ITEM #4

National Capital Region
Transportation Planning Board
COMMUTER CONNECTIONS PROGRAM

Fiscal Year 2018
Applicant Database
Annual Placement Survey Report
Applications Received During July-September 2017
(November 2017 Survey)

Prepared for:

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Executive Summary

This report presents results of a survey about commuter transportation assistance services offered by the Commuter Connections program of the National Capital Region Transportation Planning Board (TPB) at the Metropolitan Washington Council of Governments (COG) to commuters in the Washington, DC region.

Commuter Connections' services include: carpool and vanpool matchlists, transit route and schedule information, information on Park & Ride lot locations, bicycling and HOV facilities, and employer transportation demand management (TDM) and telework assistance. Commuters obtain services by submitting information and service requests via the Commuter Connection's website or toll-free telephone number, or through an employer, a local partner assistance program, or a transportation management association (TMA). Additionally, some services are available for immediate download from Commuter Connections' website.

This report estimates transportation and air quality impacts of Commuter Connections' services. Data for this analysis were collected in November 2017 through a survey of 706 applicants who received information or assistance between July 1 and September 30, 2017.

Commuter Connections Program Activity Summary and
Overall Participation, Utilization, and Satisfaction Performance Measures
Placement Survey, July-September 2017

• Commuter applicants	5,021	
• Applicant placement rates	49.9%	
- Continued placement rate		36.4%
- Occasional placement rate		3.7%
- Temporary placement rate		5.2%
- One-time placement rate		4.6%
• Applicants placed in alternative modes	2,505	
- Continued placements	1,826	
- Occasional placements	186	
- Temporary placements	262	
- One-time placements	231	
• Applicants who received matchlist from Commuter Connections		25%
• Applicants who received vanpool assistance		6%
• Applicants who received transit information		28%
• Applicants who received commute event information		15%
• Applicants who received Park & Ride info		12%
• Applicants who received bicycle information		7%
• Applicants who received telework information		5%
• Applicants who received GRH information/registration		76%

Commuter Connections Program
Program Impact Performance Measures
Placement Survey, July-September 2017

• Daily vehicle trips (VT) reduced	**954**	**trips**
- Continued placements	935	trips
- Temporary placements (prorated credit)	19	trips
• Daily VMT reduced	**28,047**	**VMT**
- Continued placements	27,583	VMT
- Temporary placements (prorated credit)	464	VMT
• Daily tons of Emissions reduced		
– NOx	**0.0063**	**tons**
– VOC	**0.0036**	**tons**
• Annual tons of Emissions reduced		
– PM 2.5	**0.100**	**tons**
– PM 2.5 NOx precursors	**1.650**	**tons**
– CO2 / Greenhouse gas	**2,785.7**	**tons**
• Gallons of gasoline saved	**1,457**	**daily gallons of gas**
• Commuter costs reduced		
- Annual cost saving per placement	**$720**	**per year**

Other Key Survey Results

Demographics

- Slightly over half of the applicants were female (54%). Nearly six in ten (57%) applicants were white and 84% were between 35 and 64 years old.

Commute Travel Patterns

- More than half (56%) of the applicants surveyed said they used transit at least one day per week. Transit trips accounted for 44.8% of applicants' weekly commute trips; 20.9% were made by bus and 15.9% were made by commuter rail. Applicants made 8.0% of weekly trips by Metrorail.

- One-third (33%) of applicants carpooled or vanpooled at least one day per week. Carpool and vanpool trips made up 26.3% of applicants' weekly commute trips.

- Nineteen percent of applicants drove alone one or more days per week, but this was a secondary mode for almost half of these applicants; drive alone was used for just 12.3% of weekly commute trips.

- The average one-way commute distance was 35.1 miles. The average one-way commute time was 66 minutes.

Commute Changes

- Half (49.9%) of survey respondents made a commute pattern change or tried another method of transportation after receiving assistance from Commuter Connections.

- More than a third (36.4%) of applicants made a change to an alternative mode that they had continued to use at least one day per week. This 36.4% was the "continued placement rate." The temporary placement rate (percent of applicants who made a change but returned to their original modes) was 5.2%.

- About 4.6% of applicants tried using a new alternative mode a few days (one-time placement rate) and 3.7% made a change to a mode they use occasionally, but less than once per week on average (occasional placement rate).

- About one-third (36%) of applicants who made a mode change shifted from driving alone. The remaining 64% shifted from one alternative mode to another.

- The primary reasons that applicants made commute changes were to save money (21%) or save time (18%), because they changed jobs or work hours (14%) or more to a new residence (5%), or were tired of driving (6%).

- One-quarter (26%) applicants who made a commute change indicated that information they received from Commuter Connections influenced or assisted their decision to make the change. About seven percent of respondents cited a carpool or vanpool matching or assistance service and 6% named a transit information service. Six percent cited Park & Ride lot information, and 4% named Guaranteed Ride Home. Four in ten (41%) said a service provided by their employer or another commute assistance organizations had influenced their decision.

Contact with Commuter Connections

- Applicants noted four primary sources of making contact with Commuter Connections: employer / employee survey (30%), word of mouth referrals (27%), Internet (18%), and radio (11%).

- Half (49%) of applicants contacted Commuter Connections to find back-up transportation in case of emergency. Fourteen percent wanted to check commute options or a transit schedule, 12% made the contact to find a carpool or vanpool partner or to get information about these modes, and 9% wanted to save money.

Information and Assistance Requested and Received

- The top service received overall, by a large majority, was Guaranteed Ride Home; three-quarters (76%) of applicants said they received or accessed this service, which is open to any commuter who uses an alternative mode to commute.

- Four in ten applicants said they received or accessed a service to help with carpooling or vanpooling. One-quarter (25%) received a matchlist with names and contact information for potential carpool/vanpool partners, 12% received a map showing home and work locations of potential carpool/vanpool partner, and 9% used the carpool rider bulletin board

- Over half (56%) of applicants who received a matchlist or map with potential rideshare partners tried to contact someone named on the list and 83% who tried to make contact reached someone on the list.

- Nearly three in ten (28%) applicants received some type of information about transit from Commuter Connections. Thirty-nine percent of these applicants said they used the information provided to contact a transit agency and 81% who contacted a transit agency said they used information they received from the transit agency to try transit.

- More than eight in ten (85%) applicants said their employers offer some commute services at the worksite. More than half (55%) said their employers offered transit pass discounts and 47% said telework or compressed work schedules were offered. Other common services included carpool/vanpool information (19%), other cash incentive (18%), matchlists (17%), vanpool subsidy (15%), GRH (15%), shuttle to Metrorail (15%), transit schedule information (12%), and Federal "Commuter Choice" tax benefit incentive (11%).

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Section 1 Overview

Purpose of the Report

This report presents results of a commuter placement survey of a randomly-selected sample of 706 commuters who applied to the regional rideshare database, administered by the Commuter Connections Program of the National Capital Region Transportation Planning Board (TPB) at the Metropolitan Washington Council of Governments (COG), between July 1 and September 30, 2017.

The primary purpose of conducting this survey was to collect data to document transportation, air quality, energy, and cost impacts of commuter transportation assistance services offered by Commuter Connections to commuters and employers in the Washington, DC metropolitan region. The Commuter Operations Center (COC) provides basic commute information and assistance, such as regional ridematching and transit, bicycling, teleworking, and Park & Ride lot information.

The survey described in this report represents an annual survey. Similar annual surveys were conducted in 2014, 2011, 2008, 2005, 2004, 2003, and 2002. Results for these surveys were reported in Fiscal Year 2015, 2012, 2009, 2006, 2005, 2004, and 2003 Placement Survey Reports, respectively, dated (May 2015, May 2012, May 2009, May 2006, May 2005, May 2004, and May 2003). Prior to the November 2002 survey, COG conducted a series of eight semi-annual placement surveys between 1997 and 2002. These surveys were documented in two reports. The first report, TDM Analysis Report – Compilation of Four Quarterly Placement Surveys 1997-1998 (January 10, 2000), covered four surveys conducted during 1997 and 1998. The second report, TDM Analysis Report – Compilation of Four Quarterly Placement Surveys 2000-2002 (October 10, 2002), covered surveys conducted during 2000 and 2001.

The results of each of the two four-quarter series were combined to represent two full calendar years. Additionally, the results for individual quarters of the year were examined to identify the quarter most representative of a full calendar year. The third quarter, July through September, was chosen for this purpose for future annual surveys and was used for the 2002, 2003, 2004, 2005, 2008, 2011, and 2014 surveys. The survey documented in this report covers applications received between July 1, 2017 and September 30, 2017. These results will represent the performance for all applications received during FY 2018 (July 1, 2017 through June 30, 2018).

Organization of the Report

The report is divided into three sections following this overview section:

- Section 2 Data Collection Methodology
- Section 3 Commuter Placement survey results
- Section 4 Program performance results

Three appendices follow these sections. Appendix A presents the questionnaire used in the 2017 survey. Appendix B provides comparisons of 2017 survey results with those of previous surveys for key survey questions. Appendix C details the calculations of transportation, air quality, energy, and cost-saving impacts.

Section 2 Data Collection Methodology

This section briefly describes the survey methodology used for this analysis.

Survey Overview

Questionnaire

The questionnaire used for the 2017 survey is shown in Appendix A. It was based on the questionnaire used for the 2014 applicant survey, with minor updates to enhance the clarity and flow of questions and addition of several questions related to new Commuter Connections services. Separate formats of the questionnaire were developed for Internet and telephone survey administration methods. The two versions differed only in the phrasing and format of the questions, with Internet questions designed for self-guided visual presentation and telephone questions designed for oral presentation of questions by the interviewer.

The Internet version was programmed by MediaBeef, Inc., Commuter Connections' online TDM software system vendor. It was used for applicants who provided an email address as a contact in the registration database. The telephone version was programmed by CIC Research, Inc. (CIC), an independent survey research firm, for applicants who provided only telephone numbers as contact information.

Sample Selection and Alert Letters

The survey described in this report was conducted with applicants who received assistance from Commuter Connections between July 1 and September 30, 2017. Potential respondents were identified from the Commuter Connections' database. After duplicate records and records that did not include at least one form of contact information were deleted, 5,129 sample points were available for selection.

For sampling purposes, applicants were divided into four sub-groups, based upon the type of contact information they provided in the database record. A target was established for completed interviews in each group, as shown below:

Contact Information	Applicants	Targeted Interviews	Completed Interviews
Email Only	552	11	12
Email & Telephone	4,316	656	658
Telephone Only	240	33	36
Postal Address Only	21	0	0
Total	5,129	700	706

Alert Letters – The survey consultants developed alert letters to inform potential respondents of the upcoming survey and request their participation. These letters were based upon the letter distributed to potential respondents during the 2014 study, with tailoring to update the letter to 2017 and reference the appropriate 2017 survey administration method: either Internet or telephone.

Three letters were developed for the four sub-groups described above:

1) ***Email alert letter*** – sent by email to the Email Only and Email & Telephone groups asking the recipient to take the interview via Internet using their Commuter Connections' accounts
2) ***Postal mail alert letter/telephone only*** – sent by postal mail to the Telephone Only group alerting the recipient of a possible upcoming telephone interview
3) ***Postal mail/address only*** – letter sent by postal mail to the Postal Address Only group asking the recipient to complete the interview via Internet through their Commuter Connections' accounts

All 5,129 commuters identified for the survey period were sent an invitation to participate in the survey. For the Telephone Only and Postal Address Only groups, COG/TPB staff sent invitation letters printed on Commuter Connections letterhead to commuters during the last week of October 2017. For Email Only and Email & Telephone groups, COG sent the letter via email to potential respondents a few days after the postal letters were mailed.

Commuters in the Email Only and Email & Telephone groups who did not respond to the initial invitation were sent reminder emails. The initial email and three reminders generated 316 completed interviews. To increase the response rate, a fourth and final reminder was sent. It was reworded to note that the survey was administered "only once every three years." The fourth reminder resulted in an additional 104 interviews.

Interviews

Telephone Interviews – Telephone Only Sample – CIC prepared the survey instrument for the Telephone Only ample group. To ensure proper administration of the applicant survey on CIC's CATI system, a pretest was conducted on November 2 and 3, 2017. Output from the pretest also provided information and documentation for the survey team conducting the Internet survey. Following a successful pretest, interviewing for the Telephone Only group resumed on November 30 and was completed on December 13, 2017.

Telephone interview calls to selected commuters were first directed to the respondent's work number. If contact was unsuccessful, the respondent was called at home. A total of 36 interviews were completed from among 240 potential respondents. The average length of interview was 20.2 minutes. On average, 27.5 call attempts were made for each completed interview. This was similar to the numbers of dialing attempts made during the 2014 interviewing period (28.6 call attempts), but higher than the attempts for the 2011 survey (18.7 attempts) and the 2008 interviewing period (10.4 call attempts). The increased number of call attempts appears related to an increasing difficulty in reaching respondents via telephone.

Internet Interviews – The Internet survey was hosted through the Commuter Connections' online system, with support from Mediabeef, from October 31 through December 22, 2017. Both Email Only and Email & Telephone groups (4,868 commuters) were invited to take the interview via Internet using their Commuter Connections' account. Eighty-three sample points were removed due to email bounce backs, resulting in a final Internet sample frame of 4,785.

At the end of the survey period, Commuter Connections had compiled the total of 514 completed Internet interviews and sent the data to CIC for validity checks and merging with the telephone survey data. Of the 514 initial interviews, 96 could not be used because the respondents were not currently employed or did not recall receiving or requesting information from Commuter Connections. This left a total of 418 useable interviews from the Internet, comprised of 12 from the Email Only group and 406 from the Email & Telephone group. The response rate for the Internet method of contact was 8.7% (418 / 4,785). Data received from the Internet method of contact were formatted and merged with the interviews completed by telephone.

Telephone Interviews – Follow-up to Internet Non-respondents – Due to the low response rate by email invitation to potential respondents, Internet respondents who had provided a telephone number were contacted for a follow-up survey to be conducted by telephone interview. A total of 252 interviews were completed from this group of 3,815 applicants.

The non-response survey was fielded from December 1 to December 21, 2017. If both work and home numbers were available from the applicant record, interviews were first directed to a work telephone number. If the interview could not be completed at the work number, the respondent was called at home. The average length of interview was 18.6 minutes and an average of 20.3 dialing attempts was made for each completed interview.

Weighting of Survey Data

Respondent survey data were weighted to align survey results with the total group of applicants defined during the analysis period. The criterion used to weight the survey data was "type of contact available" which denoted applicants as either:

1) Applicant who had provided only email or both email and telephone number (670 interviews)
2) Applicant who had provided only a telephone number (36 interviews)

Because none of the 21 applicants who included only a postal address in the Commuter Connections' database record completed an interview via the Internet and they could not be contacted by telephone, this sample group was eliminated from the weighting scheme.

As noted earlier, 83 applicants were removed from the email group because their email bounced back as not delivered in the Commuter Connections' computer system. This left a final total of 5,025 commuter applicants who were included in the calculation of weights for the survey data.

The following table shows the relationship between the completed interviews and the total applicant group with respect to the weighting variable, "method used to complete the interview."

Type of Contact by Group	Completed Interviews	Total Applicant Group
Applicants with either email or telephone	94.9%	95.2%
Applicants with only telephone	5.1%	4.8%

Statistical Distribution Comparison Between Completed Interviews and Total Applicant Population

A total of 7016 interviews were completed from the total of 5,025 commuter applicants. This represented an overall response rate of 14.0%. The low response rate increases the potential for non-response bias, meaning that it is possible that those responding to the survey could be different from the total applicant population.

The level of confidence for the study was calculated using the finite population correction factor. Completion of 706 interviews from a population of 5,025 resulted in a level of confidence of 95% $\pm$ 3.4 for the 2017 COG Placement Rate Survey.

Section 3 Commuter Placement Survey Results

This section presents the results of the November 2017 placement survey. This survey was conducted to define travel patterns of commuters who applied to the Commuter Connections program to obtain information and assistance with alternative modes and to collect data needed to estimate transportation and air quality benefits of travel changes made by these commuters.

A primary goal of the Commuter Connections program is to reduce commute vehicle trips, commute vehicle miles traveled, and emissions from commute travel by:

- Encouraging and assisting drive alone commuters to shift to commute alternative arrangements
- Assisting current commute alternative users to maintain their use of alternative modes or increase the number of days per week they use alternative modes

With these goals in mind, the commuter placement survey collected data in the following primary topic areas, related to commuters' travel patterns and influences on these patterns:

- Current commute patterns (commute mode, distance, time)
- Alternative mode characteristics (carpool and vanpool occupancy, rideshare/transit meeting points, distance to meeting point)
- Recent commute pattern changes (mode/frequency, occupancy)
- Information and assistance services received
- Influences of services on change (Commuter Connections services, employer/other services)
- Demographics (age, income, ethnic group, sex, employer type and size)

Following are summaries of key results from each section of the survey. Percentages presented in the results tables show percentages weighted to the total applicant population for the survey quarter, but each table shows the raw number of respondents (e.g., n=__) who answered the question. Where possible, results from the survey are compared for sub-groups of survey respondents and/or compared with corresponding available data for the general public. Finally, comparisons are made for some questions with results from surveys conducted in 2014, 2011, and 2008. Appendix B presents more complete results for these comparisons and earlier surveys.

The commute pattern data from the survey were used in Section 4 to calculate estimated transportation, air quality, energy, and consumer impacts of Commuter Connections services.

Characteristics and Demographics of the Sample

Work and Home Locations

Table 2 shows the percentage of applicants by home and work states. The majority of applicants lived in Virginia (57%) or Maryland (40%). Top home locations in Virginia included: Prince William County (16%), Fairfax County (12%), Stafford County (10%), Loudoun County (6%), and Spotsylvania County (5%). In Maryland the top home locations were Montgomery County, MD (10%), Frederick County (6%), and Charles County (5%). Other jurisdictions each accounted for less than 5% of applicants.

Work locations were distributed much differently. Half (50%) of all applicants worked in the District of Columbia. About one-quarter (25%) worked in a Virginia jurisdiction within the COG region and 20% worked in one of the Maryland jurisdictions in the COG region. Top work locations outside the District of Columbia included: Montgomery County, MD (17%), Arlington County, VA (13%), and Fairfax County, VA (8%). About five percent of respondents worked outside the COG region.

Table 2
Distribution by Home and Work Locations

State/County	Home Location (n = 706)	Work Location* (n = 706)
District of Columbia	1%	50%
Maryland		
– MD counties within COG region	26%	20%
– MD counties outside COG region	14%	5%
Virginia		
– VA counties within COG region	38%	25%
– VA counties outside COG region	19%	<1%
Other	2%	<1%

* Work location percentages for Maryland and Virginia within COG region: Maryland – Calvert, Charles, Frederick, Montgomery, and Prince George's counties; and Virginia – City of Alexandria and Arlington, Fairfax, Loudoun, and Prince William counties). Maryland and Virginia locations outside this area are counted separately.

Demographics

The survey asked demographic classification questions for sex, ethnic group, and age. About half (54%) of the applicants were female and 46% were male. The remaining demographics are summarized in Table 3 and Figure 1.

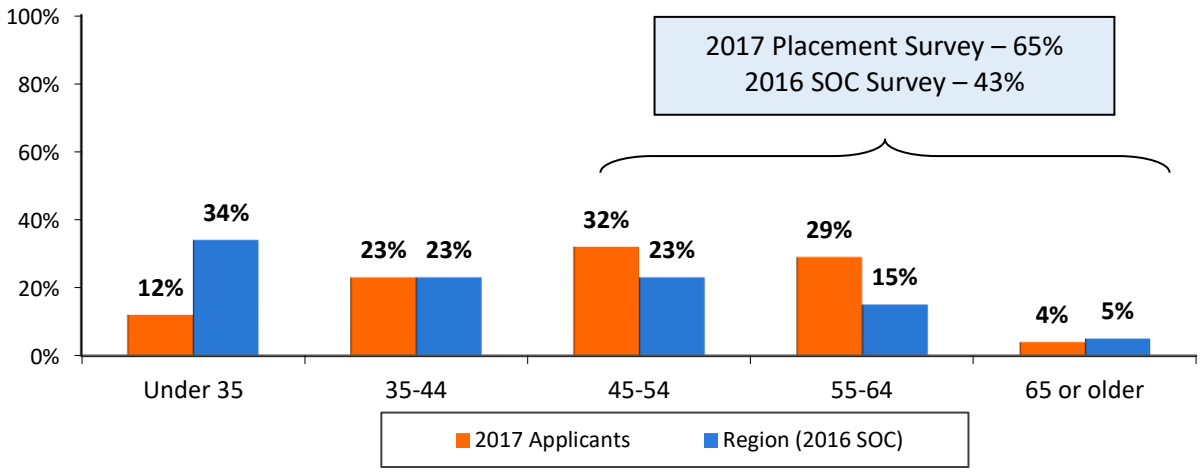
Ethnic Background –As illustrated in Table 3, Caucasians and African-Americans represented the two largest ethnic group categories of survey applicants, 57% and 22%, respectively. Asians/Pacific Islanders represented 10% of the sample and Hispanics accounted for about 6% of respondents.

Table 3
Distribution by Ethnic Background
(n = 545)

Ethnic Group	Percentage
White	57%
African-American	22%
Asian/Pacific Islander	10%
Hispanic	8%
Other	3%

Age – Placement survey respondents were considerably older than the average worker in the Washington region. As shown in Figure 1, about two-thirds (65%) of applicants were older than 44, compared with 43% of all Washington area commuters, as estimated in the 2016 State of the Commute Survey.

Figure 1
Distribution by Age
(2017 Placement Survey n = 677, 2013 SOC Survey n = 5,682)



Employment Characteristics

Respondents were asked about the number of employees working at their worksite and the type of employer for which they worked. These results are shown in Table 4 and Figure 2, respectively.

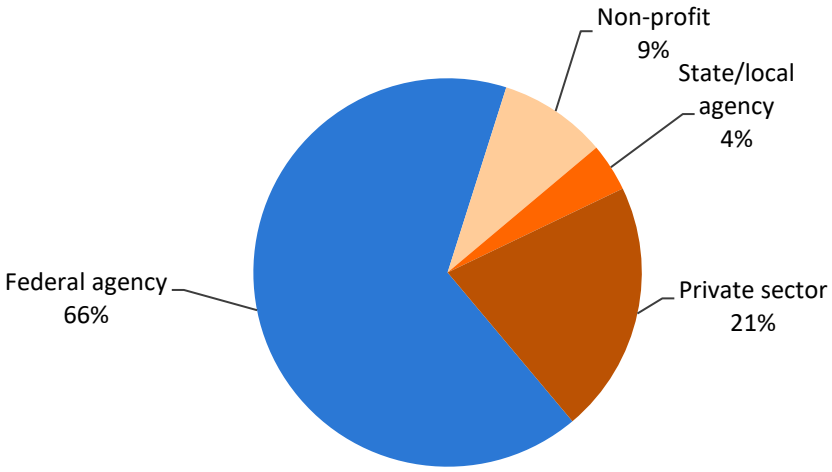
Employer Size – As shown in Table 4, the majority of applicants (79%) worked for employers with more than 100 employees. Nearly half (48%) worked for employers with at least 1,000 employees. About two in ten (21%) said they work for organizations with 100 or fewer employees.

Table 4
Distribution by Employer Size
(n = 667)

Number of Employees	Percentage	Number of Employees	Percentage
1-25	8%	101-250	11%
26-50	6%	251-999	20%
51-100	7%	1,000+	48%

Employer Type – Two-thirds of the applicants (66%) said they worked for a federal agency (Figure 2). Two in ten (21%) worked for a private sector employer. State and local government agencies employed 4% and 9% worked for a non-profit organization. The distribution of employer type in the 2017 survey was similar to that from the 2014 survey, in which 67% of applicants worked for Federal agencies, 18% worked for private sector firms, and 10% worked for non-profits.

Figure 2
Distribution by Employer Type
(n = 678)



Occupations – Respondents represented many occupations (Table 5). The most common occupations were computer/engineering/science (26%), business/financial operations (24%), office administration (15%), and management (13%).

Table 5
Distribution by Occupation
(n = 612)

Occupation	Percentage
Computer, engineering, science	26%
Business, financial operations	24%
Office administrative support	15%
Management occupations	13%
Legal, community services	6%
Service	5%
Healthcare practitioners/support	3%
Protective services	2%
Military	2%
Education, training, library	2%
Other*	2%

* Each response in Other category was mentioned by fewer than 2% of respondents.

Current Commute Patterns

One section of the survey examined current commute patterns of applicants: commute mode, distance, travel time, and use of telecommute and alternative work schedules.

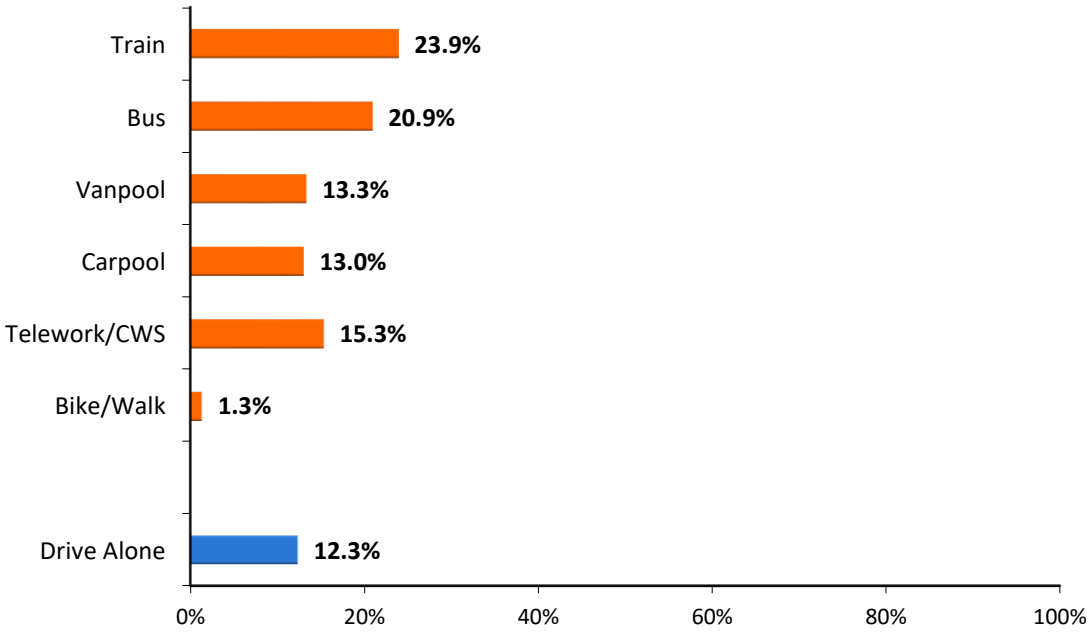
Current Commute Mode

Applicants were asked how many days in a typical week they used each of a variety of transportation modes. Figures 3 and 4 present several different views of modal distribution.

Percentage of Weekly Trips – Figure 3 presents mode shares as a percentage of weekly commute trips. The figure includes six traditional "on the road" mode groups for travel to job locations outside the home: train (subway/commuter rail), bus, vanpool, carpool, bike/walk, and drive alone.

The figure also includes the mode share for telework and compressed work schedule (CWS). These are not actually travel modes, but this figure includes them to show the percentage of weekly work trips that were eliminated through use of these work schedule options.

Figure 3
Weekly Commute Trips by Modes
(n = 706)



Transit accounted for more than four in ten weekly trips; 23.9% of trips were made by train and 20.9% by bus. Vanpool and carpool accounted for 13.3% and 13.0% of trips, respectively. Applicants made a very small share of trips by bicycling or walking (1.3%) and made only 12.3% of weekly commute trips by driving alone.

Applicants eliminated 15.3% of weekly commute trips through telework days and compressed work schedule days offs. As noted earlier, these "trips" actually were not made, but they were officially assigned as part of the work week, so were included in this distribution.

If the telework and compressed schedule days off are excluded, to estimate the "on the road" mode share, the percentage use of each of the six travel modes increases. Without telework and CWS, the transit share would rise to 52.9% of weekly commute trips. The weekly commute trip distribution would be:

- Train 28.2%
- Bus 24.7%
- Vanpool 15.8%
- Carpool 15.3%
- Bike/walk 1.6%
- Drive alone 14.5%

Distribution of Modes within Carpool/Vanpool and Transit Mode Groups – Table 6 presents use of individual modes within the carpool/vanpool and transit mode groups. Vanpooling accounted for slightly more than half of the carpool / vanpool group. Among carpoolers, about six in ten (8.0% / 13.0%) used a traditional carpool with the same partner(s) all the time. Casual carpools or "slug," carpools, which pick up riders at established meeting points but with different partners each day, made up about two in ten carpool/vanpool riders.

Bus use comprised almost half of the transit trips (total transit 44.8%; bus – 20.9%; train – 23.9%). About one-third of transit trips were on a commuter train (MARC, VRE, or Amtrak). Slightly less than two in ten transit trips were on Metrorail.

