2016 and 2019 surveys appear to have re-established the long-term mode use patterns of declining drive alone and increasing transit mode shares from 2004 to 2019.

Primary Commute Mode by Demographic Group

Analysis of survey data showed some modest differences in choice of primary mode (mode used most days per week) among other demographic groups. Tables 3 through 7 present distributions of primary mode by respondent sex, ethnic group, income, vehicle availability, and location of residence and employment. Note that telework percentages are excluded from the tables, so row totals will not add to 100%.

Sex

Female and male respondents used each mode group at an equal rate, within one percentage point in all mode cases. There were no significant differences in mode use rates for any modes (Table 3).

Table 3
Primary Mode by Sex
(Note: row totals might not add to 100% because telework is not included)
(Shading indicates statistically higher percentages of mode use)

Sex	(n =__)	Primary Commute Mode				
		Drive Alone*	Carpool/ Vanpool	Bus	Train	Bike / Walk
Female	3,806	61%	5%	7%	20%	3%
Male	3,859	60%	6%	6%	19%	4%

* Includes drive alone in personal vehicle or riding alone as a passenger in taxi or ride-hail vehicle

Income

Table 4 presents primary mode by annual household income. Differences in mode use by income were not statistically significant for most modes. Respondents with incomes less than $100,000 drove alone more than did higher income respondents and a higher share of middle-income ($60,000 - $179,999) respondents rode a train than was the case among other income groups but use of other modes showed no clear increasing or decreasing patterns by income.

Table 4
Primary Mode by Annual Household Income
(Note: row totals might not add to 100% because telework is not included;
(Shading indicates statistically higher percentages of mode use)

Income	(n =__)	Primary Commute Mode				
		Drive Alone*	Carpool/ Vanpool	Bus	Train	Bike / Walk
Less than $60,000	633	64%	3%	12%	16%	4%
$60,000 – 99,999	1,234	64%	4%	5%	21%	3%
$100,000 – 139,999	1,267	58%	5%	6%	21%	4%
$140,000 – 179,999	1,013	60%	4%	5%	22%	4%
$180,000 – 249,999	957	57%	8%	4%	19%	5%
$250,000 +	580	59%	6%	5%	17%	4%

* Includes drive alone in personal vehicle or riding alone as a passenger in taxi or ride-hail vehicle

Race/Ethnicity

Table 5 presents primary mode distribution for respondents of the three primary race/ethnicity groups. Hispanic and Non-Hispanic Black respondents were more likely to ride a bus than were Non-Hispanic Whites. Black respondents were statistically more likely to use the train than were either White or Hispanic respondents. Bike/walk use was highest among White respondents. The shares of driving alone and carpool/vanpool use were similar for the three groups.

Table 5
Primary Mode by Race/Ethnicity
(Note: row totals might not add to 100% because telework is not included)
(Shading indicates statistically higher percentages of mode use)

Ethnic Group	(n =__)	Primary Commute Mode				
		Drive Alone*	Carpool / Vanpool	Bus	Train	Bike / Walk
Hispanic	502	63%	4%	9%	17%	2%
Non-Hispanic Black	1,351	61%	5%	9%	21%	1%
Non-Hispanic White	5,466	61%	5%	5%	18%	6%

* Includes drive alone in personal vehicle or riding alone as a passenger in taxi or ride-hail vehicle

Vehicles Available – Table 6 shows the primary mode distribution by the number of vehicles per adult resident in the respondent's household. Not unexpectedly, respondents who lived in a car-free household (0 vehicles per adult) and those who had fewer cars than adult residents (0.1-0.5 vehicles and 0.6-0.9 vehicles) were less likely to drive alone and more likely to commute by bus, train, and bike/walk than were respondents who reported having one or more vehicles for each adult in the household.

Table 6
Primary Mode by Number of Vehicles Per Adult in the Household
(Note: row totals might not add to 100% because telework is not included;
(Shading indicates statistically higher percentages of mode use)

Number of Vehicles per Adult	(n =__)	Primary Commute Mode				
		Drive Alone*	Carpool / Vanpool	Bus	Train	Bike/ Walk
0 vehicles	393	8%	1%	24%	48%	16%
0.1 to 0.5 vehicles	1,021	43%	9%	8%	30%	5%
0.6 to 0.9 vehicles	431	67%	7%	5%	17%	1%
1 vehicle or more	5,982	70%	5%	4%	15%	2%

* Includes drive alone in personal vehicle or riding alone as a passenger in taxi or ride-hail vehicle

As the number of vehicles per adult in the household increased, driving alone increased from 43% for respondents who had at most one vehicle for two household members (0.1-0.5 vehicles) to a high of 70% when every household member had a vehicle available. Use of bus and train declined significantly with higher vehicle availability. Carpooling was most common for respondents who were "car-lite," with a vehicle in the household, but fewer vehicles than adult residents. Some of these respondents likely carpooled with another member of the household. Biking/walking was more common among respondents with low vehicle availability, but these respondents would have lived close to work, so the relationship between car availability and mode could be in the opposite direction; being able to bike/walk to work could have encouraged them to avoid car ownership or share a vehicle with other household members.

Residence and Employment Location

Residence State – Respondents' commute modes differed by where they lived (Table 7). About two-thirds of Maryland (65%) and Virginia (65%) residents primarily drove alone to work, while only three in ten (31%) District of Columbia residents primarily used this mode to commute. District residents were significantly more likely to use bus, train, and bike/walk to work than were residents of Maryland or Virginia.

Table 7
Primary Mode by State of Residence and State of Employment
(Note: row totals might not add to 100% because telework is not included;
(Shading indicates statistically higher percentages of mode use)

State	(n =__)	Primary Commute Mode				
		Drive Alone	Carpool/ Vanpool	Bus	Train	Bike / Walk
State of Residence						
District of Columbia	735	31%	2%	12%	35%	17%
Maryland	3,828	65%	3%	5%	19%	1%
Virginia	3,544	65%	8%	6%	15%	2%
State of Employment						
District of Columbia	2,720	32%	6%	12%	41%	7%
Maryland	2,447	75%	4%	5%	7%	2%
Virginia	2,846	76%	5%	4%	9%	2%

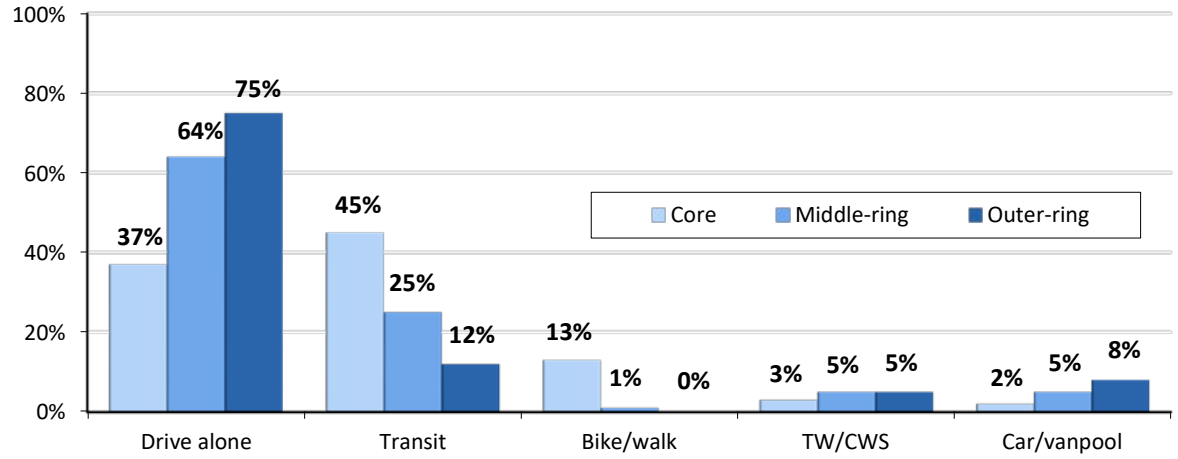
As is described further in Section 5, the much higher share of transit for District residents is related to their greater access to transit modes. District residents also travel shorter distances to work than do Maryland and Virginia residents, thus the higher bike/walk percentage is not surprising. Maryland residents used train more than did Virginia residents, while a larger share of Virginia residents primarily carpooled or vanpooled. Virginia residents' high use of carpooling and vanpooling is almost certainly related to their greater access to High Occupancy Vehicle (HOV) lanes, which provide a substantial time saving for carpooling/vanpooling commuters, and the presence of casual carpool/slug formation points along several of the Virginia roads with HOV facilities.

Employment State – Table 7 also displays primary mode by state of employment. Respondents who worked in the District of Columbia drove alone to work at less than half the rate (32%) of those who worked in Virginia (76%) or Maryland (75%). District workers were more than twice as likely to ride a bus and to bike/walk to work as were Maryland and Virginia workers. Train use also dramatically higher among respondents working in the District than for other respondents.

Home Area "Ring" – The mode use comparisons presented above for Virginia and Maryland represent average use across large geographic areas that have substantially different travel conditions and travel options. Virginia, in particular, includes jurisdictions that are largely urban (Alexandria and Arlington), as well as suburban (Fairfax), and exurban (Loudoun and Prince William) areas. Maryland includes two largely suburban areas (Montgomery and Prince George's) with some pockets of urban development, and three exurban areas (Calvert, Charles, and Frederick). These aggregations can mask large differences in mode use for sub-areas of the states.

Thus, the analysis examined mode use by how close the respondent lived to the center of the region. Figure 9 displays primary mode as a function of respondents' residence area, in the "ring" designation defined earlier.

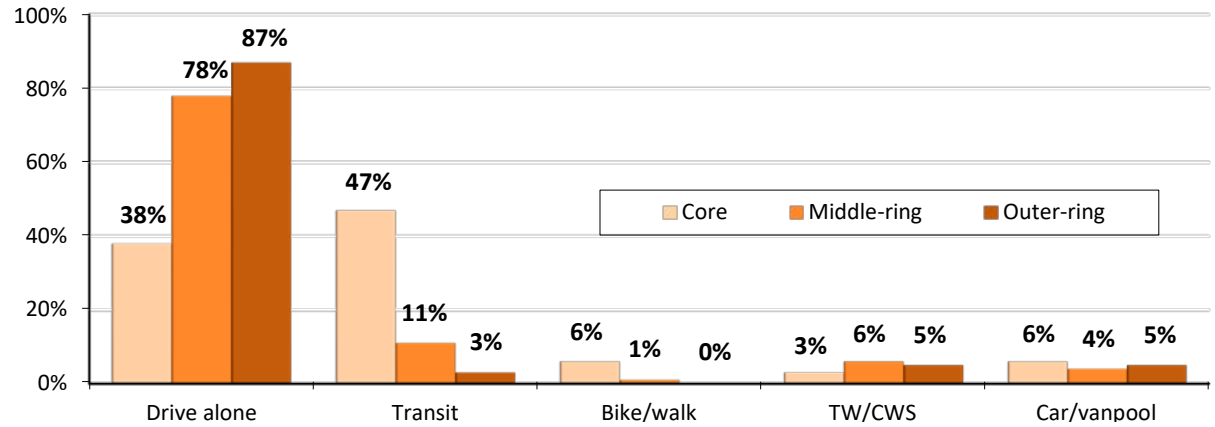
Figure 9
Primary Mode by Home Area
(Inner Core n = 2,198, Middle Ring n = 2,421, Outer Ring n = 4,488)



Only 37% of commuters who lived in the Inner Core area, which includes the District of Columbia, Alexandria, and Arlington, drove alone. This was much lower than the drive alone rates for the Middle Ring (64%) and the Outer Ring (75%) and only slightly higher than the 31% drive alone share noted in Table 7 for the District of Columbia alone. Transit use in the Inner Core (45%) also was nearly as high as for the District of Columbia alone (53%). This suggests that the two Inner Core Virginia jurisdictions were more similar to the District of Columbia in travel mode characteristics than they were to other Virginia jurisdictions.

Work Area Ring – The mode pattern for mode by respondents' employment area was similar to that for the residence area, but more pronounced (Figure 10). Fewer than four in ten (38%) commuters who worked in the Inner Core area drove alone. This was dramatically lower than the drive alone rates for the Middle Ring (78%) and Outer Ring (87%). Transit use was high in the Inner Core; nearly half (47%) of Inner Core workers used bus or train as their primary mode, while transit rates were much lower for commute trips to Middle Ring (11%) and Outer Ring (3%) worksites. This pattern obviously reflects both the availability of transit infrastructure in the Inner Core areas as well as the inbound focus of transit service during peak commuting hours.

Figure 10
Primary Mode by Work Area
(Inner Core n = 3,843, Middle Ring n = 2,828, Outer Ring n = 1,375)



Primary Mode by Non-Standard Schedules

Compressed Work Schedules vs Standard Schedules – Use of non-standard work schedules sometimes has been assumed to reduce the use of alternative modes for commuting, by making it more difficult to maintain a carpool or vanpool or by reducing the possibility of using transit for early or late hour commuting. But as seen from Table 8, respondents who worked a compressed schedule actually drove alone less and had higher rates of bike/walk and transit use than did respondents who worked a standard, non-compressed, schedule. Compressed schedule workers used carpool/vanpool at the same rates as did employees who worked a standard schedule.

Table 8
Primary Mode by Use of Non-Standard Schedules
(Note: row totals might not add to 100% because telework is not included;
(Shading indicates statistically higher percentages of mode use)

Type of Schedule	(n=__)	Primary Mode				
		Drive Alone	Carpool/ Vanpool	Bus	Train	Bike / Walk
Compressed schedule	881	54%	6%	9%	23%	4%
Standard schedule	6,546	61%	5%	6%	20%	2%

The lower use of drive alone by commuters who work a compressed schedule likely is related to factors other than simply their work schedule, however. First, compressed schedules were more common in the Inner Core, where driving alone is more costly and difficult and where transit alternatives are more available than in the Middle Ring and Outer Ring areas. Half (50%) of respondents who worked a compressed schedule worked in the Inner Core. Among respondents who worked a non-compressed schedule, 45% worked in the Inner Core.

A second factor that could influence compressed schedule users' lower drive alone commuting is that they were more likely to have access to commute services, such as discounted transit passes, reserved parking for carpools, and commute information, at work to encourage and assist them to use alternative modes. Seven in ten (71%) respondents who worked a compressed schedule said their employers offered commute assistance services, compared with 61% of respondents who worked a standard work schedule. Compressed schedule users also had access to a higher number of commute assistance services; 35% said their employers offered three or more services, while only 22% of respondents who worked a standard schedule had three or more services.

Flexible Work Schedules versus Standard Schedules – Respondents who said their employers offered flexible schedules drove alone at a much lower rate (55% drive alone) than did commuters who did not have flexible schedules (72% drive alone). As was noted in the discussion for compressed schedule, however, this could be related to locational factors. Half (50%) of respondents who said a flexible schedule was available worked in the Inner Core. Among respondents who did not have this service available, 44% worked in the Inner Core.

Primary Roads Used on the Trip to Work

The 2019 SOC survey included a question to identify the major roadways that commuters use to get to work. This question will primarily be used for COG/TPB planning purposes, but the results are briefly summarized in Table 9 for commuters whose primary mode was carpool/vanpool or public transit. These commuters did not drive alone to work, so the question identified roads on which traffic was most likely to have been reduced when commuters chose non-drive alone modes of travel.

Table 9
Primary Roadways Used to Get To Work – Commuters who Carpool/Vanpool or Ride Public Transit

Primary Roadway	Carpoolers / Vanpoolers (n = 374)	Public Transit Riders (n = 1,869)
Maryland / District of Columbia)		
I-495 – Capital Beltway (MD)	14%	17%
I-295 (MD/DC)	12%	14%
I-270 (MD)	12%	9%
I-95 (MD)	6%	4%
I-695 – Southeast-Southwest Freeway (DC)	5%	6%
Baltimore Washington Parkway – U.S. Route 295 (MD)	4%	5%
U.S. Route 301 (MD)	4%	2%
U.S. Route 50 – John Hanson Highway (MD)	3%	3%
U.S. Route 29 – Colesville Road (MD)	3%	3%
U.S. Route 1 (MD)	3%	2%
Virginia		
I-395 Shirley Highway (VA)	26%	15%
I-95 (VA)	20%	4%
I-66 Inside the Beltway (VA)	17%	14%
I-495 – Capital Beltway (VA)	12%	11%
Dulles Toll Road – VA Route 267 (VA)	11%	5%
I-66 Outside the Beltway (VA)	10%	8%
U.S. Route 1 – Jefferson Davis Highway (VA)	8%	4%
U.S. Route 50 – Lee Jackson Highway (VA)	7%	7%
George Washington Parkway (VA)	4%	9%
VA Route 29 – Lee Highway (VA)	3%	4%

Overall, the route used by most alternative mode commuters was I-395 (Shirley Highway) in Virginia. One-quarter (26%) of all regional carpoolers/vanpoolers said they used this route on their trip to work and 15% of all regional transit riders said they would use this route on days they drove to work. Other common roads for carpoolers/ vanpoolers included I-95 in Virginia, the Capital Beltway in both Maryland and Virginia, I-66 in Virginia, and the Dulles Toll Road in Virginia; at least one in ten regional ridesharers used one of these roads.

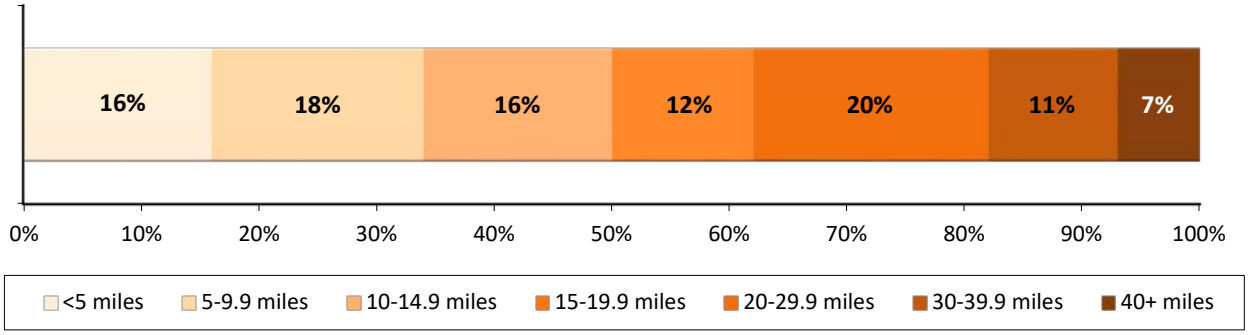
Other common routes that transit rider would use on days they drove to work included the Capital Beltway in Maryland and Virginia, I-295 in Maryland/District of Columbia, I-270 in Maryland, I-66 in Virginia, and the George Washington Parkway (VA). At least 9% of transit riders named each of these roads.

Length of Commute

Number of Miles

Commuters in the sample had a wide range of commute distances, ranging from less than one mile to more than 100 miles, with an overall average of 17.1 miles. About one-third (34%) of respondents commuted fewer than 10 miles one-way (Figure 11). Almost three in ten (28%) traveled between 10 and 19 miles. Seven percent traveled 40 or more miles.

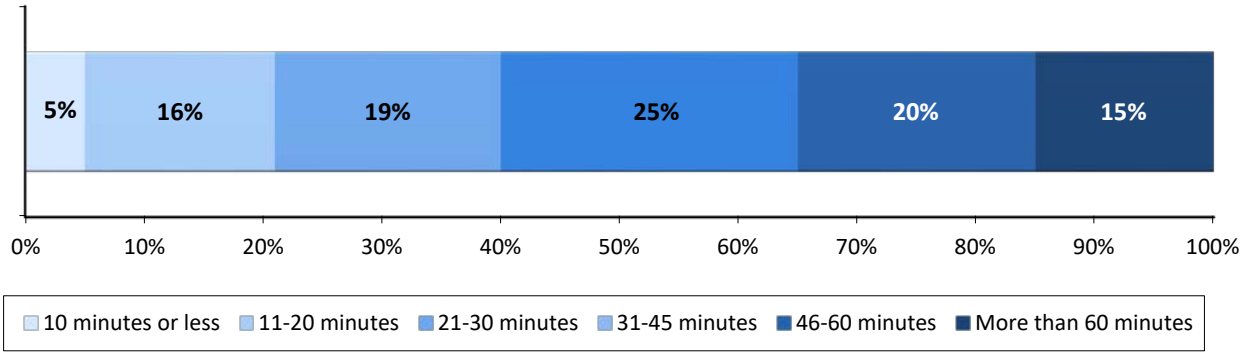
Figure 11
Commute Distance (miles)
(n = 7,412)



Commute Travel Time

Survey respondents commuted, on average, about 43 minutes one-way. Two in ten (21%) respondents commuted 20 minutes or less and 44% commuted between 21 and 45 minutes (Figure 12). Slightly more than one-third (35%) traveled more than 45 minutes, with 15% traveling more than one hour one-way.

Figure 12
Commute Time (minutes)
(n = 7,862)



The reported average commute distance was about the same in 2019 (17.1 miles) as was observed in 2016 (17.3 miles). The average 2019 commute time (43 minutes), however, was longer than the times measured in 2016 (39 minutes) and in 2013 (36 minutes). Results for average travel distance and time for all SOC surveys from 2004 through 2019 are shown in Appendix F.

Commute Distance By Mode

The longer travel time could be related to higher use of public transit modes than in past SOC surveys. Survey respondents' travel distance differed by the type of transportation they used to commute (Table 10). Vanpool riders and commuter rail riders traveled the farthest, 35.0 miles and 29.8 miles one-way, respectively. Commuters who carpooled and those who drove alone to work also traveled farther than the 17.1-mile regional average. Vanpoolers and commuter rail, Metrorail, and bus riders spent the longest time commuting, at least 46 minutes one-way.

Table 10
Average Commute Distance and Commute Time by Primary Mode

(Note: Distances greater than 120 miles and times greater than 150 minutes are excluded from the averages)

Primary Commute Mode	Average Distance (mi.)		Average Time (min.)	
	(n =__)	Average	(n =__)	Average
Vanpool	24	35.0 mi.	26	52 min.
Commuter rail	131	29.8 mi.	143	78 min.
Carpool	343	20.6 mi.	349	46 min.
Drive alone	4,908	17.6 mi.	5,012	39 min.
Bus	504	16.4 mi.	578	55 min.
Metrorail	987	13.6 mi.	1,172	50 min.
Bike	142	4.2 mi.	140	24 min.
Walk	152	1.0 mi.	156	18 min.

Commute Distance By Home and Work Location

Respondents' travel distance also varied by where they lived and where they worked (Table 11). Respondents who lived in the Inner Core traveled the shortest distance to work, an average of 7.5 miles one-way. Respondents who lived in the Middle Ring commuted considerably farther, 16.4 miles. Respondents who lived in the Outer Ring traveled an average of 26.7 miles one-way, more than three times the distance of Inner Core residents.

Commute distances by work area were less varied. Respondents who worked in the Inner Core traveled an average of 15.5 miles and Middle Ring workers traveled 17.1 miles. Respondents who worked in the Outer Ring traveled the farthest, 22.3 miles one way.

Inner Core area residents had the shortest travel time, an average of 33 minutes one-way. But, while the Inner Core respondents traveled both fewer miles and fewer minutes to work than did other respondents, they did not have proportionately shorter travel times than their travel distances might suggest. Middle Ring residents traveled only nine minutes longer than did Inner Core residents and Outer Ring residents traveled just 20 minutes longer, despite substantially longer travel mileage. This was likely due to the higher transit and bike/walk use among Inner Core respondents; transit and bike/walk trips, while short in distance, tend to be longer in time.

Table 11
Average Commute Distance and Commute Time by Home and Work Areas
(Note: Distances greater than 120 miles and times greater than 150 minutes are excluded from the averages)

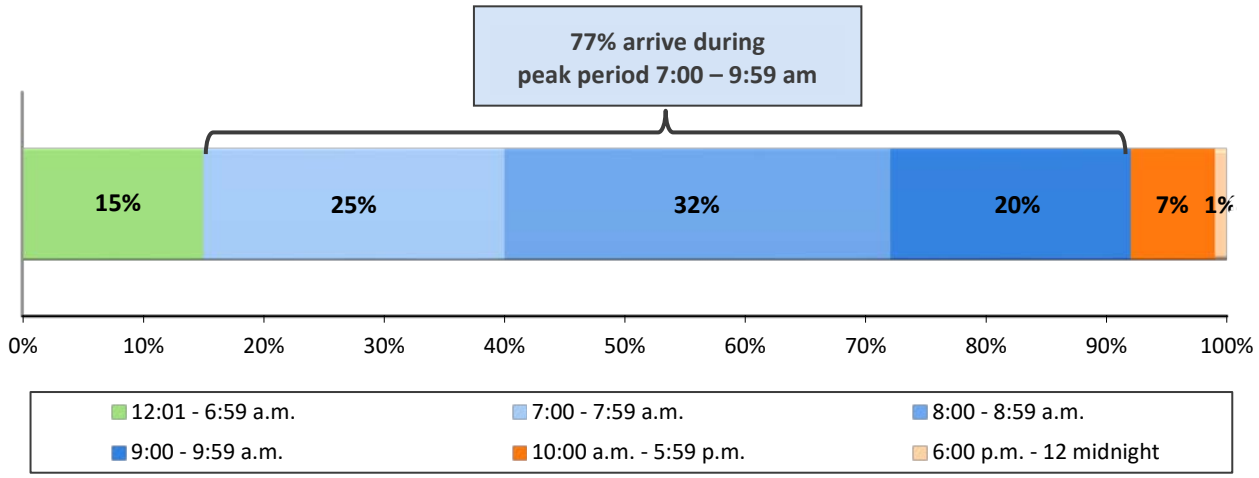
Primary Commute Mode	Average Distance (mi.)		Average Time (min.)	
	(n =__)	Average	(n =__)	Average
Home Area				
Inner Core	1,971	7.5 mi.	2,128	33 min.
Middle Ring	2,137	16.4 mi.	2,329	42 min.
Outer Ring	3,291	26.7 mi.	3,371	53 min.
Work Area				
Inner Core	3,419	15.5 mi.	3,755	47 min.
Middle Ring	2,645	17.1 mi.	2,728	39 min.
Outer Ring	1,282	22.3 mi.	1,301	39 min.

By contrast with the home area results, respondents who worked in the Inner Core had the longest commute times, an average of 47 minutes one-way. Middle Ring workers and Outer Ring workers each commuted 39 minutes. The higher travel time for Inner Core workers likely was due to their higher use of transit for commuting and the greater congestion they would encounter along their commute.

Work Arrival Time

More than half (57%) of all respondents typically arrived at work between the hours of 7:00 am and 8:59 am (Figure 13). Another 20% arrived between 9:00 am and 9:59 am, so many of these commuters also would be traveling during the peak commuting time. Fifteen percent arrived at work before 7:00 am.

Figure 13
Arrival Time at Work
(n = 7,926)



Alternative Mode Use Characteristics

Carpool and Vanpool Occupancy

The average number of occupants in respondents' carpools and vanpools was 2.6 and 7.7 people, respectively. Overall average pool occupancy was 2.8. Carpool occupancy has remained relatively stable over the past 15 years, at about 2.4 to 2.6 occupants per vehicle since 2004. In 2019, about six in ten (57%) of carpoolers rode with just one other person.

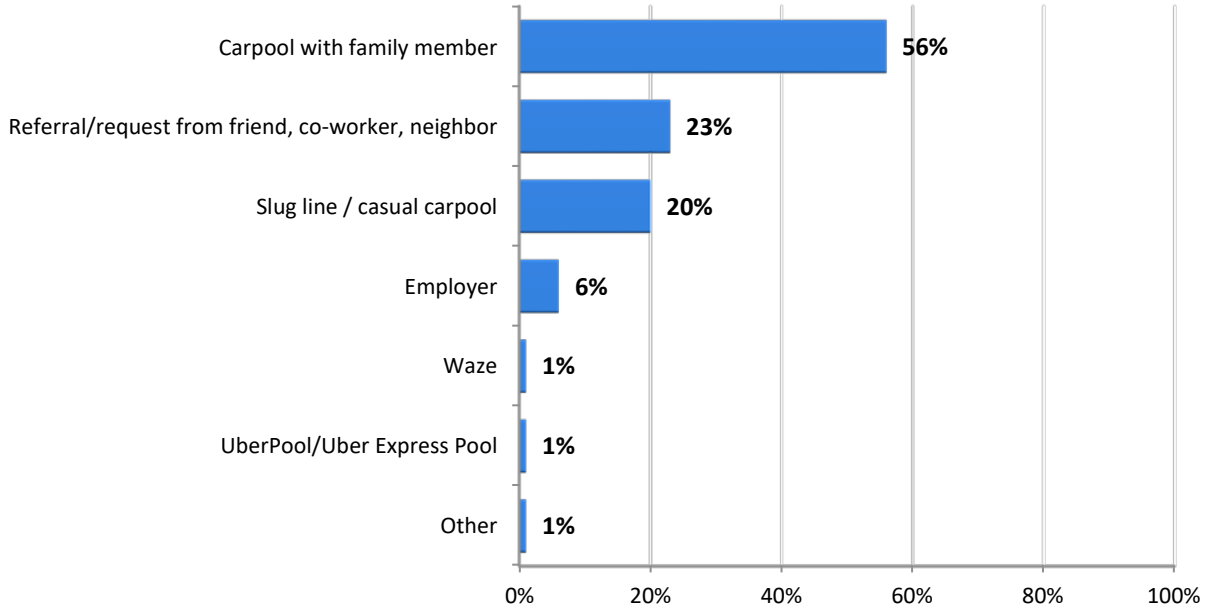
The 2019 vanpool average of 7.7 was about the same as the 2016 average of 7.5 occupants and the 2010 average of 7.6 occupants. The average measured in the 2013 survey was higher (10.8 occupants), however the sample sizes for vanpools in the SOC survey have generally been less than 25 respondents, making it difficult to conclude any trends in vanpool occupancy.

A small number of respondents said they used UberPool or Uber Express Pool for their commute. While Uber and other ride-hail services are not typically considered carpools, in the traditional sense of the word, these two Uber options are similar to casual carpooling, because passengers share rides with other passengers on a one-time basis. UberPool/Uber Express Pool users were asked how many passengers (excluding the driver) were usually in the vehicle. On average, there were 2.4 passengers in the vehicle. About two-thirds (63%) of these commuters said there were two passengers; 37% had three or more passengers in the vehicle.

Carpool and Vanpool Formation Assistance

Carpoolers and vanpoolers have numerous ways to find carpool and vanpool partners. More than half (56%) of respondents who were carpooling or vanpooling at the time of the survey said they rode with family members and 23% found their rideshare partners through a referral or simple request from a friend, co-worker, or neighbor who knew that their work locations and schedules were compatible (Figure 14). Presumably these respondents did not need assistance from an outside group to identify their rideshare partners, although they might have received other services, such as preferential or reserved carpool parking at work or information about the location of Park & Ride lots, which influenced their decisions to rideshare.

Figure 14
How Carpool and Vanpool Riders Found Rideshare Partners
(n = 420)



Two in ten (20%) said they casual carpooled/slugged, so they did not have regular partners; they traveled with different people each day they carpooled. These commuters either picked up riders waiting in line at slug line pick-up points or waited in the line to travel as a passenger. The slug lines that facilitate use of this mode, primarily located in Virginia near the I-95 and I-395 HOV lanes, provide both a substantial motivation for commuters to utilize carpooling and an opportunity for commuters to carpool occasionally as their schedules permit, without committing to a full-time carpool arrangement.

Six percent of carpoolers/vanpoolers said they found their rideshare partners through their employer. Although some employers do provide pool formation assistance, it is likely that many of these ridersharers actually used regional or local commuter service ridematching resources, which were provided to them at transportation information meetings and fairs at their worksites, with the agreement and encouragement of their employers. One percent carpooled through UberPool or Uber Express Pool, a similar form of casual carpool and 1% found their partner through the Waze mobile application.

Access Mode to Alternative Mode Meeting Points and Mode Used from Drop Off to Worksite Destination

Table 12 presents how carpoolers, vanpoolers, and transit riders traveled to where they met their rideshare partners or where they started their transit trip. The table also shows results for a new question added to the 2019 SOC survey, asking transit commuters how they got from where they got off the bus or train to their work location. This question was designed particularly to examine use of bikeshare and e-scooters as a "last mile" option to get from a transit stop to the workplace.

Table 12
Means of Getting from Home to Alternative Mode Meeting Place and from Alternative Mode "Drop Off" Location to Worksite Destination
(Access to alternative mode n = 2,453; Worksite destination access n = 1,905)

Access/Destination Mode	Access Mode Percentage	Destination Mode Percentage
Driving access	**32%**	
Drive to a central location (e.g., Park & Ride)	30%	
Drive alone to driver's/passenger's home	2%	
Non-driving access	**68%**	
Walk	38%	
Bus/transit	14%	
Picked up at home by carpool/vanpool driver	9%	
Dropped off / rode in another carpool / vanpool	5%	
I am the carpool/vanpool driver or carpool with family member	1%	
Bicycle	1%	
Non-driving destination mode (transit users)		**100%**
Walk		92%
Ride-hail (Uber, Lyft, Via)		1%
Capital Bikeshare or dockless bike		1%
Bus, shuttle, Metrorail		6%

Access Mode to Alternative Mode Meeting Points – About four in ten respondents walked (38%) to the meeting place. Nine percent said they were picked up at home by the carpool or vanpool driver and 1% always drove the pool vehicle or rode with a household member, so they left home together. Fourteen percent of respondents rode transit to the meeting point and 5% said they were dropped off, for example by a spouse or other household member. One percent bicycled to the meeting point.

The remaining one-third of respondents said they drove to the meeting point, such as a Park & Ride lot or bus/train station (30%) or the home of a carpool rider (2%), and left their cars at that location during the day. This is significant, because a large proportion of auto emissions are produced during the first few miles of a vehicle trip, when the engine is cold. Even though these trips generally were short, they have an environmental impact.

Driving alone to a meeting point was far more common for commuters who lived outside the Inner Core. More than seven in ten (71%) alternative mode commuters who lived in the Outer Ring and 39% of Middle Ring commuters drove alone to the meeting point. Among Inner Core respondents, driving alone accounted for only 3% of the access trips. Inner Core respondents were far more likely to walk; 77% walked to the meeting point, compared with 25% of Middle Ring respondents and just 2% of Outer Ring residents.

The high share of walking for Inner Core respondents largely reflects their use of transit and close access to transit. Nearly six in ten (59%) and 40% of train riders walked to the transit stop. By comparison, 82% of vanpoolers and 40% of carpoolers drove alone to the meeting point. Among train riders, 31% drove and 20% took a feeder bus.

Destination Mode from Transit Drop Off Location to Workplace Destination – The third column of Table 12 shows the modes transit riders used to get from their transit "drop off" point to their work location. Nearly all (92%) of these respondents said they walked from the drop-off point to their work location. One percent used a ride-hail service and 1% used Capital Bikeshare or other bikeshare service. About 6% said they rode a company shuttle or other transit service to the work location. The question specifically asked respondents who used more than one transit route or mode to report how they got to work after they got off the last transit vehicle. These respondents appear to have misunderstood the question. If they are excluded from the respondent base, the share of respondents who walked from the drop-off location rises to 98%, with 1% using ride-hail and 1% using bikeshare.

Distance to Alternative Mode Meeting Point

Most access trips to alternative mode meetings points were short. Respondents traveled an average of 2.8 miles to the meeting point (Table 13). About half (52%) traveled one mile or less; these were primarily bus and Metrorail riders who walked to the stop or station. About two in ten (22%) respondents traveled between 1.1 and 5.0 miles. Only 16% of respondents traveled more than 5.0 miles. Carpoolers/vanpoolers traveled farther to the meeting points than did transit riders. Vanpoolers traveled 5.0 miles and carpoolers traveled 4.5 miles, while train riders traveled just 2.9 miles. Bus riders traveled the shortest distance, an average of just 2.2 miles, and 52% traveled one-half mile or less.

Table 13
Distance Traveled from Home to Alternative Mode Meeting Point
(n = 1,947)

Distance	Percentage
1.0 mile or less	52%
1.1 to 3.0 miles	22%
3.1 to 5.0 miles	10%
5.5 to 10.0 miles	11%
10.1 miles or more	5%

SECTION 3 RECENT COMMUTE CHANGES, EASE OF COMMUTE, AND COMMUTE SATISFACTION

The SOC survey also examined recent changes in commuting, in particular:

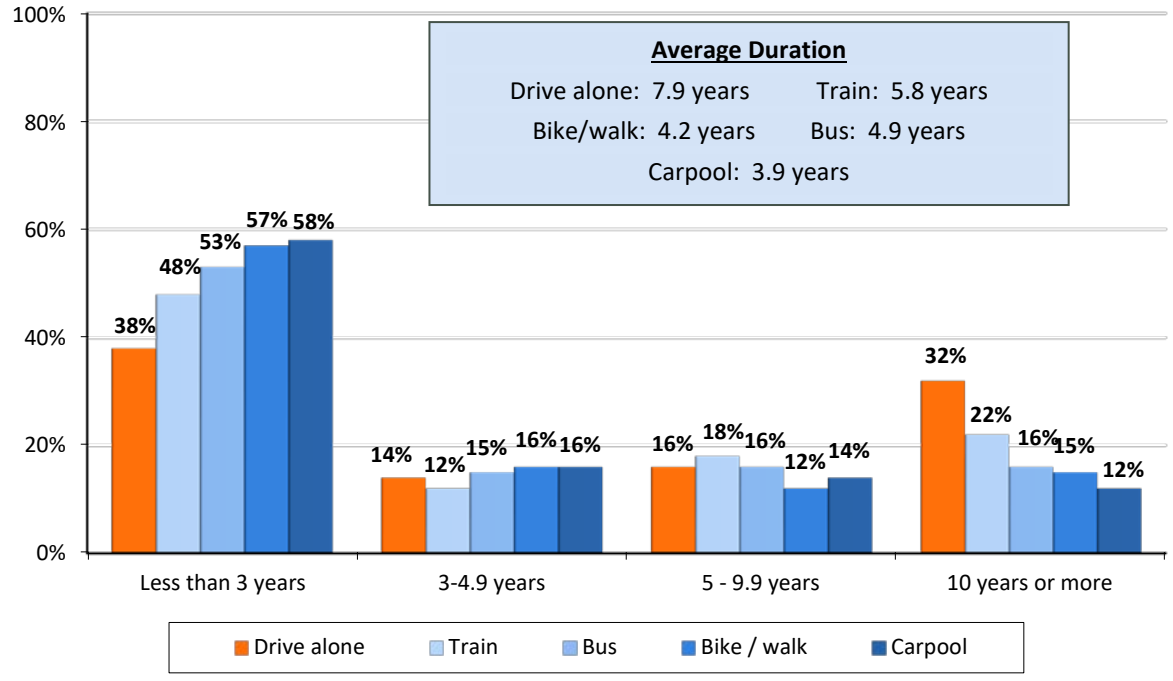
- Commute mode shifts and motivations for making commute changes
- Ease of commute compared to one year ago
- Satisfaction the current commute

Commute Mode Shifts and Mode Shift Motivations

Length of Time Using Mode

Respondents were asked how long they had used each mode they reported using one or more days per week. Results are shown in Figure 15 for commuters who drove alone, rode a train, rode a bus, biked/walked, and carpooled. Commuters who drove to work had used this mode the longest, an average of 7.9 years. Nearly one-third (32%) of drive alone commuters used this mode 10 years or more and 48% had been driving alone for five or more years. About 38% started using this mode less than three years ago.

Figure 15
Duration of Mode Use
(Drive alone n = 5,067, Train n = 1,426, Bus n = 634, Bike / Walk n = 380, Carpool n = 409)



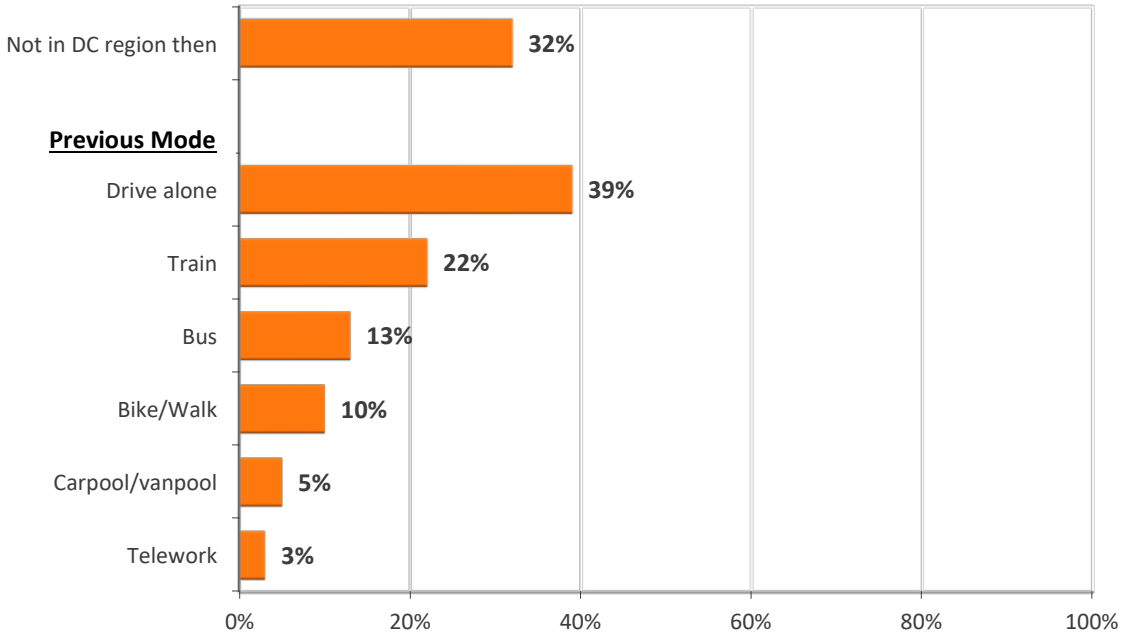
Alternative mode users had used these modes for shorter durations, ranging from an average of 3.9 years (carpool) to 5.8 years (train). But a substantial portion of alternative mode users still were long-term users. Four in ten (40%) train riders, 32% of bus riders, 27% of bike/walk commuters and 26% of carpoolers had used these modes for five or more years.

Carpoolers and bikers/walkers were most likely to have started using these modes recently; 58% of commuters who carpooled and 57% of bikers/walkers started using these modes within the past three years. About half of bus riders (53%) and train riders (48%) started these modes less than three years ago.

Modes Used Before Starting Current Alternative Modes

Nearly six in ten (57%) respondents who were using an alternative mode at the time of the survey said they started using that mode within the past three years. These respondents were asked what modes they used before starting the new alternative mode (Figure 16). Respondents were permitted to select multiple previous modes, so the total of the percentages will add to more than 100%. Almost four in ten (39%) alternative mode users made a shift from driving alone. Twenty-two percent of alternative mode users previously rode a train and 13% previously used a bus. One in ten (10%) previously walked or rode a bicycle and 5% carpooled or vanpooled before switching to their current alternative mode.

Figure 16
Previous Mode of Current Alternative Mode Users
Respondents who Used Current Alternative Mode Three Years or Less
(n = 1,362, multiple responses permitted)



One-third (32%) said they were not working or were not working in the Washington metropolitan region then. While some of these respondents might have started using their current mode within the past three years, they did not have a previous mode to report.

Commuters who were carpooling at the time of the survey were more likely than were other mode users to have shifted from driving alone; 60% were driving alone before starting to carpool. About one-third (35%) of train riders and 28% of bus riders shifted from driving alone. Four percent of commuters who switched to bike or walk previously drove alone to work.

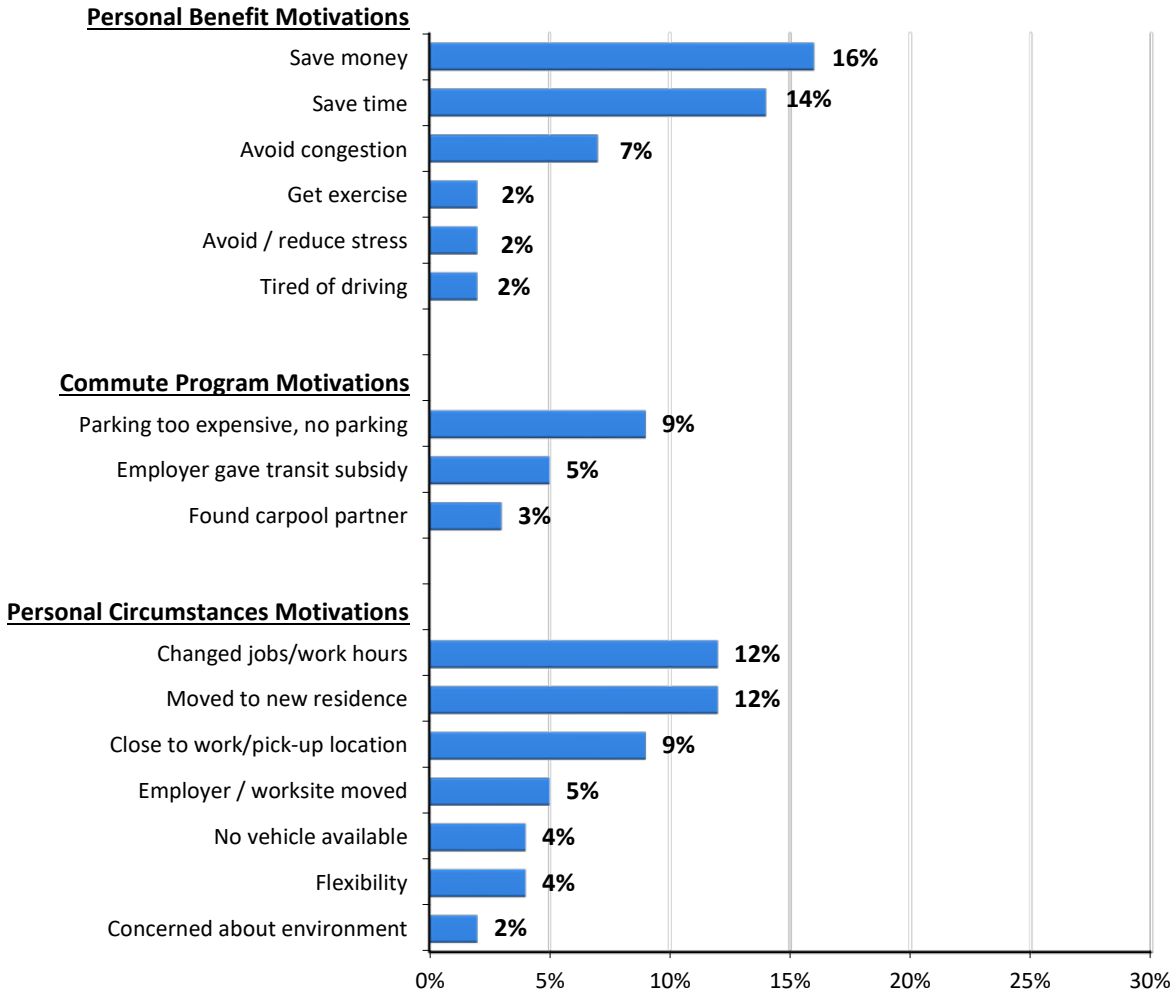
Reasons for Using Alternative Modes

Respondents who had been using an alternative mode for three years or less were asked why they began using those modes. The reasons are listed in Figure 17, divided into three broad categories of motivations:

- Personal benefits – benefits the respondent would expect to receive by using an alternative mode
- Commute program – commute assistance services the respondent received that encouraged or assisted use of the alternative mode
- Personal circumstances – personal circumstances or changes experienced by the respondent

Current alternative mode users cited motivations in each of the three categories. The most common personal benefit reasons were to save money (16%), save time (14%), or avoid traffic congestion (7%). In the commute program category, 9% noted that parking at work was either unavailable or too expensive and 5% said their employers offered a transit subsidy, making commuting by bus and train economically attractive. Personal circumstances reasons included changing jobs or work hours (12%), moving to a new residence (12%), living close to work or to a transit pick-up location (9%), and that the employer/worksite moved (5%).

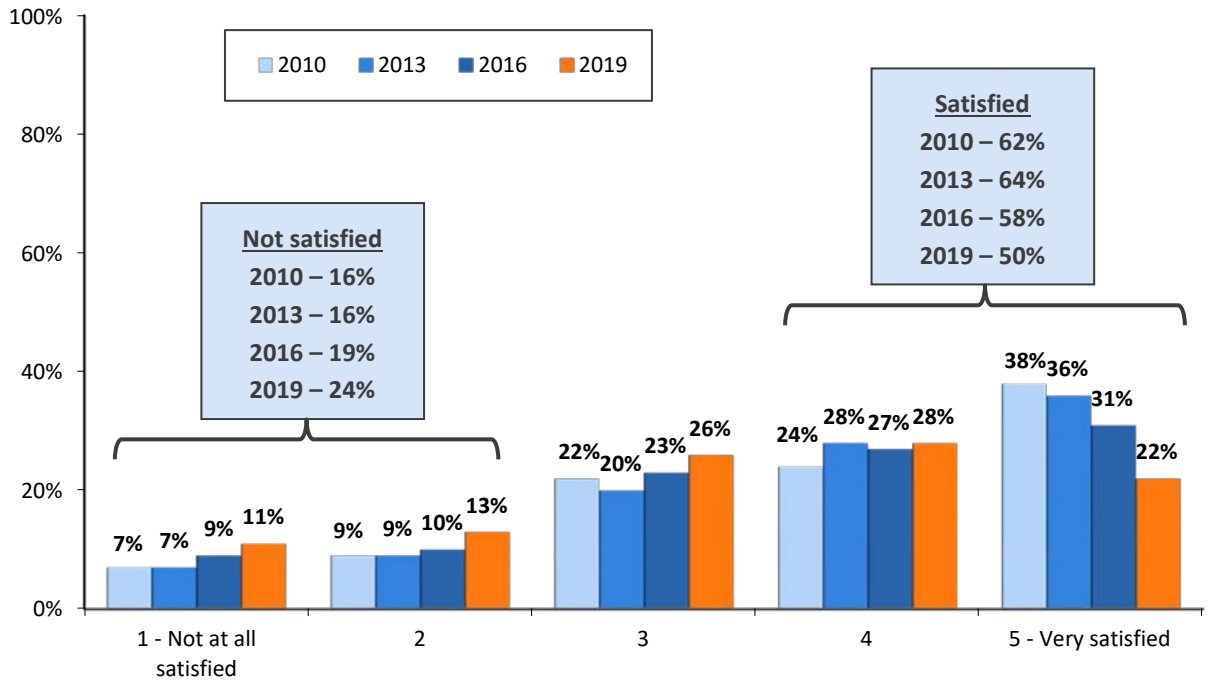
Figure 17
Motivations to Start Using Current Alternative Mode
(Note: Scale extends only to 30% to highlight difference in responses)
(n = 1,184, multiple responses permitted)



Commute Satisfaction

The 2019 survey included a question that had been asked in several previous SOC surveys, about how satisfied commuters were with their trip to work. In 2019, 50% rated their commute satisfaction as a "4" or "5" on a 5-point scale, where "5" meant "very satisfied (Figure 18). One-quarter (26%) gave a rating of 3 and one-quarter rated their satisfaction as either a "1 – not at all satisfied (11%) or 2 (13%).

Figure 18
Satisfaction with Commute – 2010 to 2019
(2010 n = 6,033, 2013 n = 5,692, 2016 n = 5,217, 2019 n = 7,911)



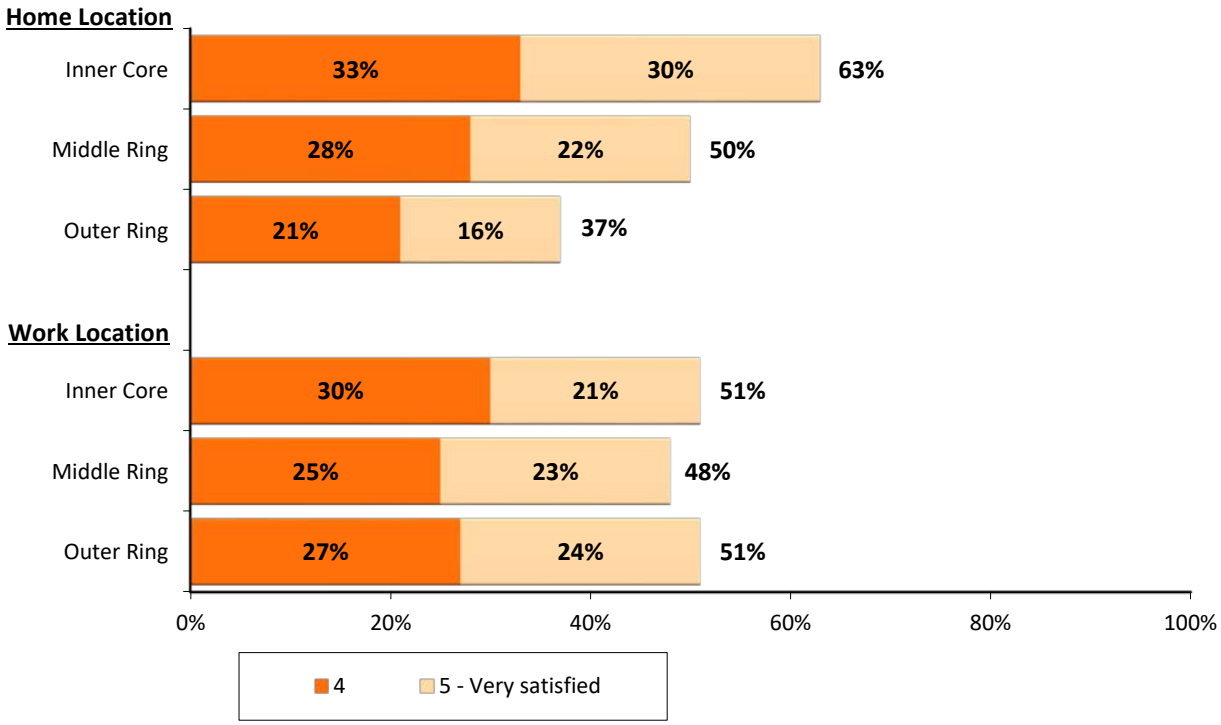
Commute satisfaction has declining since 2013, when nearly two-thirds (64%) of SOC respondents said they were satisfied with their commute. The percentage satisfied fell over the next three years to 58% in 2016. Satisfaction declined even more between 2016 and 2019, to 50%, the lowest percentage since the question was added to the SOC survey in 2010.

The most striking change has been in the percentage of respondents who reported being very satisfied (rating of 5). In 2010, 38% of all respondents said they were very satisfied. That percentage dropped in each of the subsequent survey years, to a low of 22% in 2019. Also notable is the growth in the percentage of commuters who reported being dissatisfied, rating their commute as either a 1 (not at all satisfied) or 2. In 2010 and 2013, 16% of commuters gave these low ratings. The percentage increased to 19% in 2016. In 2019, nearly one-quarter (24%) of all respondents said they were not satisfied.

Commute Satisfaction by Home and Work Location

Respondents who lived in the Inner Core were notably more satisfied with their commute than were respondents who lived farther out in the region (Figure 19). Two-thirds of Inner Core residents rated their commute satisfaction as a 4 (33%) or 5-very satisfied (30%), while only 50% of Middle Ring and 37% of Outer Ring residents were satisfied. Respondents were about equally satisfied, regardless of where they worked, with about half of respondents in each of the three work areas rating their commute satisfaction as a 4 or 5.

Figure 19
Satisfaction with Commute by Home and Work Area
Percent Rating Commute a 4 or 5
(Home Area – Inner Core n = 2,160, Middle Ring n = 2,360, Outer Ring n = 3,391)
(Work Area – Inner Core n = 3,785, Middle Ring n = 2,760, Outer Ring n = 1,308)



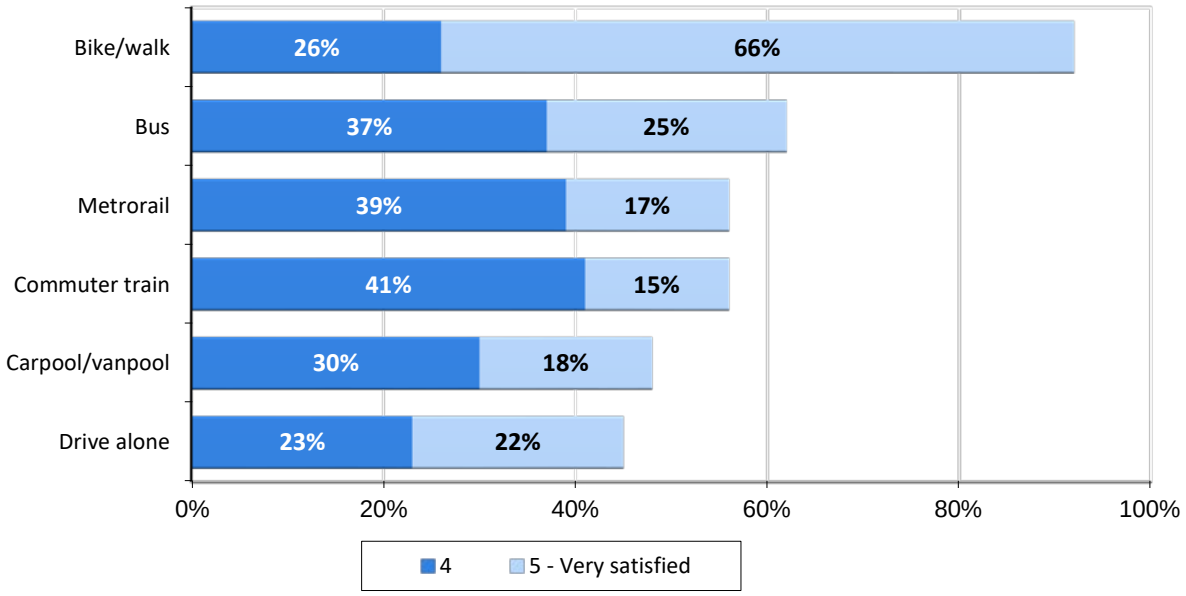
Commute Satisfaction by Demographic Characteristics

The data showed only small differences in commute satisfaction across demographic characteristics. Men and women were equally satisfied (men – 50% satisfied, women – 50% satisfied). Non-Hispanic Black respondents (54%) were slightly more satisfied than were Non-Hispanic White (50%) or Hispanic (45%) respondents. Respondents with household incomes under $100,000 were slightly more satisfied (56%) than were those with higher incomes (48%). And commute satisfaction was slightly higher among respondents who were younger than 35 years (50%) and those who were older than 55 years old (55%) than for respondents in the middle 35 to 54 years old group (47%).

Commute Satisfaction by Commute Mode

Commute mode appeared much more related to commute satisfaction than were demographics. More than nine in ten (92%) commuters who walked or biked to work reported high commute satisfaction (Figure 20). Bus riders, commuter train riders, and Metrorail riders were about equally satisfied, with about six in ten rating their commute as a 4 or 5. Carpoolers/vanpoolers and drive alone commuters reported the lowest satisfaction; 48% of ridesharers and just 45% of commuters who drove alone were satisfied.

Figure 20
Satisfaction with Commute by Primary Commute Mode
Percent Rating Commute a 4 or 5
(Bike/walk n = 302, Bus n = 588, Metrorail n = 1,177, Commuter train n = 144, Carpool/Vanpool n = 378, Drive alone n = 5,042)



Satisfaction by Mode from 2010 to 2019 – Commute satisfaction has been stable for bike/walk commuters and bus riders since 2010, but has varied substantially for other mode users (Figure 21). Metrorail and commuter rail riders both expressed notably lower satisfaction in 2016 than in 2013. Metrorail reversed some of the loss in 2019, but commuter rail satisfaction declined further, to its lowest level since 2010. The 2016 drop in satisfaction for Metrorail likely was related to the SafeTrack trackwork maintenance efforts, which affected both frequency and reliability of train service. The commuter rail trend is more puzzling, but the very high, 90%, satisfaction level seems out of line with the longer-term patterns starting with 2010.

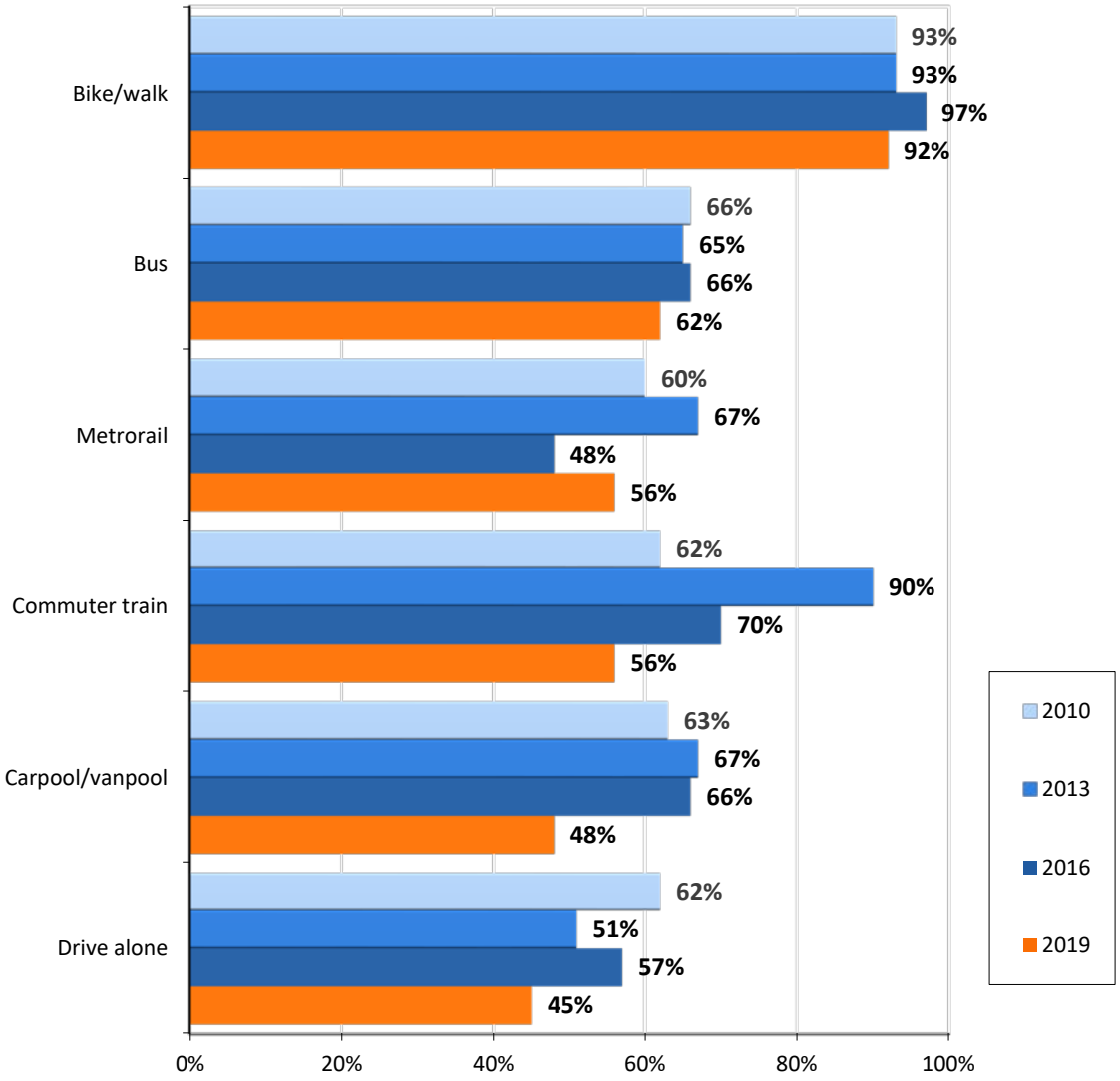
Carpool/vanpool commute satisfaction was stable between 2010 and 2016, but experienced a substantial decline between 2016 and 2019. Finally, drive alone commuters, which had expressed a slight increase in satisfaction between 2013 and 2016, completely reversed the gain in 2019, with a 12-percentage point drop. Because carpoolers/vanpoolers and commuters who drive alone are more affected by roadway congestion than other mode users, these drops could reflect longer travel times, more congested travel, and or higher stress experienced by commuters who travel in personal vehicles.

It is also possible that declining satisfaction among carpoolers and vanpoolers could be related to the transition of HOV lanes on Virginia roadways to Express lanes. Further analysis of satisfaction data showed that ridesharers who lived in Maryland were more satisfied with their commutes than were those who lived in Virginia (MD 56%, VA 45%).[8] Additionally, ridesharers who did not have access to an HOV or Express lane on their commute (54% satisfied) were more satisfied than were those who had access to these lanes (45% satisfied). Before the transition, all Virginia HOV lanes were open only to carpools, vanpool, and transit buses, and provided a substantial time advantage to commuters who used these modes.[9] The transition to Express lanes on some routes opened the lanes to drive alone commuters who are willing to pay a toll to use the lanes. While ridesharers can still use the lanes at no cost, this shift has added vehicles to the lanes, potentially reducing the ridesharers time advantage.

[8] Sample for carpoolers living in District of Columbia was too small to analyze.
[9] Some HOV lanes in Virginia allowed motorcycles and hybrid vehicles to use the lanes, regardless of the number of passengers.

Figure 21
Satisfaction with Commute by Primary Commute Mode – 2010 to 2019
Percent Rating Commute Satisfaction as 4 or 5

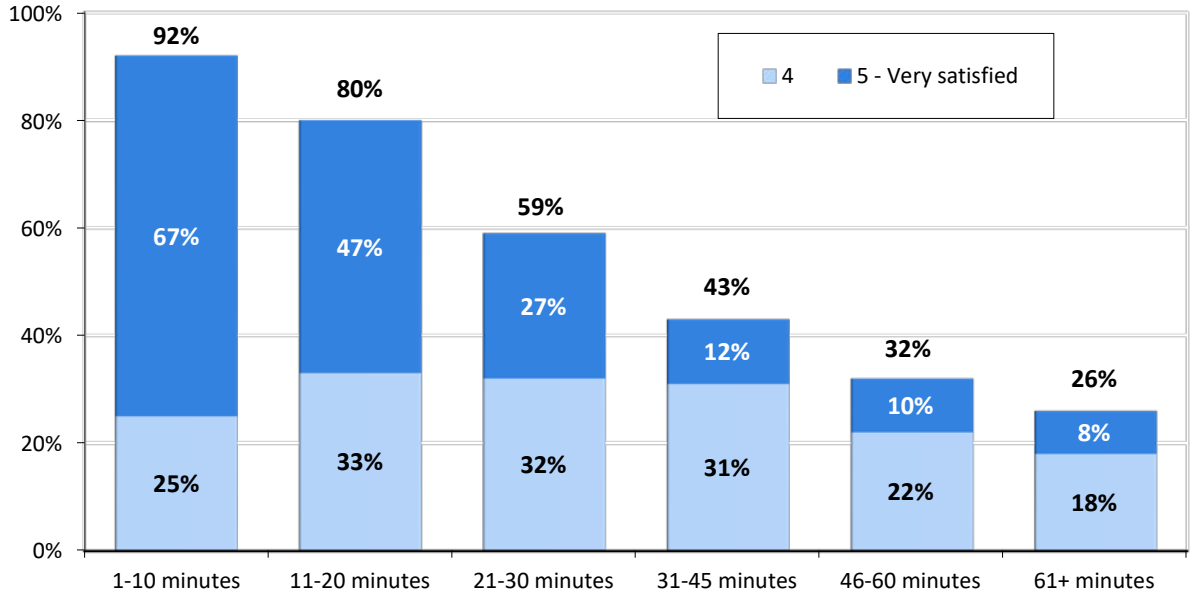
(2010: Bike/walk n=166, Bus n=327, Metrorail n=685, Commuter train n=61, Carpool/Vanpool n=435, Drive alone n=4,243)
(2013: Bike/walk n=150, Bus n=298, Metrorail n=615, Commuter train n=64, Carpool/Vanpool n=363, Drive alone n=4,080)
(2016: Bike/walk n=180, Bus n=284, Metrorail n=634, Commuter train n=62, Carpool/Vanpool n=283, Drive alone n=3,552)
(2019: Bike/walk n=302, Bus n=588, Metrorail n=1,177, Commuter train n=144, Carpool/Vanpool n=378, Drive alone n=5,042)



Commute Satisfaction by Travel Time

Commute satisfaction declined steadily and significantly as the amount of time a commuter traveled increased (Figure 22). Nearly all (92%) commuters who had commutes of 10 minutes or less gave a 4 or 5 rating for commute satisfaction. When the commute was between 11 and 20 minutes, 80% were satisfied. At 21 to 30 minutes, satisfaction dropped to 59%. Only about four in ten (43%) commuters who traveled 31 to 45 minutes were satisfied and satisfaction dropped to 32% for travel times of 46 to 60 minutes. When travel time exceeded 60 minutes, only 26% rated their commute a 4 or 5.

