

**ITEM #4**

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

**FISCAL YEAR 2012  
DRAFT APPLICANT DATABASE  
ANNUAL PLACEMENT SURVEY REPORT  
APPLICATIONS RECEIVED DURING JULY-SEPTEMBER 2011  
(DECEMBER 2011 SURVEY)**

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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 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 December 2011 through a combination internet and telephone survey of 892 applicants randomly selected from the applicant database. The surveys collected data for applicants who received information or assistance between July 1 and September 30, 2011.

### Commuter Connections Program Activity Summary and Overall Participation, Utilization, and Satisfaction Performance Measures Placement Survey, July-September 2011

• Commuter applicants	8,483	
• Applicant placement rates	52.6%	
- Continued placement rate		35.4%
- Occasional placement rate		6.1%
- Temporary placemen rate		5.1%
- One-time placement rate		6.0%
• Applicants placed in alternative modes	4,458	
- Continued placements	2,997	
- Occasional placements	517	
- Temporary placements	435	
- One-time placements	509	
• Applicants who received matchlist		27%
• Applicants who received vanpool assistance		5%
• Applicants who received Park & Ride info		10%
• Applicants who received transit information		31%
• Applicants who received GRH information/registration		71%

Commuter Connections Program  
Program Impact Performance Measures  
Placement Survey, July-September 2011

• Daily vehicle trips (VT) reduced	<b>1,677 trips</b>
- Continued placements	1,638 trips
- Temporary placements (prorated credit)	39 trips
• Daily VMT reduced	<b>45,967 VMT</b>
- Continued placements	45,038 VMT
- Temporary placements (prorated credit)	929 VMT
• Daily tons of Emissions reduced	
- NO <sub>x</sub>	<b>0.017 tons</b>
- VOC	<b>0.009 tons</b>
- PM 2.5	<b>0.001 tons</b>
- PM 2.5 NO <sub>x</sub> precursors	<b>0.019 tons</b>
• Annual tons of Emissions reduced	
- CO <sub>2</sub> / Greenhouse gas	<b>5,612 tons</b>
• Gallons of gasoline saved	<b>1,853 daily gallons of gas</b>
• Commuter costs reduced	
- Annual cost saving per placement	<b>\$610 per year</b>

*\* See Appendix C for calculations*

## OTHER KEY SURVEY RESULTS

### Demographics

- Slightly over half of the applicants were female (52%). Seven in ten (69%) applicants were white and 82% were between 35 and 64 years old (63%).

### Commute Travel Patterns

- Six in ten (61%) applicants said they use transit at least one day per week. Transit trips accounted for more than half (53.4%) of applicants' weekly commute trips; a quarter (24.7%) were made by bus and 20.5% were made by commuter rail. Applicants made 8.5% of weekly trips by Metrorail.
- About a third (33%) of applicants carpooled or vanpooled at least one day per week. Carpool and vanpool trips made up 27.4% of applicants' weekly commute trips.
- Sixteen percent of applicants drove alone one or more days per week, but this was a secondary mode for half of these applicants; drive alone was used for just 9.7% of weekly commute trips.

- The average one-way commute distance was 36.2 miles. The average one-way commute time was 63 minutes.

### Commute Changes

- More than half (52.6%) of survey respondents made a commute pattern change or tried another method of transportation after receiving assistance from Commuter Connections.
- More than a third (35.4%) of applicants made a change to an alternative mode that they had continued to use at least one day per week. This 35.4% was the “continued placement rate.” The temporary placement rate (percent of applicants who made a change but returned to their original modes) was 5.1%.
- Six percent of applicants tried using a new alternative mode a few days (one-time placement rate) and 6.1% made a change to a mode they use occasionally, but less than once per week on average (occasional placement rate).
- About 38% of applicants who made a mode change shifted from driving alone. The remaining 62% shifted from one alternative mode to another.
- The primary reasons that applicants made commute changes were to save money (17%) or save time (13%), because they changed jobs or work hours (16%) or were tired of driving (11%). About one in ten cited convenience (9%), gas prices too high (9%), or because a new option became available (8%).
- About four in ten (38%) applicants who made a commute change indicated that information they received from Commuter Connections influenced or assisted their decision to make the change. The top two Commuter Connections services named were matchlist / map showing home and work locations of potential rideshare partners and Guaranteed Ride Home, each named by about 14% of applicants who made a change. Two in ten (21%) 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: word of mouth referrals (33%), employer / employee survey (20%), internet (18%), and radio (14%).
- Almost half (45%) of applicants contacted Commuter Connections to find back-up transportation in case of emergency and 16% wanted to check commute options or a transit schedule or were just curious about the service. Eleven percent made the contact to find a carpool or vanpool partner or to get information about these modes.

### Information and Assistance Requested and Received

- The top service received overall, by a large majority, was Guaranteed Ride Home; seven in ten (71%) applicants said they received or accessed this service, which is open to any commuter who uses an alternative mode to commute.
- Four in ten (39%) applicants said they received or accessed a service to help with carpooling or vanpooling; 27% received a matchlist with names of potential carpool/vanpool partners, 12% used the carpool rider bulletin board, and nine percent received a map showing home and work locations

of potential carpool/vanpool partners. One in ten applicants (12%) accessed Park & Ride lot information and 10% received general information about carpooling or vanpooling.

- Over two-thirds (68%) of applicants who received a matchlist or map with potential rideshare partners tried to contact someone named on the list and 77% who tried to make contact reached someone on the list.
- Three in ten (31%) of applicants recalled receiving transit route, schedule, or fare information. Forty 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.
- Nearly all (95%) of applicants said their employers offer some commute services at the worksite. The most common employer services were telework or compressed work schedule, offered by 40% of employers and transit pass discounts, noted by 30% of applicants. One in ten (11%) said their employers offer assistance with finding carpool or vanpool partners (matchlist).

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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 892 commuters who applied to the regional rideshare database, administered by the Commuter Connections Program of the National Capital Region Transportation Planning Board at the Metropolitan Washington Council of Governments (COG), between July 1 and September 30, 2011.

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 2008, 2005, 2004, 2003, and 2002. Results for these surveys are reported in Fiscal Year 2009, 2006, 2005, 2004, and 2003 Placement Survey Reports, respectively, dated (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 are documented in two reports. The first report, TDM Analysis Report – Compilation of Four Quarterly Placement Surveys 1997-1998 (January 10, 2000), covers four surveys conducted during 1997 and 1998. The second report, TDM Analysis Report – Compilation of Four Quarterly Placement Surveys 2000-2002 (October 10, 2002), covers 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, and 2008 surveys documented in this report. This survey covers applications received between July 1, 2011 and September 30, 2011, and the results will represent the performance for all applications received during FY 2012 (July 1, 2011 through June 30, 2012).

### 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

Following these sections is one appendix, presenting summaries of 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 2011 survey is shown in Appendix A. It was based on the questionnaire used for the November 2008 applicant survey, with updates to explore use of the comprehensive range of services available from Commuter Connections through the online ridematching and information system. Initially, two variations of the questionnaire were developed for two survey administration methods, based on the type of contact information provided by the applicant in the online system.

One version was programmed by Base Technologies, Inc. (BTI), the contractor that developed the online system, for administration by Internet for applicants who provided an email address or postal mail address only. The second version was programmed by CIC Research, Inc. (CIC), an independent survey research firm, for administration by telephone for applicants who provided only telephone numbers as contact information. These two versions differed only in the phrasing and format of the questions, with Internet questions designed for visual presentation and telephone questions designed for aural presentation.

CIC subsequently created a third version of the survey for follow-up telephone interviews with a sample of applicants who did not respond to the Internet survey. This version was based on the original telephone questionnaire, with additional questions to inquire why the respondent did not answer the Internet survey and several open-ended questions removed to shorten the length of the interview.

#### 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, 2011. Potential respondents were selected from the Commuter Connections' database. After duplicate records and records that did not include at least one form of contact information were deleted, 8,831 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:

- 1) Email only (651 records)
- 2) Email and telephone (7,317)
- 3) Telephone only (803)
- 4) Postal address only (60)

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 2008 study, with additional tailoring to reference the survey administration method and the method of delivery: either postal delivery or email delivery.

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

- 1) Email alert letter – sent by email to the Email only and Email and 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

For the Telephone only and Postal address only groups, COG sent invitation letters printed on COG letterhead to commuters at the end of November 2011. A randomly selected sample of 133 commuters was drawn from the group containing Telephone only contact information. All 60 commuters with Postal address only contact information were mailed letters as well.

For the 7,968 commuters in the Email only and Email and telephone groups, COG emailed an electronic invitation letter. The invitation letter was sent to an initial batch of 3,939 randomly-selected commuters via email on December 12, 2011. COG sent invitation letters to the remaining 4,029 commuters on December 20, 2011. Members of each group received two reminder emails over a two-week period following the distribution of the initial email letters.