Table 6
Weekly Commute Trips by Modes – Distribution of Carpool/Vanpool and Transit Mode Categories

Commute Mode	Percentage (n = 706)
Carpool / Vanpool	**26.3%**
- Vanpool	13.3%
- Regular carpool	8.0%
- Casual carpool (slug)	5.0%
Transit	**44.8%**
- Ride a bus/shuttle	20.9%
- Commuter rail	15.9%
- Metrorail	8.0%

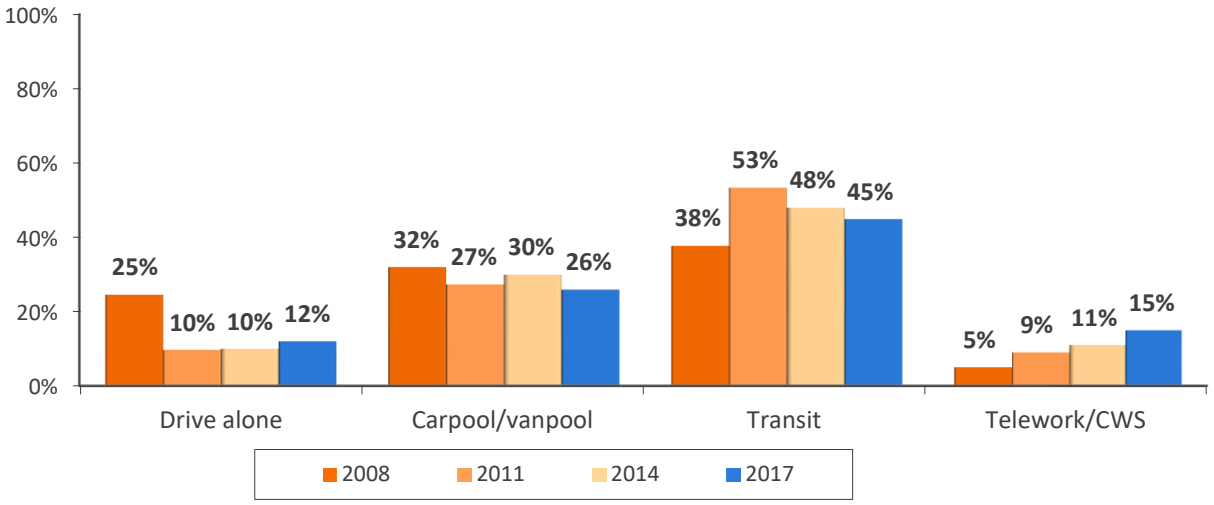
Applicant Mode Split Compared to All Regional Travel – Table 7 compares applicants' commute modes with those of the general commuting population in the Washington metropolitan region, as determined from the 2016 State of the Commute survey. The percentage of weekly trips made by driving alone was dramatically lower for applicant survey respondents (12.3%) than for all regional commuters (61.0%). Applicants' use of transit and car-pool/vanpool was much higher than use in the general population. But applicants used bike/walk less than did the general commuting population.

Table 7
Weekly Commute Trips by Modes
Comparison of 2017 Applicant Survey to 2016 State of the Commute Survey

Commute Mode	2017 Applicant Survey (n = 706)	2016 SOC Survey (n = 5,503)
Transit	44.8%	20.1%
Carpool/vanpool	26.3%	5.4%
Drive alone	12.3%	61.0%
Telework / compressed schedules	15.3%	10.2%
Bike/walk	1.3%	3.3%

Mode Split Trends 2008 to 2017 – Figure 4 presents the mode split distribution (percent of weekly trips by mode) for 2017 and for the three preceding surveys.

Figure 4
Weekly Commute Trips by Modes – 2017 Compared with 2008, 2011, and 2014
(2008 n = 703, 2011 n = 863, 2014 n = 690, 2017 n = 706)
(Bike/Walk are excluded from the chart, so the percentages for a particular year might not add to 100%)

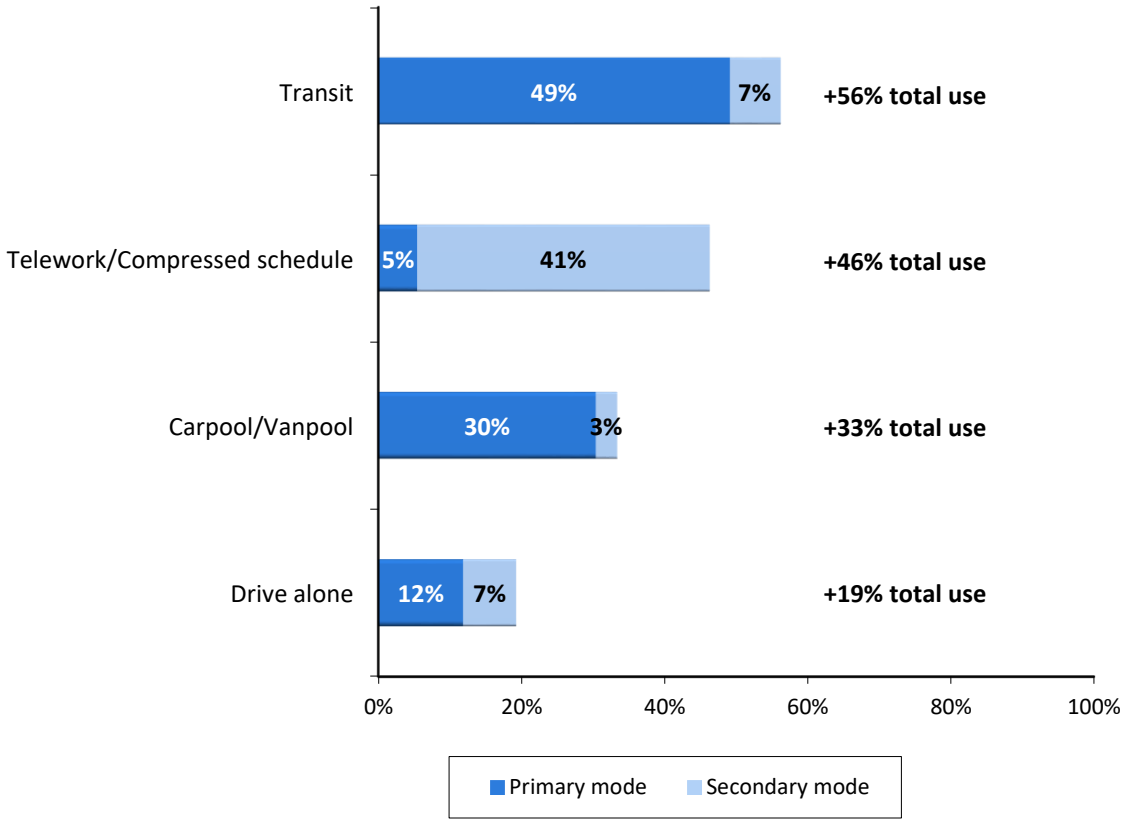


Several modes exhibited distinct use trends since 2008. The drive alone mode split fell dramatically in 2011, from 25% in 2008 to 10%, then leveled off to remain approximately constant through 2017. Carpool/vanpool use generally trended downward, from a high of 32% in 2008 to 26% in 2017, although with fluctuation during the nine-year period. Transit experienced a notable jump in use from 2008 (38%) to 2011 (53%), then fell in 2014 and again in 2017, but the 2017 transit share remained above the 2008 level. The other notable trend is the increasing share of weekly trips eliminated by telework and compressed schedule; these modes have increased from 5% of weekly trips in 2008 to 15% in 2017; this mirrors the overall growth in telework in the region, as observed in the State of the Commute Surveys.

Even accounting for the drop in transit share between 2011 and 2017, transit use showed a significant growth since 2008, likely reflecting the change in Commuter Connections service delivery method and greater variety of service offerings. Prior to the 2008 transition to the current online Commuter Connections TDM software system, the applicant database primarily included commuters who registered to receive a carpool or vanpool ridematch. By contrast, the new online system offers a wider range of services, such as telework and bicycle information and the regional Guaranteed Ride Home program, programs that might be of interest to commuters who are not interested in carpooling or vanpooling.

Primary vs Secondary Mode – Figure 5 shows mode split as the percentage of applicants who used each mode as their "primary" mode, defined as the mode used most days per week. The figure also shows the percentages of applicants who used each mode as a secondary or occasional mode.

Figure 5
Primary Modes and Secondary Modes
(n = 706)
(Total use percentages add to more than 100% because some respondents had both a Primary and Secondary mode)
(Figure excludes Bike/Walk, which has 1% Primary and 1% Secondary use)



Primary Mode – Since most applicants worked five or more days per week, primary mode generally equated to use three or more days per week. But for a small percentage of applicants who worked fewer than five days or who used more than two modes, the primary mode could be used just two days per week.

As with mode split by weekly trips, the most common primary mode was transit, used by 49% of applicants. Three in ten (30%) applicants said they primarily carpooled or vanpooled, 12% primarily drove alone, and 5% primarily teleworked.

Secondary Use of Modes – Figure 5 also shows the percentage of applicants who used the mode group as a secondary mode, typically one or two days per week. The total of primary and secondary together is the percentage of applicants who used the modes at least one day per week.

Seven percent of respondents said they used transit as a secondary mode and 3% said they carpooled/vanpooled as a secondary mode. Seven percent of applicants said they drove alone one or two days per week. The largest difference between the primary mode and the overall use of a mode was in the percentage of applicants who teleworked or worked a compressed schedule. Five percent said they primarily teleworked but an additional 41% teleworked one or two days per week or had one or two compressed schedule days off (secondary mode), so a total of 46% of applicants used one of these schedule options, at least one day per week.

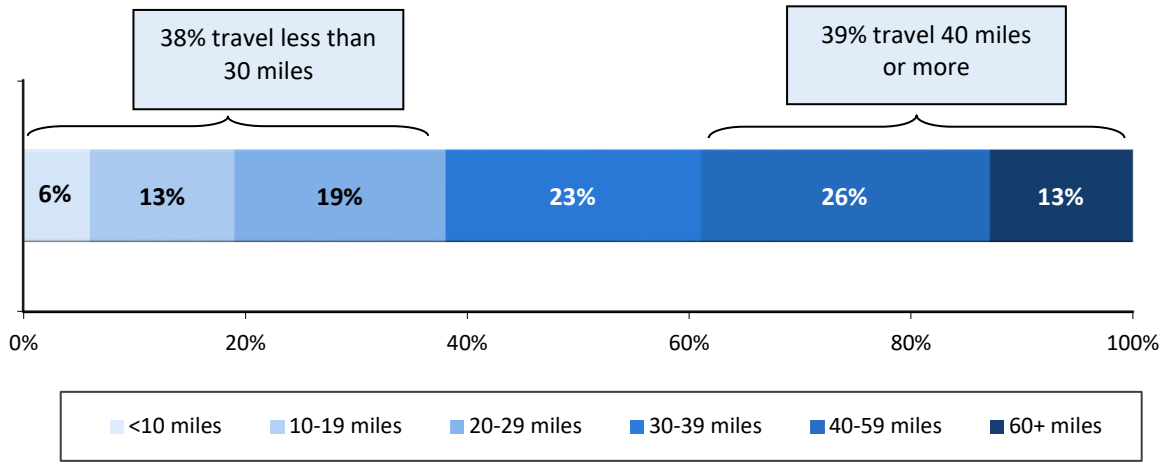
Commute Distance

Applicants had a wide range of commute distances, ranging from two miles to 125 miles. The average one-way distance was 35.1 miles, slightly less than the 36.2 miles reported in the 2014 survey, but more than twice the 17.3 mile average travel distance of all regional commuters, as estimated in the 2016 State of the Commute survey.

Figure 6 presents the distribution of applicants by distance categories. Six percent of applicants traveled fewer than 10 miles to work. Three in ten (32%) commuted between 10 and 29 miles. About four in ten (39%) commuted 40 or more miles.

Figure 6
Commute Distance (miles)

(n = 622)



Distance by Mode – Commute distances differed by commute mode (Table 8). Vanpoolers traveled the farthest, an average of 44.4 miles one-way. Applicants who rode Metrorail traveled the shortest distance (23.1 miles), but other transit riders had longer distances; commuter rail riders traveled 42.7 miles one way and bus riders traveled 33.2 miles. Carpoolers traveled an average of 31.9 miles and drive-alone commuters traveled 31.6 miles.

Table 8 also presents the average commute distances by mode as measured in the 2016 regional State of the Commute survey. For all modes, the SOC average one-way distance was much shorter than the applicant survey average, indicating that even within individual modes, commuters who traveled longer distances were most interested in Commuter Connection' services.

Table 8
Average Commute Distance (miles) by Travel Mode
2017 Applicant Survey vs 2016 State of Commute Survey

Mode	2017 Applicant Survey		2016 SOC Survey	
	Sample size n =	Average Distance	Sample size n =	Average Distance
Vanpool	104	44.4 mi		NA *
Commuter rail	126	42.7 mi	49	29.1 mi.
Carpool	104	31.9 mi	248	19.0 mi.
Bus	165	33.2 mi	229	18.4 mi.
Drive alone	122	31.6 mi	3,359	17.7 mi.
Metrorail	66	23.1 mi	484	15.0 mi.

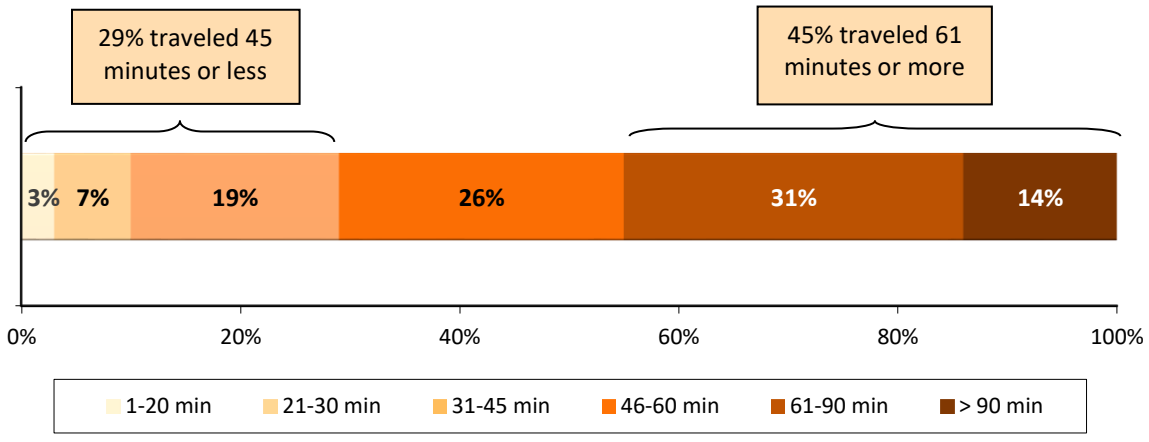
* Vanpool distance was not calculated for SOC due to very small sample size.

Commute Travel Time

One-way commute travel time of applicants ranged from five minutes to more than two hours, with an average of 66 minutes, the same time as observed in the 2014 survey. Just under half (45%) traveled more than an hour and seven in ten (71%) traveled more than 45 minutes one-way (Figure 7).

Figure 7
Commute Distance (minutes)

(n = 648)

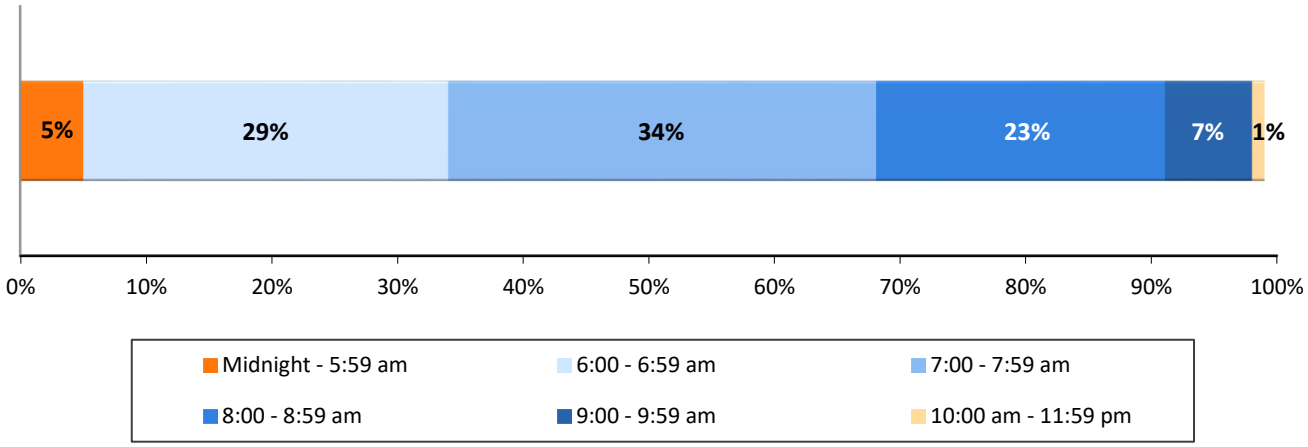


Commute time for survey applicants was longer than that for the general public. The average commute time for all commuters in the region was 39 minutes, as reported in the 2016 State of the Commute survey. From that survey, only 27% of commuters in the region traveled more than 45 minutes.

Work Arrival Time

Survey respondents typically arrived at work quite early in the day (Figure 8). Two-thirds (68%) typically arrived at work before 8:00 am and one-third (34%) arrived before 7:00 am Twenty-three percent arrived between 8:00 am and 8:59 am and 8% arrived at 9:00 am or later. Nearly all (87%) were traveling to work during the 6:00 am to 8:59 am peak commuting period.

Figure 8
Arrival Time at Work
(n = 702)



Primary Roads Used on the Trip to Work

Since 2013, the MWCOG State of the Commute Surveys, Guaranteed Ride Home surveys, and applicant placement surveys have included a question to identify the major roadways that commuters used to get to work. The purpose of the question is to help assess the role that Commuter Connections services and other commute assistance services play in mitigating congestion on major regional roadways. These questions will primarily be used for MWCOG planning purposes, but the placement survey results are briefly summarized in Table 9.

The SOC survey asked commuters who drove/rode in a carpool or vanpool were asked what roads they used in their commute travel. Because transit riders were not driving in a personal vehicle, they were asked what roads they would use on a day they drove to work. The placement survey also asked the question of commuters who drove alone to work, but because the SOC survey asked the question only of respondents who used alternative modes two or more days per week, the results shown in Table 9 for the placement survey also include only applicants with this travel pattern.

Commuters who obtained commute information services from Commuter Connections were much more likely to have used most of the major Interstate and US/state routes than were the average commuters in the region. Use of five roads in Virginia: I-95, I-395, I-495, I-66 inside the Capital Beltway, and the Dulles Toll Road, was particularly notable for placement survey respondents, when compared with use generally across the region. All of these routes have HOV lanes or Express lanes available during commuting hours. Similar, although less pronounced, differences were noted for several Maryland highways.

Table 9
Primary Roadways Used by Carpool/Vanpool Commuters and Transit Riders to Get To Work
Placement Survey Applicants and All Regional Commuters
(Shows only roads used by at least 4% of placement survey applicants)
(Shading indicates statistically higher percentages)

Primary Roadway	2017 Placement Survey Applicants (n = 604)	All Region (2016 SOC) (n = 1,296)
Maryland / District of Columbia)		
I-495 - Capital Beltway (MD)	**15%**	11%
I-270 (MD)	**12%**	8%
I-295 (MD/DC)	**10%**	7%
I-95 (MD)	**6%**	3%
US Route 50 – John Hanson Highway (MD)	**5%**	3%
Baltimore-Washington Parkway	4%	3%
Virginia		
I-95 (VA)	**30%**	6%
I-395 Shirley Highway (VA)	**22%**	15%
Capital Beltway (I-495)	13%	5%
I-66 Inside the Beltway (VA)	**11%**	7%
I-66 Outside the Beltway (VA)	9%	8%
Dulles Toll Road (VA)	**7%**	2%
US Route 1 (VA – Richmond Highway))	4%	3%
George Washington Parkway (VA)	4%	5%

Telework and Compressed Work Schedules

Telework – Nearly six in ten (56%) applicants said they teleworked, at least occasionally, an increase of 10 percentage points over the 46% of 2014 placement survey respondents who said they teleworked. Of the 2017 teleworkers, 14% teleworked less than once per month/only in emergencies and 22% teleworked a few times each month. About half (54%) teleworked one or two days per week and 10% teleworked three or more days per week.

- Never telework 44%
- Telework at least occasionally 56%
  - Less than once per month/emergency 14%
  - 1 – 3 times per month 22%
  - 1 day per week 28%
  - 2 days per week 26%
  - 3 or more days per week 10%

Compressed Work Schedule – Two in ten (20%) applicants reported working a compressed work schedule (CWS), in which they worked a full work week (35-40 hours) in fewer than five days per week. The most common CWS arrangement was a 9/80 schedule (17%), in which employees worked nine days for a total of 80 hours over two weeks. Three percent of applicants worked a 4/40 arrangement, that is, four ten-hour days in one week.

Current Alternative Mode Characteristics

The second part of the survey collected data on occupancy and composition of carpools and vanpools and explored how carpoolers, vanpoolers, and transit riders accessed these commute modes.

Carpool and Vanpool Size

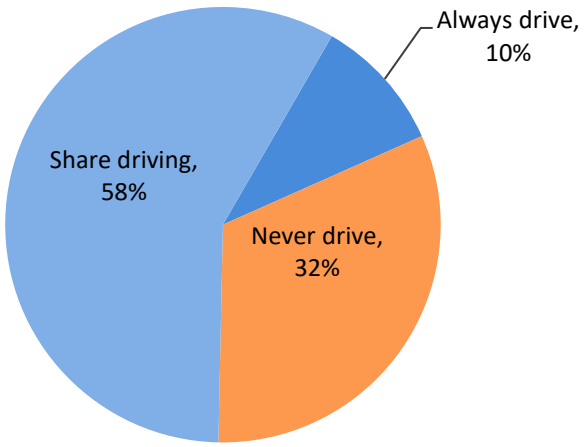
About a third (33%) of survey respondents said they rode in a carpool or vanpool at least one day per week. Carpools had an average size of 3.0 occupants, including the driver. Vanpool occupancy was on average 7.9, including the driver. The carpool occupancy is essentially the same as the 3.1 occupant number from the 2014 survey. The vanpool occupancy represented a decline from the average 2014 occupancy of 9.0 and a further drop from the 9.9 occupancy observed in the 2011 placement survey. In 2017, vanpools ranged in size from 6 to 14 occupants; only about 8% of vanpools had 12 or more occupants.

Carpool Members

Carpoolers and vanpoolers in the survey sample tended to carpool more with co-workers than with family members. Half (51%) of the applicants who carpooled or vanpooled traveled with at least one co-worker. By contrast, only 9% said they rode with a family or household member. This is not unexpected, as commuters who can carpool with family members are less likely to need Commuter Connections to find a carpool partner. Two percent of carpool/vanpool applicants said they had counted a child under the age of 16 as a carpool/vanpool rider.

Nearly six in ten (58%) carpoolers and vanpoolers shared driving with their pool partners, for example alternating days or weeks of driving the carpool (Figure 9). One-third (32%) said they never drove. This was primarily the response among vanpoolers and casual carpoolers. The remaining 10% said they always drove.

Figure 9
Driving Frequency of Carpoolers/Vanpoolers
(n = 230)

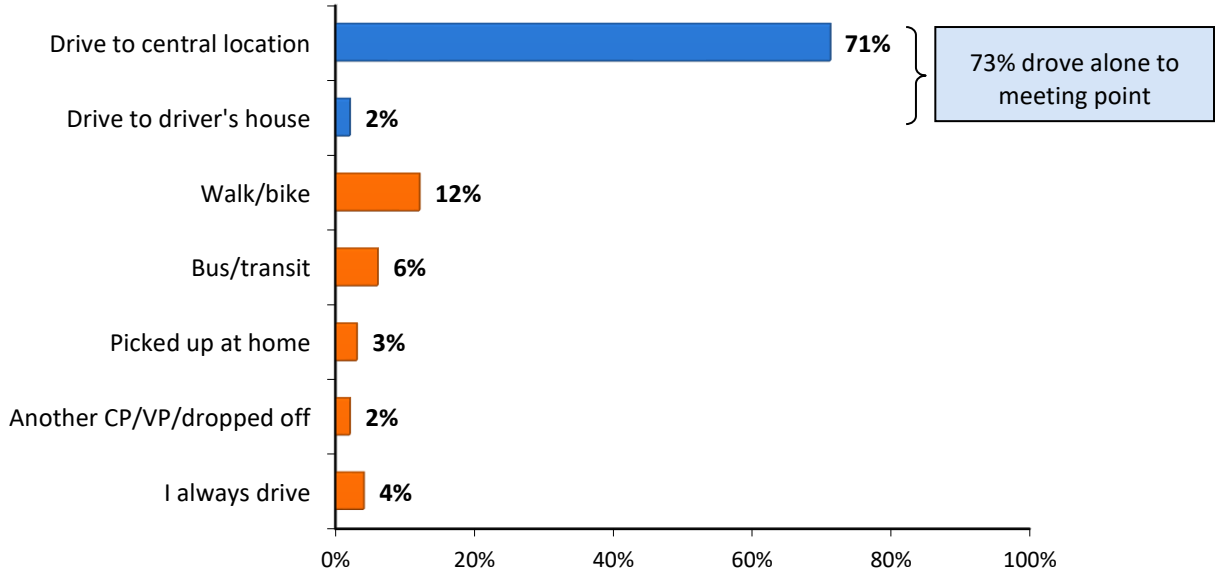


Access to Carpools, Vanpools, and Transit

Figure 10 presents the types of transportation carpoolers, vanpoolers, and transit riders used to travel to where they met their pool partners or where they started their transit trip.

Figure 10
Access Mode to Alternative Mode Meeting Place

(n = 607)



One in ten (12%) walked to the meeting point, but nearly three-quarters drove to either a central meeting location (71%) or to the driver's home (4%), and left their cars at this location for the day. This is significant to the calculation of air quality impacts, because a large proportion of auto emissions are produced during the first few miles of a vehicle trip, when the engine is cold. (For details on calculating emissions reductions, refer to "Transportation Emission Reduction Measures (TERMs) Revised Evaluation Framework – July 2014 – June 2017" (March 15, 2016). Even though these trips tend to be short, an average of just 6.2 miles, these trips must be accounted for in an air quality analysis.

Recent Commute Pattern Changes

The third survey section asked applicants about commute pattern changes they made since receiving assistance from Commuter Connections. Data were collected on: types of changes made, "permanence" of change, reasons for changes, and details of commute patterns before the changes occurred. To ensure that all shifts were captured, the survey asked applicants a series of questions about various mode changes they might have made:

- Started using a new alternative mode (carpool, vanpool, bus, Metrorail, commuter rail, bicycle, walk, telework, CWS)
- Increased the number of days using any alternative modes
- Try an alternative mode, even if only once
- Add or replace a person in an existing carpool or vanpool

Applicants who made any of these changes were considered to have been "placed" in alternative modes. These shifts are measured by the placement rate, defined as the percentage of respondents who made an alternative mode change after they received assistance, divided by the total number of respondents surveyed.

Four types of alternative mode changes were measured:

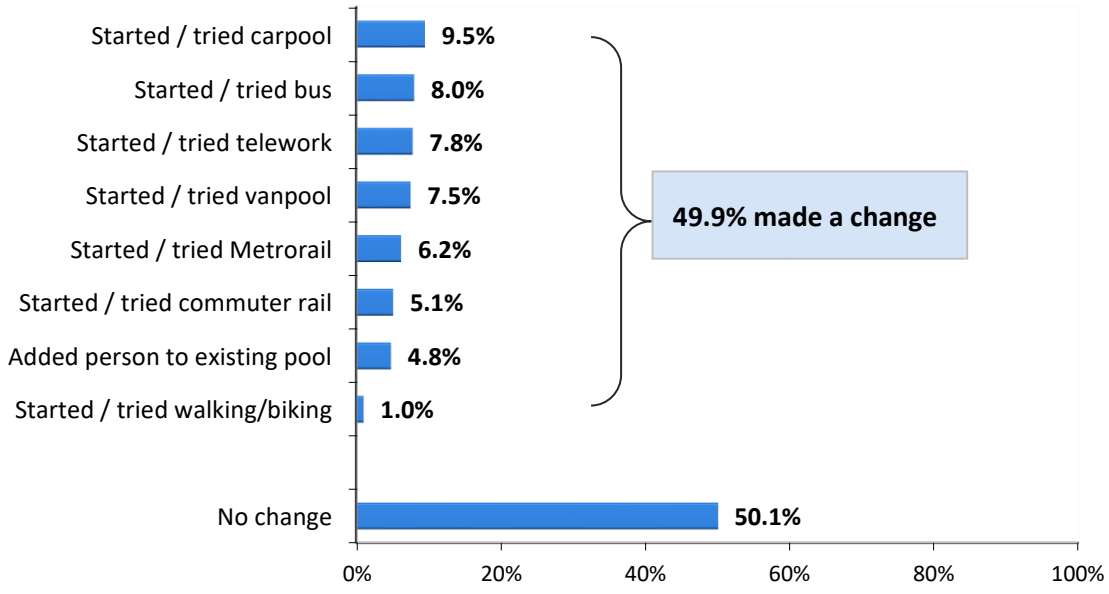
- Continued – applicant made a change and was still using the new mode at the time the survey was conducted
- Occasional – applicant made a change and was still using the new mode, but used the alternative mode less than one time per week
- Temporary – applicant made a change, but stopped using the new mode before the survey was conducted
- One-time – applicant briefly tried an alternative mode, but used it less than one week

Temporary shifts are reported separately from continued shifts, because they cannot be counted toward long-term reduction in vehicle trips, VMT, or emissions. Occasional and one-time shifts also are reported separately because their contribution to vehicle trips, VMT, and emissions is very minor.