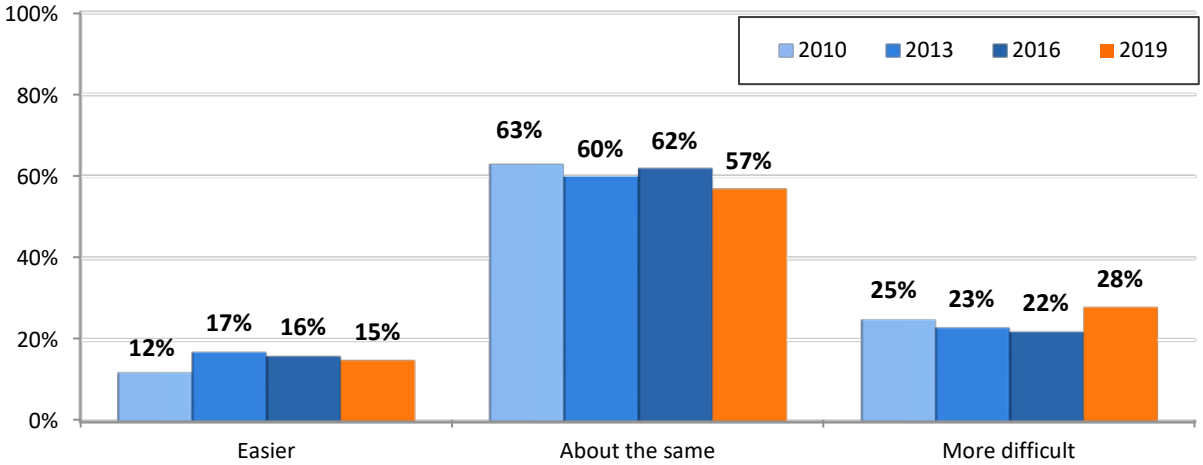
Figure 22
Satisfaction with Commute by Length of Commute (minutes)
Percent Rating Commute a 4 or 5
(1-10 min n = 371, 11-20 min n = 1,194, 21-30 min n = 1,340, 31-45 min n = 1,905, 46-60 min n = 1,453, 61+ min n = 1,537)



Ease of Commute

Respondents who commuted at least one day per week also were asked if their commute time was easier, more difficult, or about the same as it was a year prior. Nearly six in ten (57%) respondents said their commute was about the same as a year ago (Figure 23). Fifteen percent said their commute was easier and 28% said their commute was more difficult.

Figure 23
Commute Easier, More Difficult, or About the Same as Last Year, 2010–2019
(2010 n = 6,049, 2013 n = 5,717, 2016 n = 5,142, 2019 n = 7,787)

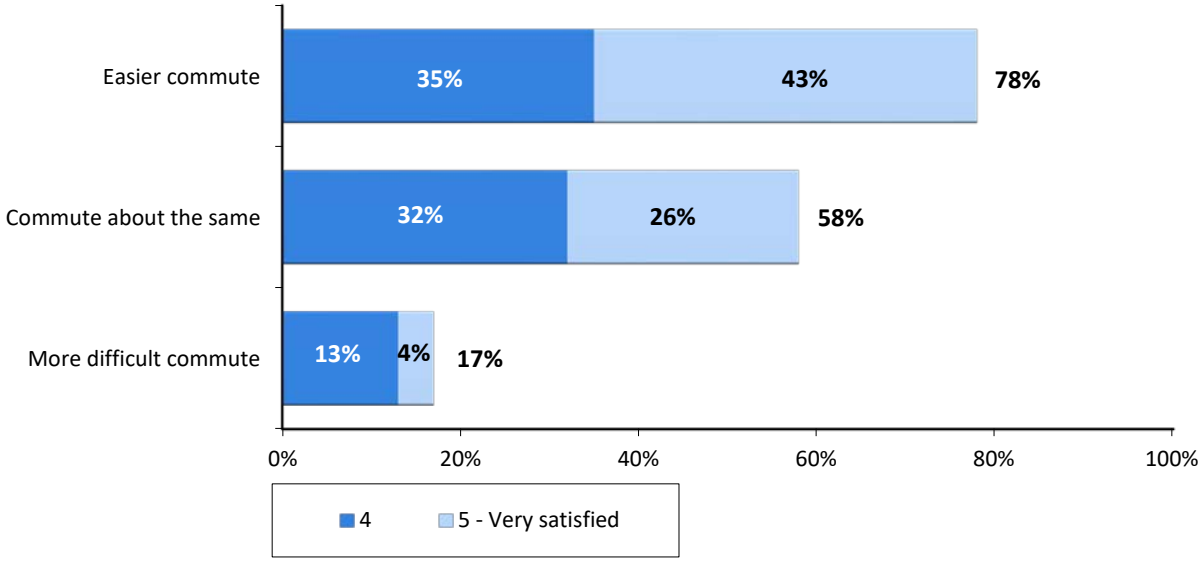


The percentage of respondents who said they had an easier commute in 2019 was very similar to the results from the previous three surveys. But the 28% share of commuters who said they had a more difficult commute in 2019 was notably higher than the 22% of commuters who reported a more difficult commute in 2016. Given the consistency of the easier commute percentage, this suggests that commutes are getting worse overall.

Commute Satisfaction by Ease of Commute Compared with a Year Ago

The decline in commute satisfaction likely was related to commutes becoming more difficult over recent years. Nearly eight in ten (78%) respondents who said they had an easier commute than last year and 58% who said their commute had not changed were satisfied with their commute, compared to only 17% who said their commute had become more difficult (Figure 24).

Figure 24
Satisfaction with Commute by Change in Ease of Commute
Percent Rating Commute a 4 or 5
(Easier commute n = 943, Commute about the same n = 4,367, More difficult commute n = 2,437)



Change in Commute Ease by Primary Commute Mode

Table 14 reports the shares of commuters who reported easier, more difficult, or the same commute as last year by their primary commute mode. Respondents who primarily biked or walked to work were most likely to say they had either a stable (63%) or easier (30%) commute, but eight in ten train riders also said their commute was either about the same (59%) or easier (21%), perhaps reflecting the end of the SafeTrack maintenance efforts that had affected train service in 2016 and 2017.

Commuters who drove alone and those who carpooled or vanpooled seemed to have less favorable conditions; one-third (33%) of drive alone commuters and 28% of ridesharers said their commutes had gotten worse. These results reinforce the higher commute satisfaction reported by Metrorail riders and lower satisfaction of carpool/vanpool riders and drive alone commuters.

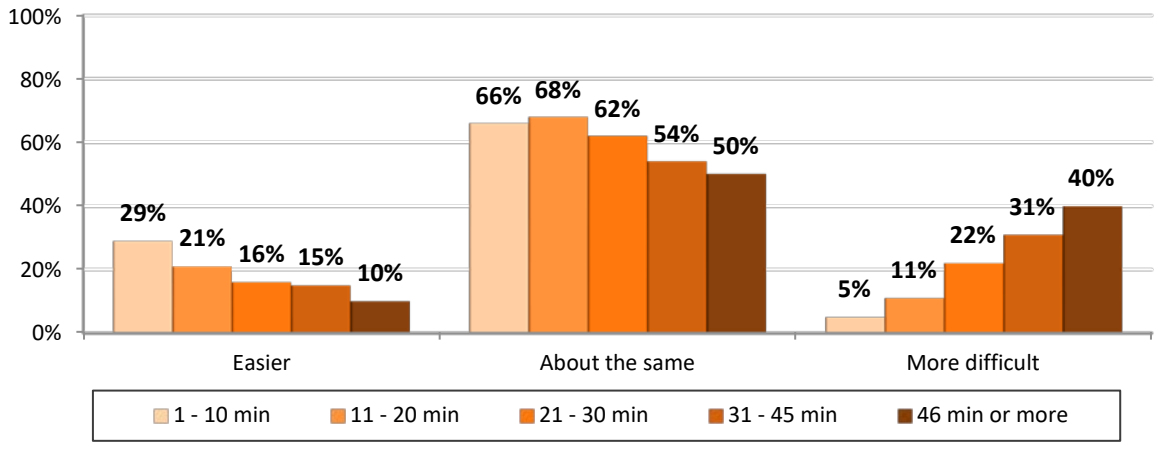
Table 14
Change in Ease of Commute by Primary Commute Mode
(Shading indicates statistically higher percentages)

Home Location	(n =__)	Easier	About the Same	More Difficult
Drive alone	4,979	12%	55%	33%
Train	1,278	21%	59%	20%
Bus	570	16%	62%	22%
Carpool/Vanpool	375	16%	56%	28%
Bike/Walk	300	30%	63%	7%

Change in Commute Ease by Travel Time

Figure 25, which presents the shares of commuters who reported easier, more difficult, or the same commute as last year by the amount of time they spent commuting, shows a clear pattern; the ease of commuting was inversely proportionate to the length of time commuting. Among commuters who had very short commutes of 10 minutes or less, two-thirds said their commute was about the same as it was a year ago and 29% said it was easier; only 5% said it was more difficult. Conversely, the share who said they had a more difficult commute increased steadily with increasing commute time. Among commuters who traveled more than 45 minutes to work, 40% said their commute was more difficult.

Figure 25
Change in Ease of Commute by Commute Length (minutes)
(1 to 10 min n = 365, 11 to 20 min n = 1,167, 21 to 30 min n = 1,304, 31 to 45 min = 1,879, 46 min or more n = 2,962)



Change in Commute Ease by Home and Work Location

Respondents who lived in the outer areas of the region were more likely to report a more difficult commute than were commuters who lived closer to the center (Table 15). Two in ten (21%) Inner Core residents and 26% of Middle Ring residents said their commute was more difficult, compared with 40% of Outer Ring residents. Only one in ten (11%) Outer Ring resident had an easier commute, compared with 19% of Inner Core residents.

Table 15
Change in Ease of Commute by Home Location
Shading indicates statistically higher percentages)

Home Location	(n =__)	Easier	About the Same	More Difficult
Inner Core	2,104	19%	61%	21%
Middle Ring	2,315	15%	59%	26%
Outer Ring	3,368	11%	49%	40%

By contrast, work location did not appear to have an impact on changes in the ease or difficulty of their commute. One-quarter (26%) of respondents who worked in the Inner Core reported a more difficult commute, about the same as the 30% of Middle Ring and 30% Outer Ring workers. The shares of workers in different areas who reported an easier commute also were similar: Inner Core (17%), Middle Ring (13%), and Outer Ring (15%).

Influence of Changes in Residence or Work Location on Commuting Conditions

Anecdotal reports suggest some commuters might move their residences and/or seek new jobs at least in part to make their commute easier or less costly and several survey questions explored the influence commute factors might play in commuters' location decisions. Because it was expected that a commute might have become easier or more difficult because the origin and/or destination of the commute changed, all respondents were asked if they had made a change in their work location and/or home location in the past year.

About three in ten respondents made a change; 11% changed only the home location, 13% changed only the work location, and 7% changed both home and work. The remaining 69% made no change. About two-thirds (63%) moved within the Washington metropolitan region. One-quarter (26%) moved from Maryland or Virginia, but from a jurisdiction outside the Washington region, and one in ten (11%) moved from a state other than the District of Columbia, Maryland, or Virginia.

Table 16 compares changes in ease of commute for respondents who did and did not make a move. Because those who moved from outside the region could not provide a before-the-move comparison, they were excluded from the base for Table 16.

Table 16
Change in Ease of Commute by Made a Change in Home or Work Location
(Shading indicates statistically higher percentages for ease/difficulty of commute)

Changed Home or Work Location	(n =__)	Easier	About the Same	More Difficult
No change	5,863	9%	65%	26%
Any change	1,911	29%	38%	33%
Type of change made				
Changed only home	674	28%	40%	32%
Changed only work	861	29%	36%	35%
Changed home and work	376	31%	38%	31%

The results presented in Table 16 suggest the ease or difficulty of the commute was related to moves for at least some respondents. Two-thirds (65%) of respondents who did not move said their commutes were about the same. Nine percent said their commutes had improved and 26% said they had gotten more difficult.

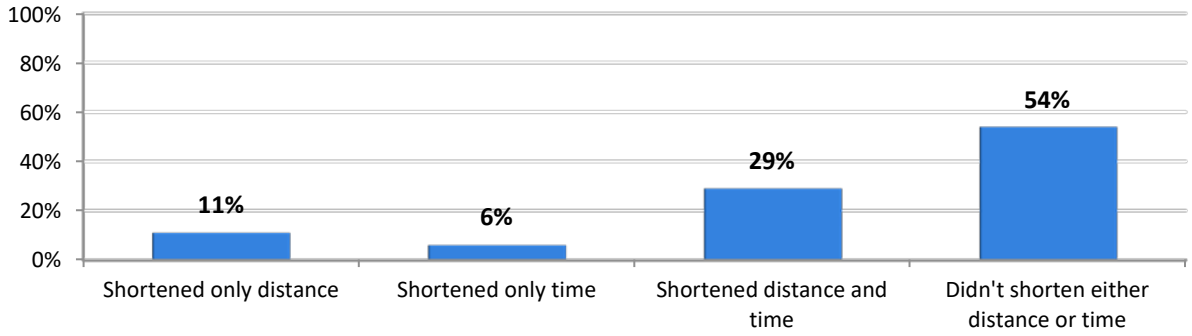
One-third (32%) of respondents who moved said they had a more difficult commute, but a nearly equal share (29%) of those who moved said their commute had improved. Both the percentages of easier and more difficult commutes were higher among those who moved than those who did not. This suggests a move could have played a role in improving or worsening a commute, but that the move often improved the commute.

The table also shows a breakdown of change in commute conditions by the type of move made: home only, work only, or both home and work. Respondents were about equally likely to report easier and more difficult commutes, regardless of the type of location changes they had made.

Move as Factor in Shortening Commute Distance or Time

Respondents who had moved were asked if the residential or job location change had shortened either the distance or time they traveled between home and work. Three in ten (29%) said the move had shortened both the distance and time (Figure 26). For 11%, the move shortened only the distance and 6% said it had shortened the time, but not the distance. The remaining 54% said the move had not affected either the distance or time.

Figure 26
Home or Work Move Shortened Distance or Time from Home to Work
(n = 1,960)



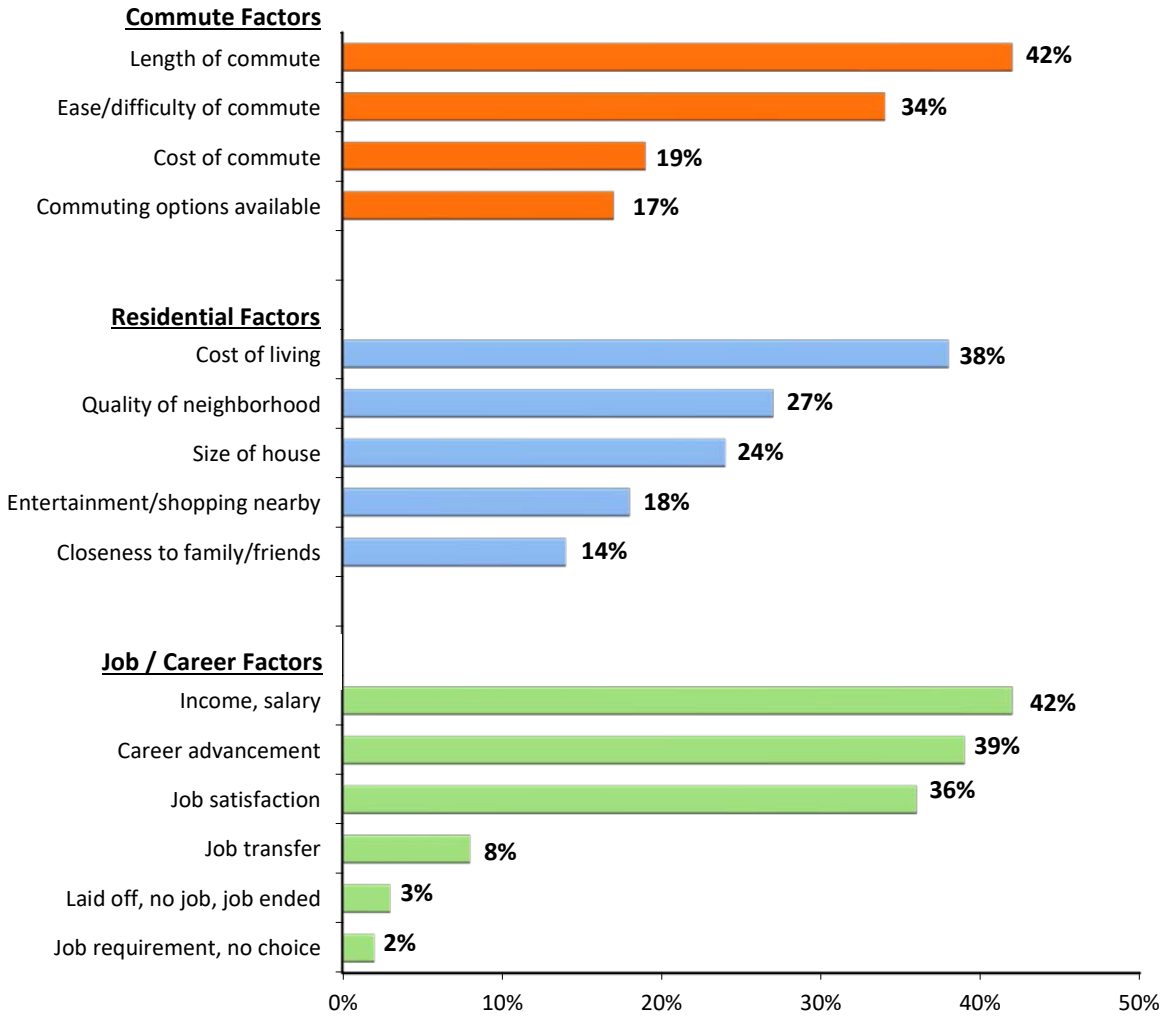
Concern about Commuting as a Factor in Location Change Decisions

Respondents who moved also were asked what factors they considered in making location changes and how important to their decision commute ease had been compared with other factors they considered.

More than half (52%) of respondents cited a commute-related concern as a factor they considered in the moving decision. Four in ten (42%) cited the length of the commute and 34% mentioned the ease or difficulty of the commute (Figure 27). Nineteen percent had thought about how much the commute would cost and 17% considered the range of commuting options that would be available at the new location.

About half of respondents named one or more residential factors. Most common in this category include the cost of living (38%), quality of the neighborhood (27%), and the size of the house (24%). Seven in ten respondents noted a job or career concern as a factor in their decision. Income (42%), career advancement (39%), and job satisfaction (36%) topped the list in this category.

Figure 27
Factors Considered in Home or Work Location Changes
Respondents who Made a Change in Work or Residence Location)
(Note: Scale extends only to 50% to highlight difference in responses)
(n = 2,013, multiple responses permitted)



Several groups of respondents cited commute factors at a statistically higher rate, presumably because they anticipated a more difficult commute after moving or because they wanted to improve their commute by moving:

- Respondents who worked in the Inner Core and Middle Ring – 53% of Inner Core and 53% of Middle Ring workers named commute factors, compared with 48% of Outer Ring workers.
- Respondents with household incomes under $100,000 – 59% of respondents with incomes of less than $100,000 mentioned commute factors, compared with 49% of respondents with higher incomes.
- Respondents who were younger than 45 years old – 54% of respondents who were younger than 45 years named commute factors, compared with 48% of respondents who were between 45 and 64 years, and 39% of respondents who were 65 years or older.

- Respondents who changed their home location – 60% of respondents who moved only their home and 58% who moved both work and home considered commute factors, compared with 42% of respondents who moved only work. Likely, some respondents who moved only their work location would have been required to make the job move to continue their employment, so commuting was less of a motivating factor for these respondents than job or career considerations. Among respondents who changed only their work, 92% considered job or career factors, compared with just 33% of those whose move involved only their residence.
- Respondents who moved from Maryland or Virginia, but from outside the Washington region – 58% of respondents whose previously location was in Maryland or Virginia, but in a county outside the five Maryland and five Virginia counties that are part of the Washington metropolitan region cited commute factors that were important. This was compared with 52% of respondents who moved from within the region and 39% who moved from a state other than the District of Columbia, Maryland, or Virginia. The greater consideration of commuting suggests that many of these respondents likely had some knowledge or at least a perception that commuting in the region could be challenging.

Respondents who had moved also were asked how important the expected ease of their new commute had been to their decisions, relative to other factors they considered (Table 17). One-third of these respondents said the length or ease of their commute was more important than other factors (30%) or was the only factor they considered (3%). About 42% said length or ease of commute was about equally important to other factors. Only 25% said commute ease was less important. Table 21 also lists the responses for previous SOC surveys. It is clear that commuting has been an important factor for several years.

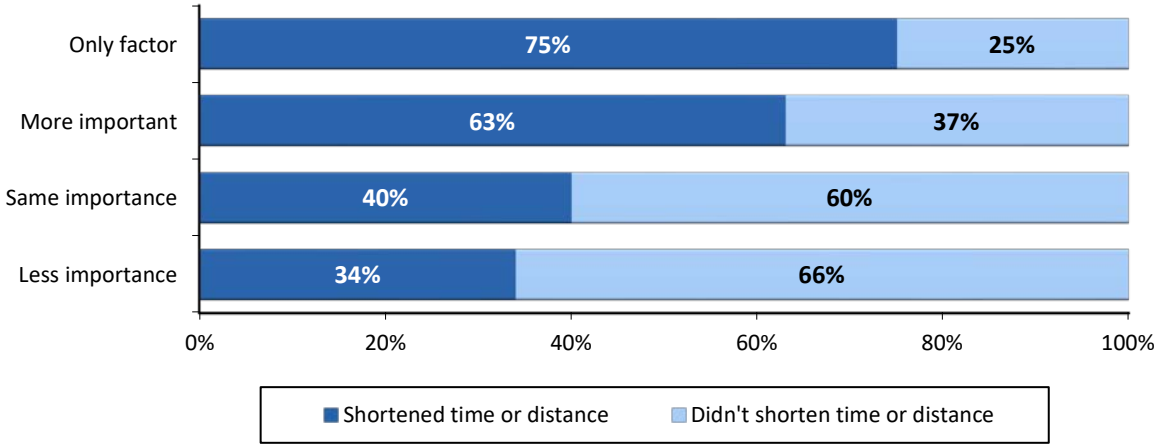
Table 17
Importance of Commute Ease Relative to Other Factors Considered in Home or Work Location Changes
Respondents who Made a Change in Work or Residence Location
(2007 n = 981, 2010 n = 887, 2013 n = 850, 2016 n = 789, 2019 n = 1,921)

Importance of Commute Ease	2007	2010	2013	2016	2019
Commute ease was the only factor	---	---	---	13%	3%
More important than other factors	30%	29%	28%	26%	30%
About the same importance as other factors	44%	38%	46%	42%	42%
Less important than other factors	27%	33%	26%	19%	25%

Importance of Commute Factors and Length of Commute – Respondents who said that commuting was an important factor were more likely to have a shorter commute after making the move than were respondents who said commuting was not as important to their decision.

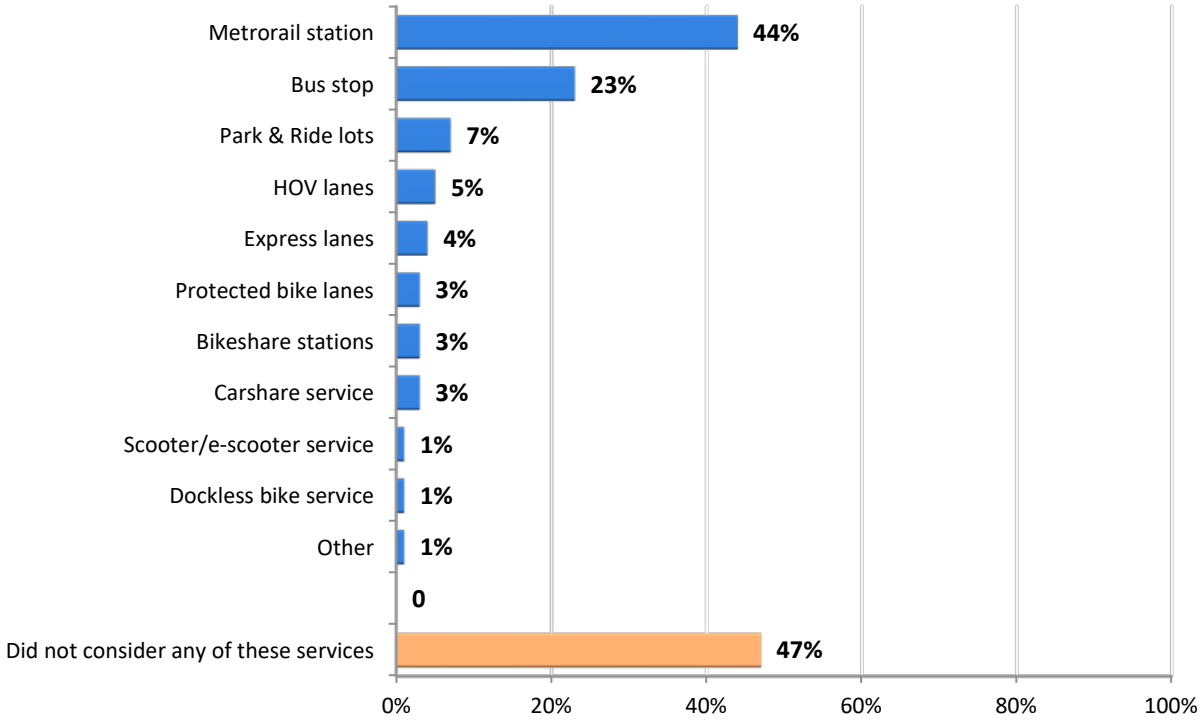
Three-quarters (75%) of respondents who said commuting was the only factor they considered in making the move and 63% of respondents who said commuting was more important than other factors said they had a shorter commute after making the move (Figure 28). This suggests respondents who were particularly concerned with commuting ease, length, or cost chose work and/or home locations that improved their commutes. By contrast, only 40% of those who said commute factors had been about the same importance as other factors and 34% who said commute factors were less important than were job, home, or personal factors had shortened their commutes.

Figure 28
Importance of Commute Factors by If Move Shortened Distance or Time from Home to Work
(Commute factors were: Only factor n = 40, More important n = 540, Same importance n = 780, Less important n = 514)



Transportation Services Considered When Making Home or Work Move – Finally, respondents who made a residential or work location change were asked if, when they were considering making this change, they had considered how close their new location would be to any of ten transportation services including Park & Ride lots, HOV and Express lanes, bike and scooter servicers, and transit stops or stations (Figure 29).

Figure 29
Access to Transportation Services Considered when Making Home or Work Move
(n = 2,013, multiple responses permitted)



More than half (53%) of respondents said they considered their access to at least one of these services. More than four in ten (44%) considered how close they would be to a Metrorail station and 23% considered their access to a bus stop. About one in ten (7%) thought about the availability of a Park & Ride lot. Only one in twenty considered their access to HOV lanes (5%) or Express lanes (4%), but these lanes are primarily available in Virginia, so would be less likely to be noted by respondents who lived in the District of Columbia and Maryland. Smaller shares said they considered how close they would be to bike lanes, carshare, bikeshare, and, and scooter services.

Respondents for whom commute factors were important were slightly more likely to have explored access to new transportation services. Nearly six in ten (58%) respondents who said commuting was either the only factor they considered or more important than other factors had explored availability of various services at the new location. About 55% of respondents who said commuting factors were about the same importance as other factors had considered transportation service access where they would be moving. But only 42% of respondents who said commuting was a less important factor had considered transportation service access.

Consideration of these services also was highly dependent on where respondents lived and worked. Three-quarters (74%) of Inner Core residents considered transportation service access, compared with 51% of Middle Ring and 32% of Outer Ring respondents. And 71% of Inner Core workers explored the availability of transportation services, compared with 40% of Middle Ring and just 23% of Outer Ring workers.

The low percentages of Outer Ring residents who explored their access to these services suggests that they assumed, rightly in many cases, that these services would not be available in their new home or work area, or that they would not be useful services for their travel in the new area. Despite their lower overall interest, however, Outer Ring residents were more likely to have considered their access to Park & Ride lots and to HOV lanes and Express lanes than were commuters who lived closer to the center of the region. About one in ten (11%) Outer Ring residents said they explored their access to Park & ride lots, compared with 8% of Middle Ring residents and just 2% of Inner Core residents. Similarly, one in ten Outer Ring residents considered their access to HOV (11%) and Express (10%) lanes, compared with 4% of Middle Ring residents and 1% of Inner Core residents.

Several other groups of respondents also gave greater consideration to transportation access at their new home or work location:

- Respondents who had limited access to a personal vehicle – 83% of respondents who were car-free (no household vehicles) and 59% who had fewer than one car for each adult in the household (0.1 – 0.9 vehicles per adult) considered transportation options. By contrast, just 46% of respondents who had a vehicle for each adult in the household explored transportation service access.
- Respondents who were younger than 35 years old – 56% of respondents who were younger than 35 considered what transportation services would be available, compared with 50% of respondents who were between 35 and 54, and 39% of respondents who were 55 or older. This result likely is related to younger respondents being less likely to have a personal vehicle available, as well as their greater presence in the Inner Core area of the region, where these services are primarily available.
- Respondents who used an alternative mode to commute – Almost nine in ten (89%) train riders, 82% of bus riders, 67% of commuters who biked/walked to work, and 57% who carpooled or vanpooled considered their access to transportation services at the new location. This indicates that commuters who were using alternative modes were interested in continuing to do so after the move. By contrast, only 33% of respondents who drove alone had considered access to the services. However, this indicates that a sizeable share of drive alone commuters were willing to consider use of alternative modes when their commute pattern was changing due to a location move.

SECTION 4 TELEWORK

The SOC survey also explored respondents' telework experience. For purposes of this survey, teleworkers were defined as "*wage and salary employees who at least occasionally work at home or at a telework or satellite center during an entire work day, instead of traveling to their regular work place*."

This definition specifically excluded workers who worked at client sites outside of the Washington region and workers, such as sales or equipment repair staff, who traveled to multiple customer locations during the course of the day. The definition also excluded respondents who worked a portion of the normal workday at home, for example while waiting for a delivery, but traveled to the regular workplace for another part of the day. These situations are not generally considered telework for transportation-related purposes, because the commuter still makes commute trips on that day. This section presents telework results for 2019 and, in some tables, results for previous SOC surveys.

Current and Potential Telework

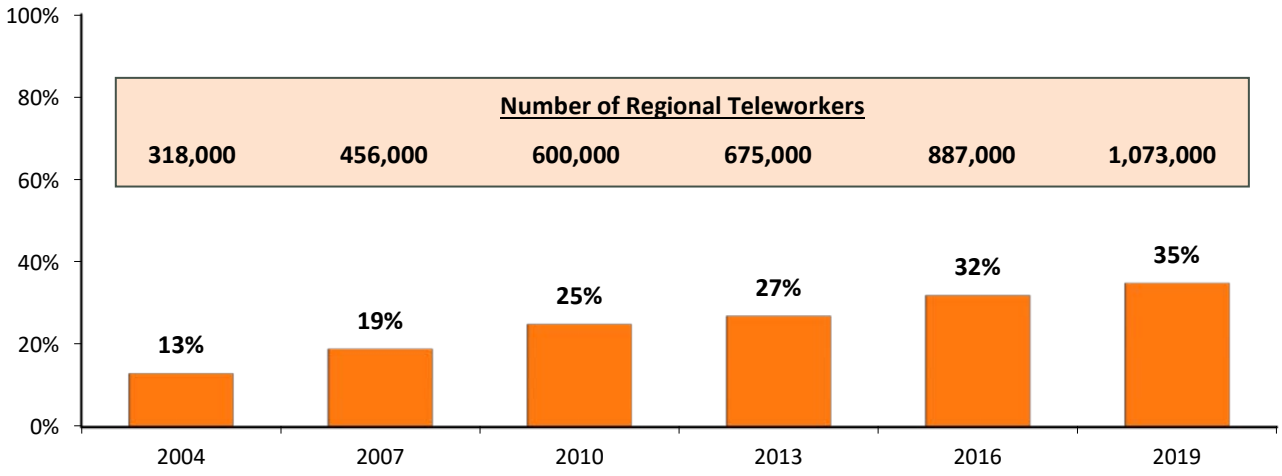
Respondents who Currently Telework

Respondents were shown the above definition of telework and asked if they would consider themselves teleworkers based on this definition. One-third (34%) of regional workers said they teleworked, either regularly or occasionally. When extrapolated to the regional worker population, this represented about 1,073,000 workers region-wide.

Teleworkers accounted for a higher percentage, 35%, of "commuters," where commuters were defined as regional workers who would otherwise travel to a main work location on non-telework days. Using the commuter base excludes self-employed workers for whom home was their only workplace. These workers would not make commute trips to an outside work location, thus, excluding them from the calculation of teleworkers reflects a more realistic picture of the role of telework in eliminating commute trips.

The 35% telework percentage represents a steady growth over the percentage from the 2004 survey, when only 13% of employees teleworked (Figure 30). The percentage growth also equals a more than three-fold growth in the total number of teleworkers, from 318,000 in 2004 to 1,073,000 in 2019.

Figure 30
Percentage of Commuters who Telework – 2004 to 2019
(2004 n = 6,851, 2007 n = 6,168, 2010 n = 6,050, 2013 n = 5,892, 2016 n = 5,503, 2019 n = 8,107)

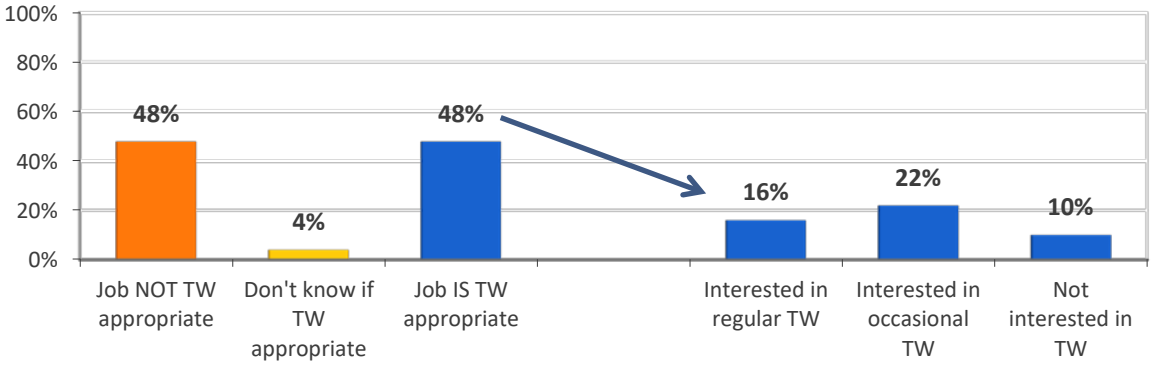


Interest in Telework

Commuters who worked at a location outside their homes and who did not telework at the time of the survey were asked if their job responsibilities would allow them to work at a location other than their main work place, at least occasionally. Almost half (48%) said they had telework-appropriate job responsibilities (Figure 31).

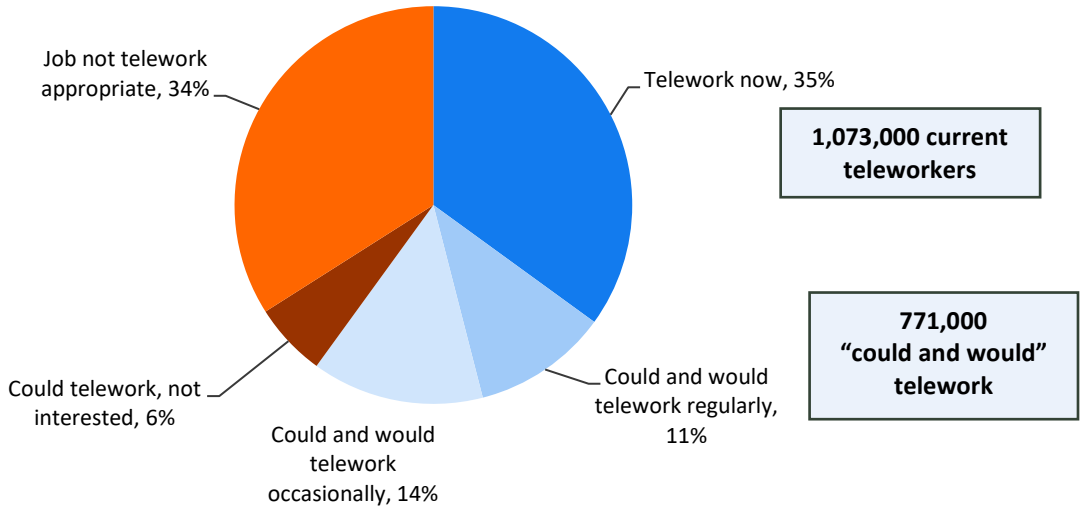
These respondents were then asked if they would want to telework. Eight in ten of the respondents with telework-appropriate jobs said they would be interested in telework on either an occasional basis or a regular basis. These interested respondents equaled about 771,000 commuters or 25% of all commuters region-wide.

Figure 31
Potential for Telework Among Non-teleworkers – 2019
(n = 5,195)



These results suggest that even as the number of teleworkers has grown in the Washington metropolitan region, additional telework potential exists. Figure 32 summarizes the telework status of all respondents who were "commuters," that is, not self-employed/work at home full-time.

Figure 32
Telework Status Distribution
(n = 8,107)



About 1,073,000 regional commuters (35%) teleworked at the time of the survey. An additional 25% of commuters "could and would" telework, that is, they had job responsibilities that could be accomplished away from the main work place and they would be interested in teleworking, if given an opportunity. These commuters represented about 771,000 potential teleworkers. The remaining commuters said they would not be interested in teleworking (6%) or that their job responsibilities could only be performed at the main workplace (34%).

Table 18 summarizes the 2019 results shown above, with additional comparisons for previous SOC surveys. The percentage of current plus potential telework has grown dramatically from 29% in 2004 to 60% in 2016.

Table 18
Summary of Current and Potential Telework – 2004 to 2019
Respondents who are not Self-Employed/Work at Home ("Commuters")

Telework Status	2004 (n = 6,896)	2007 (n = 6,168)	2010 (n = 6,050)	2013 (n = 5,892)	2016 (n = 5,503)	2019 (n = 8,107)
Currently teleworking	**13%**	**19%**	**25%**	**27%**	**32%**	**35%**
Not teleworking	**87%**	**81%**	**75%**	**73%**	**68%**	**65%**
- Job responsibilities allow telework and INTERESTED in telework ("could and would")	16%	24%	21%	18%	18%	25%
- Job responsibilities allow telework, but NOT INTERESTED in telework	6%	6%	9%	11%	9%	6%
- Job responsibilities would NOT allow telework	65%	51%	45%	44%	41%	34%

Interestingly, the percentage of commuters who said their jobs were incompatible with telework has steadily dropped from 65% in 2004 to 34% in 2016. Because it seems unlikely that the composition of jobs changed radically in the region, this result suggests a shift in commuters' ability or perception of their ability to perform work away from their primary work location; a larger share of commuters believed they could telework. This could be related to increasing availability of communication and computer technology or perhaps from greater understanding of telework options and a broader definition of what responsibilities were "telework-compatible."

Telework by Personal Characteristics

Telework was not distributed equally by demographic group. Table 19 compares the incidence of telework by respondents' sex, race/ethnicity, age, and income. The third column shows the percentage of each demographic group who teleworked at the time of the survey (e.g., 35% of men and 34% of women). The last column shows the percentage of commuters in the group who "could and would" telework if given the opportunity (e.g., additional 25% of men and 25% of women would telework). Note that the "could and would" percentages should be compared against the 25% of all commuters in the region who "could and would" telework.

Some demographic groups teleworked more than did others. For example, 39% of Non-Hispanic Whites teleworked, compared with 27% of Non-Hispanic Blacks and 26% of Hispanics. Use of telework appeared to be approximately the same for the three age groups 25-34 years, 35-44 years, and 45-54 years, then declining as age increased further. And there was a strong pattern of increasing telework as income increased; More than four in ten respondents with household incomes of $140,000 or more teleworked, compared with only about 5% of workers with incomes below $30,000, 15% of workers with incomes between $30,000 and $59,999, and 25% of respondents with incomes of $60,0000 to $99,999.

Table 19
Telework by Demographic Characteristics

Demographic Group	All Commuters		
	(n =__)*	Percentage who Teleworked	Percentage who "could and would" Telework**
Sex			
Male	3,859	35%	25%
Female	3,806	34%	25%
Race/Ethnicity			
Non-Hispanic White	5,466	39%	24%
Non-Hispanic Black	1,351	27%	24%
Hispanic	502	26%	26%
Age			
Under 25 years	205	19%	31%
25 – 34	1,520	35%	27%
35 – 44	1,795	37%	26%
45 – 54	1,998	36%	24%
55 – 64	1,883	32%	23%
65 or older	614	27%	17%
Income			
Less than $30,000	123	5%	15%
$30,000 – $59,999	510	15%	27%
$60,000 – $99,999	1,234	25%	27%
$100,000 – $139,999	1,267	36%	25%
$140,000 – $179,999	1,013	45%	23%
$180,000 – $249,999	957	48%	27%
$250,000+	580	53%	27%

* All respondents in the group, both teleworkers and non-teleworkers
** Respondents whose job responsibilities would allow telework and who would be interested in telework

Table 19 also illustrates the potential for additional telework; that is, the percentages of non-teleworkers who would telework in the future, if given the opportunity. In general, with only a few exceptions, additional potential was within one or two percentage points of the 25% regional average for most groups.

Use of telework increased with increasing commute distance (Table 20). Only about three in ten respondents who lived less than 15 miles from work teleworked, while four in ten (41%) respondents who commuted 40 miles or more teleworked. Among respondents who lived between 15 and 39 miles away, 36% teleworked.

Table 24
Telework by Commute Distance and Home/Work Area

Commute Characteristic	All Commuters		
	(n =__)*	Percentage Who Teleworked	Percentage who "could and would" Telework**
Commute Distance			
Less than 5 miles	1,070	31%	28%
5 – 14 miles	2,317	29%	27%
15 – 29 miles	2,110	36%	24%
30 – 39 miles	1,012	36%	28%
40 miles +	903	41%	22%
Home Area			
Inner Core	2,198	37%	28%
Middle Ring	2,421	35%	24%
Outer Ring	3,488	31%	24%
Work Area			
Inner Core	3,843	39%	26%
Middle Ring	2,828	32%	24%
Outer Ring	1,375	23%	21%

* All respondents in the group, both teleworkers and non-teleworkers
** Respondents whose job responsibilities would allow telework and who would be interested in telework

Respondents who lived in the Inner Core (37%) or Middle Ring (35%) areas teleworked at higher rates than did Outer Ring respondents (31%). A similar pattern was observed for telework by work area; respondents who worked in the Inner Core and Middle Ring teleworked at higher rates than did respondents who worked in the Outer Ring.

Telework by Employment Characteristics

The survey data also showed some differences in the telework and potential telework distribution by employment characteristics (Table 21). Federal agency employees teleworked at a much higher rate (48%) than the regional average and much higher than did employees who worked for non-profit organizations (36%), private employers (30%), and state/local agencies (14%).

Generally, use of telework increased with increasing employer size. About four in ten respondents who worked for employers with 251 to 999 employees (41%) or 1,000 or more employees (42%) teleworked, compared with only one-quarter of respondents who worked for employers with between 1 and 100 employees.

Some occupations also had higher telework rates than average, including executive/managerial (41%) and professional (38%). Common occupations with below average telework rates included sales (25%), administrative support (20%), technicians/related support (19%), protective services (15%), precision craft/ production (1%), military (9%) and other service, such as restaurant workers (2%).

Table 21
Telework by Employment Characteristics

Employment Characteristic	All Commuters		
	(n =__)*	Percentage Who Teleworked	Percentage who "could and would" Telework**
Employer Type			
Federal agency	2,435	48%	21%
Non-profit organization	1,152	36%	32%
Private employer	3,480	30%	26%
State/local agency	848	14%	26%
Employer Size			
1 – 25	1,390	24%	22%
26 – 100	1,578	26%	26%
101 – 250	1,031	34%	27%
251 – 999	1,414	41%	27%
1,000+	2,174	42%	27%
Occupation			
Executive, manager	1,796	41%	30%
Professional	4,006	38%	26%
Sales	228	25%	24%
Administrative support	527	20%	21%
Technicians/related support	152	19%	13%
Protective services	184	15%	23%
Precision craft, production	74	14%	6%
Military	90	9%	25%
Other service	101	2%	14%

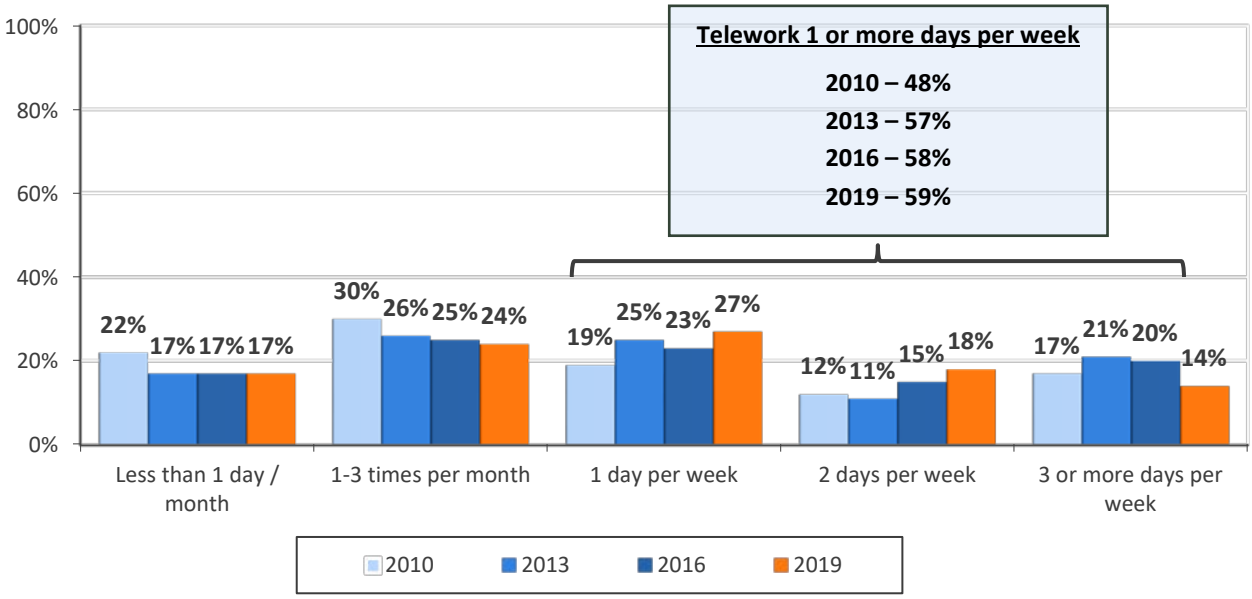
* All respondents in the group, both teleworkers and non-teleworkers
** Respondents whose job responsibilities would allow telework and who would be interested in telework

Again, the relative percentages of non-teleworkers who could and would telework if given the opportunity generally mirrored the relative percentages of respondents who teleworked in each group. Two groups with statistically higher potential than the 25% average included non-profit organization employees (32%) and respondents who worked in in executive/management occupations.

Telework/Work at Home Frequency and "Episodic" Telework

The frequency with which respondents teleworked is detailed in Figure 33. About 17% of respondents who said they teleworked did so less than one time per month. One-quarter (24%) said they teleworked a few times each month. Nearly six in ten (59%) said they teleworked at least one day per week. On average, teleworkers used this arrangement about 1.20 days per week.

Figure 33
Frequency of Telework – 2010, 2013, 2016, 2019
(2010 n = 1,529, 2013 n = 1,559, 2016 n = 1,874, 2019 n = 2,856)



The overall average frequency of 1.20 in 2019 was lower than the 1.38 day frequency observed in the 2016 survey, primarily by the shift from "three or more days" telework to telework one or two days per week; in 2019, 14% of teleworkers teleworked 3 or more days per week, compared with 20% who teleworked this often in 2016.

Frequency of Work at Home Among Non-Teleworkers

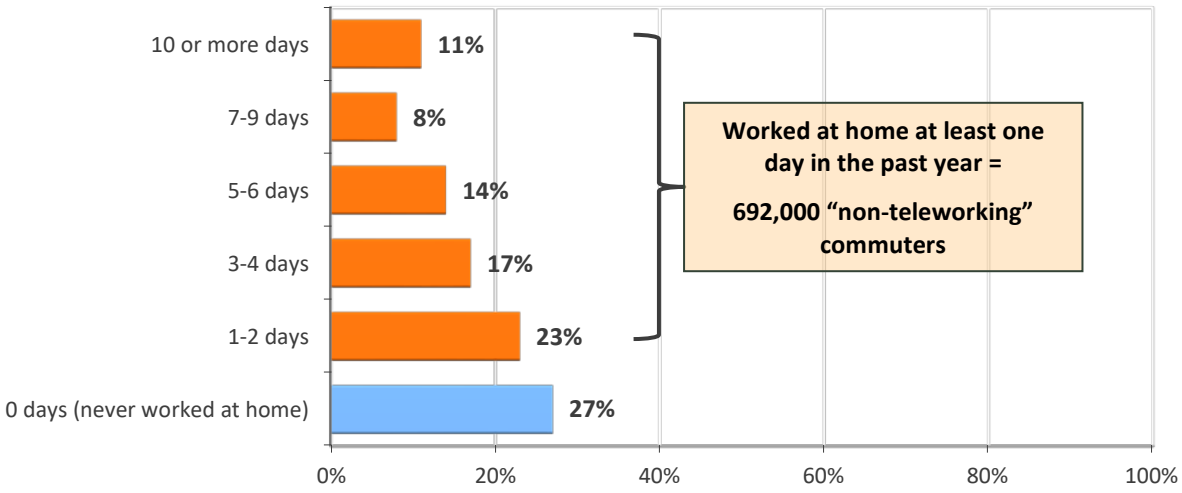
The percentage of respondents who self-defined as "teleworkers," based on the definition they were shown, likely underrepresented the true extent of telework activity in the region. The research team considered the possibility that some commuters who occasionally worked at home might not consider themselves "teleworkers." To test this premise, the survey asked respondents who said they were not "teleworkers" but who had telework-appropriate jobs the following question:

> "*In the past year, about how many days did you work at home all day on a regular work day, instead of traveling to your main work place?*"

The purpose of the question was to determine how many actually had teleworked during the past year, even though they did not consider it telework.

Nearly three-quarters (73%) of these respondents had worked all day at home at least once in the past year (Figure 34). These respondents represented about 22% of all commuters region-wide or a total of 692,000 commuters. When added to the 35% of commuters who self-defined as teleworkers, the total percentage of commuters who telework/work at home at least occasionally rises to 57%.

Figure 34
Frequency of Work at Home in the Past Year – Non-teleworkers
(n = 2,447)



The average work at home frequency of these "non-teleworkers" was quite low. Self-defined teleworkers teleworked an average of 1.20 days per week. By contrast, "non-teleworkers" worked at home an average of just 5.3 days per year or about 0.11 days per week (5.3 telework days per year / 50 work weeks per year = 0.11 telework days per week).

When the average telework frequency for respondents who self-identified as teleworkers and the work-at-home frequency of non-teleworkers are applied to the estimated numbers of regional commuters, it equates to approximately 272,700 regional workers teleworking/working at home on a typical workday. Nearly 6% of the telework/work at home days would be from commuters who do not consider themselves teleworkers occasionally working at home.

Total telework/work at home days per week = 1,363,700 weekly days

Teleworkers = 1,073,000 teleworkers x 1.20 days per week = 1,287,600 weekly days

Non-teleworkers work at home = 692,000 non-teleworkers x 0.11 days per week = 76,100 weekly days

Total commuters teleworking on a typical day = 272,700 (1,363,700 weekly days / 5 days per week)

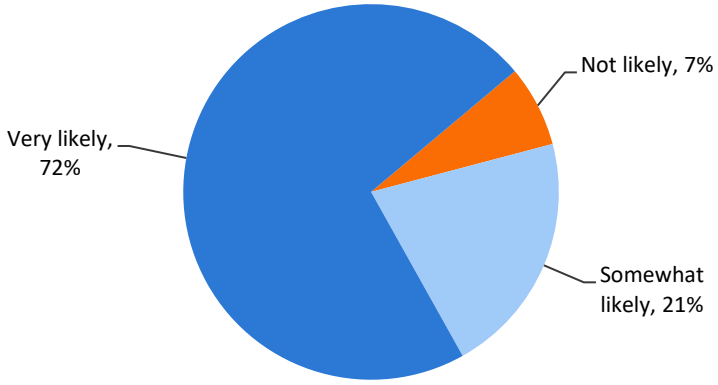
"Episodic" Telework

The teleworking calculation above for a "typical weekday" might underestimate the true traffic-reduction benefit if commuters telework on days when traffic is likely to be heavier or more difficult than normal. To examine this situation, commuters who self-defined as teleworkers were asked the following question:

Thinking about a day when traffic in the region is likely to be disrupted due to a snowstorm or a major special event, how likely are you to telecommute to avoid the traffic? Are you very likely, somewhat likely, or not likely?

More than nine in ten teleworkers said they were likely to telework on those days; 72% said they were very likely to work at home on a major event day and 21% were somewhat likely (Figure 35). Thus, teleworking likely provides a higher than average benefit for regional traffic conditions on days when traffic is likely to be at its worst.

Figure 35
Likely to Telework During Weather Events/Major Regional Events
(n = 2,727)



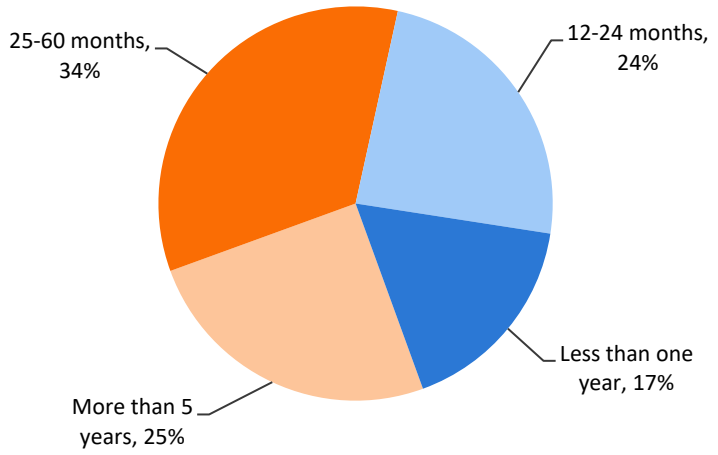
Telework Patterns

Respondents who self-defined as "teleworkers" were questioned about their telework characteristics including: length of time teleworking, telework location, access mode to telework locations outside the home, use of informal or formal telework arrangement, and source of telework information.

Length of Time Teleworking

Although teleworking has been widely used in the region for many years, a sizeable share of teleworkers recently adopted this work option. Four in ten (41%) of teleworkers started teleworking within the past two years and 17% started within the past year (Figure 36). One-quarter (25%) had been teleworking more than five years. On average, respondents had been teleworking about 50 months. This was nearly a one year shorter duration than that estimated in 2016 (58 months) and 2013 (59 months), but about the same duration as in the 2007 SOC survey (53 months)

Figure 36
Length of Time Teleworking
(n = 2,744)



Telework Locations

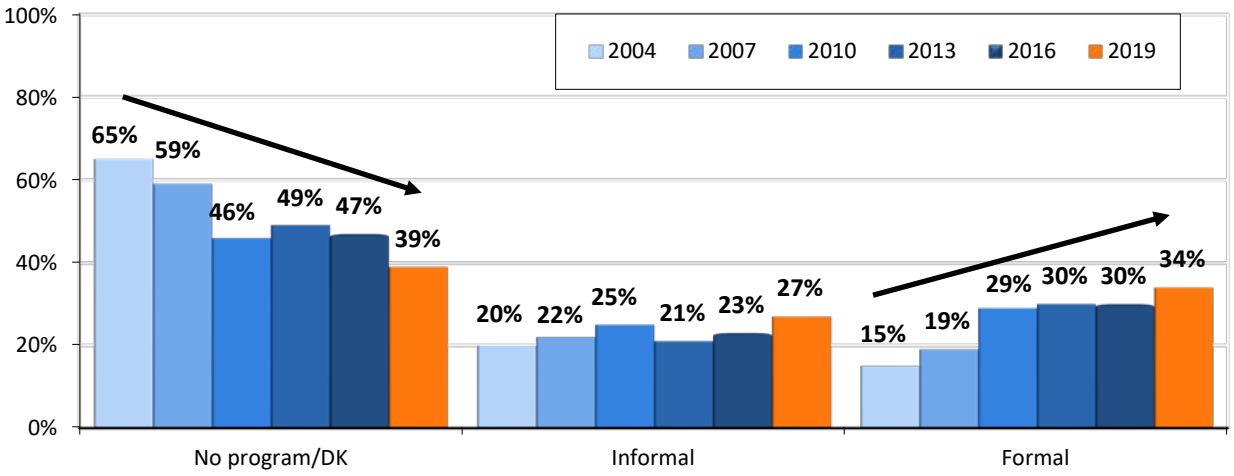
Nine in ten (91%) teleworkers said they teleworked exclusively from home. Two percent named another telework location, such as a satellite office, library or community center, or Telework Center and 7% said they teleworked from both home and from another location. Teleworkers who teleworked from locations outside their homes traveled an average distance of 10.1 miles to the telework location. Seven in ten (69%) of these respondents drove alone to the telework location. The remaining 31% used an alternative mode.

Formal or Informal Telework Arrangement

Teleworkers were asked if they teleworked under a formal program or through an informal arrangement with a supervisor. Respondents who said they were not teleworkers were asked if their employer had a telework program, even though the respondent did not use it. More than six in ten (61%) of all respondents said their employers allowed some telework, either under a formal program (34%) or an informal arrangement (27%) (Figure 37). The remaining respondents said their employers did not have any telework program (32%) or that they did not know about any program (7%).

Figure 37 also shows the incidence of telework arrangements for the six SOC surveys since 2004. The share of employees that reported telework availability increased substantially between 2004 and 2010, leveled off through 2016, then increased again in 2019. In the 2004 SOC survey, only 35% of respondents noted that their employer allowed telework, either formal or informal. In 2007, the share had risen to 41%. By 2010, more than half of respondents said their employer offered some telework option. This percentage was relatively stable through 2016, but increased to 61% in 2019.

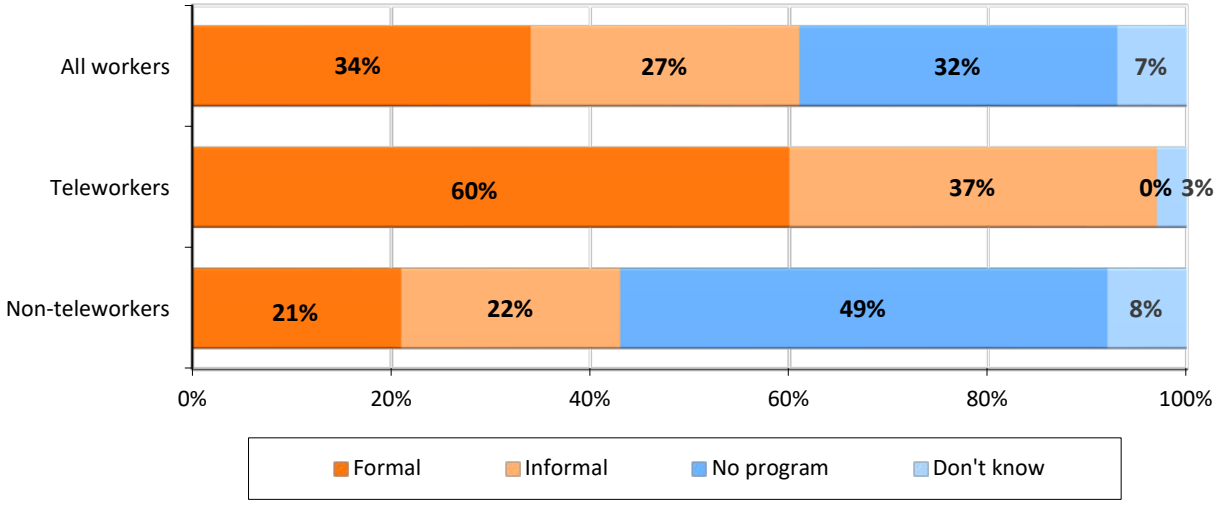
Figure 37
Telework Arrangements – 2004-2019
(2004 n = 6,896, 2007 n = 6,168, 2010 n = 5,854, 2013 n = 5,892, 2016 n = 5,487, 2019 n = 8,101)



The incidence of informal telework programs has increased somewhat since 2004, but the primary growth has been in the availability of formal programs. In 2004, telework arrangements were more often informal, while by 2010, the proportions had reversed and formal telework arrangements predominated.

Availability of Telework Arrangements at Worksites for Teleworkers and Non-teleworkers – As expected, teleworkers were much more likely than were non-teleworkers to work for an employer with a formal telework program (Figure 38). Six in ten (60%) teleworkers teleworked under a formal arrangement and 37% teleworked under an informal arrangement with their supervisor. This represents a continued shift from 2004, when only 32% of teleworkers had a formal agreement. This appears to signal a greater acceptance of formal telework.

Figure 38
Formal and Informal Telework Arrangements Available at Work – Teleworkers and Non-Teleworkers
All respondents and Teleworkers vs Non-Teleworkers
(All workers n = 8,101, Teleworkers n = 2,867, Non-teleworkers n = 5,223)



By contrast, only 21% of non-teleworkers said their employers had a formal telework program and 22% said telework was permitted under informal arrangements. Half (49%) said the employer had no program and 8% didn't know if a program existed.

Telework Arrangement by Employer Type – The availability of telework arrangements varied widely by respondents' employer types. Formal programs were most common among respondents who worked for a Federal government agency (Table 22).

Table 22
Formal or Informal Telework Arrangements By Employer Type

Program Type	Federal Agencies (n = 2,434)	Non-profit Organizations (n = 1,151)	Private Employers (n = 3,478)	State/local Agencies (n = 848)
No telework program/ Don't know if program exists	21%	34%	46%	**59%**
Telework permitted	79%	66%	54%	41%
Formal program	**68%**	26%	17%	24%
Informal arrangement	11%	**40%**	**34%**	16%

Nearly seven in ten (68%) respondents who worked for Federal agencies said their employers had formal programs, compared to only about 26% of respondents who worked for non-profit organizations, 17% who worked for private employers, and 24% who were employed by state/local agencies. Respondents who worked for non-profit organizations or private employers were most likely to have informal telework. Four in ten non-profit employees and 34% of private sector employees said their employers permitted informal telework. State/local

government agencies were least likely to permit telework under any arrangement. Only 41% of these respondents said their employer allowed employees to telework at all.

Telework Arrangement by Employer Size – Respondents who worked for large employers were most likely to have access to a telework program and to have access to a formal program (Table 23). Three-quarters of respondents who worked employers with 1,000 or more employees said their employer had either a formal program (55%) or permitted informal telework (20%). By contrast, less than half of respondents who worked for employers with 50 or fewer employees had access to either formal (16%) or informal (32%) telework.

Table 23
Formal or Informal Telework Arrangements By Employer Size

Program Type	1-50 Employees (n = 2,133)	51-100 Employees (n = 833)	101-250 Employees (n = 1,028)	251-999 Employees (n = 1,414)	1,000+ Employees (n = 2,174)
No telework program/ Don't know if program exists	**53%**	**48%**	**39%**	27%	25%
Telework permitted	47%	52%	61%	73%	75%
Formal program	16%	20%	31%	**43%**	**55%**
Informal arrangement	32%	32%	30%	30%	20%

Telework Arrangement by Employer Location – Finally, respondents who worked in the Inner Core of the region were much more likely to have access to a telework program and to have access to a formal program (Table 24). Seven in ten respondents who worked in the Inner Core said their employer had either a formal program (41%) or permitted informal telework (29%). Among Middle Ring workers, about six in ten had access to either a formal program (30%) or informal program (27%). Workers in the Outer Ring were least likely to have access to telework; only about four in ten had any telework option and only 20% said their employer had a formal program.

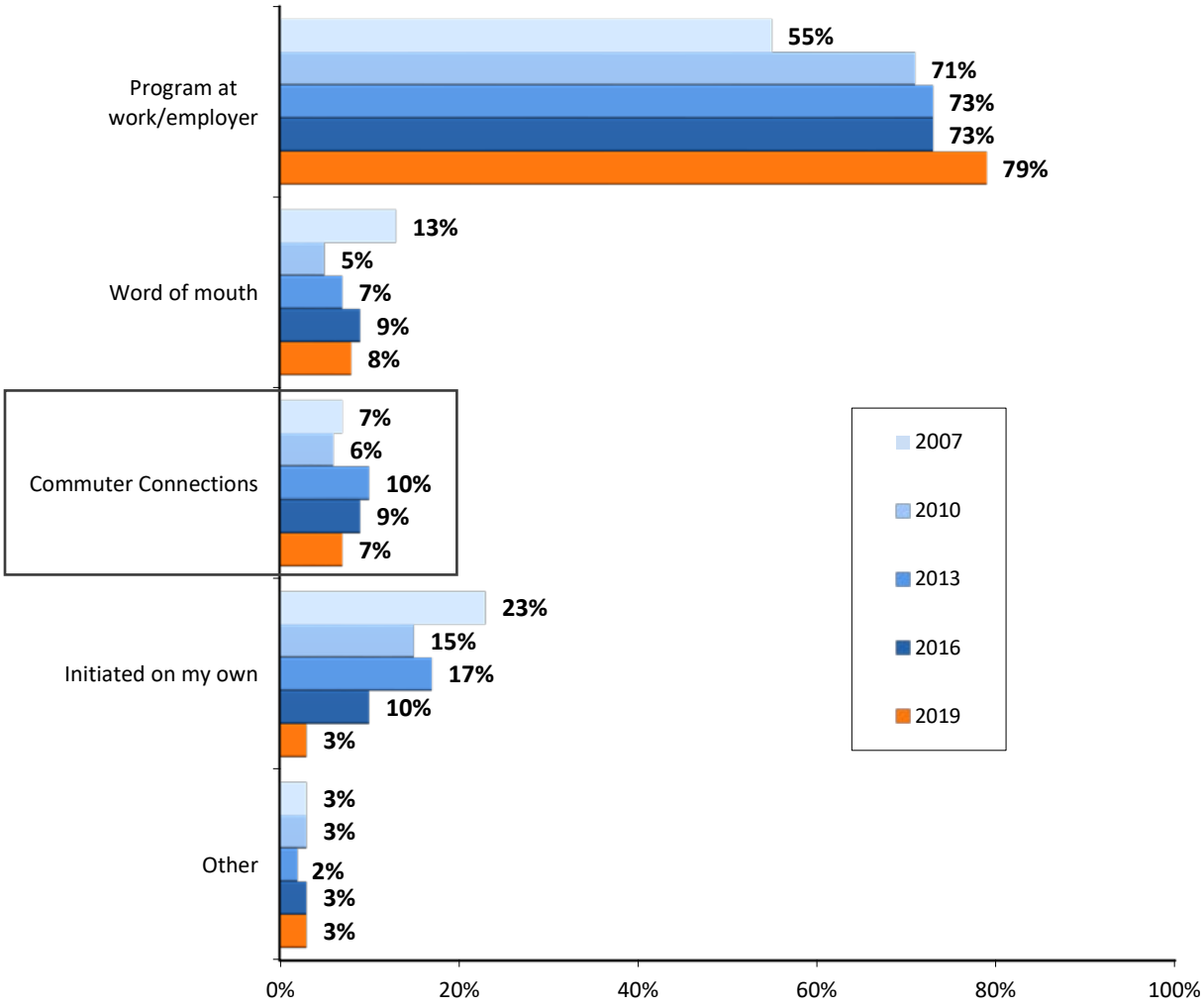
Table 24
Formal or Informal Telework Arrangements By Employer Work Location

Program Type	Inner Core (n = 3,840)	Middle Ring (n = 2,826)	Outer Ring (n = 1,374)
No telework program/ Don't know if program exists	30%	**43%**	**56%**
Telework permitted	70%	57%	44%
Formal program	**41%**	30%	20%
Informal arrangement	29%	27%	24%

Sources of Telework Information

Respondents who teleworked were asked how they learned about telework and if they received telework information from Commuter Connections or from MWCOG. The largest source of information, by far, was "special program at work/employer," named by 79% of respondents (Figure 39). This percentage was slightly higher than in 2016 (73%), 2013 (73%), and 2010 (71%), and well above the percentage in the 2007 SOC survey, in which only 55% of teleworkers cited their employer as the source of information. Eight percent learned of telework through "word of mouth" referrals from friends, co-workers, or family.