### Interviews

*Telephone Interviews – Telephone Only Sample* – CIC prepared the survey instrument for the Telephone only ample group. Because the questionnaire had changed since the last administration of the applicant survey in 2008, a pretest was conducted between November 30, 2011 and December 2, 2011 to test new questions that had been added to the questionnaire. The pretest was also used to test the accurate administration of the survey instrument on CIC's CATI system. Following a successful pretest of 19 interviews, interviewing resumed on December 5, 2011 and was completed on December 21, 2011.

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 random selection of 110 potential respondents was used, as well as 97 reserve leads, totaling a sample selection of 207 potential respondents. Additional leads were used due to the unusual difficulty in reaching respondents. Calls were made until 65 interviews were completed from the sample, resulting in a response rate of 31.4% (65 / 207). The average length of interview was 15.7 minutes.

An average of 18.7 call attempts was made for each completed interview. This is considerably higher than dialing attempts made during the 2008 interviewing period (10.4 call attempts) and during prior years. The proximity of the interviewing period to the winter holidays may have contributed to the high number of dialing attempts per completed interview.

*Internet Interviews* – The Internet survey was hosted through the Commuter Connections' online system, with support from BTI, from December 12, 2011 through January 10, 2012. At the end of the survey period, BTI compiled the total of 793 completed interviews and sent the data to CIC on February 20, 2012 for validity checks and merging with the telephone survey data. Seven interviews were excluded because the Commuter ID number did not show valid activity within the survey analysis period. An additional 11 interviews were deleted because they were incomplete. This resulted in 775 completed Internet interviews from a sample frame of 7,968.

Upon completion of the Internet interviewing period, 200 non-responding sample points were removed from the Internet sample, and moved to a telephone sample in order to conduct a follow-up telephone survey of Internet non-respondents. This left a final total of 7,768 non-respondents to the Internet survey. The response rate for the Internet method of contact was 10.0% (775 / 7,768).

**Telephone Interviews – Follow-up to Internet Non-respondents** – Due to the low response rate by email invitation to potential respondents, a random selection of 200 non-respondents to the Internet survey were drawn from the Email and telephone contact group for a follow-up survey to be conducted by telephone interview.

The non-response survey was fielded between January 17 and January 20, 2012. If two telephone numbers were available from the sample record, interviews were first directed to a work telephone number. If the interview could not be completed with the work number, the respondent was called at home. All 200 sample points were called, targeting 50 completed interviews. A total of 52 interviews were completed, resulting in a 26.0% response rate (52 / 200). The average length of interview was 14.0 minutes and an average of 14.0 dialing attempts was made for each completed interview.

**Reasons for Non-Response** – As noted earlier, the follow-up survey questionnaire included several questions at the end of the interview to determine why respondents did not reply to the Internet survey invitation. Table 1 summarizes the results for the three key questions: 1) recall getting an email from Commuter Connections, 2) open the email, and 3) tried to take the survey.

**Table 1**  
**Awareness of Email Survey Invitation Letter and Actions Taken**

<b>Awareness / Action</b>	<b>Percentage of Respondents</b>
Recall getting email from Commuter Connections	n = 52
Yes	65%
No	17%
Don't know	18%
Opened the email from Commuter Connections	n = 34
Yes	56%
No	38%
Don't know	6%
Tried to take / complete the survey	n = 19
Yes	53%
No	32%
Don't know	15%

The answers to the follow-up questions revealed that almost two-thirds of respondents remembered seeing the invitation, while one-third did not. Of those who recalled the invitation, 56% opened the email and 44% did not. Of those who opened the email, about half (53%) said they tried to take the survey, but did not complete it. These 10 respondents represented about 20% of the total follow-up survey sample of 52 respondents.

Respondents who provided a “yes” response to one of the three key questions were asked an additional question probing for why they did not take the next step. The primary reasons that the 13 respondents who recalled getting the email did not open it were:

- Too busy (10 of 13 respondents)
- Away for holidays / on business (3)
- Thought it was SPAM (1)
- Didn’t like doing surveys (1)

The 19 respondents who either didn’t take the survey (9) or who tried but didn’t complete it (10) cited several reasons:

- Thought they already had taken it (7 respondents)
- Couldn’t get into their account or get survey link or their password to work (6)
- Too busy (2)
- Hadn’t used the services so didn’t think his survey would contribute (1)

## 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 “method used to complete the interview” which denotes applicants as either:

- 1) Applicant who completed the interview via Internet (775)
- 2) Applicant who completed the interview by telephone (117)

Because none of the 60 applicants who included only a postal address in the Commuter Connections’ database record was able to complete an interview via the Internet or by telephone, this sample group was eliminated from the weighting scheme.

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.”

<b><u>Method Used to Complete Interview</u></b>	<b><u>Completed Interviews</u></b>	<b><u>Total Applicant Group</u></b>
Applicants completing via Internet	86.9%	88.6%
Applicants completing by telephone	13.1%	11.4%

## STATISTICAL DISTRIBUTION COMPARISON BETWEEN COMPLETED INTERVIEWS AND TOTAL APPLICANT POPULATION

A total of 892 interviews were completed from the total of 8,831 commuter applicants. This is an overall response rate of 10.1%. The low response rate increases the potential for non-response bias, meaning that it is possible that those responding to the survey may be different from the total applicant population. To assess if distributional differences existed between the completed interview group and the total applicant population group, a series of statistical goodness-of-fit tests were conducted.

The variables used were provided in the original sample drawn from the Commuter Connections' database. These tests rely on a Chi-square distribution and measure the distributional differences between two groups. Comparisons between the two groups were made for a number of different criteria. Some minor differences existed between the sample and the total population.

The level of confidence for the study was calculated using the finite population correction factor. Completion of 892 interviews from a population of 8,831 resulted in a level of confidence of 95%  $\pm$  3.1% for the 2011 COG Placement Rate Survey.

## SECTION 3 COMMUTER PLACEMENT SURVEY RESULTS

This section presents the results of the December 2011 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 November of 2002, 2003, 2004, 2005, and 2008. Appendix B presents more complete results for these comparisons.

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 (60%) or Maryland (36%). Top home locations included: Fairfax County, VA (14%), Prince William County, VA (11%), Stafford County, VA (9%), Montgomery County, MD (6%), Anne Arundel County, MD (6%), Loudoun County, VA (5%), Prince George's County, MD (5%), and Howard County, MD (5%). Other jurisdictions accounted for no more than four percent each of applicants.

**Table 2**  
**Distribution by Home and Work Locations**

<b>State/County</b>	<b>Home Location (n = 887)</b>	<b>Work Location* (n = 869)</b>
District of Columbia	2%	57%
Maryland Counties	36%	12%
Virginia Counties	60%	27%
Other**	2%	8%

\* Work location percentages for Maryland and Virginia include only jurisdictions located in the COG region (District of Columbia; 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 as “other.”

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

Work locations were distributed much differently. Nearly six in ten (57%) applicants worked in the District of Columbia. About quarter (27%) worked in Virginia and 15% worked in Maryland. Top work locations outside the District of Columbia included: Arlington County, VA (14%), Montgomery County, MD (9%), and Fairfax County, VA (7%).

### Demographics

The survey asked respondents demographic classification questions for sex, ethnic group, and age. Slightly more than half (52%) of the applicants were female and 48% were male. The remaining demographic categories are summarized in Table 3 and Figure 1.