Types of Changes Made

Half (49.9%) of all applicants reported some type of alternative mode change after receiving Commuter Connections' assistance (Figure 11). The largest segment (9.5%) started or tried carpooling (9.5%) and 7.5% started or tried vanpooling. Two in ten applicants made a change to a transit mode (Bus – 8.0%, Metrorail – 6.2%, Commuter rail – 5.1%). About 7.8% started or tried telework and 1.0% indicated a change to bike or walk. About 4.8% said they were carpooling or vanpooling before requesting information from Commuter Connections, but added another person to their existing pools.

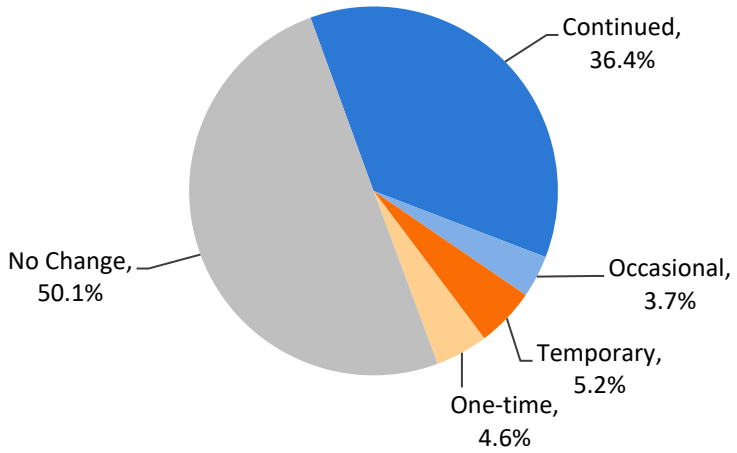
Figure 11
Commute Changes Made After Receiving Commuter Connections Services
(n = 706)



Continued, Occasional, Temporary, and One-time Placement Rates

Applicants who made a change to a mode they were using at least once per week at the time of the survey were classified as having made a "continued change." Applicants who made a change to a mode they did not report using during a typical week at the time of the survey were asked if they still used the mode occasionally or if they had stopped using it. Applicants who had stopped using the mode were asked how long they had used the new mode after the change. Then, applicants were classified as "occasional," "temporary," or "one-time" by the duration of their change. Figure 12 summarizes these results.

Figure 12
Distribution of Continued, Occasional, Temporary, and One-time Changes - "Placement Rates"
(n = 706)



More than a third (36.4%) of applicants made a change to a mode they were still using at least one day per week; these applicants made ***continued changes***. About 3.7% made a change to a mode they were using, but using only ***occasionally***, defined as less than once per week. One in twenty (5.2%) respondents made a ***temporary change***, that is, they had already stopped using the new alternative mode by the time of the survey. On average, they had used the new mode for 8.2 weeks. Finally, 4.6% of applicants tried a new mode for less than one week. These applicants were classified as ***one-time changes***.

The delineation of change duration is important because occasional, temporary, and one-time changes do not produce the ongoing travel and air quality impacts of the continued changes. Impacts from temporary changes are discounted to credit only the time the new mode was used. This discounting is described further in Section 4. Occasional and one-time changes are not included in the impact calculation.

Placement Rates by Home and Work Location in the Ozone Non-attainment Area – Placement rates were estimated also for two sub-groups of applicants. The first sub-group included applicants who lived and worked within the MWCOG ozone non-attainment area, MWCOG's 11-jurisdiction region. The second sub-group included applicants who either lived in the area and worked outside or worked in the area and lived outside it, that is, one end point of their commute trip was outside the non-attainment area. Thirty-seven percent of the total participants either lived or worked outside the ozone non-attainment area.

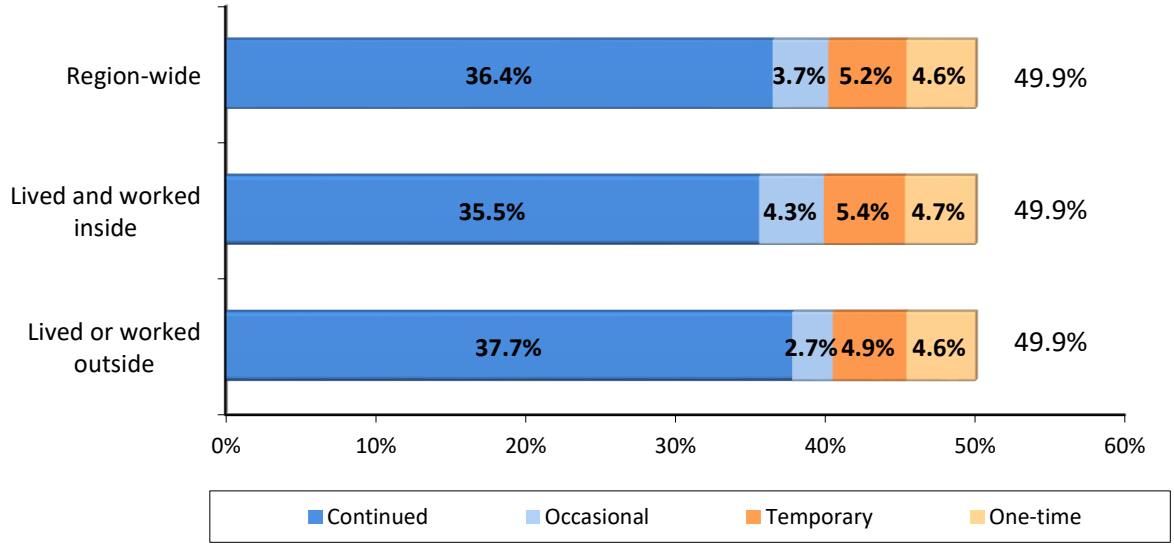
This distinction was made because applicants who lived or worked outside the ozone non-attainment area traveled a portion of their VMT outside the area. The VMT for these "out of area" applicants was discounted to credit VMT reduction only for the portion that occurred within the area.

Figure 13 presents the continued and temporary placement rates for all applicants, for applicants who lived and work within the region (Inside MSA), and applicants who either lived or worked outside the ozone non-attainment area (Outside MSA).

Figure 13
Placement Rates: All Applicants Region-Wide, Applicants who Live and Work Inside Ozone Non-Attainment Area, and Applicants who Live or Work Outside Ozone Non-Attainment Area

(Note: scale extends only to 60% to highlight differences)

(Region-wide n = 706, Live and work in area n = 443, Live or work outside area n = 263)



As shown, the overall placement rate was the same (49.9%) for all applicants and for the two applicants sub-groups, but the distribution within the overall rate differed slightly for the two sub-groups. Applicants who lived or worked outside the area had a higher continued placement rate (37.7%) than did applicants who lived and worked in the area (35.5%). By contrast, applicants who lived or worked outside the area had a lower occasional use rate (2.7%) than did applicants who lived and worked inside the non-attainment area (4.3%). This might reflect the limited range of occasional travel use options, such as transit, that would be available to commuters who travel outside the MWCOG region. The temporary and one-time placement rates were similar for the two sub-groups.

Change by Demographic, Employment, and Travel Characteristics

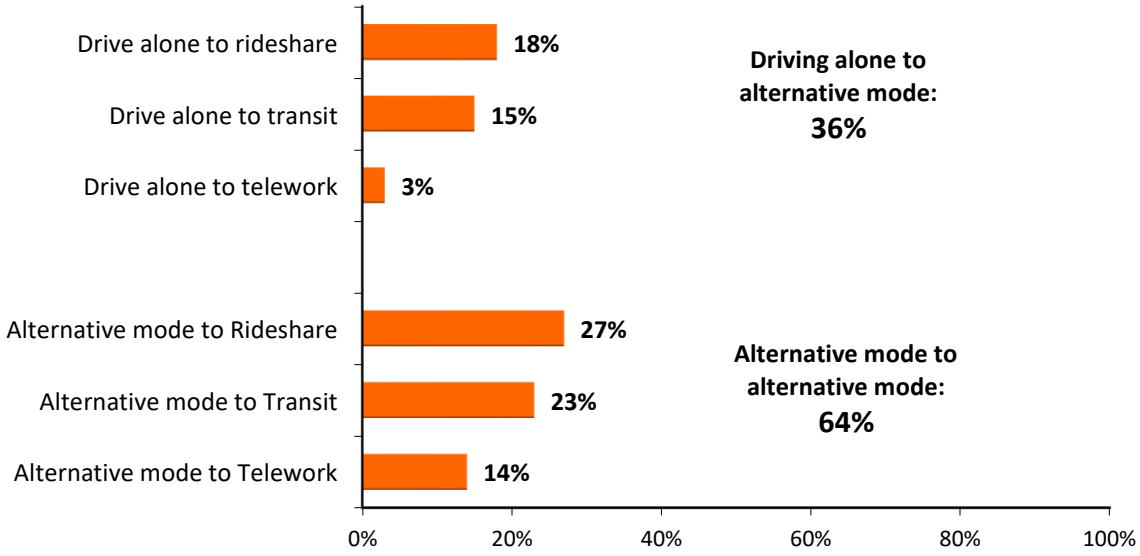
The survey examined demographic and employment characteristics of applicants who had made changes and applicants who did not make any changes, to see if the groups were different in fundamental ways. A larger share (38.4%) of male respondents made continued changes than female respondents (33.9%). Respondents who were 35 years and older also were more likely to make continued changes (38.6%) than were those who were under 35 years of age (22.8%). Review of the survey data showed no differences in the incidence of travel changes by other demographic characteristics. Similarly, there were no statistical differences in the percentage of respondents who made travel changes either by the size or type of their employer.

The average commute distance of applicants who made a continued change (38.3 miles) was higher than the distances for commuters who made temporary changes (36.3 miles) and occasional changes (33.2 miles). And the distance of respondents who made any change (37.4 miles) was higher than the distance of applicants who did not make any changes (33.5 miles).

Previous Mode of Commuter Who Changed Mode

Some applicants who made a mode change shifted from driving alone, but others shifted from one alternative mode to another. One-third (36%) of applicants who made a change shifted from driving alone to an alternative mode (Figure 14). These applicants were divided between shifts to rideshare (carpool or vanpool) and shifts to transit and non-motorized modes (bike and walk). The remaining 64% of applicants were previously using an alternative mode, but made a change from one alternative mode to another, for example, from carpool to vanpool, from bus to train, or from vanpool to train.

Figure 14
Types of Mode Changes of Respondents who Made Mode Changes
(n = 313)



The percentages of shifts between alternative modes is noted because commuters who made these shifts reduced vehicle trips only if they shifted to a higher occupancy mode (carpool to vanpool or vanpool to transit, for example) or increased the number of days they used the alternative. Some of these shifts, such as from transit to rideshare, actually increased the number of vehicle trips the applicant made during the week. This is not to say these were not desirable shifts from the perspective of the commuter, but these shifts must be accounted for in determining the transportation and air quality benefits of the services.

Reasons for Changes

Applicants who said they had made a commute change were asked the reasons for their changes (Table 10). Many applicants made the change for commute-related reasons: save money (21%), save time (18%), or carpool broke up (9%). Small percentages of respondents named other commute or commute service reasons such as the employer permitted telework (6%) or the respondent received a carpool matchlist (4%).

Some applicants said they were motivated by a personal factor that resulted in either changing jobs or work hours (14%) or moving to a new residence (5%). This emphasizes the potential for Commuter Connections, its regional partners, and its employer clients to market alternative modes through new employee orientations and through direct mail to those moving to new residences. Other applicants said they were tired of driving (6%), wanted to save wear and tear on a personal vehicle (4%), or to reduce stress of commuting (4%).

Table 10
Reasons for Commute Change
(n = 253, multiple responses permitted)

Commute related reasons	Percentage		Personal related reasons	Percentage
- Save money	21%		- Changed job/work hours	14%
- Save time	18%		- Tired of driving	6%
- Carpool broke up/didn't work	9%		- Moved residence	5%
- Employer permitted telework	6%		- Save wear and tear on car	4%
- Received carpool matchlist	4%		- Reduce stress/medical reason	4%
- Commute distance	4%			
- Received commute subsidy	2%			
- New mode option was available	2%			
- Reduce congestion/pollution	2%			

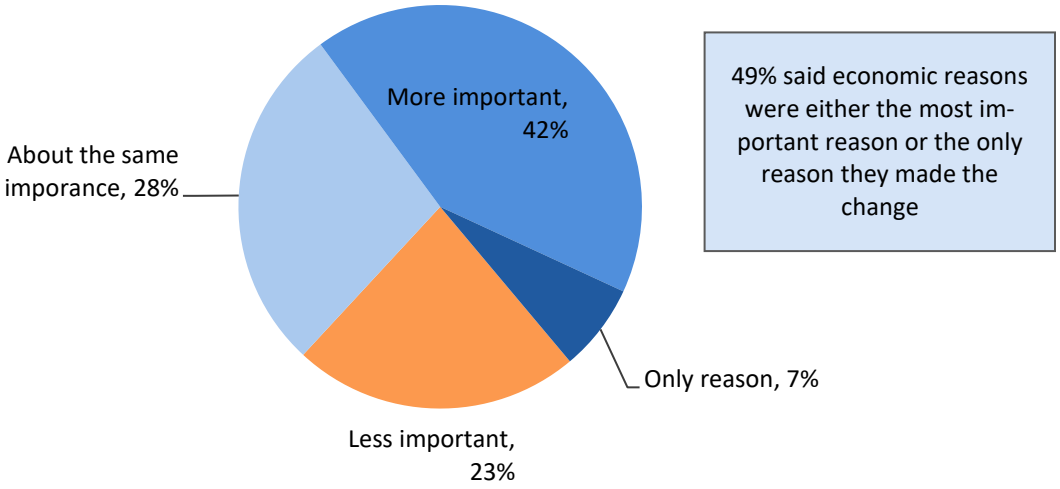
Importance of Commute Services on Decision to Make Change – Applicants who made a change also were asked if their decision to make the change was influenced or assisted by any information or service they received from Commuter Connections, from another commute service organization, or from their employer.

Twenty-six percent of applicants who made a change cited a Commuter Connections service that had influenced or assisted them. About 7% of respondents cited a carpool or vanpool matching or assistance service, 6% named a transit information service, 6% cited Park & Ride lot information, and 4% named Guaranteed Ride Home. Six percent named another type of service.

Four in ten (41%) applicants said a service from their employer or another commute service organization influenced or assisted their change. The most commonly noted services were financial incentives, cited by 28% of applicants who made a change, and vanpool assistance, named by 6%.

Importance of Economic Reasons to Make Change – Applicants who made a change were asked how important economic reasons, such as saving money or reducing gas expense, were in motivating the change. Seven percent of applicants who made a change said economic reasons were the only reason they made the change and 42% said economic reasons were more important than other reasons (Figure 15). Twenty-eight percent said economic reasons were about the same importance as other motivating influences and 23% said they were less important.

Figure 15
Importance of Economic Reasons in Motivating Travel Changes
(n = 289)



Contact with Commuter Connections and Services Received

The survey asked applicants several questions related to the details of their contact with Commuter Connections and what services they received. The following section of the report presents results to these questions, including the following:

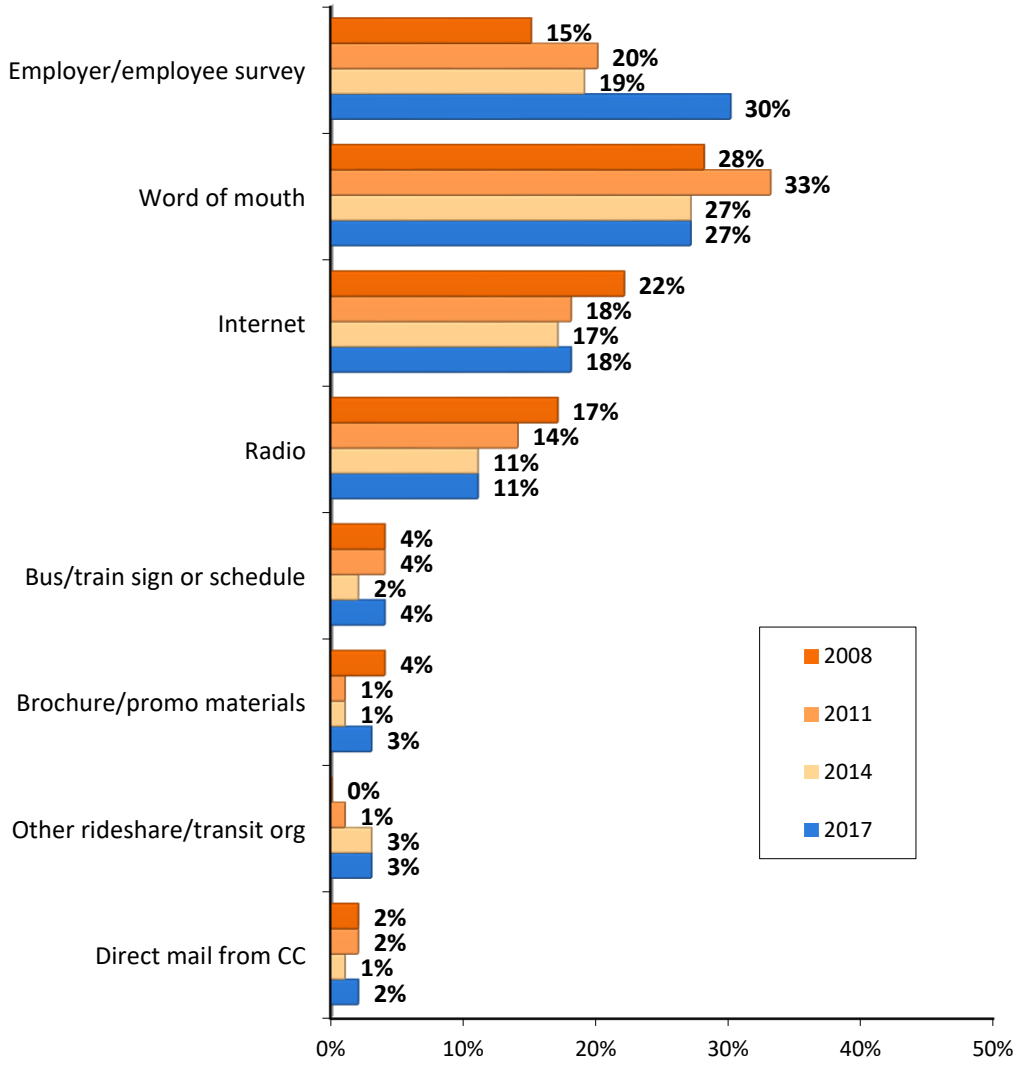
- Sources of information about Commuter Connections
- Method of accessing Commuter Connections
- Reason for requesting information or assistance
- Types of information/assistance received from Commuter Connections
- Commute assistance received from other sources

Sources of Information about Commuter Connections

Commuters have a variety of sources through which they can learn of Commuter Connections. Figure 16 presents the primary sources of information cited by applicants in 2017 and in the three previous applicant surveys. Four sources dominated in 2017: employer/employee survey (30%), word of mouth referrals (27%), internet (18%), and radio (11%).

These also were the top reasons in 2008, 2011, and 2014, although the relative use of the sources has changed somewhat since 2008. Employer/employee survey has grown as a source, with a particular increase evident in the 2017 survey. Reliance on the radio as an information source has fallen since 2008, when it was named by 17% of applicants.

Figure 16
How Applicants Learned of Commuter Connections – 2008, 2011, 2014 and 2017
(Note: scale extends only to 50% to highlight differences)
(2008 n = 703, 2011 n = 892, 2014 n = 600, 2017 n = 537; multiple responses permitted)

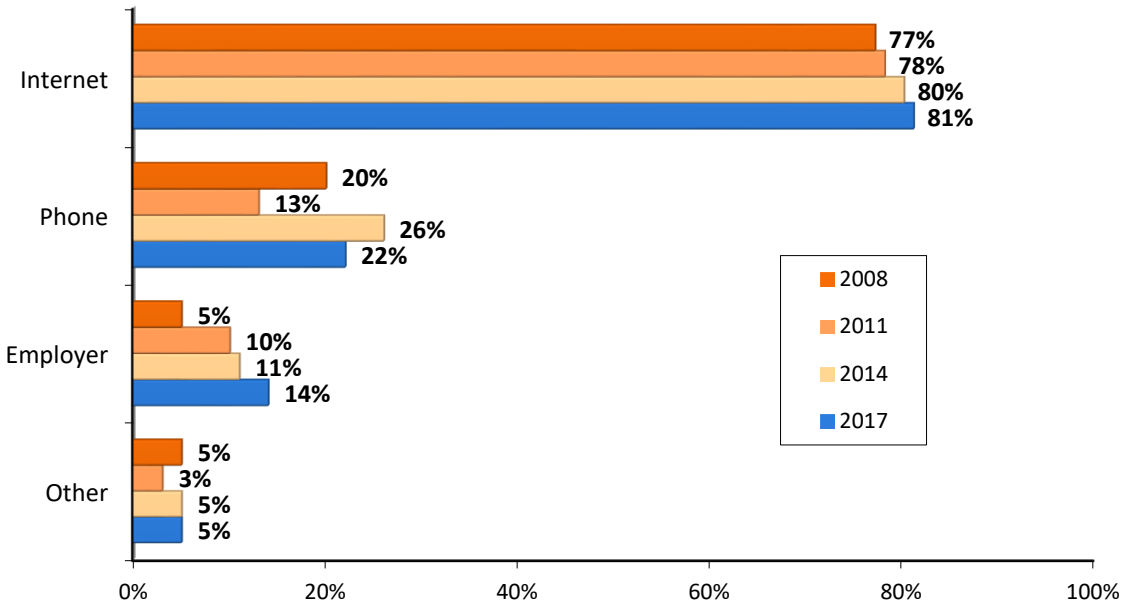


Methods Used to Contact Commuter Connections

Commuters can contact Commuter Connections in a variety of methods. In 2017, the majority of applicants (81%) made this contact through the Commuter Connections web page or another web site on the Internet (Figure 17). This was statistically the same percentage as reported this method in the three previous surveys.

In 2017, 14% of applicants contacted Commuter Connections through their employers or through work. This has shown a slow but steady upward trend since 2008, when only 5% of applicants noted this contact method. There is no distinct trend in use of the telephone as the contact method, with increases and decreases occurring each year.

Figure 17
How Applicants Contacted Commuter Connections – 2008, 2011, 2014 and 2017
(2008 n = 703, 2011 n = 872, 2014 n = 688, 2017 n = 670; multiple responses permitted)



Reasons for Seeking Assistance

Applicants were asked what prompted them to seek information or assistance from Commuter Connections at that time. Almost half (49%) wanted to find back-up transportation in case of emergency. Fourteen percent wanted to check commute options or a transit schedule, 12% made the contact to find a carpool or vanpool partner or to get information about these modes, and 9% wanted to save money. Smaller shares of applicants cited other reasons, such as wanting to save time, because they changed job or home locations, or were tired of driving.

Table 11
Reasons for Seeking Information

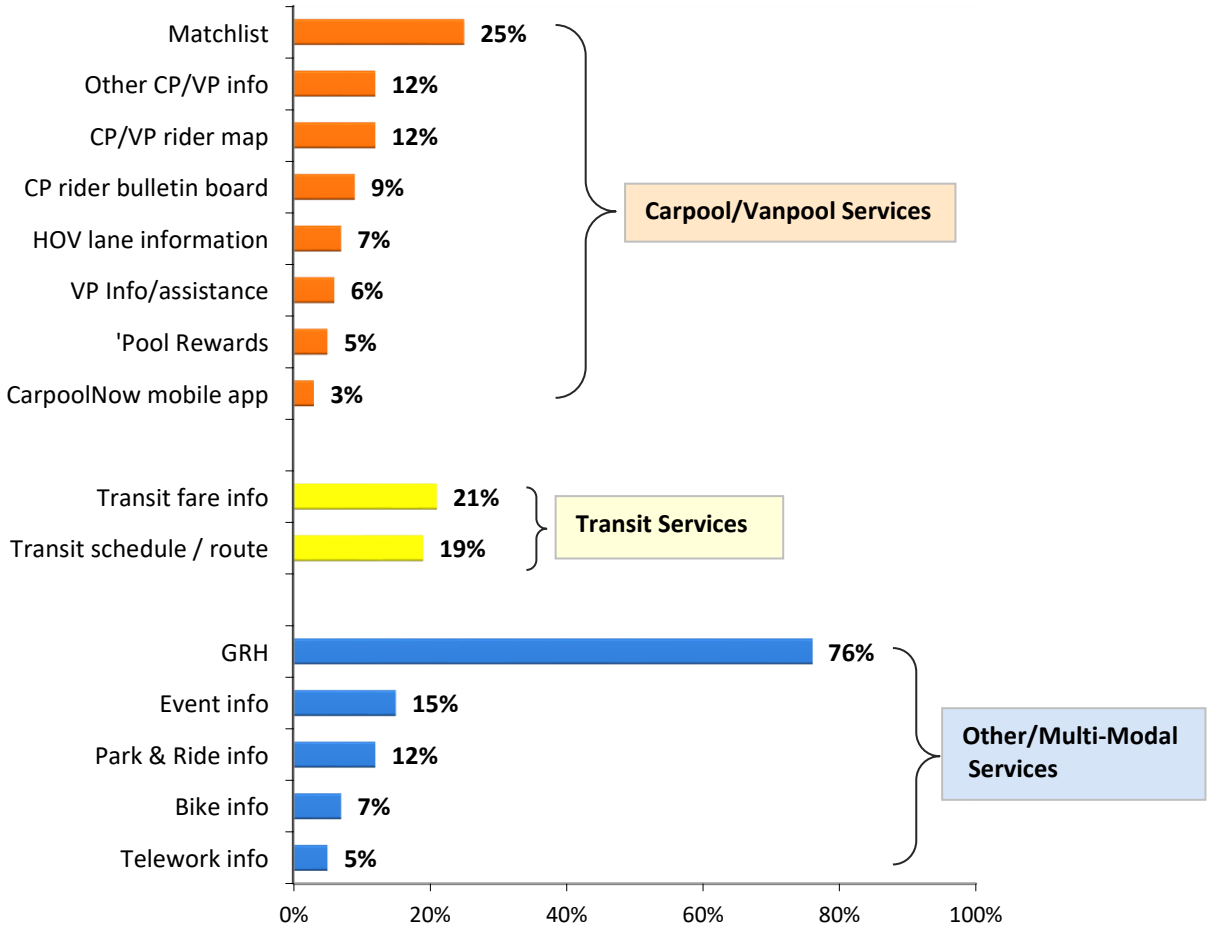
Reasons	Percentage (n = 547)
In case of emergencies, wanted back up transportation, GRH	49%
Check commute options/schedule, get general commute information	14%
Wanted to carpool or vanpool, get carpool/vanpool information	12%
Save money	9%
Didn't want to drive, tired of driving, traffic is worse	7%
Changed jobs/work schedule, moved to new residence	6%
Save time	5%
Employer program or service	4%
Other*	11%

*Other responses were each mentioned by fewer than three percent of respondents

Information Received from Commuter Connections

When commuters contact Commuter Connections, they have the option to request or access various types of assistance and information. In the 2017 survey, respondents were shown a list of services offered by Commuter Connections and were asked to check all that they remembered receiving or accessing. Figure 18 displays the percentages of applicants who said they received or accessed each service, with services grouped into three categories by the types of alternative modes they support: Carpool/Vanpool, Transit-Related, and Other/Multi-Modal.

Figure 18
Information Received or Accessed from Commuter Connections
(n = 682, multiple responses permitted)



Carpool/Vanpool Services – Four in ten applicants received or accessed one or more Carpool/Vanpool services; some of these respondents received more than one of these services. One-quarter (25%) received a matchlist with names and contact information for potential carpool/vanpool partners, 12% received a map showing home and work locations of potential carpool/vanpool partner, 9% used the carpool rider bulletin board.