Figure 39
Sources of Information About Telework – 2007, 2010, 2013, 2016, 2019
(n = 2,511, multiple responses permitted)



Seven percent of teleworkers said they received telework information directly from Commuter Connections or MWCOG. This was about a slightly lower percentage as mentioned Commuter Connections/MWCOG in 2016 (9%) and 2013 (10%) and about the same percentage as in the 2010 (6%) and 2007 (7%) surveys. Three percent of respondents said they "initiated the request on their own."

SECTION 5 AVAILABILITY OF/ATTITUDES TOWARD TRANSPORTATION OPTIONS

Another major section of the State of the Commute Survey examined the availability of transportation options, such as transit, and respondents' attitudes toward these options.

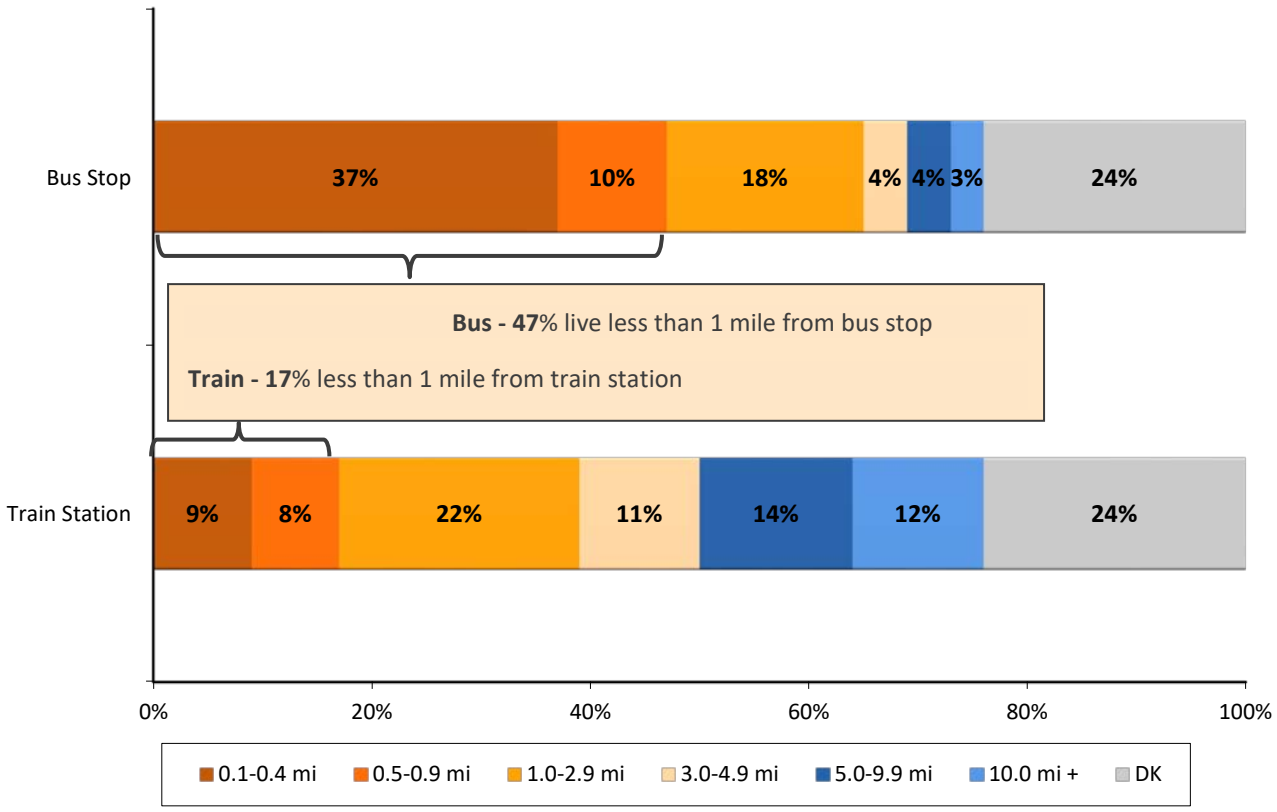
Public Transportation

Respondents who worked outside their homes were asked how far their homes were from the nearest bus stop and the nearest train station. Respondents also were asked several follow-up transit questions, depending on their current use of transit.

Distance to Bus Stop and Train Station

About four in ten (37%) respondents said they lived less than one-half mile from a bus stop and 47% said they lived less than one mile (Figure 40). But nearly one-quarter were unsure how far they lived from a bus stop. Among respondents who could provide a distance to a bus stop, the average distance was 1.5 miles.

Figure 40
Distance from Home to Bus Stop and Train Station
(n = 7,981)



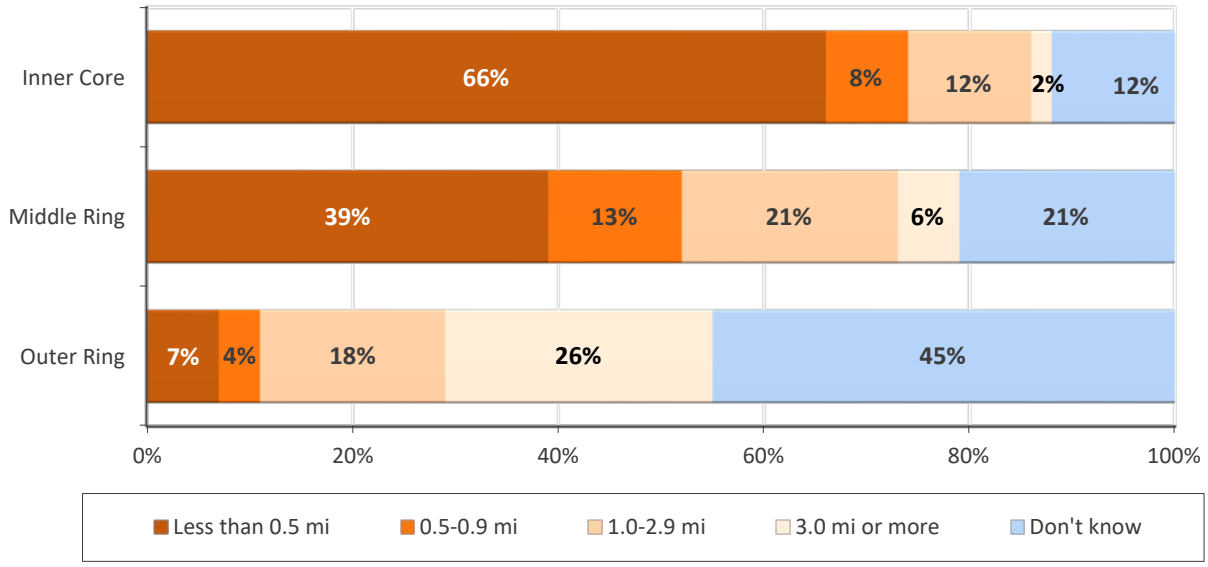
Train stations were farther away for most respondents. Only 9% lived less than one-half mile from a Metrorail or commuter rail station and only 17% lived less than one mile. Thirty-seven percent said they lived three or more miles from the nearest train station. As with bus stop distance, 24% of respondents did not know the distance from their home to the train stations. On average, respondents who provided a distance lived 4.8 miles away.

Distance to Transit by Home Area

Figure 41 presents the distribution of bus stop distance for the three area rings. Three-quarters (74%) of respondents in the Inner Core reported living less than one-half mile from a bus stop, compared with 52% of respondents in the Middle Ring, and just 11% of respondents in the Outer Ring. Only 14% of Inner Core respondents lived one or more miles from a bus stop, compared with 44% of Outer Ring respondents. It is also notable that 21% of Middle Ring and 45% of Outer Ring respondents said they did not know the distance to the nearest bus stop.

The average transit access distance was the shortest for respondents who lived in the Inner Core; just 0.5 miles to the nearest bus stop and 1.4 miles to the nearest train station. Respondents in the Middle Ring said they traveled 1.0 miles to the nearest bus stop and 4.0 miles to the nearest train station. Respondents who lived in the Outer Ring reported that the nearest bus stop was an average of 4.4 miles away and train was 11.8 miles away.

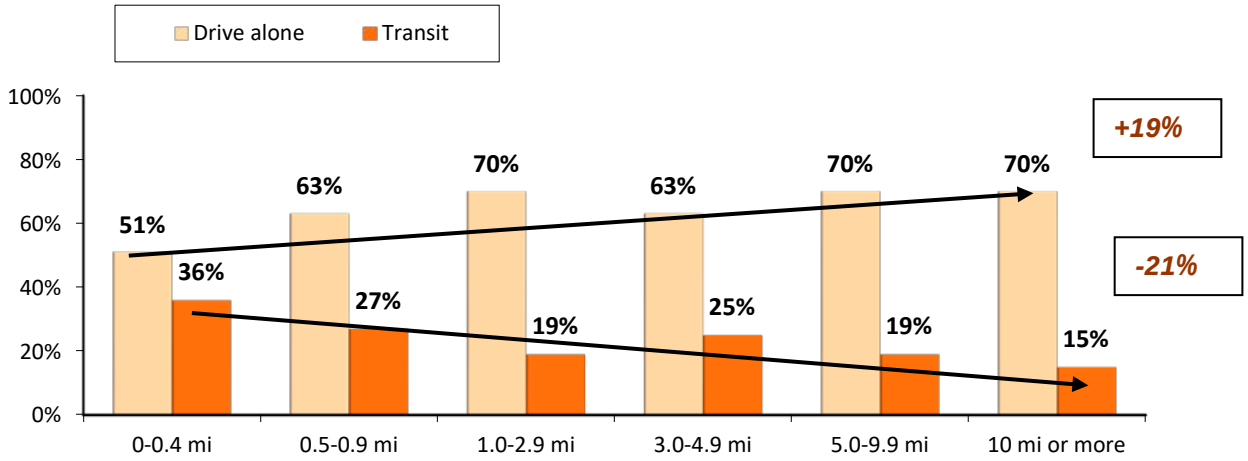
Figure 41
Distance from Home to Bus Stop by Home Area
(Inner Core n = 2,172, Middle Ring n = 2,381, Outer Ring n = 3,428)



Commute Mode by Distance to Bus Stop – As might be expected, the transit commute mode share declined with increasing distance from a bus stop (Figure 42). More than one-third (36%) of commuters who lived less than one-half mile from a bus stop primarily commuted by bus or train. As the distance from home to a bus stop increased, the transit share fell steadily. When the nearest bus stop was 10 miles from home, only 15% of respondents commuted by transit, a drop of 21 percentage points compared with respondents who lived less than one-half mile away.

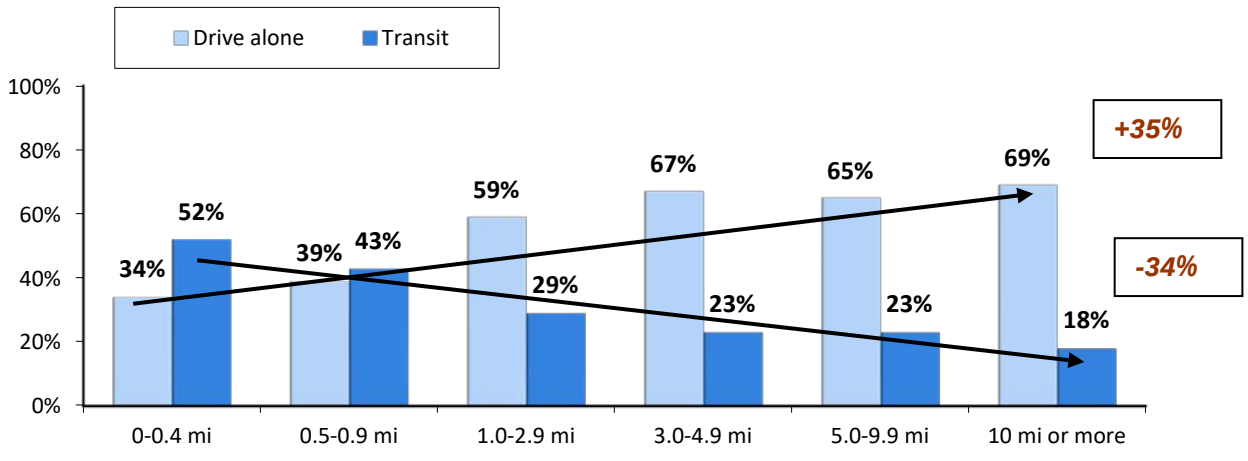
The drop in transit use was mirrored by a corresponding increase in driving alone. As Figure 42 shows, the drive alone rate for commuters who lived more than 10 miles from a bus stop was 70%, compared with 51% for commuters who lived less than one-half mile from a bus stop. This represents a 19-percentage point increase for driving alone.

Figure 42
Commute Mode by Distance from Home to Bus Stop
(Less than 0.5 mi n = 2,608, 0.5-0.9 mi n = 596, 1.0-2.9 mi n = 1,273, 3.0-4.9 mi n = 373, 5.0-9.9 mi n = 507, 10.0 mi or more n = 380)



Drive alone use also increased and transit use decreased with increasing distance from home to a train station (Figure 43). Among commuters who lived less than one-half mile from a train station, only 34% drove alone and 52% used transit. Among commuters who lived 10 miles or more from the nearest train station, the drive alone rate was 69%, an increase of 35 percentage points, and the transit share was 18%, a drop of 34 percentage points.

Figure 43
Commute Mode by Distance from Home to Train Station
(Less than 0.5 mi n = 597, 0.5-0.9 mi n = 618, 1.0-2.9 mi n = 1,530, 3.0-4.9 mi n = 712, 5.0-9.9 mi n = 907, 10.0 mi or more n = 1,497)



High Occupancy Vehicle (HOV)/Express Lanes

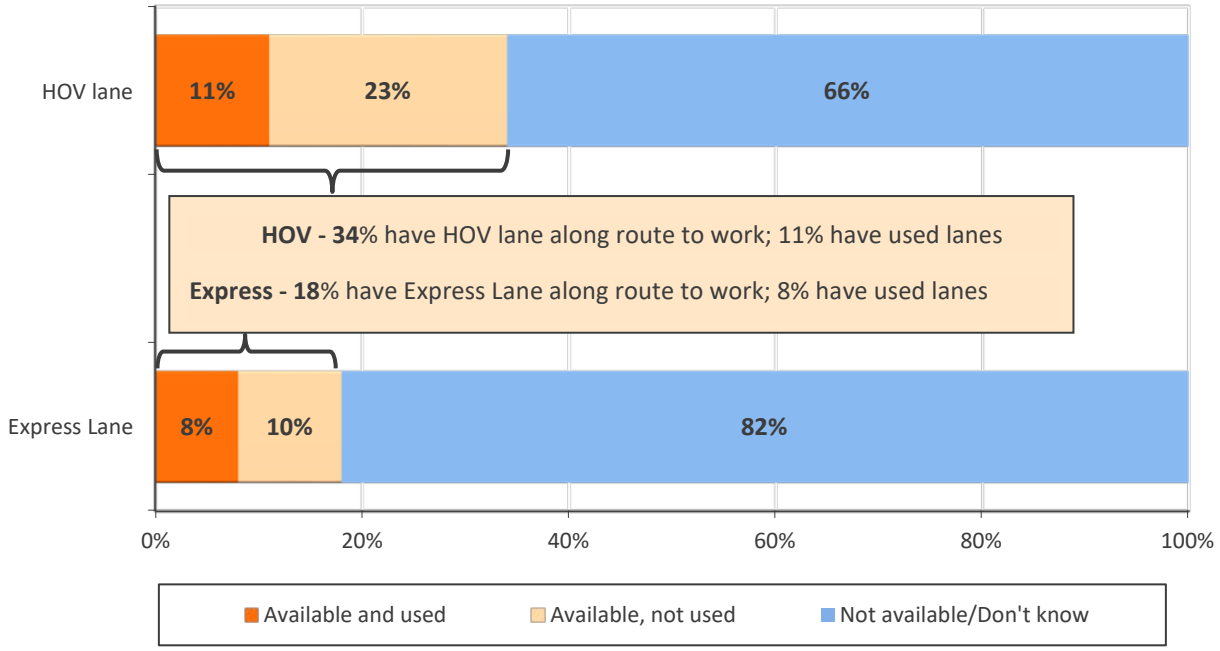
Availability and Use of HOV / Express Lanes

The survey also examined availability and use of High Occupancy Vehicle (HOV) and Express Lanes. Several roads in the region have had High Occupancy Vehicle (HOV) lanes for many years. In recent years, new HOV lanes have opened in Maryland and Virginia. Virginia also has initiated tolled Express lanes, which permit travelers who are driving alone to use the lanes for a fee. The 2019 SOC survey repeated several HOV/Express lane questions from the 2016 and 2013 surveys. The 2019 survey also added several new questions to define Express lane use patterns.

Nearly four in ten (38%) respondents said one or both of these types of facilities were available along their route to work: 19% had access to HOV only, 3% said only Express Lanes were available, and 16% had access to both HOV and Express lanes.

Eleven percent of commuters region-wide had used an HOV lane, about one-third of the 34% of commuters who said an HOV lane was available along (Figure 44). Eight percent of commuters region-wide had used an Express Lane, just under half of the 18% who reported access to an Express Lane along the route to work. The lower use of HOV lanes than Express lanes is certainly related to the lower potential market for HOV lanes; they allow only carpoolers, vanpoolers, and transit riders, while Express lanes also are open to commuters who drive alone.

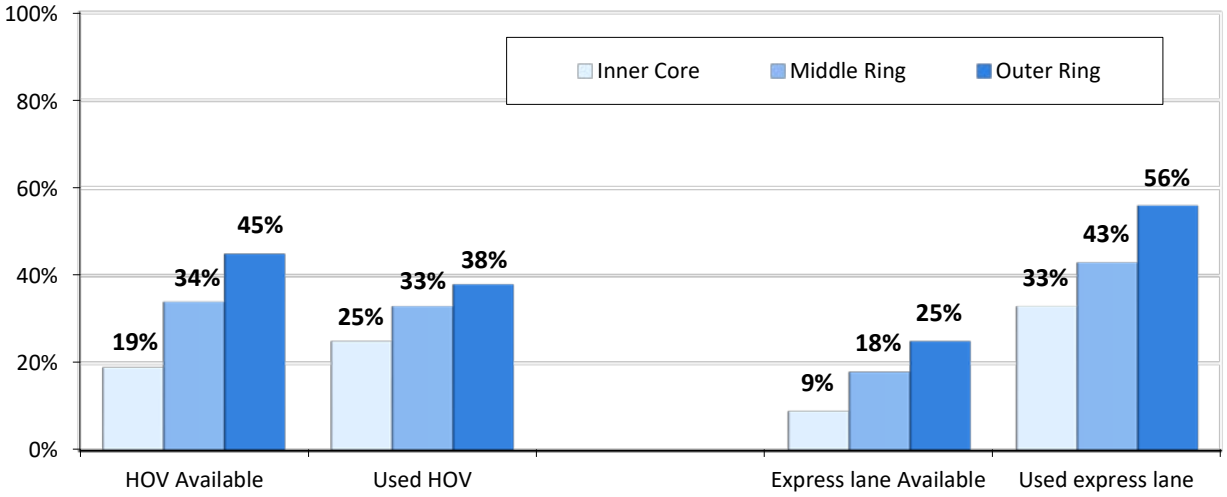
Figure 44
Availability and Use of HOV and Express Lanes
(n = 7,656)



HOV/Express Lanes by Home Area – Figure 45 shows availability and use of HOV/Express lanes by respondents' home location within the three "ring" categories. Commuters were more likely to have HOV lanes available on their route to work if they lived in Middle Ring (34%) or Outer Ring (45%) jurisdictions than if they lived in the Inner Core (19%). The pattern was similar for availability of Express Lanes; 18% of Middle Ring and 25% of Outer Ring residents said they were available, compared with 9% of Inner Core residents. The greater access of commuters who live and work outside the Inner Core reflects the locations of HOV and Express lanes, nearly all of which are located outside the Inner Core jurisdictions.

Figure 45
Availability and Use of HOV/Express Lanes by Home Area

(HOV lane/Express lane available – Inner Core n = 1,960, Middle Ring n = 2,344, Outer Ring n = 3,45)
(HOV lane used (respondents with lanes available) – Inner Core n = 525, Middle Ring n = 689, Outer Ring n = 1,108)
(Express lane used (respondents with lanes available) – Inner Core n = 234, Middle Ring n = 362, Outer Ring n = 1,169)



Respondents who lived in the Outer Ring also used HOV lanes at a considerably higher rate than did commuters in other areas. Nearly four in ten (38%) Outer Ring respondents who had access to HOV lanes said they used them, compared with about 33% of Middle Ring respondents and 25% of Inner Core respondents. Outer Ring respondents also used Express Lanes at a high rate; 56% who said the lanes were available had used them. But Express Lane use also was sizeable (43%) among Middle Ring respondents. One-third (33%) of Inner Core respondents who said Express Lanes were available had used the lanes.

Table 25 shows availability and use of HOV/Express Lanes by respondents' home county or city. Virginia residents generally had higher availability than did residents of Maryland or the District of Columbia. At least three in ten respondents in each of the five Virginia jurisdictions said an HOV lane was available; in Prince William County, two-thirds (65%) of respondents reported having access and 50% of Fairfax residents had access to HOV lanes. By comparison, the highest rates of HOV lane availability outside Virginia were 45% for respondents who lived in Frederick County, MD and 34% for Montgomery County, MD residents. Only 7% of respondents from the District of Columbia reported having access to the lanes along their route to work.

Virginia residents also had higher availability of Express Lanes than did residents of Maryland or the District of Columbia. Almost half (46%) of Prince William residents and 35% of Fairfax residents said Express Lanes were available. In Maryland, about one in ten residents of Montgomery (10%), Charles (9%), Prince George's (8%), and Frederick (8%) counties said Express lanes were available.

Table 25 also shows the use of HOV and Express Lanes for respondents who said they had lanes available. HOV lane use was highest for residents of Prince William County (45%), Fairfax County (38%), Loudoun County (37%), the District of Columbia (36%), and Calvert County (33%). At least one-third of respondents who lived in these jurisdictions and had HOV lanes available had used them. Highest use of Express Lanes was found in Frederick County (60%), Prince William County (59%), Prince George's County (56%), Loudoun County (50%), and Charles County (49%).

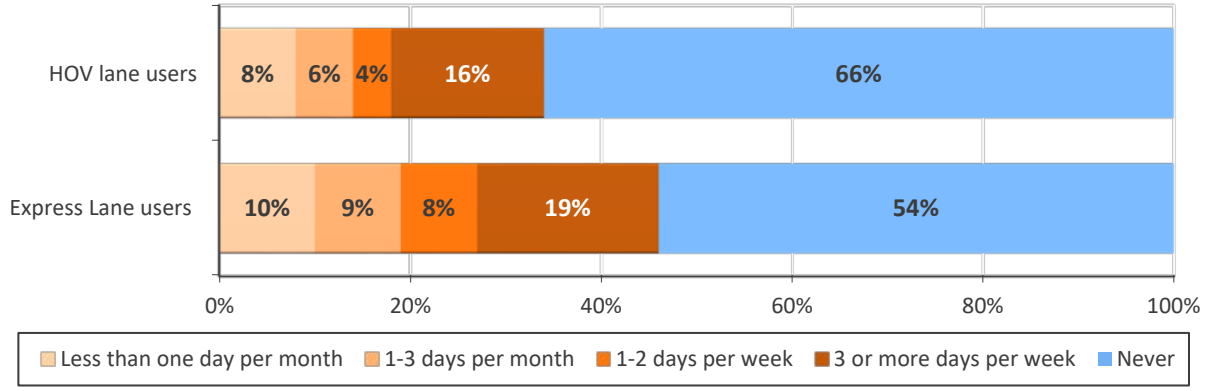
Table 25
Availability and Use of HOV / Express Lanes By Residence Jurisdiction

Home Jurisdiction (County/City)	All Respondents			Respondents Use Lanes When Available			
	(n=___)	HOV Available	Express Available	HOV (n =)*	HOV Use	Express (n=_)*	Express Use
Virginia jurisdictions							
Prince William Co	721	65%	46%	455	45%	312	59%
Fairfax Co	678	50%	35%	335	38%	242	40%
Loudoun Co	631	43%	21%	272	37%	132	50%
Alexandria City	645	43%	19%	268	30%	119	42%
Arlington Co	712	30%	14%	220	23%	99	27%
Maryland jurisdictions							
Frederick Co	667	45%	8%	297	26%	48	60%
Montgomery Co	758	34%	10%	233	27%	62	44%
Prince George's Co	908	15%	8%	121	27%	58	56%
Charles County	694	8%	9%	52	12%	53	49%
Calvert County	702	4%	4%	32	33%	28	43%
District of Columbia	603	7%	4%	41	36%	16	31%

* Respondents in the jurisdiction who have an HOV / express lane available along their route to work.

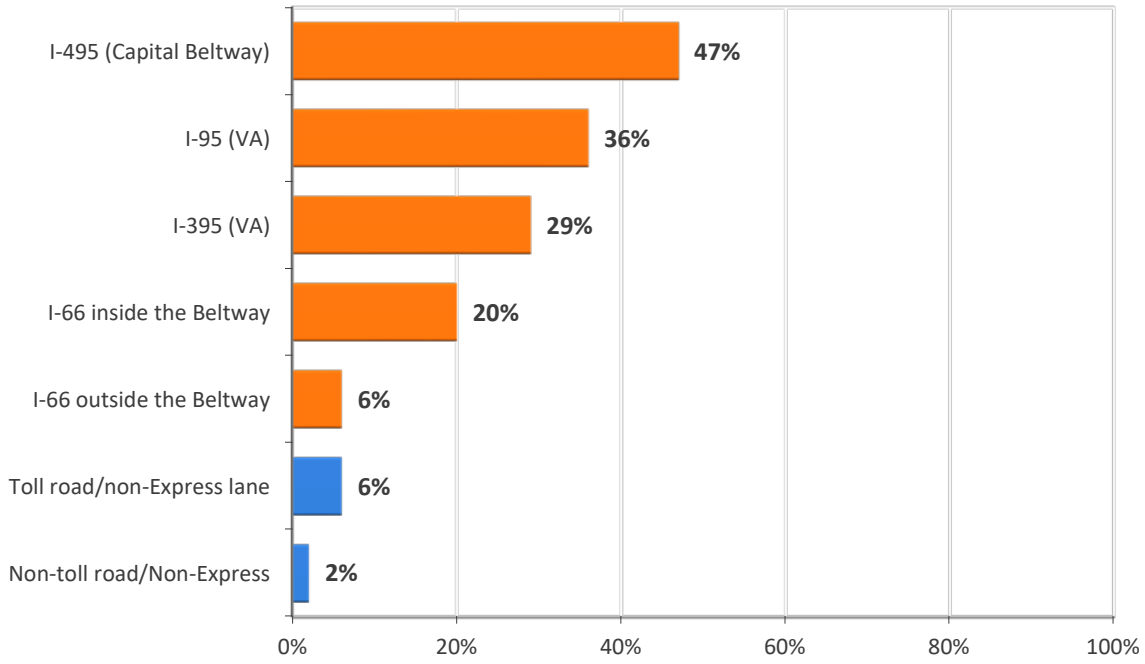
HOV and Express Lane Use Frequency – As noted above, respondents who had access to Express Lanes typically used them at a higher rate than did respondents who had access to HOV lanes. As indicated by Figure 46, they also used them more frequently than did those with HOV lanes available. More than one-quarter (27%) of commuters with Express lanes available used them at least one day per week, compared with 20% of commuters who had an HOV lane available.

Figure 46
Use Frequency of HOV and Express Lanes – Among Commuters Who Used the Lanes
(HOV lane available n = 2,322, Express lane available n = 1,169)



Express Lanes Used – In 2019, Express Lanes were available on numerous roadways, including I-66, I-495, I-395, and I95, all in Virginia. Respondents who said they used an Express Lane were asked which roadway they used (Figure 47). Nearly half (47%) of Express Lane users traveled on I-495, the Capital Beltway. About 36% used lanes on I-95 and 29% used Express Lanes on I-395. Two in ten (20%) used Express lanes on I-66 inside the Capital Beltway and 6% used lanes on I-66 outside the Beltway.

Figure 47
Express Lanes Used
(n = 567; multiple responses permitted)

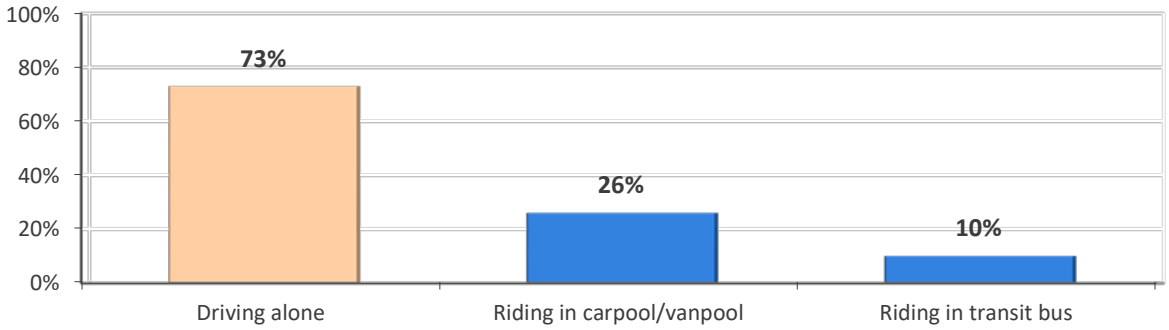


About 8% of respondents who said they used an Express lane mentioned a toll road that was not actually an Express lane, for example, the Inter-County Connector (ICC) in Maryland or the Dulles Toll Road in Virginia or another road that had only HOV lanes, such as I-270 in Maryland. This result suggests that commuter might have some confusion about the Express lane concept.

Mode When Using Express Lanes – Respondents who said they used Express lanes also were asked what mode they used while traveling on the lanes. During certain hours of the day, HOV lanes are restricted to those using shared-ride modes, such as carpools, vanpools, or transit buses. Express lanes do not have this restriction; they are open to all users all day, although travelers who are driving alone pay a fee to use the lanes, while shared-ride users travel for free or a reduced price.

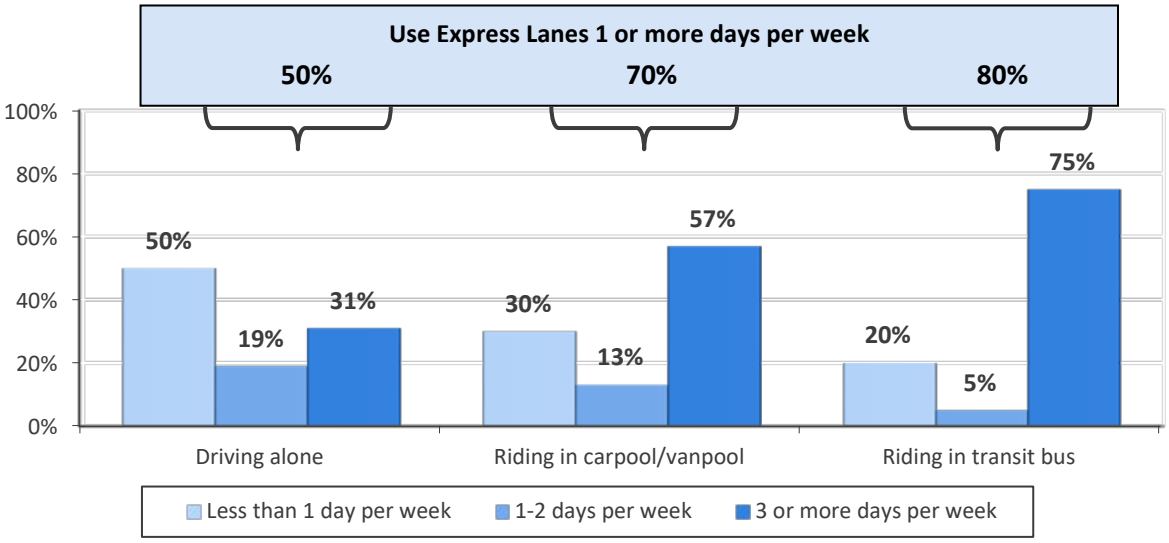
Nearly three-quarters (73%) of Express lane users said they typically drove alone while riding in the Express lanes (Figure 48). About one-quarter (26%) rode in a carpool or vanpool at least some days and one in ten (10%) rode in a transit bus. Respondents were permitted to select more than one answer, so the total will add to more than 100%.

Figure 48
Commute Mode While Using Express Lanes
(n = 568; multiple responses permitted)



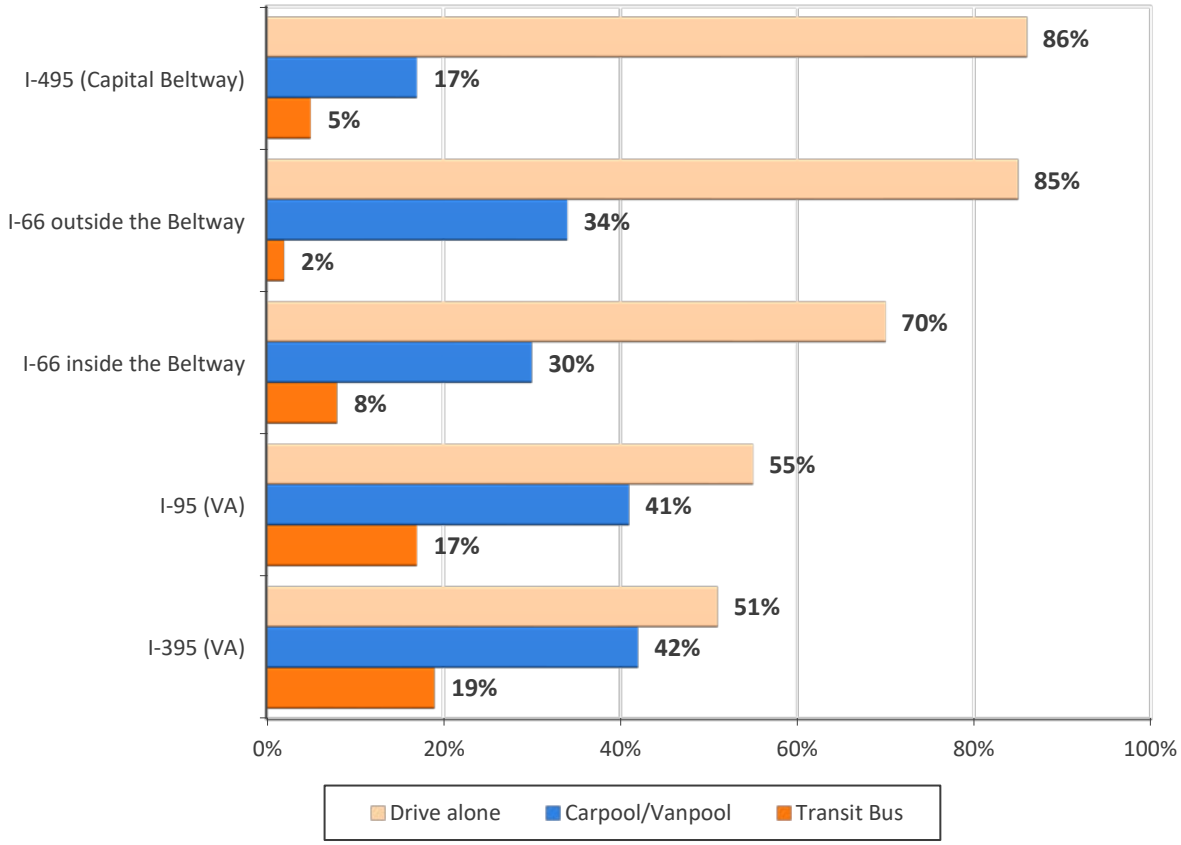
Frequency of Express Lane Use by Mode When Using Lane – Although a larger share of commuters said they typically drove alone while using Express lanes, commuters who carpooled or vanpooled and those who rode transit buses in the Express lanes used them more frequently. Eight in ten commuters who typically rode a transit bus on an Express lane did so at least one day per week and 75% used the lane three or more days per week (Figure 49). Carpoolers/vanpoolers also were frequent users, with seven in ten using the lane one or more days per week and 57% using the lane three or more days. By contrast, only half of commuters who drove alone on an Express lane used the lanes at least once per week and only three in ten (31%) were frequent users.

Figure 49
Frequency of Express Lane Use by Mode While Using Express Lanes
(Drive alone n = 427, Carpool/vanpool n = 131, Transit bus n = 53)



Mode While Using Express Lane by Express Lane Used – Driving alone in the Express lanes also was much more common on some lanes than others (Figure 50). More than eight in ten respondents who used Express lanes on the Capital Beltway (86%) and I-66 outside the Beltway (85%) said they drove alone, at least some of the time. Some commuters who used these lanes carpooled/vanpooled (I-495 17%, I-66 34%) or rode a bus (I-495 5%, I-66 2%), but driving alone was by far the more common mode choice for these Express lane users.

Figure 50
Mode While Using Express Lane by Express Lane Used
(I-495 n = 258, I-66 Outside Beltway n = 38, I-66 Inside Beltway n = 96, I-95 n = 203, I-395 n = 162; multiple responses permitted)



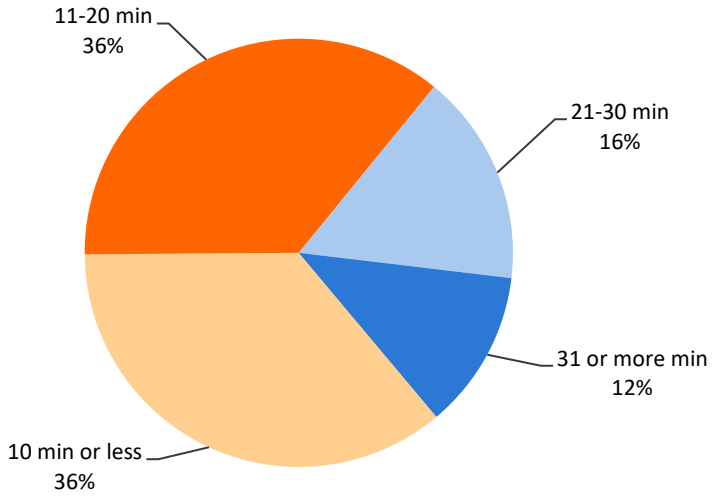
The mode profile was very different for Express lanes on I-95 and I-395. Only about half of commuters who used these roadways said they typically drove alone on the lanes (I-95 55%, I-395 51%), while four in ten carpooled or vanpooled and about two in ten rode transit. These two roadways have a long history of robust carpool and vanpool use on HOV lanes that date back to the 1970s. Although the HOV lanes now operate as Express lanes, allowing commuters who drive alone, carpools/vanpools of three or more occupants travel for free, providing an incentive for commuters to start or continue using carpool and vanpool.

HOV/Express Lane Time Saving

HOV and Express Lane Time Saving – A primary benefit attracting both HOV and Express lane users is the travel time saving and travel time reliability these lanes provide. Respondents who said they regularly used an HOV or Express Lane for commuting estimated that using the lane saved them an average of 19 minutes for each one-way trip, essentially the same time saving as noted in 2016 (20 minutes). HOV/Express lane users who lived in the Inner Core saved an average of 13 minutes, Middle Ring commuters saved 17 minutes, and Outer Ring commuters who used the lanes saved an average of 24 minutes on their commute. Note that these time savings are self-reported and represent the respondents' perceptions of time saving, rather than actual, measured time saving.

More than one-third (36%) said they saved 10 minutes or less and the same share (36%) said they saved between 11 and 20 minutes (Figure 51). The remaining HOV users were split between saving 21 to 30 minutes (16%) and saving more than 30 minutes one-way (12%).

Figure 51
Perceived Travel Time Saving of HOV/Express Lane Users (Estimated by Users)
(Note that actual time saving could be different from the respondent-estimated, perceived time saving)
(n = 771)



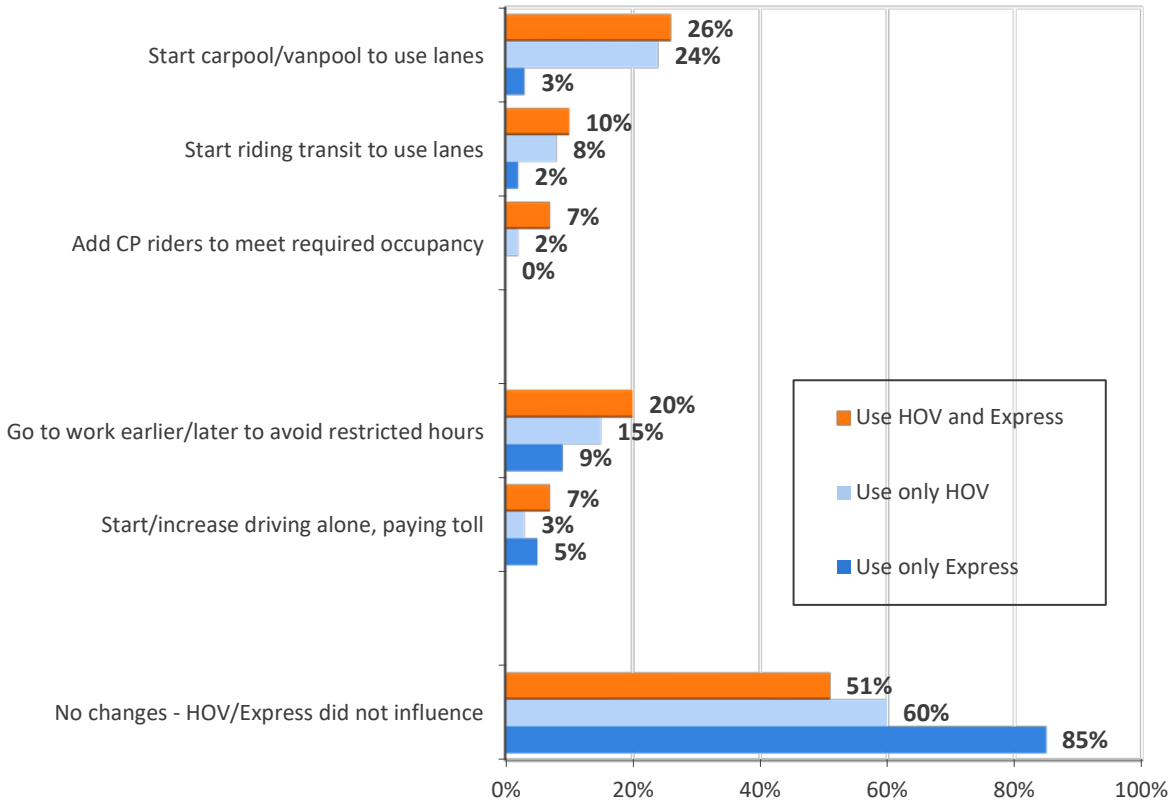
Travel Changes Influenced by HOV/Express Lane Use – A primary objective of HOV lanes is to encourage commuters to shift from driving alone to shared-ride modes, to obtain travel time savings, as noted above. Express lanes, which allow all users for a fee, also provide time savings, but do not necessarily encourage shifts to alternative modes, unless carpools and vanpools receive a toll discount. To explore the possible influence of HOV and Express lanes on travel choices, the 2019 SOC survey added a new question asking if the availability of HOV or express lanes had influenced users of the lanes to make any of five specific changes in how they commuted.

Three of the travel changes would result in greater use of non-drive-alone modes: start carpooling or vanpooling to use the lanes (or use for free/reduced price), start riding transit to use the lanes, and add another rider to an existing carpool to meet the occupancy requirement. The remaining two changes would allow the respondents to use the lanes, but while driving alone: go to work earlier or later to avoid the restricted hours and start or increase driving alone, knowing the commuter could pay the toll. Because HOV lanes and Express lanes might influence quite different actions, Figure 52 displays the percentage of commuters who took each action by the type of lanes they used: both HOV and Express lanes, HOV lanes only, and Express lanes only.

The data suggest HOV/Express lanes can influence commuters' mode choice. Among commuters who used both HOV and Express lanes, 49% had made one or more of the travel changes presented and many made one of the three changes that result in greater use of non-drive alone modes; 26% started carpooling or vanpooling and 7% added another rider to a carpool to meet the 3-person minimum requirement to use the lane for free or reduced toll. One in ten started riding a bus that travels along the HOV/Express lane. Other respondents made one of the "continue driving alone" changes; 20% said they changed their work hours to avoid the time restrictions and 7% started or increased driving alone, gaining the travel time saving by paying the toll on the Express lane.

The profile of changes made by commuters who used only HOV lanes was very similar to that for commuters who used both lanes. Four in ten HOV only commuters were influenced to make at least one change, 24% started carpooling or vanpooling, 2% added a rider to an existing pool, and 8% started riding transit. Fifteen percent changed their work hours to avoid HOV restricted hours and 3% said they increased driving alone.

Figure 52
Travel Changes Influenced by Use of HOV Lanes and Express Lanes
(Use both HOV/Express lanes n = 283, Use only HOV n = 457, Use only Express lanes n = 284; multiple responses permitted)

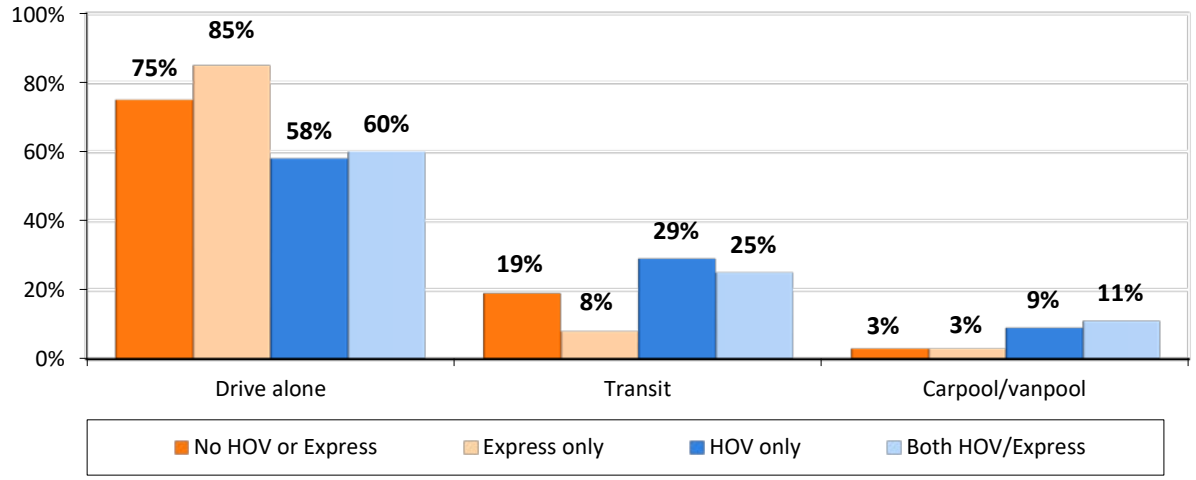


Not surprisingly, the profile of changes made by commuters who used only Express lanes, which allow commuters to use the lanes with no travel changes at all, was very different from those of the HOV/Express and HOV only cases. Only 15% of Express lane only commuters said they were influenced to change their travel and most made changes that would continue or increase how often they drove alone. One in ten changed their work hours to avoid the restricted hours and 5% started or increased how often they drove to work, presumably shifting from an alternative mode. Only 5% were influenced to start using an alternative mode.

Primary Commute Mode by HOV/Express Lanes Available – The influence of HOV and Express lanes on mode choice, in particular on ridesharing, is best illustrated by the mode shares when HOV and/or Express lanes were available and when they were not (Figure 53). Carpool/vanpool was used by 9% of respondents who said they had access to HOV but not Express lanes and 11% who said they had both HOV and Express lanes available. By comparison, the carpool/vanpool mode share was just 3% for commuters who had access to Express lanes only and the same 3% for commuters who had neither HOV nor Express available.

Examination of the drive alone mode shares for the four HOV/Express cases reveals another interesting finding. The drive alone mode shares for the HOV only and HOV plus Express situations were similar, at 58% and 60%, respectively. By contrast, 75% of respondents who said neither HOV nor Express lanes were available drove alone. Among respondents who had access only to Express lanes, an even higher percentage, 85%, primarily drove alone. This suggests Express lane availability likely encourages some commuters to drive alone or drive alone more often. Given the low percentage of Express lane users who said they started or increased driving alone because of the Express lanes, this influence might be subtle, commuter drive more, even if they do not explicitly realize it.

Figure 53
Primary Commute Mode by Availability of HOV/Express Lanes
(No HOV/Express n = 4,401, Express only n = 201, HOV only n = 1,359, HOV and Express 982)

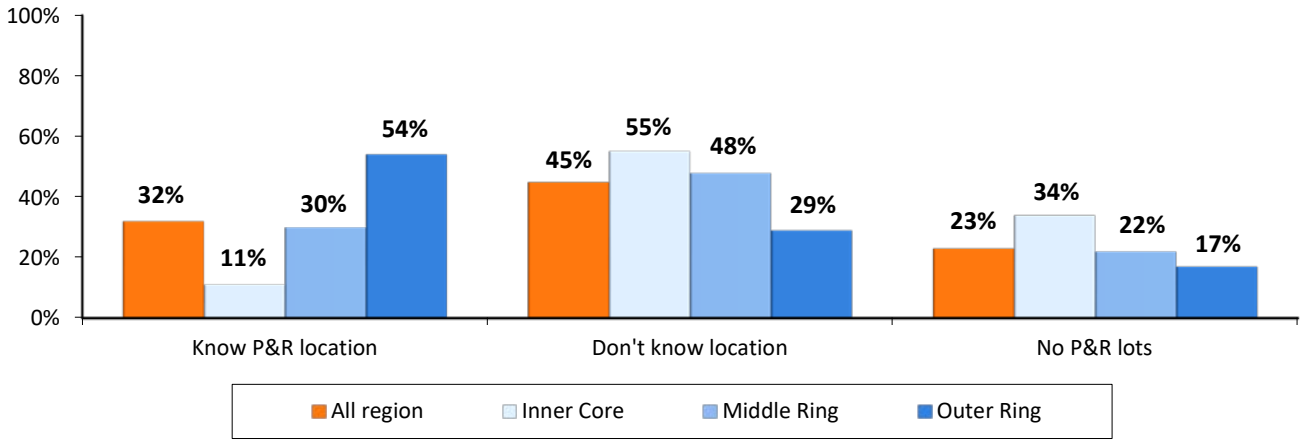


Park and Ride Lots

A large network of Park & Ride lots is available in the region, providing a convenient location for commuters who want to carpool or vanpool to meet their rideshare partners. Some Park & Ride lots also are served by feeder and express bus, so can facilitate use of transit for commuting. Many of the lots are located along congested commuting routes and/or routes with HOV/Express lane access, to encourage alternative mode use even more. Figure 54 depicts respondents' awareness of the locations of Park and Ride (P&R) lots along their route to work.

One-third (32%) of respondents across the region said they knew P&R lots were available on their commuting route and they knew the locations. Forty-five percent said they thought lots existed but did not know the locations. The remaining (23%) said there were no P&R lots along their route to work. Awareness/availability of lots varied substantially by home location. Only 11% of respondents who lived in the Inner Core knew of a P&R lot on their route, while 30% of respondents who lived in the Middle Ring and 54% of respondents in the Outer Ring knew of a lot along their route to work.

Figure 54
Awareness of Park & Ride Lots Along Route to Work By Home Area
(All region n = 7,649, Inner Core n = 1,934, Middle Ring n = 2,320, Outer Ring n = 3,393)



Twenty-three percent of those who knew Park and Ride lot locations had used these lots when commuting during the past year. These respondents represented 7% of total respondents in the survey, about the same as the shares of respondents who used P&R lots in 2016 (6%) and 2013 (7%).

P&R lot use was more common among respondents who lived in the Outer Ring (25%) and Middle Ring (23%) than for Inner Core residents (11%). But respondents who worked in the Inner Core used P&R lots at a much higher rate than did other respondents. Nearly four in ten (38%) Inner Core workers who knew of a lot used it in the past year, compared with just one in ten respondents who worked in the Middle Ring (11%) or Outer Ring (12%).

Attitudes Towards Transportation Options

Carpool/Vanpool Barriers

At the time of the survey, 6% of respondents traveled to work by carpool, casual carpool, or vanpool at least one day per week. Respondents who did not carpool or vanpool to work were asked why they did not use these modes. Table 26 lists respondents' barriers to rideshare use, grouped into three categories: service availability, service characteristics, and personal preferences/needs.

Table 26
Reasons for Not Using Carpool / Vanpool to Work

(Shading indicates statistically higher percentages for reasons; multiple responses permitted)

Reasons	2013 (n = 5,276)	2016 (n = 4,871)	2019 (n = 7,134)
Service Availability			
Don't know anyone to carpool/vanpool with	47%	43%	32%
Service Characteristics			
Carpool/vanpool partner could be unreliable/late	3%	3%	4%
Takes too much time	5%	6%	2%
Doesn't save time	3%	4%	1%
Personal Preferences/Needs			
Work schedule irregular	23%	18%	17%
Prefer to use bus / Metro / train	3%	5%	9%
Live close to work, can walk, use other mode	5%	6%	7%
Need car for emergencies/overtime/flexibility	---	10%	5%
Need car before/after work	7%	8%	5%
Need my car for work	8%	7%	5%
Don't like to ride with strangers, prefer to be alone	4%	6%	5%
Just not interested / not feasible or practical	2%	---	5%
Not convenient	---	2%	5%
Other	10%	8%	10%

The most common reason overall, cited by more than three in ten (32%) respondents, was one of availability; that they didn't know anyone with whom to carpool or vanpool. This result was despite the fact that Commuter Connections offers ridematching assistance across the region and a growing number of other services exist to assist commuters with finding a rideshare partner. Only a small share of respondents noted concerns or barriers related to service characteristics. The most common concern in this category was that carpooling and vanpooling partners could be unreliable, but this was noted by only 4% of respondents.

Respondents expressed greater barriers related to personal preferences/needs. The most common reason was an irregular schedule, cited by 17% of respondents. About one in ten (9%) said they preferred to use transit and 6% lived too close to work to make carpooling or vanpooling attractive. Respondents also mentioned needing to have a personal vehicle available for any of several reasons: for emergencies or flexibility (5%), for trips before or after work (5%), or to accomplish work responsibilities that required use of a vehicle (5%). Five percent did not want to ride with strangers or preferred to be alone during commuting, 5% said they just were not interested in carpooling or that it would not be feasible or practical, and 5% said carpooling would not be convenient.

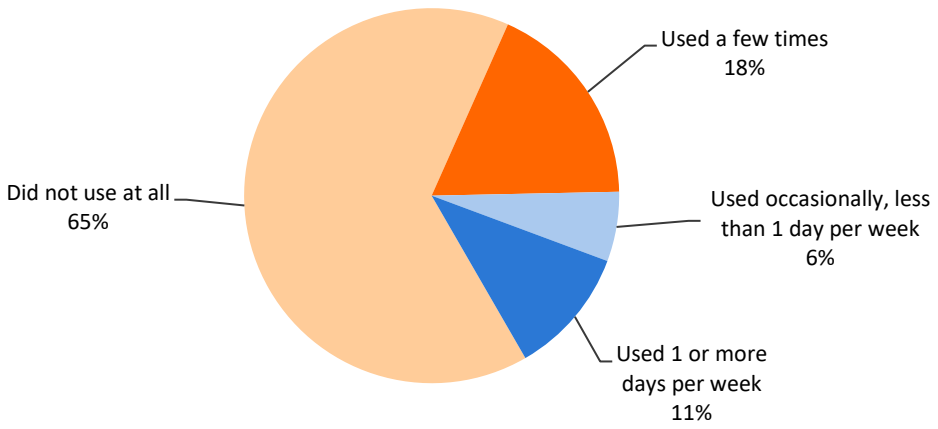
Table 26 also shows percentage responses to each reason from the 2013 and 2016 SOC surveys. The general categories of barriers were the same in the three surveys, but a few trends seem notable. The share of respondents who said they did not know anyone with whom to rideshare declined since 2013, when 47% of respondents mentioned this reason. Irregular work schedule and needing a car also were noted less often in 2019 than in the two previous surveys. It should be noted that respondents might consider these socially-acceptable reasons, which do not require commuters to express dislike for ridesharing or unwillingness to consider ridesharing. Conversely, in 2019, when the survey was self-administered by Internet, rather than using telephone interviewers, higher shares of respondents said they preferred to use transit, that ridesharing was not convenient, or that they were just not interested.

Transit Barriers

Previous and Future Transit Use Among Non-riders – At the time of the survey 29% of respondents said they were using either a bus or train to get to work at least one day per week. Respondents who did not use transit were asked why they did not use these modes, but they first were asked if they had used transit for their commute at any time in the past three years.

About one-third (35%) of respondents who were not riding transit to work at the time of the survey said they had done so within the past three years (Figure 55). Two in ten (18%) said they had used transit just a few times and 6% used transit occasionally, but less than one day per week. One in ten (10%) non-riders had been regular riders, taking transit to work at least one day per week.

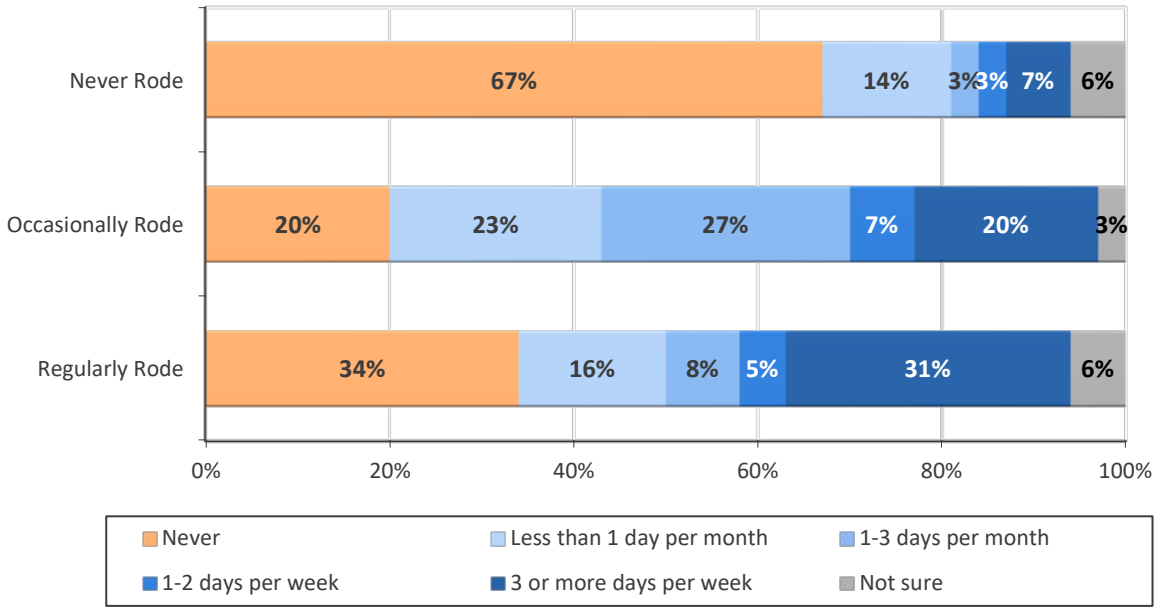
Figure 55
Transit Commuting in the Past Three Years – Non-transit Commuters
(n = 5,828)



These non-transit riders also were asked how often they might be able to use transit now to get to work, considering their work and personal schedules. Across all non-riders, 61% said they would not be able to use transit at all for commuting and two in ten said they would be able to use transit only infrequently, 14% less than one day per month and 5% one to three days per month. Fourteen percent said they would be able to commute by transit one or more days per week; 4% one or two days per week and 10% three or more days per week. The remaining 6% were unsure how often they could ride transit.

Figure 56 presents potential transit use frequencies by how often respondents rode transit to work in the past three years: never rode or rode just a few times, rode occasionally but less than one day per week, or rode regularly, one or more days per week. A large share of respondents who did not use transit at all in the past three years said they either would not be able to ride at all (67%) or could ride occasionally, but less than one day per week (17%). About one in ten (10%) said they could use transit at least one day per week. These results suggest these respondents either have work or personal situations that would make it infeasible for them to use transit or are unwilling to use transit for other reasons.

Figure 56
Possible Transit Commute Frequency Now by Previous Transit Use
(All non-riders n = 5,554, Never rode n = 4,926, Occasionally rode n = 345, Regularly rode n = 546)



Among previously regular riders, defined as respondents who previously commuted by transit at least one day per week, 36% could still commute by transit this often and another 24% could ride occasionally, but less than once per week. One-third (34%) said they could not ride at all, perhaps because their work or personal situation had changed from the time when they were regular riders.

The more interesting result is for potential use among respondents who were occasional riders in the past three years. Two in ten said they would not be able to commute by transit at all now and half (50%) said they could use transit at most occasionally, as they had done previously. But more than one-quarter (27%) said they would be able to ride at least one day per week, an increase over their past use.

Potential for regular future transit use (one or more days per week) was highest among some commute segments:

- Inner Core residents (26%), compared with Middle Ring (13%) and Outer Ring (8%) residents
- Inner Core workers (24%), compared with Middle Ring (10%) and Outer Ring (4%) workers
- Current alternative mode users (Bike/walk 36%, carpool 32%), compared with drive alone commuters (11%)
- Federal agency workers (19%), compared with non-profit (14%), private sector (12%), and state/local agency (7%) workers
- Respondents younger than 35 years (16%), compared with respondents 35 years or older (12%)

Reasons for Not Using Transit or to Stop Using Transit – Table 27 shows respondents' barriers to transit use, grouped in the same three reason categories presented for carpool/vanpool: service availability, service characteristics, and personal preferences/needs. The table shows responses for two sub-groups of non-riders: those who did not use transit in the past three years and those who used transit at least occasionally during that time period. Note that previous non-transit users were asked what keeps them from using transit now, while respondents who did use transit in the past were asked why they stopped riding transit.

Among respondents who had not used transit in the past three years, lack of availability was a primary reason for not using transit; 30% said they did not have bus service available and 24% said transit service was not available in either the home or work area at the time they needed it. Respondents also noted bus/train service characteristics as barriers to transit use, in particular that transit "takes too much time," mentioned by 35% of respondents. Small percentages of respondents noted issues with the need to transfer, transit cost, safety, and reliability. Common reasons in the personal preferences/needs category included needing a vehicle for work or before or after work, not wanting to ride with strangers, that the trip was too long, and having an irregular work schedule.

Past riders who stopped riding transit mentioned some similar transit barriers to those of the never-rode group. More than two in ten (23%) past rider respondents said they did not use transit because they had moved either their home or work location and no longer had transit service available. In the transit service characteristic category, past riders were more likely than never-rode respondents to cite the cost of transit (11%) and the unreliability of transit (9%) as reasons not to use transit. Past riders were less likely than were respondents who never used transit to mention travel time as an issue, but 18% of past riders still noted this as a reason.

There were also a few differences between past riders and never-rode respondents in the personal preferences/needs category. Past riders were less likely than never-rode respondents to mention needing car for work or before/after work, wanting to avoid riding with strangers, concern that the transit trip was too long, and having an irregular work schedule.

Table 27
Reasons for Not Using Transit to Work (Never Riders) or to Stop Using Transit (Past Riders)

Never riders n = 261, Past riders n = 873; multiple responses permitted)

Reasons for Not Using/Stop Using Transit	Never Riders Percentage	Past Rider Percentage
Service Availability *		
Transit not available/operating in home/work area	---	23%
No bus service available in home/work area	30%	---
No train service available in home/work area	24%	---
Service Characteristics		
Takes too much time	35%	18%
Have to transfer/too many transfers	5%	5%
Too expensive	3%	11%
Don't feel safe on bus/train or at stop/station	4%	3%
Bus/train could be unreliable/late	3%	9%
Buses/trains uncomfortable/crowded	1%	2%
Personal Preferences/Needs		
Need my car for work	12%	3%
Need car before/after work	10%	6%
Don't like to ride with strangers, prefer to be alone	7%	1%
Trip is too long/distance too far	6%	1%
Work schedule irregular	6%	---
Commute is too short/prefer to walk	3%	6%
Prefer to drive, want freedom / flexibility	3%	5%
Prefer another alternative mode	1%	5%
Health reasons	3%	2%
Other	6%	8%

* Respondents who said no train or bus service is available also were permitted to answer other reasons why they could not use bus or train

SECTION 6 TRANSPORTATION SATISFACTION AND BENEFITS OF ALTERNATIVE MODES

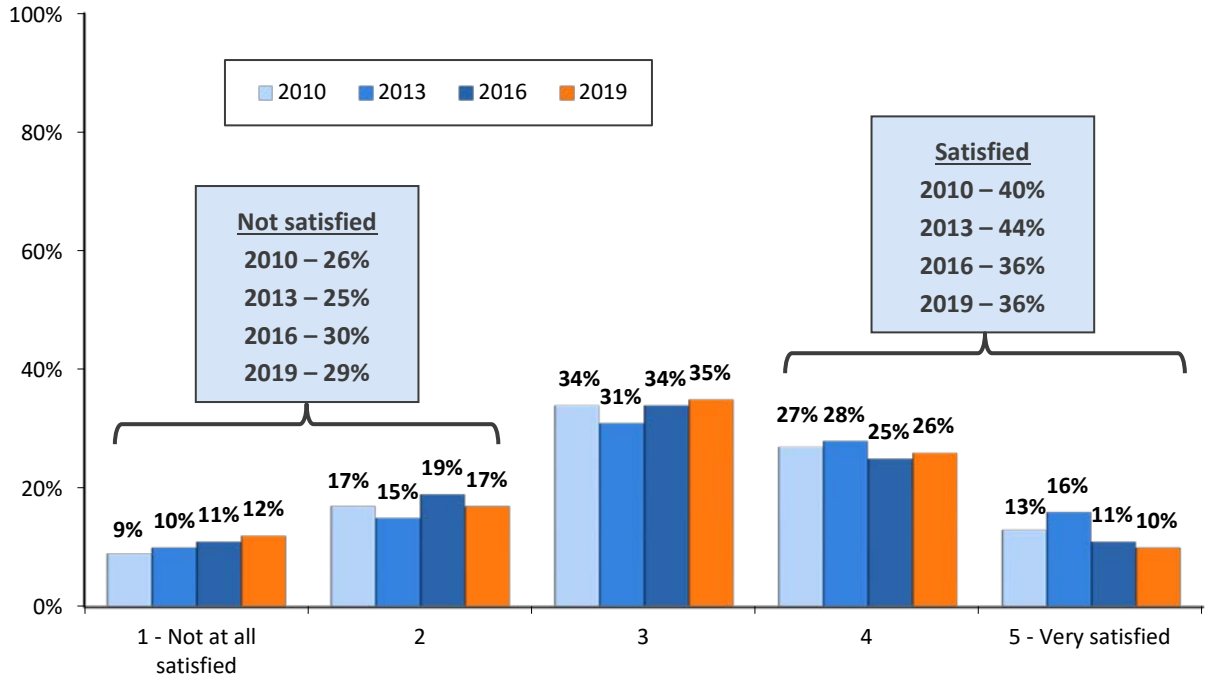
The 2019 SOC survey included a series of questions to explore residents' opinions on transportation needs in the Washington region. These questions focused on:

- Satisfaction with transportation in the region
- Benefits of using alternative modes for commuting

Transportation Satisfaction

When asked to rate their satisfaction with the transportation network in the Washington metro region, only 36% of respondents reported being satisfied, indicated by a rating of 4 or 5 (very satisfied) (Figure 57). Three in ten (29%) said they were not satisfied (rating of 1-not at all satisfied or 2). The 36% satisfaction rating in 2019 was the same as the rating in 2016 (36%), but commuters appear less satisfied than they were in 2013, when 44% of commuters were satisfied, or in 2010, when 40% of regional commuters rated their satisfaction as a 4 or 5.