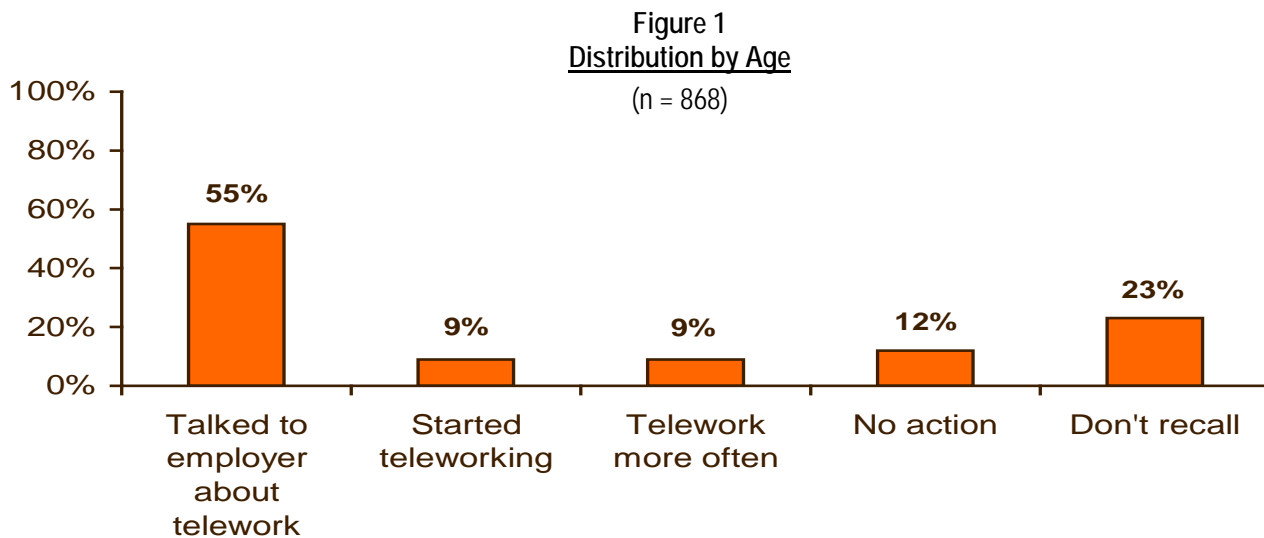
*Ethnic Background* – Next, as illustrated in Table 3, Caucasians and African-Americans represented the two largest ethnic group categories of survey applicants, 69% and 17% respectively. Asians/Pacific Islanders represented seven percent of the sample and Hispanics accounted for about five percent.

**Table 3**  
**Distribution by Ethnic Background**  
(n = 768)

<b>Ethnic Group</b>	<b>Percentage</b>
White	69%
African-American	17%
Asian/Pacific Islander	7%
Hispanic	5%
Other	2%



**Age** – About eight in ten (82%) applicants were between 35 and 64 years old. (Figure 1) The age distribution was quite similar to that of the entire regional workforce, as estimated in the 2010 State of the Commute Survey.



### Employment Characteristics

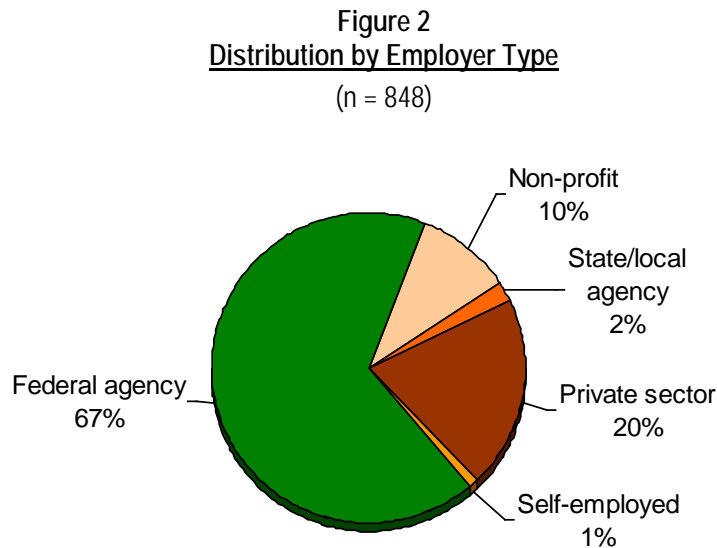
Respondents were asked about the number of employees at their worksite and the type of employer for which they worked. These results are shown in Table 4 and Figure 2, respectively.

**Employer Size** – As shown in Table 4, the majority of applicants (81%) worked for employers with more than 100 employees. More than four in ten (46%) worked for employers with at least 1,000 employees. About two in ten (19%) said they work for organizations with 100 or fewer employees.

**Table 4**  
**Distribution by Employer Size**  
(n = 691)

Number of Employees	Percentage	Number of Employees	Percentage
1-25	7%	101-250	12%
26-50	5%	251-999	23%
51-100	7%	1,000+	46%

**Employer Type** – Two-thirds of the applicants (67%) said they worked for a federal agency. (Figure 2) Two in ten (20%) worked for a private sector employer. State and local government agencies employed two percent and 10% worked for a non-profit organization.



## 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.

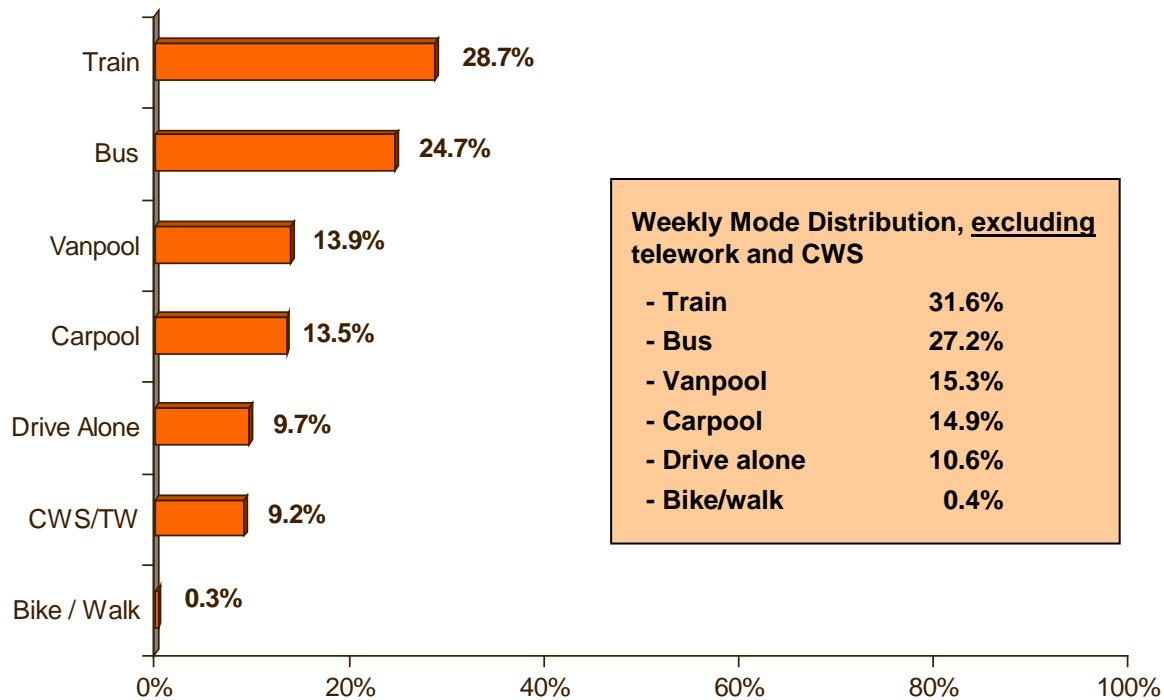
### Current Commute Mode

Applicants were asked how many days in a typical week did they use 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, bus, drive alone, and bike/walk.

The figure also includes the mode share for telework and compressed work schedule. 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 = 863)



Transit accounted for more than half of weekly trips; 28.7% of trips were made by train and 24.7% by bus. Vanpool and carpool accounted for 13.9% and 13.5% of trips, respectively. Applicants made only 9.7% of weekly commute trips by driving alone and a very small share (0.3%) of trips bicycle or walking.

Applicants eliminated 9.2% 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 58.8% of weekly commute trips. The weekly commute trip distribution would be:

- Train 31.6%
- Bus 27.2%
- Vanpool 15.3%
- Carpool 14.9%
- Drive alone 10.6%
- Bike/walk 0.4%

Distribution of Modes within Carpool/Vanpool and Transit Mode Groups – Table 5 presents use of individual modes within the carpool/vanpool and transit mode groups. The carpool / vanpool group was nearly evenly divided between carpool and vanpool. The majority of carpools 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 a small share of carpool/vanpool riders. Transit use was slightly in favor of train (28.7%) compared to bus (24.7%). Almost four in ten transit riders rode a commuter train (MARC, VRE, or Amtrak). The remaining transit riders used Metrorail.