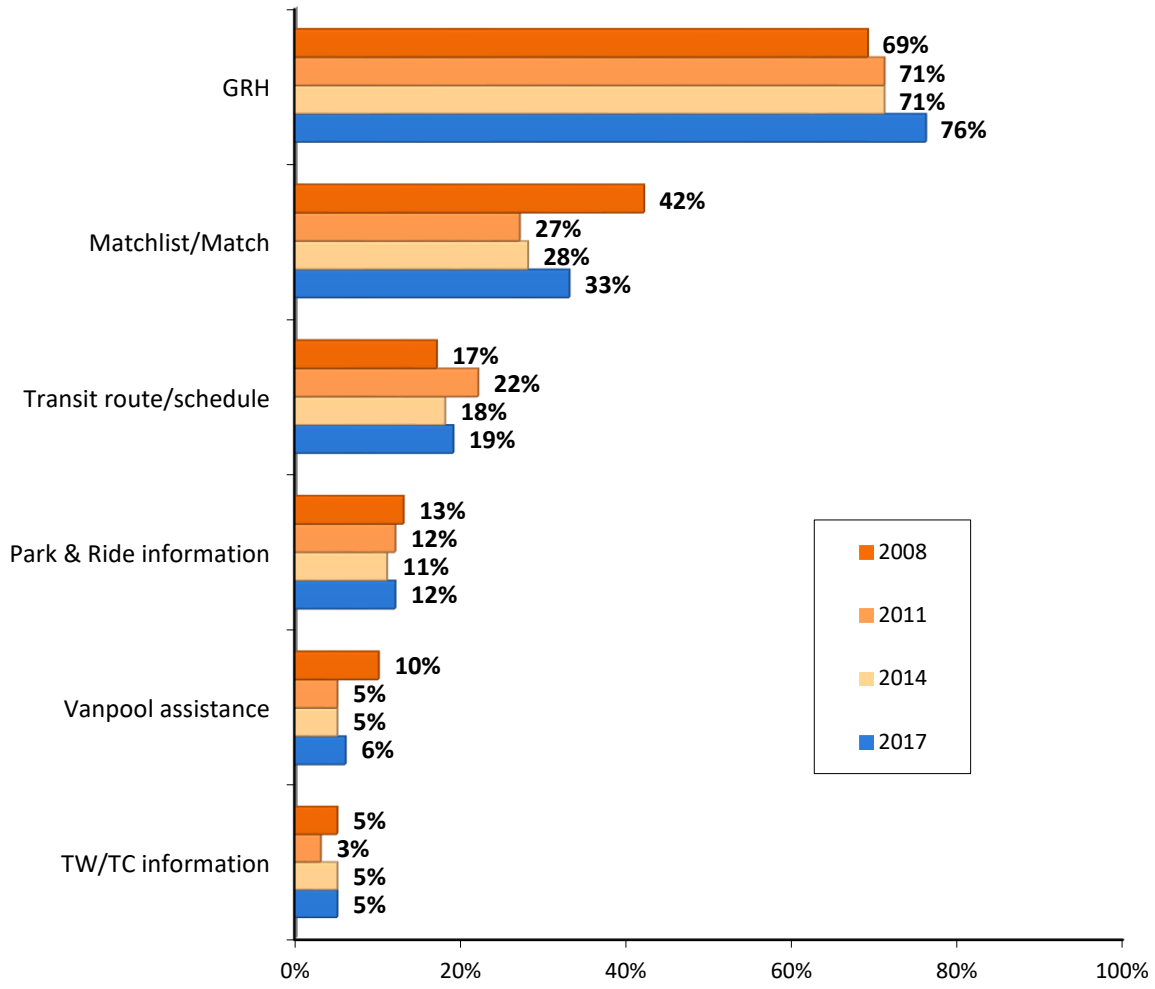
Transit-Related Services – Nearly three in ten (28%) applicants received some type of information about transit from Commuter Connections. Twenty-one percent received information about transit fares or the SmarTrip fare

payment system and 19% obtained transit route or schedule information. Nearly all of the respondents who received transit information received both fare and route/schedule information.

Other/Multi-Modal Services – The top service received overall, by a large majority, was Guaranteed Ride Home; three-quarters (76%) of all applicants said they received or accessed this multi-modal service, which is open to any commuter who uses an alternative mode to commute. Fifteen percent received information about one of the regional special events, such as Bike to Work Day or Car Free Day. These services are promoted regionally, in partnership with other organizations, but Commuter Connections offers information and registration through the online system. One in ten (12%) applicants accessed Park & Ride lot information and small shares of applicants received bicycle information (7%) and telework information (5%).

Comparison of Services Received in 2017 to Services Received in Previous Years – Figure 19 shows the percentages of applicants who received various services in 2017 compared to the percentages noted in the three previous applicant surveys.

Figure 19
Information Received or Accessed from Commuter Connections – 2008, 2011, 2014, 2017
(2008 n = 703, 2011 n = 892, 2014 n = 697, 2017 n = 682, multiple responses permitted)

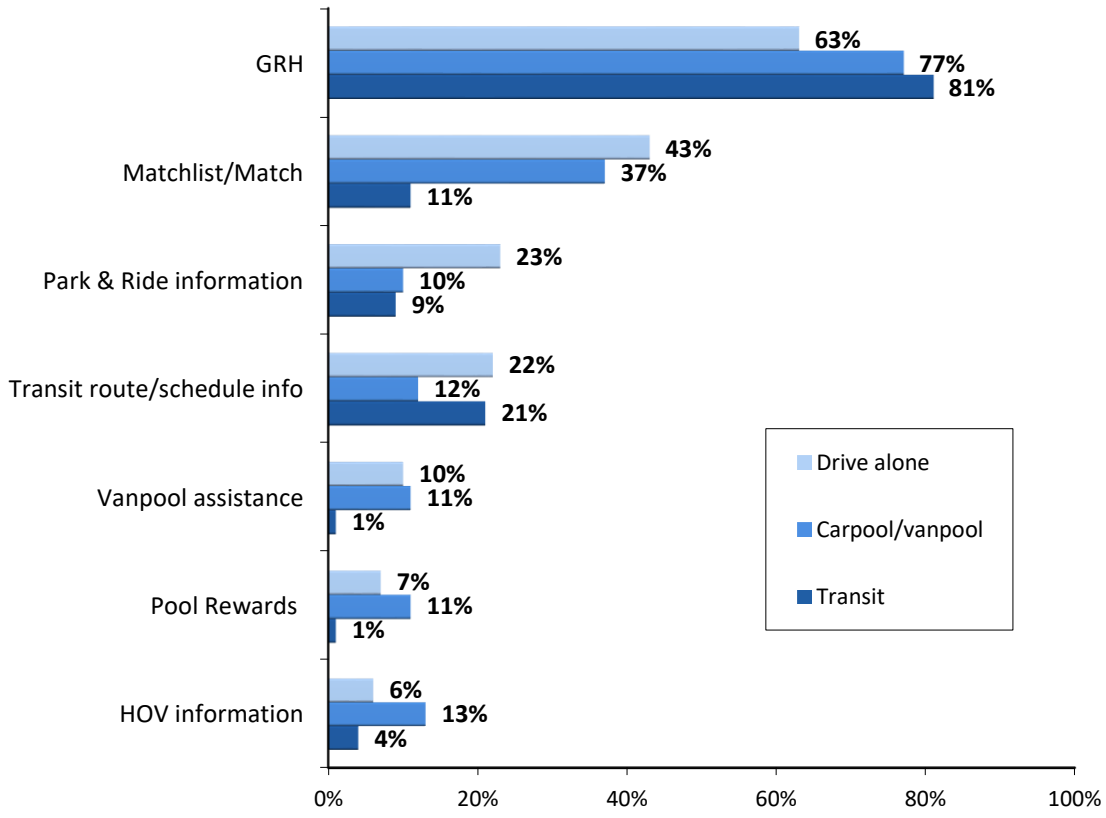


Guaranteed Ride Home continued to be a popular Commuter Connections service. In 2008, 69% of applicants received this service. In 2011 and 2914, the share remained approximately the same, at 71% in each of these surveys, but the percentage increased in 2017, to 76%. The share of applicants who received matchlists/matching information exhibited a notable drop between 2008, when 42% of applicants received this information, and 2011 and 2014, when only 27% and 28%, respectively, received it. The percentage of survey applicants who mentioned receiving a matchlist or matching information increased in 2017, to 33%. Use of vanpool assistance also dropped between 2008 and 2011, but has remained essentially the same since then. Information on Park & Ride services and telework information have remained at approximately the same levels since 2008.

In 2017, 19% of applicants received transit route and schedule information, a similar share to that found in the 2014 survey and 2008 survey. The slightly higher share of applicants who received transit information in 2011 could have been related to the higher federal transit benefit offered in 2010 and 2011, compared with previous years. In 2013, the benefit amount returned to the lower level.

Comparison of Services Received by Mode Before Seeking Services – Figure 20 presents the percentages of applicants who received various services in 2017 by the type of mode they were using at the time they sought the services: drive alone, carpool/vanpool, or transit. These results show different service user patterns.

Figure 20
Information Received or Accessed from Commuter Connections by Mode
(Drive alone n = 164, Carpool/vanpool n = 172, Transit n = 336, multiple responses permitted)



Applicants who were driving alone to work had stronger interest than did other applicants in Park & Ride information. The lower interest among current carpoolers/vanpoolers and transit riders might indicate that existing alternative mode users already knew about Park & Ride locations. Drive alone commuters sought transit route/schedule information at the same rate as did transit riders and sought matchlist and vanpool assistance at about the same rate as did applicants who already were carpooling/vanpooling, but at higher rates than did applicants who were using transit when they sought information. The high matchlist use for carpoolers/vanpoolers resulted in part from vanpoolers seeking additional or replacement riders, but the demand for matchlists among existing ridesharers indicates the role this service plays in retaining carpools and vanpools by finding replacement riders.

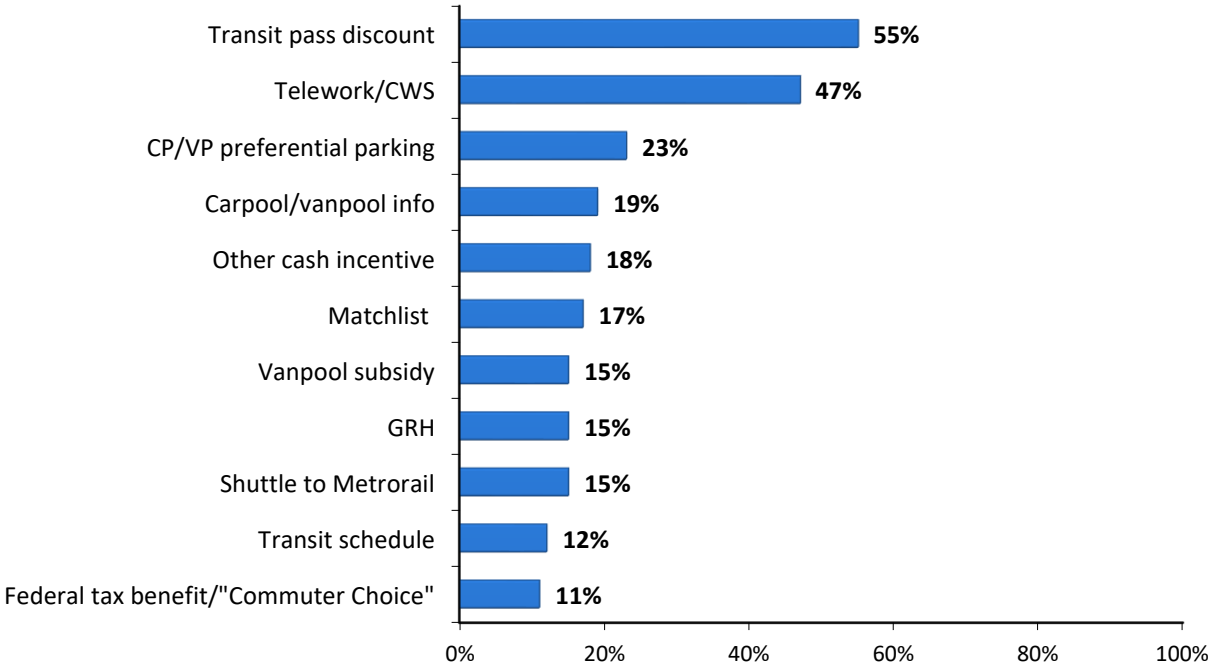
Applicants who carpooled, vanpooled, or used transit at the time they sought information were equally likely to have sought information on Guaranteed Ride Home and were somewhat more likely than were drive alone commuters to have sought this information. This is likely related to the fact that GRH is only available to commuters who use an alternative mode, but heavy promotion of GRH by some transit agencies to their riders also could have contributed to this result.

Applicants' tendency to seek more information on modes they already were using suggests they were either satisfied with the modes or that they were using the only modes, other than driving alone, that were feasible for their commute needs.

Assistance Offered by Employers

Applicants also were asked if their employers offered commute assistance services and if these services had influenced their commute decisions. More than eight in ten (85%) applicants said their employers did offer some services. Figure 21 lists individual services noted by applicants.

Figure 21
Commuter Assistance Services Offered by Employers
(n = 704, multiple responses permitted)



The most common employer services were transit pass discounts, noted by 55% of applicants, telework or compressed work schedule (47%), and carpool/vanpool preferential parking (23%). Eight other services were mentioned by at least one in ten respondents: carpool/vanpool information (19%), other cash incentive (18%), matchlist (17%), vanpool subsidy (15%), GRH (15%), shuttle to Metrorail (15%), transit schedule information (12%), and Federal "Commuter Choice" tax benefit incentive (11%).

Assistance Offered by Other Commute Assistance Groups

Applicants did not rely substantially on other organizations for commuter information or assistance; only about 9% of applicants indicated they received information from another organization. Most of these applicants received either transit route/schedule information, transit fare information, or vanpool assistance.

Use of Commuter Connections Services

Applicants who received any of the following services were asked additional questions related to how they used information:

- Matchlist
- Carpool rider bulletin board
- Transit information
- Park & Ride information
- Bicycle / walking information
- Telework information
- Guaranteed Ride Home

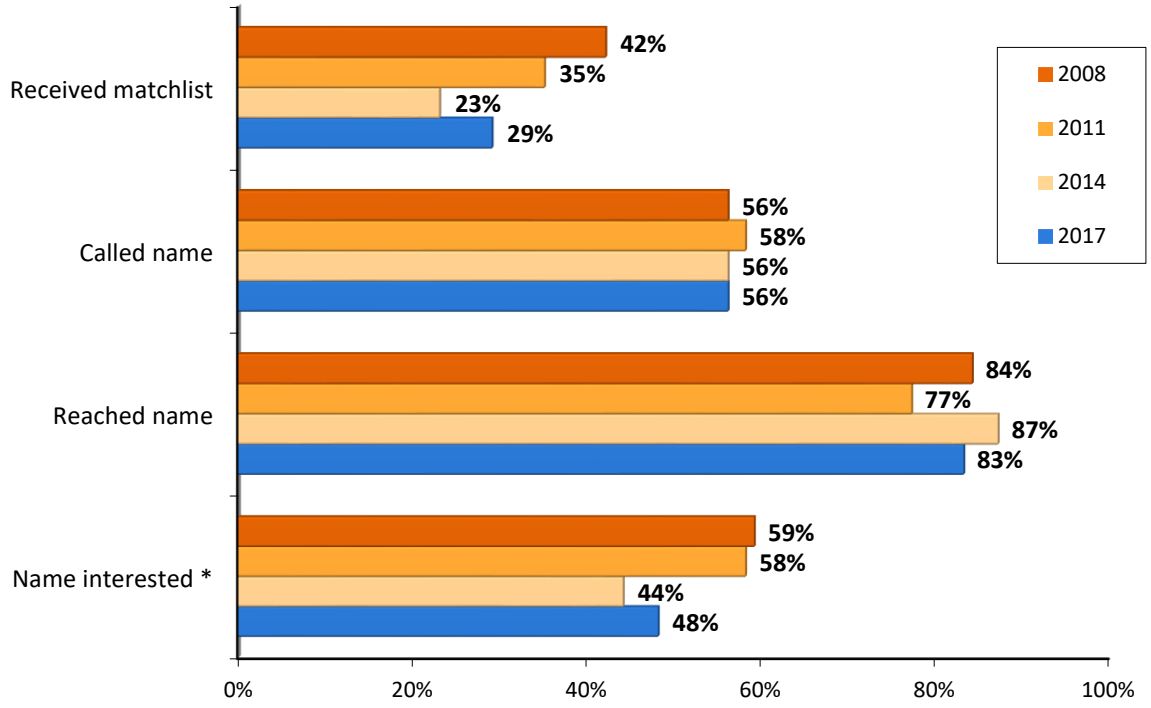
Use of Matchlist Information

Applicants who said they received a matchlist of potential rideshare partners or a map with home and work locations of potential carpool/vanpool partners were asked about their use of matchlist information. Their responses are displayed in Figure 22. As noted earlier, the share of applicants who received matchnames has fluctuated since 2008, but applicants who received a matchlist in 2017 were about equally likely to use the list as were applicants surveyed in previous years.

Tried to Make Contact – About 56% of the applicants who received a matchlist in 2017 tried to contact one or more of the people named, essentially the same as the percentages who tried to make contact in previous survey years.

The remaining 44% of applicants did not try to make contact. A primary reason for not trying to reach people on the list was that people named on the matchlist were not considered compatible partners; they either had "work hours not compatible with mine" (18%) or "work or home location not compatible with mine" (17%). But two in ten (19%) applicants who did not try to make contact said they already had found an alternative mode arrangement by the time they received the list and 28% decided they didn't want to carpool or vanpool. Seven percent said they "haven't gotten around to it."

Figure 22
Actions Taken by Applicants who Received Matchnames
(Received matchlist: 2008 n = 703, 2011 n = 892, 2014 n = 716, 2017 n = 706)
(Called name: 2008 n = 310, 2011 n = 156, 2014 n = 145, 2017 n = 172)
(Reached name: 2008 n = 176, 2011 n = 90, 2014 n = 80, 2017 n = 93)
(Name interested: 2008 n = 146, 2011 n = 66, 2014 n = 77, 2017 n = 82)



* In 2017, an additional 31% of respondents who reached a ridematch list name said people were interested but their schedules/destinations weren't compatible.

Success in Reaching Someone Named on the Matchlist – In 2017, 83% of applicants who tried to make contact were successful in reaching someone named on the list. This high percentage suggests the information provided on the matchlists was generally current and accurate. The 2017 percentage was about the same result as was observed in the 2014 and 2008 surveys. The percentage shown in the 2011 survey was lower (77%), but the sample sizes for this question were low and this result is not statistically different from the results for the other years.

Interest in Ridesharing – About half (48%) of applicants who reached someone said that person was interested in ridesharing. The percentage of interested commuters declined between 2011 and 2014, but has remained relatively constant since then. It is possible the higher 2008 and 2011 results were influenced by high gas prices. In 2017, an additional 31% said the people they reached were interested, but their schedules or destinations were not compatible. Thirteen percent of applicants said the people they reached were not interested in carpooling.

To some extent, compatibility is an individual standard. One applicant might be willing to drive out of his way or arrive at work 30 minutes earlier than scheduled to take advantage of carpooling benefits, while another applicant would feel these accommodations were too inconvenient. But this result suggests the software might not match applicants with as much precision as some commuters would like.

Carpool Rider Bulletin Board

Nine percent of applicants used the Carpool Rider Bulletin Board, on which commuters can post messages looking for a carpool partner or respond to messages posted by other commuters. These applicants were asked about their use of this service (Table 12).

Table 12
Use of Carpool Rider Bulletin Board
(n = 60)

Bulletin Board Actions	Percentage
No action taken / don't remember	**60%**
Looked at site – did not post or respond	47%
Don't remember	13%
Actions Taken	**40%**
Posted a message	18%
Responded to other commuters' messages	13%
Posted a message AND responded to messages	9%
Results of Actions	
Reached an interested commuter	46%
Reached interested commuter with incompatible commute	39%
Reached commuter who was not interested in carpooling	8%
Did not reach any commuters	7%

Four in ten (40%) of the applicants who used the bulletin board noted that they posted a message or responded to a message from another commuter; 9% both posted and responded to messages. Almost half (47%) looked at the postings on the bulletin board but did not take any further action. The remaining 13% of applicants said they did not remember if they had taken any action. The bulletin board has been in place for more than 15 years, on the Commuter Connections website that preceded the online system, so it is possible that some of these applicants had used the bulletin board several years ago and did not recall their action at that time.

Among applicants who posted a message, 50% said another commuter had responded to their messages; 44% heard from one or two commuters and the 6% said three or more commuters responded.

Forty-six percent of bulletin board users who tried to make contact with another commuter reached a commuter who was interested in carpooling. An additional 39% said they reached an interested commuter but their schedules or destinations were not compatible. Seven percent were unable to reach any commuter and the remaining 8% said they reached only commuters who were not interested in carpooling.

CarpoolNow Mobile Application

The 2017 survey included new questions about commuters use of the CarpoolNow mobile application that allows commuters to request or provide carpool rides in real-time, for a single, immediate trip. Commuter Connections initiated this app in early 2017. Of the 20 applicants who had used the app 3% of the total), six used it once and five had used it two or more times. Nine did not recall how often they used it.

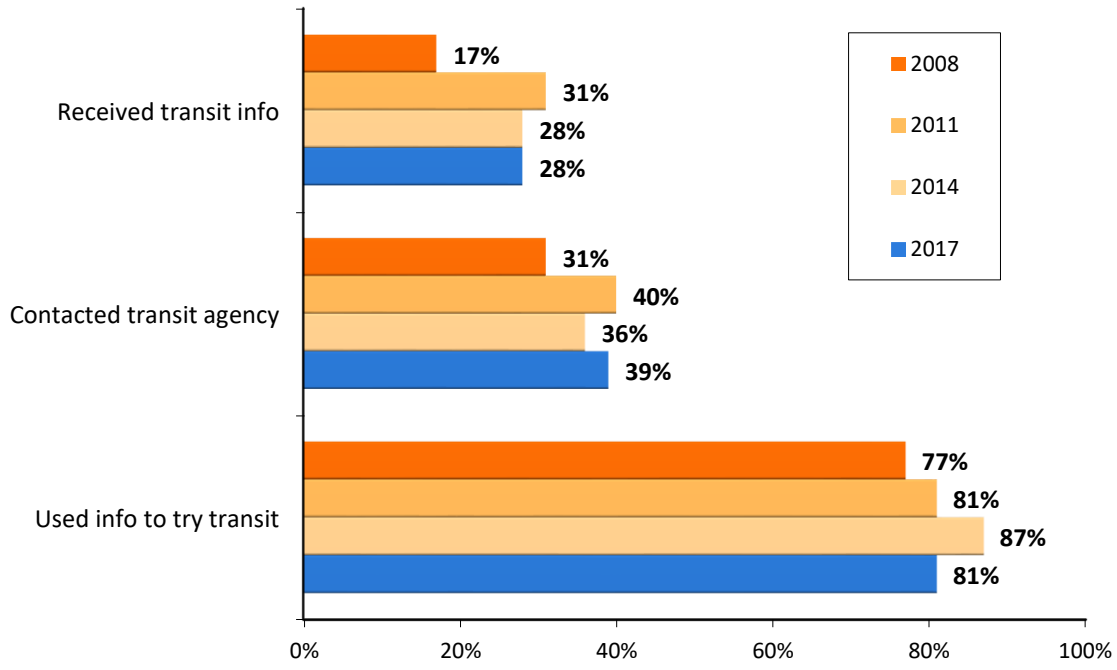
Commuters were more likely to be asking for rides than offering them; six applicants said they were always requesting a ride and two always offered a ride. One applicant both offered to drive and requested a ride. Four were "just trying it out;" they neither offered to drive nor requested a ride.

The nine applicants who had posted to the app were asked about their success in finding a driver or rider. Seven applicants said they had a response to their offer/request and two said they shared a ride at least one time. Five were not able to match for the particular ride time and location. Two said they had not received any response from another app user.

Transit Information

Slightly under three in ten (28%) applicants said they received transit information (Figure 23). As noted earlier, Commuter Connections includes on the matchlist and on the online ridematch map information on transit organizations that offer transit service that might meet the applicant's travel needs. This information is provided to all ridematch recipients, even if they did not request information. Commuter Connections staff also notify transit agencies to send transit information directly to applicants who make a formal request for the information. But the online system also offers direct links to websites of local and regional transit services, so the website has become an excellent self-service portal to access transit information directly.

Figure 23
Actions Taken by Applicants who Received Transit Information
(Received transit info: 2008 n = 703, 2011 n = 892, 2014 n = 716, 2017 n = 706)
(Contacted transit agency: 2008 n = 117, 2011 n = 206, 2014 n = 167, 2017 n = 195)
(Tried transit: 2008 n = 34, 2011 n = 68, 2014 n = 60, 2017 n = 69)



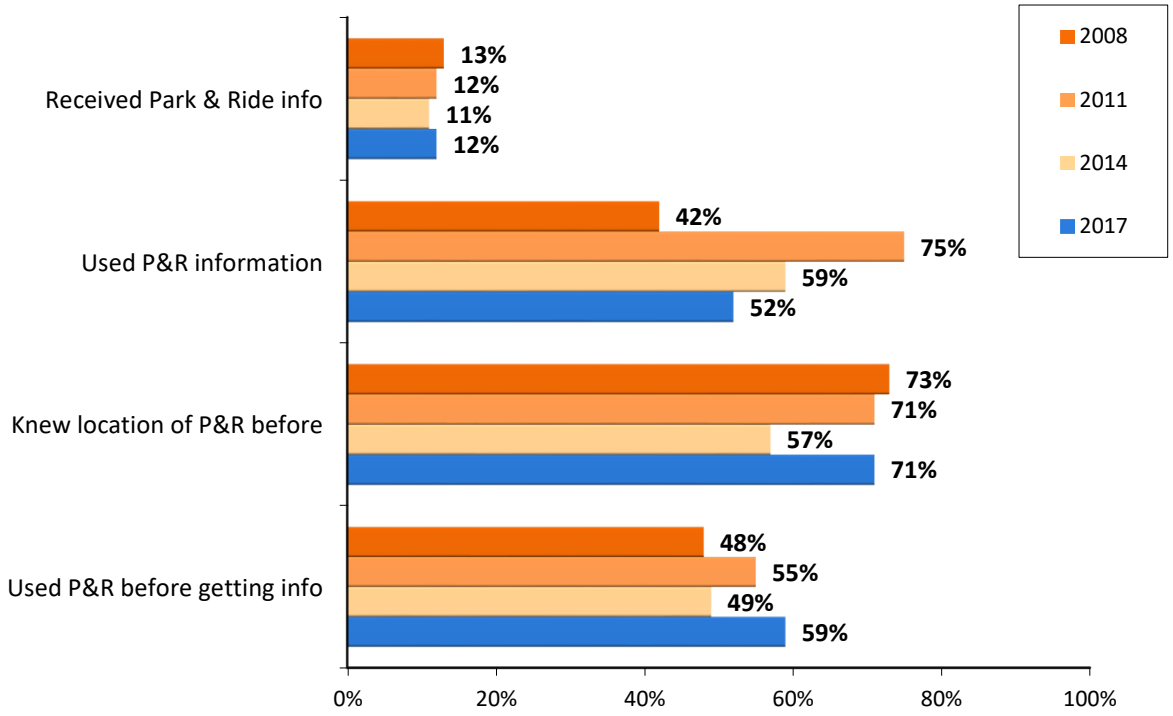
Four in ten (39%) applicants who received transit information used the information to contact a transit agency. This was not statistically different from the percentages estimated in the three previous surveys (2014 – 36%, 2011 - 40%, 2008 - 31%). Eight in ten (81%) of those who contacted a transit agency said they used information they received to try transit; again, this percentage was not statistically different from the three previous survey years.

Reasons for Not Contacting Transit Agency – Applicants who received transit information but who did not contact a transit agency gave a variety of reasons for not calling for transit schedule or route information. One-quarter (25%) said they "didn't need more information." This response could have several meanings, however, such as the applicant was not interested in using transit or that the applicant already had as much transit information as needed, either from Commuter Connections' online system or from another source. About two in ten (18%) said they got the information they needed from another source. Fifteen percent said they weren't interested in transit and 10% said they preferred to use another mode.

Park & Ride Information

Commuter Connections also provides Park & Ride lot location information on matchlists and on the website. Twelve percent of applicants remembered receiving or accessing Park & Ride information in 2017 (Figure 24).

Figure 24
Actions Taken by Applicants who Received Park & Ride Lot Information
(Received Park &Ride info: 2008 n = 703, 2011 n = 892, 2014 n = 716, 2017 n = 706)
(Used Park &Ride info: 2008 n = 62, 2011 n = 97, 2014 n = 76, 2017 n = 85)
(Knew locations of Park &Ride before: 2008 n = 26, 2011 n = 71, 2014 n = 45, 2017 n = 42)
(Used Park &Ride before: 2008 n = 26, 2011 n = 51, 2014 n = 27, 2017 n = 29)



Half (52%) of applicants who received Park & Ride information used the information provided, considerably less than the 75% noted in 2011, but still above the percentage in 2008 (42%). This suggests a larger share of commuters deliberately sought out the information in 2011, 2014, and 2017, but the decline since 2011 suggests a declining interest in Park & Ride information generally.