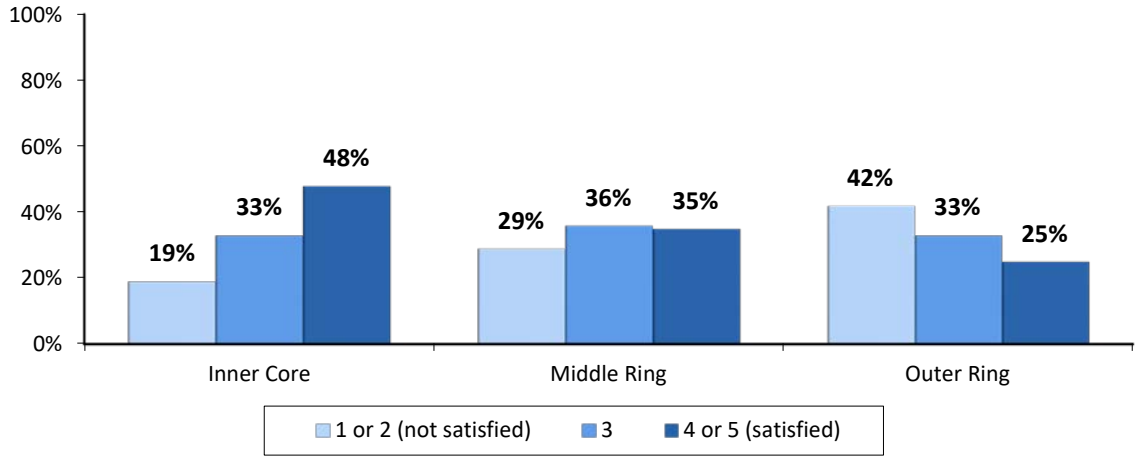
Figure 57
Ratings for Transportation Satisfaction – 2010 to 2019
(2010 n = 6,420, 2013 n = 5,486, 2016 n = 5,093, 2019 n = 7,358)



Transportation Satisfaction by Home Location

Respondents who lived in the Inner Core gave a higher rating for transportation satisfaction than did respondents in either the Middle Ring or Outer Ring (Figure 58). Nearly half (48%) of Inner Core respondents rated their satisfaction with transportation as a 4 or 5, compared with 35% of Middle Ring respondents and 25% of Outer Ring respondents. As noted in Figure 57, transportation satisfaction region-wide remained the same between 2016 and 2019, at 36%. Satisfaction ratings were also stable in each of the three home areas.

Figure 58
Ratings for Satisfaction with Regional Transportation By Home Area
(Inner Core n = 2,127, Middle Ring n = 2,231, Outer Ring n = 3,000)



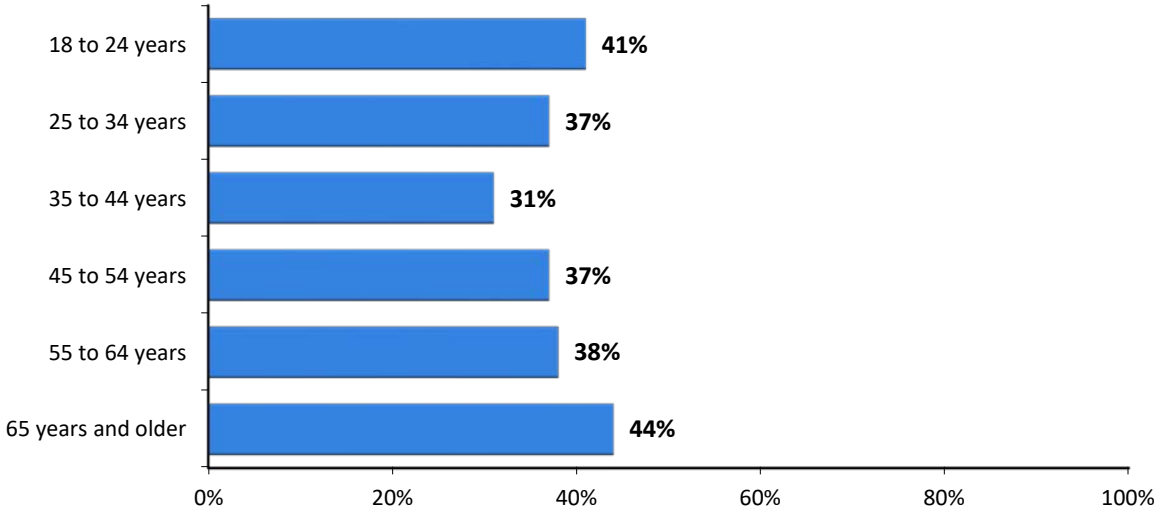
Transportation Satisfaction by Demographic Characteristics

The analysis of transportation satisfaction examined the results for all commuters region-wide, but also for various sub-segments of the commuting population. Results of these inquiries are presented below for:

- Demographic characteristics – age, income, sex, race/ethnicity, and employment status
- Travel characteristics – commute mode, commute travel time, and home proximity to transit

Age – Satisfaction with regional transportation was highest among the youngest respondents (18 to 24 years) and oldest respondents (65 years and older) (Figure 58). Respondents who were between 35 and 44 reported the lowest satisfaction.

Figure 59
Ratings for Transportation Satisfaction by Age
Percentage Rating Satisfaction as a 4 or 5 (Very satisfied)
(18 to 24 n = 191, 25 to 34 n = 1,410, 35 to 44 n = 1,648, 45 to 54 n = 1,817, 55 to 64 n = 1,667, 65 and older n = 542)



Sex, Race/Ethnicity, and Household Income –Table 28 presents transportation satisfaction results by three demographic characteristics: sex, race/ethnicity, and annual household income. Male and female respondents rated transportation satisfaction equally, but Non-Hispanic Black respondents (42% satisfied) were more satisfied than were either Hispanic (34%) or Non-Hispanic White respondents (35%). Satisfaction also varied by respondents' income, but the pattern was not definitive.

Table 28
Ratings for Transportation Satisfaction by Sex, Race/Ethnicity, and Income
Percentage Rating Satisfaction as a 4 or 5 (Very satisfied)
(Shaded percentages indicate statistically higher values)

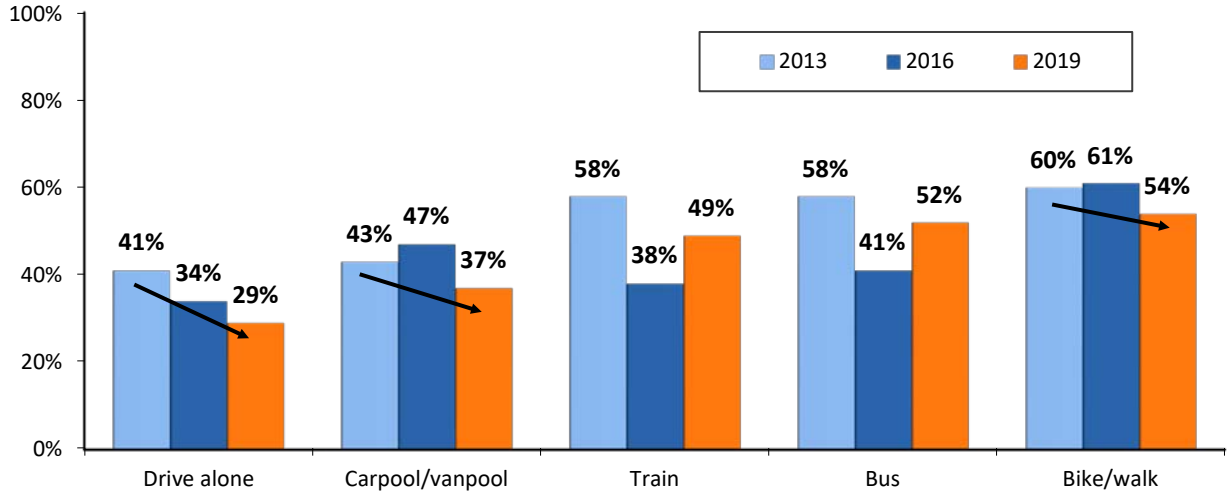
Demographic Characteristic	Percentage Satisfied
Sex	
Female (n = 3,404)	37%
Male (n = 3,554)	37%
Race/Ethnicity	
Hispanic (n = 444)	34%
Non-Hispanic White (n = 4,969)	35%
Non-Hispanic Black (n = 1,229)	42%
Income	
Less than $40,000 (n = 189)	48%
$40,000 to $99,999 (n = 1,458)	40%
$100,000 to $139,999 (n = 1,152)	34%
$140,000 to $199,999 (n = 1,278)	39%
$200,000 or more (n = 1,104)	36%

Transportation Satisfaction by Travel Characteristics

Transportation Satisfaction by Commute Mode – In 2019, respondents who drove alone gave the lowest ratings for transportation satisfaction; only 29% of drive alone commuters were satisfied (Figure 60). Carpool/vanpool commuters also gave relatively low ratings; about four in ten (37%) were satisfied. Transit riders reported higher satisfaction; 49% of train riders and 52% of bus riders rated the transportation system as a 4 or 5. Commuters who biked or walked to work also gave generally good ratings, with 54% of respondents in this mode group being satisfied. A common trait of these modes is that commuters do not drive, so can avoid the stress of congestion.

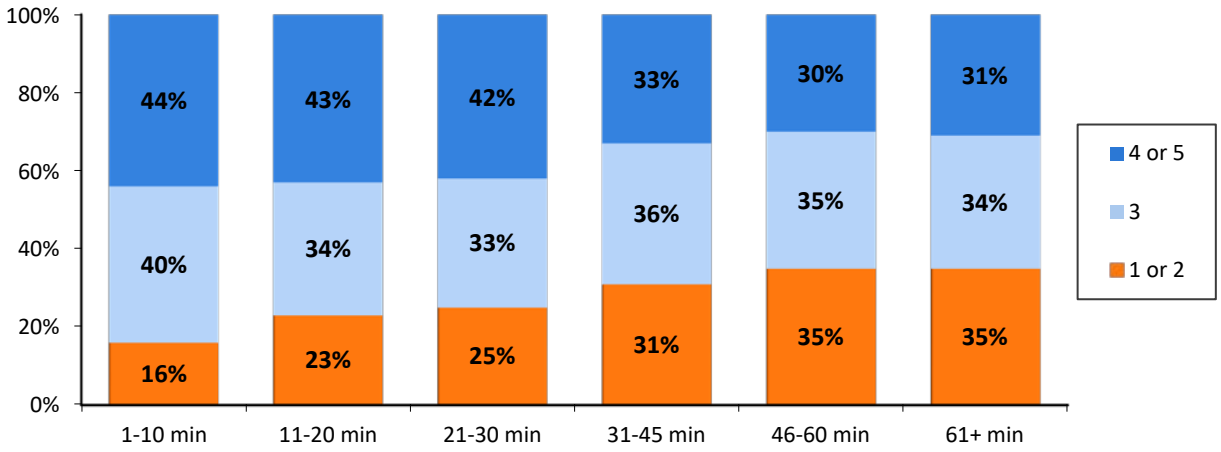
Figure 60 also presents satisfaction ratings by mode from the 2013 and 2016 SOC surveys. Satisfaction among commuter who drove alone and those who carpooled/vanpooled fell between 2013 and 2019. Bike and walk commuters also expressed slightly lower satisfaction in 2019 than in the two previous surveys, but the sample size for this mode was relatively small and the drop was not statistically significant. Train and bus riders both reported 11 percentage points higher satisfaction in 2019 than in 2016, but 2019 satisfaction still was lower than the 58% who were satisfied with these modes in 2013.

Figure 60
Ratings for Transportation Satisfaction By Primary Commute Mode
Percentage Rating Satisfaction as a 4 or 5 (Very satisfied)
(2013: Drive alone n = 3,873, Carpool/vanpool n = 352, Bus n = 296, Train n = 674, Bike/walk n = 148)
(2016: Drive alone n = 3,439, Carpool/vanpool n = 282, Bus n = 283, Train n = 687, Bike/walk n = 176)
(2019: Drive alone n = 4,532, Carpool/vanpool n = 362, Bus n = 583, Train n = 1,317, Bike/walk n = 300)



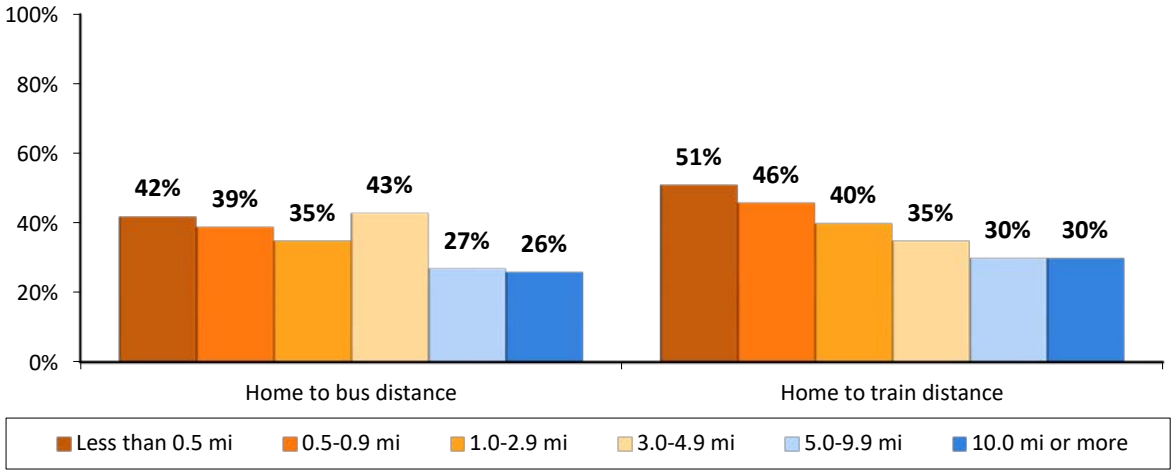
Transportation Satisfaction by Commute Travel Time – There was a clear pattern between increasing commute travel time and declining transportation satisfaction (Figure 61). Satisfaction fell as the length of the commute increased. Thirty minutes appeared to be a break point for travel time; about four in ten respondents who traveled 30 minutes or less gave a satisfaction rating of 4 or 5, while only about three in ten respondents who traveled longer than 30 minutes were satisfied. Increasing travel time showed an even strong pattern with transportation dissatisfaction. More than one-third (35%) of commuters who traveled longer than 45 minutes to work were not satisfied (rating of 1 or 2), compared with just 16% of commuters who traveled 10 minutes or less.

Figure 61
Ratings for Transportation Satisfaction (1 to 5 Scale) By Commute Travel Time (minutes)
(1-10 min n = 328, 11-20 min n = 1,089, 21-30 min n = 1,249, 31-45 min n = 1,795,
46-60 min n = 1,352, More than 60 min n = 1,440)



Transportation Satisfaction by Proximity to Transit – Transportation satisfaction also appeared related to a respondent's proximity to bus and train stops (Figure 62). Respondents who lived closer to transit gave higher marks for transportation satisfaction than did respondents who lived farther away. Over four in ten respondents who lived less than one mile from a bus stop were satisfied with transportation, compared with about one-quarter of respondents who lived 5.0 or more miles away. A similar pattern was evident for distance from a train station, except that nearly half (51%) of respondents who less than 0.5 miles from a train station rated transportation satisfaction as a 4 or 5.

Figure 62
Ratings for Transportation Satisfaction By Distance from Home to Bus Stop and Train Station (miles)
Percentage Rating Satisfaction as a 4 or 5 (Very satisfied)
(Bus stop Distance – Less than 0.5 mi n = 2,533, 0.5-0.9 mi n = 571, 1.0-2.9 mi n = 1,187, 3.0-4.9 mi n = 360, 5.0-9.9 mi n = 465, 10.0 mi or more n = 343)
(Train station Distance – Less than 0.5 mi n = 586, 0.5-0.9 mi n = 613, 1.0-2.9 mi n = 1,480, 3.0-4.9 mi n = 683, 5.0-9.9 mi n = 859, 10.0 mi or more n = 1,389)

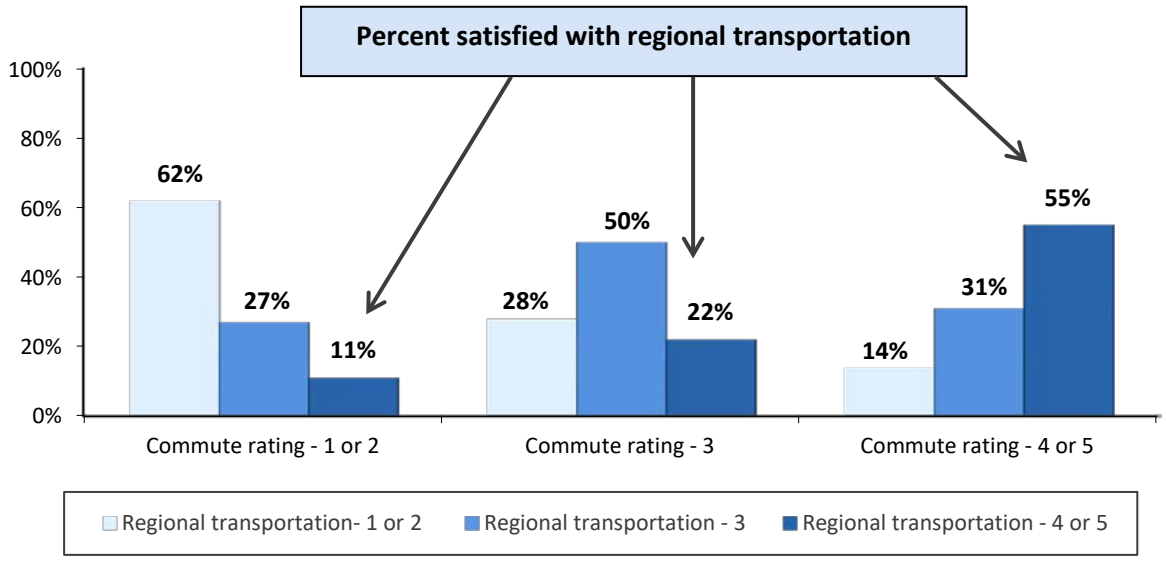


Transportation Satisfaction by Commute Satisfaction

As shown earlier in this report, about 50% of respondents region-wide said they were satisfied with their commute. But only 36% were satisfied with the regional transportation system. This implies that most commuters had found an acceptable commute option, but that many still felt the regional transportation was lacking, perhaps because they were considering both work and non-work travel in making their transportation satisfaction ratings.

However, as illustrated in Figure 63, respondents' satisfaction with their commute certainly appears related to their satisfaction with transportation in the region. Among respondents who rated their trip to work as 1 or 2 (not satisfied), 62% also were dissatisfied with the regional transportation system and only 11% were satisfied. Conversely, among respondents who rated their commute as a 4 or 5 (satisfied), only 14% were not satisfied and 55% reported being satisfied.

Figure 63
Satisfaction with Regional Transportation by Commute Satisfaction
(Commute Rating 1 or 2 n = 2,002, Commute Rating 3 n = 1,846, Commute Rating 4 or 5 n = 3,484)



Benefits of Alternative Mode Use

Several questions in the 2019 survey assessed commuters' opinions about the benefits generated by commuters' use of alternative modes. First, all respondents were asked, "What impacts or benefits does a community or region receive when people use alternative modes?" Then, respondents who used alternative modes were asked two questions about the personal benefits of alternative modes:

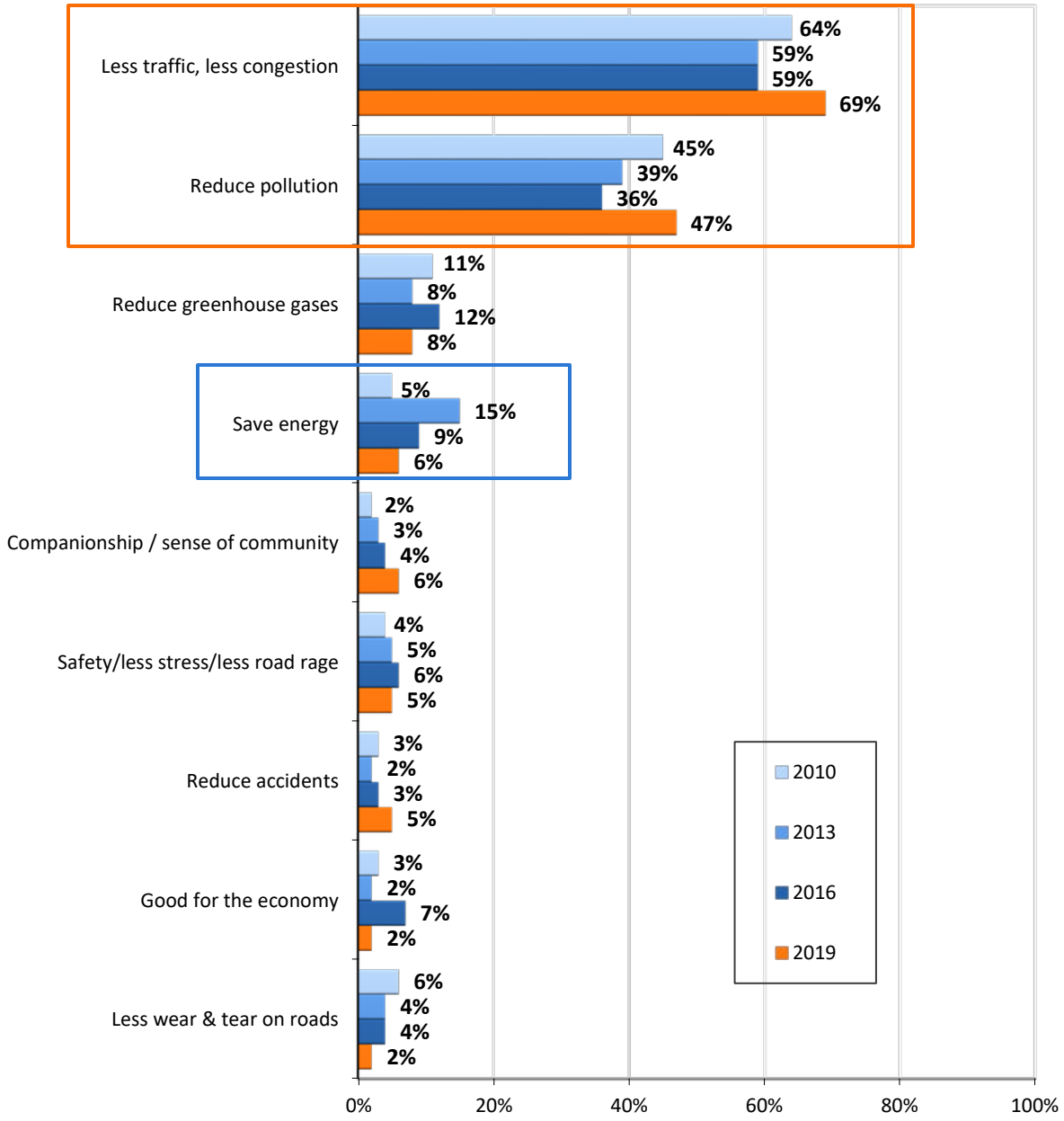
- You said you [bicycle, walk, carpool, vanpool, ride public transportation] to work some days. What benefits have you personally received from traveling to work this way?
- On days that you [carpool, vanpool, ride public transportation] to work, how often do you do you read or write work-related material or check work messages on the way to work?

Societal Benefits of Alternative Mode Use

When asked what benefits a region or community receives from use of alternative modes, 76% of respondents named at least one benefit, about the same as the 80% of respondents who cited one or more benefits in the 2016 SOC survey. In 2019, nearly seven in ten (69%) respondents said that use of alternative modes could reduce traffic congestion and 47% said it could reduce pollution or help the environment (Figure 64). Eight percent cited reduced greenhouse gases. Smaller percentages of respondents noted other benefits.

The figure also shows responses to this question from the 2010, 2013, and 2016 SOC surveys. Several notable differences were observed in 2019, compared with past survey results. In 2019, notably higher shares of respondents mentioned less traffic/congestion and reduced pollution as community benefits than was observed in 2016 and 2013. Conversely, fewer 2019 respondents mentioned saving energy as a benefit. Interestingly, the 2019 results for these benefits were quite similar to those from 2010.

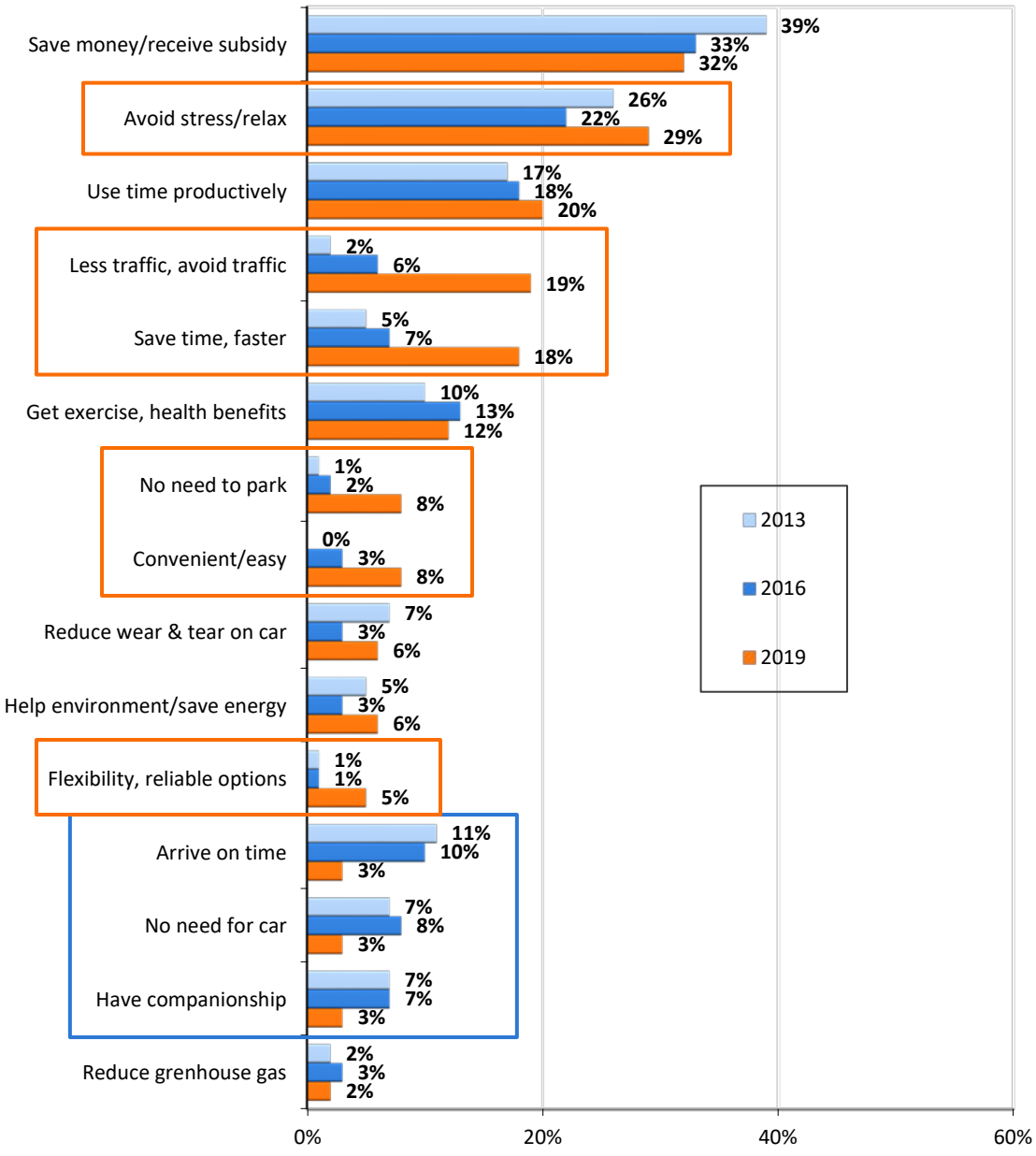
Figure 64
Regional/Community Benefits of Alternative Mode Use – 2010 to 2019
Asked of All Commuters
(2010 n = 6,050, 2013 n = 5,718, 2016 n = 5,239, 2019 n = 6,445)



Personal Benefits of Alternative Mode Use

When respondents who used alternative modes for their commute were asked what personal benefits they received from using these modes, 89% named at least one benefit, the same percentage as mentioned a personal benefit in 2016. Saving money or receiving a financial incentive that reduced their transportation cost topped the list of personal benefit; 32% of alternative mode users mentioned this benefit (Figure 65). About one in ten respondents mentioned other benefits with a financial implication: reduced wear and tear on a car (6%) and not needing a car (3%).

Figure 65
Personal Benefits of Alternative Mode Use – 2013, 2016, and 2019
Asked Only of Alternative Mode Users
(2013 n = 1,575, 2016 n = 1,555, 2019 n = 2,610)
(Scale extends only to 60% to highlight differences between years)



Respondents also cited benefits that have a connection to quality of life. Three in ten (29%) respondents said use of alternative modes helped them avoid stress or relax while commuting and two in ten (19%) said they could avoid traffic. Two in ten (20%) said they could use their travel time productively when they used an alternative mode and 18% said they could save time or travel more quickly when they used an alternative mode. About one in ten said they got exercise or health benefits (12%), arrived at work on time (10%), did not need to find parking (8%), or had a more convenient, easier time traveling (8%).

Figure 65 also presents responses to the personal benefits question from the SOC surveys in 2013 and 2016. Many benefits showed quite different results in 2019. As indicated by the orange boxes in the figure, in 2019, notably higher shares of respondents mentioned avoiding stress, avoiding traffic, saving time, avoiding the need to park, having a convenient, easy travel mode, and having a flexible and reliable travel option. By contrast, lower percentages of 2019 respondents mentioned arriving on time, not needing a car, and having companionship as benefits, when compared with the 2013 and 2016 survey results.

Differences in Personal Benefits by Alternative Mode – Saving money was a common personal benefit named by all alternative mode users, but particularly so for commuters who carpooled/vanpooled and those who rode a bus; nearly four in ten respondents in these mode groups named saving money as a benefit (Table 29). Saving time also was noted generally, but ridersharers noted this benefit at a much higher rate than other mode groups, presumably because they could use HOV or Express lanes. Respondents who primarily carpooled or vanpooled also reported having companionship during the commute and saving on gas. And ridersharers cited less wear and tear of personal vehicles, a benefit also mentioned by transit riders.

Table 29
Personal Benefits of Alternative Mode Use by Primary Alternative Mode
(Shaded percentages indicate statistically higher values for benefits)

Personal Benefit	Carpool/ Vanpool (n=342)	Bus (n=534)	Train (n=1,237)	Bike/Walk (n=292)
Save money	39%	35%	21%	23%
Save time, travel faster	38%	9%	15%	20%
Can use HOV lane	7%	0%	0%	0%
Have companionship during commute	9%	4%	1%	2%
Save gas, save energy	10%	5%	2%	1%
Less wear and tear on car	7%	6%	6%	1%
Use travel time productively	6%	17%	27%	3%
No need for a car	1%	3%	3%	1%
No need to park/look for parking	2%	10%	10%	2%
Receive financial benefit for mode use	1%	8%	8%	2%
Less traffic/congestion	8%	13%	26%	6%
Avoid stress, relax	13%	30%	31%	32%
Get exercise	0%	3%	6%	80%
Flexibility/always available	5%	4%	4%	11%
Arrive at work on time	3%	3%	2%	4%

Transit riders mentioned several benefits at higher rates than did other mode groups. One such benefit was using travel time productively; this was noted by few ridersharers and bike/walk commuters, who would have to give their attention to their travel. Other benefits named by transit riders included not needing a car, not needing to find parking, receiving a financial benefit for transit use, being able to avoid traffic, and being able to avoid stress and relax during the commute. Commuters who bicycled or walked to work also mentioned avoiding stress, but they overwhelmingly noted getting exercise; eight in ten bicycle and walk commuters noted the personal benefit. Bike/walk commuters also said their mode was “always available,” giving them travel flexibility.

Differences in Personal Benefits by Commute Distance (Minutes) and by Work Location – Some benefits were more often reported by short-distance or long-distance commuters or by respondents who worked in the Inner Core of the region. For example, commuters who traveled 20 minutes or less to work noted that using an alternative mode gave them travel flexibility and an opportunity to get exercise. Commuters who traveled longer distances were more likely to mention using travel time productively and avoiding traffic and stress. These results likely were influenced, however, by the modes that were common at each distance, such as the sizeable presence of bikers/walkers in the short commute time category and vanpoolers and train riders in the long commute time group.

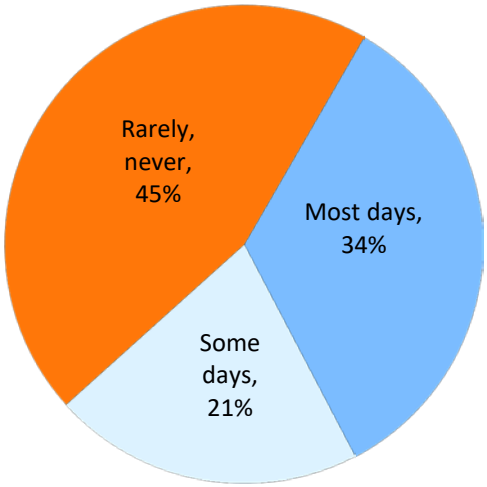
Respondents who worked in the Inner Core or Middle Ring areas were more likely to note using travel time productively, saving time, avoiding traffic congestions, and being able to relax during their commutes than were Outer Ring workers, but these benefits were likely influenced by both the modes used and travel time to each area, so were not solely due to work location. One benefit that was definitively related to location was the benefit of not needing to find parking. One in ten (9%) Inner Core workers mentioned not needing to find parking because they used and alternative mode, compared with 4% of Middle Ring respondents and 1% of Outer Ring respondents.

Productive Use of Personal Travel Time

The third question in this series about travel benefits explored the idea that commuters who use alternative modes can make productive use of their travel time. Commuters who carpooled, vanpooled, or rode transit to work were asked how often they read or wrote work-related material or checked work messages on the way to work. Having time to catch up on work tasks could make their time at the worksite more productive and less stressful. More than half of these commuters performed work-related tasks during the commute; 34% performed work-related tasks "most days" and 21% performed work-related tasks "some days" (Figure 66).

Conducting work-related business during the commute was more common among transit riders than carpoolers. Nearly six in ten (58%) train riders and 58% of bus riders said they perform work-related tasks during their commute, compared with 38% of carpoolers.

Figure 66
Frequency of Work-Related Tasks During Commute Time
Asked Only of Alternative Mode Users
(n = 2,483)



SECTION 7 AWARENESS AND IMPACT OF COMMUTE ADVERTISING

Commute Advertising Recall

The next set of questions in the survey inquired about respondents' awareness of commute information advertising. About 45% of all respondents said they had seen, heard, or read advertising about commuting in the six months prior to the survey. This was a lower percentage than was estimated in the 2016 (54%), 2013 (55%), 2010 (58%), and 2007 (51%) SOC surveys, but in 2019, nearly two in ten (18%) respondents said they didn't recall if they heard, saw, or read any commute advertising.

Advertising recall differed by respondents' personal characteristics and by their travel patterns. Advertising recall was highest among respondents who:

- Worked in the Inner Core – Half (49%) of Inner Core workers, compared with 43% of Middle Ring workers and 40% of Outer Ring workers.
- Used alternative modes to commute – Half of carpoolers/vanpoolers (52%) and transit riders (49%), compared with 43% of drive alone commuters.
- Were 55 year or older – Half (52%) of respondents who were 55 year or older, compared with 45% who were between 35 and 54 years and 41% who were younger than 35 years.
- Were Non-Hispanic White – Half (51%) of Non-Hispanic White respondents, compared with 42% of Non-Hispanic Black respondents and 41% of Hispanic respondents.
- Had Higher Household Incomes – Half (49%) of respondents with annual incomes of $100,000 or more, compared with 46% who had incomes less than $100,000.

Message Recall

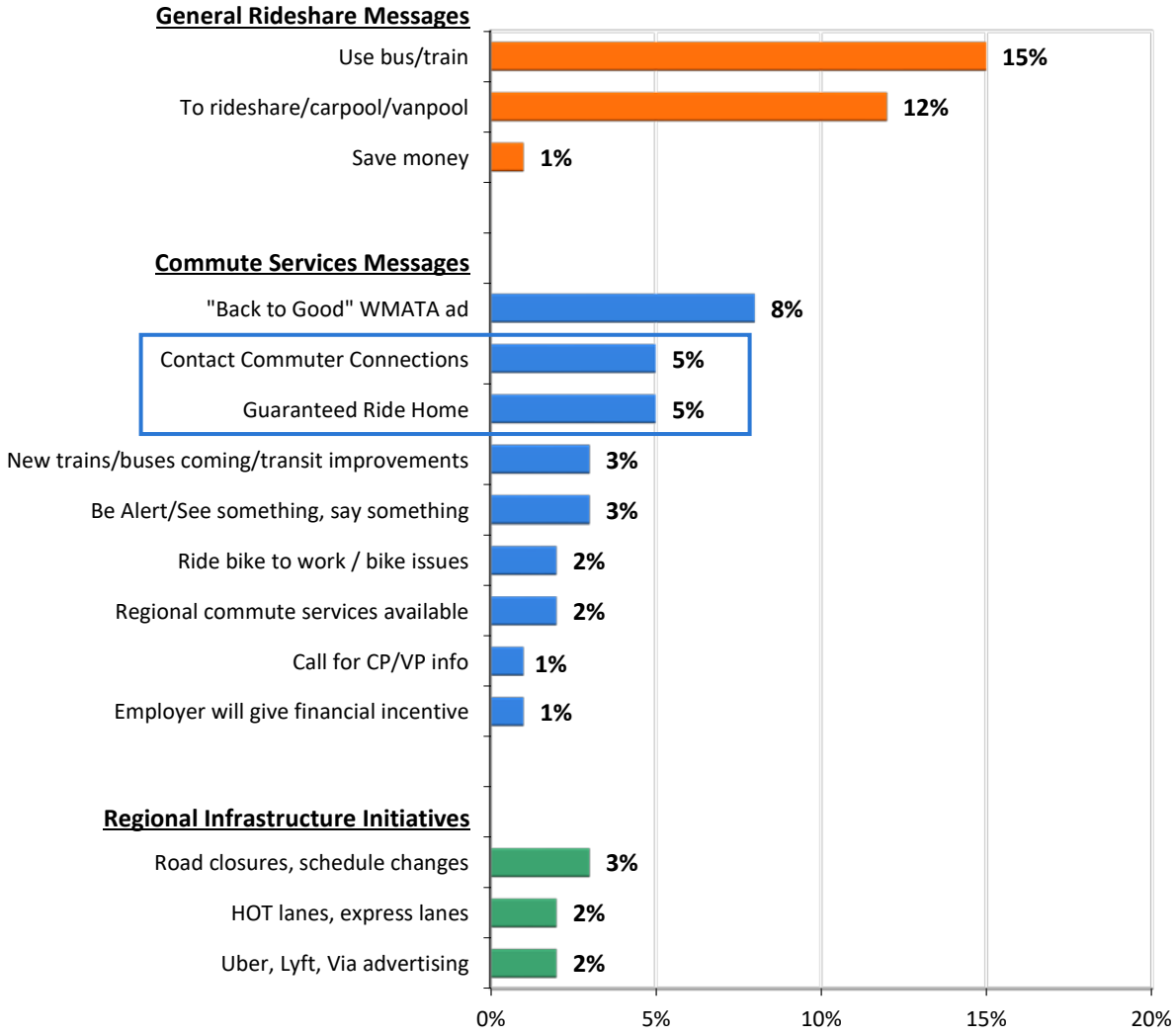
Respondents who recalled some advertising were then asked what messages they recalled. About six in ten (59%) could cite a specific message, slightly lower than the share who could recall a message in previous years (2016-67%, 2013-67%, 2010-70%, and 2007-65%). Figure 67 lists specific messages that were mentioned by respondents in the 2019 survey and the percentage who mentioned each response. Responses named by less than 2% of respondents are not shown. The messages are divided into three categories: general rideshare messages, commute services messages, and regional infrastructure initiatives.

General Commute Alternatives Messages – The top reason noted overall, was a general rideshare message, "use the bus, train, Metrorail," recalled by 15% of respondents. A close second was the general message of "rideshare or carpool or vanpool," cited by 12% of respondents.

Commute Program/Service Messages – The most common message recalled in the commute services category was for the WMATA "Back to Good" campaign associated with the SafeTrack track repair effort; 8% of respondents mentioned this message. Five percent of respondents mentioned "contact Commuter Connections," slightly less than the 7% who gave this response in 2016. Five percent of respondents mentioned Guaranteed Ride Home, about the same as the 6% who volunteered this response in 2016. Three percent of respondents recalled a message of new buses/trains coming to the region and/or a message about impending transit improvements. Another 3% cited WMATA's "See something, say something" message promoting transit safety awareness initiative.

Regional Infrastructure Initiatives – Small percentages of respondents mentioned messages related to regional infrastructure or services. Three percent mentioned ads for road closures or transit schedule changes related to road construction, 2% said they heard a message about the High Occupancy Toll (HOT) or Express lanes available on several Virginia roadways and 2% had heard an ad for Uber, Lyft, or Via ride-hailing services.

Figure 67
Commute Information/Advertising Messages Recalled
(Note: Scale extends only to 20% to highlight difference in responses)
(n = 3,874)



Recall of Advertising Sponsors

About half (49%) of respondents who could cite an advertising message said they remembered who sponsored the ad (Table 30). The Washington Metropolitan Area Transit Authority (WMATA, Metro) was named by 31% of respondents, an increase from the 23% who noted this sponsor in 2016. Commuter Connections or COG were named by 10%, slightly less than the 13% who gave this response in 2016. Three percent named Uber, Lyft, or Via ride-hailing companies as the sponsor of the ads and 2% named a state transportation agency in Virginia (VDOT, VDRPT), Maryland (MDOT, MTA), or the District of Columbia (DDOT).

Two percent named Arlington County Commuter Services, which provides commute services in Arlington, but also some services that are available in other parts of the region. Three percent named another county transportation or transit organization. Many other organizations also were named in 2019, but each was named by less than 1% of respondents.

Table 30
Recall of Advertising Sponsors
(n = 2,340)

Advertising Sponsor	Percentage
Metro, WMATA	31%
Commuter Connections, MWCOG	10%
Uber, Lyft ride-hailing companies	3%
State transportation agency (VDOT, MDOT, MTA, DDOT, DRPT)	2%
Arlington County Commuter Services	2%
County transit/transportation agency	3%
Don't remember, don't know	51%
Other *	8%

* Each response in the "Other category" mentioned by less than 1% of respondents.

Advertising Sources/Media

Table 31 presents the primary sources or media through which respondents heard, saw, or read commute advertising. The most common 2019 source was a sign on a bus or train, or at a bus stop or train station; fully half (49%) of respondents who recalled an ad said they saw it in one of these locations. The other top source was radio, named by 36% of respondents who recalled an ad.

Other common sources named in 2019 included television (19%), roadside billboard (16%), postcard received in the mail (10%), newspaper (8%) and work/employer (6%). Nearly two in ten mentioned a source related to the Internet; 5% mentioned seeing the ad on either the MWCOG or Commuter Connections website, 5% noted social media, 4% cited a smart phone or tablet as the source, and 3% said it was on website other than MWCOG/Commuter Connections.

Table 31 also shows sources or media named in previous SOC surveys. Four sources were named substantially more in 2019 than in 2016: sign on bus/train/station, roadside billboard, postcard in the mail, and social media all had statistically higher percentages in 2019. Roadside billboards continued a long-term trend of growth, while the substantial increase in transit-related signage likely reflects increased WMATA advertising following the SafeTrack track maintenance effort. One source, newspaper, fell as an advertisement source, following a trend that goes back to 2013.

Table 31
Advertising Sources/Media – 2007 to 2019

(Shaded percentages indicate statistically higher percentages between 2016 and 2019 for sources named; multiple responses permitted)

Advertising Source/Media	2007 (n=2,275)	2010 (n=2,756)	2013 (n=2,457)	2016 (n=2,341)	2019 (n=2,373)
Sign on bus/train, at bus stop/train station	20%	22%	25%	22%	49%
Radio	35%	40%	33%	34%	36%
Television	25%	24%	18%	21%	19%
Roadside billboard/ad	2%	5%	9%	10%	16%
Postcard in the mail	3%	3%	5%	4%	10%
Newspaper	22%	18%	20%	14%	8%
At work	5%	6%	5%	7%	6%
MWCOG/Commuter Connections website*	---	---	---	---	5%
Social media	---	---	---	2%	5%
Smart phone / Tablet	---	---	1%	3%	4%
Website/internet (other than MWCOG)*	2%	2%	2%	6%	3%
Other **	3%	4%	3%	5%	2%

* Prior to 2019, MWCOG/Commuter Connections website was not reported separately from other websites.

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

Commute Advertising Impact

Persuasiveness of Advertising Messages

The advertising appeared to have had an effect for some respondents. Two in ten (18%) respondents who had seen, heard, or read advertising said they were more likely to consider ridesharing or using public transportation after seeing or hearing the advertising. This was statistically lower than the percentages as noted this willingness in 2016 (25%), 2013 (25%) and 2010 (24%).

Persuasiveness of Messages by Commute Mode, Distance, and Time – The respondents who were most persuaded by the advertising were those who already used alternative modes. About 34% of bus riders, 20% of train riders, 22% of carpoolers/vanpoolers, and 19% of bike/walk commuters said they were more likely to consider using an alternative after hearing the ads, compared with 15% of respondents who drove alone. There did not seem to be any relationship with commute distance or time; commuters who traveled short distances and those who traveled long distances to work were about equally likely to say they were more willing to use alternative modes after hearing the ads.

Persuasiveness of Messages by Commute Ease and Satisfaction – An interesting result was that ad receptivity was highest among respondents who were satisfied with the regional transportation system and satisfied with their commutes. One-quarter (25%) of respondents who were satisfied with the regional transportation said they were more willing to consider alternative modes after hearing the ads, compared with only 9% of those who gave a 1 or 2 rating for transportation system satisfaction. Similarly, 20% of commuters who were satisfied with their current commutes said they were persuaded by the ads, compared with 12% of those who were not satisfied with their commutes.

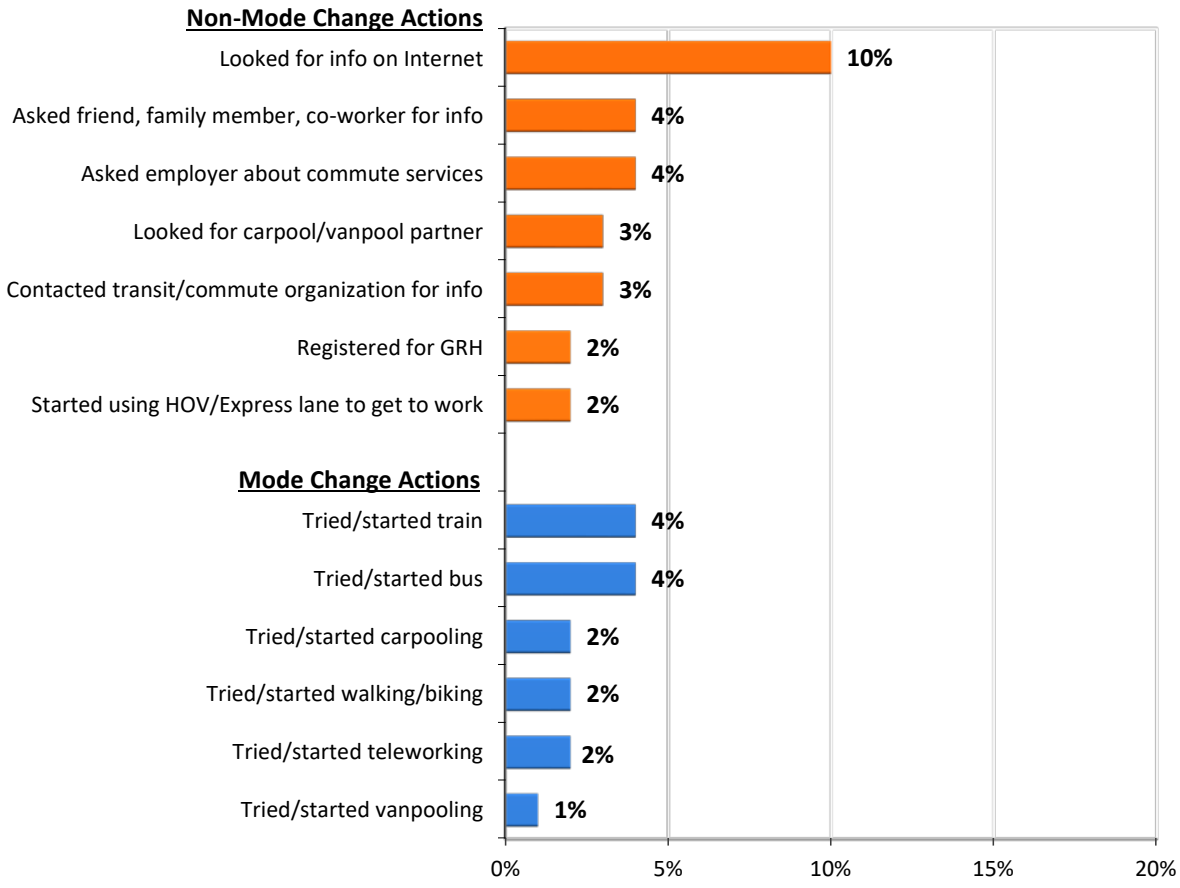
Perhaps counter-intuitively, commuters who reported that their commute was easier than last year were more likely to say they were persuaded by the ads than were commuters whose commutes had become more difficult; 22% of commuters with an easier commute were more willing to use alternative modes after hearing the ads, compared with 15% of commuters who had a more difficult commute and 18% of commuters whose commutes had not changed.

Commute Actions Taken After Hearing or Seeing Commute Advertising

Respondents who recalled advertising messages were asked if they had taken any actions to try to change how they commuted after seeing or hearing the ads. About two in ten of these respondents, equating to about 6% of all regional commuters, said they took one of the actions listed. In 2016, the percentage of regional commuters who reported taking an action was only 3%. Thus, despite the lower overall recall of commute advertising in 2019 than 2016 and the lower share of 2019 commuters who said they were more likely to consider using an alternative mode after hearing the ads, twice as many respondents actually took an action in 2019 than in 2016.

Most respondents who took an action sought more information on commuting options or services (Figure 68). Ten percent sought information or services for commuting through the Internet, 4% asked family member, friend, or co-worker for commute information, 4% asked their employers about commute services, 3% looked for a rideshare partner, and 3% sought information from a commute organization or a transit agency. Two percent said they registered for a regional or local Guaranteed Ride Home program and 2% started using an HOV lane to get to work.

Figure 68
Commute Change Actions Taken After Hearing/Seeing Commute Advertising
(Base is commuters who heard/saw advertising; n = 2,304; multiple responses permitted)



Ten percent of the respondents who recalled an ad message (203 respondents) said they tried or started using an alternative mode for commuting. Four percent started or tried riding a train and 4% started or tried riding a bus. Two percent of these respondents tried or started carpooling and 1% tried vanpooling. Two percent tried bicycling or walking and 2% tried or started teleworking. While these respondents equaled just 2.7% of all regional respondents, they represent more than 82,000 commuters region-wide.

Influence of Ads on Commute Change Actions – More than four in ten (43%) respondents who took an action to change their commute said the advertising they saw or heard encouraged the action. And 46% of respondents who made a mode change drove alone for their commute before they made the change. This suggests that the advertising, although having a small impact on mode shifts, acquainted drive alone commuters with other commuting opportunities and encouraged them to seek more information on these options.

SECTION 8 AWARENESS AND USE OF COMMUTER ASSISTANCE RESOURCES

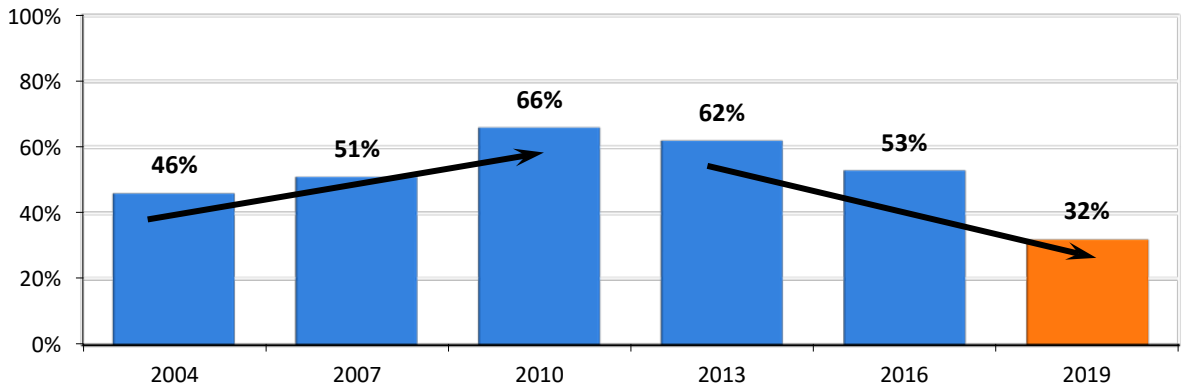
The survey also explored respondents' awareness of commute/travel assistance services available to commuters in the Washington metropolitan region through regional and local organizations. All respondents were asked an unprompted question about regionally-available telephone numbers or websites that provided commute information. They then were asked they had heard of Commuter Connections, the organization that provides services throughout the Washington metropolitan region. Respondents also were asked about local commute information organizations providing services in the areas where they lived and worked.

Awareness of Commuter Assistance Numbers/Websites

Respondents first were asked if they were aware of a telephone number or website they could use to obtain information on ridesharing, public transportation, HOV/Express lanes, and telework in the Washington region. One-third (32%) of respondents said they knew such a number existed. Fifteen percent said there was not such a phone number or website. More than half (53%) said they did not know if a phone number or web site existed.

Awareness of regional commute information resources has declined since 2010, when 66% of respondents knew of a number or website, but the drop between 2016 (53%) and 2019 (32%) was particularly steep (Figure 69).

Figure 69
Awareness of Regional Commute Information Resource
(2004 n = 7,200, 2007 n = 6,600, 2010 n = 6,629, 2013 n = 6,335, 2016 n = 5,903, 2019 n = 8,236)



Awareness by Population Sub-Group

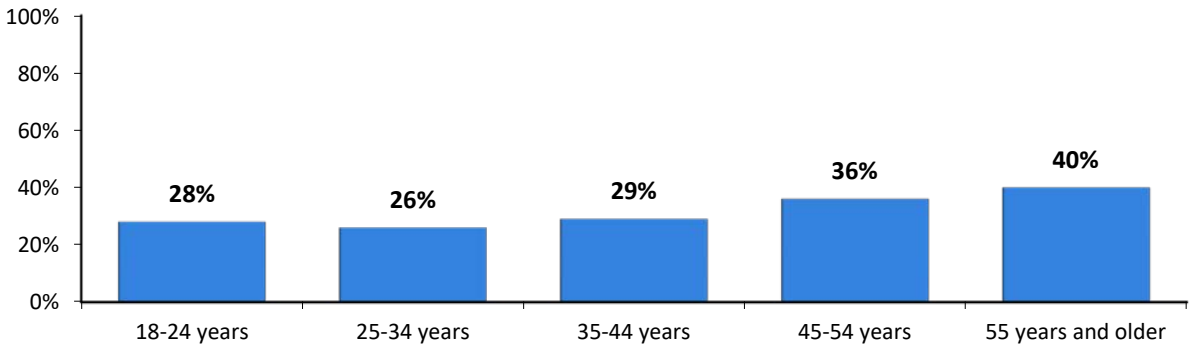
Awareness was substantially higher among respondents who said they saw or heard commute advertising in the past year (41%) than for respondents who did not recall advertising (21%). And commuters who had heard of Commuter Connections reported higher awareness of regional commute resources (44%) than did commuters who were not aware of Commuter Connections (21%). Employer worksite commute programs also appeared to boost awareness of regional commute services; 36% of respondents who said their employers offered commute services at the worksite knew of a regional commute information resources, compared with 26% of those who said no commute services were offered at work, suggesting some information that employers disseminate to commuters is related to regional services as well as to services offered directly by the employer.

Awareness by Commute Travel Time and Mode – There were no differences in awareness by either commuters' travel distance or travel time, but awareness generally was higher among commuters who used an alternative mode for commuting. Just three in ten (30%) drive alone commuters knew of a regional information number or website, compared with 42% of commuters who carpooled or vanpooled, 40% of those who rode a bus, and 36% who biked/walked to work. Train riders were no more likely than were drive alone commuters to be aware of regional commute information resources; only 31% knew of either a phone number or website.

Awareness by Home/Work Location and Demographics – Awareness of commute resources was slightly higher among respondents who lived in the Outer Ring area of the region; 36% of these respondents were aware of a regional resource, while only 32% of Inner Core and 31% of Middle Ring respondents said they knew of such a resource. But a higher share of Inner Core workers (34%) knew of resources, compared with 31% of Middle Ring and 28% of Outer Ring workers who had heard of a resource.

Men and women were equally aware of regional resources and there was no clear pattern of awareness with household income. But differences were noted for respondents of different race/ethnicity and age groups. Awareness was higher among Non-Hispanic White (36%) and Hispanic (32%) respondents than for Non-Hispanic Black (25%) respondents. Awareness also was higher among older respondents (Figure 70). Fewer than three in ten respondents who were younger than 45 years of age knew of a regional resource, compared with 36% who were between 45 and 54 years and 40% of respondents who were 45 or older.

Figure 70
Awareness of Regional Commute Information Resources by Respondent Age
(18-24 years n = 206, 25-34 years n = 1,527, 35-44 years n = 1,815, 45-54 years n = 2,016, 55 year and older n = 2,577)



Recall of Web Sites and Phone Numbers

Respondents who said there was a regional resource were asked if they had used the number and what was the number or website they used. About one-third of respondents who said a commute resource was available had used it. These commuters represented about 12% of all regional commuters (Figure 71).

Figure 71
Summary of Awareness and Use of Regional Commute Information Phone Number or Website
(n = 8,236)

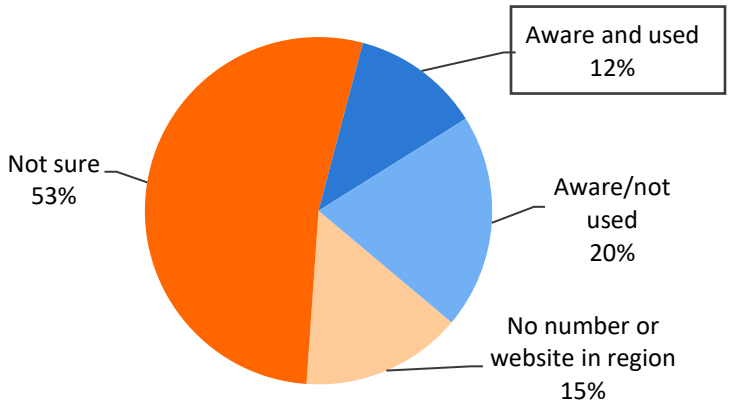


Table 32 summarizes the awareness/use of numbers/websites, as percentages of the regional commuter population. About 6% of respondents said they had used a specific WMATA phone number or website and 1% mentioned WMATA or Metro, but did not specify the number or site. Commuter Connections was second only to WMATA as a regional information source, named by about 1% of all respondents. Two county websites, for Loudoun County, VA and PRTC/OmniRide in Prince William County, VA, also were noted by about 0.3% of respondents. The same share of respondent (0.3%) mentioned a website for slug lines.

Table 32
Recall and Use of Regional Commuter Assistance Telephone Number or Website

(n = 8,236, multiple responses permitted for numbers/websites used)

Number or Web site	Percentage
Believe no phone number/web site exists	15%
Don't know if a phone number exists	53%
Aware of number/web site, didn't use it	20%
Aware of number/web site and used it	12%
Telephone numbers used:	
1-800-745-RIDE (7433) Commuter Connections	**0.2%**
202-637-7000 Metro, WMATA	0.7%
Web sites recalled:	
www.commuterconnections.org / .com	**0.7%**
wwww.wmata.com	5.4%
www.MetroOpensDoors.com	0.1%
WMATA website (unspecified)	0.3%
DC Metrobus app (unspecified)	0.3%
Loudoun County website	0.4%
PRTC/OmniRide.com website	0.3%
Slug line/slug websites (unspecified)	0.3%
Other	3.0%

Respondents named 23 additional organizations that they had contacted to obtain commuter information. Each of these was named by less than 0.3% of all respondents, but collectively they were used by 3% of the regional population. The high count of commute resources suggests commuters continue to seek commute information from a wide range of regional and local resources.

Commuters who had used one of the resources were more likely to have certain personal and travel characteristics. Use of regional information resources was highest among respondents who:

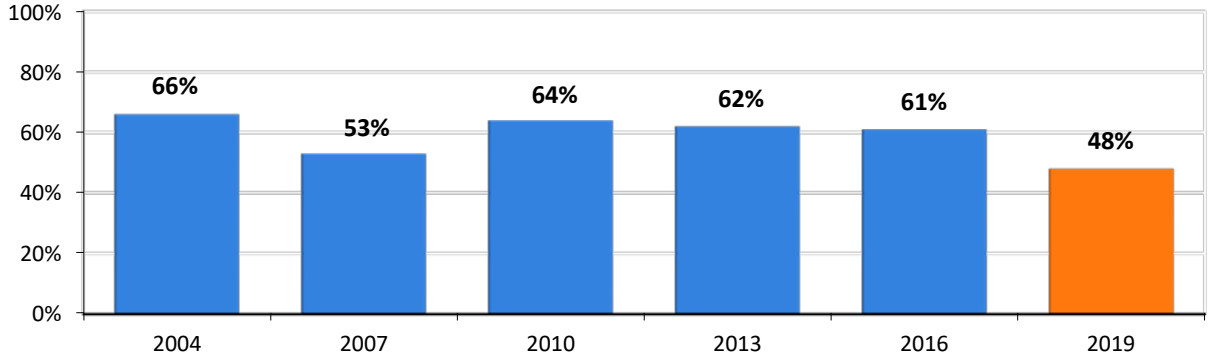
- Lived in the Outer Ring – Two in ten (21%) Outer Ring residents, compared with 16% of Middle Ring residents and 18% of Inner Core residents.
- Worked in the Inner Core – Two in ten (22%) Inner Core workers, compared with 14% of Middle Ring workers and 13% of Outer Ring workers.

- Used alternative modes to commute – More than one-third (35%) of bus riders, 29% of carpoolers/ vanpoolers, 24% of train riders, and 22% of bikers/walkers, compared with 12% of drive alone commuters.
- Were 45 years or older – Two in ten (20%) respondents who were 45 years or older, compared with 16% who were younger than 45 years.

Awareness and Use of Commuter Connections

The survey also explored respondents' awareness of the Commuter Connections program. As noted earlier, some commuters named Commuter Connections as a regional information source that they had used without being prompted with the organization's name. But when directly asked if they have heard of an organization in the Washington region called Commuter Connections, a total of 48% of commuters knew of the program (Figure 72). This represented a drop of 13 percentage points since 2016, when 61% were aware but still represents overall high awareness of the program.

Figure 72
Awareness of Commuter Connections (Prompted or Unprompted)
(2004 n = 7,200, 2007 n = 6,600, 2010 n = 6,629, 2013 n = 6,335, n = 5,903, 2019 n = 8,227)



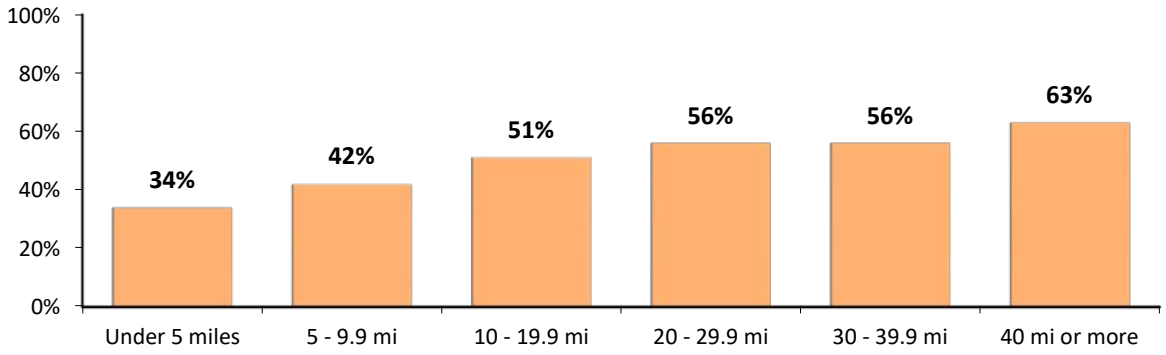
Awareness of Commuter Connections by Population Sub-Group

Awareness by Home/Work Location – Awareness of Commuter Connections was higher for commuters who lived farther from the center of the region; 59% of Outer Ring residents and 47% of Middle Ring residents had heard of Commuter Connections, while only 36% of Inner Core residents said they knew of the program. A similar but less striking difference in awareness was found for work location; 52% of Outer Ring workers knew of Commuter Connections, compared with 47% of Middle Ring and 47% of Inner Core workers.

Awareness by Commute Mode and Distance – Awareness of Commuter Connections differed by respondents' commute mode, but with a different pattern than was noted earlier for awareness of an unnamed "regional information resource." Commuters who carpooled/vanpooled were most likely to be aware, with 59% saying they knew of the program. But commuters who drove alone also had relatively high awareness, with 49% knowing of the program. By contrast, only 43% of bus riders, 40% of train riders, and 38% of bikers/walkers said they knew of Commuter Connections.

Awareness of Commuter Connections also showed a strong relationship to the distance a commuter traveled to work, with longer-distance commuters much more likely to know about the program than those whose commutes were short (Figure 83). Only 34% of respondents who traveled less than five miles to work knew of Commuter Connections, compared with more than half of respondents who traveled between 10 and 39.9 miles and 63% of respondents who commuted 40 miles or more.