**Table 5**  
**Weekly Commute Trips by Modes – Distribution of Carpool/Vanpool and Transit Mode Categories**

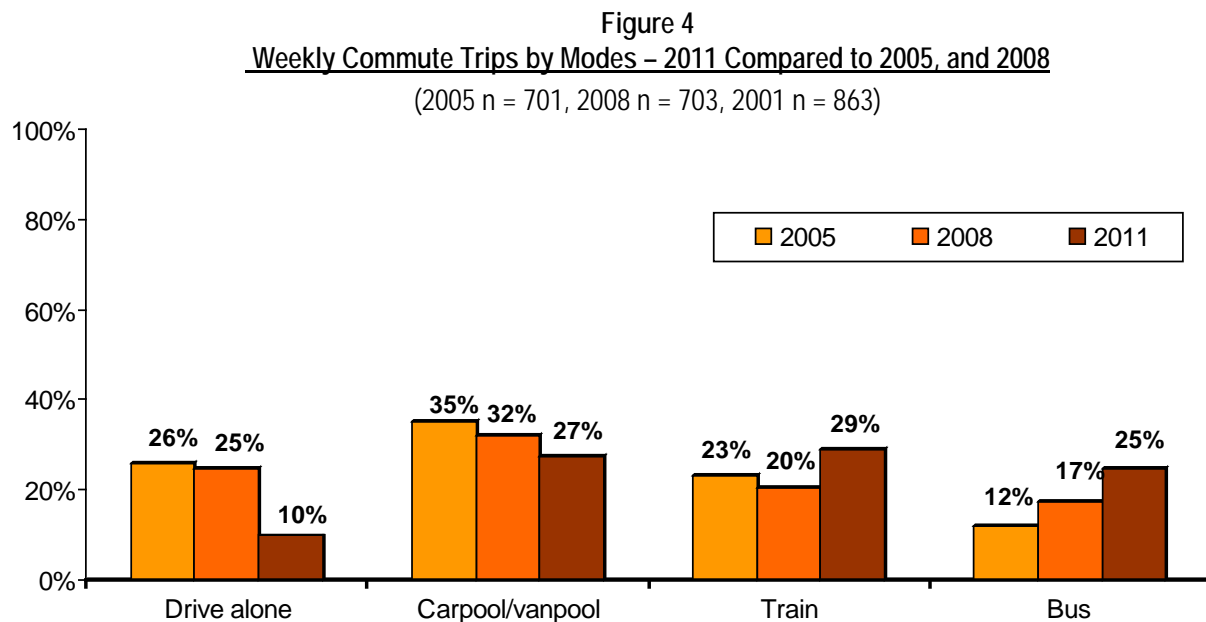
Commute Mode	Percentage (n = 863)
<b>Carpool / Vanpool</b>	<b>27.4%</b>
- Vanpool	13.9%
- Regular carpool	12.8%
- Casual carpool (slug)	0.7%
<b>Transit</b>	<b>53.4%</b>
- Ride a bus/shuttle	24.7%
- Commuter rail	20.2%
- Metrorail	8.5%

Applicant Mode Split Compared to All Regional Travel – Table 6 compares applicants’ commute modes with those of the general commuting population in the Washington metropolitan region, as determined from the 2010 State of the Commute survey. The percentage of regional commuters who drove alone three or more days per week (64.2%) was dramatically higher than for placement survey applicants (9.7%), because applicants were motivated to use an alternative mode. Applicants’ use of transit and carpool/vanpool was much higher than use in the general population. But applicants used bike/walk much less than did the general commuting population.

**Table 6**  
**Weekly Commute Trips by Modes**  
**Comparison of 2011 Applicant Survey to 2010 State of the Commute Survey**

Commute Mode	2011 Applicant Survey (n = 863)	2010 SOC Survey (n = 6,066)
Transit	53.4%	20.2%
Carpool/vanpool	27.4%	7.0%
Drive alone	9.7%	64.2%
Telework / compressed schedules	9.2%	6.3%
Bike/walk	0.3%	2.3%

Mode Split Trends 2005 to 2011 – Figure 4 presents the mode split distribution (percent of weekly trips by mode) for 2011 and for the two preceding surveys.



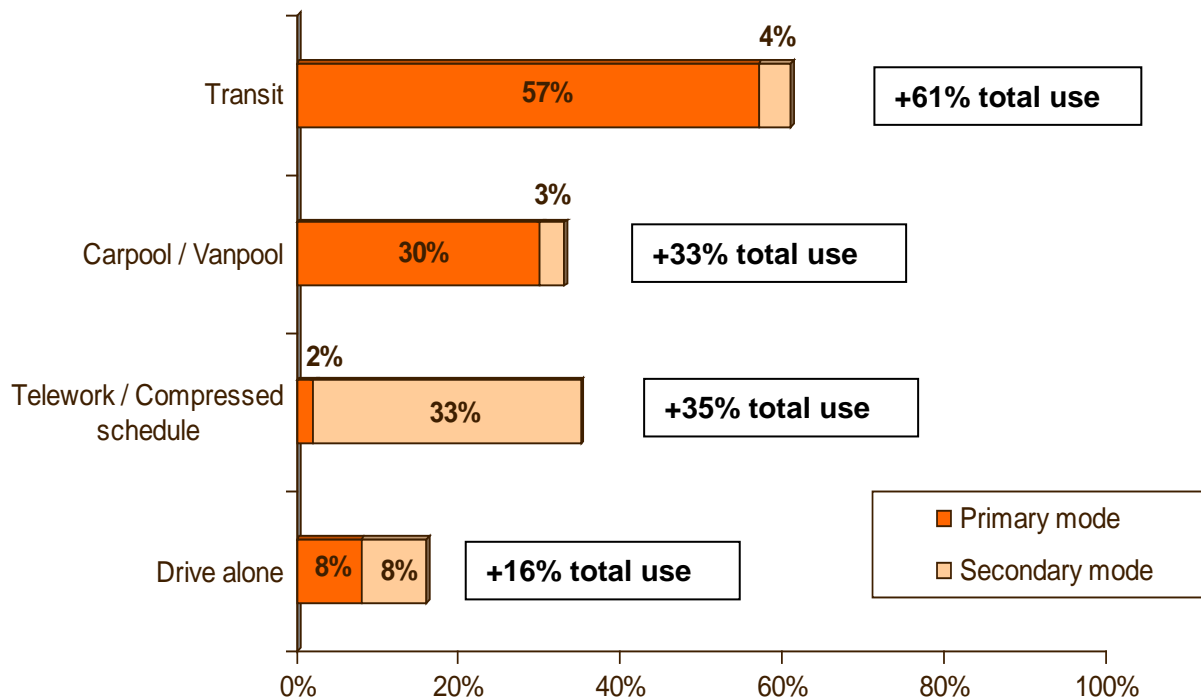
As shown, mode split was relatively constant from 2005 to 2008, except that bus use was higher in 2008 than in the previous years. But the pattern in 2011 was much different. Bus use continued to increase. Train and bus use were considerably higher in 2011 than in previous years and carpool/vanpool use was slightly lower in 2011. But the most striking change was in the share of weekly trips made by driving alone; 10% in 2011, compared with about a quarter of trips in the three previous surveys.

The significant shift to transit likely reflects two factors. First, prior to the 2008 transition to the current online system, the applicant database primarily included commuters who registered to receive a ride-match. 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. Second, several of the regional and local transit operators have been active promoters of the online system, thus, train and bus riders might be using the service at higher rates than in the past.

***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 one or more days per week, that is, either as a primary mode or as a secondary mode that they used occasionally.

**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.

Figure 5  
Primary Modes and Secondary Modes  
 (n = 863)



\* Percentages for Primary or Secondary Modes add to more than 100% because some respondents had both a Primary and Secondary mode

As with mode split by weekly trips, the most common primary mode was transit, used by 57% of applicants. A third (33%) of applicants said they primarily carpooled or vanpooled, eight percent primarily drove alone, and two percent 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.

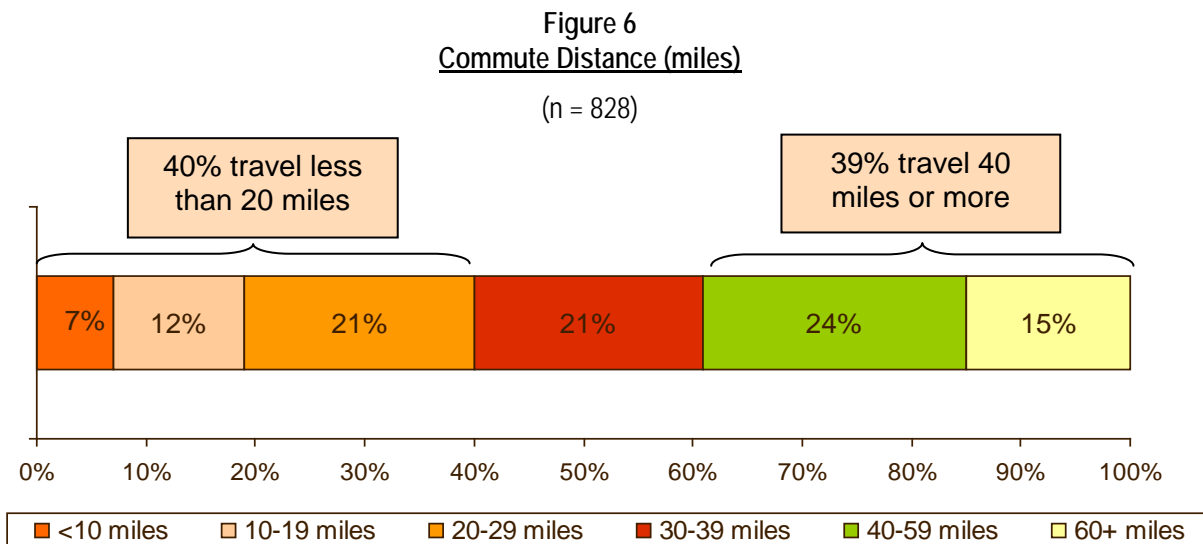
The transit and carpool/vanpool groups each had a small percentage of secondary users, four percent and three percent respectively. About eight percent of applicants said they drove alone one or two days per week, equal to the share of applicants who primarily drove alone.