In 2017, 71% of applicants who received Park & Ride information said they already knew the location of the lots before they received the information from Commuter Connections. This was essentially the same share as in the 2008 and 2011 surveys. The 2014 percentage was lower than in previous years, but the sample sizes for this question were very small, so even this apparent difference is not statistically different from the other years. Similarly, the percentages who had used the lot before getting the information were statistically the same between 2008 and 2014. Six in ten (63%) applicants who used a Park & Ride lot listed on the matchlist said that using the lot was a factor in their decision to try using a new type of transportation.

Bicycle Information

Seven percent of applicants reported receiving bicycle information. Three in ten of these applicants made a bicycle travel change and four in ten of these applicants said the information was a factor in their decision to make the change. Two in ten (18%) started bicycling to work or increased how often they bicycle to work (Table 13). Two in ten (16%) started riding a bicycle or ride more often for non-work trips.

Table 13
Actions Taken After Receiving Bicycle Information
(n = 40, multiple responses permitted)

Bicycle Actions	Percentage
Started bicycling to work	8%
Bicycle to work more often	10%
Started bicycling for non-work trips	3%
Bicycle more often for non-work trips	13%
Did not take any bicycle action	70%

Telework Information

Five percent of applicants said they had received information from Commuter Connections about telework. Three in ten (30%) of the applicants used the information to talk to their employers about telework and 42% said they used the information to start teleworking or to telework more often. Half (52%) said they took no action with the information. Of respondents who started or increased teleworking, half (50%) said receiving the information had been a factor in their decision.

Guaranteed Ride Home

Finally, the survey included questions about applicants' use of the Guaranteed Ride Home (GRH) program. Three-quarters (76%) of applicants received or accessed information on GRH. Nearly all (94%) of these applicants subsequently registered for GRH.

About 10% of applicants who received GRH information were driving alone to work at the time they requested the information (Table 14). The remaining 90% were using an alternative mode; six in ten (60%) were riding transit, 16% vanpooled, and 13% carpooled.

Table 14
Modes Used When Requesting GRH Information
(n = 524, multiple responses permitted)

Modes Used	Percentage
Drive alone	**10%**
Alternative modes	**90%**
- Bus, Metrorail, commuter rail	60%
- Vanpool	16%
- Carpool	13%
- Bike/walk	1%

Section 4 Progress on Performance Measures and Goals

Performance Indicators

One purpose of the evaluation was to document transportation and air quality impacts of the Commuter Operations Center. This report also documents Commuter Connections' progress on participation, utilization, and satisfaction performance measures.

Participation, utilization, and satisfaction measures can include, for example, the number of commuter assistance requests, number of matchlists provided, and users' satisfaction with the assistance. These measures are important primarily for tracking purposes, but also are used to assess ***program impact measures***, the ultimate measures of results or benefits, such as transportation, air quality, and energy benefits. Program impact measures include, for example, the number of vehicle trips reduced.

The Commuter Operations Center's basic services include carpool and vanpool matchlists, information on transit routes and schedules, information on Park & Ride lot locations, bicycling, telework, and information on HOV lanes and other HOV facilities. Commuters obtain services by submitting information and service requests via the Commuter Connection's website or toll-free telephone number, or through an employer, a local partner assistance program, or a transportation management association (TMA). Additionally, some services are available for immediate download from Commuter Connections' website.

The placement survey documented in this report collected data to calculate transportation and air quality impacts for Commuter Connections' services provided to commuters through the Commuter Operations Center. Impacts for other Commuter Connections TERMs, including: GRH, Telework, Employer Outreach, and Marketing are calculated primarily using data collected through other means. The results of these other impact analyses will be reported in June 2020, as part of the FY 2018-2020 TERM analysis.

Participation, Utilization, and Satisfaction

The results of six participation, utilization, and satisfaction measures are presented in Table 15 below for the Commuter Connections Program overall. These data were drawn from the Commuter Connections database and from the commuter placement survey conducted for this project.

Table 15
Commuter Connections Program Activity Summary and
Overall Participation, Utilization, and Satisfaction Performance Measures
Placement Survey, July-September 2017

•	Commuter applicants	5,021	
•	Applicant placement rates	49.9%	
	- Continued placement rate	36.4%	
	- Occasional placement rate	3.7%	
	- Temporary placement rate	5.2%	
	- One-time placement rate	4.6%	
•	Applicants placed in alternative modes	2,505	
	- Continued placements	1,826	
	- Occasional placements	186	
	- Temporary placements	262	
	- One-time placements	231	
•	Applicants who received matchlist from Commuter Connections		25%
•	Applicants who received vanpool assistance		6%
•	Applicants who received transit information		28%
•	Applicants who received commute event information		15%
•	Applicants who received Park & Ride info		12%
•	Applicants who received bicycle information		7%
•	Applicants who received telework information		5%
•	Applicants who received GRH information/registration		76%

Program Impact Measures

MWCOG also established five program impact performance measures to assess the impacts of Commuter Connections' commuter assistance services. These measures are:

- Vehicle trips (VT) reduced
- Vehicle miles traveled (VMT) reduced
- Emissions reduced
  - Tons of Nitrogen Oxides – NOx
  - Tons of Volatile Organic Compounds – VOC
  - Tons of Particulate Matter (2.5 microns) – PM 2.5
  - Tons of PM 2.5 NOx precursors
  - Tons of Carbon Dioxide (CO2, Greenhouse gas)
- Gallons of gasoline saved
- Commuter travel costs reduced

The results for these measures, calculated from the survey data and other data provided by Commuter Connections are shown in Table 16.

Table 16
Commuter Connections Program
Program Impact Performance Measures
Placement Survey, July-September 2017

• Daily vehicle trips (VT) reduced	**954**	**trips**
- Continued placements	935	trips
- Temporary placements (prorated credit)	19	trips
• Daily VMT reduced	**28,047**	**VMT**
- Continued placements	27,583	VMT
- Temporary placements (prorated credit)	464	VMT
• Daily tons of Emissions reduced		
– NOx	**0.0063**	**tons**
– VOC	**0.0036**	**tons**
• Annual tons of Emissions reduced		
– PM 2.5	**0.100**	**tons**
– PM 2.5 NOx precursors	**1.650**	**tons**
– CO2 / Greenhouse gas	**2,785.7**	**tons**
• Gallons of gasoline saved	**1,457**	**daily gallons of gas**
• Commuter costs reduced		
- Annual cost saving per placement	**$720**	**per year**

** See Appendix C for calculations*

Calculations of these impacts are briefly described below. Appendix C in this report provides a summary worksheet of the impact calculations. For further detail on the methodology used to calculate impacts, refer to the "Transportation Emission Reduction Measures (TERMs) Revised Evaluation Framework – FY2015 - FY2017," March 15, 2016. The report is available from Commuter Connections.

Vehicle Trips Reduced

Vehicle trip reduction (VTR) measures the number of vehicle trips no longer made as a result of commuters increasing their use of high occupancy modes. Vehicle trip reduction can occur from shifts from driving alone to an alternative mode, shifts within alternative modes to HIGHER occupancy alternatives, and increases in the number of days per week commuters use alternatives. The calculation of trip reduction also accounts for some shifts that do not reduce, and indeed may increase, vehicle trips. These shifts include shifts within alternative modes to LOWER occupancy alternatives, and decreases in the number of days per week commuters use alternatives.

To simplify measuring the impacts of these various shifts, a "VTR factor" is used, combining the impacts of various changes into one number and equal to the average number of vehicle trips reduced by a new commuter "placement." This factor is multiplied by the number of placements to estimate the vehicle trip reduction of all commuters placed in alternative modes.

VTR factors were derived from detailed examination of the types of changes reported by survey respondents for continued changes and temporary changes. Additionally, as was done for placement rates, the VTR multipliers

were estimated for applicants who both lived and worked within the MWCOG Ozone Non-Attainment Area (Area) and those who either lived or worked outside it.

	Within Area	Outside Area
• Continued VTR =	0.50	0.53
• Temporary VTR =	0.37	0.59

The calculation of vehicle trip reduction for each change group was performed by multiplying the within Area VTR factor for that change group by the number of within Area placements for the group, multiplying the outside Area VTR factor by the outside Area placements, and adding these products together.

This calculation for continued changes resulted in **935 daily trips reduced by continued changes**. The calculation of vehicle trip reduction for temporary placements was handled similarly to that for continued placements except that an additional calculation was needed to discount these trip reductions, because these placements lasted only 8.2 weeks on average. Thus, only about 16% of the temporary trip reduction was allocated to the placements, representing the portion of a year (8.2 / 52 weeks) when the mode was used. This resulted in **19 daily trips reduced by temporary changes**.

All Placements VT Reduction – The total vehicle trip reductions from continued and temporary commute changes of all applicants were then added to obtain a total trip reduction for all applicants.

This sum, 935 + 19, equaled **954 daily vehicle trips reduced**.

Vehicle Miles Traveled (VMT) Reduced

The reduction in vehicle miles traveled, or VMT, is the second travel impact measure. It was calculated by multiplying the number of vehicle trips reduced by the average commute distance for respondents who made a commute change. The one-way trip distance for the within Area applicants was 29.5 miles for respondents with continued changes and 24.4 miles for respondents with temporary changes.

The actual one-way distance for the outside-Area applicants was considerably higher; 52.5 miles for continued changes and 48.8 miles for temporary changes. But many of these miles would have occurred outside the Ozone Non-attainment Area. Thus, to better represent the miles reduced for their travel within the Area, one-way travel distances for outside-Area applicants were set equal to the distances for the within-Area respondents. This resulted in a loss of 23.0 one-way miles per trip for outside-Area applicants who made continued changes and 24.4 miles per trip for outside-Area applicants who made a temporary change. The VMT calculation thus was as follows, resulting in 28,047 VMT reduced daily:

(935 continued trips reduced x 29.5 miles) + (19 temporary trips reduced x 24.4 miles)

= **28,047 VMT reduced**

Emissions Reduced

The calculation of emissions benefits, defined as tons of pollutants reduced, applied one regional emission factor to the number of vehicle trips or "trip ends" and another factor to VMT to determine the pollutants reduced as a result of the program. This analysis calculated emission reduction for five pollutants: Oxides of Nitrogen (NOx), Volatile Organic Compounds (VOC), Particulate Matter, 2.5 Microns (PM 2.5), PM 2.5 NOx precursors, and Carbon Dioxide (CO2, greenhouse gas).

For 2017, the emission factors are:

NOx:

Trip end (cold start)	=	1.2435 grams per one-way vehicle trip reduced
VMT (running)	=	0.1897 grams per vehicle mile reduced

VOC:

Trip end (cold start + hot soak)	=	2.5814 grams per one-way vehicle trip reduced
VMT (running)	=	0.0688 grams per vehicle mile reduced

PM 2.5:

Trip end (cold start + hot soak)	=	0.0312 grams per one-way vehicle trip reduced
VMT (running)	=	0.0115 grams per vehicle mile reduced

PM 2.5, NOx precursor:

Trip end (cold start + hot soak)	=	1.3603 grams per one-way vehicle trip reduced
VMT (running)	=	0.2019 grams per vehicle mile reduced

CO2 (Greenhouse gas):

Trip end (cold start + hot soak)	=	227.06 grams per one-way vehicle trip reduced
VMT (running)	=	380.68 grams per vehicle mile reduced

The trip end emission factor, estimating emissions from starting a cold-engine vehicle and the emissions from evaporation as a hot engine is cooling down, is multiplied by the estimated vehicle trips reduced, adjusted to remove commuters who make a drive alone trip to a rideshare or transit meeting point. The VMT (running) factor, which estimates emissions from running a warm-engine vehicle, is multiplied by the vehicle miles reduced, adjusted to account for the length of drive alone trips to rideshare and transit meeting points. The sum of the products of these two calculations determines daily emission reductions.

The emission reduction calculation is shown in Appendix C. The emissions reduced by all placements equaled **0.0063 daily tons of NOx and 0.0036 daily tons of VOC. PM 2.5 and CO2 emissions were calculated on an annual basis. They totaled as follows: PM 2.5 – 0.100 annual tons, PM 2.5 NOx precursors – 1.650 annual tons, and CO2 – 2,786 annual tons.**

Gallons of Gasoline Saved

The fourth performance measure assesses the number of gallons of gasoline saved by increased use of alternative modes. This performance measure is calculated by dividing the number of daily VMT reduced by an average miles per gallon fuel efficiency of the mix of vehicles in the region. The calculation for this measure is shown in Appendix C. As shown, **1,457 gallons of gasoline were saved daily** from increased use of alternative modes by Commuter Connections applicants.

Commuter Travel Costs Reduced

The fifth program impact performance measure is commuter travel costs reduced. This performance measure, which assesses benefits to commuters, was calculated by multiplying the number of daily VMT reduced by an average travel cost per mile for the mix of types of vehicles in the region.

This calculation, also presented in Appendix C indicates that new Commuter Connections **placements saved a total of $1.344 million annually** by beginning or increasing their use of alternative modes. Dividing the annual overall saving by the number of commuter placements (continued plus prorated temporary placements), equals a saving of **$720 per commuter per year**.

List of Appendices

Appendix A – Questionnaire for November 2017 Applicant Survey

Appendix B – Comparison of 2017 Survey Results with Results for 2014, 2011, 2008, 2005, 2004, 2003, and 2002 Surveys

Appendix C – Commuter Connections Impact Calculations, All Placements – July-September 2017

Appendix A
Questionnaire for November 2017 Applicant Survey

Introduction – SHOW ONLY ON THE FIRST PAGE OF THE SURVEY

Commuter Connections is conducting this online survey of people who received commute information or assistance from the Commuter Connections program. Your answers will be confidential. It will take about 10 minutes.

Please complete the survey and click on the "SUBMIT" button at the end. If you need to stop before you have finished the survey, your answers will be saved and you may come back and complete the remaining questions at a later time. Thank you for your participation.

Please click on the "NEXT" button below to begin the survey.

START Q1 on NEW PAGE
Show QS1 and QS2 on the same page

SCREENING FOR SERVICES USED

S1 Which of the following carpool and vanpool services have you accessed or received from Commuter Connections? You could have received them from the Commuter Connections website or mobile applications, or through a letter, email, or phone call. Please check all that apply.

ACCEPT MULTIPLES FOR 1-8, DO NOT ALLOW MULTIPLES WITH 90

1 Names and contact information for people you could contact to form a carpool or vanpool (matchlist)
2 Map showing home and work locations of people you could contact to form a carpool or vanpool
3 Carpool / vanpool rider wanted bulletin board
4 Other carpool / vanpool information
5 Vanpooling assistance
6 HOV lane information
7 'Pool Rewards carpool /vanpool financial incentive
8 CarpoolNow mobile application (real-time ridematching)
90 Did not receive any of these services from Commuter Connections (**PROGRAMMER: GREY OUT THIS BOX IF ANY OTHER RESPONSE IS CHECKED**)
99 Question left blank

S2 Commuter Connections also offers information on telework, transit, Park & Ride, and bicycling around the Washington metropolitan region. Which of the following services have you accessed or received from Commuter Connections? Please check all that apply.

ACCEPT MULTIPLES FOR 1-9, DO NOT ALLOW MULTIPLES WITH 90

1 Transit schedule or route information
2 Transit fare information, SmarTrip
3 Park & Ride lot information
4 Telework information, telework center information
5 Bicycle to Work Guide, bicycling information
6 Online bicycle route planning
7 Guaranteed Ride Home information or trip
8 Special events information (e.g., Bike to Work Day, Car Free Day)
9 Other (specify)

90 Did not receive any of these services from Commuter Connections (**PROGRAMMER: GREY OUT THIS BOX IF ANY OTHER RESPONSE IS CHECKED**)
99 Question left blank

IF Q_S1 = ANY RESPONSE 1-8 OR Q_S2 = ANY RESPONSE 1-9, SKIP TO DEFINE USER
IF Q_S1 = 90 OR 99 AND Q_S2 = 90 OR 99, CONTINUE

S3 Do you recall **requesting or seeking** any of the following commute information or assistance from Commuter Connections, from a state or county commuter services organization, from a commute information website, or from your employer, even if you did not receive the information?

ROTATE RESPONSES 1-16, SHOW "90-no services" AT THE END OF THE LIST. ACCEPT MULTIPLES FOR 1-16, DO NOT ALLOW MULTIPLES WITH 90

1 Names and contact information for people you could contact to form a carpool or vanpool (matchlist)
2 Map showing home and work locations of people you could contact to form a carpool or vanpool
3 Carpool / vanpool rider bulletin board
4 Other carpool / vanpool information
5 Vanpooling assistance
6 HOV lane information
7 'Pool Rewards carpool/vanpool financial incentive
8 CarpoolNow mobile application (real-time ridematching)
9 Transit schedule or route information
10 Transit fare information, SmarTrip
11 Park & Ride lot information
12 Telework information, telework center information
13 Bicycle to Work Guide, bicycling information
14 Online bicycle route planning
15 Guaranteed Ride Home information or trip
16 Special events information (e.g., Bike to Work Day, Car Free Day)

90 Did not request or seek any of these services (**PROGRAMMER: GREY OUT THIS BOX IF ANY OTHER RESPONSE IS CHECKED**)
99 Question left blank

IF Q_S3 = 90 or 99 ONLY, SKIP TO DEFINE USER
IF Q_S3 = ANY RESPONSE 1 - 16, CONTINUE TO Q_S4

S4 Are you still interested in receiving this information?

1 Yes **(CONTINUE TO Q_S5)**
2 No **(SKIP TO DEFINE USER)**
9 Question left blank **(SKIP TO DEFINE USER)**

S5 Please provide your name and a phone number or email address below, to receive a follow-up contact from Commuter Connections.

_____

DEFUSER - DEFINE USER – FOR LATER BRANCHING
Codes: 1 – Received, 2 – Requested, 3 – BB only (Bulletin board), 4 – Unknown, 5 – CP Now only (CarpoolNow mobile app)

CLASSIFY IN THE FOLLOWING ORDER:
IF Q_S1 = ANY RESPONSE 1, 2, OR 4 – 7, DEFUSER = 1 (RECEIVED)
IF Q_S2 = ANY RESPONSE 1 – 9, DEFUSER = 1 (RECEIVED)

IF Q_S1 = 90 OR 99 AND Q_S2 = 90 OR 99 AND Q_S3 = ANY RESPONSE 1, 2 OR 4 – 7, OR 9 – 15, DEFUSER = 2 (REQUESTED)

IF Q_S1 = ONLY 3 AND Q_S2 = 90 OR 99 AND Q_S3 = 90 OR 99, DEFUSER = 3 (BB ONLY)
IF Q_S1 = 90 OR 99 AND Q_S2 = 90 OR 99 AND Q_S3 = ONLY 3, DEFUSER = 3 (BB ONLY)

IF Q_S1 = ONLY 8 AND Q_S2 = 90 OR 99 AND Q_S3 = 90 OR 99, DEFUSER = 5 (CP Now ONLY)
IF Q_S1 = 90 OR 99 AND Q_S2 = 90 OR 99 AND Q_S3 = ONLY 8, DEFUSER = 5 (CP Now ONLY)

IF Q_S1 = 90 OR 99 AND Q_S2 = 90 OR 99 AND Q_S3 = 90 OR 99, DEFUSER = 4 (UNKNOWN)

IF DEFUSER = 1, 2, 3, OR 5 CONTINUE TO Q1
IF DEFUSER = 4, THANK AND TERMINATE – SHOW MESSAGE "That is all the questions we have. Thank you for participating in the Commuter Connections survey."

HOW THEY GET TO WORK

1 Next, please answer a few questions about your travel to and from work. In a TYPICAL week, how many weekdays (Monday-Friday) are you assigned to work?

1 1 day per week
2 2 days per week
3 3 days per week
4 4 days per week
5 5 days per week
_____ Not currently working (**THANK AND TERMINATE**)

2 Which of the following best represents your work schedule?

1. Part-time
2. Full-time, 5 or more days per week
3. 4/40 compressed schedule (four 10-hour days per week, 40 hours)
4. 9/80 compressed schedule (9 days every 2 weeks, 80 hours)
5. 3/36 compressed schedule (three 12-hour days per week, 36 hours)
6. Other (**SPECIFY**) _____

9 Question left blank

3 Do you telecommute or telework? 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
8 Don't know
9 Question left blank

IF Q3 = 2, 8, OR 9, SKIP TO Q4a

4 How often do you usually telecommute?

1 Less than 1 time per month / only in emergencies (e.g., sick child, snowstorm)
2 1 to 3 times a month
3 1 day a week
4 2 days a week
5 3 days a week
6 4 days a week
7 5 or more days a week
8 other (SPECIFY) _____
9 Question left blank

4a In a typical week, how often are you away from your usual work location **for an entire day** for business or work travel (e.g., meetings / visits to clients or customers)?

1 Never, I don't ever travel for work
2 Occasionally, but less than 1 day per week
3 Regularly, 1 or more days per week
9 Question left blank

Current Travel Grid (Typical week)

5 Thinking about a TYPICAL week, Monday through Friday, how do you get to work? In the table below, enter the number of days you typically use each of the listed types of transportation. If you use more than one type on a single day (e.g., walk to the bus stop, then ride the bus), count only the type you use for the **longest distance part** of your trip to work.

IF Q4a = 3, ALSO SHOW: "For days that you are on business / work travel, please report the type of transportation you would use to get to work if you worked at your usual work location."

SHOW TO ALL RESPONDENTS: Indicate also how many weekdays (if any) you do NOT typically travel to your usual work location and the reasons for not traveling to work (e.g., regular day off, telecommute, compressed work schedule day off).

PROGRAMMER NOTES:
CHECK SUM OF DAYS. IF TOTAL OF 1-18 IS LESS THAN 5, SHOW MESSAGE: "Please report for all days Monday – Friday, including telework days, compressed schedule days, and days you do not work." **IF TOTAL OF 1-18 IS GREATER THAN 5, SHOW MESSAGE:** "You've reported more than five days. Please report only for Monday – Friday."

IF Q2 = 3, 4, OR 5 AND RESPONDENT DOES NOT CHECK "CWS day off" (RESPONSE 1), 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 Q4 = 3, 4, 5, 6, OR 7 AND RESPONDENT DOES NOT CHECK "Telecommute" (RESPONSE 2), SHOW MESSAGE: "You said you typically telework. How many days do you telework in a typical week? **(ACCEPT 0 AS A RESPONSE)**

Type of Transportation	Number of Days Used (0 to 5)
Days you travel to your usual work location	
3 Drive alone in a car, truck, van, or SUV	
4 Motorcycle	
5 Carpool, including carpool w/family member, dropped off (ride or drive with others in a car, truck, van, or SUV)	
6 Casual carpool (slugging)	
7 Vanpool	
8 N/A – don't show on screen	
9 Bus (public bus, shuttle, buspool, express bus)	
10 Metrorail	
11 MARC (MD Commuter Rail)	
12 VRE	
13 AMTRAK / other train	
14 Bicycle (entire trip or longest distance part of trip from home to work)	
15 Walk (entire trip or longest distance part of trip from home to work)	
16 Taxi, Uber, Lyft	
Days you DO NOT travel to your usual work location	
1 Compressed work schedule day off	
2 Telecommute / telework all day	
17 Regular day off	
18 Other (describe)_____	
Total Days (**DO NOT SHOW THIS LINE ON SCREEN**)	Sum of 1-18

DEFINE Q5 MODES USED (ALLOW MULTIPLE MODES) - AUTOCODE ONLY: don't show messages/codes on screen

CWDAYS = SUM OF Q5, RESPONSE 1
TWDAYS = SUM OF Q5, RESPONSE 2
DADAYS = SUM OF Q5, RESPONSE 3, 4, 16
CPDAYS = SUM OF Q5, RESPONSE 5, 6
VPDAYS = SUM OF Q5, RESPONSE 7
BUDAYS = SUM OF Q5, RESPONSE 9
MRDAYS = SUM OF Q5, RESPONSE 10
CRDAYS = SUM OF Q5, RESPONSE 11, 12, 13
BKDAYS = SUM OF Q5, RESPONSE 14
WKDAYS = SUM OF Q5, RESPONSE 15

IF CWDAYS > 0, Q5 MODE = 1 COMPRESSED SCHEDULE
IF TWDAYS > 0, Q5 MODE = 2 TELEWORK
IF DADAYS > 0, Q5 MODE = 3 DRIVE ALONE
IF CPDAYS > 0, Q5 MODE = 4 CARPOOL
IF VPDAYS > 0, Q5 MODE = 5 VANPOOL
IF BUDAYS > 0, Q5 MODE = 6 BUS
IF MRDAYS > 0, Q5 MODE = 7 METRORAIL
IF CRDAYS > 0, Q5 MODE = 8 COMMUTER TRAIN
IF BKDAYS > 0, Q5 MODE = 9 BICYCLE
IF WKDAYS > 0, Q5 MODE = 10 WALKING

DEFINE PRIMARY MODE (mode used most days of week)

SET PR_MODE = Q5 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), 10 (WALKING), 2 (TELEWORK), 3 (DRIVE ALONE)

DO NOT SELECT COMPRESSED SCHEDULE (1) AS PRIMARY MODE

DEFINE CALTDAYS (days currently using alternative modes)

CALTDAYS = TOTAL Q5 DAYS USING MODES 5, 6, 7, 9, 10, 11, 12, 13, 14, 15 (= CPDAYS + VPDAYS + BUDAYS + MRDAYS + CRDAYS+ BKDAYS + WKDAYS)

8 About how many miles do you usually travel from home to work one way?

_____ miles one way
999 Question left blank

9 And about how many minutes does it take you to get to work?

_____ minutes
999 Question left blank

9a At what time do you typically arrive at work?

1 12:00 am (midnight) – 5:59 am
2 6:00 am – 6:59 am
3 7:00 am – 7:59 am
5 8:00 am – 8:59 am
7 9:00 am – 9:59 am
9 10:00 am – 2:59 pm
10 3:00 pm – 6:59 pm
11 7:00 pm – 11:59 pm
99 Don't know
999 Question left blank

Check sum of days using Personal vehicle (DA/MC/Taxi, CP, VP) – Show different form of Q9b question depending on sum of vehicle days

IF SUM OF (DADAYS + CPDAYS + VPDAYS) = 4 OR 5, INSERT V1 "What Interstate highways or major U.S. or state routes do you use on your trip to work? Select all that apply"
IF SUM OF (DADAYS + CPDAYS + VPDAYS) = 1, 2, OR 3, INSERT 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? Select all that apply"
IF SUM OF (DADAYS + CPDAYS + VPDAYS) = 0, INSERT V3, "If you were to drive to work, what Interstate highways or major U.S. or state routes would you use? Select all that apply"

9b **V1** – "What Interstate highways or major U.S. or state routes do you use on your trip to work? Select all that apply"

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? Select all that apply"

V3 – "If you were to drive to work, what Interstate highways or major U.S. or state routes would you use? Select all that apply"

THEN SHOW LIST BELOW TO ALL RESPONDENTS. ACCEPT MULTIPLES FOR 1 – 21 AND 99, DO NOT ALLOW MULTIPLES WITH 98

Interstate Highways
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)

Major U.S./State Routes
11 BW Parkway (US 295, Baltimore-Washington Parkway - MD)
12 Dulles Toll Road (Dulles Greenway, Route 267)
13 GW Parkway (George Washington Parkway)
14 ICC (Inter-County Connector, Route 200)
15 US Route 1 (MD)
16 US Route 1 (VA - Richmond Highway, Jefferson Davis Highway)
17 US Route 29 (MD - Colesville Road, Columbia Pike)
18 US Route 29 (VA – Lee Highway)
19 US Route 50 (MD – John Hanson Highway)
20 US Route 50 (VA – Lee Jackson Highway, Arlington Blvd, Fairfax Blvd)
21 US Route 301 (MD)

98 No Interstate or U.S. or state routes
99 Other (specify) _____

POOL MAKE-UP
IF CPDAYS = 0 AND VPDAYS = 0, SKIP TO INSTRUCTIONS BEFORE Q15
IF CPDAYS > VPDAYS, ASK Q10-Q14, INSERT "carpool" AS Q5 MODE
IF VPDAYS > CPDAYS, ASK Q10-Q14, INSERT "vanpool" AS Q5 MODE
IF CPDAYS = VPDAYS, ASK Q10-Q14, INSERT "vanpool" AS Q5 MODE

10 Including yourself, how many people usually ride in your [**Q5 MODE, carpool, vanpool**]?

_____ total people in pool
999 Question left blank

11 How many of the other people in your [**Q5 MODE, carpool, vanpool**], excluding yourself, are members of your family or members of your household?