Figure 73
Awareness of Commuter Connections By Commute Travel Distance (miles)
(Under 5 mi n=1,066, 5–9.9 mi n=1,351, 10–19.9 mi n=1,737, 20–29.9 mi n=1,331, 30-39.9 mi n=1,010, 40+ mi n=901)



Referral Sources to Commuter Connections Program

Table 33 displays the methods by which respondents reported learning about Commuter Connections in 2019, with comparisons to sources named in the five previous SOC surveys. In 2019, about three in ten (31%) respondents cited the radio as their source of information and 5% named television. Other common sources included employer (8%), mail/postcard/brochure (7%), sign on transit vehicle/stop (6%), Internet (5%), and word of mouth / referrals (5%). One-third (32%) of respondents who knew of Commuter Connections did not remember how they learned of the organization.

Table 33
Commuter Connections Program Referral Sources
(2004 n = 4,133, 2007 n = 3,614, 2010 n = 4,398, 2013 n = 4,046, 2016 n = 3,875, 2019 n = 4,484)

Information Source	2004	2007	2010	2013	2016	2019
Radio	56%	43%	48%	42%	41%	31%
Employer	2%	4%	4%	5%	6%	8%
Mail/postcard/brochure	1%	1%	1%	2%	4%	7%
Sign on transit vehicle, bus stop	N/A	2%	4%	3%	2%	6%
Television	19%	16%	15%	14%	13%	5%
Internet	2%	3%	4%	6%	5%	5%
Word of mouth, friend, co-worker	5%	8%	9%	10%	9%	5%
Sign/billboard	5%	7%	7%	7%	7%	3%
Newspaper ads/article	4%	7%	6%	6%	5%	1%
Don't know	10%	14%	11%	11%	10%	32%

As indicated by the year-to-year comparisons in Table 33, several referral sources, such as employers, mail/postcards, and Internet have gained importance since 2004, while traditional media sources of radio and television have declined. The shift from traditional media to digital media and targeted geographic and mode advertising is consistent with Commuter Connections' marketing plans, but traditional media still play a role in

raising respondents' awareness. More than six in ten (62%) respondents who recalled hearing or seeing commute advertising knew of Commuter Connections, while only 33% of respondents who did not recall advertising knew of the program.

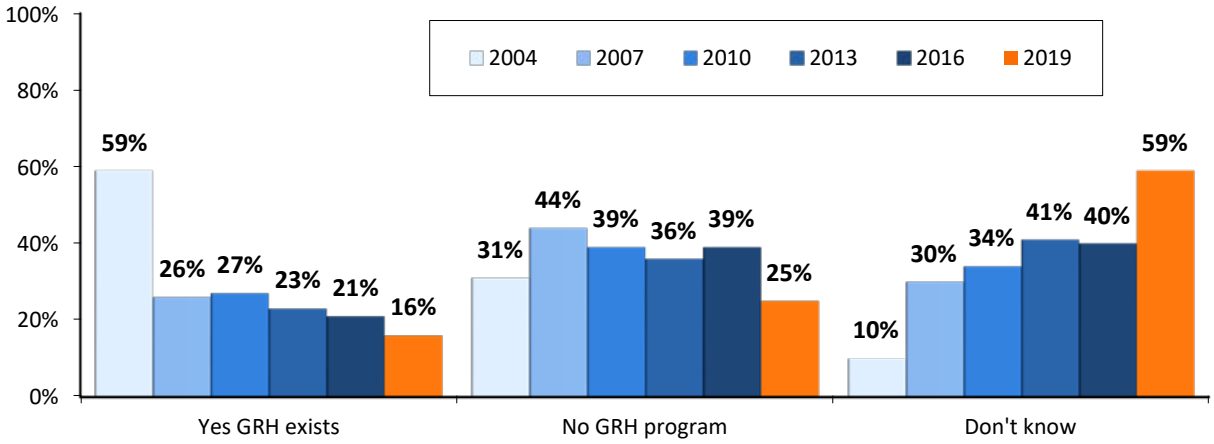
About one in ten (11%) of respondents who knew of Commuter Connections said they had contacted the program or visited a Commuter Connections or COG website in the past year. These respondents represented about 5% of all employed residents of the region. Current alternative mode user were most likely to have made contact. More than one-quarter (26%) of commuter rail riders, 21% of bus riders, 19% of carpoolers, and 15% of Metrorail riders had contacted Commuter Connections in the past year. By contrast, only 8% of drive alone commuters made a contact.

Awareness of Regional Guaranteed Ride Home (GRH)

Since 1997, Commuter Connections has offered Guaranteed Ride Home to eliminate alternative mode users' fear of being without transportation in the case of an emergency. The program provides free rides in a taxi or rental car in the event of an unexpected personal emergency or unscheduled overtime.

Survey respondents who did not work at home all the time were asked if they knew of a regional GRH program available for commuters who rideshare or use public transportation. Sixteen percent thought there was such a program, 25% said there was no such program, and the remaining 59% were unsure (Figure 74). Awareness of GRH has been steadily dropping since 2010, when 27% of respondents said they knew of a regional program. And awareness was dramatically lower than in 2004, when nearly six in ten respondents knew of the program.

Figure 74
Awareness of Regional GRH Program – 2004 to 2019
(2004 n = 6,867, 2007 n = 6,071, 2010 n = 6,084, 2013 n = 5,738, 2016 n = 5,266, 2019 n = 7,974)



Awareness of regional GRH was strongly tied to respondents' awareness of Commuter Connections; 27% of commuters who said they had heard of Commuter Connections knew a regional GRH program existed, compared with only 4% of commuters who did not know Commuter Connections.

Awareness of GRH by Commute Mode – Respondents who carpooled/vanpooled and those who rode a commuter train to work were more likely than were other commuters to know about GRH (Table 34). Almost three in ten ridesharers and 26% of commuter rail riders knew that a regional GRH program existed. And, with the exception of bikers/walkers, commuters who used an alternative mode were more aware of GRH than were commuter who drove alone; only 14% of drive alone commuters knew of GRH.

Table 34
Awareness of Regional GRH Program by Primary Commute Mode

Current Primary Mode	2004	2007	2010	2013	2016	2019
Drive alone (2019 n = 5,083)	61%	26%	27%	21%	19%	14%
Carpool/vanpool (2019 n = 380)	66%	29%	39%	29%	25%	29%
Commuter train (2019 n = 146)	55%	56%	67%	70%	57%	26%
Bus (2019 n = 588)	52%	22%	32%	34%	20%	20%
Bike/walk (2019 n = 302)	43%	15%	26%	16%	16%	17%
Metrorail (2019 n = 1,180)	55%	26%	31%	23%	23%	14%

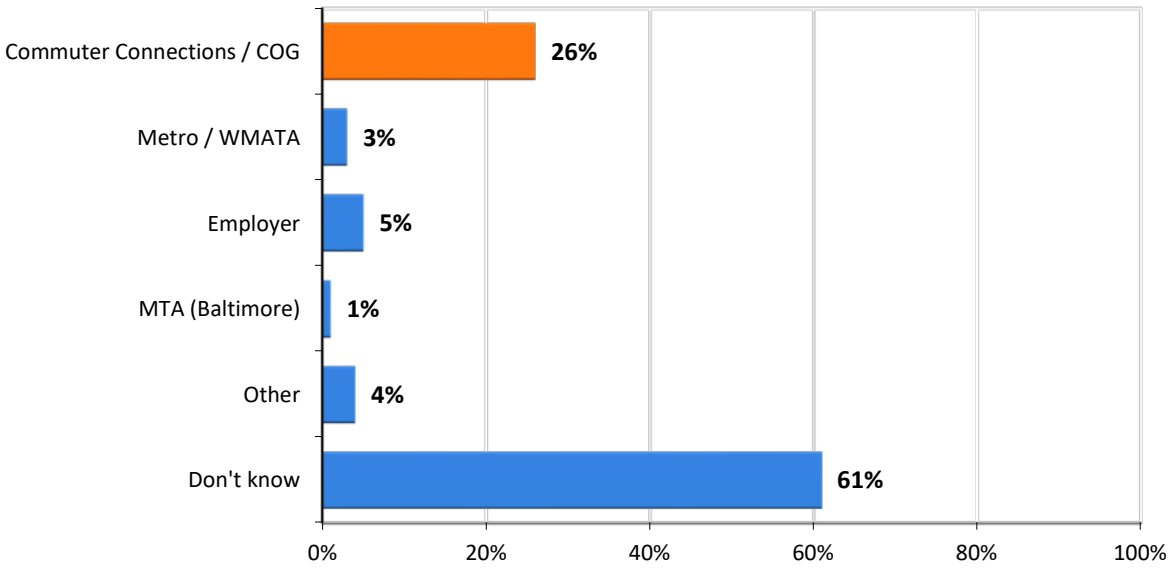
Awareness of GRH by Home and Work Location – Respondents who lived in the Outer Ring demonstrated higher awareness of GRH (20%) than did either Middle Ring (15%) or Inner Core (13%) residents (Table 35). An opposite pattern was clear for work location; respondents who worked in the Inner Core (16%) and Middle Ring (16%) areas were more likely to know about GRH than were respondents who worked in the Outer Ring (12%) sub-area.

Table 35
Awareness of Regional GRH Program by Home and Work Area

Location – Ring Designation	Percentage
Home Location	
Inner Core (n = 2,170)	13%
Middle Ring (n = 2,380)	15%
Outer Ring (n = 3,424)	20%
Work Location	
Inner Core (n = 3,804)	16%
Middle Ring (n = 2,781)	16%
Outer Ring (n = 1,330)	12%

GRH Program Sponsor – Respondents who said they believed there was a regional GRH program were asked who sponsored this service. Six in ten (61%) said they did not know who operated the program. One-quarter (25%) said Commuter Connections or COG/Council of Governments sponsored the program (Figure 75). This was lower than the 36% who mentioned Commuter Connections as the sponsor in the 2016 SOC survey. Small shares of respondents mentioned other sponsors.

Figure 75
Awareness of Who Sponsored Regional GRH Program
Of Respondents who said a Regional GRH Program Existed
(n = 1,500)



Awareness and Use of Local Commuter Assistance Programs

Many of the commute services offered in the Washington region are promoted, supported, or administered by local commute program organizations. Ten organizations operate as program partners with Commuter Connections, each serving a separate county or independent city. To test awareness and use of these programs, respondents who lived in an organization's service area were asked if they had heard of the organization and if they had used any services of the program. Commuters who worked in different jurisdictions than where they lived also were asked about the organization in their work area.

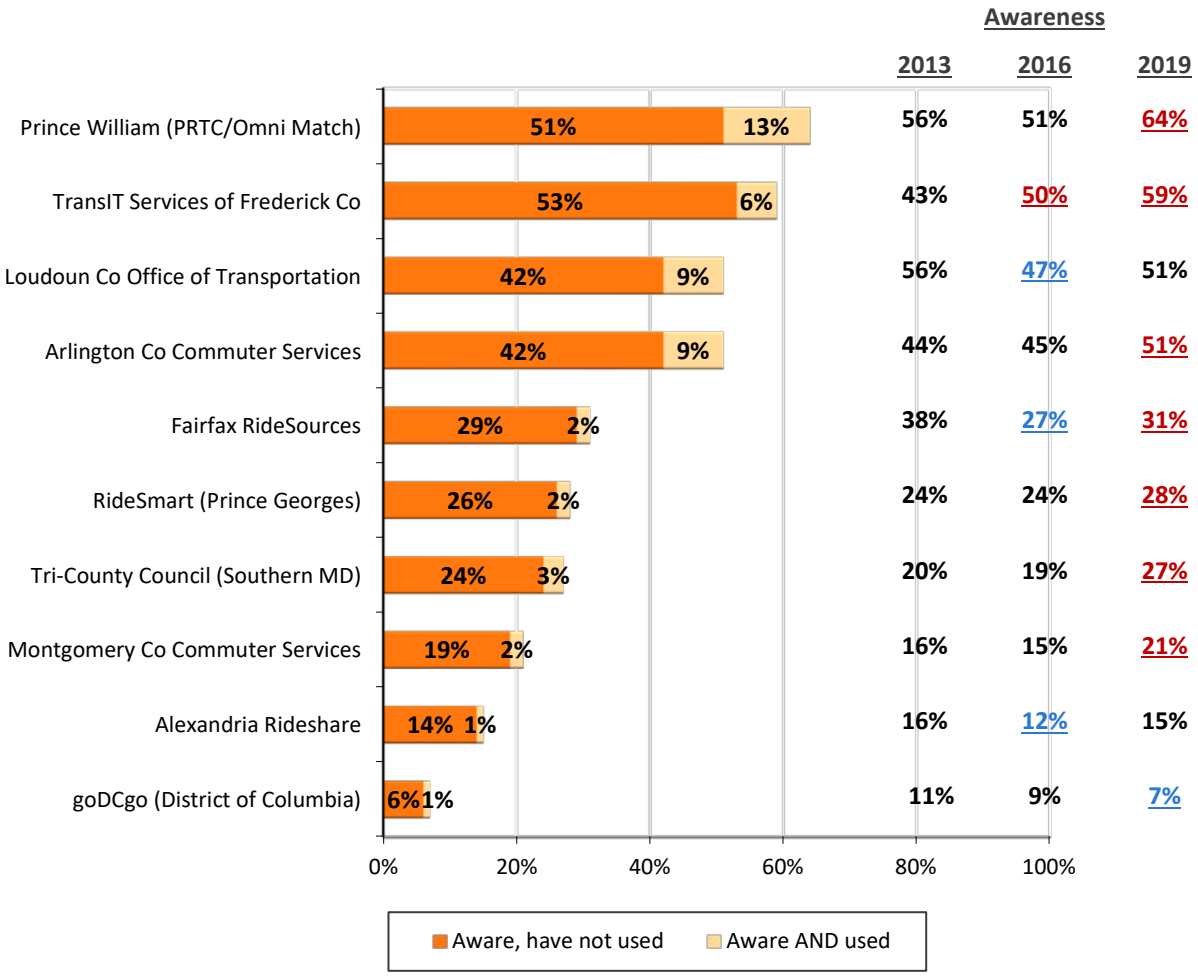
Figure 76 presents the percentage of respondents who said they had heard of each of the ten organizations, when prompted with the organization's name. Awareness of these programs ranged from 7% to 64% of respondents who were asked about the organization. Four of ten programs were known to at least half of the target area respondents and three other programs were known to about three in ten target area respondents.

One notable and positive finding is that seven programs recorded higher awareness in 2019 than in 2016. Two programs, PRTC/OmniMatch and TransIT Services of Frederick County had particularly high increases, 13 percentage points and nine percentage points, respectively. Awareness declined slightly for one program, goDCgo. Two programs, TransIT Services of Frederick County, Tri-County Council in Southern Maryland, and Fairfax RideSources, had 2019 awareness levels approximately the same as in 2016.

Respondents who knew of a local organization were asked if they had contacted it. Figure 76 also shows these results. Use ranged from 1% to 13% of respondents who lived or worked in the service area. Thirteen percent of respondents who lived or worked in the PRTC/Omni Match area had contacted this organization. Programs in Loudoun County (9%), Arlington County (9%), and Frederick County (6%) also had high use rates.

Figure 76
Heard of/Used Local Jurisdiction Commute Assistance Program

(2019: Prince William n = 769; Frederick n = 711, Loudoun n = 760, Arlington n = 1,220, Fairfax n = 1,534, Prince George's n = 1,316, Southern Maryland n = 1,443; Montgomery n = 1,330, Alexandria n = 908, District of Columbia n = 2,845)
(Red highlighting for 2016 and 2019 awareness totals denotes statistically higher percentages from the previous year; blue highlighting indicates statistically lower percentages from the previous year)



With the exception of Arlington County Commuter Services, both awareness and use were generally higher for programs in outer jurisdictions (Frederick, Loudoun, and Prince William), a pattern that has held since 2007, when the question was added to the SOC survey. The relationship to the location in the region is likely because outer jurisdiction commuters encounter more congestion in their travel and have longer commute times and distances, which would encourage them to seek options for travel to work.

Use also was higher for programs that are strongly associated with transit agencies (Frederick, Loudoun, Prince William, and Arlington). This connection might be due to higher visibility of the services and/or to the broader range of services that these programs offer. In the other jurisdictions, the commuter information programs are less integrated with the organizations that provide transit service.

It also is important to note that both name recognition and service use for any of these programs is complicated by name changes for some programs in past years, as well as by the interwoven nature of these programs with Commuter Connections. For many years, all of the programs have been jointly branded with Commuter

Connections, with the majority of commute program advertising being disseminated through regional “mass marketing” umbrella campaigns administered by Commuter Connections. Few of the local programs conduct commuter level outreach with brand name recognition as a goal. It is not surprising that awareness of specific program names was low in some areas.

Additionally, several key services that the programs promote (e.g., regional rideshare matching, Guaranteed Ride Home, Bike-to-Work Day), are publicly administered by and branded as Commuter Connections’ programs. So, while each of the local programs offers independently-sponsored services, some of their most visible services would be most associated with Commuter Connections.

SECTION 9 EMPLOYER-PROVIDED COMMUTER ASSISTANCE SERVICES

The SOC survey also inquired about commute assistance services and benefits that might be offered to employees at their worksites, either by employers or a building management company. Respondents were asked about two types of services:

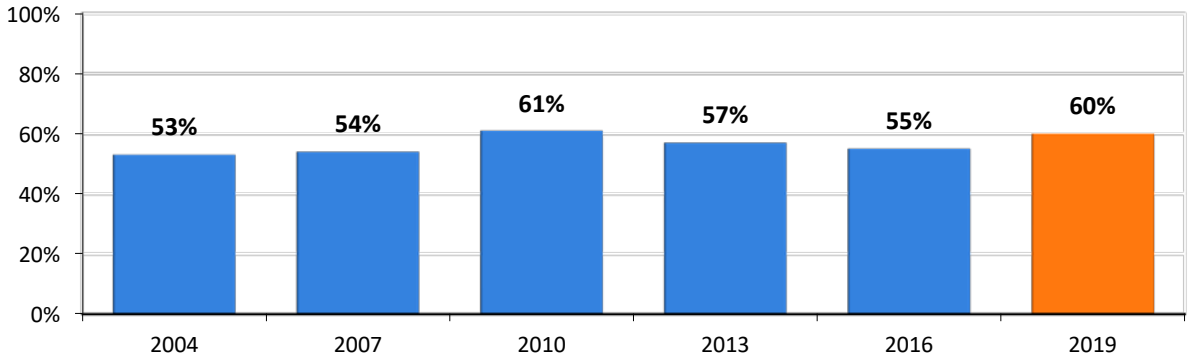
- Alternative mode support benefits and services
- Parking facilities and services

This section presents results regarding respondents' availability and use of these services in 2019. Results also are presented for some questions from previous SOC surveys.

Alternative Mode Benefits/Services

Six in ten (60%) respondents said their employers offered one or more commuter benefits or services (Figure 77). This was a slight increase over the rates for most past SOC surveys and nearly meeting the 61% rate recorded in 2010. This suggests that commute service cut-backs made by employers during the economic recession years of 2013 and 2016 have been reversed. Note also that these percentages represent employees' perceptions or awareness of service availability. They could under-represent the true availability of services if employees were unaware of some services that actually were offered.

Figure 77
Employee Reports Access to any Worksite Benefits/Services – 2004 to 2019
(2004 n = 6,866, 2007 n = 6,071, 2010 n = 5,899, 2013 n = 5,524, 2016 n = 5,086, 2019 n = 7,991)

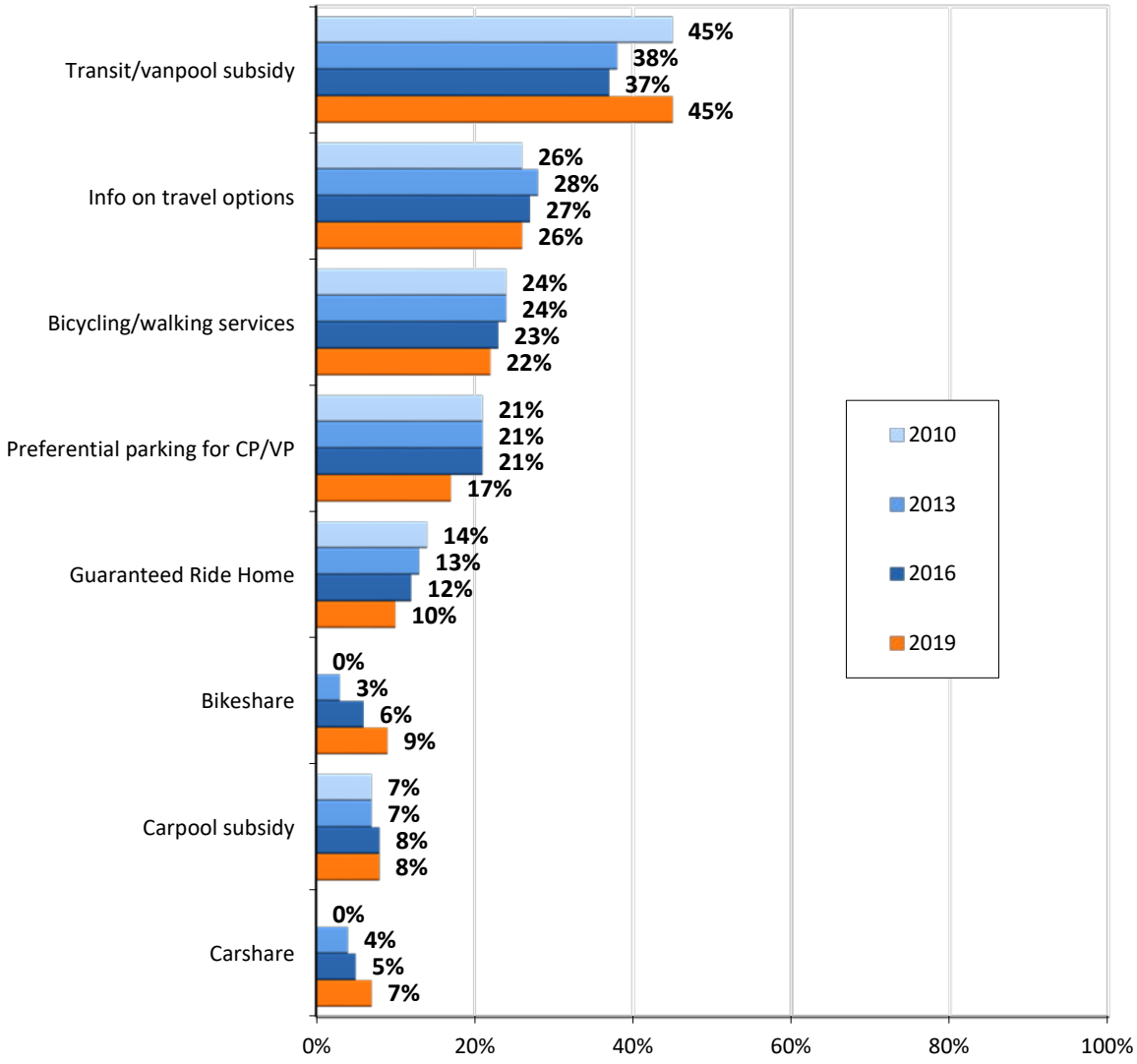


Individual Benefits/Services Offered

The percentages for individual commute services offered are displayed in Figure 78. Thirty-seven percent of respondents said their employers offered one or two of these services and 22% said their employers offered three or more services.

The most commonly offered services were SmarTrip/other subsidies for transit or vanpool, available to 45% of respondents, and information on commuter transportation options, available to 26% of respondents. Two in ten (22%) respondents said their employer offered services for bikers and walkers and 17% said preferential parking was offered to carpools and vanpools. One in ten (10%) said their employer offered GRH. Carpool subsidies were mentioned by about 8% of employees. Two vehicle-sharing services, bikeshare membership and carshare membership, were mentioned by 9% and 7% of respondents, respectively.

Figure 78
Alternative Mode Benefits/Services Available at Worksites – 2010 to 2019
(2010 n = 5,899, 2013 n = 5,524, 2016 n = 5,086, 2019 n = 7,991)

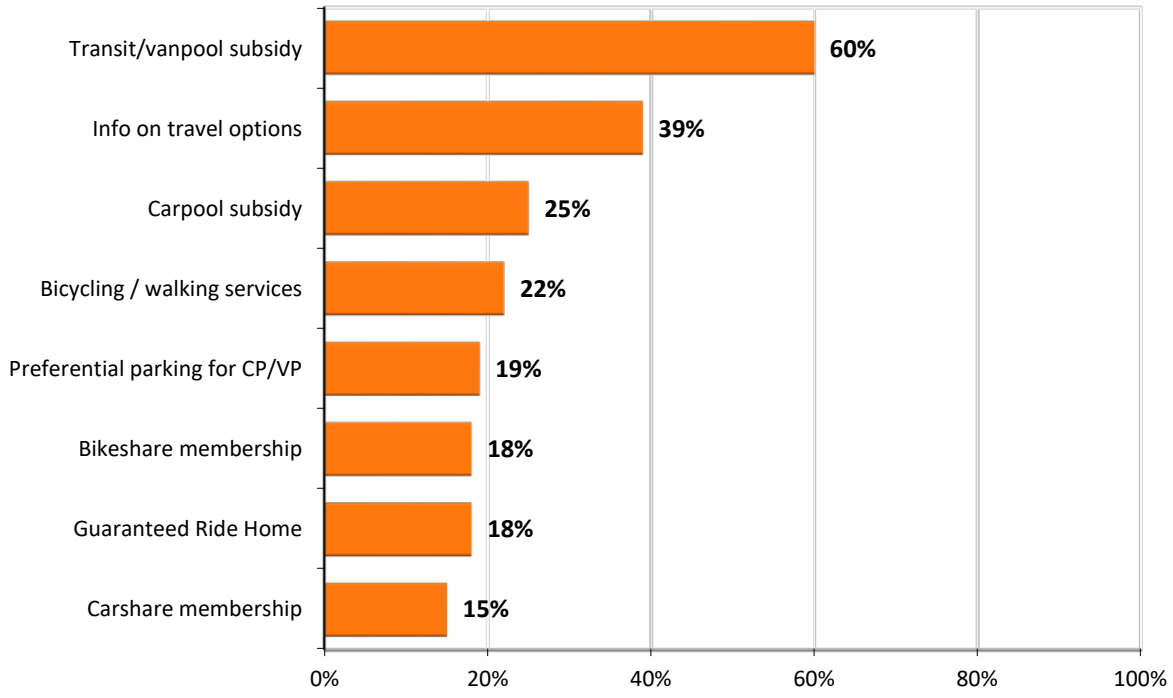


Availability of most services was not significantly different in 2019 than in past SOC survey years. However, access to transit/vanpool subsidies increased substantially between 2016 and 2019, reversing a declining trend noted in 2013 and 2016. As this service can represent a sizeable cost commitment for employer commute programs, it reinforces the likelihood that employers cut back on commute assistance services during the recession to save money and have now restarted some elements of the program. Availability of carshare and bikeshare, two services added to the SOC questionnaire in 2013, continued to grow. Availability of employer-sponsored GRH has shown a slight, but consistent, decline since 2010. Availability of preferential parking for carpools and vanpools also fell between 2016 and 2019, from a level that had been consistent since 2010.

Respondents whose employers offered incentives/support services were asked if they had ever used these services. Overall, 57% of respondents who said commute services were available had used a service. This percentage represented 34% of all workers who were not self-employed.

The most commonly used benefit or service was transit or vanpool subsidies, used by 60% of respondents whose employers offered this service (Figure 79). Four in ten (39%) respondents who had access to commute information had used it and carpool subsidy was used by 25% who said it was available. About two in ten respondents whose employers offered bicycling or walking services (22%), preferential parking (19%), bikeshare membership (18%), and Guaranteed Ride Home (18%) had used these services. Fifteen percent of respondents had used a carshare membership when it was offered.

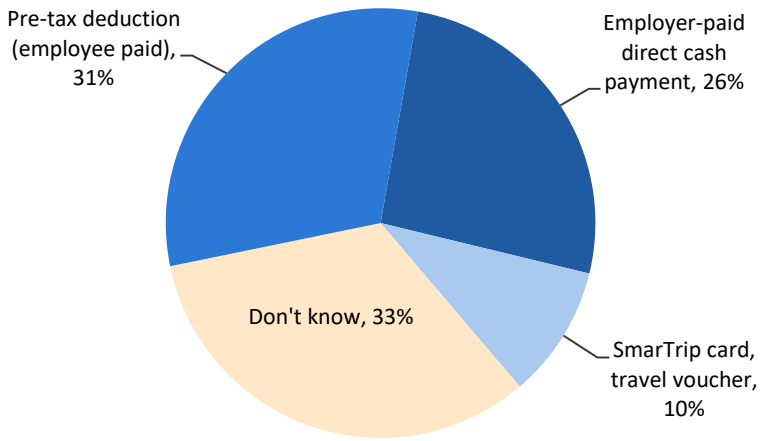
Figure 79
Use of Employer-Provided Benefits/Services
Of Employees Who had Access to Services
(Transit/vanpool subsidy n = 1,962, Information on travel options n = 1,425, Carpool subsidy n = 407, Bicycling / walking services n = 1,284, Preferential parking n = 1,078, Bikeshare membership n = 291, GRH n = 643, Carshare membership n = 226)



Form of Transit Financial Benefits – As indicated above, transit/vanpool financial benefits were both available to and used by a large share of respondents. Respondents who said their employer offered this benefit were asked about the form in which it was provided. The most common form was an employee-paid pre-tax deduction program, in which employees have the monthly cost of their transit cost deducted from their pay before taxes are deducted, reducing the amount of the tax they pay; 31% of respondents reported this type of benefit (Figure 80).

About one-quarter (26%) of respondents said it was a direct cash payment or employer-paid SmartBenefits account. In this form, the employee receives the full cost of the benefit, either as an upfront payment or reimbursement for transit costs paid, as a non-taxed addition to their pay. Ten percent reported that the employer offered SmarTrip cards or travel vouchers. One-third (33%) said they knew a financial benefit was available, but did not know the specific type of benefit.

Figure 80
Transit Financial Benefit Types
(n = 3,556)



Benefits/Services Offered by Employer Type

Respondents who worked for Federal agencies were most likely to report availability of benefits/services at their worksites; 85% of Federal workers said they had at least one of these services (Table 36). Two-thirds (66%) of respondents who worked for non-profit organizations had access to services. Respondents who worked for private employers and state/local agencies were least likely to have access; only half (50%) of private sector employees and 44% of state/local government employees reported access to commuter benefits/services.

Table 36
Commuter Benefits/Services Available by Employer Type

Incentives/Support Services	Employer Type			
	Federal (n = 2,421)	**Non-profit** (n = 1,147)	**State/local** (n = 845)	**Private** (n = 3,390)
Any services offered	**85%**	**66%**	**50%**	**44%**
SmartBenefit/transit/VP subsidy	75%	51%	30%	29%
Commute information	43%	26%	29%	18%
Bike/walk services	36%	29%	23%	14%
Preferential parking	38%	12%	18%	8%
GRH	17%	8%	11%	6%
Carpool subsidy/cash payment	15%	6%	11%	5%
Capital Bikeshare	12%	10%	18%	6%
Carshare (Zipcar, car2go)	8%	8%	12%	5%

Table 36 also compares the percentages of employers that offered various individual services by employer type. Not surprisingly, Federal agency workers also had greater access than did other respondents to individual services. This was especially true for transit/vanpool subsidies 75% of Federal workers said subsidies were offered, while only 51% of non-profit workers and three in ten respondents who worked for private firms and state/local agencies had this benefit. The high availability of transit subsidies among federal agency employees is due to a federal mandate. Since an Executive Order signed in 2000, Federal agencies in the National Capital Region have been required to offer transit subsidies to employees. In 2019, the maximum subsidy amount was $265 per month. Most other benefits/services also were disproportionately available to Federal agency workers.

Benefits/Services Offered by Employer Size

Large employers were more likely to offer commuter services than were small employers (Table 37). Only 40% of respondents who worked for employers with 100 or fewer employees and 60% of respondents who worked for employers with 101-250 employees said they had any services. By contrast, 72% of respondents employed by large employers (251-999 employees) and 83% of respondents who worked for very large firms (1,000+ employees) had one or more employer-provided commuter service.

Table 37 also compares availability of individual commuter assistance services by employer size. Respondents who worked for employers with 251 or more employees had greater access to most benefits/services, compared with employees of smaller firms. This trend of increasing services with increasing size was most striking with transit/vanpool subsidies, commute information, bike/walk services, and preferential parking.

Table 37
Commuter Benefits/Services Available by Employer Size (number of employees)

Incentives/Support Services	Employer Size			
	1-100 (n = 2,890)	**101-250** (n = 994)	**251-999** (n = 1,353)	**1,000+** (n = 2,081)
Any services offered	**40%**	**60%**	**72%**	**83%**
SmartBenefit/transit/VP subsidy	28%	44%	55%	67%
Commute information	14%	25%	31%	47%
Bike/walk services	12%	22%	30%	38%
Preferential parking	7%	12%	19%	38%
GRH	6%	9%	11%	18%
Carpool subsidy/cash payment	5%	9%	9%	15%
Capital Bikeshare	5%	11%	11%	16%
Carshare (Zipcar, car2go)	6%	6%	8%	11%

Benefits/Services Offered by Employer Location

Finally, the analysis examined availability of services by respondents' work locations, divided into the three "ring" designations described earlier: Inner Core (Alexandria, Arlington, and the District of Columbia), Middle Ring (Fairfax, Montgomery, and Prince George's), and Outer Ring (Calvert, Charles, Frederick, Loudoun, and Prince William). Inner Core respondents had greater access to benefits/services than did other respondents (Table 38). Three-quarters (76%) of Inner Core workers said they had commute services, while only about half (51%) of Middle Ring workers and 28% of Outer Ring workers had services available.

Table 38
Commuter Benefits/Services Available by Work Area

Incentives/Support Services	Work Area		
	Inner Core (n = 3,815)	**Middle Ring** (n = 2,785)	**Outer Ring** (n = 1,332)
Any services offered	**76%**	**51%**	**28%**
SmartBenefit/transit/VP subsidy	66%	34%	12%
Commute information	32%	27%	13%
Bike/walk services	31%	20%	11%
Preferential parking	18%	20%	11%
GRH	12%	9%	7%
Carpool subsidy/cash payment	10%	9%	6%
Capital Bikeshare	15%	7%	3%
Carshare (Zipcar, car2go)	9%	6%	4%

The higher share of Inner Core workers with commute services was primarily due to their much greater access to transit subsidies; 66% of Inner Core workers reported this service was offered, while only 34% of Middle Ring and 12% of Outer Ring workers said it was available. This largely mirrors the availability of transit service; employers in areas with limited transit operating would understandably be less likely to offer this service. The high availability of transit subsidies in the Inner Core also reflects the concentration of federal agencies in this area. As noted earlier, Federal agencies in the National Capital Region are required to offer transit subsidies to employees.

Another factor that could influence the availability of transit subsidies in the Inner Core is the DC Commuter Benefits Ordinance enacted by the District of Columbia government. Beginning in 2016, employers with 20 or more employees at District worksites were required to offer some form of transit benefit. The 66% share of Inner Core employees who said a transit benefit was offered was nine percentage points higher than the 57% reported in 2016. But Middle Ring employees reported a similar nine-point jump in transit subsidy availability in 2019 (34%) from the 25% who reported the benefit in 2016, so it is not definitive that the ordinance was responsible for the growth.

Inner Core workers also had substantially higher access to bike/walk services and to Capital Bikeshare. Again, this difference reflects the greater access to bike/walk infrastructure and the density of Capital Bikeshare stations in the Inner Core area, when compared with the Middle Ring and Outer Ring areas.

Differences in availability of other commute services were less pronounced, particularly between Inner Core and Middle Ring workers. The percentages of Inner Core and Middle Ring workers with access to commute information, preferential parking, GRH, carpool subsidies, and carshare memberships were similar. Outer Ring workers had lower availability of all services than did commuters who worked closer to the region's urban center.

Parking Facilities and Services

Respondents also were asked about the parking services available at their worksites. These results are displayed in Table 39 for 2004 through 2019. The majority of respondents (60%) across the region said their employers provided "free parking to all employees" at the worksite. One percent said the employer offered "free parking off-site." An additional 5% of respondents said their employers did not provide free parking to all employees, but that they personally had free parking. This follow-up question was not asked prior to the 2016 survey, so no data were available for previous years.

Table 39
Parking Facilities / Services Offered by Employers – 2004 to 2019
(2004 n = 6,866, 2007 n = 5,426, 2010 n = 5,819, 2013 n = 5,524, 2016 n = 5,093, 2019 n = 7,385)

Parking Facilities and Services	2004	2007	2010	2013	2016	2019
Free on-site parking (all employees)	66%	65%	63%	63%	64%	60%
Free on-site parking (some employees)*	----	----	----	----	6%	5%
Free off-site parking	3%	4%	2%	2%	1%	1%
Employee pays all parking charges	21%	21%	22%	23%	24%	28%
Employee/employer share parking charge	6%	7%	7%	7%	5%	5%
Parking discounts for carpools/vanpools*	14%	15%	16%	14%	14%	9%

* Follow-up question about parking offered to some employees was added in 2016
** Percentages of parking discounts for CP/VP are calculated on a base of respondents who did not have free parking. These sample sizes are (2019 n = 1,934, 2016 n = 1,148, 2013 n = 1,438, 2010 n = 1,610; 2007 n = 1,674; 2004 n = 1,752)

About one-third said they paid at least part of the cost of parking; 24% paid the total cost and 5% paid a portion of the cost with the balance paid by their employers. The availability of free parking has remained relatively stable over the past 12 years.

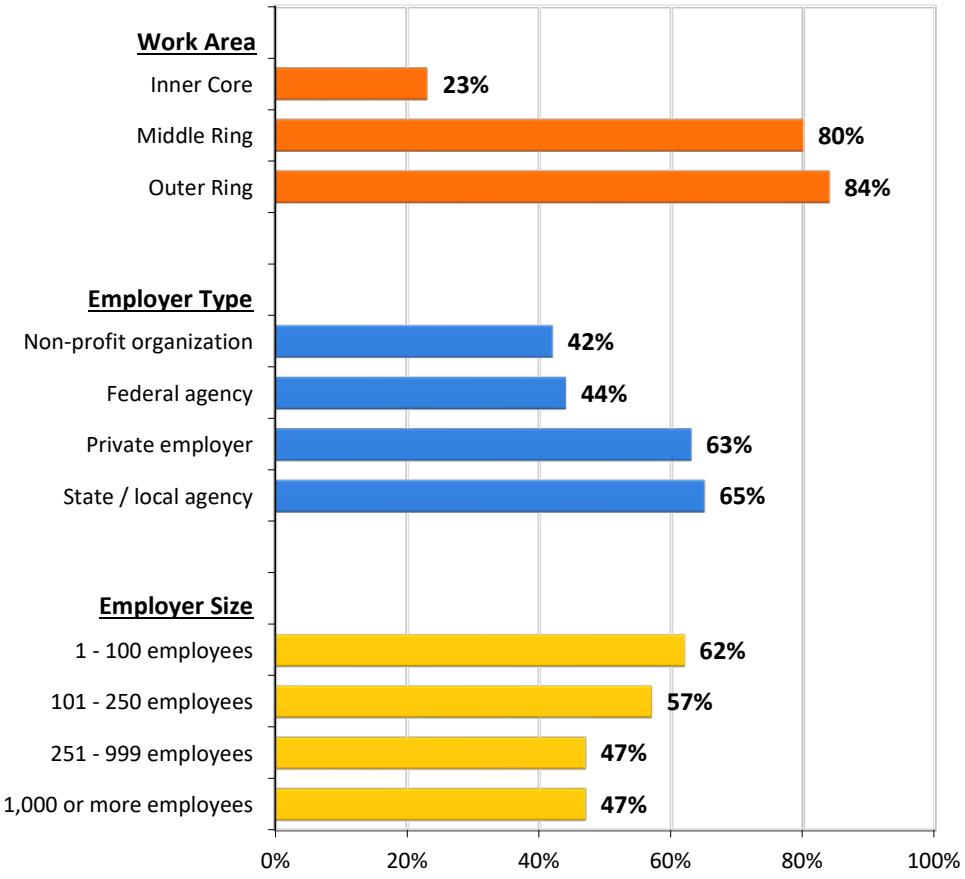
Parking by Work Location, Employer Type, and Employer Size – Figure 81 displays free parking availability by employer type, employer size, and the location of the respondents' worksite. The most dramatic differences in availability of free parking were noted for respondents who worked in different parts of the region. Only one-quarter (23%) of Inner Core workers said their employers offered free parking to all employees, compared with eight in ten (80%) respondents who worked in the Middle Ring and 84% of respondents who worked in the Outer Ring.

Federal agency workers and respondents who worked for non-profit organizations also were least likely to have free parking at work. About 44% of respondents who worked for Federal agencies and 42% of respondents who worked for a non-profit said their employers provided free on-site parking to all employees. By contrast, 65% of respondents who worked for state and local agencies and 63% of private sector employees said they had free parking. Note that many federal agency worksites and non-profit worksites are located in the Inner Core, thus the lower parking availability for these employees could be due to the employer type, but also to their location.

Respondents who worked for large employers were less likely to have free parking. Less than half of respondents who were employed by employers with 251 or more employees had free parking, compared with about six in ten respondents who worked for employers with 250 or fewer employees.

Figure 81
On-site Free Parking Availability by Work Area, Employer Type, and Employer Size

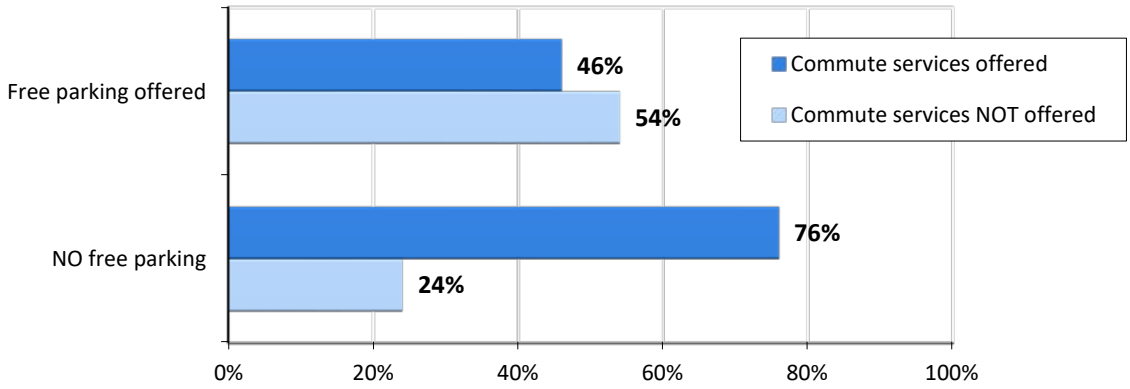
(Work Area – Inner Core n = 3,815, Middle Ring n = 2,785, Outer Ring n = 1,333)
(Employer Type –Non-profit n = 1,147, Federal n = 2,241, Private n = 3,391, State/local n = 845)
(Employer Size – 1-100 n = 2,974, 101-250 n = 1,034, 251-999 n = 1,415, 1,000+ n = 2,174)



Availability of Commuter Assistance Services/Benefits Offered by Availability of Free Parking

The availability of commute benefits/services was inversely related to the availability of free parking at the worksite. As shown in Figure 82, less than half (46%) of respondents who said free parking was offered to all employees said their employers also offered commute benefits/services that would encourage or help them use alternative modes for commuting. By contrast, 76% of respondents who said free parking was not available reported having access to commute benefits/services at work.

Figure 82
Commuter Benefits/Services Offered by Free Parking Available
(Free parking available n = 4,471, No free parking n = 3,520)

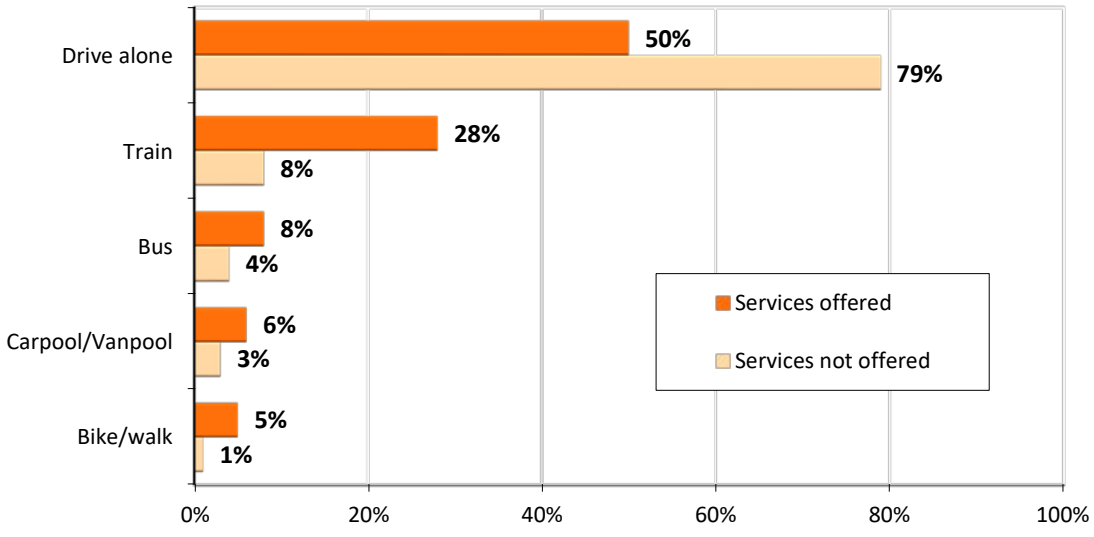


Impact of Commute Assistance Services and Parking

Commute Mode by Commute Assistance Benefits/ Services Offered

Figure 83 presents the share of commuters who used various commute modes by whether or not commute assistance benefits/services were available at their worksites. A much lower share of respondents who had access to alternative mode benefits/services drove alone (50%), when compared with respondents whose employers did not provide these services (76%).

Figure 83
Primary Commute Mode by Commute Benefits/Services Offered
(Services offered n = 4,696, Services not offered n = 3,295)



Train use was particularly higher for respondents with commute services; 28% of respondents whose employers offered commute benefits/services rode the train to work, compared with 8% of respondents whose employers did not offer these services. Use of other alternative modes also was about twice as high among respondents who had access to commute benefits/services as for respondents with no services.

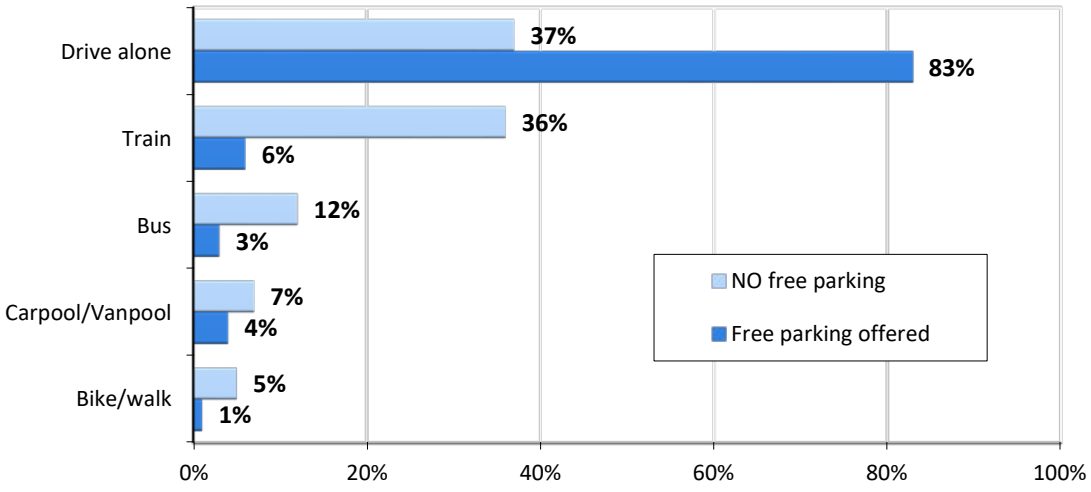
While all the differences shown in the figure are statistically significant, it is not possible to say that the availability of these services was the only reason, or even the primary reason, for differences in mode use. As noted before, employers in the Inner Core were much more likely than were employers in the Middle Ring and Outer Ring to offer commuter assistance services and drive alone rates were much lower for respondents who worked in the Core (38%) than for respondents who worked in either the Middle Ring (78%) or Outer Ring (87%).

However, respondents who worked in the Inner Core also could be faced with greater impediments to driving alone. For example, Inner Core workers commuted an average of 47 minutes one-way, compared with 39 minutes for Middle Ring and Outer Ring workers. And respondents who worked in the Inner Core also might experience greater congestion levels and have greater availability of commute options, such as transit, than would be experienced by workers outside this area. Any of these factors might have been at least as important in influencing respondents' commute mode choices.

Commute Mode by Parking Services Offered

Figure 84 compares mode use rates for respondents who had free on-site parking at work and those who pay or would have to pay for parking. The difference in drive alone rates for these two groups was dramatic; 83% of respondents whose employers offered free parking drove alone, compared with only 37% of respondents who did not have this benefit.

Figure 84
Primary Commute Mode by Free Parking Available at Work
(No free parking n = 3,520, Free parking offered n = 4,472)

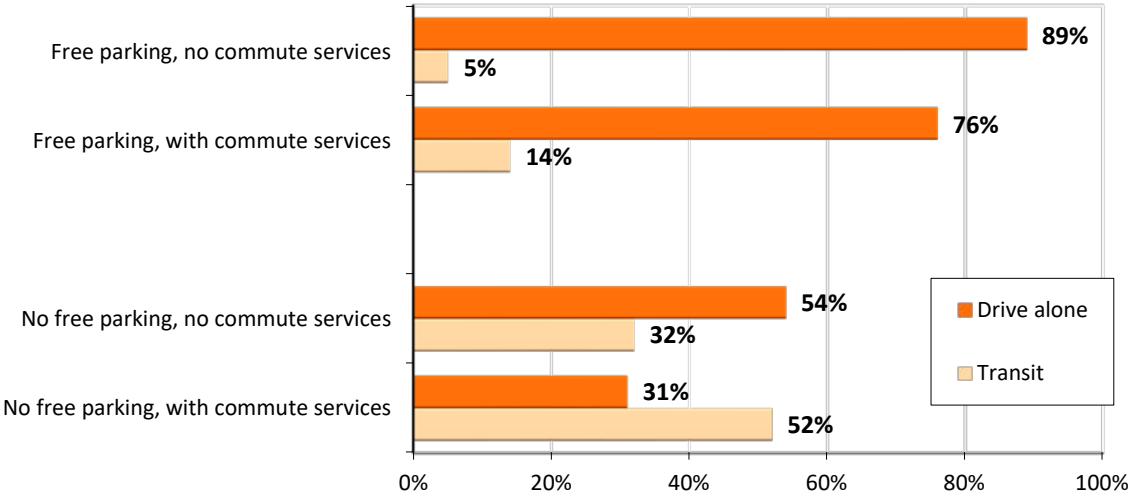


Respondents who had to pay to park used all alternative modes at higher rates than did respondents with free parking. The difference was especially striking for use of transit; train mode share was more than five times as high for respondents who had to pay to park as for respondents who had free parking. Use of bus, carpool/vanpool, and bike/walk also were higher for respondents who did not have free parking. Many other surveys and research studies have documented the important role parking availability and cost play in commute decisions.

Commute Mode by Commute Benefits/Services and Parking Services in Combination

Finally, Figure 85 presents a comparison of drive alone and public transit use by the combination of free parking and commute benefits/services. The top section of the figure shows the mode shares at worksite where free on-site parking was offered and commute benefits/services were and were not available. The bottom section shows the mode shares when free parking was not available and commute benefits/services were and were not offered.

Figure 85
Drive Alone and Transit Mode Use by Combination of Free Parking and Commute Benefits/Services Offered
(Free parking, no commute services n = 2,456, Free parking, with commute services n = 2,009)
(No free parking, no commute services n = 834, No free parking, with commute services n = 2,681)



The drive alone mode share declined steadily across the four cases, indicating that both parking cost and commute services influenced commuters' choice of driving alone. When parking was free and commute services were not offered, 89% of respondents drove alone to work. The drive alone rate dropped to 76% among respondents who had free parking, but when commute services were added.

When no free parking was available, the drive alone rate was just 54% even when no commute services were offered. This was fully 35 percentage points below the rate when parking was free and commute services were not offered, suggesting that parking charges can have a substantial impact on drive alone mode share, even in the absence of commute services. But when commute services were added, on top of parking charges, the drive alone mode share fell an additional 23 percentage points, to 31%, indicating that commute services also play a motivating role in commute mode choice.

The reverse pattern was clear for use of public transit. When free parking was offered, 5% of respondents used transit when no commute benefits/services were available and 14% used transit when they had access to commute benefits/services. At worksites where parking was not free, the transit share was 32% among respondents who did not have access to commute benefits/services and 52% when commute benefits/ services were offered.

The figure does not show mode shares for bike/walk or for carpool/vanpool, but there were slight differences in use of these modes for the four parking/commute service combinations. For respondents who reported free parking, bike/walk mode use was 1% without commute benefits/services and 2% when services/benefits were offered. Similarly, when parking was not free, bike/walk mode use was 3% without services and 6% when services were available. When parking was free, carpool/vanpool use was 2% without commute services and 5% with services. When parking was not free, carpool/vanpool mode use was essentially the same; 6% without commute services and 7% when services were offered.

The much more dramatic differences in transit use reflect the motivating value of transit subsidies. Three-quarters of respondents who reported access to commute services/benefits said a transit subsidy was an available benefit, thus the "with commute benefits/services" categories would reflect a substantial transit motivating factor. Services, such as bike support services, bikeshare, carpool subsidies, and carpool/vanpool preferential parking, which primarily target use of bike/walk or carpool/vanpool were offered by fewer employers.

SECTION 10 TECHNOLOGY-BASED APPLICATIONS, AND DRIVERLESS CARS

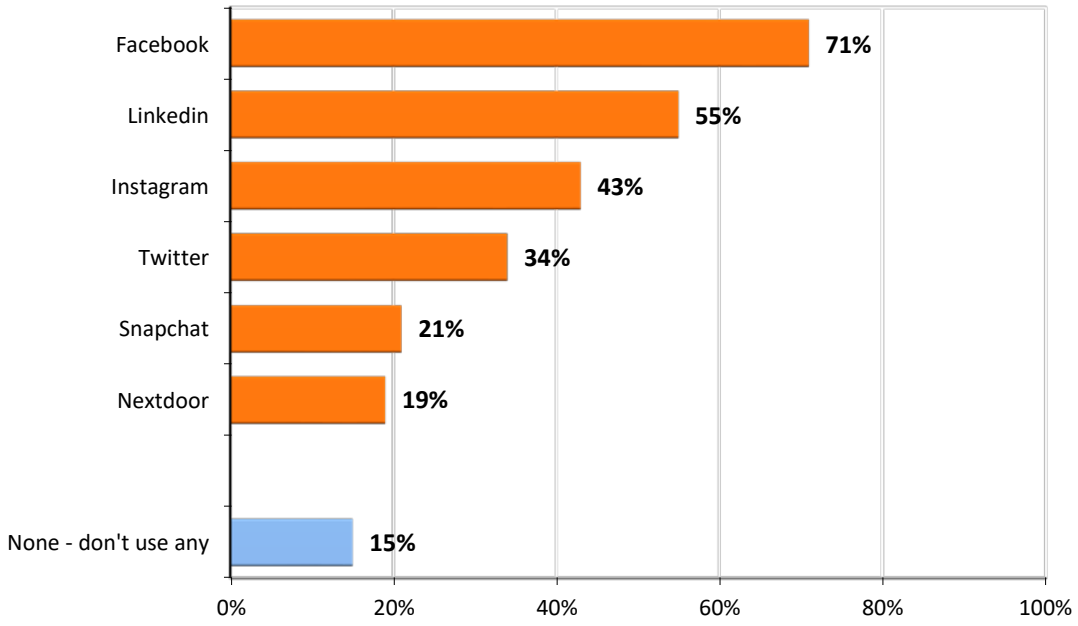
The 2019 survey added a new section of questions to examine the growing use of social networking and traveler information mobile applications. This section also included questions to develop a baseline for awareness and interest in the concept of automated vehicles, also known as driverless cars. This section presents results for these new questions.

Social Networking

Use of social networking applications has become a daily part of life for many people and the networking apps have become a common source of information. The 2019 SOC survey added a question to identify the networking applications that employed residents were using. Survey respondents were shown a list of six applications and asked to indicate those with which they had accounts.

Nearly nine in ten (85%) of all respondents said they had an account with at least one of the six applications (Figure 86). The most common application was Facebook, used by seven in ten (71%) respondents. Linkedin, used primarily for work-related/professional interactions, was noted by 55% of respondents. About four in ten (43%) had an account with Instagram and 34% had a Twitter account. Two in ten mentioned having accounts with Snapchat (21%) and Nextdoor (19%).

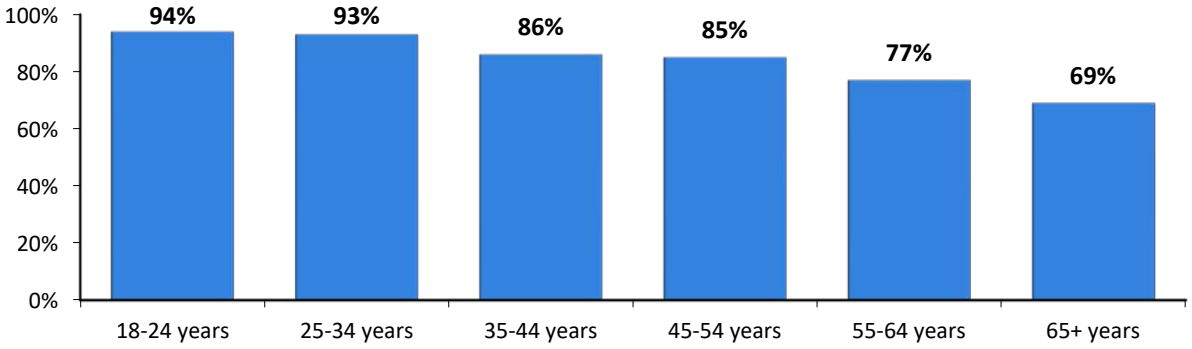
Figure 86
Social Networking Applications – Percentage with Accounts in 2019
(n = 8,157)



Use of Social Networking Applications by Respondent Characteristics

Use of social networking applications declined with increasing respondent age (Figure 87). More than nine in ten respondents who were younger than 35 had accounts, compared with about 85% of respondents who were between 35 and 54. Use of the apps dropped further among respondents who were between 55 and 64 years (77%) and respondents who were 65 years or older (69%).

Figure 87
Use of Social Networking Applications by Respondent Age
(18-24 n = 205, 25-34 n = 1,511, 35-44 n = 1,804, 45-54 n = 2,006, 55-64 n = 1,905, 65 and older n = 645)



Differences in Use by Commute Mode – Social networking use was highest among respondents who walked or biked to work (90%). Commuters who drove alone (86%) were about equally likely to have an account as were train riders (86%) and carpoolers/vanpoolers (87%). Bus riders were least likely to use social networking; only 79% reported having a social networking account.

Differences in Use by Demographics There were very few other differences in use of social networking apps by other respondent characteristics and the differences that did exist were very slight. A higher share of female respondents (89%) used social networking than did male respondents (84%) and respondents with annual household incomes of at least $100,000 were slightly more likely to have an account (90%) than were respondents with incomes below $100,000 (87%). Race/ethnicity did not appear to have an influence; 86% of Non-Hispanic Whites and the same percentage of Non-Hispanic Blacks had accounts, compared with 84% of Hispanic respondents.

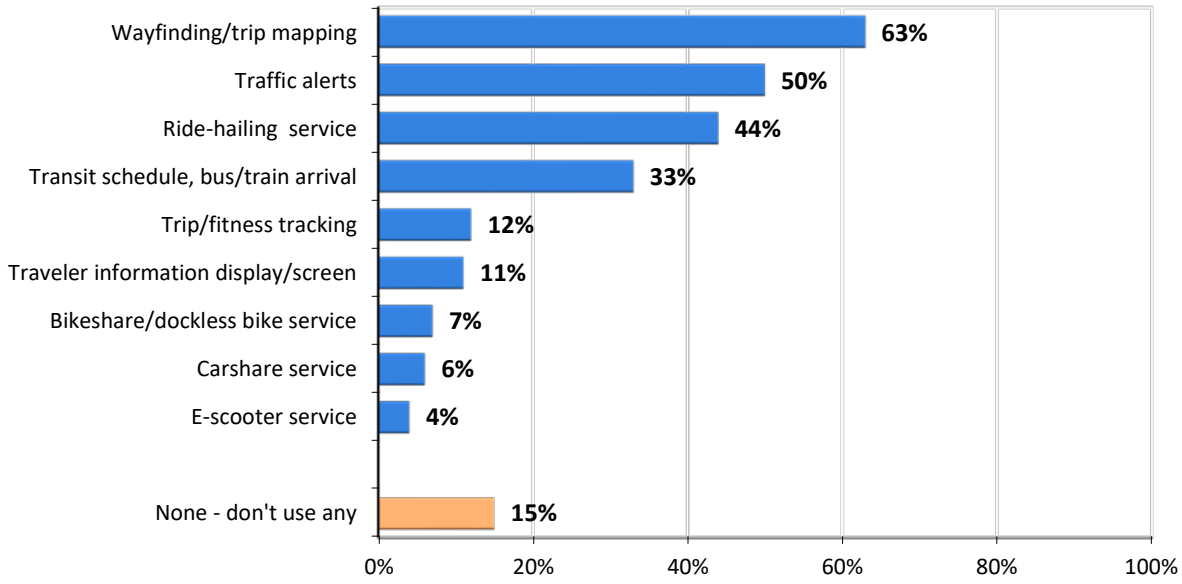
Differences in Use by Home and Work Location – Respondents who lived in the Inner Core area of the region were slightly more likely to use a social networking application than were other respondents; 88% of Inner Core respondents had an account with at least one application, compared with 85% of Middle Ring and 83% of Outer Ring respondents. There were no differences in social networking use by work location.

Travel/Trip Information Applications

The wide-scale availability of smartphones and other mobile devices has created an opportunity for commute information and service organizations to deliver an extensive range of information via mobile applications, enhancing commuters' access to travel information in real time and before and during a trip. The 2019 SOC survey added a question to identify applications that regional commuters used. Survey respondents were shown a list of nine applications and asked to indicate those they had used.

Eighty-five percent of all respondents said they had used at least one of the listed applications (Figure 88). The most common application was for wayfinding or mapping applications, such as Google maps and Waze; 63% of respondents had used this type of application. Traffic alerts delivered via text message or other means had been used by 50% of respondents. About four in ten (44%) had used an application for a ride-hail service such as Uber, Lyft, or Via and 33% had used an application that tracked transit schedules or provided "next bus/train" information on arrival time. About one in ten had used a trip or fitness tracking app (12%) and a traveler information display or screen located in a public location (11%). Smaller shares of respondents had used applications for bikeshare (7%), carshare (6%), and e-scooter (4%) services.

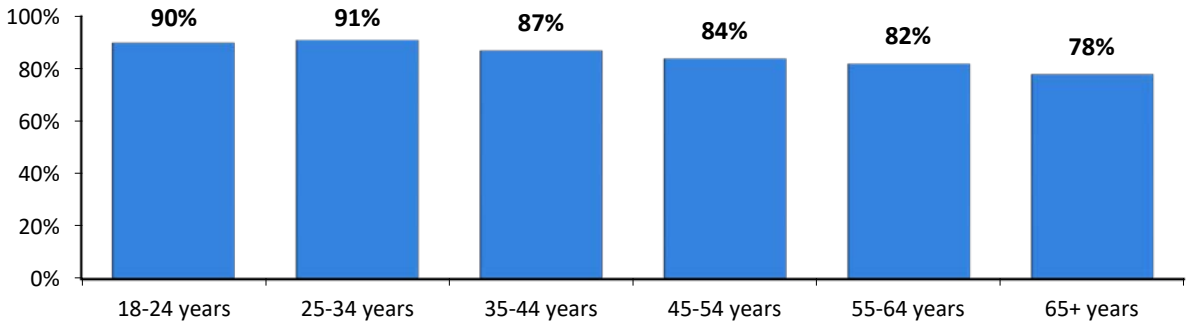
Figure 88
Travel/Trip Information Applications – Percentage Using in 2019
(n = 8,161)



Use of Travel/Trip Information Applications Among Respondent Sub-Groups

Use of Travel/Trip Information Applications by Age – As was noted for use of social networking app, use of travel/trip information applications also declined with increasing respondent age (Figure 89), although less precipitously than for social networking. About nine in ten respondents who were younger than 35 had accounts, compared with about 84-87% of respondents who were between 35 and 54. Use of the apps dropped further among respondents who were between 55 and 64 years (82%) and those who were 65 years or older (78%).

Figure 89
Use of Travel/Trip Information Applications by Respondent Age
(18-24 n = 204, 25-34 n = 1,506, 35-44 n = 1,795, 45-54 n = 2,010, 55-64 n = 1,911, 65 and older n = 648)



Use of individual applications varied substantially by age, with younger respondents nearly always using the apps more than did older respondents (Table 40). The only application that exhibited an increasing pattern with increasing age was traffic alert; 58% of respondents who were 55 years or older had used this application, compared with just 42% of respondents who were younger than 35 years.

Table 40
Use of Travel/Trip Information Applications by Respondent Age
(Shading indicates statistically higher percentages for app use)

Trip/Travel Application	Respondent Age			
	18-34 years (n = 1,812)	35 – 44 years (n = 2,017)	45 – 54 years (n = 1,729)	55+ years (n = 2,563)
Use any trip/travel info app	91%	87%	84%	81%
Transit schedule arrival apps	40%	32%	28%	28%
Bikeshare service app	9%	8%	4%	3%
Carshare service app	7%	8%	4%	2%
E-scooter service app	7%	4%	2%	1%
Ride-hailing service apps	60%	46%	34%	26%
Wayfinding apps	72%	64%	59%	50%
Trip/fitness tracking apps	14%	13%	12%	7%
Traffic alerts	42%	48%	55%	58%
Traveler information display	13%	11%	10%	9%

Respondents who were younger than 45 years were higher users of transit schedule arrival applications, as well as bikeshare, carshare, and e-scooter service apps; respondents who were 45 years and above used them at lower and similar rates. Note that younger respondents were less likely to have access to a personal vehicle and more likely to live in the Inner Core, where these services are more widely available. The pattern for use of ride-hailing service apps and wayfinding applications declined steadily through all four age groups, with each age group using the application less than did the next younger group. Trip/fitness tracking apps were used at similar rates for respondents who were younger than 55 years. Use of traveler information displays was approximately the same across all age groups.

Use of Travel/Trip Information Applications by Other Demographics – Differences in use of the apps by other respondent demographic characteristics were small. Non-Hispanic White respondents (91%) reported higher use of apps than did either Non-Hispanic Blacks (82%) or Hispanics (83%). Use of the apps also appeared slightly related to income; respondents with annual household incomes of at least $120,000 had used one of the apps, compared with 85% of respondents with incomes between $40,000 and $119,999, and 78% of respondents with incomes below $40,000. Female and male respondents were equally likely to report using one or more app.

Use of Travel/Trip Information Applications by Home and Work Location – A slightly higher share of respondents who lived in the Inner Core area of the region (90%) had used a travel/trip information app, compared with 86% of Middle Ring and 84% of Outer Ring respondents. And a larger share of respondents who worked in either the Inner Core (87%) or Middle Ring (87%) used these applications than did Outer Ring workers (80%).

The propensity of Inner Core and Middle Ring respondents to use applications likely is related somewhat to the age profiles of each area, but also to the wide availability of non-driving services, such as bikeshare and transit information, that were the subject of some of the apps. Use of apps was higher for young respondents than for older respondents in each regional sub-area, but use dropped off for each age group among Outer Ring respondents. For example, among respondents who were younger than 35 years, 91% of Inner Core and 90% of Middle Ring residents had used apps, while only 84% of young Outer Ring respondents had done so. Among respondents who were 35 to 54 years, 88% of Inner Core and 85% of Middle Ring residents had used apps, compared with 83% of those who lived in the Outer Ring.