The greatest difference between the primary mode and primary or secondary mode distributions was in the percentage of applicants who teleworked or worked a compressed schedule. Two percent said they primarily teleworked but an additional 33% teleworked one or two days per week or had one or two compressed schedule days off (secondary mode), so a total of 35% 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 more than 200 miles. The average one-way distance was 36.2 miles. This is about the same as the 36.3 mile distance reported in the 2008 survey, but more than double the 16.3 mile average travel distance of all regional commuters, as estimated in the 2010 State of the Commute survey.

Figure 6 presents the distribution of applicants by distance categories. Seven percent of applicants traveled fewer than 10 miles to work. About a third (33%) commuted between 10 and 29 miles. Just under four in ten (39%) commuted 40 or more miles.



**Distance by Mode** – Commute distances vary by commute mode. Table 7 indicates that vanpoolers travel the farthest, an average of 48.3 miles one-way. Applicants who rode Metrorail traveled the shortest distance (22.5 miles), but other transit riders had longer distances; commuter rail riders traveled 37.2 miles one way and bus riders traveled 35.7 miles. Carpoolers traveled an average of 32.0 miles and drive alone commuters traveled 30.7 miles.

Table 7 also presents the average commute distances by mode as measured in the 2010 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's services.

**Table 7**  
**Average Commute Distance (miles) by Travel Mode**  
**2011 Applicant Survey vs 2010 State of Commute Survey**

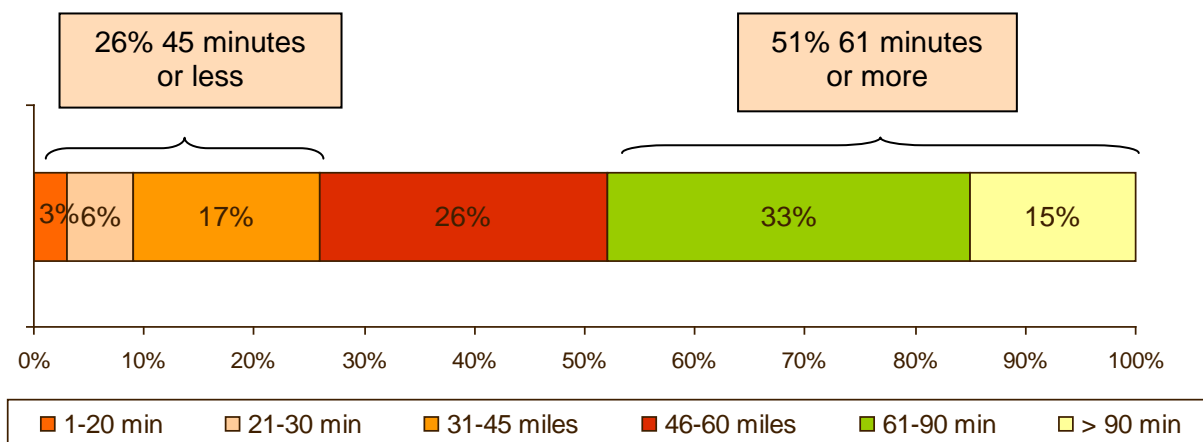
Mode	2011 Applicant Survey		2010 SOC Survey	
	n =	Average Distance	n =	Average Distance
Vanpool	145	48.3 mi	12	25.0 mi
Commuter rail	189	37.2 mi	51	29.3 mi
Bus	253	35.7 mi	258	16.5 mi
Carpool	147	32.0 mi	393	19.0 mi
Drive alone	147	30.7 mi	4,026	16.3 mi
Metrorail	96	22.5 mi	524	15.8 mi

### Commuter Travel Time

One-way commute travel time of applicants ranged from five minutes to more than two hours, with an average of 68 minutes, slightly longer than the time as observed in the 2008 survey (63 minutes). As illustrated in Figure 7, more than half traveled more than an hour and three-quarters (77%) traveled more than 45 minutes one-way.

**Figure 7**  
**Commuter Distance (miles)**

(n = 861)





Commute time for survey applicants was longer than that for the general public. The average commute time for all commuters in the region was 36 minutes, as reported in the 2010 State of the Commute survey. From that survey, only 24% of commuters in the region traveled more than 45 minutes.

### Telework and Compressed Work Schedules

*Telework* – About four in ten (42%) applicants said they teleworked, at least occasionally. More than half of these applicants teleworked infrequently; 23% teleworked less than once per month/only in emergencies and 30% teleworked a few times each month. Four in ten (41%) teleworked one or two days per week and six percent teleworked three or more days per week.

- Less than once per month/emergency 23%
- 1 – 3 times per month 30%
- 1 day per week 25%
- 2 days per week 16%
- 3 or more days per week 6%

*Compressed Work Schedule* – Just over a quarter (26%) of applicants reported working a compressed work schedule (CWS), in which they work a full work week (35-40 hours) in fewer than five days per week. The most common CWS arrangement (23%) was a 9/80 schedule, in which employees work nine days for a total of 80 hours over two weeks. Three percent of applicants work a 4/40 arrangement, that is, work 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 access these commute modes.

### Carpool and Vanpool Size

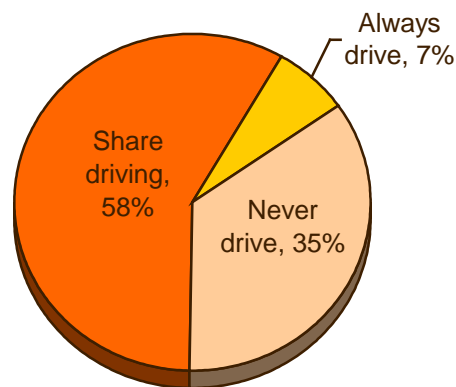
About a third (34%) of survey respondents said they ride in a carpool or vanpool at least one day per week. Carpools had an average size of 3.1 occupants, including the driver. Vanpool occupancy was on average 9.9, including the driver. Vanpools ranged in size from six to fifteen occupants, but about a third (32%) 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 (49%) of the applicants who were carpooling or vanpooling traveled with one or more co-workers. By contrast, only 11% 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. About two percent of carpool/vanpool applicants said they had counted children under the age of 16 as a carpool/vanpool rider.

As shown in Figure 8, nearly six in ten (58%) of carpoolers and vanpoolers shared driving with their pool partners, for example alternating days or weeks of driving the carpool. About a third (35%) said they never drive. This was primarily the response among vanpoolers and casual carpoolers. The remaining seven percent said they always drove.

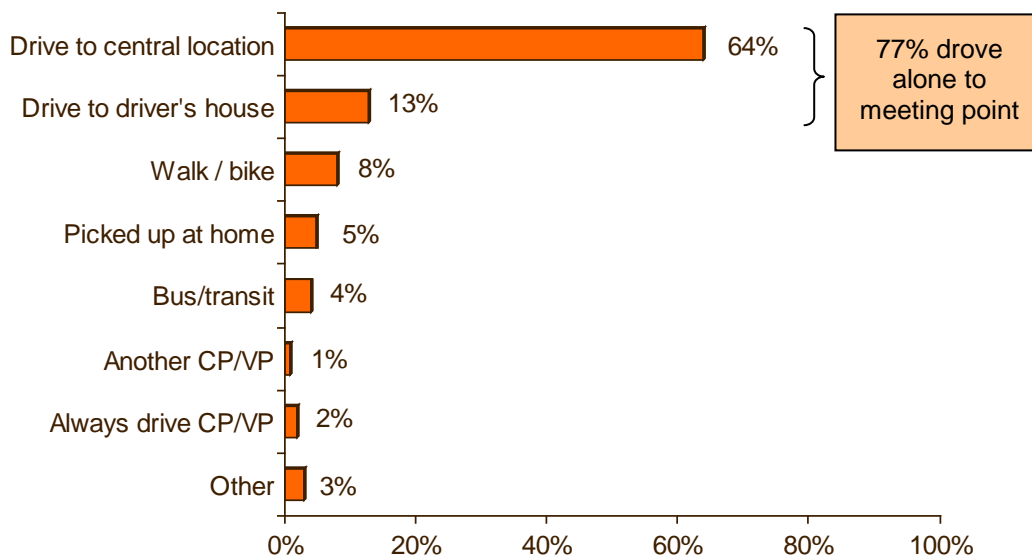
**Figure 8**  
**Driving Frequency of Carpoolers/Vanpoolers**  
 (n = 275)



### Access to Carpools, Vanpools, and Transit

Figure 9 presents the types of transportation carpoolers, vanpoolers, and transit riders used to travel to where they meet their pool partners or where they started their transit trip.