_____ people are family/household members
999 Question left blank

12 How many are children under age 16?

_____ children under age 16
999 Question left blank

13 How many are co-workers?

_____ co-workers
999 Question left blank

14 How often are you the driver of your [**Q5 MODE, carpool, vanpool**]?

1 I always drive **(AUTOCODE Q15 = 9, THEN SKIP TO Q20)**
2 I sometimes drive or share driving, such as driving on alternate days or weeks
3 I never drive

INSTRUCTIONS BEFORE Q15

IF Q5 MODE = 5 (VANPOOL), 4 (CARPOOL), 8 (COMMUTER TRAIN), 7 (METRORAIL TRAIN), OR 6 (BUS), ASK Q15-Q16
IF CPDAYS = 0 AND VPDAYS = 0 AND BUDAYS = 0 AND MRDAYS = 0 AND CRDAYS = 0, SKIP TO Q20

IF CPDAYS > 0 AND (CPDAYS > VPDAYS), ASK Q15-Q16, INSERTING "carpool" AS Q5 MODE
IF VPDAYS > 0 AND (VPDAYS > CPDAYS), ASK Q15-Q16, INSERTING "vanpool" AS Q5 MODE
IF (CPDAYS > 0 AND VPDAYS > 0) AND (CPDAYS = VPDAYS), ASK Q15-Q16, INSERTING "vanpool" AS Q5 MODE

IF (CPDAYS = 0 AND VPDAYS = 0) AND (BUDAYS > 0 OR MRDAYS > 0 OR CRDAYS > 0), ASK Q15 / Q16, INSERTING <Q5 MODE> NAME DEFINED BY Q5 MOST DAYS USED AS FOLLOWS:
- **BUDAYS = bus**
- **MRDAYS = Metrorail train**
- **CRDAYS = commuter train**

IF Q5 MODE = bus, Metrorail train, or commuter train, DO NOT SHOW RESPONSES 1, 2 OR 9 ON THE SCREEN – SHOW ONLY 3, 4, 5, 6, 7, 8, 19

IF MORE THAN ONE OF THESE Q5 MODES, SELECT MODE WITH GREATEST NUMBER OF DAYS FOR Q15-Q16. IF TIE, SELECT MODE IN THIS PRIORITY ORDER: 5 (VANPOOL), 4 (CARPOOL), 8 (COMMUTER TRAIN), 7 (METRORAIL), 6 (BUS). (NOTE, DO NOT SELECT Q5 MODES DRIVE ALONE, TELEWORK, COMPRESSED SCHEDULE, BICYCLE, OR WALKING FOR Q15-Q16).

IF Q14 = 2, ASK BEFORE Q15, "On days you are not the driver of the carpool or vanpool, …"

15 How do you get from home to where you meet your [**Q5 MODE: vanpool, carpool, bus, Metrorail train, commuter train**]?

1 Picked up at home by car/vanpool (or carl/vanpool leaves from my home) **(SKIP TO Q20)**
2 Drive alone to driver's home or drive alone to passenger's home
3 Drive to a central location, like park & ride
4 Dropped off (including by household member)
5 Bicycle (personal bike or Capital Bikeshare bike)
6 Walk
7 Bus/transit
8 Taxi, Uber, Lyft
9 I am always the driver of carpool/vanpool **(SKIP TO Q20)**
19 other (SPECIFY) _____

16 How many miles is it one way from your home to where you meet your [**Q5 MODE: vanpool, carpool, commuter train, Metrorail train, bus**]?

_____ miles **(ALLOW ONE DECIMAL)**
999 Question left blank

CHANGES

[PROGRAMMER NOTE: Tests for travel changes applicants might have made. Changes are examined hierarchically (mode changes first, frequency changes next, then occupancy changes)]
NOTE: Q20 – Q22 ARE MANDATORY QUESTIONS; "Left blank" is not a valid option for these questions.

20 The next few questions ask about changes you might have made in your travel to work since you requested or obtained commute information or assistance. Since that time, did you make any of the following changes in how you travel to or from work, even if the change was only temporary? **(ALLOW MULTIPLES FOR 1-9, DON'T ALLOW MULTIPLES WITH 90)**

1 Started carpooling, joined or created a new carpool, started slugging
2 Started vanpooling, joined or created a new vanpool
3 Started riding a bus
4 Started riding Metrorail
5 Started riding MARC, VRE, or Amtrak
6 Started bicycling to work (entire trip or longest distance part of trip)
7 Started walking to work (entire trip or longest distance part of trip)
8 Started teleworking at least one day per week
9 Started working a compressed work schedule
90 Did not make any of these changes

21 Since you requested or obtained assistance, did you **increase** the number of days per week that you used any of the following types of transportation for your trip to work, again, even if only temporarily?**(ALLOW MULTIPLES FOR 1-8, DON'T ALLOW MULTIPLES WITH 90)**

1 Carpool, slug / casual carpool
2 Vanpool
3 Bus
4 Metrorail
5 MARC, VRE, or Amtrak
6 Bicycle (entire trip or longest distance part of trip)
7 Walking (entire trip or longest distance part of trip)
8 Telework days
90 No, didn't increase days using these types of transportation

22 Did you try any other type of transportation to get to work, even if only once, since you requested or obtained assistance from Commuter Connections? **(ALLOW MULTIPLES FOR 1-9, DON'T ALLOW MULTIPLES WITH 90)**

1 Tried carpooling, slugging / casual carpooling
2 Tried vanpooling
3 Tried bus
4 Tried Metrorail
5 Tried MARC, VRE, AMTRAK
6 Tried bicycling
7 Tried walking
8 Tried teleworking
9 Tried driving alone, started driving alone
90 No, did not make any of these changes

Q23 - DEFINE INITIAL MODE CHANGES – AUTOCODE ONLY – MULTIPLE RESPONSE

REVIEW Q20, Q21, Q22, CODE ALL CHANGES AS FOLLOWS:

IF (Q20 = ONLY 9 OR 90) AND Q21 = 90 AND (Q22 = ONLY 9 OR 90), AUTOCODE Q23 = 90

IF Q20 = 1 OR Q21 = 1 OR Q22 = 1 AND CPDAYS > 0, Q23 = 1 (Continued carpool)
IF Q20 = 2 OR Q21 = 2 OR Q22 = 2 AND VPDAYS > 0, Q23 = 2 (Continued vanpool)
IF Q20 = 3 OR Q21 = 3 OR Q22 = 3 AND BUDAYS > 0, Q23 = 3 (Continued bus)
IF Q20 = 4 OR Q21 = 4 OR Q22 = 4 AND MRDAYS > 0, Q23 = 4 (Continued Metrorail)
IF Q20 = 5 OR Q21 = 5 OR Q22 = 5 AND CRDAYS > 0, Q23 = 5 (Continued commuter train)
IF Q20 = 6 OR Q21 = 6 OR Q22 = 6 AND BKDAYS > 0, Q23 = 6 (Continued bicycle)
IF Q20 = 7 OR Q21 = 7 OR Q22 = 7 AND WKDAYS > 0, Q23 = 7 (Continued walking)
IF Q20 = 8 OR Q21 = 8 OR Q22 = 8 AND TWDAYS > 0, Q23 = 8 (Continued telework)

IF Q20 = 1 OR Q21 = 1 OR Q22 = 1 AND CPDAYS = 0, Q23 = 11 (Temporary carpool)
IF Q20 = 2 OR Q21 = 2 OR Q22 = 2 AND VPDAYS = 0, Q23 = 12 (Temporary vanpool)
IF Q20 = 3 OR Q21 = 3 OR Q22 = 3 AND BUDAYS = 0, Q23 = 13 (Temporary bus)
IF Q20 = 4 OR Q21 = 4 OR Q22 = 4 AND MRDAYS = 0, Q23 = 14 (Temporary Metrorail)
IF Q20 = 5 OR Q21 = 5 OR Q22 = 5 AND CRDAYS = 0, Q23 = 15 (Temporary commuter train)
IF Q20 = 6 OR Q21 = 6 OR Q22 = 6 AND BKDAYS = 0, Q23 = 16 (Temporary bicycle)
IF Q20 = 7 OR Q21 = 7 OR Q22 = 7 AND WKDAYS = 0, Q23 = 17 (Temporary walking)
IF Q20 = 8 OR Q21 = 8 OR Q22 = 8 AND TWDAYS = 0, Q23 = 18 (Temporary telework)

1 Continued carpool
2 Continued vanpool
3 Continued bus
4 Continued Metrorail
5 Continued commuter train
6 Continued bicycle
7 Continued walking
8 Continued telework

11 Temporary carpool
12 Temporary vanpool
13 Temporary bus
14 Temporary Metrorail
15 Temporary commuter train
16 Temporary bicycle
17 Temporary walking
18 Temporary telework

90 No mode change

BRANCHING INSTRUCTIONS

IF Q23 = 90 (NO MODE CHANGE), SKIP TO Q26
IF Q23 = ONLY RESPONSES 1-8 (continued mode change), SKIP TO Q26

IF Q23 = ANY OF 11-18 (temporary mode change), CONTINUE WITH Q24. ASK Q24 FOR EACH TEMPORARY MODES 11-18 CODED IN Q23.

NOTE: IF THEY APPLY TO THE RESPONDENT Q24 – Q25 ARE MANDATORY QUESTIONS; "Left blank" is not a valid option for these questions.

24 You indicated you made a change to a new type of transportation that you don't typically use now to get to work. Was this a temporary change or do you still use it for your commute now, even if only occasionally?

LIST ALL TEMPORARY MODES (11-18) CHECKED/CODED IN Q23 – DO NOT INCLUDE ANY CONTINUED MODE CHECKED IN Q23 (responses 1-8)

	Type of Transportation	(1) **Temporary Change**	(2) **Still use - less than 1 day per week**	(3) **Still use - 1 or more days per week**
1	Carpool	_____	_____	_____
2	Vanpool	_____	_____	_____
3	Bus	_____	_____	_____
4	Metrorail	_____	_____	_____
5	Commuter train (MARC, VRE, Amtrak)	_____	_____	_____
6	Bicycle	_____	_____	_____
7	Walking	_____	_____	_____
8	Telework	_____	_____	_____

IF Q24 = RESPONSE 1 (temporary change) FOR ANY MODE, ASK Q25. REPEAT Q25 FOR EACH TEMPORARY MODE
IF Q24 = ONLY RESPONSES 2 OR 3 (still use) SKIP TO Q26

25 How long did this temporary change to [**Q24 MODE: carpool, vanpool, bus, Metrorail, commuter train, bicycle, walking, telework]** last?

1 Less than one week
2 1 to 3 weeks
3 4 to 7 weeks
4 8 to 11 weeks
5 12 weeks or more (3 or more months)
9 Don't recall

NOTE: Q26 IS MANDATORY QUESTION; "Left blank" is not a valid option.

26 Finally, did you add another person or replace a person in an existing carpool or vanpool?

1 Yes, added or replaced person in a carpool
2 Yes, added or replaced person in a vanpool
90 No

27 CHECK FOR OCCUPANCY CHANGES FROM Q26 – AUTOCODE ONLY-ONE RESPONSE ONLY

IF Q26 = 1 AND CPDAYS > 0, Q27 = 1 (Continued carpool)
IF Q26 = 2 AND VPDAYS > 0, Q27 = 2 (Continued vanpool)

IF Q26 = 1 AND CPDAYS = 0, Q27 = 3 (Temporary carpool)
IF Q26 = 2 AND VPDAYS = 0, Q27 = 4 (Temporary vanpool)

IF Q26 = 90, Q27 = 9 (No occupancy change)

1 Continued carpool occupancy
2 Continued vanpool occupancy

3 Temporary carpool occupancy
4 Temporary vanpool occupancy

9 No occupancy change

Q28 ALL CHANGES – AUTOCODE ONLY – ALLOW MULTIPLE RESPONSE

REVIEW Q23, Q24, Q25, Q27, CODE ALL CHANGES AS FOLLOWS:

IF Q23 = 90 AND Q27 = 9, AUTOCODE Q28 = 90

IF Q23 = 1, Q28 = 1 (Continued carpool)
IF Q23 = 2, Q28 = 2 (Continued vanpool)
IF Q23 = 3, Q28 = 3 (Continued bus)
IF Q23 = 4, Q28 = 4 (Continued Metrorail)
IF Q23 = 5, Q28 = 5 (Continued commuter train)
IF Q23 = 6, Q28 = 6 (Continued bicycle)
IF Q23 = 7, Q28 = 7 (Continued walking)
IF Q23 = 8, Q28 = 8 (Continued telework)

IF Q24 = 1 FOR carpool AND Q25 = 2-5 OR 9 FOR carpool, Q28 = 11 (Temporary carpool)
IF Q24 = 1 FOR vanpool AND Q25 = 2-5 OR 9 FOR vanpool, Q28 = 12 (Temporary vanpool)
IF Q24 = 1 FOR bus AND Q25 = 2-5 OR 9 FOR bus, Q28 = 13 (Temporary bus)
IF Q24 = 1 FOR Metrorail AND Q25 = 2-5 OR 9 FOR Metrorail, Q28 = 14 (Temporary Metrorail)
IF Q24 = 1 FOR commuter rail AND Q25 = 2-5 OR 9 FOR commuter rail, Q28 = 15 (Temporary commuter train)
IF Q24 = 1 FOR bicycle AND Q25 = 2-5 OR 9 FOR bicycle, Q28 = 16 (Temporary bicycle)
IF Q24 = 1 FOR walking AND Q25 = 2-5 OR 9 FOR walking, Q28 = 17 (Temporary walking)
IF Q24 = 1 FOR telework AND Q25 = 2-5 OR 9 FOR telework, Q28 = 18 (Temporary telework)

IF Q24 = 2 or 3 FOR carpool, Q28 = 21 (Occasional carpool)
IF Q24 = 2 or 3 FOR vanpool, Q28 = 22 (Occasional vanpool)
IF Q24 = 2 or 3 FOR bus, Q28 = 23 (Occasional bus)
IF Q24 = 2 or 3 FOR Metrorail, Q28 = 24 (Occasional Metrorail)
IF Q24 = 2 or 3 FOR commuter rail, Q28 = 25 (Occasional commuter train)
IF Q24 = 2 or 3 FOR bicycle, Q28 = 26 (Occasional bicycle)
IF Q24 = 2 or 3 FOR walking, Q28 = 27 (Occasional walking)
IF Q24 = 2 or 3 FOR telework, Q28 = 28 (Occasional telework)

IF Q24 = 1 FOR carpool AND Q25 = 1 FOR carpool, Q28 = 31 (One-time carpool)
IF Q24 = 1 FOR vanpool AND Q25 = 1 FOR vanpool, Q28 = 32 (One-time vanpool)
IF Q24 = 1 FOR bus AND Q25 = 1 FOR bus, Q28 = 33 (One-time bus)
IF Q24 = 1 FOR Metrorail AND Q25 = 1 FOR Metrorail, Q28 = 34 (One-time Metrorail)
IF Q24 = 1 FOR commuter rail AND Q25 = 1 FOR commuter rail, Q28 = 35 (One-time commuter train)
IF Q24 = 1 FOR bicycle AND Q25 = 1 FOR bicycle, Q28 = 36 (One-time bicycle)
IF Q24 = 1 FOR walking AND Q25 = 1 FOR walking, Q28 = 37 (One-time walking)
IF Q24 = 1 FOR telework AND Q25 = 1 FOR telework, Q28 = 38 (One-time telework)

IF Q27 = 1 OR 2, Q28 = 9 (Continued occupancy)
IF Q27 = 3 OR 4, Q28 = 19 (Temporary occupancy)

1 Continued carpool
2 Continued vanpool
3 Continued bus
4 Continued Metrorail
5 Continued commuter train
6 Continued bicycle
7 Continued walking
8 Continued telework
9 Continued occupancy

11 Temporary carpool
12 Temporary vanpool
13 Temporary bus
14 Temporary Metrorail
15 Temporary commuter train
16 Temporary bicycle
17 Temporary walking
18 Temporary telework
19 Temporary occupancy

21 Occasional carpool
22 Occasional vanpool
23 Occasional bus
24 Occasional Metrorail
25 Occasional commuter train
26 Occasional bicycle
27 Occasional walking
28 Occasional telework

31 One-time carpool
32 One-time vanpool
33 One-time bus
34 One-time Metrorail
35 One-time commuter train
36 One-time bicycle
37 One-time walking
38 One-time telework

90 No change

Q30 – DEFINE FINAL CHANGE – AUTOCODE ONLY – ONE RESPONSE ONLY

SELECT ONE CHANGE FROM Q28 LIST AS FINAL CHANGE: SET WITH THIS PRIORITY

Continued Mode Change

IF Q28 = ANY OF 1-8 (Continued mode change), SET Q30 = Q28 CHANGE 1-8 WITH MOST Q5 DAYS. IF TIE FOR MOST DAYS, SELECT CHANGE USING THE FOLLOWING HIERARCHY: 2 (Continued vanpool), 1 (Continued carpool), 4 (Continued Metrorail), 3 (Continued bus), 5 (Continued commuter rail), 6 (Continued bicycle), 7 (Continued walking), 8 (Continued telework)

Continued Occupancy Change

IF Q28 NE ANY OF 1-8, BUT Q28 = 9 (Continued occupancy), SET Q30 = 9

Temporary Change

IF Q28 NE ANY OF 1-9, BUT Q28 = ANY OF 11-18 (Temporary mode change), SET Q30 = Q28 CHANGE 11-18 WITH LONGEST Q25 DURATION. IF TIE FOR LONGEST DURATION, SELECT CHANGE USING THE FOLLOWING HIERARCHY: 12 (Temporary vanpool), 11 (Temporary carpool), 14 (Temporary Metrorail), 13 (Temporary bus), 15 (Temporary commuter rail), 16 (Temporary bicycle), 17 (Temporary walking), 18 (Temporary telework)

Temporary Occupancy Change

IF Q28 NE ANY OF 1-18, BUT Q28 = 19 (Temp occupancy), SET Q30 = 19

Occasional Change

IF Q28 NE ANY OF 1-19 BUT Q28 = ANY OF 21-28, SET Q30 = Q28 CHANGE 21-28 USING THE FOLLOWING HIERARCHY: 22 (Occasional vanpool), 21 (Occasional carpool), 24 (Occasional Metrorail), 23 (Occasional bus), 25 (Occasional commuter rail), 26 (Occasional bicycle), 27 (Occasional walking), 28 (Occasional telework)

One-time Change

IF Q28 NE ANY OF 1-28 BUT Q28 = ANY OF 31-38, SET Q30 = Q28 CHANGE 31-38 USING THE FOLLOWING HIERARCHY: 32 (OT vanpool), 31 (OT carpool), 34 (OT Metrorail), 33 (OT bus), 35 (OT commuter rail), 36 (OT bicycle), 37 (OT walking), 38 (OT telework).

IF Q28 = 90, SET Q30 = 90

1 Continued carpool
2 Continued vanpool
3 Continued bus
4 Continued Metrorail
5 Continued commuter train
6 Continued bicycle
7 Continued walking
8 Continued telework
9 Continued occupancy

11 Temporary carpool
12 Temporary vanpool
13 Temporary bus
14 Temporary Metrorail
15 Temporary commuter train
16 Temporary bicycle
17 Temporary walking
18 Temporary telework
19 Temporary occupancy

21 Occasional carpool
22 Occasional vanpool
23 Occasional bus
24 Occasional Metrorail
25 Occasional commuter train
26 Occasional bicycle
27 Occasional walking
28 Occasional telework

31 One-time carpool
32 One-time vanpool
33 One-time bus
34 One-time Metrorail
35 One-time commuter train
36 One-time bicycle
37 One-time walking
38 One-time telework

90 No change

Q30 MODE – DEFINE MODE TO INSERT IN NEXT SECTION – AUTOCODE ONLY – ONE RESPONSE ONLY

SELECT ONE MODE FROM Q30 LIST: SET WITH THIS PRIORITY

IF Q30 = 1, 11, 21, OR 31, Q30 MODE = 1 carpool
IF Q30 = 2, 12, 22, OR 32, Q30 MODE = 2 vanpool
IF Q30 = 3, 13, 23, OR 33, Q30 MODE = 3 bus
IF Q30 = 4, 14, 24, OR 34, Q30 MODE = 4 Metrorail
IF Q30 = 5, 15, 25, OR 35, Q30 MODE = 5 commuter train
IF Q30 = 6, 16, 26, OR 36, Q30 MODE = 6 bicycle
IF Q30 = 7, 17, 27, OR 37, Q30 MODE = 7 walking
IF Q30 = 8, 18, 28, OR 38, Q30 MODE = 8 telework

IF Q30 = 9, 19, AND Q27 = 1 OR 3, Q30 MODE = 1 carpool
IF Q30 = 9, 19, AND Q27 = 2 OR 4, Q30 MODE = 2 vanpool

IF Q30 = 90, Q30 MODE = 9 None

1 Carpool
2 Vanpool
3 Bus
4 Metrorail
5 Commuter train
6 Bicycle
7 Walking
8 Telework
9 None

Q31 CHANGE TYPE – AUTOCODE ONLY

IF Q30 = ANY OF 1 – 9, Q31 = 1 (Continued change)
IF Q30 = ANY OF 11 – 19, Q31 = 2 (Temporary change)
IF Q30 = ANY OF 21 – 28, Q31 = 3 (Occasional change)
IF Q30 = ANY OF 31 – 38, Q31 = 4 (One-time change)
IF Q30 = 90, Q31 = 9 (No change)

1 Continued change
2 Temporary change
3 Occasional change
4 One-time change
9 No change

BRANCHING INSTRUCTIONS – QUESTIONS REGARDING MODE BEFORE CHANGE

IF Q31 = 9 (no change), SKIP TO Q60
IF Q31 = 1 (continued change), SKIP TO INSTRUCTIONS BEFORE Q50
IF Q31 = 3 (occasional change), SKIP TO INSTRUCTIONS BEFORE Q50
IF Q31 = 4 (one-time change), SKIP TO Q60

Autofill temporary travel grid for temporary changers who did not change mode or frequency
IF Q30 = 19 (occupancy change with no mode change), AUTOFILL Q41 = Q1, AUTOFILL Q43 = Q5, THEN SKIP TO INSTRUCTIONS BEFORE Q46.

IF Q30 = 11, CONTINUE WITH Q41, INSERT 'carpool' AS Q30 MODE
IF Q30 = 12, CONTINUE WITH Q41, INSERT 'vanpool' AS Q30 MODE
IF Q30 = 13, CONTINUE WITH Q41, INSERT 'bus' AS Q30 MODE
IF Q30 = 14, CONTINUE WITH Q41, INSERT 'Metrorail' AS Q30 MODE
IF Q30 = 15, CONTINUE WITH Q41, INSERT 'commuter train' AS Q30 MODE
IF Q30 = 16, CONTINUE WITH Q41, INSERT 'bicycle' AS Q30 MODE
IF Q30 = 17, CONTINUE WITH Q41, INSERT 'walking' AS Q30 MODE
IF Q30 = 18, CONTINUE WITH Q41, INSERT 'telework' AS Q30 MODE

TRAVEL DURING TEMPORARY CHANGE

41 During the time of this temporary change to [**Q30 MODE: carpool, vanpool, bus, Metrorail, commuter train, bicycle, walking, telework**], how many weekdays, Monday through Friday, were you assigned to work in a typical week?

1 1 day per week **(SKIP TO Q43)**
2 2 days per week **(SKIP TO Q43)**
3 3 days per week
4 4 days per week
5 5 days per week-**(SKIP TO Q43)**
9 Did not work then **(SKIP TO Q60)**

IF Q41 = 3 or 4, ASK Q42

42 At that time, did you work a compressed work schedule, for example, four-ten hour days per week or did you work a part-time schedule?

1 Worked compressed work schedule
2 Worked part-time
3 Other (specify) _____
9 Left blank

43 During the time of your temporary change to [Q30 MODE: carpool, vanpool, bus, Metrorail, commuter train, bicycle, walking, telework], how did you get to work? Enter the number of days you typically used each of the listed types of transportation. If you used more than one type on a single day (e.g., walked to the bus stop, then rode the bus), count only the type you used for the **longest distance part** of your trip.

IF Q4a = 3, ALSO SHOW: "For days that you were on business / work travel, please report the type of transportation you would use to get to work if you worked at your usual work location."

SHOW ALL RESPONDENTS: Indicate also how many weekdays you did NOT travel to your usual work location and the reasons (e.g., regular day off, telework, compressed work schedule day off) for not traveling to work.

PROGRAMMER NOTES:
CHECK SUM OF DAYS. IF TOTAL OF 1-18 IS LESS THAN 5, SHOW MESSAGE: "Please report for all days Monday – Friday, including days you did not work." **IF TOTAL OF 1-18 IS GREATER THAN 5, SHOW MESSAGE: "**You've reported more than five days. Please report only for Monday – Friday."

IF Q42 = 1 AND RESPONDENT DOES NOT REPORT "CWS day off" (RESPONSE 1), SHOW MESSAGE: "You said you typically worked a compressed work schedule. How many compressed schedule days did you typically have off during the time of this temporary change." PERMIT "0" AS THE RESPONSE.

IF Q4 = 3, 4, 5, 6, OR 7 AND RESPONDENT DOES NOT CHECK "Telecommute" (RESPONSE 2), SHOW MESSAGE: "You said you typically telework. How many days did you telework during the time of this temporary change." ACCEPT '"0" AS RESPONSE.

Type of Transportation	Number of Days Used (0 to 5)
Days you traveled to your usual work location	
3 Drove alone in a car, truck, van, or SUV	
4 Motorcycle	
5 Carpool, including carpool w/family member, dropped off (ride or drive with others in a car, truck, van, or SUV)	
6 Casual carpool (slugging)	
7 Vanpool	
8 N/A – DO NOT SHOW ON SCREEN	
9 Bus (public bus or shuttle, buspool, express bus)	
10 Metrorail	
11 MARC (MD Commuter Rail)	
12 VRE	
13 AMTRAK / other train	
14 Bicycle (entire trip or longest distance part of trip from home to work)	
15 Walk (entire trip or longest distance part of trip from home to work)	
16 Taxi, Uber, Lyft	
Days you did not travel to your usual work location	
1 Compressed work schedule day off	
2 Telecommute / telework all day	
17 Regular day off	
18 Other (describe)_____	
Total Days (**DO NOT SHOW THIS LINE ON SCREEN**)	Sum of 1-18

DEFINE Q43 MODES USED (ALLOW MULTIPLE MODES):

D_CWDAYS = SUM OF Q43, RESPONSE 1
D_TWDAYS = SUM OF Q43, RESPONSE 2
D_DADAYS = SUM OF Q43, RESPONSE 3, 4, 16
D_CPDAYS = SUM OF Q43, RESPONSE 5, 6
D_VPDAYS = SUM OF Q43, RESPONSE 7
D_BUDAYS = SUM OF Q43, RESPONSE 9
D_MRDAYS = SUM OF Q43, RESPONSE 10
D_CRDAYS = SUM OF Q43, RESPONSE 11, 12, 13
D_BKDAYS = SUM OF Q43, RESPONSE 14
D_WKDAYS = SUM OF Q43, RESPONSE 15

IF D_CWDAYS > 0, Q43 MODE = COMPRESSED SCHEDULE
IF D_TWDAYS > 0, Q43 MODE = TELEWORK
IF D_DADAYS > 0, Q43 MODE = DRIVE ALONE
IF D_CPDAYS > 0, Q43 MODE = CARPOOL
IF D_VPDAYS > 0, Q43 MODE = VANPOOL
IF D_BUDAYS > 0, Q43 MODE = BUS
IF D_MRDAYS > 0, Q43 MODE = METRORAIL
IF D_CRDAYS > 0, Q43 MODE = COMMUTER TRAIN
IF D_BKDAYS > 0, Q43 MODE = BICYCLE
IF D_WKDAYS > 0, Q43 MODE = WALKING

DEFINE DALTDAYS (days using alternative modes during time of temporary change)

DEFINE DALTDAYS = TOTAL Q43 DAYS USING MODES 5, 6, 7, 9, 10, 11, 12, 13, 14, 15 (= D_CPDAYS + D_VPDAYS + D_BUDAYS + D_MRDAYS + D_CRDAYS + D_BKDAYS + D_WKDAYS)

CHECK FOR TEMPORARY USE OF MODES IN TEMPORARY CHANGES

IF Q30 = 11 AND D_CPDAYS = 0, ASK Q44, INSERTING "CARPOOL" AS Q43 MODE
IF Q30 = 12 AND D_VPDAYS = 0, ASK Q44, INSERTING "VANPOOL" AS Q43 MODE
IF Q30 = 13 AND D_BUDAYS = 0, ASK Q44, INSERTING "BUS" AS Q43 MODE
IF Q30 = 14 AND D_MRDAYS = 0, ASK Q44, INSERTING "METRORAIL" AS Q43 MODE
IF Q30 = 15 AND D_CRDAYS = 0, ASK Q44, INSERTING "COMMUTER TRAIN" AS Q43 MODE
IF Q30 = 16 AND D_BKDAYS = 0, ASK Q44, INSERTING "BICYCLE" AS Q43 MODE
IF Q30 = 17 AND D_WKDAYS = 0, ASK Q44, INSERTING "WALKING" AS Q43 MODE
IF Q30 = 18 AND D_TWDAYS = 0, ASK Q44, INSERTING "TELEWORK" AS Q43MODE

OTHERWISE, SKIP TO INSTRUCTIONS BEFORE Q46

45 Earlier you said you made a temporary change to (**Q43 MODE: carpool, vanpool, bus, Metrorail, commuter train, bicycle, walking, telework**), but you haven't mentioned using this type of transportation for your commute during that time. About how many days per week did you typically use (**Q43 MODE: carpool, vanpool, bus, Metrorail, commuter train, bicycle, walking, telework**) then to commute?