Use of Travel/Trip Information Applications by Commute Mode and Commute Distance – Overall use of travel/trip information apps was high among respondents of all commute distance groups and, as shown in Table 41, among all commute mode groups. But the applications listed for the question covered all travel modes and the question did not ask if respondents had used the applications for commuting. Thus, the question covered a broad range of app types and situations for respondents to have used.

Table 41
Use of Travel/Trip Information Applications by Primary Commute Mode
Shading indicates statistically higher percentages)

Trip/Travel Application	Primary Commute Mode			
	Drive Alone (n = 5,054)	**Carpool** (n = 355)	**Transit** (n = 1,896)	**Bike/Walk** (n = 298)
Use any trip/travel info app	85%	85%	89%	94%
Traffic alerts	55%	61%	40%	34%
Traveler information display	8%	14%	16%	24%
Transit schedule arrival apps	20%	35%	62%	60%
Ride-hailing service apps	38%	39%	53%	78%
Bikeshare service app	4%	6%	10%	36%
Carshare service app	3%	4%	9%	23%
Wayfinding apps	63%	61%	58%	83%
Trip/fitness tracking apps	11%	11%	12%	32%
E-scooter service app	3%	6%	5%	19%

Use of individual applications, however, did vary substantially by commute mode. Use of traffic alerts was higher among commuters who carpooled (61%) and those who drove alone (55%) than among transit riders (40%) and bike/walk commuters (34%). Most other applications had higher use rates among alternative mode commuters. Commuters who rode biked or walked to work used all apps except traffic alerts at a higher rate than did other commuters, but transit riders also used ride-hailing, bikeshare, and carshare service applications at higher rates than did carpoolers or drive alone commuters.

Use of Travel/Trip Information Applications by Personal Vehicle Availability – One additional respondent characteristic that seemed to be associated with use of travel/trip information applications was the respondents' availability of a personal vehicle (Table 42). Only three-quarters (76%) of respondents who had at least one vehicle per adult resident in the household had used a travel/trip app, compared with nearly nine in ten (87%) respondents who were car-free and the same share (87%) of respondents who were car-lite, with a vehicle in the household, but fewer vehicles than adult residents (0.1 to 0.9 vehicles per adult).

As expected, respondents who were car-free or car-lite used applications for bikeshare, e-scooter, and carshare services and for transit schedule arrival apps at statistically higher rates than did respondents with full vehicle availability, reflecting their higher use of non-driving modes overall. Car-free and car-lite respondents also used ride-hailing service apps at a higher rate than did respondents with vehicles available, but the difference in use was less dramatic; 41% of respondents with full vehicle access had used ride-hailing apps, indicating the attractiveness of ride-hailing for some trips even among vehicle owners. Use of traffic alerts was higher among respondents with greater vehicle availability and wayfinding applications were used at a slightly higher rate by respondents with full vehicle availability.

Table 42
Use of Travel/Trip Information Applications by Vehicles Available per Adult
Shading indicates statistically higher percentages)

Trip/Travel Application	Vehicles per Adult in Household		
	0 vehicles (n = 396)	**0.1 to 0.9 vehicles** (n = 1,470)	**1.0+ vehicles** (n = 6,029)
Use any trip/travel info app	87%	87%	76%
Traveler information display	23%	11%	10%
Trip/fitness tracking apps	18%	13%	11%
Bikeshare service app	23%	9%	4%
E-scooter service app	13%	6%	3%
Carshare service app	31%	7%	3%
Transit schedule arrival apps	74%	38%	28%
Ride-hailing service apps	65%	50%	41%
Traffic alerts	32%	46%	54%
Wayfinding apps	61%	60%	65%

Driverless Cars

This section of the survey also explored respondents' awareness and opinions about driverless cars. At the time of the survey, these vehicles were undergoing testing in several regions of the country and news media were reporting on the tests. In particular, these questions were designed to:

- Assess baseline awareness of the concept
- Identify commuters' impressions of potential benefits and concerns about the vehicles
- Determine commuters' willingness to use a driverless car under various scenarios

Familiarity with the Concept of Driverless Cars

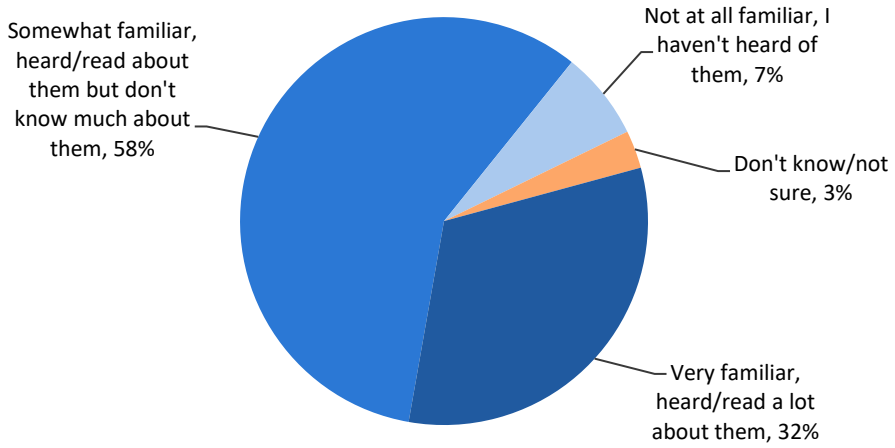
The first question asked about commuters' familiarity with driverless cars:

> *"You might have heard of self-driving cars, also known as driverless cars or autonomous cars. These are cars that can sense their surroundings and drive themselves. How familiar are you with the concept of these vehicles?"*

As displayed in Figure 90, the largest share of respondents (58%) said they were "somewhat familiar," they had heard or read about the concept, but did not know much about them. One-third (32%) were "very familiar," they had heard or read a lot about the concept. Seven percent had not heard about driverless vehicles at all and 3% were unsure.

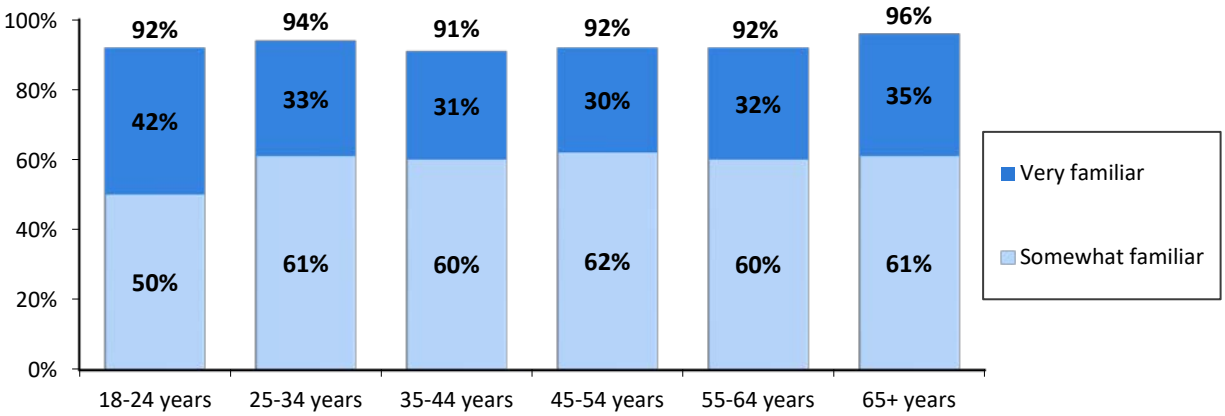
Familiarity by Home and Work Location – The concept of driverless cars was best known by respondents who lived or worked in the Inner Core. Thirty-seven percent of Inner Core residents were very familiar, compared with 32% of Middle Ring residents and 30% of Outer Ring residents. Similarly, 35% of Inner Core workers were very familiar with the concept, versus smaller shares of Middle Ring (32%) and Outer Ring (29%) workers.

Figure 90
Familiarity with Concept of Driverless Cars
(n = 8,198)



Familiarity by Demographics – Unlike the results for both social networking and trip/travel information applications, the pattern of driverless car familiarity among respondents of various ages was less distinct (Figure 91). Respondents of all age groups were about equally likely to report some familiarity with driverless cars; at least nine in ten respondents in each age group said they were either somewhat or very familiar. The youngest and oldest respondents were more likely to report a high level of familiarity. More than four in ten (42%) respondents who were under 25 said they were very familiar and 35% of respondents who were 65 or older reported being very familiar. Among all other age groups, the percentages were between 30% and 33%.

Figure 91
Familiarity with Concept of Driverless Cars by Respondent Age
(18-24 n = 198, 25-34 n = 1,497, 35-44 n = 1,756, 45-54 n = 1,965, 55-64 n = 1,876, 65 and older n = 631



Male respondents were twice as likely to say they were very familiar with driverless cars as were females (Male 44%, Female 22%). This difference was made up in the "somewhat familiar" category; 70% of females were somewhat familiar, compared with 50% of males. There also was a clear pattern by household income, with

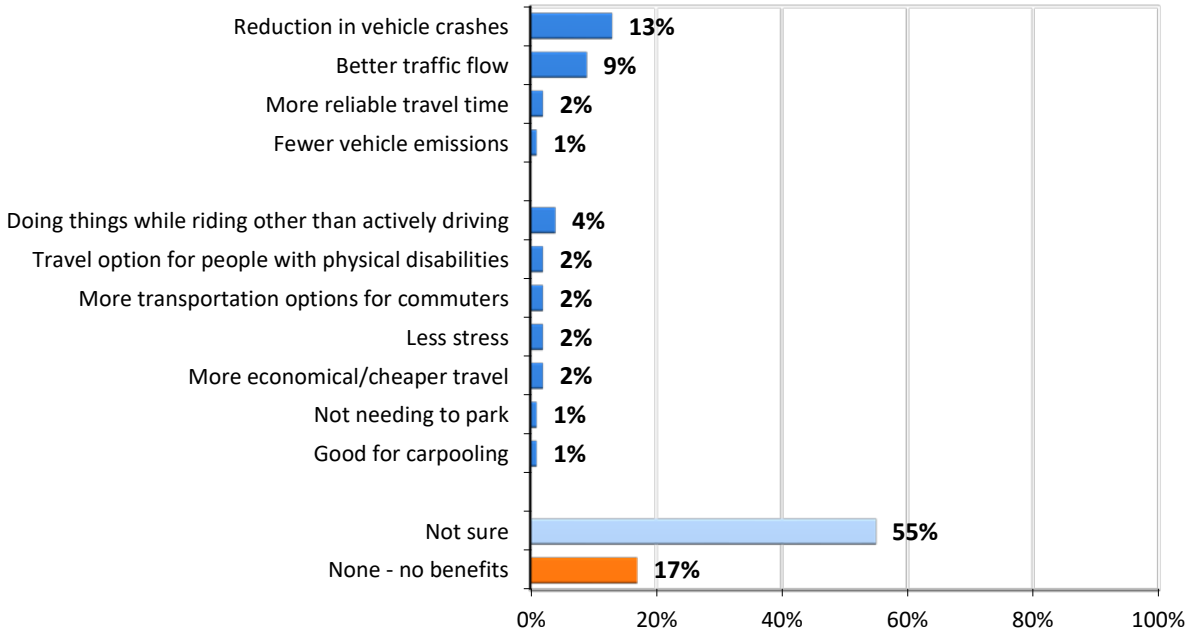
greater familiarity among higher income respondents; 44% with annual incomes of $160,000 or more said they were very familiar, versus 36% with incomes between $100,000 and $159,999, and only 25% whose incomes were under $100,000. And Non-Hispanic White (39%) respondents were significantly more likely to say they were very familiar than were either Hispanic (27%) or Non-Hispanic Black (23%) respondents.

Potential Benefits and Concerns with the Concept of Driverless Cars

All respondents were next asked two parallel questions, with open-ended responses: *"How might the availability of driverless cars benefit you or others in the Washington metro region?"* and *"What concerns, if any, do you have about driverless cars?"*

Potential Benefits of Driverless Cars – Figure 92 presents responses to the first question. More than seven in ten respondents could not describe a benefit, either because they did not feel there were any benefits (17%) or because they weren't sure that there were benefits (55%). Recall that about six in ten respondents had said they were only "somewhat" familiar with the driverless car concept and these respondents were most likely to have no opinion of benefits.

Figure 92
Potential Benefits of Driverless Cars to the Respondent or Others in the Washington Region
(n = 7,935)

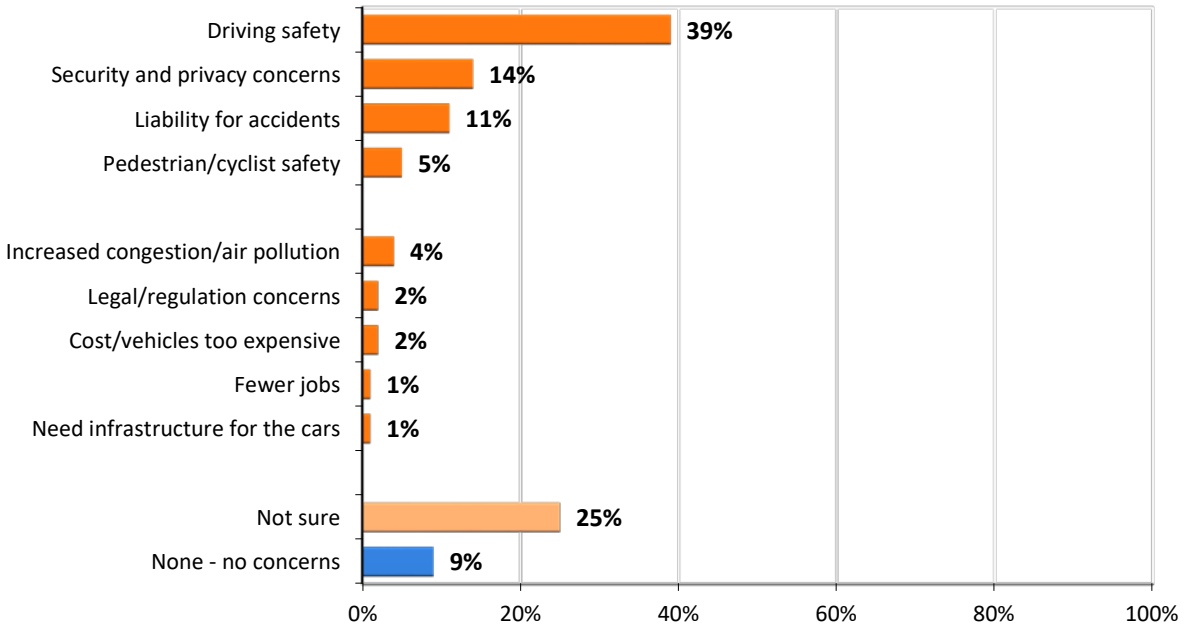


The benefits that respondents mentioned generally fell into two categories: benefits that would result in easier or better regional travel conditions and benefits that would accrue to individual travelers who used driverless cars. Among the 28% who cited a benefit, the benefit mentioned most often was for a potential reduction in vehicle crashes; 13% of all respondents cited this benefit. Respondents mentioned two benefits related to travel operations; 9% said driverless cars could result in better traffic flow and 2% said it could provide more reliable travel time.

Respondents also named several personal benefits; 4% said it would free the driver to do other, productive, things, rather than actively driving, 2% said it would provide a travel option for people with mobility or vision disabilities, 2% said it would offer a new travel option to all commuters, 2% felt it could result in less stress for travelers, and 2% said it could make travel more economical or cheaper.

Potential Concerns with Driverless Cars – Respondents were more likely to mention concerns about driverless cars than they were to cite potential benefits; 66% noted at least one concern that they had with driverless cars versus 28% who had mentioned a benefit (Figure 93). The primary concerns were related to safety and privacy. Four in ten (39%) were concerned that driverless cars could reduce the safety of driving, 11% mentioned potential liability for accidents, and 5% felt the vehicles could negatively affect pedestrian and cyclist safety. Fourteen percent noted a general concern for personal security and privacy. Smaller shares of respondents mentioned other concerns, such as the potential for increased congestion or air pollution (4%), legal/regulation concerns (2%), and potentially high cost of the vehicle (2%).

Figure 93
Respondents' Concerns Regarding Driverless Cars
(n = 7,706)



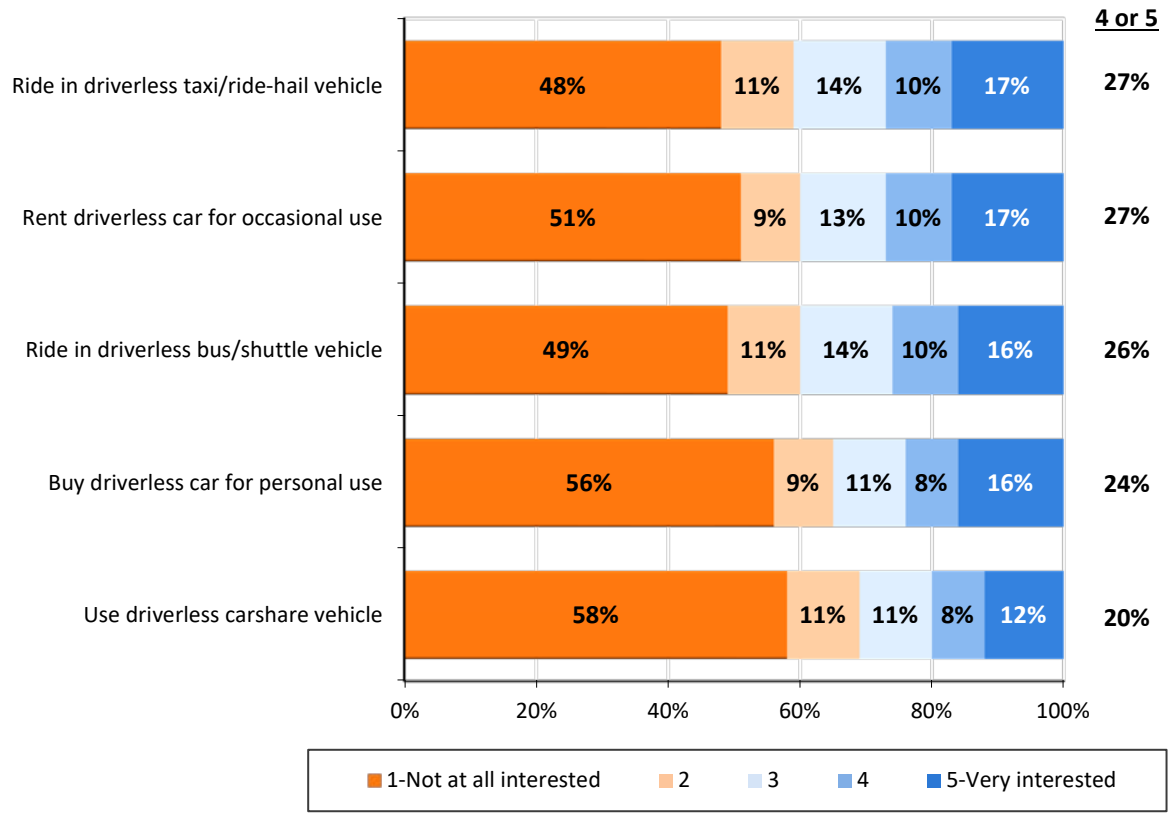
Interest in Using Driverless Cars

The final question in the section on driverless cars asked respondents how interested they would be in using a driverless car under five use scenarios:

- Buy a driverless car for personal use
- Ride in a driverless taxi/ride-hail vehicle
- Ride in a driverless bus or shuttle vehicle
- Rent a driverless car for occasional trips
- Use a driverless carshare vehicle

Figure 94 displays the percentages that rated each scenario on a 1 to 5 scale, where 1 meant "not at all interested" and 5 meant "very interested." The overall level of interest was quite similar across the scenarios, regardless of the type of vehicle described in the scenario and/or whether the vehicle was owned or rented by the respondent.

Figure 94
Interest in Using Driverless Cars by Use Scenario
(n = 7,560)

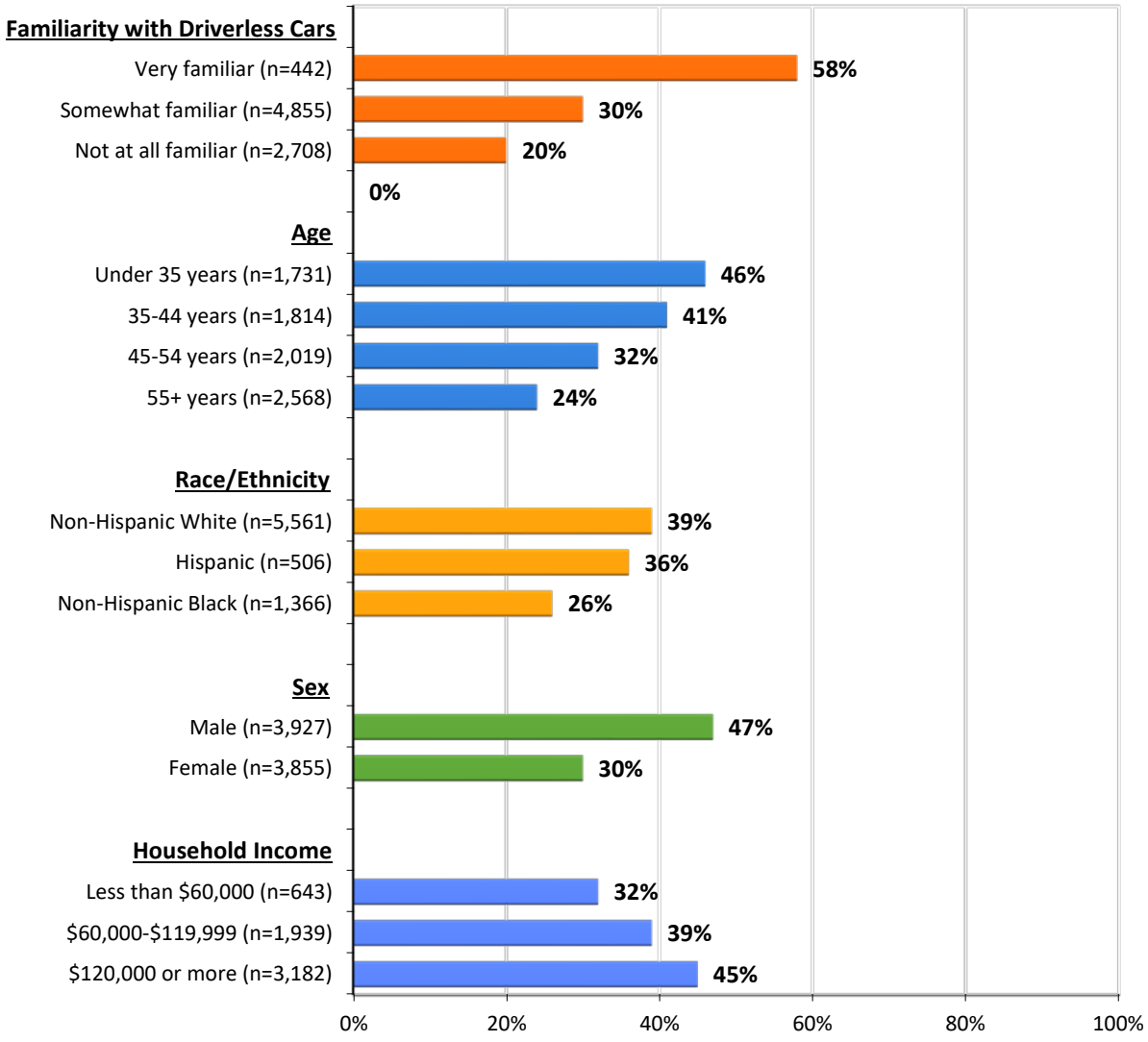


In four scenarios, about one-quarter of respondents said they were at least somewhat interested and 16% or 17% were very interested. For the final scenario, use a driverless carshare vehicle, interest was slightly lower, with 20% being at least somewhat interested and 12% being very interested. The relatively modest interest reported for using driverless vehicles could be related to the low level of familiarity many respondents indicated and the concerns that many respondents have about safety, privacy, and liability.

Interest by Familiarity with Driverless Car Concept and Demographics – Overall 37% of respondents rated their interest as a 4 or 5 (very interested) for at least one of the scenarios and 13% rated their interest as a 3. The remaining respondents either were not interested (rating of 1 or 2) or didn't know if they were interested (4%).

Interest in at least one scenario was notably higher among some respondent sub-group than others (Figure 95). For example, interest was greater among respondents who were more familiar with driverless cars. Nearly six in ten (58%) respondents who said they had heard or read a lot about driverless cars expressed interest in using them. Among respondents who said they had read or heard about driverless cars but did not know much about them, only 30% were interested. Interest was lower still for those who said they hadn't heard of driverless cars; only 20% were interested in using one.

Figure 95
Interest in Using Driverless Cars by Familiarity with Driverless Cars and Demographics
Rated Interest as a 4 or 5 (Very interested)



Young respondents also expressed greater interest in using driverless cars; 46% of those who were under 35 years and 41% who were between 35 and 44 years rated their interest as a 4 or 5 for at least one driverless car scenario. By contrast, only one-third (32%) of respondents who were between 45 and 54 years and just 24% of respondents who were 55 year or older were interested.

The pattern of greater interest by young respondents held across all of the driverless car scenarios, but was particularly notable for the scenario of buying a driverless car. Nearly three in ten (29%) respondents who were younger than 45 years noted a willingness to buy a driverless car, while only 17% of respondents who were 45 or older were interested in this scenario. Younger respondents also were more willing to use a driverless taxi or ride-hail vehicle and driverless bus or shuttle. One-third (33%) of respondents who were younger than 45 years were interested in the taxi/ride-hail scenario and 30% would use the bus/shuttle scenario. By contrast, 20% of respondents who were older than 45 years would be interested in using a driverless taxi/ride-hail vehicle and the same 20% share would be interested in riding in a driverless bus/shuttle.

Non-Hispanic White (39%) and Hispanic (36%) respondents expressed greater interest in using driverless cars than did Non-Hispanic Black (26%) respondents. Male respondents (47%) were considerably more interested than were female respondents (30%). There also was a clear pattern by household income, with greater interest among higher income respondents; 45% with annual incomes of $120,000 or more said they were interested, versus 39% with incomes between $60,000 and $119,999, and only 32% whose incomes were under $60,000.

Interest by Home Location – Driverless car interest overall was greatest among respondents who lived in the Inner Core. Four in ten (42%) Inner Core residents rated their interest as a 4 or 5 for at least one of the scenarios, compared with 37% of Middle Ring and 34% of Outer Ring residents. Inner Core residents were particularly more likely to report interest in using driverless vehicles that they did not own. One-third of Inner Core residents were interested in the taxi/ride-hail scenario (35%) and the bus/shuttle scenario (32%). By contrast, interest in these scenarios was lower for Middle Ring (taxi/ride-hail 27%; bus 26%) and Outer Ring residents (taxi/ride-hail 23%; bus 21%). But Outer Ring residents noted a higher willingness to buy a driverless car (27%) than did either Middle Ring (25%) or Inner Core (21%) residents.

Interest by Length of Commute and Commute Mode – Perhaps counter-intuitively, respondents who traveled farther (miles) or longer (time) to work did not report greater interest in using a driverless car. Four in ten (41%) respondents with commutes of less than 10 miles expressed interest, versus 39% who had commutes between 10 and 19.9 miles and 37% who had commutes of 20 or more miles. This result might reflect the lower expected availability of shared-ride driverless car scenarios, such as carshare and ride-hail use, for long-distance commuters.

The results also were similar for respondents with short and long travel times; 38% of respondents who traveled 20 minutes or less to work were interested in using a driverless car, compared with 39% of those who traveled 21 to 45 minutes, and 35% who commuted 46 or more minutes.

Potential interest in driverless cars overall was quite similar across all commute mode categories; 36% of bus riders, 38% of train riders, 39% of drive alone commuters, and 40% of carpoolers/vanpoolers cited at least one driverless car scenario in which they were interested. The single mode exception was bike/walk; a considerably higher share (55%) of respondents who used this mode said they were interested in using a driverless car. They were not any more interested in buying a driverless car than were other mode users, but were much more interested in riding in a driverless taxi/ride-hail vehicle and riding in a driverless bus/shuttle. Forty-four percent of bike/walk commuters would use the taxi/ride-hail scenario, versus 25% to 29% of other mode users. And 47% of bike/walk commuters would be interested in using a driverless bus/shuttle, versus 24% to 32% for other mode users.

SECTION 11 CHARACTERISTICS OF THE SAMPLE

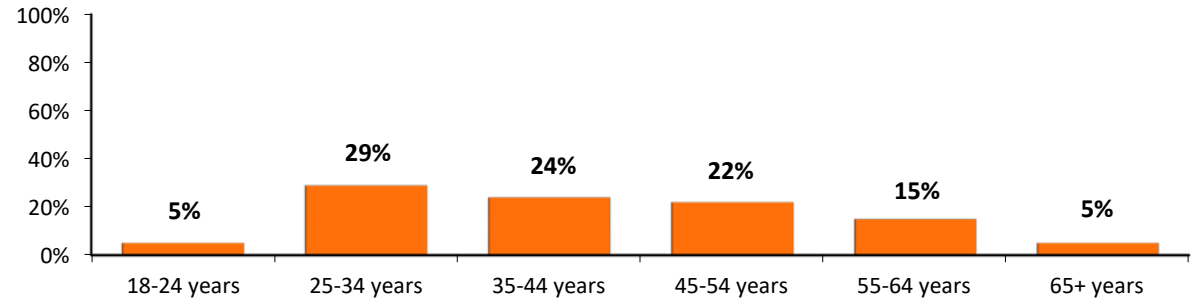
At the end of the survey interview, respondents were asked a series of questions about their age, race/ethnicity, sex, income, household size, vehicle ownership, home and work locations, type of employer, size of employer, and occupation. These results define characteristics of the sample.

Demographic Characteristics

Age

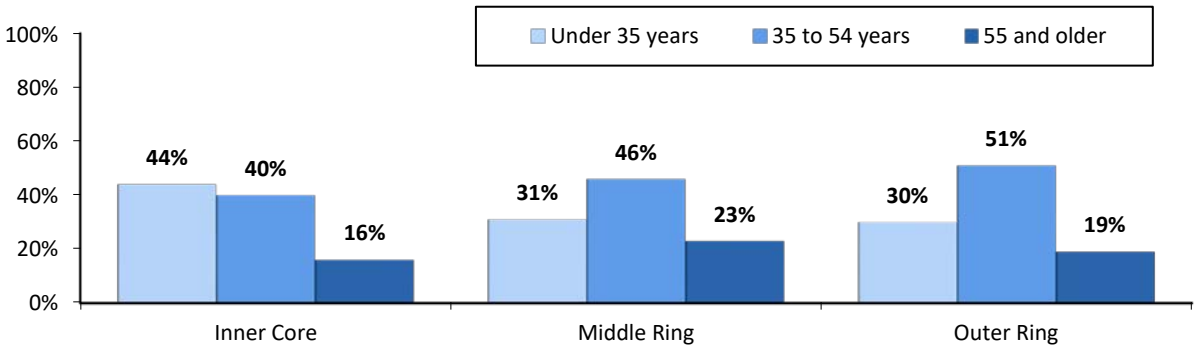
About one-third (34%) of respondents were younger than 35 years of age, 46% were between 35 and 54 years old, and 20% were 55 years of age or older (Figure 96). Note that the age distribution was adjusted during the sample weighting process, so the distribution presented in Figure 96 is exactly representative of the region, as defined in the U.S. Census American Community Survey (ACS).

Figure 96
Respondent Age Distribution
(n = 8,149)



The age distributions varied substantially by where in the region the respondents lived (Figure 97). Respondents who lived in the Inner Core area were considerably younger than those who lived in the Middle Ring and Outer Ring. More than four in ten (44%) Inner Core respondents were under 35 years of age, compared with 31% of respondents who lived in the Middle Ring and 30% who lived in the Outer Ring.

Figure 97
Respondent Age by Home Area – Inner Core, Middle Ring, and Outer Ring
(Inner Core n = 2,198, Middle Ring n = 2,402, Outer Ring n = 3,439)



Race/Ethnicity

Non-Hispanic Whites and Non-Hispanic Blacks represented the two largest racial/ethnic groups of survey respondents, 43% and 24% respectively (Table 43). Respondents who self-identified as Hispanic/Latino accounted for about 14% and Asians/Pacific Islanders represented 15% of the total. As was noted for the age distribution, the race/ethnicity distribution also was adjusted during the sample weighting process, so the race/ethnicity distribution shown in Table 43 was exactly representative of the region, as defined in the ACS.

Table 43
Race/Ethnic Background
(n = 7,839)

Ethnic Group	Percentage	Ethnic Group	Percentage
Non-Hispanic White	43%	Asian/Pacific Islander	15%
Non-Hispanic Black	24%	Other/Mixed	4%
Hispanic/Latino	14%		

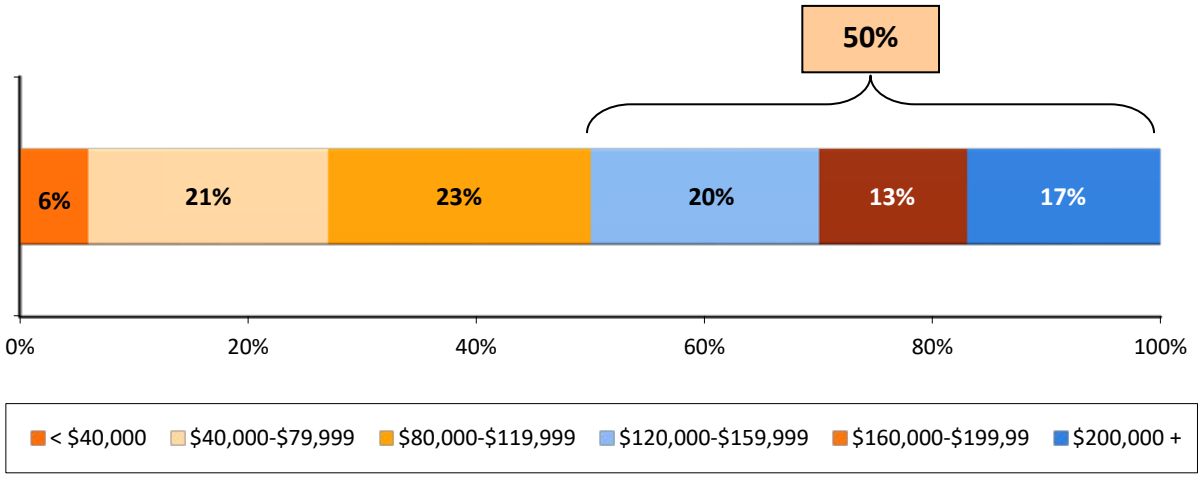
Sex

Respondents were about evenly divided between females (52%) and males (48%).

Income

Figure 98 presents the distribution of respondents' annual household income. Nearly three-quarters (73%) of respondents reported incomes of $80,000 or more and half (50%) had incomes of $120,000 or more.

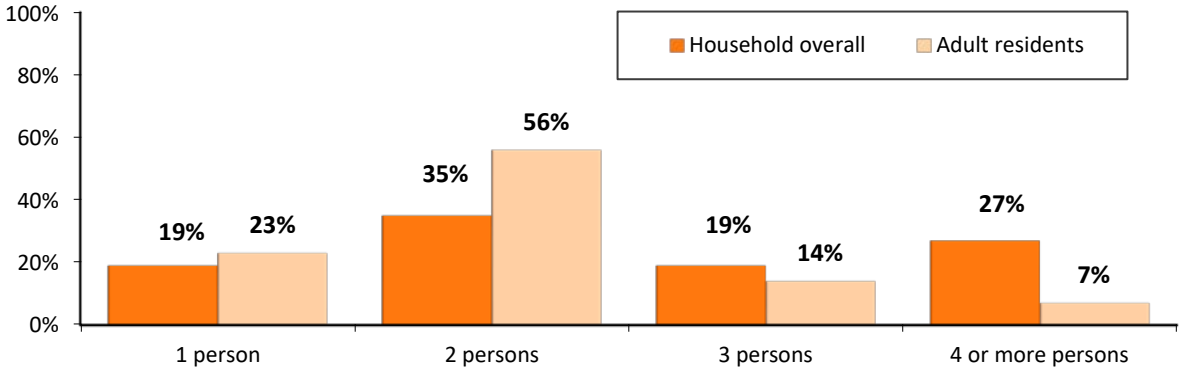
Figure 98
Annual Household Income
(n = 5,776)



Household Size and Composition

Nineteen percent of respondents said they were the only member of their household and 35% of respondents lived with one other person (Figure 99). The remaining respondents lived with at least two other household members. On average, respondents' households included 2.7 persons.

Figure 99
Household Size – Overall and Adult Residents
(n = 8,062)

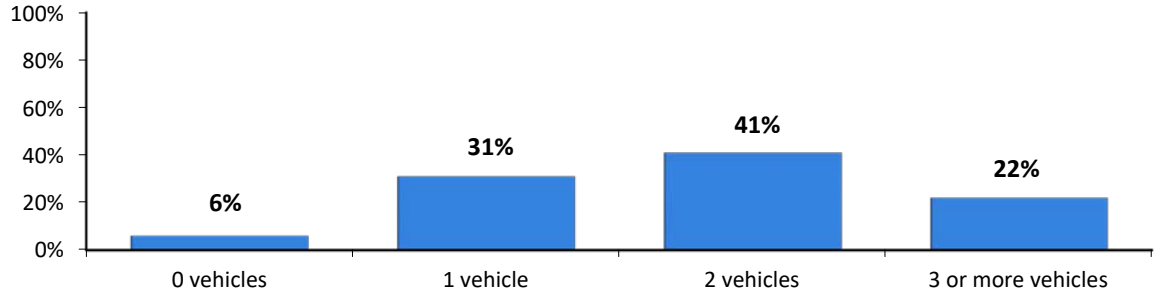


The majority of households were comprised solely of adults. Nearly two-thirds (65%) of respondents said all household members were adults; they had no children in the household. Seventeen percent of respondents reported having one child in the household and 18% had two or more children under 18. The average household was comprised of 2.1 adults and 0.6 children.

Household Vehicle Ownership

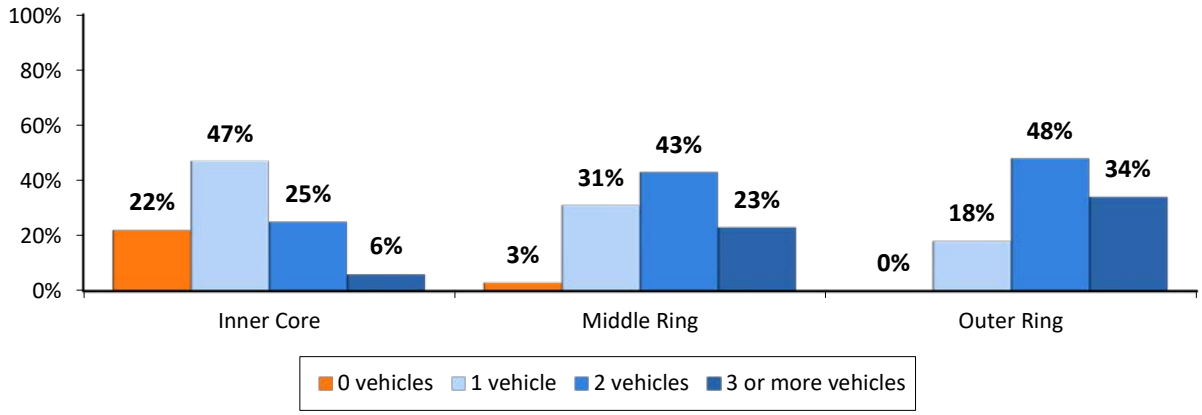
Nearly all (94%) survey respondents reported having at least one household vehicle (Figure 100). Three in ten (31%) had one vehicle, 41% had two vehicles, and 22% had three or more vehicles. Respondents reported an overall average of 1.9 vehicles per household.

Figure 100
Household Vehicles
(n = 8,034)



Vehicle ownership differed substantially by where respondents lived, with ownership lower among respondents who lived in the Inner Core than in either the Middle Ring or Outer Ring (Figure 101). Two in ten (22%) Inner Core respondents said they did not have a household vehicle, compared with only 3% of Middle Ring respondents and 0% of Outer Ring respondents.

Figure 101
Household Vehicles By Home Area
(Inner Core n = 2,189, Middle Ring n = 2,404, Outer Ring n = 3,441)

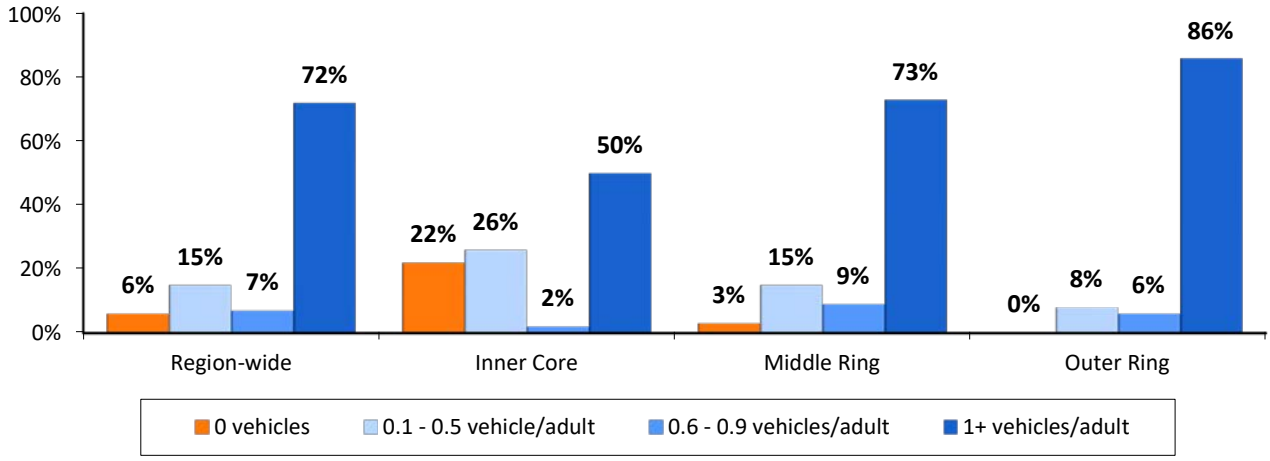


Inner Core area residents also were much less likely than were respondents who lived in other areas to have two or more vehicles per household. But this was due in part to their smaller household sizes; only 12% of Inner Core respondents lived in a household with three or more adult members, compared with 23% of Middle Ring respondents and 24% of Outer Ring respondents.

Vehicles Available Per Adult Household Member – The number of vehicles in the household is not a true measure of vehicle availability, however. Respondents who shared a vehicle with other household members might not have the vehicle available to them on a regular basis for their travel. Figure 102 presents the distribution of vehicle availability, taking into account both the number of household vehicles and number of adult household members.

As noted before, 6% of respondents were car-free, but an additional 16% were "car-lite," defined as having fewer vehicles than adult household members. Fifteen percent had between 0.1 and 0.5 vehicles per adult member, or at most one vehicle for every two adult members and 7% had between 0.6 and 0.9 vehicles per household member. On average, respondents had 0.93 vehicles per adult household member.

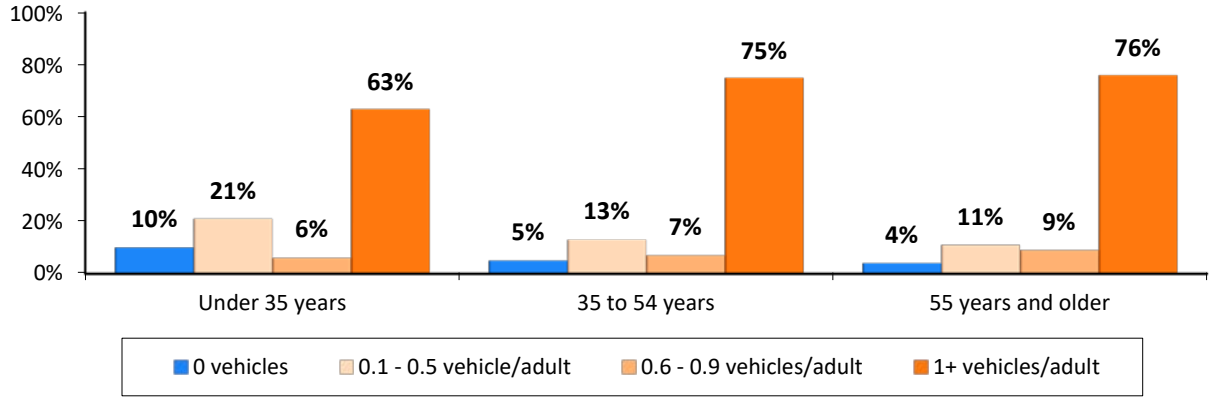
Figure 102
Vehicles Per Adult Household Member – Region-wide and by Home Area
(Region-wide n = 7,958, Inner Core n = 2,171, Middle Ring n = 2,678, Outer Ring n = 3,409)



Vehicle availability per adult was considerably lower among respondents who lived in the Inner Core than for those who lived in Middle Ring or Outer Ring jurisdictions. Just half (50%) of Inner Core respondents had a vehicle for each adult in the household, compared with 73% of respondents in the Middle Ring and 86% in the outer Ring. On average, Inner Core respondents had 0.69 vehicles per adult resident. Among Middle Ring and Outer Ring respondents, the averages were 0.96 and 1.13 vehicles per adult, respectively, essentially full availability.

Younger respondents also were much more likely to be car-free or car-lite (Figure 103). Ten percent of respondents who were under 35 years did not have a household vehicle and 27% had less than one vehicle per adult household member. Less than two-thirds (63%) of respondents in the youngest age group had a vehicle for every adult in the household. Vehicle availability was much higher among older populations. Among respondents who were 35 to 54 years, 75% had a vehicle for every adult in the household; 76% of respondents who were 55 years or older had a vehicle for each adult in the household.

Figure 103
Vehicles Per Adult Household Member by Respondent Age
(Under 35 years n = 1,678, 35 to 54 years n = 3,719, 55 years and older n = 2,514)



Vehicles Available Per Adult Household Member by Both Home Area and Age – As illustrated by Figures 102 and 103, respondents who lived in the urban center of the region and young respondents were less likely to have personal vehicles regularly available for their travel. But was age or the location the more important variable influencing their vehicle availability? Table 44 presents the percentages of respondents who were car-free (no household vehicle), car-lite (less than one vehicle per adult household member), and fully car available (one or more vehicles per adult household member) by the combination of home location and age.

In each of the three home areas, respondents who were younger than 35 years were less likely to have a vehicle always available to them than were older respondents. That is, young respondents were more likely to be car-free or car-lite than were older respondents regardless of where they lived. Among Inner Core respondents, only 40% of respondents who were younger than 35 years had a vehicle for each adult in the household, compared with 56% of those who were between 35 and 54 years old and 63% of respondents who were 55 or older.

Age differences in vehicle availability also were evident among Middle Ring and Outer Ring respondents, but were less pronounced than for the Inner Core. Two-thirds (67%) of Middle Ring respondents who were under 35 years old had a vehicle for each adult household member, compared with about three-quarters of respondents who were 35 years or older. In the Outer Ring, 83% of respondents who were under 35 years had a vehicle always available for their travel, versus about 87% of older respondents who lived in the Outer Ring. This suggests that while age is a factor influencing vehicle availability, home location is more important, possibly reflecting the wider range of travel options available in the Inner Core for residents who choose to be car-free or car-lite.

Table 44
Vehicles Per Adult Household Member by Respondent Home Area and Age
Shading indicates statistically higher percentages)

Home Area and Age		Car-free (0 vehicles)	Car-lite (0.1-0.9 vehicles per adult)	Car available (1 + vehicles per adult)
Inner Core	**Under 35 years** (n = 778)	26%	34%	40%
	35 to 54 years (n = 908)	19%	25%	56%
	55 years and older (n = 476)	14%	23%	63%
Middle Ring	**Under 35 years** (n = 417)	5%	28%	67%
	35 to 54 years (n = 1,065)	3%	22%	75%
	55 years and older (n = 875)	2%	22%	76%
Outer Ring	**Under 35 years** (n = 483)	0%	17%	83%
	35 to 54 years (n = 1,746)	0%	13%	87%
	55 years and older (n = 1,163)	1%	11%	88%

Home and Work Locations

About equal shares of respondents lived in Maryland (45%) and Virginia (43%) (Table 45). The remaining 12% of respondents lived in the District of Columbia. Because the survey only interviewed employed residents of the 11-jurisdiction area, no respondents lived outside these areas. Note also that the data expansion method defined expansion factor to align the interview counts for each of the 11 home jurisdictions to the correct representation in the region, thus the home location distribution exactly matches the percentages reported in the American Community Survey.

Work locations were more evenly divided. The largest number of respondents worked in Virginia (36%), but the District of Columbia, with 34%, was close behind in its share of regional employment. Slightly more than one-quarter (27%) of respondents worked in Maryland. Note that the work location percentages for Maryland and Virginia include only counties in the COG 11-jurisdiction region. Maryland and Virginia locations outside this region are counted in the "other" category.

Four jurisdictions accounted for residences of seven in ten respondents: Fairfax County (21%), Montgomery County, MD (20%), Prince George's County, MD (17%), and the District of Columbia (12%). The top five jurisdictions represented more than eight in ten of the work locations: District of Columbia (34%), Fairfax County (19%), Montgomery County (15%), Prince George's County (9%), and Arlington County (7%).

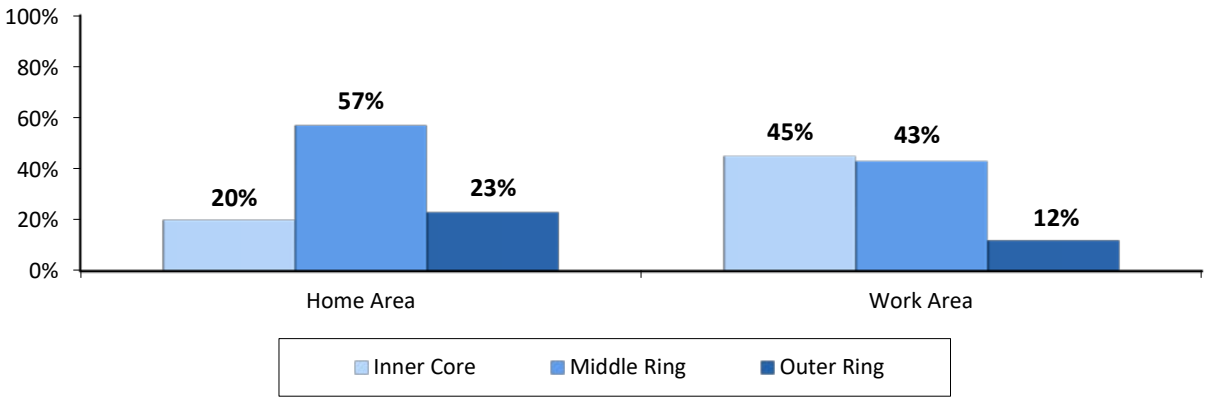
Table 45
Home and Work Locations

State/County	Home Location (n = 8,246)	Work Location* (n = 8,208)
District of Columbia	**12%**	**34%**
Maryland Counties	**45%**	**27%**
Montgomery Co.	20%	15%
Prince Georges Co.	17%	9%
Frederick Co.	4%	2%
Charles Co.	3%	1%
Calvert Co.	1%	0%
Virginia Counties	**43%**	**36%**
Fairfax Co.	21%	19%
Arlington Co.	5%	7%
Prince William Co.	8%	2%
Loudoun Co.	6%	4%
Alexandria City	3%	4%
Other	**N/A**	**3%**

Home and Work Areas

More than half of respondents (57%) lived in the Middle Ring (Figure 104). The remaining respondents were about evenly divided between the Inner Core (20%) and Outer Ring (23%). Work locations, by contrast, were divided primarily between the Inner Core (45%) and Middle Ring (43%). Only 12% of respondents worked in an Outer Ring jurisdiction.

Figure 104
Home and Work Locations – Inner Core, Middle Ring, and Outer Ring
(Home area n = 8,246, Work area n = 8,183)



Work Area by Home Area – Most respondents worked either in the geographic area where they lived or in an area closer to the center of the region (Table 46). More than eight in ten (83%) Inner Core respondents also worked in the Inner Core and 56% of Middle Ring respondents worked in the Middle Ring. Outer Ring residents were most likely to travel to another jurisdiction to work; only 35% worked in their home area, 37% traveled inbound to the Middle Ring and 28% traveled inbound to the Inner Core. Among Middle Ring residents, 38% traveled to the Inner Core. Only a small share of respondents made a "reverse commute" to a more distant ring; 17% of Inner Core and 6% of Middle Ring residents traveled outbound.

Table 46
Work Location by Home Location

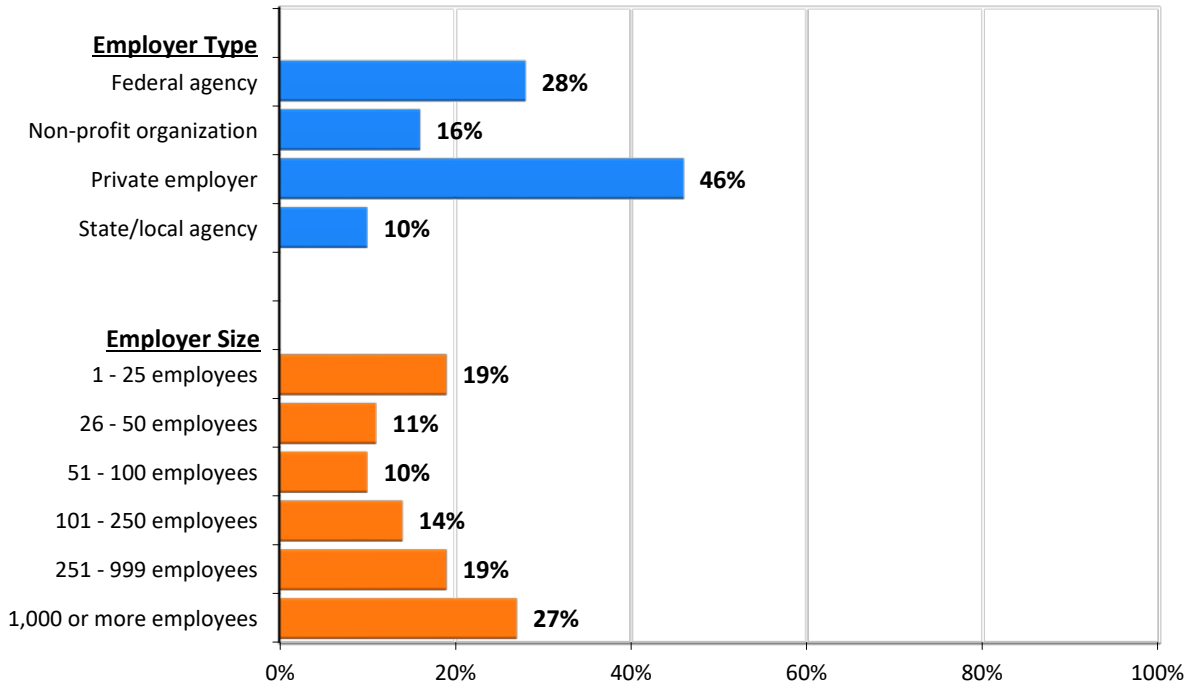
Home Area	Work Area		
	Inner Core	Middle Ring	Outer Ring
Inner Core (n = 2,228)	83%	15%	2%
Middle Ring (n = 2,452)	38%	56%	6%
Outer Ring (n = 3,503)	28%	37%	35%

Employment Characteristics

Type and Size of Employer

Respondents were asked the type of employer for which they worked and the number of employees at their worksites. These results are shown in Figure 105.

Figure 105
Employer Type and Size
(Type n = 8,007, Size n = 7,597)



Type – As indicated by the top section of Figure 11, more than four in ten (45%) respondents worked for a private sector employer, Federal government agencies employed 28%, state and local agencies employed 10%, and 16% worked for a non-profit organization.

Size – The majority of respondents worked for employers that were either very small or very large (bottom section of Figure 11). Four in ten (40%) worked for firms with 100 or fewer employees. Slightly more than one-quarter (27%) worked for employers that employed 1,000 or more employees.

Occupations

Respondents represented many occupations (Table 47). About eight in ten respondents worked in a professional (57%) or executive/managerial occupation (21%). Other common occupations included administrative support (8%), sales (3%), and technical and related support (2%).

Table 47
Occupation
(n = 7,509)

Occupation	Percentage	Income	Percentage
Professional/specialty	57%	Precision craft, production	1%
Executive/managerial	21%	Transportation/equipment	1%
Administrative support	8%	Military	1%
Sales	3%	Handlers, helpers, laborers	1%
Technicians/support	2%	Other*	1%
Service	2%		
Precision craft, production	1%		

* Each response in Other category was mentioned by less than 1% of respondents.

APPENDICES

Appendix A – Survey and Sampling Methodology

Appendix B – Survey Data Weighting and Expansion

Appendix C – Dialing Disposition

Appendix D – Survey Questionnaire

Appendix E – Instructions and Definition of Terms

Appendix F – Comparison of Key SOC Results – 2019, 2016, 2013, 2010, 2007, 2004, 2001

APPENDIX A
SURVEY AND SAMPLING METHODOLOGY

Overview

The geographic scope of COG's responsibility encompasses the 11 independent cities and counties that make up the Washington metropolitan region. All employed residents who lived within this geographic area were eligible for selection in the study.

The 2019 survey was conducted in two components. The first, and largest component, was a web-based survey. This component used an address-based sampling (ABS) method to select the sample of potential respondents, a postcard survey invitation sent through postal mail to selected addresses, and an Internet interview format for respondents to complete the survey. The 2016 SOC survey included a pilot test of this method, which had been found to produce valid survey responses at a lower cost per completed interview than for a telephone survey.

The second component was a telephone "follow-up" survey to a sample of residents who had received the postcard survey invitation, but who did not complete the survey via the Internet (Internet non-respondents). The primary function of this component was to test for any statistical differences between responses of Internet respondents and those who had not responded.

Both survey components were conducted with employed adult residents. The survey sample plan set a minimum target of 6,846 region-wide, with separate targets for individual jurisdictions in the study area. Due to higher-than-anticipated response to the Internet survey, a total of 8,246 interviews were completed for the survey, 7,808 from the Internet survey and 438 through the telephone survey. Upon completion of the interviews, responses were expanded to represent the commute patterns of residents in the independent cities and counties that make up the Washington metropolitan region.

The survey was designed to meet multiple objectives, including commute trend analysis and evaluation of Transportation Demand Management (TDM) services administered by COG's Commuter Connections Program. Wherever possible, questions used in previous SOC surveys were replicated to allow for trend analysis. Additionally, the survey included questions related to the Telework and Mass Marketing TDM program elements administered by Commuter Connections.

Questionnaire Design

The research team and COG/TPB staff prepared the survey questionnaire, with input from a TDM Evaluation Group comprised of representatives from the District of Columbia, Maryland, and Virginia. The 2019 SOC questionnaire was based on the questionnaire used in the 2016 SOC survey. Wherever possible, the study team retained the 2016 questions to allow trend analysis, but changes were made when the revisions were expected to add substantially to the accuracy of the data or to update question or response language for 2019. A small number of questions were deleted from the 2016 survey to make room for new questions of current topical interest, such as use of ride-hailing services, tolled Express lanes, trip/travel information applications, and driverless cars.

For the Internet component, the research team developed an online questionnaire using Voxco's Computer Aided Web Interviewing (CAWI) software. The online questionnaire was thoroughly tested by the research team and COG staff to ensure correct programming. When the questionnaire was finalized, it was translated into Spanish. The Spanish version of the questionnaire was made available to respondents by a toggle switch in the introduction to the online survey.

A parallel version of the questionnaire was programmed for telephone administration using Computer Assisted Telephone Interviewing (CATI) with predictive dialing for landline calls. The research team used manual dialing for cell phone calls to comply with Federal Communication Commission (FCC) regulations implemented on July 10, 2015. A copy of the English version of the Internet questionnaire is included in Appendix C. Spanish and telephone versions of the questionnaire are available upon request. The Internet and telephone questionnaires were

identical with the exception that minor wording differences were applied for the visual versus aural formats of the Internet and telephone interview methods.

Sample Areas and Sampling Methodology

The survey was conducted using a random selection of residents of the 11 independent cities and counties defined as the COG region. Eligible respondents were at least 18 years old, employed, and living within the study area. The research team set a minimum target of 600 for each of the 11 jurisdictions, with a total across the region of 6,846.

As the interviewing progressed and the Internet response rate was higher than anticipated, the research team increased the targets in the jurisdictions that were closest to the center of the region and increased targets for all jurisdictions to at least meet the numbers of interviews collected in the jurisdiction in the 2016 SOC survey. The final jurisdiction targets were broken down by three sub-regions:

- Inner Core area (Alexandria, VA, Arlington, VA, District of Columbia) – Minimum of 641 completed interviews in each of these jurisdictions, for a minimum sub-region total of 1,923
- Middle Ring area (Fairfax VA, Montgomery MD, and Prince George's MD) – Minimum of 641 completed interviews in each of these jurisdictions, for a minimum sub-region total of 1,923
- Outer Ring area (Calvert MD, Charles MD, Frederick MD, Loudoun VA, and Prince William VA) – Minimum of 600 completed interviews in each of these jurisdictions, for a minimum sub-region total of 3,000

The intended sample size of 6,846 completed interviews represented a 16% increase from the 2016 count of 5,903 completed interviews and an 8% increase from the 2013 count of 6,335 completed interviews.

Internet Survey

Potential Internet survey respondents were requested to participate in the survey through a postcard, sent through the U.S. mail service. The postcard described the survey and requested their participation, provided the URL address for the survey website and two entry passwords. The postcard also informed residents that MWCOG was offering a drawing for fifty $250.00 Amazon gift cards to residents completed the survey.

To achieve a balanced sample of responses throughout the region as well as to meet the jurisdictional targets, the consultants used an address-based method to select a random sample of households to receive the survey invitation. The address-based list included both physical mailing addresses and post-office box addresses for residents who receive their mail at central post office locations. Household addresses were chosen randomly by jurisdiction from the ABS database maintained by Marketing Systems Group (MSG). The total number of addresses needed was determined by dividing the desired final sample by the anticipated response rate, which was assumed to be slightly lower than that achieved during the 2016 SOC Internet pilot survey. The survey was conducted in two waves, the first with a postcard mailing of 180,000 and the second with a postcard mailing of 137,000.

Telephone Follow-up Survey

The telephone component of the survey consisted of telephone follow-up calls made to respondents who received the postcard and who did not complete the survey via the Internet. Telephone numbers for the follow-up survey were obtained through MSG's sample matching system. Of the 180,000 ABS addresses selected for Wave #1, 101,307 addresses were matched with landline telephone numbers and 28,899 with cell phone numbers. About 1,500 of the cell phone numbers were identified as landline numbers that had been ported to cell phones. The research team purchased the extra service provided by MSG to identify ported numbers to ensure compliance with FCC guidelines.

Survey Administration

Internet Survey

Preparation for the Internet survey included design and printing of high-quality, two-color 4.25" x 6" survey invitation postcards. The wording on the postcards invited employed persons 18 years of age or older to participate in the survey by accessing the survey website link, www.TraveltoWork2019.org and entering one of the two passwords printed on the card. Two passwords were provided to permit two adults in the household to take

the survey. The invitation to take the survey was also printed in Spanish. To reduce postal costs, COG staff used its non-profit postal rates and arranged for printing and mailing of the postcards by a local firm.

Because response rates could differ by jurisdiction, the mailing of the Internet survey invitation was accomplished in two waves. An initial order of 180,000 postcards was mailed in three groups on January 11, 14, and 16, 2019, with the distribution of addresses by jurisdiction determined by the jurisdictional response rates from the 2016 survey. Based upon response rates from the 2016 SOC Internet Pilot survey, 63,602 post cards were mailed to households in the Inner Core area; 57,550 to the Middle Ring area, and 58,848 were mailed to the Outer Ring area.

The data collection period for Wave 1 began on January 11, 2019 and ended on February 15, 2019. On February 15, the first wave results were tallied and yielded 4,773 completed interviews. Although Wave 1 postcards cited February 15 as the survey end date, the survey website remained open throughout Wave 2, so Wave 1 respondents were able to complete interviews after February 15. An additional 75 Wave 1 respondents completed the survey, for a total of 4,852 Wave 1 interviews, and an overall response rate of 2.70%.

Before purchasing addresses from MSG for Wave 2, the distribution of completed interviews from Wave #1 was analyzed to account for varying response rates by jurisdiction. The Wave 2 mailing would adjust the distribution of postcards mailed to increase the percentage of postcards sent to low-response areas and decrease the percentage sent to high-response areas. The Wave 1 response rates were used as an indicator of Wave 2 completion rates. Additionally, before finalizing the Wave 2 address purchase, the addresses of residents who had completed interviews for COG's 2017-2018 Regional Household Travel Survey (RHTS) were identified and eliminated from the sample frame. This was done so that potential respondents would not feel overburdened by survey requests.

Wave 2 targets were set and a total of 136,928 unique, de-duplicated, addresses were purchased with a distribution of 12,352 to the Inner Core area, 26,096 to the Middle Ring area, and 25,475 postcards to the Outer Ring area. Wave 2 postcards were printed and distributed by postal mail on February 22, 25, and 27. The Wave 2 data collection period extended from February 22, 2019 through March 30, 2019. By the Wave 2 cut-off date of March 30, a total of 2,970 interviews were completed for a Wave 2 response rate of 2.17%.

Wave 1 and Wave 2 combined produced 7,808 completed Internet interviews. On the postcard base of 316,928, this resulted in an overall response rate 2.47%. As noted earlier, to boost survey response rates, survey respondents were offered the opportunity to participate in a random drawing for one of fifty $250 Amazon gift cards. Following each survey wave, 25 names were drawn from respondents who had completed the interview and requested to participate in the gift card drawing. Each winner was emailed a gift card voucher. Respondents who participated in the telephone survey also were included in the drawing.

Telephone Survey

The telephone survey was conducted in the telephone survey facility of CIC Research, one of the research team members. Landline calls were made using predictive dialing and cell phone calls were made using manual dialing. Interviews were conducted using the Voxco CATI system, an integrated survey system encompassing both CATI and Web applications, which simplifies survey management while boosting interviewer performance. Before beginning the full survey effort, CIC conducted an interviewer-training session.

Items included in the session were:

- Explanation of the purpose of the study
- Identification of the group to be sampled
- Overview of COG and its function
- Review of the definition and instruction sheet to familiarize interviewers with the terminology
- Verbatim reading of the questionnaire
- Paper/CATI review of skip-patterns to familiarize interviewers with questionnaire flow
- Practice session on the CATI system in full operational mode
- Additional training for experienced interviewers who were assigned to cell phone interviewing

The research team started the telephone interviews on February 14, 2019, using the telephone numbers matched to the ABS sample addresses. All telephone interviews were completed on April 13, 2019. All calls were made to the respondents' home numbers or cell phone numbers. Weekday calls were made from 2:30 pm to 8:30 pm local time and weekend calls from 12:00 pm to 6:00 pm local time on Saturday. Calls were not made on Sunday due to low response rate and to avoid annoying potential respondents. The research team conducted a maximum of five call attempts for landline telephones at different times and over different days throughout the data collection period. Cell phone numbers were called a maximum of three times. Bilingual interviewers were available for Spanish interviews, however all of the of the 438 completed interviews all were completed in English.

All interviewing was conducted with survey supervisors present. Survey supervisors were responsible for overseeing the CATI server, monitoring quotas, editing callback appointment times, answering questions, and reviewing completed interviews. Survey supervisors also monitored a minimum of 10% of each surveyor's interviews. Other quality assurance logical checks were applied as the survey responses were collected.