**Figure 9**  
**Access Mode to Alternative Mode Meeting Place**  
 (n = 775)



About one in ten (8%) said they walked to the meeting point, but three-fourths (77%) drove to either a central meeting location or to the driver's home (where they left their cars 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 2008 – June 2011” (May 18, 2010). Even though these trips tend to be short, an average of just 6.9 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:

- Joining or forming a new carpool or vanpool
- Starting to ride a bus, Metrorail, or a commuter train
- Starting to bicycle or walk
- Starting to telework

Applicants who said they did not make a mode change were asked if they had increased the number of days they used alternative modes they already had been using, if they added a person to an existing carpool or vanpool, or if they had tried using any other type of transportation.

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 respondent 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:

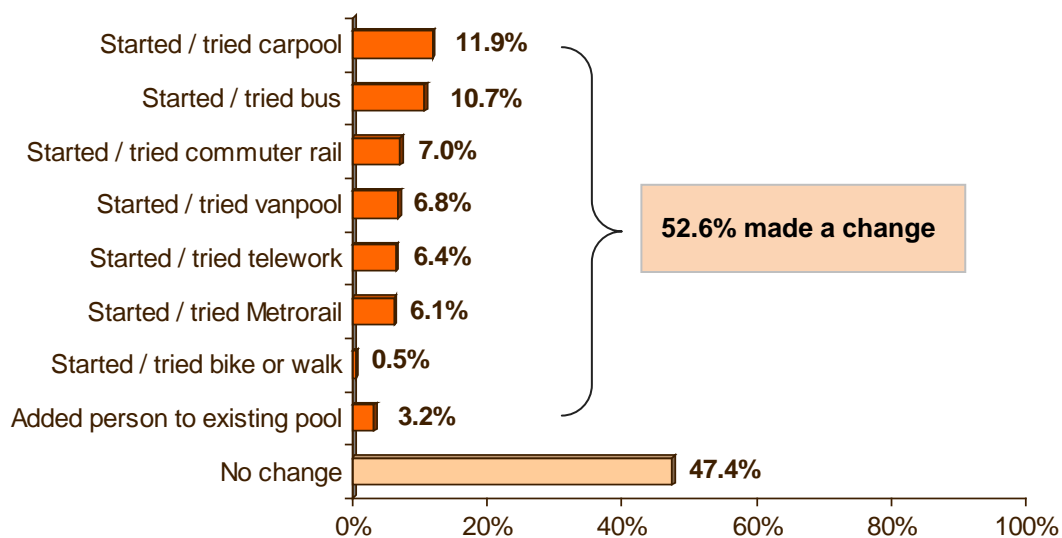
- Continued – applicant made a change and was still using the new mode at the time the survey was conducted
- Occasional – applicant made a change and was still using the new mode, but used the alternative mode less than one time per week
- Temporary – applicant made a change, but stopped using the new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

More than half (52.6%) of the applicants reported some type of alternative mode change after receiving Commuter Connections' assistance. (Figure 10) The largest segments started or tried carpooling (11.9%) or started or tried bus (10.7%). About seven percent made a change to commuter rail (7.0%) or vanpool (6.8%) and about six percent started or tried telework (6.4%) or Metrorail (6.1%). Less than one percent noted a change to bike or walk. About three percent said they were carpooling or vanpooling before requesting information from Commuter Connections, but added another person to their existing pools.

Figure 10  
All Commute Changes Made  
(n = 863)



### 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 said they made a change to a mode they had not reported 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 said they 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. Table 8 summarizes these results.

More than a third (35.4%) of applicants made a change to a mode they were still using at least one day per week; these applicants made continued changes. About six percent made a change to a mode they were using, but using only occasionally, defined as less than once per week. Five percent of applicants 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 about nine weeks. Finally, six percent of applicants tried a new mode for less than one week. These applicants were classified as one-time changes.

Table 8  
Distribution of Continued, Occasional, Temporary, and One-time Changes  
“Placement Rates”

Type of Change	Percentage of All Applicants (n = 863)	Percentage of Changes (n = 454)
Continued	35.4%	64%
Occasional	6.1%	14%
Temporary	5.1%	12%
One-time	6.0%	10%
<b>TOTAL – All Changes</b>	<b>52.6%</b>	<b>100%</b>
<b>No change</b>	<b>47.4%</b>	

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.

The percentages of respondents who made various types of changes represent the overall, “region-wide” placement rates for these types of changes. The continued placement rate for the total applicant population is 35.4%, the occasional rate is 6.1%, the temporary rate is 5.1%, and the one-time placement rate is 6.0%.

*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 live and work within the MWCOG ozone non-attainment area, MWCOG’s 11-jurisdiction region. The second sub-group included applicants who either live in the area and work outside or work in the area and live outside it, that is, they have one end point of their commute trip outside the area. Approximately 44% of the total participants either lived or worked outside the ozone non-attainment area.

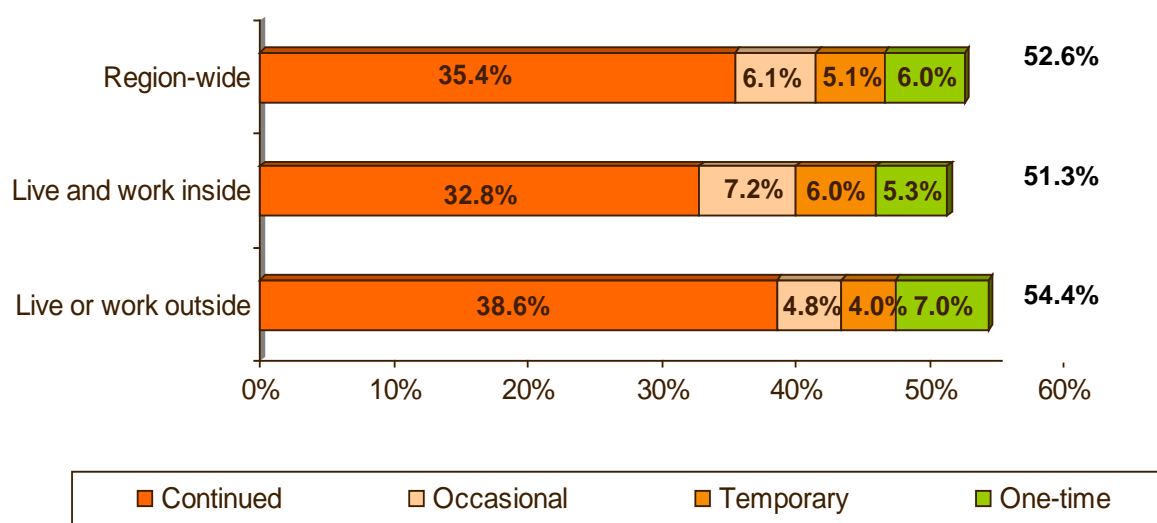
This distinction was made because applicants who live or work outside the ozone non-attainment area traveled a portion of their VMT outside the area. Thus, the VMT for these “out of area” applicants is discounted to credit VMT reduction only for the portion that occurred within the area.

Figure 11 presents the continued and temporary placement rates for the three groups of applicants: all applicants, applicants who lived and work within the region, and applicants who lived outside the ozone non-attainment area. As shown, applicants who lived or worked outside the area had a slightly higher overall placement rate (54.4%) than did applicants who lived and worked in the area (51.3%). The difference was particularly striking for continued placement rate; applicants who lived or worked outside had a continued rate of 38.6%, considerably higher than the 32.8% rate for applicants who lived and worked in the area.

**Figure 11**  
**Placement Rates by Home and Work Location: 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 = 863, Live and work in Area n = 4870, Live or work outside area n = 376)



### Change by Demographic and Employment Characteristics

The survey examined demographic and employment characteristics of applicants who had made continued or temporary changes and applicants who did not make any changes, to see if the groups were different in fundamental ways. Review of the survey data showed no differences between applicants who made travel changes and those who did not change by demographic characteristics or by the size or type of their employer.