0 0
1 1
2 2
3 3
4 4
5 5
8 Only used occasionally, use less than one time per week

IF Q45 = 0, SKIP TO Q60

INSTRUCTIONS BEFORE Q46
IF D_CPDAYS = 0 AND D_VPDAYS = 0, SKIP TO INSTRUCTIONS BEFORE Q50

IF Q30 = 19 AND Q27 = 3, ASK Q46, INSERT "carpool" AS Q43 MODE
IF Q30 = 19 AND Q27 = 4, ASK Q46, INSERT "vanpool" AS Q43 MODE

IF Q30 NE 19 AND D_CPDAYS > D_VPDAYS, ASK Q46, INSERT "carpool" AS Q43 MODE
IF Q30 NE 19 AND D_VPDAYS > D_CPDAYS, ASK Q46, INSERT "vanpool" AS Q43 MODE
IF Q30 NE 19 AND D_CPDAYS = D_VPDAYS, ASK Q46, INSERT "vanpool" AS Q43 MODE

46 Including yourself, how many people were in your [**Q43 MODE, carpool, vanpool**] during that time?

_____

TRAVEL BEFORE MAKING CHANGE

INSTRUCTIONS BEFORE Q50
IF Q30 = 9 OR 19 (occupancy change with no mode change), AUTOFILL Q50 = Q1, AUTOFILL Q52 = Q5, THEN SKIP TO INSTRUCTIONS BEFORE Q53

IF Q30 = 1, 11, OR 21, CONTINUE WITH Q50, INSERT 'carpool' AS Q30 MODE
IF Q30 = 2, 12, OR 22, CONTINUE WITH Q50, INSERT 'vanpool' AS Q30 MODE
IF Q30 = 3, 13, OR 23, CONTINUE WITH Q50, INSERT 'bus' AS Q30 MODE
IF Q30 = 4, 14, OR 24, CONTINUE WITH Q50, INSERT 'Metrorail' AS Q30 MODE
IF Q30 = 5, 15, OR 25, CONTINUE WITH Q50, INSERT 'commuter train' AS Q30 MODE
IF Q30 = 6, 16, OR 26, CONTINUE WITH Q50, INSERT 'bicycle' AS Q30 MODE
IF Q30 = 7, 17, OR 27, CONTINUE WITH Q50, INSERT 'walking' AS Q30 MODE
IF Q30 = 8, 18, OR 28, CONTINUE WITH Q50, INSERT 'telework' AS Q30 MODE

50 Think back to the time before you made this change to [**Q30 MODE: carpool, vanpool, bus, Metrorail, commuter train, bicycle, walking, telework**]. At that time, how many weekdays, Monday through Friday, were you assigned to work in a typical week?

1 1 day per week **(SKIP TO Q52)**
2 2 days per week **(SKIP TO Q52)**
3 3 days per week
4 4 days per week
5 5 days per week **(SKIP TO Q52)**
_____ Did not work then **(SKIP TO Q60)**

IF Q50 = 3 or 4, ASK Q51

51 At that time, did you work a compressed work schedule, for example, four-ten hour days per week, or did you work a part-time schedule?

1 worked compressed work schedule
2 worked part-time
3 Other _____
9 Left blank

52 Before you made the change to [**Q30 MODE, carpool, vanpool, bus, Metrorail, commuter train, bicycle, walking, telework**], how did you get to work? Enter the number of weekdays, Monday-Friday, that you typically used each of the listed types of transportation. If you used more than one type on a single day (e.g., walked to the bus stop, then rode the bus), count only the type you used for the **longest distance part** of your trip.

IF Q4a = 3, ALSO SHOW: "For days that you were on business / work travel, please report the type of transportation you would use to get to work if you worked at your usual work location."

SHOW ALL RESPONDENTS: Indicate also how many weekdays you did NOT travel to your usual work location and the reasons (e.g., regular day off, telework, compressed work schedule day off) for not traveling to work.

PROGRAMMER NOTES:
CHECK SUM OF DAYS. IF TOTAL OF 1-18 IS LESS THAN 5, SHOW MESSAGE: "Please report for all days Monday – Friday, including days you did not work." **IF TOTAL OF 1-18 IS GREATER THAN 5, SHOW MESSAGE:** "You've reported more than five days. Please report only for Monday – Friday."

IF Q51 = 1 AND RESPONDENT DOES NOT REPORT "CWS day off" (RESPONSE 1), SHOW MESSAGE: "You said you typically worked a compressed work schedule. How many compressed schedule days did you typically have off before you made this change." PERMIT "0" AS THE RESPONSE.

IF Q4 = 3, 4, 5, 6, OR 7 AND RESPONDENT DOES NOT CHECK "Telecommute" (RESPONSE 2), SHOW MESSAGE: "You said you typically telework. How many days per week did you telework before you made this change" **PERMIT "0" AS THE RESPONSE**.

Type of Transportation	**Number of Days Used (0 to 5)**
Days you traveled to your usual work location	
3 Drove alone in a car, truck, van, or SUV	
4 Motorcycle	
5 Carpool, including carpool w/family member, dropped off (ride or drive with others in a car, truck, van, or SUV)	
6 Casual carpool (slugging)	
7 Vanpool	
8 NA – DO NOT SHOW ON SCREEN	
9 Bus (public bus or shuttle, buspool, express bus)	
10 Metrorail	
11 MARC (MD Commuter Rail)	
12 VRE	
13 AMTRAK / other train	
14 Bicycle (entire trip or longest distance part of trip from home to work)	
15 Walk (entire trip from home to work)	
16 Taxi, Uber, Lyft	
Days you did not travel to your usual work location	
1 Compressed work schedule day off	
2 Telecommute / telework all day	
17 Regular day off	
18 Other (describe)_____	
Total Days (**DO NOT SHOW THIS LINE ON SCREEN**)	Sum of 1-18

DEFINE Q52 MODES USED (ALLOW MULTIPLE MODES):

P_CWDAYS = SUM OF Q52, RESPONSE 1
P_TWDAYS = SUM OF Q52, RESPONSE 2
P_DADAYS = SUM OF Q52, RESPONSE 3, 4, 16
P_CPDAYS = SUM OF Q52, RESPONSE 5, 6
P_VPDAYS = SUM OF Q52, RESPONSE 7
P_BUDAYS = SUM OF Q52, RESPONSE 9
P_MRDAYS = SUM OF Q52, RESPONSE 10
P_CRDAYS = SUM OF Q52, RESPONSE 11, 12, 13
P_BKDAYS = SUM OF Q52, RESPONSE 14
P_WKDAYS = SUM OF Q52, RESPONSE 15

IF P_CWDAYS > 0, Q52 MODE = COMPRESSED SCHEDULE
IF P_TWDAYS > 0, Q52 MODE = TELEWORK
IF P_DADAYS > 0, Q52 MODE = DRIVE ALONE
IF P_CPDAYS > 0, Q52 MODE = CARPOOL
IF P_VPDAYS > 0, Q52 MODE = VANPOOL
IF P_BUDAYS > 0, Q52 MODE = BUS
IF P_MRDAYS > 0, Q52 MODE = METRORAIL
IF P_CRDAYS > 0, Q52 MODE = COMMUTER TRAIN
IF P_BKDAYS > 0, Q52 MODE = BICYCLE
IF P_WKDAYS > 0, Q52 MODE = WALKING

DEFINE PALTDAYS (days using alternative modes before change)

DEFINE PALTDAYS = TOTAL Q52 DAYS USING MODES 5, 6, 7, 9, 10, 11, 12, 13, 14, 15 (= P_CPDAYS + P_VPDAYS + P_BUDAYS + P_MRDAYS + P_CRDAYS + P_BKDAYS + P_WKDAYS)

INSTRUCTIONS BEFORE Q53

IF P_CPDAYS = 0 AND P_VPDAYS = 0, SKIP TO Q54

IF Q30 = 9 AND Q27 = 1, ASK Q53, INSERT "carpool" AS Q52 MODE
IF Q30 = 9 AND Q27 = 2, ASK Q53, INSERT "vanpool" AS Q52 MODE

IF Q30 = 19 AND Q27 = 3, ASK Q53, INSERT "carpool" AS Q52 MODE
IF Q30 = 19 AND Q27 = 4, ASK Q53, INSERT "vanpool" AS Q52 MODE

IF Q30 NE 9 OR 19 AND P_CPDAYS > P_VPDAYS, ASK Q53, INSERT "carpool" AS Q52 MODE
IF Q30 NE 9 OR 19 AND P_VPDAYS > P_CPDAYS, ASK Q53, INSERT "vanpool" AS Q52 MODE
IF Q30 NE 9 OR 19 AND P_CPDAYS = P_VPDAYS, ASK Q53, INSERT "vanpool" AS Q52 MODE

53 Including yourself, how many people were in your [**Q52 MODE, carpool, vanpool**] at that time?

_____

54 What were the reasons that you made that change?

OPEN ENDED _____

(DO NOT SHOW THESE RESPONSES ON SCREEN) CODE OPEN-ENDED RESPONSES INTO THE FOLLOWING CATEGORIES IN POST PROCESSING – ACCEPT MULTIPLES

Personal changes or preferences

1 changed job, work hours, work location
2 save money
3 parking costs were too high
4 gas prices too high, save money on gas
5 no parking available at work
6 save time
7 moved to a different residence
8 reduce congestion/pollution
9 safety
10 no vehicle available, vehcle became unavailable
11 tired of driving
12 others doing it (friends, coworkers, other people, etc.)
13 carpool/vanpool didn't work out
14 avoid construction area

Commute program or services

15 SmarTrip, or other transit/vanpool discount
16 financial incentives
17 a new option became available
18 advertising
19 special program at work
20 pressure or encouragement from employer
21 use HOV lane
22 employer permitted telework

Commuter Connections information or services

23 Names and contact information for people you could contact to form a carpool or vanpool (matchlist)
24 Map showing home and work locations of people you could contact to form a carpool or vanpool
25 Carpool / vanpool rider bulletin board
26 Other carpool / vanpool information
27 Vanpooling assistance
28 HOV lane information
29 'Pool Rewards carpool/vanpool financial incentive
30 Transit schedule or route information
31 Transit fare information, SmarTrip
32 Park & Ride lot information
33 Telework information, telework center information
34 Bicycle to Work Guide, bicycling information
35 Online bicycle route planning
36 Guaranteed Ride Home information or trip
37 Special events information (e.g., Bike to Work Day, Car Free Day)
38 CarpoolNow mobile application (real-time ridematching)
39 Other (specify)

55 Did any of the information or assistance from Commuter Connections influence you or assist you to make the change?

SHOW RESPONSES 91 AND 98 ON SCREEN; ALSO SHOW "YES" WITH TEXT BOX FOR RESPONSE

90 Did not receive any services from Commuter Connections
91 No, services did not influence or assist
98 Don't know
99 Left blank

* Yes (please specify)
OPEN ENDED _____

(DO NOT SHOW THESE RESPONSES ON SCREEN) CODE OPEN-ENDED RESPONSES INTO THE FOLLOWING CATEGORIES IN POST PROCESSING – ACCEPT MULTIPLES

1 Names and contact information for people you could contact to form a carpool or vanpool (matchlist)
2 Map showing home and work locations of people you could contact to form a carpool or vanpool
3 Carpool / vanpool rider bulletin board
4 Other carpool / vanpool information
5 Vanpooling assistance
6 Transit schedule or route information
7 Transit fare information, SmarTrip
8 Park & Ride information
9 Guaranteed Ride Home information or trip
10 Telework information, telework center information
11 Bicycle to Work Guide, bicycling information
12 Online bicycle route planning
13 HOV lane information
14 'Pool Rewards carpool/vanpool financial incentive
15 Special events information (e.g., Bike to Work Day, Car Free Day)
16 CarpoolNow mobile application (real-time ridematching)
17 Other (specify)
90 Did not receive any services from Commuter Connections
99 Question left blank

56 Did any commute information, assistance, or benefits from your employer or another organization influence or assist you?

SHOW RESPONSES 90, 91 AND 98 ON SCREEN; ALSO SHOW "YES" WITH TEXT BOX FOR RESPONSE

90 Did not receive any services from employer or other organization
91 No, services did not influence or assist
98 Don't know
99 Left blank

* Yes (please specify)
OPEN ENDED _____

(DO NOT SHOW THESE RESPONSES ON SCREEN) CODE OPEN-ENDED RESPONSES INTO THE FOLLOWING CATEGORIES IN POST PROCESSING – ACCEPT MULTIPLES

1 Matchlist, contact info for potential carpool / vanpool partners
2 Map showing home and work locations of potential carpool / vanpool partners
3 Transit schedule or route information
4 Park & Ride information
5 Vanpooling assistance
6 Guaranteed Ride Home information or registration
7 GRH trip
8 Telecommuting information, telework center information
9 Bicycling map, bicycle route planning, bicycling information
10 HOV lane information
11 Discount / free transit pass / Smart Trip Card
12 Other cash incentive
13 Compressed work week/telecommute
14 Carpool/vanpool preferential parking
15 Parking fees
16 Carpool/vanpool discount parking fee
17 E-Z Pass subsidy
18 HOV lane info
19 Shuttle bus
20 Federal Tax Benefit / Commuter Choice Program
21 Referral to Commuter Connections
22 Telecommuting info
23 NuRide-carpool incentive

57 How important were economic reasons, such as saving money or reducing your gas expense, in motivating you to make the change, as compared to other reasons you mentioned?

1 Economic reasons were more important
2 Economic reasons were less important
3 Economic reasons were about the same importance
4 Economic reasons were my only influence
9 Don't know

IF Q31 = 1 OR 3, SKIP TO Q60
IF Q31 = 2, ASK Q58

58 What were the reasons you did not continue this change?

OPEN ENDED _____

(DO NOT SHOW THESE RESPONSE ON SCREEN) CODE OPEN-ENDED RESPONSES INTO THE FOLLOWING CATEGORIES IN POST PROCESSING – ACCEPT MULTIPLES

1 Too inconvenient
2 Cost too much
3 Took too much time
4 Safety concerns
5 Job changes - job, work site,
6 Need vehicle during or after work
7 Vehicle became unavailable/unreliable
8 Moved home location
9 Didn't like pool partners
10 New/changes in employer program
11 Bus or rail schedule or route change or schedule
12 Car became available
13 Other (Specify)
99 Left blank

AWARENESS

60 How did you learn about Commuter Connections and its programs and services?

OPEN ENDED _____

(DO NOT SHOW THESE RESPONSES ON SCREEN) CODE OPEN-ENDED RESPONSES INTO THE FOLLOWING CATEGORIES IN POST PROCESSING – ACCEPT MULTIPLES

1 Brochure/promo materials
2 Bus/train schedule
3 Bus/train sign
4 Direct mail/postcard from COG/CC
5 Employer/employer survey
6 Fair/on-site event
7 Government office
8 Highway sign
9 Internet
10 Newsletter
11 Newspaper (regional or local)
12 Other rideshare/transit organization
13 Radio
14 TV
15 Was/Is applicant
16 Word of mouth
17 Info Kiosk
18 Yellow Pages (One Book or Verizon)
19 Social media, Twitter, Facebook
29 Other
99 Left blank

61 Which of the following sources did you use to contact Commuter Connections for assistance? **(SHOW RESPONSES 1 – 9; ACCEPT MULTIPLES)**

1 Employer
2 Commuter Connections website on the Internet
3 Another Internet site
4 Commuter Connections telephone number (1-800-745-RIDE)
5 Commute assistance program operated by county or city
6 Transportation Management Association (TMA)
9 Other (please describe) _____

62 What prompted you to seek commute information or assistance from Commuter Connections at that time?

OPEN ENDED _____

(DO NOT SHOW THESE RESPONSES ON SCREEN) CODE OPEN-ENDED RESPONSES INTO THE FOLLOWING CATEGORIES IN POST PROCESSING – ACCEPT MULTIPLES

1 Save gas, gas prices too high, wanted to reduce gas expense
2 Didn't want to drive anymore/tired of driving
3 Traffic is bad, has gotten worse
4 Changed jobs, moved to a new work location
5 Moved to a new residence
6 Wanted to save money
7 Wanted to save time
8 Didn't have/don't have a place to park
9 Concerned about the environment
10 No vehicle available
11 Construction along my route to work
12 Avoid stress
13 In case of emergencies, wanted back-up transportation
14 Could receive financial incentive for transit, vanpool
15 Advertising, newspaper, billboard, flyer, social media
16 Employer program or service
17 Referral from family, friend, co-worker, word of mouth
18 Save wear and tear, reduce mileage on car
29 Other (SPECIFY) _____
99 Left blank

63 **COMMUTER CONNECTIONS SERVICES ACCESSED – AUTOCODE ONLY – ACCEPT MULTIPLE RESPONSES**

IF Q_S1 = 1, AUTOCODE Q63 = 1
IF Q_S1 = 2, AUTOCODE Q63 = 2
IF Q_S1 = 3, AUTOCODE Q63 = 3
IF Q_S1 = 4, AUTOCODE Q63 = 4
IF Q_S1 = 5, AUTOCODE Q63 = 5
IF Q_S1 = 6, AUTOCODE Q63 = 6
IF Q_S1 = 7, AUTOCODE Q63 = 7
IF Q_S1 = 8, AUTOCODE Q63 = 16

IF Q_S2 = 1, AUTOCODE Q63 = 8
IF Q_S2 = 2, AUTOCODE Q63 = 9
IF Q_S2 = 3, AUTOCODE Q63 = 10
IF Q_S2 = 4, AUTOCODE Q63 = 11
IF Q_S2 = 5, AUTOCODE Q63 = 12
IF Q_S2 = 6, AUTOCODE Q63 = 13
IF Q_S2 = 7, AUTOCODE Q63 = 14
IF Q_S2 = 8, AUTOCODE Q63 = 15

IF QS_1 = 90 OR 99 AND Q_S2 = 90 OR 99, AUTOCODE Q63 = 90

1 Names and contact information for people you could contact to form a carpool or vanpool (matchlist)
2 Map showing home and work locations of people you could contact to form a carpool or vanpool
3 Carpool / vanpool rider bulletin board
4 Other carpool / vanpool information
5 Vanpooling assistance
6 HOV lane information
7 'Pool Rewards carpool/vanpool financial incentive
8 Transit schedule or route information
9 Transit fare information, SmarTrip
10 Park & Ride lot information
11 Telework information, telework center information
12 Bicycle to Work Guide, bicycling information
13 Online bicycle route planning
14 Guaranteed Ride Home information or trip
15 Special events information (e.g., Bike to Work Day, Car Free Day)
16 CarpoolNow mobile application (real-time ridematching)
90 Did not receive any services from Commuter Connections

64 Does your employer offer any of the following commuter information, assistance, or transportation benefits? Check all that apply. **ALLOW MULTIPLES FOR RESPONSES 1-17. DO NOT ALLOW MULTIPLES WITH RESPONSE 90)**

1 Names and contact information (telephone, email, address) for people you could contact to form a carpool or vanpool (matchlist)
2 Carpool or vanpool information
3 Transit route or schedule information
4 Discounted or free transit pass, SmartBenefits
5 Financial incentive for employees who vanpool to work
6 Financial incentive for employees who carpool to work
7 Other cash incentive for commute cost
8 Guaranteed Ride Home in case of emergencies or unscheduled overtime
9 Compressed work schedule or telework
10 Preferential or special parking spaces for carpools or vanpools
11 Free onsite parking
12 Discounted parking fee for carpools and vanpools
13 E-Z Pass subsidy
14 Shuttle bus to Metrorail or bus stop
15 Federal Tax Benefit/ "Commuter Choice" program
16 Zipcar carshare service account
20 Bikeshare account
17 other (SPECIFY)
90 no, employer doesn't offer any of these services
99 Left blank

65 Did you access or receive any other transportation information, assistance, or benefits from a program or organization, other than from Commuter Connections or your employer?

SHOW RESPONSES 90 AND 98 ON SCREEN; ALSO SHOW "YES" WITH TEXT BOX FOR RESPONSE
90 Did not receive any other services
98 Don't know
99 Left blank

* Yes (please specify)
OPEN ENDED _____

(DO NOT SHOW THESE RESPONSES ON SCREEN) CODE OPEN-ENDED RESPONSES INTO THE FOLLOWING CATEGORIES IN POST PROCESSING – ACCEPT MULTIPLES

1 Names and contact information) for people you could contact to form a carpool or vanpool (matchlist)
2 Map showing home and work locations of people you could contact to form a carpool or vanpool
3 Guaranteed Ride Home
4 Transit route or schedule information
5 Discounted or free transit pass, SmartBenefits
6 Other cash incentives for commute cost
7 Telework information
8 HOV information
9 Park & Ride information
10 Vanpool assistance
11 Smart Tag / E-Z Pass info
12 Bicycle information
13 Referral to Commuter Connections
14 Carpool incentive
15 Other (SPECIFY) _____
90 Did not receive any services from another organization

Q66 RESPONDENT RECEIVED MATCHING INFO – AUTOCODE ONLY – ALLOW MULTIPLE RESPONSES

IF Q63 = 1, SET Q66 = 1 (Commuter Connections matchlist)
IF Q64 = 1, SET Q66 = 2 (other matchlist)
IF Q63 = 2, SET Q66 = 3 (map)
IF Q63 = 3, SET Q66 = 4 (bulletin board)
IF Q63 = 16, SET Q66 = 5 (CarpoolNow mobile app)
IF Q63 NE 1, 2, OR 3 AND Q64 NE 1 OR 2, SET Q66 = 9

1 Commuter Connections matchlist
2 Other matchlist
3 Map
4 Bulletin board
5 CarpoolNow mobile app
9 No matching info

INSTRUCTIONS BEFORE Q67 – BULLETIN BOARD
IF Q66 = 4 (USED CC BULLETIN BOARD), ASK Q67. OTHERWISE, SKIP TO INSTRUCTIONS BEFORE Q70

67 You said you used Commuter Connections' online carpool rider bulletin board. Did you post a rider wanted message or respond to a message posted by another commuter? **(ALLOW ONLY ONE RESPONSE)**

1 Posted a message
2 Responded to other commuters' messages **(SKIP TO Q69)**
3 Posted a message and responded to other commuters' messages
4 Did not post or respond to any messages **(SKIP TO INSTRUCTIONS BEFORE Q70)**
9 Don't remember **(SKIP TO INSTRUCTIONS BEFORE Q70)**

IF Q67 = 1 OR 3, ASK Q68

68 How many commuters responded to your rider wanted message?

1 None
2 1-2
3 3-5
4 6-10
5 More than 10
9 Don't remember/don't know

IF Q67 = 1 AND Q68 = 1, SKIP TO INSTRUCTIONS BEFORE Q70

69 Were any of the people you reached interested in forming a carpool or vanpool, if your travel destination and schedule were compatible? **(ALLOW ONE RESPONSE ONLY)**

1 Was not able to reach any of the people
2 At least one person was interested
3 At least one person was interested but schedules or destinations were not compatible
4 People were not interested
9 Don't remember/don't know

INSTRUCTIONS BEFORE Q70 - RIDEMATCH
IF Q66 = 1 OR 2 (RECEIVED RIDEMATCH), ASK Q70, OTHERWISE, SKIP TO INSTRUCTIONS BEFORE Q75

70 You said you obtained names of people you could contact to form a carpool or vanpool. How many names did you receive?

_____
99 Don't remember

IF Q70 = 0, SKIP TO INSTRUCTIONS BEFORE Q75, IF Q70 > 0, CONTINUE TO Q71

71 Did you try to contact any of these people?

1 Yes **(CONTINUE WITH Q72)**
2 No **(SKIP TO Q74)**

72 Were you able to reach any of the people named?

1 Yes
2 No
9 Don't remember/don't know

73 Were any of the people you reached interested in forming a carpool or vanpool, if your travel destination and schedule were compatible? **(ALLOW ONE RESPONSE ONLY)**

1 Was not able to reach any of the people
2 At least one person was interested
3 At least one person was interested but schedules or destinations were not compatible
4 People were not interested
9 Don't remember/don't know

SKIP TO INSTRUCTIONS BEFORE Q75

74 Why did you decide not to contact any of the people?

1 Haven't gotten around to it
2 Decided I didn't want to carpool/vanpool
3 Moved to a new residence
4 Changed jobs
5 Work hours were not compatible with mine
6 Work or home locations were not compatible with mine
7 Already found rideshare arrangement (carpool, vanpool, transit, bike, walk)
8 other (Specify) _____

INSTRUCTIONS BEFORE Q75 – CARPOOLNOW MOBILE APP
IF Q66 = 5 (USED CARPOOLNOW MOBILE APP), ASK Q75. OTHERWISE, SKIP TO INSTRUCTIONS BEFORE Q80

75 You said you used Commuter Connections' CapoolNow mobile application. How many times have you used the app?

1 1 time
2 2 to 4 times
3 5 or more times
9 Don't remember

76 Were you offering to drive or requesting a ride? **(ALLOW ONLY ONE RESPONSE)**

1 Sometimes offering to drive, sometimes requesting a ride
2 Always offering to drive
3 Always requesting a ride
4 Just trying it out, did not offer to drive or request a ride **(SKIP TO INSTRUCTIONS BEFORE Q80)**
9 Don't remember **(SKIP TO INSTRUCTIONS BEFORE Q80)**

77 Did you share a ride with any of the people who responded? **(ALLOW ONE RESPONSE ONLY)**

1 Yes, shared a ride at least one time
2 No, did not ever share a ride with people who responded
3 No one ever responded
9 Don't remember/don't know

INSTRUCTIONS BEFORE Q80 – TRANSIT INFO

IF Q63 NE 8 or 9 (DID NOT RECEIVE TRANSIT INFO), SKIP TO INSTRUCTIONS BEFORE q84
IF Q63 = 8 or 9 (received transit info) CONTINUE.

80 You said that you received information about transit from Commuter Connections. Did you contact a transit agency listed in the information you received?

1 Yes
2 No **(SKIP TO q83)**
9 Don't remember, don't know **(SKIP TO INSTRUCTIONS BEFORE Q84)**

81 Did you use the information from the transit agency to try transit?

1 Yes **(SKIP TO INSTRUCTIONS BEFORE Q84)**
2 No **(ask Q82)**
9 Don't remember, don't know **(SKIP TO INSTRUCTIONS BEFORE Q84)**

82 Why did you decide not to try transit?

OPEN ENDED _____

(DO NOT SHOW THESE RESPONSE ON SCREEN) CODE OPEN-ENDED RESPONSES INTO THE FOLLOWING CATEGORIES IN POST PROCESSING – ACCEPT MULTIPLE RESPONSES

1 Never got around to it
2 Wouldn't work with my schedule
3 Too far from home/work
4 Service not available
5 Commute too long
6 Too expensive
7 Prefer other mode
* other (SPECIFY)

SKIP TO INSTRUCTIONS BEFORE Q84

83 Why did you decide not to contact the transit agency?

OPEN ENDED _____

(DO NOT SHOW THESE RESPONSE ON SCREEN) CODE OPEN-ENDED RESPONSES INTO THE FOLLOWING CATEGORIES IN POST PROCESSING – ACCEPT MULTIPLE RESPONSES

1 Never got around to it
2 Don't like transit – wouldn't ever use
3 Too far from home/work
4 Prefer other mode or current mode
5 Wasn't interested, didn't ask for it
6 other (SPECIFY)

INSTRUCTIONS BEFORE q84 – pARK & rIDE

IF Q63 NE 10 (did not receive P&r INFO), SKIP TO INSTRUCTIONS BEFORE Q90
IF Q63 = 10 (received p&R info), CONTINUE WITH q84

84 You said that you received park & ride information from Commuter Connections. Have you used the park & ride lot listed on the information you received?