Landline interviews took an average of 24.5 minutes to complete in 2019, as compared with 18.0 minutes in 2016, 17.0 minutes in 2013, and 21.1 minutes in 2010. In 2019, cell phone interviews took an average of 28.8 minutes to complete, considerably longer than the 20.2 minutes in 2016, and 18.5 minutes in 2013.

Including both the 370 interviews completed via landlines and the 68 completed via cell phones, between 22 and 60 interviews were completed in each of the 11 jurisdictions. The 2019 refusal rate for landline telephone numbers was 13.0%[10] compared with 8.0% in 2016, 9.0% in 2013, and 14.3% in the 2010 study. The 2019 refusal rate for cell phone numbers was 10.3%, compared with 20.9% in 2016 and 18.0% in 2013.

The research team experienced a high number of call attempts for the telephone survey. This was primarily due to fact that the telephone survey was a non-response, follow-up survey; effectively calling people who had not responded to the postcard request to perform the survey online. It also likely was influenced by the high use of personal answering machines, caller-ID services, and other technical services that make it possible for respondents to screen telephone calls and avoid answering calls from unknown persons, effecting a "soft refusal" to the survey.

When data collection was completed, the Internet and telephone survey data were merged into a single file for analysis. Because the telephone and Internet surveys were conducted from the same address-based sample frame, and the research team removed Internet respondents from the telephone survey sample frame, the interviews could be merged with no concern of duplicate records.

Weighting of Survey Data

Because the jurisdiction-level samples were not collected proportionately, the combined Internet/telephone survey results were expanded at the jurisdiction level to match counts of employed residents in each sample jurisdictions. The results also were adjusted to align survey results to known race/ethnicity and age distributions, an adjustment that also had been applied in the 2016 SOC survey. Analysis of the 2016 survey results showed a significant over-collection of older age groups and an under-collection of younger age groups. The age distribution in the 2019 survey also over-represented older respondents and under-represented young respondents, but to a considerably lesser extent than in 2016; the ABS sample frame and Internet survey captured a considerably larger share of young respondents than in 2016. For this reason, the age adjustment, while still necessary in 2019, was less extensive than had been needed in 2016.

Population statistics from the U.S. Census Bureau's American Community Survey (ACS) for combinations of employment status, race/ethnicity, and age by jurisdiction were used to calculate expansion values for each jurisdiction in the survey sample. Age categories included 18-34 years, 35-44 years, 45-54 years, and 55 years and older. Race/ethnicity categories included Hispanic, Non-Hispanic Black, Non-Hispanic White, and Other. Details of the weighting/expansion process are found in Appendix B.

[10] Refusal rates are calculated as the number of initial refusals plus the number terminated during the interview, divided by the total sample, excluding Not in Service. See Appendix C.

This methodology was the same as had been used for the 2016 survey, however it replaced use of employment numbers obtained from the Bureau of Labor Statistics, Local Area Unemployment Statistics (LAUS) that had been used in the 2013 SOC and earlier SOC survey. The need for available employment statistics broken down by race/ethnicity and by age groups was the overlying reason for the change from LAUS to ACS figures.

Comparisons to Past SOC Surveys

Where relevant, survey results are compared for sub-groups of respondents and against results from past SOC surveys, when these data were available and notable. Appendix E also presents comparisons of 2019 results with those of SOC surveys beginning with 2004.

The 2019 survey surveyed residents of 11 jurisdictions. This also was the sample area for the 2016, 2013, 2010, and 2007 surveys. The 2004 survey surveyed employed residents of 12 jurisdictions. Stafford County, VA was removed from SOC in 2007, because it was no longer part of the federally-designated COG non-attainment area. Thus, the sampled areas in 2019, 2016, 2013, 2010, and 2007 are not identical to the area covered in the 2004 survey.

In 2007, COG examined the possible implications of the change in the survey area and concluded that eliminating Stafford County from the survey area did not represent a significant issue for comparison of 2007 results to results of earlier surveys. This was primarily because Stafford County accounted for a very small proportion of the overall weighted sample. In 2004, Stafford County accounted for only 2.0% of the region's resident workers and an even smaller share, just 0.8%, of all workers destined for the 12-jurisdiction area.

COG compared key variables (e.g., travel mode, commute distance, telework percentage, etc.) for Stafford County with values for the 12-jurisdiction region. In most cases, Stafford County results were not statistically different from the regional averages. Thus, removing Stafford County would not have changed the overall regional results in 2004, even if Stafford had constituted a larger share of the total worker population of the region. For a few variables (e.g., travel distance, travel time), the results for Stafford were statistically different from the regional averages, but removing Stafford from the sample did not change the overall regional average significantly, due to the small contribution of Stafford's results to the regional average.

APPENDIX B
SURVEY DATA WEIGHTING AND EXPANSION

The 2019 SOC Survey was conducted using an address-based sample (ABS), distributed to residential addresses in the 11-county/city, MWCOG region. Survey responses were expanded numerically by jurisdiction-level expansion factors to align them with published employment, race/ethnicity and age group statistics for the region and individual jurisdictions in the study area. The procedure for the expansion is detailed below.

The first step in the expansion process was to align the counts of persons interviewed in each jurisdiction with the total number of employed persons in those jurisdictions. Table B-1 shows the number of employed workers living in each of the 11 areas and the number of employed persons interviewed. These figures were used in computing the initial expansion factors applied to each survey response. The U.S. Census American Community Survey (ACS) data were used to calculate the expansion factor of employed persons by race/ethnicity and by age group. Dividing the ACS estimate for employed residents by the number of interviews yields the expansion factor by jurisdiction. These factors were then applied to each survey response, allowing the survey results to be expanded to the employment totals for each of the 11 areas.

Table B-1 – Estimate of Workers by Survey Area and Expansion Factors

Survey Area	Estimated Employed Workers Totals from ACS	Number of Working Persons Interviewed	Initial Adjustment and Expansion Factors
Alexandria City, VA	101,485	698	145.394
Arlington Co., VA	153,657	790	194.502
Calvert Co., MD	46,906	725	64.698
Charles Co., MD	76,906	709	108.472
District of Columbia	386,077	753	512.719
Fairfax Co., VA	636,936	712	894.572
Frederick Co., MD	131,062	695	188.578
Loudoun Co., VA	208,369	664	313.809
Montgomery Co., MD	605,329	815	742.735
Prince George's Co., MD	540,739	941	574.643
Prince William Co., VA	250,976	744	337.334
Total	3,138,443	8,246	

Second, as was done in the 2016 SOC survey, the project team carried out a series of chi-squared statistical analysis calculations to test the survey sample distribution for race/ethnicity and age groups against published statistics for these groupings. The majority of race/ethnicity and age distributions by jurisdictions were found to be significantly different when compared to the published ACS tables. Based upon these results, adjustments to account for race/ethnicity and age groups were added to the initial expansion factors applied to the survey results to expand the survey responses to the employed population of the region. Race/ethnicity corrections had been applied to previous SOC survey, beginning with 2007. The age adjustment was added in 2016 to correct for an age bias identified during the initial analysis.

Three tables from ACS were used for the development of expansion factors: Tables B01001, B23002, and C23002. Table B01001 contained more complete information for all jurisdiction residents by race/ethnicity and by age groups for persons 18 year of age and older, however not by employed persons. Table B23002 contained information for employed residents for persons 16 years of age and older, and race/ethnicity broken down by age groups, but some race/ethnicity groups were missing, and age categories were not completely broken down into the desired age groups. By using a third table, Table C23002, some missing data was infilled for race/ethnicity and age categories. Using Table B01001 as the base, a percentage of employment was developed from Tables B23002 and C23002 for each race/ethnicity by age groups by jurisdiction and applied to Table B01001 counts. The resulting estimates of employment for residents 18 years of age and over by race/ethnicity were finalized and applied to the SOC Survey responses. The final expansion factors are shown in Table B-2 below.

Table B-2 – Race/Ethnicity and Age Weighting Factors by Survey Area

Survey Area	Race/Ethnicity and Age Weighting Factors			
	18 – 34 Years	35 – 44 Years	45 – 54 Years	55+ Years
Alexandria City, VA				
Black	351.994	232.280	250.727	242.983
White-Not Hispanic	108.501	112.986	89.751	79.869
Hispanic	337.262	290.224	235.466	180.887
Other	373.972	434.099	816.623	284.441
Arlington Co., VA				
Black	226.005	292.562	287.073	221.474
White-Not Hispanic	208.943	142.175	152.192	112.399
Hispanic	364.138	418.449	378.277	282.159
Other	313.921	266.326	274.316	342.282
Calvert Co., MD				
Black	805.336	78.457	132.135	96.158
White-Not Hispanic	159.238	63.450	57.286	35.083
Hispanic	125.917	49.517	42.785	7.346
Other	313.018	90.691	153.094	28.601
Charles Co., MD				
Black	285.556	125.685	111.615	78.379
White-Not Hispanic	205.430	100.970	78.231	61.350
Hispanic	418.081	124.946	48.605	64.494
Other	288.812	143.551	97.922	69.279
District of Columbia				
Black	1493.920	968.735	1017.214	793.281
White-Not Hispanic	425.001	301.700	260.743	243.685
Hispanic	1149.600	945.106	600.627	547.885
Other	570.557	797.213	616.251	579.571
Fairfax Co., VA				
Black	4485.535	1068.143	938.252	905.807
White-Not Hispanic	977.045	604.455	706.813	406.084
Hispanic	2009.983	3033.874	2302.742	3648.444
Other	2648.946	1277.613	1303.972	1666.672

Table A-2 continued on following page

Table B-2 – Race/Ethnicity and Age Weighting Factors by Survey Area (continued)

Survey Area	Race/Ethnicity and Age Weighting Factors			
	18 – 34 Years	35 – 44 Years	45 – 54 Years	55+ Years
Frederick Co., MD				
Black	594.477	271.140	238.990	159.941
White-Not Hispanic	250.729	181.442	157.055	130.419
Hispanic	620.905	537.553	180.510	84.067
Other	396.721	309.083	269.704	145.262
Loudoun Co., VA				
Black	1548.282	475.652	606.036	231.807
White-Not Hispanic	445.136	262.934	267.657	151.239
Hispanic	835.386	922.871	474.426	498.307
Other	651.004	345.389	302.635	279.368
Montgomery Co., MD				
Black	1613.888	1191.232	904.859	795.763
White-Not Hispanic	783.946	436.246	551.847	350.473
Hispanic	2424.306	3042.319	2108.970	1114.882
Other	1431.722	886.039	1256.062	841.922
Prince George's Co., MD				
Black	1227.018	640.535	539.061	386.115
White-Not Hispanic	395.795	137.403	219.500	152.749
Hispanic	2038.500	1684.729	1111.682	774.009
Other	2701.821	1419.532	1033.871	622.192
Prince William Co., VA				
Black	1031.359	457.356	359.880	254.887
White-Not Hispanic	467.660	261.528	179.939	131.041
Hispanic	1151.130	879.465	660.573	506.349
Other	1133.145	593.818	457.594	542.687

The expansion factors allow for the proper representation of workers in each geographical area when analyzing the survey results. By using the expansion/weighting factors shown in the table above for each sub-area, the number of workers by race/ethnicity and age groups has been adjusted so that each worker is equally represented within the region.

Level of Confidence for Analysis

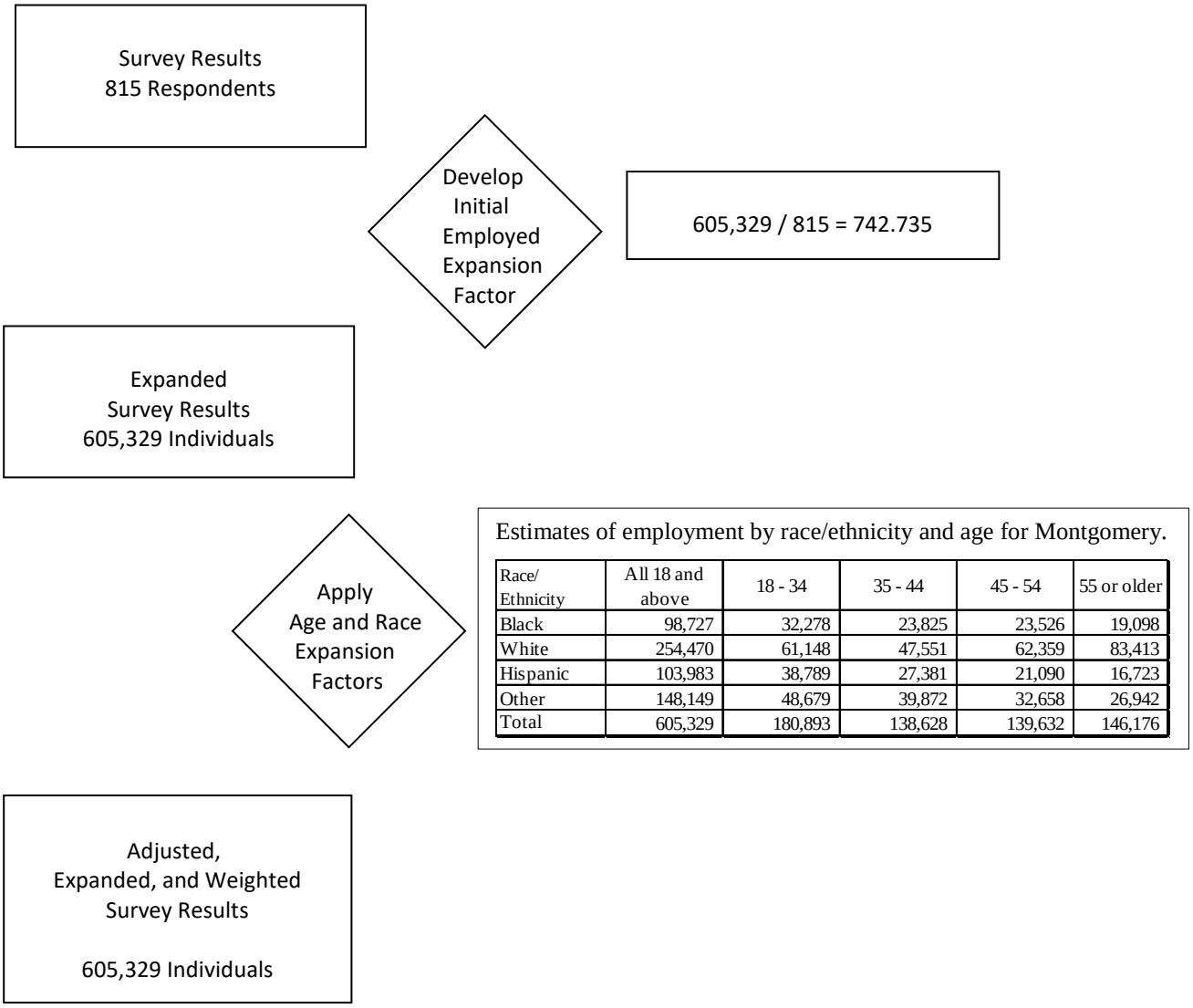
The level of confidence for analysis of the region and the county/city sub-areas will differ because the sample sizes in each category differ. Table B-3 shows the level of confidence for each of these geographic divisions for the 2019 State of the Commute survey sample. In addition, the level of confidence has been calculated for several other non-geographic key sub-populations of interest in the study. Note that some questions were answered by smaller numbers of respondents, and therefore the confidence level for these questions will be lower.

Table B-3 – Level of Confidence for Analysis

Sub-Area or Sub-Population	Sample Size	Level of Confidence
Geographic Sub-Areas		
Study Region – Eleven Areas	8,246	95% ± 1.1%
Study Portion of Virginia	3,608	95% ± 1.6%
Study Portion of Maryland	3,885	95% ± 1.6%
District of Columbia	753	95% ± 3.6%
Individual County or City Level*	664	95% ± 3.8%
Sub-Area or Sub-Population	**Sample Size**	**Level of Confidence**
Sub-Populations		
Telecommuters	2,912	95% ± 1.8%
Carpoolers (including casual)/Vanpoolers	460	95% ± 4.6%
Transit Users	2,121	95% ± 2.1%
Bike Users or Walkers	374	95% ± 5.1%
Commuters Aware of GRH	1,824	95% ± 2.3%

Figure B-1. Weighting and Expansion for Working Households

Example: Montgomery County, MD
Objective: Apply the survey results (815 respondents) to the American Community Survey Statistics (605,329) for Montgomery County, MD, to equally represent employed individuals by race/ethnicity and age groups.



Estimates of employment by race/ethnicity and age for Montgomery.

Race/ Ethnicity	All 18 and above	18 - 34	35 - 44	45 - 54	55 or older
Black	98,727	32,278	23,825	23,526	19,098
White	254,470	61,148	47,551	62,359	83,413
Hispanic	103,983	38,789	27,381	21,090	16,723
Other	148,149	48,679	39,872	32,658	26,942
Total	605,329	180,893	138,628	139,632	146,176

Note: 1. 815 x 742.735 = 605,329 estimated, employed individuals
2. Final expansion estimates for workers by race/ethnicity and by age group for Montgomery County.
3. Sum of Race/Ethnicity and Age Groups represents workers in Montgomery County.

APPENDIX C – DIALING DISPOSITIONS

Figure C-1. Total Dialing Dispositions

Final Disposition of Call Results	Landline		Cell Phone		Total	
Lives	**No.**	**%**	**No.**	**%**	**No.**	**%**
Answering machine	32,223	31.8%	5,039	57.6%	37,262	33.9%
Busy number	3,475	3.4%	663	7.6%	4,138	3.8%
Callback	451	0.4%	58	0.7%	509	0.5%
No answer	18,961	18.7%	543	6.2%	19,504	17.7%
Total Lives	**55,110**	**54.4%**	**6,303**	**72.1%**	**61,413**	**55.8%**
Deads	**No.**	**%**	**No.**	**%**	**No.**	**%**
Blocked Telephone Number	255	0.3%	101	1.2%	356	0.3%
Business Number	406	0.4%	58	0.7%	464	0.4%
Fax/Modem	1,608	1.6%	6	0.1%	1,614	1.5%
Minor's Phone	6	0.0%	10	0.1%	16	0.0%
Number not in service, including IVR	28,763	28.4%	316	3.6%	29,079	26.4%
Other language	143	0.1%	31	0.4%	174	0.2%
Out of DC / MD / VA	49	0.0%	126	1.4%	175	0.2%
Refused	9,315	9.2%	847	9.7%	10,162	9.2%
Respondent never available	17	0.0%	3	0.0%	20	0.0%
Retired / Currently not working	2,262	2.2%	91	1.0%	2,353	2.1%
Terminate During Interview	92	0.1%	20	0.2%	112	0.1%
Web Time Out	239	0.2%	78	0.9%	317	0.3%
Web Screened Out	332	0.3%	69	0.8%	401	0.4%
Total Deads	**43,487**	**42.9%**	**1,756**	**20.1%**	**45,243**	**41.1%**
Telephone Completes	**370**	**0.4%**	**68**	**0.8%**	438	**0.4%**
Web Completes from Phone Sample	**2,340**	**2.3%**	**617**	**7.1%**	2,957	**2.7%**
Total Telephone Sample Used	**101,307**	**100.0%**	**8,744**	**100.0%**	**110,051**	**100.0%**
Additional Sample Information						
Refused/Terminated	9,407		867		10,274	
Sample, excluding Not in Service	72,544		8,428		80,972	
Refusal Rate (Sample / Refused)	13.0%		10.3%		12.7%	
Number of Dialing Attempts	482,068		19,548		501,616	
Average Dialed per Completed Interview	1,303		287		1,145	
Average Number of Calls per Sample	4.8		2.2		4.6	

APPENDIX D – SURVEY QUESTIONNAIRE

Commuter Connections 2019 State of the Commute Survey
Internet Version – FINAL – 1-14-19

INTRODUCTION

The Metropolitan Washington Council of Governments is conducting this online survey of residents of Maryland, Virginia, and the District of Columbia about their travel to work. Your answers will be kept completely confidential and will be used only together with those of other respondents.

MWCOG is offering a drawing for $250 Amazon gift cards for residents who complete the survey. If you would like to be entered into the drawing for one of the fifty gift cards, please provide your name and email address at the end of the survey.

To begin the survey, please enter the 6-digit Password shown on the postcard that was mailed to your household, then click "SUBMIT" to begin the survey. If there is more than one employed person 18 years or older in your household, they may use the second password.

PASSWORD _____
SUBMIT

Thank you for your participation.

SCREENING QUESTIONS (Age, Employment, Home location)

S4 Are you an employed person who is at least 18? By employed, we mean a wage or salaried employee, military, or self-employed.

1 Yes (**CONTINUE TO Q1**)
2 No (**THANK AND TERMINATE**)

1 Are you employed full-time or part-time? If you work more than one job, please respond for your primary job.

1 Employed full-time (**CONTINUE**)
2 Employed part-time (**CONTINUE**)
3 Not employed, keeping house, retired, disabled, full-time student, looking for work (**THANK AND TERMINATE**)
97 Other **(SPECIFY) _____**
88 Don't know
99 Left blank

1a What is your home zip code?
_____

HOME CLASSIFICATION

AUTOCODE COUNTY FOR CHANTILLY
IF Q1a = 20151, AUTOCODE Q2 = 6 (Fairfax), THEN SKIP TO Q3
IF Q1a = 20152, AUTOCODE Q2 = 8 (Loudoun), THEN SKIP TO Q3

AUTOCODE ALEXANDRIA (EXCEPT 22311)
IF Q1a = 22301, 22302, 22304, 22305, OR 22314, AUTOCODE Q2 = 1 (Alexandria), THEN SKIP TO Q3
IF Q1a = 22303, 22306, 22307, 22308, 22309, 22310, OR 22315, AUTOCODE Q2 = 6 (Fairfax), THEN SKIP TO Q3

AUTOCODE TAKOMA PARK, MD, TAKOMA DC
IF Q1a = 20903, 20910, 20912, 20913, AUTOCODE Q2 = 9 (Montgomery), THEN SKIP TO Q3
IF Q1a = 20011 OR 20012, AUTOCODE Q2 = 5 (DC), THEN SKIP TO Q3

AUTOCODE LAUREL
IF Q1a = 20707 OR 20708, AUTOCODE Q2 = 10 (Prince Georges), THEN SKIP TO Q3
IF Q1a = 20723 OR 20724, AUTOCODE Q2 = 12 (Other –out of area), THEN THANK AND TERMINATE

AUTOCODE SILVER SPRING (EXCEPT 20903)
IF Q1a = 20901, 20902, 20904, 20905, 20906, OR 20910, AUTOCODE Q2 = 9, THEN SKIP TO Q3

AUTOCODE STERLING
IF Q1a = 20164, 20165, OR 20166, AUTOCODE Q2 = 8 (Loudoun), THEN SKIP TO Q3

AUTOCODE FAIRFAX AND FALLS CHURCH CITIES
IF Q1a = 22030, 22041, 22042, 22043, 22044, OR 22046, AUTOCODE Q2 = 6 (Fairfax), THEN SKIP TO Q3

AUTOCODE WALDORF (EXCEPT Q20601)
IF Q1a = 20602 OR 20603, AUTOCODE Q2 = 12 (Other - out of area), THEN THANK AND TERMINATE

AUTOCODE MANASSAS, MANASSAS PARK
IF Q1a = 20110 OR 20113, AUTOCODE Q2 = 11, THEN SKIP TO Q3

IF Q1a = ANY OTHER ZIP CODE, ASK Q2

2 In what county (or Independent City) do you live now? (**SHOW RESPONSES 1-12**)

1 Alexandria City, VA
2 Arlington Co., VA
3 Calvert Co., MD
4 Charles Co., MD
5 Washington, DC (District of Columbia)
6 Fairfax Co., VA (incl. City of Falls Church, City of Fairfax)
7 Frederick Co., MD (incl. City of Frederick)
8 Loudoun Co., VA (incl. South Riding)
9 Montgomery Co., MD (incl. City of Rockville, City of Gaithersburg, City of Takoma Park, Silver Spring)
10 Prince George's Co., MD (incl. City of Greenbelt, City of College Park, City of Bowie)
11 Prince William Co., VA (incl. City of Manassas, City of Manassas Park)
97 Other (SPECIFY) _____ (**THANK AND TERMINATE**)
88 Not sure **(THANK AND TERMINATE)**
99 Left blank **(THANK AND TERMINATE)**

IF Q2 = 5, HMST = 1 (District of Columbia)
IF Q2 = 3, 4, 7, 9, OR 10, HMST = 2 (Maryland)
IF Q2 = 1, 2, 6, 8, OR 11, HMST = 3 (Virginia)

3 In what county (or independent city) do you work? If you work in more than one location, please select the location where you work the most. **(SHOW RESPONSES 1-88)**

1 Alexandria City (VA)
2 NA – do not show on screen, reserve number for post-coding
3 Arlington Co. (VA)
4 Calvert Co. (MD)
5 Charles Co. (MD)
6 District of Columbia (Washington, DC)
7 Fairfax Co. (VA, incl Fairfax City and Falls Church City)
8 NA – do not show on screen, do not reuse number
9 NA – do not show on screen, do not reuse number
10 Frederick Co. (MD)
11 NA – do not show on screen, reserve number for post-coding
12 Loudoun Co. (VA)
13 NA – do not show on screen, do not reuse number
14 NA – do not show on screen, do not reuse number
15 Montgomery Co. (MD)
16 Prince George's Co. (MD)
17 Prince William Co. (VA, incl Manassas City and Manassas Park City)
18 NA – do not show on screen, reserve number for post-coding
19 NA – do not show on screen, reserve number for post-coding
20 NA – do not show on screen, reserve number for post-coding
97 Other _____
88 Not sure
99 Left blank

IF Q3 = 6, WKST = 1 (District of Columbia)
IF Q3 = 2, 4, 5, 10, 11, 15, 16, 19, OR 20, WKST = 2 (Maryland)
IF Q3 = 1, 3, 7, 8, 9, 12, 13, 14, 17, OR 18, WKST = 3 (Virginia)
IF Q3 = 97, 88, OR 99, WKST = 9 (Unknown)

COMMUTE PATTERNS / WORK SCHEDULE / TW STATUS

Now, please answer some questions about your commute to and from work. If you have more than one job, answer for your primary job.

4 First, in a TYPICAL week, how many days are you assigned to work? If your work schedule varies from week to week, please indicate the number that is most typical.

1 1 day
2 2 days
3 3 days
4 4 days
5 5 days
6 6 days
7 7 days
0 0, not currently working **(THANK AND TERMINATE)**
99 Left blank **(THANK AND TERMINATE)**

5 How many of those days are weekdays (Monday-Friday)?

1 1 day
2 2 days
3 3 days
4 4 days
5 5 days
0 0 (work only on weekends) (**SKIP TO DEFINE SURVTYPE**)
99 Left blank **(THANK AND TERMINATE)**

6 And how many weekdays do you commute to a work location outside your home? If the number varies from week to week, please indicate what would be most typical**.**

1 1 day
2 2 days
3 3 days
4 4 days
5 5 days
0 0 (work all work days at home) (**CONTINUE TO Q8**)
99 Left blank (**SKIP TO SURVTYPE**)

IF Q1 = 2 (work part-time) AND Q6 = 1, 2, 3, 4, OR 5, SKIP TO DEFINE SURVTYPE
IF Q1 = 1 OR 8 AND Q6 = 1, 2, 3, 4, OR 5, SKIP TO DEFINE SURVTYPE

8 To clarify, you work at home every weekday you work. Is that right?

1 Yes (**SKIP TO Q9**)
2 No, I do typically commute to a work location outside my home one or more days per week **(CONTINUE TO Q8a)**
99 Left blank **(CONTINUE TO Q8a)**

8a In a typical week, how many weekdays do you commute to a work location outside your home? If the number of days varies, select the number that is most typical.

1 1 day
2 2 days
3 3 days
4 4 days
5 5 days
99 Left blank

SKIP TO DEFINE SURVTYPE

9 Which of the following best describes your work situation?

1 Self-employed with my primary work location at home
2 Work for an employer in the Washington metro region, but I telecommute all of my workdays
3 Work for an employer outside the Washington metro region, but I telecommute all of my workdays
97 Other situation (please describe) _____
99 Left blank

DEFINE SURVEY TYPE

1 WKALL – all work days on weekends
2 HOMEALL – self-employed work at home
3 TELEALL – full-time telework
4 REGULAR – commuter, work outside home some days
5 HOMEOTHER – work at home; other/unknown reason
6 SEUNK – Self-employed, unknown if home only **(RESERVE FOR POST-PROCESSING)**
9 UNKNOWN – unknown work arrangement

IF Q5 = 0 (zero), CODE SURVTYPE = WKALL (1)
IF Q9 = 1, CODE SURVTYPE = HOMEALL (2)
IF Q9 = 2 OR 3, CODE SURVTYPE = TELEALL (3)

IF Q6 = 1, 2, 3, 4, OR 5, CODE SURVTYPE = REGULAR (4)
IF Q8a = 1, 2, 3, 4, OR 5, CODE SURVTYPE = REGULAR (4)

IF Q9 = 4 or 9, CODE SURVTYPE = HOMEOTHER (5)

IF Q6 = 9, CODE SURVTYPE = UNKNOWN (9)
IF Q8a = 9, CODE SURVTYPE = UNKNOWN (9)

BRANCHING INSTRUCTIONS BEFORE Q11a

IF SURVTYPE = 1 (WKALL), SKIP TO Q61
IF SURVTYPE = 5 (HOMEOTHER), SKIP TO Q61
IF SURVTYPE = 9 (UNKNOWN), SKIP TO Q61

IF SURVTYPE = 2 (HOMEALL), SKIP TO INSTRUCTIONS BEFORE Q15

IF Q1 = 2 (part-time) AND SURVTYPE = 3 (TELEALL) OR 4 (REGULAR), AUTOCODE Q11a = 6, THEN SKIP TO DEFINE Check Q15 Days
IF Q1 = 1 OR 8 AND SURVTYPE = 3 (TELEALL) OR 4 (REGULAR), CONTINUE TO Q11a

11a Which of the following best reflects your work schedule? Please select only one.

1 Standard, five or more days per week
2 Work four 10-hour days per week, total of 40 hours (4/40 compressed schedule)
3 Work nine days every 2 weeks, total of 80 hours (9/80 compressed schedule)
4 Work three 12-hour days per week, total of 36 hours (3/36 compressed schedule)
5 Other **(SPECIFY) _____**
6 *Work part-time **(AUTOCODE ONLY, DON'T SHOW ON SCREEN)***
88 Not sure
99 Left blank

DEFINE Check Q15 Days

IF Q11a = 2, 3, OR 4, SET CHECK Q15 DAYS = 5
IF Q11a = 1, 5, 6, 88, OR 99, SET CHECK Q15 DAYS = Q5

INSTRUCTIONS BEFORE Q13

IF TELEALL (SURVTYPE = 3), AUTOCODE Q13 = 1, THEN SKIP TO Q13a

13 Now please answer a few questions about telecommuting, also called teleworking or working remotely. For purposes of this survey, "telecommuters" are defined as "wage and salary employees who at least occasionally work at home or at a telework or satellite center during an entire work day, instead of traveling to their regular work place." Based on this definition, are you a telecommuter?

1 Yes
2 No (**SKIP TO Q14d**)
88 Not sure (**SKIP TO Q14d**)
89 Left blank (**SKIP TO INSTRUCTIONS BEFORE Q15**)

13a Does your employer have a formal telecommuting program at your workplace or do you telecommute under an informal arrangement between you and your supervisor?

1 Formal program
2 Informal arrangement
3 N/A **(DO NOT SHOW ON SCREEN)**
88 Not sure
99 Left blank

IF SURVTYPE = 3 (TELEALL) AND Q5 = 1, AUTOCODE Q14 = 4, THEN SKIP TO INSTRUCTIONS BEFORE Q15
IF SURVTYPE = 3 (TELEALL) AND Q5 = 2, AUTOCODE Q14 = 5, THEN SKIP TO INSTRUCTIONS BEFORE Q15
IF SURVTYPE = 3 (TELEALL) AND Q5 = 3, 4, OR 5, AUTOCODE Q14 = 6, THEN SKIP TO INSTRUCTIONS BEFORE Q15

14 How often do you usually telecommute? **(SHOW RESPONSES 2 - 7)**

1 NA (DO NOT SHOW ON SCREEN)
2 Less than one time per month/only in emergencies
3 1-3 times a month
4 1 day a week
5 2 days a week
6 3 or more days a week
97 Other (**SPECIFY**) _____
99 Left blank

14a Thinking about a day when traffic in the region is likely to be disrupted due to a snowstorm or major special event, how likely are you to telecommute to avoid the traffic?

1 Very likely
2 Somewhat likely
3 Not likely
88 Not sure
99 Left blank

SKIP TO INSTRUCTIONS BEFORE Q15

QUESTIONS FOR NON-TELEWORKERS

14d Does your employer have a formal telecommuting program at your workplace or permit employees to telecommute under an informal arrangement with the supervisor?

1 Yes, formal program
2 Yes, informal arrangement
3 No, telecommuting is not permitted, neither formal or informal
88 Not sure
99 Left blank

14e Considering your job responsibilities, how often would you be able to work remotely at home or at another location other than your main work place?

1 Never **(SKIP TO INSTRUCTIONS BEFORE Q15)**
2 Less than once per month
3 1-3 days per month
4 1-2 days per week
5 3 or more days per week
88 Not sure **(SKIP TO INSTRUCTIONS BEFORE Q15)**
99 Left blank **(SKIP TO INSTRUCTIONS BEFORE Q15)**

14f Would you be interested in telecommuting on an occasional or regular basis?

1 Yes, occasional basis
2 Yes, regular basis
3 Not interested in telecommuting
88 Not sure
99 Left blank

14k In the past year, about how many days did you work at home all day on a regular work day, instead of traveling to your main work place? This could have been, for example if you expected traffic to be disrupted during a snowstorm or major special event, or when you had a personal event, such as a home delivery.

1 0, never worked at home
2 1 - 2 days
3 3 - 4 days
4 5 - 6 days
5 7 - 9 days
6 10 or more days
88 Not sure
99 Left blank

CURRENT COMMUTE PATTERNS

INSTRUCTIONS BEFORE Q15

IF SURVTYPE = 2 (HOMEALL), DON'T ASK Q15. AUTOCODE Q15, RESPONSE 18 FOR MONDAY, TUESDAY, WEDNESDAY, THURSDAY, FRIDAY UNTIL NUMBER OF DAYS REPORTED IN Q15 = NUMBER REPORTED IN Q5. IF Q5 = 1, 2, 3, OR 4, CODE REMAINING DAYS = RESPONSE 16. THEN SKIP TO DEFINE Q15 MODES

IF SURVTYPE = 3 (TELEALL), DON'T ASK Q15. AUTOCODE Q15, RESPONSE 2 FOR MONDAY, TUESDAY, WEDNESDAY, THURSDAY, FRIDAY UNTIL NUMBER OF DAYS REPORTED IN Q15 = NUMBER REPORTED IN Q5. IF Q5 = 1, 2, 3, OR 4, CODE REMAINING DAYS = RESPONSE 16. THEN SKIP TO DEFINE Q15 MODES

IF Q11a = 2, 3, OR 4, INCLUDE "or compressed schedule (e.g., 4/40, 9/80) day off)" IN Q15, SECOND BULLET

IF Q14 = 4, 5, OR 6 (telework 1+ days per week), SHOW THIRD BULLET IN Q15: "If you typically telework one or more days per week, check telework for those days"

15 Next, please think about your travel to work. In a typical work week, what type of transportation do you use on each of the days you work? If your travel to work varies from week to week, report for the MOST typical week.

- If you use more than one type of transportation on a single day, check only the type you use for the longest distance part of your trip.
- For any days you do not work, check regular day off [*or compressed schedule (e.g., 4/40, 9/80) day off*].
- *If you typically telework one or more days per week, check telework for those days.*

PROGRAMMER NOTES ON CHECK OF Q15 WITH Q5 AND PROMPTS TO RESPONDENTS

ALLOW ONLY ONE MODE RESPONSE FOR EACH DAY

IF Q11a = 2, 3, OR 4 AND RESPONDENT DOES NOT CHECK "CWS day off" (RESPONSE 1) FOR ANY DAY, SHOW MESSAGE: "You said you typically work a compressed work schedule. How many compressed schedule days do you typically have off in a week?" (ACCEPT 0 AS A RESPONSE)

IF Q14 = 4, 5, OR 6 AND RESPONDENT DOES NOT CHECK "Telework" (RESPONSE 2), SHOW MESSAGE: "You said you typically telework. How many weekdays (Monday through Friday), do you telework in a typical week? (ACCEPT 0 AS A RESPONSE)

(Prompt if respondent enters too few travel mode days; total Q15 days is less than CHECK Q15 DAYS weekdays worked)
IF (Q15, SUM OF MON-FRI RESPONSES 1-15, 17-22 OR 97) < CHECK Q15 DAYS, SHOW PROMPT, "Please report for a total of [CHECK Q15 DAYS] work days, Monday through Friday. If you typically telework or have a compressed schedule day off, please count those as work days."

(Prompt if respondent enters too many travel mode days; total Q15 days is more than CHECK Q15 DAYS weekdays worked)
IF (Q15, SUM OF MON-FRI RESPONSES 1-15, 17-22 OR 97) > CHECK Q15 DAYS, SHOW PROMPT, "Please report how you travel ONLY on the [CHECK Q15 days] that you work Monday through Friday. If you typically telework or have a compressed schedule day off, please count those as work days. For all other days, indicate regular day off."

SHOW MODES IN MON-FRI GRID FORMAT IN THE ORDER SHOWN

Type of transportation	(Check one Button in Each Column)				
	Mon	Tues	Wed	Thur	Fri
3 Drive alone in a car, truck, SUV, or van	❍	❍	❍	❍	❍
19 Taxi	❍	❍	❍	❍	❍
22 Uber, Lyft, Via	❍	❍	❍	❍	❍
4 Motorcycle	❍	❍	❍	❍	❍
5 Carpool (Including carpool w/family member, dropped off)	❍	❍	❍	❍	❍
6 Casual carpool (slugging)	❍	❍	❍	❍	❍
7 Vanpool	❍	❍	❍	❍	❍
8 Buspool (including commuter bus, subscription bus)	❍	❍	❍	❍	❍
9 Bus (public bus, shuttle)	❍	❍	❍	❍	❍
10 Metrorail	❍	❍	❍	❍	❍
11 MARC (MD Commuter Rail)	❍	❍	❍	❍	❍
12 VRE	❍	❍	❍	❍	❍
13 Amtrak/other train	❍	❍	❍	❍	❍
14 Bicycle/scooter/e-scooter (including bikeshare, dockless bike)	❍	❍	❍	❍	❍
15 Walk	❍	❍	❍	❍	❍
2 Telecommute (work all day at home)	❍	❍	❍	❍	❍
97 Other (Specify) _____	❍	❍	❍	❍	❍

1 Compressed schedule **day off**	❍	❍	❍	❍	❍
16 Regular day off (not compressed schedule)	❍	❍	❍	❍	❍
17 NA – do not show on screen, do not reuse number	❍	❍	❍	❍	❍
18 SE-WAH days, other than telework (AUTOCODE ONLY)	❍	❍	❍	❍	❍

IF Q15 NE 14 ANY DAY, SKIP TO INSTRUCTIONS BEFORE Q15b
IF Q15 = 14 (bicycle/e-scooter) FOR ANY DAY, ASK Q15a

15a On the day(s) that you biked or rode a scooter/e-scooter to work, was it a…? Select all that apply. **(ACCEPT MULTIPLES)**

1 Capital Bikeshare bike
2 Personal bike (including bike borrowed from friend or family member)
3 Dockless bike
4 Rented scooter/e-scooter
5 Personal scooter/e-scooter
88 Not sure
99 Left blank

INSTRUCTIONS BEFORE Q15b

IF Q15 NE 22 (Uber, Lyft) ANY DAY, SKIP TO Q16

IF Q15 = 22 (Uber, Lyft) FOR ANY DAY, ASK Q15b AND Q15c

15b You mentioned using Uber, Lyft, or Via for some of your trips to work. Which of these ridehailing services do you use for these trips? (Select all that apply)

1 Lyft
2 Uber (riding alone as a passenger)
3 UberPool or Uber Express Pool (riding with other passengers)
4 Via
97 Other (please specify) _____
88 Not sure
99 Left blank

15c How would you likely have made these trips if this/these ridehailing services were not available? (Select all that apply)

1 Drive alone (personal car, SUV, truck, van, motorcycle)
2 Taxi
3 Public transit (bus, buspool, Metrorail, commuter train)
4 Carpool or vanpool, casual carpool/slug
5 Bicycle
6 Walk
97 Other (please specify) _____
88 Not sure
99 Left blank

IF Q15b NE 3 AND Q15b NE 4, SKIP TO Q16

IF (Q15b = 3 (UberPool/Uber Express Pool) OR 4 (Via)) AND Q15 NE 5, 6, OR 7 FOR ANY DAY (NO DAYS OF CP, CCP, VP), ASK Q15c

15d On the days that you ride UberPool, Uber Express Pool, or Via to or from work, how many people, including yourself, but excluding the driver, usually ride in the vehicle?

_____ total people in pool (must be more than 1)
888 Not sure
999 Left blank

16 How long is your typical daily commute one-way? First, how many miles? Please enter numeric value only. **(PERMIT UP TO ONE DECIMAL PLACE)**

Number of miles _____
888 Not sure
999 Left blank

16a And how many minutes does it typically take you to travel from home to work? If the time varies from day to day, enter what would be most typical **(PERMIT WHOLE NUMBERS ONLY, NO DECIMAL PLACES)**

Number of minutes _____
888 Not sure

17a At what time do you typically arrive at work? If your schedule varies, please select what is most typical**.**

1 12:01 am – 5:59 am
2 6:00 am – 6:29 am
3 6:30 am – 6:59 am
4 7:00 am – 7:29 am
5 7:30 am – 7:59 am
6 8:00 am – 8:29 am
7 8:30 am – 8:59 am
8 9:00 am – 9:29 am
9 9:30 am – 9:59 am
10 10:00 am – 5:59 pm
11 6:00 pm – 12 midnight
12 NA – DO NOT SHOW ON SCREEN
88 Not sure
99 Left blank

DEFINE Q15 MODES USED (ALLOW MULTIPLE MODES) – AUTOCODE ONLY:

CWDAYS = SUM OF Q15, RESPONSE 1
TWDAYS = SUM OF Q15, RESPONSE 2
DADAYS = SUM OF Q15, RESPONSE 3, 4, 19, 22
CPDAYS = SUM OF Q15, RESPONSE 5, 6
VPDAYS = SUM OF Q15, RESPONSE 7
BUDAYS = SUM OF Q15, RESPONSES 8, 9
MRDAYS = SUM OF Q15, RESPONSE 10
CRDAYS = SUM OF Q15, RESPONSE 11, 12, 13
BKDAYS = SUM OF Q15, RESPONSE 14
WKDAYS = SUM OF Q15, RESPONSE 15
OTDAYS = SUM OF Q15, RESPONSE 97
SEDAYS = SUM OF Q15, RESPONSE 18

IF CWDAYS > 0, Q15 MODE = 1 COMPRESSED SCHEDULE
IF TWDAYS > 0, Q15 MODE = 2 TELECOMMUTE
IF DADAYS > 0, Q15 MODE = 3 DRIVE ALONE
IF CPDAYS > 0, Q15 MODE = 4 CARPOOL
IF VPDAYS > 0, Q15 MODE = 5 VANPOOL
IF BUDAYS > 0, Q15 MODE = 6 BUS
IF MRDAYS > 0, Q15 MODE = 7 METRORAIL
IF CRDAYS > 0, Q15 MODE = 8 COMMUTER TRAIN)
IF BKDAYS > 0, Q15 MODE = 9 BICYCLE/SCOOTER
IF WKDAYS > 0, Q15 MODE = 10 WALKING
IF OTDAYS > 0, Q15 MODE = 11 OTHER
IF SEDAYS > 0, Q15 MODE = 18 SELF-EMPLOYED, WORK AT HOME

DEFINE PRIMARY MODE

SET PRMODE = Q15 MODE WITH HIGHEST NUMBER OF DAYS. IF TIE FOR HIGHEST NUMBER, CHOOSE PRIMARY MODE IN THIS PRIORITY ORDER: 5 (VANPOOL), 4 (CARPOOL), 7 (METRORAIL), 6 (BUS), 8 (COMMUTER TRAIN), 9 (BICYCLE/SCOOTER), 10 (WALKING), 2 (TELECOMMUTE), 3 (DRIVE ALONE), 11 (OTHER), 18 (SELF-EMPLOYED, WORK AT HOME). DO NOT SELECT COMPRESSED SCHEDULE (1) AS PRIMARY MODE

DEFINE CALTDAYS = TOTAL Q15 DAYS USING MODES 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15

IF SURVTYPE = 2 (HOMEALL), SKIP TO Q61
IF SURVTYPE = 3 (TELEALL), SKIP TO INSTRUCTIONS BEFORE Q34

USE OF ALTERNATIVE MODES

IN Q18, <MODE Q15> = ALL MODES 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 19, 22 NAMED IN Q15 (DO NOT ASK ABOUT OTHER, Q15 = 97 (OTHER))

IF ONLY MODE Q15 = 97 (OTHER), SKIP TO INSTRUCTIONS BEFORE Q34

IN Q18, LIST ONLY MODES REPORTED IN Q15 (with additional changes shown); USE THE MODE NAMES SHOWN;

18 How long have you been using the type or types of transportation shown below to get to work? Please enter the number of months. Hover here for a years-to-months conversion table.

Type of transportation	Number of months	Don't recall (888)
3 Drive alone in a car, truck, SUV, or van		❍
19 Taxi		❍
22 Uber, Lyft, Via		❍
4 Motorcycle		❍
5 Carpool (Including carpool w/family member, dropped off)		❍
6 Casual carpool (slugging)		❍
7 Vanpool		❍
8 Buspool (including commuter bus, subscription bus)		❍
9 Bus (public bus, shuttle)		❍
10 Metrorail		❍
11 MARC (MD Commuter Rail)		❍
12 VRE		❍
13 Amtrak/other train		❍
14 Bicycle/scooter/e-scooter (including bikeshare, dockless bike)		❍
15 Walk		❍
2 NA – DO NOT SHOW ON SCREEN		❍
97 NA – DO NOT SHOW ON SCREEN		❍

1 NA – DO NOT SHOW ON SCREEN		❍
16 NA – DO NOT SHOW ON SCREEN		❍
17 NA – DO NOT SHOW ON SCREEN		❍
18 NA – DO NOT SHOW ON SCREEN		❍

DEFINE RECENT MODE = Q18 MODE WITH FEWEST NUMBER OF MONTHS
IF TIE FOR RECENT MODE, DESIGNATE BOTH MODES AS RECENT MODE

Skip Q19a – Q20 (reasons for change) if RECENT MODE duration is more than 36 months
IF RECENT MODE Q18 DURATION IS GREATER THAN 36 MONTHS OR 3.0 YEARS, SKIP TO INSTRUCTIONS BEFORE Q28

IF RECENT MODE DURATION IS 36 OR FEWER MONTHS, ASK Q19a

IF RECENT MODE IS 5 (CARPOOL) OR 6 (CASUAL CARPOOL), ENTER "carpool" IN Q19a AND Q20
IF RECENT MODE IS 8 (BUSPOOL) OR 9 (BUS), ENTER "ride a bus" IN Q19a AND Q20

19a Before you started [RECENT MODE**: *riding Metrorail, riding a bus, bicycling or riding a scooter, walking, carpooling, vanpooling, riding commuter rail, driving alone, riding a motorcycle, riding in a taxi, riding Uber, Lyft, or Via*]** to work, what type or types of transportation did you use to get to work? Select all that apply. If you were not working then or if you worked in a different region then, check "did not work then" (**ALLOW MULTIPLE MODES 1 – 15, 19, 22, AND 97. DO NOT ACCEPT MULTIPLES FOR 21**)

Type of transportation	Used Before
21 Did not work then, worked outside Washington region then	❍
20 NA – DO NOT SHOW ON SCREEN	
3 Drive alone in a car, truck, SUV, or van	❍
19 Taxi	❍
22 Uber, Lyft, or Via	❍
4 Motorcycle	❍
5 Carpool (Including carpool w/family member, dropped off, casual carpool/slug)	❍
6 NA – DO NOT SHOW ON SCREEN	❍
7 Vanpool	❍
8 NA – DO NOT SHOW ON SCREEN	❍
9 Bus (public or private bus, shuttle, commuter bus)	❍
10 Metrorail	❍
11 MARC (MD Commuter Rail)	❍
12 VRE	❍
13 Amtrak/other train	❍
14 Bicycle/scooter/e-scooter (including bikeshare, dockless bike)	❍
15 Walk	❍
2 Telework	❍
97 Other _____	❍

1 NA – DO NOT SHOW ON SCREEN	❍
16 NA – DO NOT SHOW ON SCREEN	❍
17 NA – DO NOT SHOW ON SCREEN	❍
18 NA – DO NOT SHOW ON SCREEN	❍

20 What were the reasons you began <**RECENT MODE Q15** *riding Metrorail, riding a bus, bicycling or riding a scooter, walking, carpooling, vanpooling, riding commuter rail, driving alone, riding a motorcycle, riding in a taxi, riding Uber, Lyft, or Via* >?

_____

OPEN-ENDED RESPONSE – CODE IN POST-PROCESSING INTO THE FOLLOWING CATEGORIES; ADD OTHERS AS NECESSARY)

Personal circumstances/preferences

1 Changed jobs/work hours
2 Moved to a different residence
3 Employer or worksite moved
4 Spouse started new job
5 Save money
6 Save time
7 Gas prices too high
8 Tired of driving
9 Prefer to drive, wanted to drive

10 Safety
11 No vehicle available
12 Car became available, additional car in household
13 To stay with family/children
14 HOV lanes available
50 Express lanes available
15 Congestion (other)
16 Always used
17 Close to work or transportation pick up/drop off location
18 Afraid of or didn't like previous form of transportation
19 Stress
20 Weather
21 Bought hybrid vehicle
22 Convenient (NOT AN ANSWER, PROBE FOR WHY IT'S CONVENIENT)
23 To get exercise
24 Concerned about the environment, global warming

Commute Services/Programs

25 New option that became available
26 Protected bike lanes available
27 Pressure or encouragement from employer, special program at work
28 GRH
29 Air Quality Action Days
30 No parking
31 Parking expense, parking cost too high
32 Found carpool partner (Commuter Connections, ZimRide, Waze, UberPool, craigslist, other)
33 NuRide (VA carpool incentive)
34 SmartTrip/SmartBenefit, transit subsidy, vanpool subsidy, Commuter Choice Maryland
35 'Pool Rewards carpool/vanpool incentive
50 Flextime Reward
51 CarpoolNow mobile app
52 incenTrip

Information/Promotion

36 Advertising
37 Initiated request/looked for information on my own
38 Info. From Commuter Connections/Council of Governments/COG/800 number
39 Commuter Connections Website
40 Other Website
41 Word of mouth/recommendation
42 Information from transit agency
43 Saw highway sign
44 Social media – Facebook, Twitter, Instagram, YouTube
97 Other _____
88 Not sure
99 Left blank

ALTERNATIVE MODE PATTERNS

INSTRUCTIONS BEFORE Q28

IF (CPDAYS = 0 AND VPDAYS = 0 AND BUDAYS = 0 AND MRDAYS = 0 AND CRDAYS = 0), SKIP TO INSTRUCTIONS BEFORE Q34

IF CPDAYS = 0 AND VPDAYS = 0 AND (BUDAYS > 0 OR MRDAYS > 0 OR CRDAYS > 0), SKIP TO INSTRUCTIONS BEFORE Q29

IF CPDAYS > 0 OR VPDAYS > 0, CONTINUE TO Q28

28 On the days that you [carpool, vanpool (FROM Q15)], how many people, including yourself, usually ride in the vehicle?
(IF MORE THAN 1 ANSWER IN Q15, SELECT 1 USING THIS PRIORITY: vanpool, carpool, casual carpooling/slug)

_____ total people in pool (must be more than 1)
99 Left blank

INSTRUCTIONS BEFORE Q28a

IF CPDAYS = 0, SKIP TO INSTRUCTIONS BEFORE Q29
IF CPDAYS > 0, CONTINUE WITH Q28a

28a How did you find the people with whom you now carpool? (Select all that apply)

1 I carpool with family members
2 Referral/asked or was asked by a friend, co-worker, or neighbor
3 Regional or local public agency that helps find carpool partners
4 Through my employer
5 Waze
6 UberPool/Uber Express Pool
7 ZimRide
8 craigslist
9 Via
10 Slug/casual carpool, so different people each day
97 Other (please specify) _____
88 Not sure, don't recall
99 Left blank

INSTRUCTIONS BEFORE Q29

IF CPDAYS = 0 AND VPDAYS = 0 AND (BUDAYS > 0 OR MRDAYS > 0 OR CRDAYS > 0), CONTINUE USING THE MOST COMMON ALTERNATIVE MODE

IF CPDAYS > 0 OR VPDAYS > 0, ASK Q29 AND Q30, USING THE SAME MODE AS USED IN Q28

IF Q15 MODE NAMED IN Q29 = METRORAIL, BUS, OR COMMUTER TRAIN, DO NOT SHOW Q29 RESPONSES 1, 2, OR 8 ON THE SCREEN – SHOW ONLY 3 – 7 AND 9, 97. IF Q15 MODE NAMED IN Q29 = CARPOOL OR VANPOOL, SHOW ALL RESPONSES 1-9 AND 97.

IF MOST COMMON ALT MODE = METRORAIL OR COMMUTER TRAIN, SHOW "train" **IN Q29 AND Q30**

29 How do you get from home to where you meet your <Q15 ALT MODE: carpool, vanpool, bus, or train>?

1 Picked up at home by car/van pool or leave from home with household member (**SKIP TO INSTRUCTIONS BEFORE Q34**)
2 Drive alone to driver's home or drive alone to passenger's home
3 Drive to a central location, like park & ride, or train or subway station
4 Dropped off or ride in another car/van pool (**SKIP TO INSTRUCTIONS BEFORE Q34)**
5 Bicycle
6 NA – DO NOT SHOW ON SCREEN
7 Walk
8 I always drive the car pool/van pool and pick up riders (**SKIP TO INSTRUCTIONS BEFORE Q34**)
9 Bus/transit
97 other (**SPECIFY**) _____
99 Left blank (**SKIP TO INSTRUCTIONS BEFORE Q34**)

30 How many miles is it one way from your home to where you meet your <**Q15 ALT MODE**: carpool, vanpool, bus, or train>? **(ALLOW ONLY NUMERIC ENTRIES, ALLOW ONE DECIMAL PLACE**)

_____ miles
888 Not sure
999 Left blank

IF BUDAYS = 0 AND MRDAYS = 0 AND CRDAYS = 0 AND (CPDAYS > 0 OR VPDAYS > 0), SKIP TO INSTRUCTIONS BEFORE Q34

IF CPDAYS = 0 AND VPDAYS = 0 AND (BUDAYS > 0 OR MRDAYS > 0 OR CRDAYS > 0), ASK Q31 USING THE MOST COMMON ALTERNATIVE MODE

31 And how do you get from where you get off the <**Q15 ALT MODE**: bus, or train> to your workplace? If you take more than one bus or train on your trip, answer for when you leave the final bus or train.

1 Walk
2 Taxi
3 Uber, Lyft, or Via
4 Capital Bikeshare bike
5 Personal bike
6 Dockless bike
7 Scooter/e-scooter
98 other (**SPECIFY**) _____
99 Left blank (**SKIP TO INSTRUCTIONS BEFORE Q34**)

TELECOMMUTE

INSTRUCTIONS BEFORE Q34
IF SURVTYPE = 3 (TELEALL), ASK Q34, BUT DO NOT SHOW INTRO TO Q34, SKIP DIRECTLY TO Q34
IF Q13 = 1 OR Q15 = 2 ANY DAY, CONTINUE WITH INTRO TO Q34, OTHERWISE, SKIP TO INTRO BEFORE Q45

INTRO TO Q34: Next, please answer a few more questions about telecommuting.

34 How long have you been telecommuting? Please enter as the number of months.
Hover here for a years-to-months conversion table.

Duration of Telework Use	Enter number of months
Number of months	
888 Not sure	❍

999 Left blank

IF TELEALL, AUTOCODE Q36 = 1, THEN SKIP TO Q42

36 Where do you work when you telecommute? If you telecommute from multiple locations, please check the location where you telecommute most often.

1 Always / only at home (**SKIP TO Q42**)
2 Telework Center
3 NA – DO NOT SHOW ON SCREEN
4 Satellite office provided by employer
5 NA – DO NOT SHOW ON SCREEN
6 Business service center (FedEx/Kinkos) or other "retail" location
7 NA – DO NOT SHOW ON SCREEN
8 Library or community center
9 NA – DO NOT SHOW ON SCREEN
10 Executive office suites
11 NA – DO NOT SHOW ON SCREEN
12 Co-working center
97 other location (**SPECIFY**) _____
19 Both home and another location
99 Left blank (**SKIP TO Q42**)

IF Q36 = 2, 4, 6, 8, 10, 12, OR 19, CONTINUE, OTHERWISE, SKIP TO Q38

37 How many days per week, on average, do you telecommute from the location outside your home?

0 Less than one day per week
1 1 day per week
2 2 days per week
3 3 days per week
4 4 days per week
5 5 or more days per week
88 Not sure
99 Left blank

38 How many miles is it one way from your home to this location?

_____ miles (ALLOW ONE DECIMAL)
99 Left blank

39 And how do you get from home to this location? Select all that apply

1 N/A
2 N/A
3 Drive alone, motorcycle, or taxi/Uber/Lyft
4 N/A
5 Carpool (including carpool with family member, dropped off) or casual carpool/slug
6 N/A
7 Vanpool
8 N/A
9 Bus (including public bus, commuter bus, subscription bus, shuttle)
10 Metrorail
11 Commuter rail (MARC, VRE, Amtrak)
12 N/A
13 N/A
14 Bicycle/scooter/e-scooter (including bikeshare, dockless bike)
15 Walk
16 N/A
17 N/A
18 N/A
19 N/A
99 left blank

42 How did you find out about telecommuting?

_____

OPEN-ENDED RESPONSE – CODE IN POST-PROCESSING INTO THE FOLLOWING CATEGORIES; ADD OTHERS AS NECESSARY)

1 Advertising (radio, newspaper or TV)
2 Special program at work/employer provided information
3 Initiated request on my own
4 Information from Commuter Connections / COG (Council of Governments)
5 Word of mouth
6 Newspaper or magazine article
7 Commuter Connections Website
8 Other Website
9 County or jurisdiction program
97 Other (SPECIFY) _____
88 Not sure
99 left blank

43 Did you receive any information about telecommuting from Commuter Connections or from the Metropolitan Washington Council of Governments?

1 Yes
2 No
88 Not sure
99 left blank

IF SURVTYPE = 3 (TELEALL), SKIP TO Q61

AVAILABILITY OF TRANSPORTATION OPTIONS

INTRO BEFORE Q45**:** Next, please answer the following questions about your route to work and transportation services that might be available in your area.

INSTRUCTIONS BEFORE Q45

IF SUM OF (CPDAYS + VPDAYS + BUDAYS + MRDAYS + CRDAYS) = 0 OR 1, SKIP TO INSTRUCTIONS BEFORE Q46
IF SUM OF (CPDAYS + VPDAYS + BUDAYS + MRDAYS + CRDAYS) = 2, 3, 4, OR 5, ASK Q45

Check sum of days using Personal vehicle (DA/ MC /Taxi, Uber/Lyft/Via, CP, VP) – Show different form of Q45 question depending on sum of vehicle days
IF Q45 IS ASKED, USE THE FOLLOWING STATEMENT, DEPENDING ON NUMBE OF DA/CP/VP DAYS
V1 - IF SUM OF (DADAYS + CPDAYS + VPDAYS) = 4 OR 5, INSERT "What Interstate highways or major U.S. or state routes do you use on your trip to work?"
V2 - IF SUM OF (DADAYS + CPDAYS + VPDAYS) = 1, 2, OR 3, INSERT, "On days that you drive or ride to work in a personal vehicle, what Interstate highways or major U.S. or state routes do you use?"
V3 - IF SUM OF (DADAYS + CPDAYS + VPDAYS) = 0, INSERT, "If you were to drive to work, what Interstate highways or major U.S. or state routes would you use?"

45 V1 - What Interstate highways or major U.S. or state routes do you use on your trip to work?;
V2 - On days that you drive or ride to work in a personal vehicle, what Interstate highways or major U.S. or state routes do you use?
V3 - If you were to drive to work, what Interstate highways or major U.S. or state routes would you use?

Interstates
1 Capital Beltway (I-495) (MD)
2 Capital Beltway (I-495) (VA)
3 I-66 OUTSIDE the Beltway (VA)
4 I-66 INSIDE the Beltway (VA)
5 I-95 (MD)
6 I-95 (VA)
7 I-270 (MD)
8 I-295 (DC / MD)
9 I-395 (VA)
10 I-695 (DC - Southeast-Southwest Freeway, Southwest Expressway)
11 I-695 (MD - Baltimore Beltway)

Major State / US Routes
12 BW Parkway (US 295, Baltimore-Washington Parkway - MD)
13 Dulles Toll Road (Dulles Greenway, Route 267)
14 GW Parkway (George Washington Parkway)
15 ICC (Inter-County Connector, Route 200)
16 US Route 1 (MD)
17 US Route 1 (VA - Richmond Highway, Jefferson Davis Highway)
18 US Route 29 (MD - Colesville Road, Columbia Pike)
19 US Route 29 (VA – Lee Highway)
20 US Route 50 (MD – John Hanson Highway)
21 US Route 50 (VA – Lee Jackson Highway, Arlington Blvd, Fairfax Blvd)
22 US Route 301 (MD)

98 Do not / would not use any of these Interstate or U.S. or state routes
999 Left blank

INSTRUCTIONS BEFORE Q46
IF DADAYS = 0 AND CPDAYS = 0 AND VPDYS = 0 AND BUDAYS = 0 MRDAYS = 0 AND CRDAYS = 0, SKIP TO Q53a/b

46 Is there a special HOV (High Occupancy Vehicle) lane or express lane along your route to work?

1 HOV lane only
2 Express lane only
3 Both HOV lane and express lane
4 No, HOV/express not available (**SKIP TO Q52**)
88 Not sure (**SKIP TO Q52**)
99 Left blank (**SKIP TO Q52**)

IF Q15 = 15 ANY DAY, AUTOCODE Q47 = 8 AND Q47a = 8, THEN SKIP TO Q52

IF Q46 = 1 OR 3, ASK Q47

47 How often do you use the HOV lane to get to or from work?

1 Never
2 Less than once per month
3 1-3 days per month
4 1-2 days per week
5 3 or more days per week
8 No, not asked – walk to work (AUTOCODE ONLY - DO NOT SHOW ON SCREEN)
99 Left blank

IF Q46 NE 2 OR 3, SKIP TO INSTRUCTIONS BEFORE Q50
IF Q46 = 2 OR 3, ASK Q47a

47a How often do you use the express lane to get to or from work?

1 Never **(SKIP TO INSTRUCTIONS BEFORE Q50)**
2 Less than once per month
3 1-3 days per month
4 1-2 days per week
5 3 or more days per week
8 No, not asked – walk to work (AUTOCODE ONLY - DO NOT SHOW ON SCREEN)
99 Left blank **(SKIP TO INSTRUCTIONS BEFORE Q50)**

IF Q47a = 2, 3, 4, OR 5, ASK Q47b AND Q47c

47b Which express lanes do you use to get to or from work? (Select all that apply) **(ACCEPT MULTIPLES FOR 1-8)**

1 I-495 (Beltway)
2 I-66 inside the Beltway
3 I-66 outside the Beltway
4 I-95
5 I-395
97 Other road (please specify)_____
99 Left blank

47c On the days you use the express lanes are you …? (Select all that apply)

1 Driving alone
2 Riding in a carpool/vanpool
3 Riding transit (bus, commuter bus)
88 Not sure
99 Left blank

INSTRUCTIONS BEFORE Q50
IF Q47 = 2, 3, 4, OR 5 OR Q47a = 2, 3, 4, OR 5, ASK Q50
IF Q47 = 1, 8, OR 99 AND Q47a = 1, 8, OR 99, SKIP TO Q52

50 How much time (in minutes) does the HOV or express lane save you in your one-way trip to or from work?
_____ minutes
888 Not sure
999 Left blank

51 Did availability of the HOV or express lane influence you to make any of the following changes in how you commute? Select all that apply.

1 NA – DO NOT USE AND DO NOT SHOW ON SCREEN
2 No - HOV/express lanes did not influence me to make changes in my commute
3 Started carpooling, slugging, or vanpooling to use the lanes
4 Started riding a commuter/express bus to use the lanes
5 Increased the number of riders in my carpool to meet the minimum rider requirement
6 Started going to work earlier or later to avoid the lane restriction hours
7 Started/increased how often I drive alone to work, knowing I could pay the toll
97 Other action (Specify) _____
99 Left blank

52 Do you know the locations of Park 'n Ride lots along the route that you take to work?

1 Yes
2 No (**SKIP TO Q53a**)
3 There aren't any (**SKIP TO Q53a**)
88 Not sure (**SKIP TO Q53a**)
99 Left blank (**SKIP TO Q53a**)

53 In the past year have you used Park 'n Ride lots when commuting to work?

1 Yes
2 No
88 Not sure
99 Left blank

53a/b About how far from your home is the nearest bus stop and train station? You may report the distance in EITHER miles or blocks. **(ALLOW 1 DECIMAL PLACE FOR MILES)**

Distance to …	Miles	Blocks	Not sure (888)
a Bus stop			❍
b Train station			❍

ATTITUDES TOWARD TRANSPORTATION MODES

INSTRUCTIONS BEFORE Q53c
If Q15 = 8, 9, 10, 11, 12, 13 OR Q29 = 9, SKIP TO INSTRUCTIONS BEFORE Q56

53c You said earlier that you don't regularly use public transit (bus, Metrorail, or commuter rail) to get to work. In the past three years, did you ever use public transit for your commute?

1 No, didn't use transit at all **(SKIP TO Q53e)**
2 Used transit a few times **(SKIP TO Q53e)**
3 Used transit occasionally, but less than one day per week
4 Used transit regularly, one or more days per week
88 Not sure **(SKIP TO Q53e)**
99 Left blank **(SKIP TO Q53e)**

53d Why did you stop using public transit for your commute?

_____

OPEN-ENDED RESPONSE – CODE IN POST-PROCESSING INTO THE FOLLOWING CATEGORIES; ADD OTHERS AS NECESSARY)

1 I still use transit occasionally
2 Moved to different residence where transit was not available
3 Started a new job where transit was not available or did not operate at the time I needed
4 Needed my car for work
5 Needed my car before or after work or for emergencies/overtime
6 Didn't feel safe on bus/train or at bus stops or train stations
7 Bus/train was unreliable/late
8 Distance was too far
9 Took too much time
10 Prefer to be alone during commute
11 Too expensive
12 Buses/train was too uncomfortable/crowded
13 Had to transfer/too many transfers or had to wait too long between buses/trains
14 Had a bad experience with the bus or train
15 Started using Uber, Lyft, Via
16 Started bicycling/e-scooter
88 Not sure
99 Left blank

53e Considering your work and personal schedules, how often might you be able to use public transit to get to work now?