The average commute distance of applicants who made a continued change was higher (37.9 miles) than the distance of those who made temporary changes (31.1 miles) and those who made occasional changes (29.1 miles). But the distance of continued change applicants was only moderately higher than the distance of applicants who did not make any changes (35.9 miles).

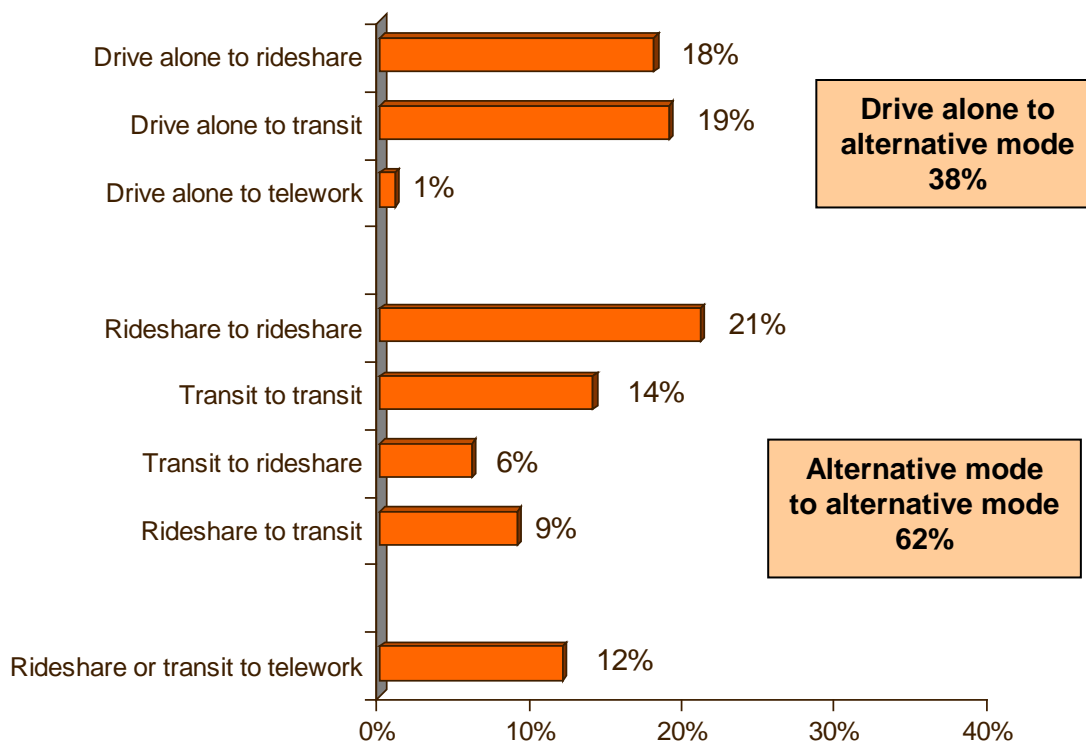
### Previous Mode of Commuter Who Changed Mode

Some applicants who made a mode change shifted from drive alone, but others shifted from one alternative mode to another. Figure 12 indicates the previous and current mode of these applicants.

Almost four in ten (38%) applicants who made a change shifted from driving alone to an alternative mode. These applicants were divided between shifts to rideshare (carpool or vanpool) and shifts to transit and non-motorized modes (bike and walk) or telework. The remaining 62% of applicants were previously using an alternative mode, but made a change within these alternatives, for example, from carpool to vanpool, from bus to train, or from vanpool to train.

It is important to note the percentage of shifting between alternative modes, 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 use the alternative. Some of these shifts, such as a shift from transit to rideshare, actually increased the number of vehicle trips the applicant made during the week, reducing the air quality benefit of the shift. 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.

Figure 12  
Types of Mode Changes – Previous to Current  
 (Note: scale extends only to 40% to highlight differences)  
 (n = 363)



### Reasons for Changes

Applicants who said they had made a commute change were asked the reasons for their changes. Table 9 summarizes the responses.

Many applicants made the change for commute-related reasons: save money (17%), save time (13%), gas prices too high (9%), a new option became available (8%), received a financial incentive (6%), or because the employer permitted telework (6%). A small percentage cited traffic congestion or a desire to reduce congestion or pollution (3%). Five percent said they changed because their carpool or vanpool broke up.

A significant number of applicants mentioned an outside factor, such as changing jobs or work hours (16%), being tired of driving (11%), or convenience (9%) as influencing the decision to make a change. Four percent said they moved to a different residence. 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.

**Table 9**  
**Reasons for Commute Change**  
(n = 238, multiple responses permitted)

Commuter related reasons	Percentage	Personal related reasons	Percentage
- Save money	17%	- Changed job/work hours	16%
- Save time	13%	- Tired of driving, reduce stress	11%
- Gas prices too high	9%	- Convenience	9%
- New option became available	8%	- Moved residence	4%
- Got financial incentive	6%	- Schedule didn't work for me	4%
- Employer permitted telework	6%	- Reduce wear and tear on car	4%
- Carpool broke up/didn't work	5%	- Weather conditions	3%
- Traffic congestion	3%	- Others doing it (e.g., friends)	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. About four in ten (38%) of applicants who made a change cited a Commuter Connections service that had influenced or assisted them. This was slightly higher than the 30% of applicants who cited an influential Commuter Connections service in 2008.

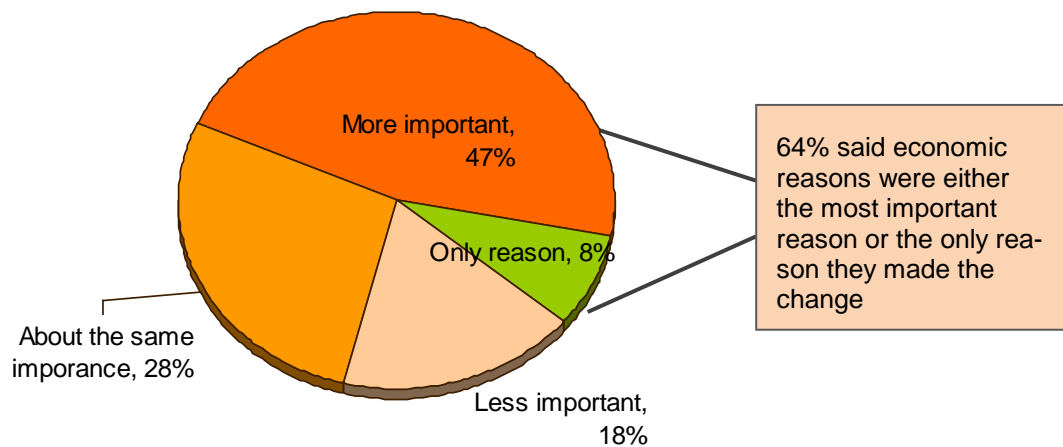
The top two Commuter Connections services named were matchlist / map showing home and work locations of potential rideshare partners and Guaranteed Ride Home, each named by about 14% of applicants who made a change. Transit information and other carpool/vanpool information were each named by about seven percent of applicants who made a change.

Two in ten (21%) of applicants said a service provided by their employer or another commute service organization had influenced or assisted their change. The most commonly noted services were financial incentives, cited by nine percent of applicants who made a change and vanpool assistance, named by five percent.



**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. As illustrated in Figure 13, eight percent of applicants who made a change said economic reasons were the only reason they made the change and 47% said economic reasons were more important than other reasons. Just over a quarter (28%) said economic reasons were about the same importance as other motivating influences.