1 Yes **(CONTINUE)**
2 No **(SKIP TO q88)**
9 Don't remember, don't know **(SKIP TO INSTRUCTIONS BEFORE Q90)**

85 Were you aware of the lot before you received the information?

1 Yes
2 No **(SKIP TO Q87)**
99 Left blank

86 Had you used the lot before you received the information?

1 Yes
2 No
9 Left blank

IF Q30 = 90, SKIP TO INSTRUCTIONS BEFORE Q90
IF Q30 = 6, 7, 8, 9, 16, 17, 18, 19, SKIP TO INSTRUCTIONS BEFORE Q90
IF Q30 = ANY OF 31 – 38, SKIP TO INSTRUCTIONS BEFORE Q90

IF Q30 = 1, 11, OR 21, ASK Q87, INSERT "carpool" as Q30 MODE
IF Q30 = 2, 12, OR 22, ASK Q87, INSERT "vanpool" as Q30 MODE
IF Q30 = 3, 13, OR 23, ASK Q87, INSERT "bus" as Q30 MODE
IF Q30 = 4, 14, OR 24, ASK Q87, INSERT "Metrorail" as Q30 MODE
IF Q30 = 5, 15, OR 25, ASK Q87, INSERT "commuter train" as Q30 MODE

87 Was using the park & ride lot a factor in your decision to try using (**Q5 mode, carpool, vanpool, bus, Metrorail, commuter train**) for your trip to work?

1 Yes
2 No
9 Don't know
99 Left blank

SKIP TO Q90

88 Why did you decide not to use the park & ride lot after getting the information?

OPEN ENDED _____

(DO NOT SHOW THESE RESPONSE ON SCREEN) CODE OPEN-ENDED RESPONSES INTO THE FOLLOWING CATEGORIES IN POST PROCESSING – ACCEPT MULTIPLE RESPONSES

1 Never got around to it
2 Didn't want to leave my car
3 Not convenient to transit
4 Didn't need a park & ride
5 Not convenient to HOV
6 No slug lines
7 No time savings from my previous commute
* Other (SPECIFY)
99 Left blank

INSTRUCTIONS BEFORE Q90 – BICYCLE INFO

IF Q63 NE 12 OR 13 (DID NOT RECEIVE BICYCLE INFO), SKIP TO INSTRUCTIONS BEFORE Q95
IF Q63 = 12 OR 13 (RECEIVED BICYCLE INFO), CONTINUE WITH Q90

90 You said that you received bicycle information from Commuter Connections. Since you received the information, have you taken any of the following actions? **(PERMIT MULTIPLES FOR 1 – 4. DO NOT PERMIT MULTIPLES FOR 5 OR 9)**

1 Started bicycling to work
2 Bicycle to work more often
3 Started bicycling for non-work trips
4 Bicycle more often for non-work trips
5 Didn't make any bicycle changes
9 Don't remember, don't know
99 Left blank

IF Q90 = 1 – 4, ASK Q91
IF Q90 = 5 or 9, SKIP TO INSTRUCTIONS BEFORE Q95

91 Was receiving this information a factor in your decision to start bicycling or bicycle more often?

1 Yes
2 No
9 Don't know

INSTRUCTIONS BEFORE Q95 – TELEWORK INFO

IF Q63 NE 11 (DID NOT RECEIVE TELEWORK INFO), SKIP TO INSTRUCTIONS BEFORE Q100
IF Q63 = 11 (RECEIVED TELEWORK INFO), CONTINUE WITH Q95

95 You said you received telework information from Commuter Connections. Since you received the information, have you taken any of the following actions? **(SHOW RESPONSES 1-8. PERMIT MULTIPLE RESPONSES WITH 1 – 5. DO NOT PERMIT MULTIPLE RESPONSES WITH 6 OR 8)**

1 Talked to employer about telework
2 Called federal employee telework coordinator
3 Started teleworking
4 Started teleworking more often
5 Started working at a telework or co-working center
6 Did not take any actions
8 Don't remember

IF Q95 NE 3, 4, OR 5, SKIP TO INSTRUCTIONS BEFORE Q100

IF Q95 = 3, 4, OR 5, ASK Q96

96 Was receiving this information a factor in your decision to start teleworking or telework more often?

1 Yes
2 No
9 Don't know

INSTRUCTIONS BEFORE Q100 – GRH

IF Q63 NE 14 (DID NOT RECEIVE GRH INFO), SKIP TO Q103
IF Q63 = 14 (RECEIVED GRH INFO), ASK Q100

100 You said you received information from Commuter Connections on the Guaranteed Ride Home program. At the time you requested GRH information, what type of transportation were you using regularly (2 or more days per week) for your commute?

1 Drive alone
2 Carpool
3 Vanpool
4 Bus, Metrorail, or commuter rail
5 Bicycle / walk
* other (SPECIFY)

101 Did you register for the GRH program?

1 Yes **(SKIP TO Q103)**
2 No **(ASK Q102)**
3 Tried to register, but did not meet eligibilty requirements **(SKIP to Q103)**

102 What were the reasons you did not register?

OPEN ENDED _____

(DO NOT SHOW THESE RESPONSE ON SCREEN) CODE OPEN-ENDED RESPONSES INTO THE FOLLOWING CATEGORIES IN POST PROCESSING – ACCEPT MULTIPLE RESPONSES

1 Couldn't use carpool, vanpool, or train 2 or more days per week (didn't meet eligibility requirements)
2 Program doesn't cover home or work area
3 Program doesn't cover work hours
4 Employer has a GRH program
5 Didn't want to pre-register
6 Too much effort to use the service
7 Don't need it
8 Haven't gotten around to it
9 Use Uber, Lyft, or bikeshare to get home in emergency
10 other (SPECIFY)
99 Left blank

COMMUTER CONNECTIONS IMPROVEMENTS

103 In what ways could Commuter Connections improve its services?

OPEN ENDED _____

(DO NOT SHOW THESE RESPONSE ON SCREEN) CODE OPEN-ENDED RESPONSES INTO THE FOLLOWING CATEGORIES IN POST PROCESSING – ACCEPT MULTIPLES

88 No improvement needed
1 Quicker response
2 More helpful staff
3 More follow-up assistance
4 More match names
5 Matches fit travel better
6 Matches are more interested in carpoo/vanpool
7 Better transit information
8 More advertising
9 More current information
10 Use Internet
11 Transit improvements
12 VP resources & assistance
13 GRH suggestion
14 separate driver & rider lists

DEMOGRAPHICS

The last few questions are for classification purposes only.

105 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+
99 Left blank

106 What is your occupation?

_____
99 Left blank

107 What type of employer do you work for?

1 Federal agency
2 State or local government agency
3 Non-profit organization or association
4 Private sector employer
* Other (SPECIFY) _____
99 Left blank

108 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+
99 Left blank

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

1 Yes
2 No
99 Left blank

110 Which of the following best describes your ethnic background?

1 White
2 Black or African-American
3 American Indian or Alaska native
4 Asian
5 Native Hawaiian or other Pacific Islander
6 Other (SPECIFY) _____
99 Left blank

111 Finally, please indicate the category that best represents your household's total annual income.

1 less than $20,000
2 $20,000 - $29,999
3 $30,000 - $39,999
4 $40,000 - $59,999
5 $60,000 - $79,999
6 $80,000 - $99,999
7 $100,000 - $119,999
8 $120,000 - $139,999
9 $140,000 - $159,999
10 $160,000 - $179,000
11 $180,000 or more
99 Left blank

112 Are you male or female?

1 Male
2 Female
99 Left blank

Thank you very much for your time and cooperation!

Appendix B

Comparison of November 2017 Survey Results with Results for 2014, 2011, 2008, 2005, 2004, and 2003 Surveys

Unless otherwise indicated, sample sizes are: 2017 n = 706, 2014 n = 716, 2011 n = 892, 2002-2008 n = 700

Current Travel Information

Table B-1
Current Mode Split – Weekly Trips
All Modes (including compressed work schedule and telework days)
(2017 n = 706, 2014 n = 690, 2011 n = 863, 2002-2008 n = 700)

	2017	2014	2011	2008	2005	2004	2003	2002
CWS	2.7%	3.7%	**3.7%**	2.2%	2.4%	2.5%	2.8%	2.6%
Telework	12.6%	7.7%	5.5%	3.2%	2.3%	1.9%	1.2%	1.2%
DA/Motorcycle	12.3%	9.6%	9.7%	24.6%	25.6%	27.4%	24.9%	30.0%
CP	13.0%	13.4%	13.5%	16.9%	21.4%	24.4%	17.9%	23.0%
VP	13.3%	16.0%	13.9%	15.2%	13.8%	11.6%	9.1%	12.7%
Bus	20.9%	21.0%	24.7%	17.5%	11.4%	11.8%	9.5%	10.1%
Train	23.9%	27.4%	28.7%	20.4%	22.8%	20.3%	34.2%	20.0%
Metrorail	8.0%	9.2%	8.5%	11.3%	12.4%	11.4%	12.8%	12.4%
Commuter rail	15.9%	18.2%	20.2%	9.1%	10.4%	8.9%	21.4%	7.6%
B/W	1.3%	1.2%	0.3%	0.1%	0.4%	0.3%	0.2%	0.3%
Bicycle	1.1%	1.2%	0.3%	0.1%	0.1%	0.1%	0.1%	0.2%
Walk	0.2%	0.0%	0.0%	0.0%	0.3%	0.2%	0.1%	0.2%

Table B-2
Current mode split – Percent of Weekly Trips
Mode Groups (excluding CWS and TW days)
(2017 n = 706, 2014 n = 690, 2011 n = 863, 2002-2008 n = 700)

	2017	2014	2011	2008	2005	2004	2003	2002
DA/Motorcycle	14.5%	10.8%	10.6%	26.0%	26.8%	28.6%	26.0%	31.1%
CP	15.3%	15.1%	15.3%	17.8%	22.4%	25.5%	18.7%	23.9%
VP	15.8%	18.0%	14.9%	16.1%	14.5%	12.1%	9.5%	13.2%
Bus	24.7%	23.7%	27.2%	18.5%	11.9%	12.3%	9.9%	10.5%
Train	28.2%	31.0%	31.6%	21.5%	24.0%	21.2%	35.7%	20.8%
B/W	1.6%	1.4%	0.4%	0.1%	0.4%	0.3%	0.2%	0.5%

Table B-3
Work Compressed Work Schedules

	2017	2014	2011	2008	2005	2004	2003	2002
Yes	**20%**	24%	26%	23%	18%	18%	15%	17%
4/40	3%	3%	3%	4%	2%	1%	2%	2%
9/80	17%	21%	23%	19%	16%	17%	13%	15%

Table B-4
Average Length of Commute (Distance and Time)

	2017	2014	2011	2008	2005	2004	2003	2002
Distance	25.1 mi	36.2 mi	36.2 mi	36.3 mi	36.5 mi	34.9 mi	35.6 mi	31.6.mi
Time	66 min	66 min	63 min	63 min	67 min	62 min	66 min	57 min

Table B-5
Carpool/Vanpool Occupancy

	2017	2014	2011	2008	2005	2004	2003	2002
(n=____) – carpool	121	115	147	137	172	191	140	186
(n=____) – vanpool	108	104	144	115	104	88	71	96
Carpool/slug	3.0	3.1	3.1	2.9	3.1	2.9	2.9	2.9
Vanpool	7.9	9.1	9.9	10.3	11.0	10.5	10.5	11.4

Table B-6
Frequency of Driving Among Carpool/Vanpool Respondents

	2017	2014	2011	2008	2005	2004	2003	2002
(n=____)	230	245	275	252	276	279	211	282
Always drive	10%	9%	7%	8%	12%	11%	9%	12%
Share driving	58%	55%	58%	55%	52%	48%	43%	45%
Never drive	32%	36%	35%	36%	36%	41%	48%	43%

Table B-7
Access Mode and Distance to Rideshare or Transit Meeting Points

	2017	2014	2011	2008	2005	2004	2003	2002
(n=____)	607	630	775	508	498	489	511	463
Picked-up at home	3%	3%	5%	7%	9%	8%	7%	8%
Drive to driver's home	2%	3%	13%	6%	13%	10%	2%	4%
Drive to central location	71%	71%	64%	71%	62%	69%	74%	72%
Another pool/drop off	2%	3%	1%	1%	2%	2%	3%	2%
Walk/bike	12%	10%	8%	12%	11%	7%	11%	10%
Always drive CP/VP	4%	4%	2%	1%	1%	<1%	1%	1%
Bus/transit	6%	5%	4%	2%	2%	3%	3%	3%
Ave access distance	6.2 mi	6.8 mi	6.9 mi	6.5 mi	6.8 mi	6.0 mi	6.2 mi	5.6 mi

Travel Changes

Table B-8
Made Travel Change Since Receiving Information/Assistance

	2017	2014	2011	2008	2005	2004	2003	2002
Started CP/tried CP	9.5%	8.7%	11.9%	9.1%	14.0%	15.4%	10.2%	14.3%
Started VP/tried VP	7.5%	7.8%	6.8%	4.9%	7.4%	5.8%	5.1%	4.6%
Started transit	19.3%	20.7%	23.8%	12.3%	15.6%	11.1%	15.0%	18.3%
Started telework	7.8%	4.8%	6.4%	4.4%	4.4%	3.4%	2.2%	4.1%
Inc days using alt modes**	N/A	N/A	N/A	0.0%	0.0%	1.8%	0.0%	1.9%
Started B/W*	1.0%	1.2%	0.5%	N/A	N/A	N/A	N/A	N/A
Added person to CP/VP	4.8%	5.4%	3.2%	6.9%	3.1%	3.0%	0.0%	2.5%
TOTAL	**49.9%**	**48.6%**	**52.6%**	**37.7%**	**44.5%**	**40.5%**	**32.5%**	**45.7%**

* Prior to 2011, Bike/walk changes were grouped with transit changes

** In 2011 survey, changed to increased alt mode were included in mode changes

Table B-9
Did Information Respondent Received from Commuter Connections Influence Decision to Make Travel Change?

	2017	2014	2011	2008	2005	2004	2003	2002
(n=____)	253	265	263	285	311	268	264	343
Yes, influenced decision	26%	21%	38%	30%	33%	35%	32%	27%

Table B-10
Reasons for Making Change (multiple response permitted)

	2017	2014	2011	2008	2005	2004	2003	2002
(n=____)	253	282	238	276	300	256	223	332
Save money	21%	16%	17%	14%	26%	18%	19%	12%
Changed jobs	14%	18%	16%	23%	16%	14%	14%	22%
Save time	18%	7%	13%	12%	23%	18%	22%	17%
Tired of driving	6%	4%	11%	9%	9%	12%	10%	7%
Gas prices too high	<1%	3%	9%	18%	N/A	N/A	N/A	N/A
New option available	2%	1%	8%	<1%	<1%	3%	N/A	N/A
Metrochek/financial incentive	2%	1%	6%	<1%	1%	2%	3%	2%
Carpool broke up / didn't work	9%	5%	5%	N/A	N/A	N/A	N/A	N/A
Moved residence	5%	4%	4%	8%	6%	6%	11%	8%
Reduce wear and tear on car	4%	<1%	4%	3%	<1%	4%	2%	2%
Reduce congestion/pollution	2%	2%	2%	3%	6%	3%	5%	4%
Reduce stress/medical reason	4%	0%	0%	0%	0%	0%	0%	0%
Others doing it (e.g., family)	1%	<1%	2%	2%	4%	<1%	<1%	<1%
Circumstances (no vehicle)	0%	NA	N/A	4%	11%	8%	14%	13%
Found new CP/VP rider	0%	NA	N/A	10%	<1%	5%	2%	9%

Table B-11
Distribution of Changes by Duration of Change?

	2017	2014	2011	2008	2005	2004	2003	2002
(n=____)	352	346	454	285	306	271	224	332
Continued change	73%	72%	64%	67%	60%	67%	63%	61%
Temporary change	11%	10%	12%	33%	34%	33%	37%	39%
Occasional use change	7%	7%	14%	N/A	6%	N/A	N/A	N/A
One-time change	9%	11%	10%	N/A	N/A	N/A	N/A	N/A

Table B-12
Continued and Temporary Placement Rates and VTR Factors

	2017	2014	2011	2008	2005	2004	2003	2002
Continued placement rate	36.4%	34.9%	35.4%	25.4%	26.9%	27.4%	20.4%	28.0%
Temporary placement rate	3.7%	5.2%	5.1%	12.3%	15.0%	13.2%	12.1%	17.7%
Occasional use placement rate	5.2%	3.3%	6.1%	N/A	2.6%	N/A	N/A	N/A
One-time use placement rate	4.6%	5.2%	6.0%	N/A	2.6%	N/A	N/A	N/A
Continued VTR	-0.51	-0.43	-0.54	-0.37	-0.45	-0.37	-0.44	-0.40
Temporary VTR	-0.45	-0.27	-0.53	-0.66	-0.57	-0.31	-0.42	-0.57
Average duration of temporary change	8.2 weeks	6.7 weeks	8.9 weeks	6.5 weeks	5.9 weeks	4.3 weeks	4.2 weeks	N/A

Information Received

Table B-13
How Contact Was Made with Commuter Connections

	2017	2014	2011	2008	2005	2004	2003	2002
CC page on Internet	77%	78%	76%	73%	62%	56%	64%	52%
Called CC directly	22%	26%	13%	20%	25%	26%	24%	26%
Employer/through work	14%	11%	10%	5%	5%	5%	8%	12%
Another internet site	4%	2%	2%	4%	5%	8%	2%	2%
Local jurisdiction program	1%	3%	1%	N/A	2%	<1%	1%	3%

Table B-14
Types of Information Received from Commuter Connections (multiple responses permitted)

	2017	2014	2011	2008	2005	2004	2003	2002
GRH info / registration	76%	71%	71%	69%	60%	70%	61%	49%
Transit info	28%	24%	22%	17%	28%	28%	33%	27%
Matchlist	25%	21%	27%	42%	67%	66%	48%	64%
Map with pool partners locations	12%	8%	9%	N/A	N/A	N/A	N/A	N/A
P&R info	12%	11%	12%	13%	25%	26%	21%	20%
Information on special events	15%	8%	6%	N/A	N/A	N/A	N/A	N/A
Vanpool assistance	6%	5%	5%	10%	19%	27%	22%	18%
Bicycle information	7%	5%	4%	N/A	N/A	N/A	N/A	N/A
Telework information	5%	5%	3%	5%	9%	11%	9%	8%
HOV lane info	7%	6%	3%	3%	7%	12%	8%	7%

Table B-15
Types of Information Offered by Employer (multiple responses permitted)

	2017	2014	2011	2008	2005	2004	2003	2002
Telework/CWS	47%	35%	40%	2%	2%	<1%	<1%	<1%
Discount/free transit pass	55%	49%	30%	60%	56%	55%	58%	47%
Other cash incentive	18%	15%	11%	4%	7%	4%	3%	4%
CP/VP information / matchlist	21%	16%	11%	4%	5%	8%	9%	5%
GRH	15%	14%	<2%	0%	0%	0%	0%	0%
Transit information / schedule	12%	10%	3%	4%	3%	2%	4%	2%
Federal tax benefit	11%	11%	3%	3%	3%	2%	3%	3%
Preferential parking	23%	15%	3%	2%	2%	2%	3%	2%
None	15%	17%	5%	27%	30%	30%	30%	37%

Table B-16
Received Information from Other Organization

	2017	2014	2011	2008	2005	2004	2003	2002
Yes	9%	2%	2%	4%	7%	6%	5%	5%

Use/Influence of Information Received

Table B-17
Received Match Names (either Commuter Connections or employer/other agency)?

	2017	2014	2011	2008	2005	2004	2003	2002
Yes, received match info	29%	23%	35%	42%	68%	66%	48%	64%

Table B-18
Try to reach People Named on the List?

	2017	2014	2011	2008	2005	2004	2003	2002
(n=____)	172	145	156	310	461	448	332	459
Yes, tried to reach people	56%	56%	58%	56%	56%	52%	49%	53%

Table B-19
Able to Reach People on List?

	2017	2014	2011	2008	2005	2004	2003	2002
(n=____)	93	80	90	176	256	231	161	242
Yes, reached people on list	83%	87%	77%	84%	88%	88%	89%	89%

Table B-20
Commuters Reached Interested in Ridesharing?

	2017	2014	2011	2008	2005	2004	2003	2002
(n=____)	82	77	66	146	224	204	141	216
Yes, interested in RS	48%	44%	58%	59%	49%	45%	45%	44%
Interested, but schedule and/or locations not compatible	31%	34%	23%	21%	35%	29%	34%	35%
Not interested in RS	13%	12%	19%	20%	16%	26%	21%	21%

Table B-21
Reasons for Not trying to Reach Commuters

	2017	2014	2011	2008	2005	2004	2003	2002
(n=____)	84	66	47	136	207	114	171	220
Work hours not compatible	18%	18%	26%	25%	28%	29%	25%	24%
Locations not compatible	17%	15%	10%	25%	26%	16%	23%	23%
Didn't want to RS	28%	22%	13%	16%	17%	12%	17%	12%
Already found RS arrangement	19%	21%	22%	19%	12%	23%	15%	25%
Haven't gotten around to it	7%	8%	11%	8%	11%	11%	10%	10%
Changed jobs	1%	2%	2%	<1%	3%	4%	2%	2%
Changed residence	2%	0%	2%	2%	2%	4%	2%	<1%

Table B-22
Did Respondent Contact Transit Agency?
(Asked of Respondents Who Said They Received Transit Information)

	2017	2014	2011	2008	2005	2004	2003	2002
(n=____)	195	167	206	117	189	187	229	184
Yes, contacted agency	39%	36%	40%	31%	37%	38%	32%	30%

Table B-23
Did Respondent Use Information to Try Transit?

	2017	2014	2011	2008	2005	2004	2003	2002
(n=____)	69	60	68	34	42	36	41	35
Yes, used info to try transit	81%	87%	81%	77%	83%	60%	88%	77%

Table B-24
Why Did Respondent Decide Not to Contact Transit Agency? (multiple responses permitted)

	2017	2014	2011	2008	2005	2004	2003	2002
(n=____)	81	52	13	81	125	121	160	129
Didn't need more information	24%	21%	19%	N/A	N/A	N/A	N/A	N/A
Prefer other modes/current mode	10%	6%	9%	20%	25%	24%	18%	28%
Got what I needed from website	NA	NA	7%	N/A	N/A	N/A	N/A	N/A
Too far from home/work	1%	1%	3%	17%	5%	11%	12%	12%
Wasn't interested	15%	1%	3%	23%	30%	21%	34%	15%
Would never use transit	5%	1%	N/A	27%	2%	2%	2%	3%
Already had info, info other source	17%	NA	4%	<1%	17%	20%	16%	13%
Never got around to it	6%	1%	N/A	6%	11%	15%	7%	10%

Table B-25
Did Respondent Use Park & Ride Information?
(Asked of Respondents Who Said They Received P&R Information)

	2017	2014	2011	2008	2005	2004	2003	2002
(n=____)	85	76	97	62	134	140	96	91
Yes, used P&R info	52%	59%	75%	42%	54%	57%	47%	44%

Table B-26
Aware of Park & Ride Lot Before Receiving Information?

	2017	2014	2011	2008	2005	2004	2003	2002
(n=____)	42	45	71	26	73	78	45	40
Yes, knew of P&R before	71%	57%	71%	73%	69%	63%	69%	65%

Table B-27
Used Park & Ride Lot Before Receiving Information?

	2017	2014	2011	2008	2005	2004	2003	2002
(n=____)	29	27	51	26	73	78	45	40
Yes, used P&R lot before	59%	49%	55%	48%	50%	40%	50%	43%

Table B-28
Mode Used When Requesting GRH Information

	2017	2014	2011	2008	2005	2004	2003	2002
(n=____)	524	491	560	487	442	492	464	352
DA/Motorcycle	10%	7%	6%	14%	20%	24%	21%	28%
CP	13%	13%	13%	19%	22%	22%	15%	20%
VP	17%	18%	17%	17%	14%	14%	11%	14%
Bus/train	60%	78%	63%	50%	45%	42%	52%	38%

Table B-29
Register for GRH?

	2017	2014	2011	2008	2005	2004	2003	2002
(n=____)	530	494	576	478	441	492	464	352
Yes, registered for GRH	94%	97%	96%	86%	76%	73%	74%	63%

Appendix C – Calculations of Impacts - All Placements, July – September 2017

Commute Information Requests

Populations of Interest – Commuter Connections Rideshare Applicants

Total assisted commuters	**5,021**		
Within MSA (63%)	3,151		
Outside MSA (37%)	1,870		
COC Placement Rates	**In MSA**	**Out MSA**	
• Continued rate	35.5%	37.8%	
• Temporary rate	5.4%	4.9%	
• Total	40.9%	42.7%	
Placements			
• Continued	1,119	707	(Apps x cont. rate)
• Temporary	170	92	(Apps x temporary rate)
Total placements	**2,088**		
Daily Vehicle Trips Reduced			
VTR Factors			
• Continued	0.50	0.53	
• Temporary	0.37	0.59	
• Temporary discount	16%	16%	
• Continued trips reduced	560	375	(Placements x cont. VTR factor)
• Temporary trips reduced	10	9	(Placements x temp VTR factor)
Total VT reduced	**954**		
Daily VMT Reduced			
Ave one-way trip distance (mi)			
• Continued	29.5	29.5	(Actual Outside dist. 52.5 miles)
• Temporary	24.4	24.4	(Actual Outside dist. 48.8 miles)
• Continued VMT reduced	16,520	11,063	(Vehicle trips x ave distance)
• Temporary VMT reduced	244	220	
Total VMT Reduced	**28,047**		

Appendix C, continued

Trip and VMT Adjustment for SOV Access to HOV Modes (reduce VT and VMT for AQ analysis)

	In MSA	Out MSA	
• SOV access % -Continued	70%	0%	(CC placement survey)
• SOV access dist (mi) – Continued	4.6	0.0	(CC placement survey)
• Non-SOV access % - Temporary	60%	0%	(CC placement survey)
• SOV access dist (mi) – Temporary	3.7	0.0	(CC placement survey)

Outside MSA – not applicable – all access outside MSA

VT Reduction

• Continued SOV access VT	392	0	(Cont VT x SOV access)
• Temporary SOV access VT	6	0	(Temp VT x SOV access)
• Continued VT (without SOV access)	168	375	(Total Cont VT – SOV access VT)
• Temporary VT (without SOV access)	4	9	(Total Temp VT- SOV access VT)

Total VT (net of SOV access) 556

VMT Reduction

• Continued SOV access VMT	1,803	0	(Cont VT x SOV % x access dist)
• Temporary SOV access VMT	22	0	(Cont VT x SOV % x access dist)
• Continued VMT (without SOV access)	14,717	11,063	(Total Temp VMT- SOV access VMT)
• Temporary VMT (without SOV access)	222	220	(Total Temp VMT- SOV access VMT)

Total VMT (net of SOV access) 26,222

Total VT for AQ analysis 556
Total VMT for AQ analysis 26,222

<u>Daily Emissions Reduced</u> – NOx and VOC

NOx	**Trips**	**17 Emission Factor**	**VMT**	**17 Emission Factor**	**Tot gm**	**Tot ton**
• From Starts	556	1.2435			691	0.0008
• From Running			26,222	0.1897	4,974	<u>0.0055</u>
Total NOx reduced (tons)					**Daily**	**0.0063**

VOC	**Trips**	**17 Emission Factor**	**VMT**	**17 Emission Factor**	**Tot gm**	**Tot ton**
• From Starts	556	2.5814			1,435	0.0016
• From Running			26,222	0.0688	1,804	<u>0.0020</u>
Total VOC reduced (tons)					**Daily**	**0.0036**

Appendix 5, continued

Annual Emissions Reduced – PM 2.5, Precursor NOx, and CO2 (PART 1 – Commute Information Requests)

PM 2.5	Trips	17 Emission Factor	VMT	17 Emission Factor	Tot gm	Tot ton
• From Starts	556	0.0312			17	0.0000
• From Running			26,222	0.0115	406	0.0004
Total PM 2.5 reduced (tons)					**Daily**	**0.0004**
					Annual	**0.110**

PM 2.5 Precursor NOx	Trips	17 Emission Factor	VMT	17 Emission Factor	Tot gm	Tot ton
• From Starts	556	1.3603			756	0.0008
• From Running			26,222	0.2019	5,294	0.0058
Total PM 2.5 Precursor NOx reduced (tons)					**Daily**	**0.0066**
					Annual	**1.650**

CO2	Trips	17 Emission Factor	VMT	17 Emission Factor	Tot gm	Tot ton
• From Starts	556	227.06			126,245	0.1392
• From Running			26,222	380.68	9,982,191	11.0035
Total CO2 reduced (tons)					**Daily**	**11.1427**
					Annual	**2,785.7**

Daily Energy Saving

Daily Energy Savings **1,457 gal/day**
(daily VMT reduced / 18.0 miles/gallons)
(26,222 / 18.0)

Annual Commuter Cost Savings Saving **

Annual Commuter Cost Savings **$1,344,000 / year**
(VMT reduced x $0.205/mi. x 250 days)
(26,222 x 0.205 x 250)

Cost Saving per commuter **$720 / year**
(cost saving / number of placements)**
($1,344,000 / 1,868)

** Respondents with temporary changes were included in this calculation, but they would receive cost savings for only the percentage of a year that represented the duration of their change. Total placements counted = 1,826 continued placements + 42 discounted temporary placements (16% * 262).