1 Never
2 Occasionally, but less than one day per month
3 1 to 3 days per month
4 1 to 2 days per week
5 3 or more days per week
88 Not sure
99 Left blank

IF Q53d = ANY RESPONSE, SKIP TO INSTRUCTIONS BEFORE Q56

54 What reasons keep you from regularly using public transit for your commute to work now?

_____

OPEN-ENDED RESPONSE – CODE IN POST-PROCESSING INTO THE FOLLOWING CATEGORIES; ADD OTHERS AS NECESSARY)

1 No bus service available (in home area or in work area/bus too far away
2 No train service available (in how area or in work area/train too far away)
3 Don't know if service is available/don't know location of bus stops / train stations
4 Need my car for work
5 Need car before or after work
6 Need car for emergencies/overtime
7 It might not be safe/I don't feel safe on bus or at bus stops
8 It might not be safe/I don't feel safe on trains or train stations
9 Bus / train is unreliable/late
10 Trip is too long/distance too far
11 Takes too much time
12 Don't like to ride with strangers
13 Prefer to be alone during commute
14 Work schedule irregular
15 Too expensive
16 Buses are too uncomfortable/crowded
17 Trains are too uncomfortable/crowded
18 Buses or trains too dirty
19 Have to transfer/too many transfers
20 Had a bad experience with the bus or train in the past
21 Have to wait too long for the bus or between buses
22 Have to wait too long for the train or between train
23 Prefer to use bikeshare or e-scooter
24 Prefer to use Uber, Lyft, Via
97 Other (specify) _____
88 Not sure
99 Left blank

INSTRUCTIONS BEFORE Q56

If Q15 = 5, 6, 7 OR Q29 = 1, 4, 8, SKIP TO Q56a1

56 You said that you do not use a carpool or vanpool for your trip to work. Why don't you carpool or vanpool?

_____

OPEN-ENDED RESPONSE – CODE IN POST-PROCESSING INTO THE FOLLOWING CATEGORIES; ADD OTHERS AS NECESSARY)

1 Don't know anyone to carpool/vanpool with
2 Need my car for work
3 Need car before or after work
4 Need car for emergencies/overtime
5 It might not be safe/I don't feel safe
6 Carpool/vanpool partners are/could be unreliable/late
7 Trip is too long/distance too far
8 Takes too much time
9 Doesn't save time
10 Don't like to ride with strangers
11 Prefer to be alone during commute
12 Work schedule irregular
13 Too expensive
14 Had a bad experience with carpooling/vanpooling in the past
97 Other (specify) _____
88 Not sure
99 Left blank

56a1 Now think about the benefits of traveling by carpool, vanpool, bus, or train, bicycle or walking. What impact or benefit does a community or region receive when people use these types of transportation?

_____

OPEN-ENDED RESPONSE – CODE IN POST-PROCESSING INTO THE FOLLOWING CATEGORIES; ADD OTHERS AS NECESSARY)

1 Less traffic, less congestion
2 Reduce air pollution, help the environment
3 Reduce greenhouse gases, reduce carbon footprint
4 Save energy
5 Less wear and tear on roads
6 Reduce accidents, improve travel safety
7 Reduce government costs
8 Less stress, less road rage
97 Other (specify) _____
77 No benefits
88 Not sure
99 Left blank

INSTRUCTIONS BEFORE Q56b
IF CALTDAYS = 0, SKIP TO Q56e
IF BKDAYS > 0, ASK Q56b, INSERTING "bicycle or ride a scooter"
IF WKDAYS > 0, ASK Q56b, INSERTING "walk"
IF CPDAYS > 0, ASK Q56b, INSERTING "carpool"
IF VPDAYS > 0, ASK Q56b, INSERTING "vanpool"
IF BUDAYS > 0 OR MRDAYS > 0 OR CRDAYS > 0, ASK Q56b, INSERTING "ride public transportation"

IF MULTIPLE ALT MODES ARE APPLICABLE FOR Q56b, SELECT THE ALT MODE WITH THE GREATEST NUMBER OF DAYS; IN THE CASE OF A TIE, USE THE FOLLOWING PRIORITY: bicycle, walk, vanpool, ride public transportation, carpool

56b You said you [bicycle or ride a scooter, walk, carpool, vanpool, ride public transportation] to work some days. What benefits have you personally received from traveling to work this way?

_____

OPEN-ENDED RESPONSE – CODE IN POST-PROCESSING INTO THE FOLLOWING CATEGORIES; ADD OTHERS AS NECESSARY)

1 Save money
2 Avoid stress
3 Not need to have a car
4 Less wear and tear on car
5 Use travel time productively (e.g., read, work, sleep)
6 Have companionship when they travel
7 Arrive at work on time, less likely to be late
8 Get exercise, health benefits
9 Help the environment
10 Reduce greenhouse gases, reduce carbon footprint
11 Can use HOV lane
97 Other (specify) _____
77 No benefits
88 Not sure
99 Left blank

IF CPDAYS = 0 AND VPDAYS = 0 AND BUDAYS = 0 AND MRDAYS = 0 AND CRDAYS = 0, SKIP TO Q56e

IF CPDAYS > 0, ASK Q56d, INSERTING "carpool"
IF VPDAYS > 0, ASK Q56d, INSERTING "vanpool"
IF BUDAYS > 0 OR MRDAYS > 0 OR CRDAYS > 0, ASK Q56d, INSERTING "ride public transportation"

IF MULTIPLE ALT MODES ARE USED, ASK ABOUT ALL THAT APPLY: carpool, vanpool, ride public transportation. BUT ASK Q56d ONLY ONCE FOR ALL MODES TOGETHER. IF TWO MODES ARE SHOWN, ADD "and" BETWEEN THE MODES. IF THREE OR MORE MODES ARE SHOWN, ADD COMMAS BETWEEN THE MODES AND ", and" BEFORE THE LAST MODE

56d On days that you [carpool, vanpool, ride public transportation] to work, how often do you do you read or write work-related material or check work messages on the way to or from work? Do you do these activities most days, some days, or rarely?

1 Most days
2 Some days
3 Rarely, never
8 Not sure
99 Left blank

TRANSPORTATION SATISFACTION AND CURRENT COMMUTE COMPARED TO LAST YEAR

56e How satisfied you are with the transportation **system** in the Washington metropolitan region? "Transportation system" means all the services and options available to travel around the region and the quality of those services, including roads, buses and trains, and services for bicycling, walking, carpooling, and so forth."

1 1 – Not at all satisfied
2 2
3 3
4 4
5 5 – Very satisfied
88 Not sure
99 Left blank

56f Overall, how satisfied are you with your trip to work?

1 1 – Not at all satisfied
2 2
3 3
4 4
5 5 – Very satisfied
88 Not sure
99 Left blank

57 Would you say your commute is easier, more difficult, or about the same now as it was one year ago?

1 Easier
2 More difficult
3 About the same
4 NA – DO NOT SHOW ON SCREEN
88 Not sure
99 Left blank

60 Have you changed either your work or home location in the last year?

1 Yes, changed home location
2 Yes, changed work location
3 Yes, changed both home and work locations
4 No, did not change either home or work location **(SKIP TO Q61)**
88 Not sure **(SKIP TO Q61)**
99 Left blank **(SKIP TO Q61)**

60a Where was your previous location?

1 Also in the Washington metropolitan region
2 In Maryland, but outside the Washington metropolitan region
3 In Virginia, but outside the Washington metropolitan region
4 Outside the Washington metropolitan region and outside Maryland and Virginia
88 Not sure
99 Left blank

60b What factors did you consider in your decision to make this change? **(ALLOW MULTIPLE RESPONSES FOR 1-16)**

Commute Factors
1 Length of commute (distance or time)
16 Ease or difficulty of commute
2 Cost of commuting
3 Commuting options that would be available (e.g., transit)

Residential Factors
4 NA – DO NOT SHOW ON SCREEN
5 NA – DO NOT SHOW ON SCREEN
6 Cost of living, cost of housing
7 Size of house
8 Quality of neighborhood
9 Closeness to family or friends
10 Entertainment, shopping, services nearby

Job Factors
11 Income, salary
12 Job satisfaction
13 Career advancement, job opportunities
14 Office was relocating – moved to stay with my employer
97 Other (SPECIFY) _____
88 Not sure
99 Left blank

IF Q60b ONLY RESPONSE = 1 AND/OR 16 (ease, length of commute), AUTOCODE Q60c = 4, THEN SKIP TO Q60f

60c How important to your decision was the length or ease of your trip to work compared to the other factors you just mentioned?

1 Less important
2 More important
3 About the same importance
4 Commute ease/difficulty, length of commute was the only factor mentioned **(AUTOCODE ONLY – DO NOT SHOW ON SCREEN)**
88 Not sure
99 Left blank

60f Did the change shorten either the distance or time from your home to work?

1 Shortened the distance
2 Shortened the time
3 Shortened BOTH distance and time
4 Didn't shorten distance or time
88 Not sure
99 Left blank

60g When you were considering making this change, did you consider how close your new location would be to any of the following transportation services? Select all that apply. **(ACCEPT MULTIPLES FOR 1-8)**

1 Park & Ride lots
2 HOV lanes
3 Express lanes
4 Protected bike lanes
5 Metrorail stations
6 Bus stops
7 Bikeshare stations
8 Scooter/e-scooter service
9 Dockless bike service
10 Carshare service
97 Other service (specify) _____
88 Did not consider the distance to any of these services
99 Left blank

AWARENESS OF ADVERTISING

61 Next are a few questions about advertising messages. Have you heard, seen, or read any advertising about commuting in the past year?

1 Yes
2 No (**SKIP TO Q81**)
88 Not sure (**SKIP TO Q81**)
99 Left blank (**SKIP TO Q81**)

62 What messages do you recall from this advertising?

SHOW OPEN-ENDED TEXT BOX AND 98 AND 99 CHECK BOX RESPONSES

_____

88 Not sure (**SKIP TO Q81**)
99 Left blank (**SKIP TO Q81**)

SHOW OPEN-ENDED TEXT BOX AND 98 AND 99 CHECK BOX RESPONSES
CODE OPEN ENDED RESPONSES IN POST-PROCESSING INTO THE FOLLOWING CATEGORIES; ADD OTHERS AS NECESSARY)

1 None (**SKIP TO Q81**)
2 That you should rideshare, carpool, vanpool) (**NOT ACCEPTABLE ANSWER; PROBE FOR WHY AND RECORD ELSEWHERE**)
3 That new trains and/or buses are coming
4 That you can call for carpool or vanpool info
5 Call 1-800-745-RIDE / call Commuter Connections
6 Commuter Choice Maryland
7 Contact the Commuter Connections website (www.commuterconnections.org, www.commuterconnections.com)
8 It saves money
9 It saves time
10 It is less stressful
11 Guaranteed Ride Home (GRH)
12 Employer would give me SmartTrip/SmartBenefit benefits
13 It would help the environment
14 It reduces traffic
15 It saves wear and tear on the car
16 Ozone Action Days / Code Red Days
17 Telecommuting / telework
18 HOV lanes
19 Regional services/programs are available to help with commute
20 Use the bus or train, use Metrobus, Metrorail
21 Way to Go, Way to Go Arlington, Car Free Diet
22 Virginia MegaProjects, Dulles rail extension
23 HOT lanes / express lanes / toll roads
24 Inter-County Connector (ICC)
25 Bike to work Day
26 Car Free Day
27 Capital Bikeshare
28 Transit fare increase
29 Toll rate increase
30 Carshare, Zip car, Car2Go, Hertz on Demand
97 Other (SPECIFY) _____
88 Not sure
99 Left blank

63 What organization or group sponsored the ad you recall?

SHOW OPEN-ENDED TEXT BOX AND 98 AND 99 CHECK BOX RESPONSES

_____

88 Not sure
99 Left blank

CODE OPEN ENDED RESPONSES IN POST-PROCESSING INTO THE FOLLOWING CATEGORIES; ADD OTHERS AS NECESSARY)

1 Commuter Connections
2 Metropolitan Washington Council of Governments, MWCOG, COG
3 Metro, WMATA
4 MARC, Maryland Commuter Rail
5 VRE, Virginia Railway Express
6 VDOT (Virginia Department of Transportation)
7 DDOT (District of Columbia Department of Transportation)
8 MDOT (Maryland Department of Transportation)
9 VDRPT, Virginia Department of Rail and Public Transportation
10 Maryland State Highway Administration
11 MTA, Maryland Mass Transit Administration
12 WABA, Washington Area Bicycling Association
13 Arlington County Commuter Services
14 Loudoun County (Transit / Commuter services)
15 goDCgo
16 Federal government, federal agency (DOD, US DOT)
97 Other (specify) _____
88 Not sure
99 Left blank

64 And where did you see, hear, or read this advertisement? **(MULTIPLE RESPONSES FOR 1-12 AND 97)**

1 MWCOG or Commuter Connections website
2 Other website, internet (specify _____)
3 Radio
4 TV
5 Postcard in mail
6 Newspaper
7 In train station
8 On train or bus
9 At work
10 Billboard, poster, road sign
11 Facebook / Twitter (social media)
12 Smart phone / tablet (text message, email, ad)
97 Other (_____)
98 Not sure
99 Left blank

INSTRUCTIONS BEFOFRE Q65
IF SURVYTE = 2(HOMEALL), SKIP TO INTRO TO Q81
IF SURVTYPE = 3 (TELEALL), SKIP TO INTRO TO Q81
IF SURVTYPE = 1 (WKALL), SKIP TO INTRO TO Q81
IF SURVTYPE = 5 (HOMEOTHER), SKIP TO INTRO TO Q81
IF SURVTYPE = 9 (UNKNOWN), SKIP TO INTRO TO Q81

Attitude changes/actions taken after hearing ads

65 After seeing or hearing this advertising, were you more likely to consider carpooling, vanpooling, or public transportation?

1 Yes
2 No
88 Not sure
99 Left blank

66 After seeing or hearing this advertising, did you try or start using any of the following forms of transportation for your trip to work or increase how often you use them for your trip to work? **(START LIST WITH #11 TO BE CONSISTENT WITH TELEPHONE SURVEY)**

11 Carpool
12 Vanpool
13 Bus
14 Train (Metrorail, commuter train)
15 Bicycle or walking
16 Telecommute/telework
98 Did not try, start, or increase us of any of these types of transportation
99 Left blank

67 After seeing or hearing this advertising, did you take any other actions to try to change how you get to work? Select all that apply. **(ALLOW MULTIPLE RESPONSES WITH 2-19)**

2 Looked for commute information on the internet
3 Asked friend, family member, or co-worker for commute information (referral)
4 Contacted a local or regional organization for commute information
5 Looked for a carpool or vanpool partner
6 Contacted a transit operator to ask about schedules or routes
7 Asked employer about commute services (e.g., telework, SmartTrip, SmartBenefit),
8 Registered for Guaranteed Ride Home (GRH) program
9 Started using HOV or express lane to get to work
97 Other action (specify_____)
1 Didn't take any of these actions
88 Not sure
99 Left blank

IF Q66 = ANY OF 11- 16 OR Q67 = ANY OF 2-9 OR 97, ASK Q68
IF Q66 = ONLY 98 OR 99 AND Q67 = ONLY 1, 88 OR 99, SKIP TO INTRO TO Q81

68 Did the advertising you saw or heard encourage you to try to change how you get to work?

1 Yes
2 No
88 Not sure
99 Left blank

IF Q66 = ANY OF 11, 12, 13, 14, 15, OR 16, CONTINUE
IF Q66 NE 11, 12, 13, 14, 15, OR 16, SKIP TO INTRO TO Q81

Collect info on mode/modes used before trying/starting new alt mode
Autofill mode duration for respondents currently using alternative mode (Q15) named in Q66
IF Q66 EQ 11 AND Q15 = 5 OR 6, AUTOFILL Q71, MODE 1 = "still using" (993)
IF Q66 EQ 12 AND Q15 = 7, AUTOFILL Q71, MODE 2 = "still using" (993)
IF Q66 EQ 13 AND Q15 = 8 OR 9, AUTOFILL Q71, MODE 3 = "still using" (993)
IF Q66 EQ 14 AND Q15 = 10, 11, 12, OR 13, AUTOFILL Q71, MODE 4 = "still using" (993)
IF Q66 EQ 15 AND Q15 = 14 OR 15, AUTOFILL Q71, MODE 5 = "still using" (993)
IF Q66 EQ 16 AND Q15 = 2, AUTOFILL Q71, MODE 6 = "still using" (993)

IF ANY APPLICABLE Q66 MODES ARE AUTOFILLED, SKIP TO INSTRUCTIONS BEFORE Q72b, DO NOT ASK Q71 ABOUT OTHER Q66 MODES
IF NO APPLICABLE Q66 MODES ARE AUTOFILLED, ASK Q71, SHOWING ONLY NON-AUTOFILLED MODES

71 You said you changed how you get to work after seeing or hearing the advertising message. How long did you <ALT MODE FROM Q66> to work? Please enter the number of months or check one of the other options. (**IF MORE THAN ONE ALT MODE NOTED IN Q66, SHOW ALL APPLICABLE MODES IN Q71**)

Type of transportation	Number of months used	Tried once or a few times (991)	Still use occasionally (992)	Still using (1+ d/wk) (993)	Don't recall (888)
1 Carpool or casual carpool (slug)		❍	❍	❍	❍
2 Vanpool		❍	❍	❍	❍
3 Bus		❍	❍	❍	❍
4 Train (Metrorail or commuter rail)		❍	❍	❍	❍
5 Bicycle or walk		❍	❍	❍	❍
6 Telework/telecommute		❍	❍	❍	❍

IF ALL Q71 MODES = 888, 991, 992, SKIP TO Q81
IF ANY Q71 MODE = VALID NUMBER OF MONTHS, CONTINUE WITH INSTRUCTIONS BEFORE Q72b

INSTRUCTIONS BEFORE Q72b
IF Q71 IS AUTOCODED FOR ANY MODE, CHOOSE THIS/THESE ALT MODES FOR Q72b
IF Q66 = MORE THAN ONE OF 11, 12, 13, 14, 15, 16, AND Q66 NOT AUTOCODED FOR ANY MODE, CHOOSE ALT MODE USED LONGEST TIME FOR Q72b. IF MORE THAN ONE ALT MODE USED SAME AMOUNT OF TIME, CHOOSE BOTH MODES.
IF Q71 WAS AUTOCODED, INSERT "You said you changed how you get to work after seeing or hearing the advertising message."

72b [You said you changed how you get to work after seeing or hearing the advertising message.] Before making this change to <ALT MODE FROM Q66>, about how many days per week did you use each of the following types of transportation for your trip to work in a typical week?

PROGRAMMER NOTES ON CHECK TOTAL DAYS.
(Prompt if respondent enters more than 5 TOTAL days M-F)
IF (Q72b, SUM OF RESPONSES 1-97) > 5, SHOW PROMPT "You've entered more than 5 days for Monday-Friday. If you use more than one type of transportation on a single day, indicate only the type you use for the longest distance part of your trip."

IF (Q72b, SUM OF RESPONSES 1-97) < 5, SHOW PROMPT "You've entered fewer than 5 days for Monday-Friday. Please also report days you teleworked, had a compressed work schedule day off, and had regular days off."

Type of transportation you used for the longest distance part of your trip to work	Number of Days Mon-Fri
3 Drive alone, motorcycle, taxi (incl Uber, Lyft, Split)	
5 Carpool or casual carpool (slugging)	
7 Vanpool	
9 Bus (public or private bus, shuttle)	
10 Train (Metrorail or commuter rail)	
15 Bicycle or walking	
2 Telecommute/telework (work all day at home)	
97 Other (Specify) _____	
1 DO NOT SHOW ON SCREEN	
16 Regular day off	
TOTAL DAYS REPORTED	

AWARENESS OF COMMUTE PROGRAMS/SERVICES

INTRO TO Q81: Now please answer a few questions about commute information and assistance services that might be available to commuters in your home or work areas.

81 Is there a phone number or website you can use to obtain information on carpooling or vanpooling, public transportation, HOV lanes, express lanes, and telecommuting in the Washington metropolitan region?

1 Yes
2 No **(SKIP TO Q86)**
88 Not sure **(SKIP TO Q86)**
99 Left blank (**SKIP TO Q86)**

82 Have you used this number or website in the past year?
1 Yes
2 No **(SKIP TO Q86)**
88 Not sure **(SKIP TO Q86)**
99 Left blank **(SIP TO Q86)**

83 What was that number or website **(DON'T READ, ACCEPT MULTIPLES FOR 1-20, DO NOT ACCEPT MULTIPLES WITH 99)**

SHOW OPEN-ENDED TEXT BOX AND 99 AND 999 CHECK BOX RESPONSES

_____

88 Not sure/Don't remember
999 Left blank

CODE OPEN ENDED RESPONSES IN POST-PROCESSING INTO THE FOLLOWING CATEGORIES; ADD OTHERS AS NECESSARY)

1	800-745-RIDE (7433)	Commuter Connections (COG)
2	888-730-6664	PRTC, Potomac Rappahannock Transportation
3	703-324-1111	Fairfax County RideSources
4	301-770-POOL	Montgomery County Commuter Services
5	240-777-RIDE	Montgomery County Commuter Services
6	202-637-7000	WMATA, METRO (Washington Metro. Area Transit Authority)
7	www.mwcog.org	Commuter Connections (COG)
8	www.commuterconnections.org	Commuter Connections (COG)
9	www.commuterconnections.com	Commuter Connections (COG)
10	www.vre.org	Virginia Railway Express (VRE)
11	www.commuterdirect.com	Arlington County Commuter Services
12	www.commuterpage.com	Arlington County Commuter Services
13	703-228-RIDE	Arlington County Commuter Services
14	www.maryland.com	Maryland Mass Transit Admin. (MTA)
a.	MARC Commuter Rail	
15	www.wmata.com	WMATA, Metro
16	www.HOVcalculator.com	VDOT
17	www.commuterchoicemaryland.com	Maryland Mass Transit Admin (MTA)
18	866-RIDE-MTA (1-800-743-3682)	Maryland Mass Transit Admin (MTA)
19	www.metroopensdoors.org	WMATA, Metro
97	Other (SPECIFY) _____	
88	Not sure/Don't remember	

86 **IF Q43 = 1, CODE Q86 = 1, THEN SKIP TO Q87**
IF Q64 = 1, CODE Q86 = 1, THEN SKIP TO Q87

Have you heard of an organization in the Washington region called Commuter Connections?

1 Yes
2 No (**SKIP TO Q88c**)
88 Not sure (**SKIP TO Q88c**)
99 Left blank (**SKIP TO Q88c**)

87 [**IF Q86 WAS AUTOCODED = 1, START Q87 WITH:** You mentioned knowing about Commuter Connections.]
How did you learn about Commuter Connections?

SHOW OPEN-ENDED TEXT BOX AND 88 AND 99 CHECK BOX RESPONSES

_____

88 Not sure
99 Left blank

CODE OPEN ENDED RESPONSES IN POST-PROCESSING INTO THE FOLLOWING CATEGORIES; ADD OTHERS AS NECESSARY)

1 TV
2 Magazine
3 Newspaper ad
4 Newspaper article
5 Sign/billboard
6 Mail/postcard
7 Brochure
8 Transportation fair/special event
9 Radio
10 Employer
11 Library
12 Phonebook, yellow pages
13 Word of mouth (family, friend, co-worker)
14 Internet/Web
15 InfoExpress kiosks
16 Ozone Action/Code Red days
17 Smart phone / tablet (text, email, ad)
97 Other _____
88 Not sure
99 Left blank

88a Have you contacted Commuter Connections in the past year or visited a website sponsored by this organization?

1 Yes
2 No
88 Not sure
99 Left blank

Define Local Program for Q88c – Q88e

88c **SET ORGANIZATIONS TO ASK ABOUT IN Q88c-Q88e**

IF Q2 = 1 OR Q3 = 1 (Alexandria), INSERT Alexandria LocalMotion as <PROGRAM> in Q88c – Q88e
IF Q2 = 2 OR Q3 = 3 (Arlington), INSERT Arlington County Commuter Services or The Commuter Store as <PROGRAM> in Q88c – Q88e
IF Q2 = 3 OR Q3 = 4 (Calvert), INSERT Tri-County Council for Southern Maryland as <PROGRAM> in Q88c – Q88e
IF Q2 = 4 OR Q3 = 5 (Charles), INSERT Tri-County Council for Southern Maryland as <PROGRAM> in Q88c – Q88e
IF Q2 = 6 OR Q3 = 7, 8, OR 9 (Fairfax Co, Ffx City, Falls Church), INSERT Fairfax County RideSources as <PROGRAM> in Q88c – Q88e
IF Q2 = 7 OR Q3 = 10 (Frederick), INSERT TransIT Services of Frederick County as <PROGRAM> in Q88c – Q88e
IF Q2 = 8 OR Q3 = 12 (Loudoun), INSERT Loudoun County Office of Transportation Services as <PROGRAM> in Q88c – Q88e
IF Q2 = 9 OR Q3 = 15 (Montgomery), INSERT Montgomery County Commuter Services, Bethesda Transportation Solutions, or North Bethesda Transportation Center as <PROGRAM> in Q88c – Q88e
IF Q2 = 10 OR Q3 = 16 (Prince Georges), INSERT Ride Smart as <PROGRAM> in Q88c – Q88e
IF Q2 = 11 OR Q3 = 13, 14, OR 17 (Prince William, Manassas, Manassas Park), INSERT PRTC OmniMatch as <PROGRAM> in Q88c-Q88e
IF Q2 = 5 OR Q3 = 6 (District of Columbia), INSERT goDCgo <PROGRAM> in Q88c-Q88e

Q88c (continued)

1 Alexandria GO Alex
2 Arlington County Commuter Services or The Commuter Store
3 Tri-County Council of Southern Maryland (Calvert, Charles)
4 Fairfax County Transportation Services Group
5 TransIT Services of Frederick County
6 Loudoun County Commuter Services
7 Montgomery County Commuter Services, Bethesda Transportation Solutions, or North Bethesda Transportation Center
8 Ride Smart (Prince Georges Commuter Solutions)
9 PRTC OmniMatch (Prince William)
10 goDCgo (District of Columbia)

88d/e Have you heard of an organization or service called <PROGRAM**>?** If so, have you contacted <PROGRAM> in the past year or visited its website?

1 Alexandria GO Alex
2 Arlington County Commuter Services or The Commuter Store
3 Tri-County Council of Southern Maryland (Calvert, Charles)
4 Fairfax County Transportation Services Group
5 TransIT Services of Frederick County
6 Loudoun County Commuter Services
7 Montgomery County Commuter Services, Bethesda Transportation Solutions, or North Bethesda Transportation Center
8 Ride Smart (Prince Georges Commuter Solutions)
9 PRTC OmniMatch (Prince William)
10 goDCgo (District of Columbia)

FOR EACH APPLICABLE PROGRAM, SHOW RESPONSES

1 Yes, heard of and contacted
2 Yes, heard of and NOT contacted
3 Have not heard of this organization or service
88 Not sure
99 Left blank

Program Name	1 – Heard of and contacted	2 – Heard of but NOT contacted	3 - Have not heard of this organization	88 – Not sure
1 Alexandria GO Alex	❍	❍	❍	❍
2 Arlington County Commuter Services or The Commuter Store	❍	❍	❍	❍
3 Tri-County Council of Southern Maryland (Calvert, Charles)	❍	❍	❍	❍
4 Fairfax County Transportation Services Group	❍	❍	❍	❍
5 TransIT Services of Frederick County	❍	❍	❍	❍
6 Loudoun County Commuter Services	❍	❍	❍	❍
7 Montgomery County Commuter Services, Bethesda	❍	❍	❍	❍
8 Ride Smart (Prince Georges Commuter Solutions)	❍	❍	❍	❍
9 PRTC OmniMatch (Prince William)	❍	❍	❍	❍
10 goDCgo (District of Columbia)	❍	❍	❍	❍

EMPLOYER SERVICES

INSTRUCTIONS BEFORE Q89
IF SURVYTE = 2 (HOMEALL), SKIP TO Q105
IF SURVTYPE = 3 (TELEALL), SKIP TO Q105
IF SURVTYPE = 5 (HOMEOTHER), SKIP TO Q105 THEN TO Q113
IF SURVTYPE = 9 (UNKNOWN), SKIP TO Q105 THEN TO Q113

89 Please indicate in the table below if your employer makes any of the following commute services or benefits available to you to help with your commute, and if so, if you have used the services.
(ROTATE 1-9)

Employer service	1 – Available and USED	2 – Available but NOT USED	3 - Not Available	88 – Not sure
1 Information on commuter transportation options	❍	❍	❍	❍
2 Special parking spaces for carpools or vanpools	❍	❍	❍	❍
3 SmarTrip, SmartBenefit or other subsidies for public transportation or vanpooling	❍	❍	❍	❍
4 Cash payments or other subsidies for carpooling	❍	❍	❍	❍
5 Facilities or programs for employees who bike or walk to work	❍	❍	❍	❍
6 Guaranteed rides home (GRH) in case of emergencies or unscheduled overtime	❍	❍	❍	❍
7 Carshare membership (Zipcar, Car2Go)	❍	❍	❍	❍
8 Bikeshare membership (Capital Bikeshare)	❍	❍	❍	❍
9 Work schedule with flexible start and end times	❍	❍	❍	❍

IF Q89, SERVICE 3 (transit/vanpool subsidy) = 1 OR 2, ASK Q89b

89b Which of the following best describes the transit or vanpool benefit that is available to you?

1 Employer-paid direct cash payment
2 Pre-tax deduction for employee-paid transit or vanpool costs
97 Another arrangement (please describe) _____
88 Not sure
99 Left blank

90 Does your employer make free on-site parking available to all employees at your worksite?

1 Yes **(SKIP TO Q90b)**
2 No
88 Not sure

90a Does your employer make free on-site parking available to YOU?

1 Yes
2 No (**SKIP TO Q91**)
88 Not sure (**SKIP TO Q102**)
99 Left blank (**SKIP TO Q102**)

90b Have you used this free parking?

1 Yes
2 No
88 Not sure

SKIP TO Q102

91 Does your employer pay part of your parking cost or do you have to pay the entire cost if you drive to work?

1 Employer pays part/employee pays part
2 Employee pays all
3 Free offsite parking
88 Not sure
99 Left blank

92 Does your employer offer parking discounts for carpools or vanpools?

1 Yes
2 No (**SKIP TO Q102**)
88 Not sure (**SKIP TO Q102**)
99 Left blank (**SKIP TO Q102**)

GUARANTEED RIDE HOME

102 Do you know if there is a regional GRH or Guaranteed Ride Home program available in the event of unexpected emergencies and unscheduled overtime for commuters who carpool, vanpool, use public transportation, or bicycle to work?

1 Yes, there is
2 No, there isn't (**SKIP TO Q105**)
88 Not sure (**SKIP TO Q105**)
99 Left blank (**SKIP TO Q105**)

104 Who sponsors or offers the service?

SHOW OPEN-ENDED TEXT BOX AND 88 AND 99 CHECK BOX RESPONSES

_____
88 Not sure
99 Left blank

CODE OPEN ENDED RESPONSES IN POST-PROCESSING INTO THE FOLLOWING CATEGORIES; ADD OTHERS AS NECESSARY)

1 Commuter Connections/Council of Governments/COG
2 Employer
3 VRE
4 TMA (TyTran)
97 Other _____
88 Not sure

SOCIAL MEDIA, TRAVEL APPS, AND DRIVERLESS CARS

105 With which of the following social networking applications do you currently have an account? Select all that apply.

1 Facebook
2 Twitter
3 LinkedIn
4 Instagram
5 Snapchat
6 Nextdoor
97 Other (Please specify)_____
77 None of these, I don't use social networking
99 Left blank

105a Which of the following types of travel or trip information services or mobile applications have you used? Select all that apply.

1 Traffic alerts (e.g., radio, TV, text)
2 Ridehailing apps (ex., Uber, Lyft, Via)
3 Wayfinding apps (ex., Waze, Google maps)
4 Trip/fitness tracking apps (ex., Strava, Map My Ride)
5 Transit schedule, bus/train arrival mobile apps (ex. Next Bus, Next Train)
6 Traveler information displays (e.g. screen at workplaces and public locations)
7 Bikeshare/ dockless bike service apps (e.g., Capital Bikeshare, Jump)
8 E-scooter service apps (e.g.,Bird, Skip, Lime, Spin)
9 Carshare service apps (e.g., Zipcar, car2go)
97 Other (Please specify)_____
77 None of these, I don't use those types of services or applications
99 Left blank

106 You might have heard of self-driving cars, also known as driverless cars or autonomous cars. These are cars that can sense their surroundings and drive themselves. How familiar are you with the concept of these vehicles?

1 Not at all, I haven't heard of them
2 Somewhat familiar, I have read or heard of them, but do not know much about them
3 Very familiar, I have read or heard a lot about them
88 Not sure
99 Left blank

106a How might the availability of driverless cars benefit you or others in the Washington metro region?

SHOW OPEN-ENDED TEXT BOX AND 88 AND 99 CHECK BOX RESPONSES

_____
88 Not sure
99 Left blank

CODE OPEN ENDED RESPONSES IN POST-PROCESSING INTO THE FOLLOWING CATEGORIES; ADD OTHERS AS NECESSARY)

1 Do not feel there are any benefits
2 Not needing to park (a driverless vehicle can drop me off and park itself)
3 Reduction in vehicle crashes
4 Being connected to data services while in the vehicle
5 Doing other things in the vehicle instead of actively driving
6 Supporting travel for adults with disabilities (e.g., vision, physical limitations)
7 Better traffic flow
8 More reliable travel time
9 Fewer vehicle emissions
88 Not sure
99 Left blank

106b What concerns, if any, do you have about driverless cars?

SHOW OPEN-ENDED TEXT BOX AND 88 AND 99 CHECK BOX RESPONSES

_____

88 Not sure
99 Left blank

CODE OPEN ENDED RESPONSES IN POST-PROCESSING INTO THE FOLLOWING CATEGORIES; ADD OTHERS AS NECESSARY)

1 No concerns
2 Driving safety
3 Pedestrian safety
4 Security/privacy concerns
5 Legal/regulations
6 Liability for accidents
7 Cost/vehicles too expensive
88 Not sure
99 Left blank

106c How interested would you be in using a driverless car in the following situations or conditions? Please use a scale from 1 (not at all interested) to 5 (very interested).

	1 – Not at all interested	2 – 2	3 - 3	4 -4	5 – Very interested	88 – Not sure
1 Buy a driverless car for personal use	❍	❍	❍	❍	❍	❍
2 Ride in a driverless taxi/Uber/Via vehicle	❍	❍	❍	❍	❍	❍
3 Ride in a driverless bus/shuttle vehicle	❍	❍	❍	❍	❍	❍
4 Rent a driverless car for occasional trips	❍	❍	❍	❍	❍	❍
5 Use a driverless carshare vehicle (e.g., Zipcar, car2go)	❍	❍	❍	❍	❍	❍

DEMOGRAPHICS

INTRO TO DEMOGRAPHICS: The last few questions are for classification purposes only.

IF SURVTYPE = 2 (HOMEALL), AUTOCODE Q110 = Q1a, THEN SKIP TO Q111
IF SURVTYPE = 3 (TELEALL), AUTOCODE Q110 = Q1a, THEN SKIP TO Q111
IF SURVTYPE = 5 (HOMEOTHER), SKIP TO Q113
IF SURVTYPE = 9 (UNKNOWN), SKIP TO Q113

110 What is your zip code at work? _____

110a About how many employees work at your worksite?

1 1 – 25
2 26-50
3 51-100
4 101-250
5 251-999
6 1,000 or more
88 Not sure
99 Left blank

111 What is your occupation? _____

IF SURVTYPE = 2 (HOMEALL), AUTOCODE Q112 = 4, THEN SKIP TO Q113

112 What type of employer do you work for?

1 Federal agency
2 State, or local government agency
3 Non-profit organization/association
4 Private sector employer
5 NA – DO NOT SHOW ON SCREEN
97 Other (SPECIFY) _____
88 Not sure
99 Left blank

113 In total, how many motor vehicles, in working condition, including automobiles, trucks, vans, and highway motorcycles are owned or leased by members of your household?

_____ vehicles
88 Not sure
99 Left blank

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

_____ persons

88 Not sure
99 Left blank

IF Q114 = 88 OR 99, SKIP TO Q121

IF Q114 = 1, AUTOCODE Q114a = 1, THEN SKIP TO Q121

IF Q114 > 1, ASK Q114a

114a And, including yourself, how many of these household members are 18 or older?

_____ household members
888 Not sure
999 Left blank

121 Which of the following groups includes your age?

1 Under 18
2 18 - 24
3 25 - 34
4 35 - 44
5 45 - 54
6 55 - 64
7 65 or older
98 Prefer not to answer
99 Left blank

122 Do you consider yourself to be any of the following: Latino, Hispanic, or Spanish?

1 Yes
2 No
98 Prefer not to answer
99 Left blank

123 Which one of the following best describes your racial background.

1 White
2 Black or African-American
3 American Indian or Alaska Native
4 Asian
5 Native Hawaiian or Other Pacific Islander
97 Other (SPECIFY) _____
98 Prefer not to answer
99 Left blank

123a Are you …?

1 Female
2 Male
3 Other
98 Prefer not to answer
99 Left blank

124 Last, is your household's total annual income …?

1 Less than $100,000 **(ASK Q124a)**
2 $100,000 or more **(SKIP TO Q124b)**
98 Prefer not to answer **(SKIP TO Q126)**
99 Left blank **(SKIP TO Q126)**

124a Which category best represents your household's total annual income?

1 less than $20,000
3 $20,000 - $29,999
4 $30,000 - $39,999
5 $40,000 - $59,999
6 $60,000 - $79,999
7 $80,000 - $99,999
98 Prefer not to answer
99 Left blank

SKIP TO Q126

124b Which category best represents your household's total annual income?

1 $100,000 - $119,999
2 $120,000 - $139,999
3 $140,000 - $159,999
4 $160,000 - $179,999
5 $180,000 - $199,999
6 $200,000 to $249,000
7 $250,000 or more
98 Prefer not to answer
99 Left blank

Thank you very much for your time and cooperation!

Q126

The Metropolitan Washington Council of Governments is offering a drawing for fifty $250 Amazon gift cards for residents who respond to the survey. If you would like to participate in the drawing, please provide your name and email address, so we can send you the card if you are one of the winners. Please be assured that we will not sell or use your information for anything other than sending you the gift card.

Yes
No, I do not want to participate in the drawing

Thank you for taking the time to complete this survey.

APPENDIX E – INSTRUCTIONS AND DEFINITIONS OF TERMS

Q15 Mode Questions/Grid:

Day off/compressed work schedule. This is a non-standard or flexible (flex) schedule:
4/40 (4 10-hour days per week for a total of 40 hours)
9/80 (9 days every 2 weeks for a total of 80 hours)
3/36 (3 12-hour days per week for a total of 36 hours per week, usually worked by police, firemen, hospital employees, etc.
flex-hours (core hours with flexible start & stop times)

Telecommuting. You telework or telecommute if you work at your home, telework center, or satellite office other than your normal worksite, during your regular work time. Either formal or informal.

Drive Alone. ***Does not include Taxi.*** You drive alone if you travel from your home to work by driving your car, truck, without a passenger.

Motorcycle. Includes moped or scooter. This is broken out separately from Drive Alone.

Carpool. You carpool if you arrive at your worksite by automobile, truck or van with 2 to 6 occupants. The carpool has a regular arrangement between the occupants. May also include occupants that are being dropped off at other worksites or companies. And may include family members.

Casual carpooling (slugging). Casual carpools are carpools that are formed on a day-to-day basis to take advantage of HOV lanes. They are most popular for commuters coming from Virginia to downtown Washington. People who want rides park at a few well-established but unofficial parking areas in VA and line up to wait for drivers. People who want riders cruise by that location and pick up as many as the car will hold. There are pick-up locations in Washington for the evening trip as well, but drivers and riders do not generally carpool home together.

Vanpool. 7-15 occupants commuting to and from work by automobile. May also include occupants that are being dropped off at other worksites or companies.

Buspool. A buspool is a large vanpool - generally 16+ people regularly riding together. It differs from a bus in that the riders "subscribe" or sign up to ride and have a reserved seat. Bridj is a commercial bus service with capacity of 14 people, it is like a Buspool.

Rode a bus. You are a bus commuter if you ride a local, public, or commuter bus (Metrobus, ART-Arlington Transit, The Bus, Ride-On, Fairfax Connector, Fairfax CUE, Loudon County Commuter Bus Service, PRTC OmniRide, OmniLink, DASH or any other public bus).

Metrorail. The Washington, DC, northern Virginia and Maryland subway, also known as Metro, that is operated by the Washington Metropolitan Area Transit Authority (WMATA). It's mostly underground, but does also run above ground in some areas. The lines are known by color, Red, Blue, Orange, Green and Yellow Lines.

MARC (MD Commuter Rail). MARC Train Service is a commuter rail system whose service areas include Harford County, Maryland; Baltimore City; Washington D.C.; Brunswick, Maryland; Frederick, Maryland and Martinsburg, West Virginia. MARC Train Service operates Monday through Friday only.

VRE (Virginia Railway Express). The VRE provides commuter rail service from the Northern Virginia suburbs to Alexandria, Crystal City and downtown Washington, DC, along the I-66 and I-95 corridors. Services began in 1992.

Amtrak/ other train. Just like the Amtrak train here.

Bicycle. Includes rental bike services such as Capital Bikeshare and CABI. Non-motorized.

Taxi. Should include dropped off by taxi or other "livery" service, if the passenger is the only passenger.

Other Terms Used:

Uber, Lyft, and Split Each of these services, is a commercial, ride-sharing service accessed by smart phone app (application), and is not concerned to be a true alt-mode or ride-share, like carpool or vanpool.

Carshare, Zip car, Car2Go, Hertz on Demand. Programs for very short term car rental.

GRH Guaranteed Ride Home (otherwise known as GRH) provides commuters who regularly carpool, vanpool, bike, walk or take transit to work with a reliable ride home when one of life's unexpected emergencies arises. Commuters will be able to use GRH to get home for unexpected personal emergencies and unscheduled overtime up to FOUR times per year.

Flexible work schedule/"Flex-time". Employees select their own starting and finishing times within a set daily period of time, e.g., between 7am and 7pm, to make up the hours they need to work daily. Flex-time is generally not available to staff who are required to work shifts.

HOT lane. "high occupancy tolls" where single occupancy vehicles can pay to use the HOV lanes.

HOV lane. "high occupancy vehicle" lane/ carpool lane/ diamond lane/ express lane.

InfoExpress Kiosks offered a regional network of information and services for area commuters. InfoExpress kiosks were equipped with touch screen monitors & easy to use interface. Even though the kiosks were removed from the Washington, DC area in January 2008, a respondent may remember using one.

Inter-County Connector (ICC). A construction project linking central and eastern Montgomery County and northwestern Prince George's County with a state-of-the-art, multi-modal east-west highway that limits access and accommodates the movement of passengers and goods.

Miles traveled in Q16. Distance from home to work not including side trips, unless they are regular stops (e.g., dropping off a child at day care).

Ozone Action Days / Code Red Days. An alert system where the National Weather Service (NWS) and/or Washington Metropolitan Council of Governments (MWCOG) issues a forecast for high ozone and heat.

SmarTrip and SmartBenefits are a tax-free commute benefit that companies can offer to employees in the Washington metropolitan area. SmarTrip is a permanent, rechargeable fare card and is embedded with a special computer chip that keeps track of the value of the card. Instead of receiving transit benefits as paper Metrochek cards, the benefit is loaded to the SmarTrip account. SmartBenefits replace the old Metrochek program and are claimed electronically each month.

Teleworking. Also known as telecommuting, means using information technology and telecommunications to replace work-related travel. Simply put, it means working at home or closer to home. With teleworking, employees work at home or perhaps at a local *telework center* one or more days per week.

Telework Centers. Federally funded facilities located around the Washington area that allow government and non-government employees to work closer to home some or all of the time.

Virginia MegaProjects, Dulles rail extension. A series of large-scale transportation improvements designed to ease congestion and provide better travel choices in Northern Virginia.Way to Go, Way to Go Arlington, Car Free Diet. Arlington, Virginia's project to leave your car at home – choosing instead to ride transit, bike, walk or telework – you can save money, improve your health and clean our environment.

Calling details:

Last day of calling: Saturday, April 13th
Mon-Fri 11:30am - 5:30pm (PST) 2:30pm - 8:30pm (EST)
Sat 9:00am - 3:00pm (PST) 12:00pm - 6:00pm (EST)
NOTE: Make callback appointments in EST!!

Purpose of survey:

The State of the Commute Survey is conducted every three years in the Washington Metropolitan area on behalf of the Washington Metropolitan Council of Governments. The purpose of the study is to provide an updated view of commuting in the Washington D.C. area for transportation policymakers from Washington D.C., Maryland and Virginia.

The study responses will be expanded to represent the commute patterns for employed households within the eleven jurisdictions of the study area. The results will be used to measure current commute patterns and program effectiveness, as well as commuter awareness and attitudes.

Contact person:

Nicholas W. Ramfos
Director, Transportation Operations Programs
National Capital Region Transportation Planning Board
Metropolitan Washington Council of Governments
777 North Capitol Street NE, Suite 300
Washington, DC 20002
(202) 962-3313

How we got your number:

When trying to reach households in the Metropolitan Washington, D.C. area and the surrounding region, we start with your area code and the 3-digit prefix that begins your phone number. Then, a computer randomly selects the last 4 digits to make up a 7-digit phone number. We have no name or address, nor will we ask for one. We are just trying to gather information from households in your area.

Why did you contact my cell phone?

More than one-in-four Americans have only a cell phone, and do not have landline telephone service. We want to make sure that our survey is not bias towards groups that have landlines, in other words, we want to be sure to include the opinions of the whole working population in our transportation study.

You work for:

CIC Research, Inc.
San Diego, CA
888-714-9846
Supervisors: Dave Harper, Susan Landfield, and Gylten Loki Beqa

APPENDIX F – COMPARISON OF KEY SOC RESULTS
2019, 2016, 2013, 2010, 2007, AND 2004

Commute Patterns

- **Current mode split** – Percentage of weekly commute trips (including CWS and TW days)

	2019	2016	2013	2010	2007	2004
DA/Motorcycle/taxi/ridehail	58.3%	61.0%	65.8%	64.2%	66.9%	71.4%
Carpool	4.4%	5.0%	6.5%	6.9%	6.9%	5.6%
Vanpool	0.2%	0.4%	0.2%	0.1%	0.2%	0.3%
Bus	5.9%	4.9%	4.7%	5.7%	4.9%	4.4%
Metrorail	16.6%	14.3%	11.6%	13.5%	12.0%	11.5%
Commuter Rail	1.6%	0.9%	1.0%	1.0%	0.8%	0.9%
Bike/walk	3.3%	3.3%	2.2%	2.3%	2.6%	2.2%
Compressed work schedule	1.7%	1.1%	1.0%	0.6%	0.6%	0.7%
Telework	8.0%	9.1%	7.0%	5.7%	5.1%	2.3%

- **Regular mode use** – Percentages of weekly "on the road" commuter trips (excluding telework/CWS)

	2019	2016	2013	2010	2007	2004
DA/Motorcycle/taxi/ridehail	64.6%	67.9%	71.5%	68.5%	71.0%	74.1%
CP/VP	5.1%	6.0%	7.3%	7.5%	7.6%	6.1%
Bus	6.5%	5.5%	5.1%	6.0%	5.2%	4.7%
Train	20.2%	16.9%	13.7%	15.5%	13.5%	12.8%
Bike/walk	3.6%	3.7%	2.4%	2.5%	2.7%	2.3%

- **Average length of commute**

	2019	2016	2013	2010	2007	2004
Distance	17.1	17.3 mi	16.0 mi	16.3 mi	16.3 mi	16.2 mi
Time	43 min	39 min	36 min	36 min	35 min	34 min

- **Work compressed schedules**

	2019	2016	2013	2010	2007	2004
No	88%	93%	93%	94%	96%	95%
Yes	12%	7%	7%	6%	4%	5%
4/40 compressed schedule	4%	2%	3%	2%	1%	2%
9/80 compressed schedule	6%	4%	3%	4%	3%	3%
Other compressed schedule	2%	1%	1%	---	---	---

- **Carpool/Vanpool occupancy**

	2019	2016	2013	2010	2007	2004
Carpool/slug	2.6	2.5	2.4	2.5	2.5	2.6
Vanpool	7.7	7.5	10.8	7.6	9.9	10.0

- **Access mode to rideshare/transit modes**

	2019	2016	2013	2010	2007	2004
Picked-up at home	9%	12%	16%	10%	12%	15%
Drive to driver's home	2%	10%	10%	10%	10%	11%
Drive to central location	30%	16%	19%	18%	18%	18%
Another pool/dropped off	5%	3%	2%	3%	1%	1%
Walk	38%	40%	34%	35%	35%	39%
Drive CP/VP	1%	5%	6%	11%	10%	6%
Bus/transit	14%	12%	13%	12%	12%	9%
Average access distance (mi)	**2.8 mi**	**2.8 mi**	**2.9 mi**	2.6 mi	3.1 mi	3.1 mi

- **Reasons for using alternative modes** – commuters who used alternative modes.

	2019	2016	2013	2010	2007	2004
Save money	16%	14%	16%	18%	18%	14%
Save time	14%	12%	12%	10%	13%	18%
Changed jobs	12%	14%	18%	15%	18%	16%
Moved residence	12%	4%	10%	7%	8%	9%
No parking / parking expense	9%	4%	6%	4%	9%	3%
Convenient / close to work	9%	4%	5%	8%	4%	1%
Avoid congestion	7%	6%	5%	4%	5%	7%
Employer/worksite moved	5%	8%	6%	4%	1%	2%
Employer offered transit subsidy	5%	1%	3%	4%	1%	1%
No vehicle available	4%	11%	11%	10%	8%	11%
Flexibility, need car	4%	1%	---	2%	1%	---
Found carpool partner	3%	3%	5%	8%	2%	2%
Tired of driving	2%	3%	2%	5%	4%	6%
Get exercise	2%	3%	1%	3%	2%	2%
Avoid stress	2%	3%	3%	1%	3%	1%
Concerned about environment	2%	---	1%	3%	---	---
Gas prices too high	0%	1%	3%	0%	4%	0%

Commute Changes, Ease of Commute, and Commute Satisfaction

- **Length of time using current alternative modes** – commuters who use alternative modes

	2019	2016	2013	2010	2007	2004
1 – 11 months	23%	18%	16%	18%	17%	23%
12 – 24 months	245	22%	17%	11%	21%	23%
25 – 36 months	10%	9%	8%	11%	10%	9%
37 – 60 months	135	16%	16%	13%	13%	12%
More than 60 months	30%	34%	43%	47%	39%	33%
Average duration (months)	**62**	**72**	**90**	**83**	**80**	**70**

- **Switching among modes** – Modes used previously by commuters who use alternative modes now. Not all shifts to alt modes were from drive alone. Some shifting occured from one alt mode to another

	2019	2016	2013	2010	2007	2004
Not in Washington area then	32%	16%	12%	10%	15%	17%
Always used this mode	---	5%	19%	5%	23%	12%
Made a change from another mode	68%	75%	69%	85%	62%	71%

Previous modes used (respondents who shifted from another mode – multiple responses permitted)

	2019	2016	2013	2010	2007	2004
Drive alone	39%	37%	49%	53%	55%	56%
Train	22%	20%	22%	23%	20%	12%
Bus	13%	9%	14%	14%	15%	15%
Bike/walk	10%	7%	6%	6%	6%	8%
Carpool/Vanpool	5%	11%	9%	4%	10%	10%

- **Commute easier, more difficult, or same as one year ago** – all regional commuters

	2019	2016	2013	2010	2007	2004
Easier	15%	16%	17%	12%	14%	14%
More difficult	28%	22%	23%	25%	27%	29%
About the same	57%	62%	60%	62%	57%	54%

- **Satisfied with trip to work** – all regional commuters

	2019	2016	2013	2010	2007	2004
Rating of 1 – not at all satisfied	11%	9%	6%	7%	N/A	N/A
Rating of 2	13%	10%	10%	9%	N/A	N/A
Rating of 3	26%	23%	20%	22%	N/A	N/A
Rating of 4	28%	27%	28%	24%	N/A	N/A
Rating of 5 – very satisfied	22%	31%	36%	38%	N/A	N/A

Telework

- **Telework incidence in region** – all commuters (workers who are not self-employed and working only at home)

	2019	2016	2013	2010	2007	2004
% regional workers who telework	34.7%	32.0%	26.5%	25.0%	18.7%	12.8%
Home-based teleworkers	98%	98%	99%	97%	95%	95%

- **Employer telework programs –** all regional commuters + FT teleworkers

	2019	2016	2013	2010	2007	2004
Employees with formal program	34%	30%	30%	29%	19%	15%
Employees with informal TW	27%	23%	21%	25%	22%	20%
No telework program at work	39%	47%	49%	46%	59%	65%

- **Potential for additional regional telework –** all regional commuters

	2019	2016	2013	2010	2007	2004
Non-TW (percent of commuters)	65%	68%	73%	75%	81%	87%
Job tasks allow TW ("could TW")	31%	27%	29%	30%	30%	25%
Interested in TW ("could and would TW")	25%	18%	18%	21%	24%	19%

- **Telework frequency** – teleworkers

	2019	2016	2013	2010	2007	2004
Less than 1 day per month	17%	17%	17%	22%	18%	22%
1 – 3 times per month	24%	25%	26%	30%	26%	32%
1 day per week	27%	23%	25%	19%	18%	15%
2 days per week	18%	15%	11%	12%	16%	12
3 or more times per week	14%	20%	21%	17%	22%	19%
Mean (days per week)	**1.2**	**1.4**	**1.4**	**1.3**	**1.5**	**1.3**

- **Length of time teleworking** – teleworkers

	2019	2016	2013	2010	2007	2004
Less than one year	17%	12%	14%	16%	14%	22%
One to two years	24%	24%	27%	22%	29%	27%
More than two years	59%	64%	59%	62%	58%	51%

- **How learned about telework** – teleworkers (multiple responses permitted)

	2019	2016	2013	2010	2007	2004
Program at work/employer	79%	73%	73%	71%	55%	56%
Word of mouth	8%	9%	7%	5%	13%	18%
Initiated request on my own	3%	10%	17%	15%	23%	16%
Commuter Connections/COG	**7%**	**9%**	**10%**	**6%**	**7%**	**5%**

Awareness/Attitudes Toward Transportation Options

- **HOV lane availability and use** – all regional commuters

	2019	2016	2013	2010	2007	2004
With HOV lane on route to work	34%	30%	29%	30%	29%	29%
Use HOV lanes (if available)	32%	34%	34%	27%	27%	8%
With Express lane on route	18%	15%	---	---	---	---
Use Express lanes (if available)	44%	53%	---	---	---	---
Ave time saving – one way trip (min)	19 min	20 min	24 min	23 min	21 min	25 min

- **Park & Ride awareness and use** – all regional commuters

	2019	2016	2013	2010	2007	2004
Know locations of P&R lots	32%	38%	38%	45%	38%	40%
Used P&R in past year	7%	6%	7%	9%	7%	7%

- **Reasons for not riding bus or train** – commuters who did not use bus or train

	2019	2016	2013	2010
No train service, don't know service	24%	55%	69%	---
No bus service, don't know service	30%	41%	49%	31%
Trips takes too much time	35%	25%	20%	32%
Need car for work	12%	7%	7%	11%
Need car before or after work	10%	7%	5%	9%
Trip too long – distance too far	6%	5%	6%	8%
Work schedule irregular	6%	5%	5%	10%
Bus unreliable/late	3%	5%	4%	3%
Too expensive	3%	5%	4%	5%
Don't like riding with strangers, prefer to be alone	7%	4%	2%	4%

- **Reasons for not riding bus** – commuters who didn't use bus (note that after 2007, one question was asked about reasons for not using transit)

	2019	2016	2013	2010	2007	2004
Trips takes too much time	N/A	N/A	N/A	N/A	31%	32%
Need car for work	N/A	N/A	N/A	N/A	16%	15%
No bus service, don't know service	N/A	N/A	N/A	N/A	19%	16%
Work schedule irregular	N/A	N/A	N/A	N/A	8%	8%
Trip too long – distance too far	N/A	N/A	N/A	N/A	10%	7%
Bus unreliable/late	N/A	N/A	N/A	N/A	5%	5%
Need car before or after work	N/A	N/A	N/A	N/A	9%	5%
Don't like riding with strangers, prefer to be alone	N/A	N/A	N/A	N/A	6%	4%
Too expensive	N/A	N/A	N/A	N/A	0%	0%

- **Reasons for not riding train** – commuters who didn't use train (after 2007, one question was asked about reasons for not using transit)

	2019	2016	2013	2010	2007	2004
No train service, don't know service	N/A	N/A	N/A	N/A	30%	38%
Trips takes too much time	N/A	N/A	N/A	N/A	22%	21%
Need car for work	N/A	N/A	N/A	N/A	16%	14%
Trip too long – distance too far	N/A	N/A	N/A	N/A	6%	6%
Work schedule irregular	N/A	N/A	N/A	N/A	7%	5%
Need car before or after work	N/A	N/A	N/A	N/A	8%	4%
Don't like riding with strangers, prefer to be alone	N/A	N/A	N/A	N/A	5%	2%
Too expensive	N/A	N/A	N/A	N/A	4%	4%

- **Reasons for not carpooling/vanpooling** – regional commuters who don't currently CP or VP

	2019	2016	2013	2010	2007	2004
Don't know anyone to CP/VP with	32%	43%	47%	45%	48%	47%
Work schedule irregular	17%	18%	23%	28%	18%	20%
Prefer to use transit/more convenient	9%	5%	3%	---	2%	2%
Close to transit/close to work	7%	6%	5%	6%	3%	3%
Not feasible/practical, not interested	5%	---	2%	2%	---	---
Not convenient	5%	2%	---	2%	---	---
Don't like riding with strangers, prefer to be alone	5%	6%	4%	6%	4%	4%
Need car for emergencies	5%	10%	---	3%	3%	1%
Need car before or after work	5%	8%	7%	11%	11%	7%
Need car for work	5%	7%	8%	10%	9%	12%
Carpool partners could be unreliable/late	4%	3%	3%	2%	1%	2%
Takes too much time	2%	6%	5%	5%	5%	4%
Doesn't save time	1%	4%	3%	2%	5%	5%

Transportation Satisfaction

- **Satisfied with transportation in Washington metropolitan region** – all regional commuters

	2019	2016	2013	2010	2007	2004
Rating of 1 – not at all satisfied	12%	11%	10%	9%	N/A	N/A
Rating of 2	17%	19%	15%	18%	N/A	N/A
Rating of 3	35%	34%	31%	35%	N/A	N/A
Rating of 4	26%	25%	28%	27%	N/A	N/A
Rating of 5 – very satisfied	10%	11%	16%	13%	N/A	N/A

- **Societal benefits of alternative mode use** – all regional commuters

	2019	2016	2013	2010	2007	2004
Less traffic/congestion	69%	59%	59%	64%	N/A	N/A
Reduce pollution	47%	36%	39%	45%	N/A	N/A
Reduce greenhouse gases	8%	12%	8%	11%	N/A	N/A
Save energy	6%	9%	15%	5%	N/A	N/A
Companionship/sense of community	6%	4%	3%	2%	N/A	N/A
Safety/less stress/less road rage	5%	6%	5%	4%	N/A	N/A
Reduce accidents	5%	3%	2%	3%	N/A	N/A
Good for economy	2%	7%	2%	3%	N/A	N/A
Less wear/tear on roads	2%	4%	4%	6%	N/A	N/A
Reduce government costs	0%	3%	1%	4%	N/A	N/A

- **Personal benefits of alternative mode use** – commuters who use alternative modes for commuting

	2019	2016	2013	2010	2007	2004
Save money/receive subsidy	32%	33%	39%	55%	N/A	N/A
Avoid stress/relax	29%	22%	26%	17%	N/A	N/A
Use time productively	20%	18%	17%	17%	N/A	N/A
Get exercise, health benefit	12%	13%	10%	- -	N/A	N/A
Less traffic, avoid traffic	19%	6%	2%	4%	N/A	N/A
Save time, faster	18%	7%	5%	- -	N/A	N/A
No need to park	8%	2%	0%	- -	N/A	N/A
Reduce wear/tear on car	6%	3%	7%	11%	N/A	N/A
Help environment/save energy	6%	3%	5%	15%	N/A	N/A
Arrive at work on time	3%	10%	11%	5%	N/A	N/A
No need for car	3%	8%	7%	6%	N/A	N/A
Have companionship	3%	7%	7%	10%	N/A	N/A
Reduce greenhouse gas	2%	3%	2%	4%	N/A	N/A
Use HOV lane	1%	2%	2%	5%	N/A	N/A

Advertising/Messages

- **Heard, seen, or read commute advertising in past 6 months** – all respondents (includes both commuters and respondents who work at home/telework from home full-time)

	2019	2016	2013	2010	2007	2004
Yes	45%	54%	55%	58%	51%	55%
Ad messages recalled						
Use bus/train, Metro	15%	13%	15%	14%	18%	7%
Carpool/vanpool	12%	%	%	%	%	%
Back to Good WMATA ad	8%	---	---	----	---	---
Call CC, CC web site	5%	7%	4%	4%	4%	6%
GRH	5%	6%	5%	9%	6%	12%
New buses/trains coming	3%	9%	7%	6%	7%	7%
Be alert/See something, say something	3%	---	---	---	---	---
Road closures/schedule change	3%	1%	1%	1%	---	---
Uber/Lyft/Via ad	2%	---	---	---	---	---
Regional commute services available	2%	2%	1%	1%	1%	1%
HOT/Express lanes	2%	5%	7%	---	---	---
Ride bike to work / bike issues	2%	2%	1%	1%	---	---
Capital Bikeshare ad	1%	2%	1%	---	---	---
You can call for CP/VP info	1%	8%	8%	11%	14%	17%
HOV lanes	1%	5%	6%	3%	3%	2%
It would help the environment	1%	2%	3%	6%	5%	2%
It reduces traffic	1%	2%	3%	4%	5%	3%
It saves money	1%	2%	2%	5%	3%	<1%
It saves time	1%	2%	2%	2%	3%	2%
Telecommuting	0%	1%	2%	2%	3%	3%

- **Attitudes/actions after hearing/seeing commute ads** (respondents who remembered ads)

	2019	2016	2013	2010	2007	2004
More likely to consider RS/transit	18%	25%	25%	24%	18%	18%
Took actions to change commute	5.8%	3%	3%	4%	<1%	2%
Advertising encouraged action taken (of respondents who took action)	43%	61%	84%	83%	67%	68%
Actions taken (all regional commuters)						
Sought commute info (internet, family, commute organization, other source)	4.7%	1%	1%	2%	0.7%	1.6%
Tried alt mode	2.7%	1%	2%	1%	0.1%	0.2%

- **Awareness and use of regional commute info phone/web site** – all respondents

	2019	2016	2013	2010	2007	2004
Know regional number/web site	32%	53%	62%	66%	51%	46%

- **Know of CC** (prompted or unprompted) – all respondents

	2019	2016	2013	2010	2007	2004
Yes – unprompted	---	---	3%	2%	2%	6%
Yes – prompted	48%	61%	62%	64%	53%	66%

Employer Services

- **Employer offers parking services** – all non-self-employed commuters

	2019	2016	2013	2010	2007	2004
Free on-site parking (all employees)	60%	64%	63%	63%	65%	66%
Free on-site parking (some employees)	5%	6%	N/A	N/A	N/A	N/A
Free off-site parking	1%	1%	2%	2%	4%	3%
Employee pays full parking charge	28%	24%	23%	22%	21%	21%
Employer pays part of parking charge	5%	5%	7%	7%	7%	6%
CP/VP parking discount (when parking is not free)	9%	14%	14%	16%	15%	14%

- **Employer offers TDM services** – all non-self-employed commuters

	2019	2016	2013	2010	2007	2004
Employer offers any services	60%	55%	57%	61%	54%	53%
Discount/free transit pass	45%	37%	38%	45%	33%	31%
Information on commute options	26%	27%	28%	26%	20%	22%
Bike/ped facilities or services	22%	23%	24%	24%	17%	14%
Preferential parking for CPVP	21%	21%	21%	21%	16%	16%
GRH	10%	12%	13%	14%	12%	12%
Bikeshare	9%	6%	3%	N/A	N/A	N/A
Carpool financial incentive	8%	8%	7%	7%	5%	4%
Carshare	7%	5%	4%	N/A	N/A	N/A

- **Respondent used TDM services** (respondents who have access to services)

	2019	2016	2013	2010	2007	2004
Discount/free transit pass	60%	59%	57%	54%	41%	41%
Information on commute options	39%	30%	34%	33%	46%	45%
Carpool financial incentive	25%	12%	18%	16%	15%	18%
Preferential parking for CPVP	19%	15%	18%	18%	20%	20%
Bike/ped facilities or services	22%	17%	19%	18%	12%	16%
Bikeshare	18%	25%	4%	N/A	N/A	N/A
GRH	18%	15%	20%	26%	25%	25%
Carshare	15%	15%	15%	N/A	N/A	N/A

Demographics

- **States of Residence and Employment** – all respondents

Residence	2019	2016	2013	2010	2007	2004
District of Columbia	12%	12%	12%	12%	12%	11%
Maryland	45%	44%	44%	44%	45%	45%
Virginia	43%	44%	44%	44%	43%	44%

Employment	2019	2016	2013	2010	2007	2004
District of Columbia	34%	31%	31%	34%	30%	29%
Maryland	27%	26%	29%	27%	32%	32%
Virginia	36%	39%	37%	37%	36%	37%
Other/Ref	3%	4%	3%	2%	2%	2%

- **Employer type** – all respondents

	2019	2016	2013	2010	2007	2004
Federal agency	28%	22%	22%	24%	20%	22%
State/local government	10%	11%	12%	12%	12%	13%
Non-profit organization	16%	13%	12%	13%	11%	10%
Private sector	46%	48%	43%	41%	47%	49%
Self-employed*	----	6%	11%	10%	10%	7%

*In 2019, Self-employed respondents were combined with private sector.

- **Employer size** – all respondents

	2019	2016	2013	2010	2007	2004
1 – 25 employees	19%	27%	27%	25%	26%	25%
26 – 50 employees	11%	11%	10%	8%	10%	12%
51 – 100 employees	10%	10%	11%	11%	12%	12%
101 – 250 employees	14%	13%	13%	13%	13%	13%
251 – 999 employees	19%	15%	14%	16%	15%	15%
1,000 employees	27%	24%	25%	27%	24%	25%

- **Age** – all respondents

	2019*	2016*	2013	2010	2007	2004
Under 24	5%	9%	5%	4%	4%	7%
25 – 34	29%	25%	12%	13%	16%	21%
35 – 44	24%	23%	22%	24%	28%	28%
45 – 54	22%	23%	31%	31%	30%	27%
55 – 64	15%	15%	23%	22%	18%	14%
65 or older	5%	5%	7%	6%	4%	3%

*In 2016 and 2019, survey, data were weighted to account for under-representation of respondents under 35 years old and over-representation of respondents 55 and older. Data for previous surveys were not weighted for age.

- **Sex** – all respondents

	2019	2016	2013	2010	2007	2004
Female	52%	49%	55%	56%	54%	55%
Male	48%	51%	45%	44%	46%	45%

- **Income** – all respondents

	2019	2016	2013	2010	2007	2004
Under $30,000	4%	5%	5%	4%	6%	6%
$30,000 – $39,999	2%	4%	3%	4%	5%	8%
$40,000 – $59,999	9%	7%	9%	9%	12%	14%
$60,000 – $79,999	12%	9%	11%	10%	14%	17%
$80,000 – $99,999	12%	8%	8%	9%	15%	16%
$100,000 – $119,999	11%	15%	15%	15%	14%	14%
$120,000 – $139,999	10%	10%	12%	12%	9%	7%
$140,000 – $159,999	10%	10%	11%	10%	7%	5%
$160,000 – $179,999	7%	7%	7%	7%	18%	13%
$180,000 – $199,999	6%	6%	8%	5%	----	----
$200,000 or more	17%	19%	11%	15%	----	----

- **Ethnic/Racial background** – all respondents

	2019	2016	2013	2010	2007	2004
Hispanic/Latino	14%	14%	13%	11%	9%	6%
White	43%	45%	50%	53%	62%	64%
Black/African-American	24%	23%	25%	23%	22%	23%
Asian	15%	13%	10%	10%	4%	5%
Other/Mixed	4%	5%	2%	3%	3%	2%