**Figure 13**  
Importance of Economic Reasons in Motivating Travel Changes  
 (Economic reasons n = 349)



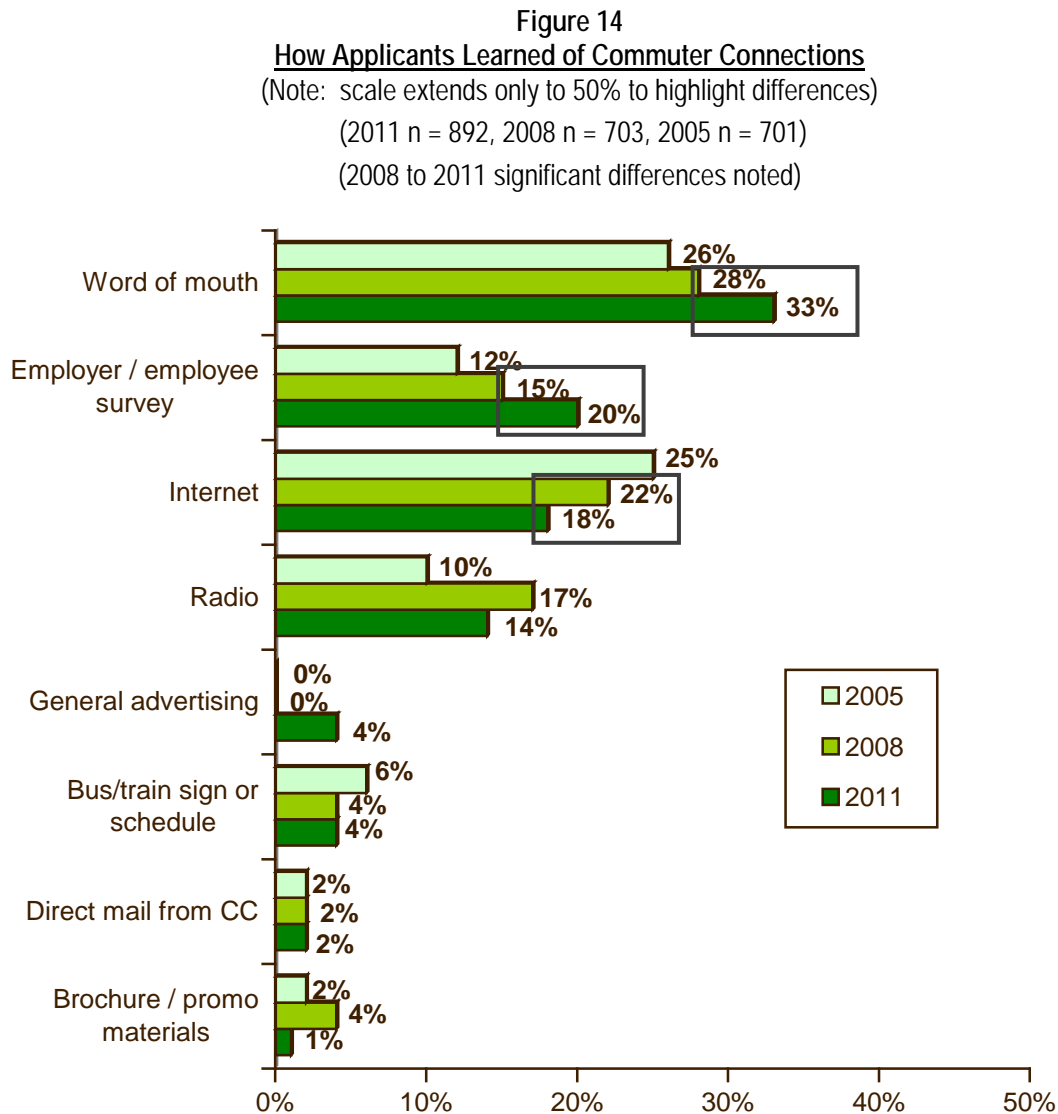
## CONTACT WITH COMMUTER CONNECTIONS AND SERVICES RECEIVED

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 14 presents the primary sources of information cited by applicants in 2011. Results for the 2008 and 2005 applicant surveys also are shown for comparison. Four sources dominated in 2011: word of mouth referrals (33%), employer / employee survey (20%), internet (18%), and radio (14%).



These also were the top reasons in 2005 and 2008, although the relative use of the sources has changed since 2005. Word of mouth and employer / employee survey both have grown steadily as sources since 2005, while the Internet as a source has fallen since 2005. All of these changes were statistically significant. A higher share of applicants mentioned radio as their source in 2011 compared with 2005, but the share fell between 2008 and 2011.

#### Methods Used to Contact Commuter Connections

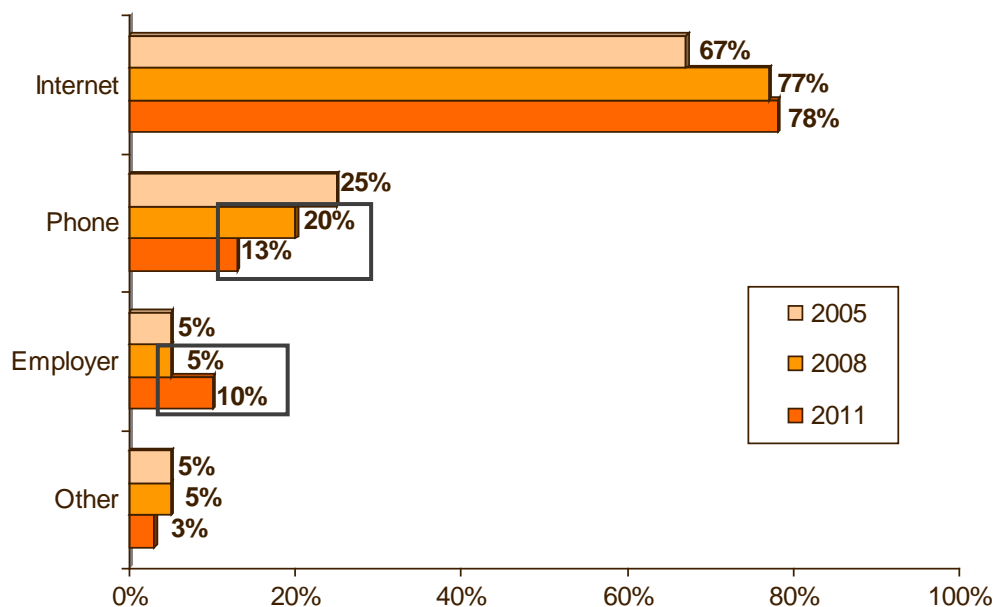
Commuters can contact Commuter Connections in a variety of ways. Nearly eight in ten (78%) applicants said they made this contact through the Commuter Connections webpage or another website on the Internet. (Figure 15) This was essentially the same percentage as reported this method in 2008, but was statistically higher than the 67% who used the Internet for their contact in 2005. This source has grown steadily since the 2002 survey, in which only 54% of applicants said they used the Internet method to contact Commuter Connections.

By contrast, use of the telephone as the contact method has declined from 25% of applicants in 2005 to just 13% in 2011. In 2011, 10% of applicants contacted Commuter Connections through their employers or through work, twice the five percent reported in both 2008 and 2005. These results also were statistically significant.

**Figure 15**  
**How Applicants Contacted Commuter Connections – 2011, 2008, and 2005**

(2011 n = 872, 2008 n = 703, 2005 n = 701)

(2008 to 2011 significant differences noted)



### Reasons for Seeking Assistance

Applicants were asked what prompted them to seek information or assistance from Commuter Connections at that time. Almost half (45%) wanted to find back-up transportation in case of emergency (Table 10). About 16% wanted to check commute options or a transit schedule or were just curious about the service. About one in ten (11%) made the contact to find a carpool or vanpool partner or to get information about these modes. Smaller shares of applicants cited other reasons, such as wanting to save money, because they changed job or home locations, could receive a financial incentive, or to sign up for a Commuter Connections program.

**Table 10**  
**Reasons for Seeking Information**  
 (n = 711)

Reasons	Percentage
In case of emergencies / wanted back up transportation, GRH	45%
Check commute options / schedule, curiosity	16%
Wanted to carpool or vanpool, get carpool/vanpool information	11%
Save money, gas prices too high	7%
Changed jobs/work schedule, moved to new residence	5%
Could receive financial incentive	3%
Referral from family / co-worker / friend, word of mouth	3%
Sign up for Commuter Connections program, register, get tickets / pass	3%
Advertising	2%
Didn't want to drive, tired of driving	2%
Employer program or service	2%
Other*	7%

\*Other responses were each mentioned by fewer than two 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 survey, respondents were shown a list of services offered by Commuter Connections and were asked to check all that they remembered receiving or accessing. Table 11 lists the percentages of applicants who said they received each service, with services grouped into three categories by the types of alternative modes they support: Carpool/Vanpool Services, Transit-Related Services, and Other / Multi-Mode Services.

**Carpool/Vanpool Services** – About four in ten (39%) applicants received or accessed one or more Carpool/Vanpool services. About a quarter (27%) received a matchlist with names and contact information for potential carpool/vanpool partners, 12% used the carpool rider bulletin board, and nine percent received a map showing home and work locations of potential carpool/vanpool partners. One in ten applicants (12%) accessed Park & Ride lot information and 10% received general information about carpooling or vanpooling.

**Transit-Related Services** – Thirty-one percent of applicants received some type of information about transit from Commuter Connections. A quarter (24%) received information about transit fares or the Smart-Trip fare payment system and 22% received transit route/schedule information.

**Other / Multi-Mode Services** – The top service received overall, by a large majority, was Guaranteed Ride Home; seven in ten (71%) applicants said they received or accessed this “Multi-Mode” service, which is open to any commuter who uses an alternative mode to commute. Six 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. Finally, small shares of applicants received bicycle or telework information.

**Table 11**  
**Information Received or Accessed from Commuter Connections**  
(n = 892)

Reasons	Percentage
<b>Carpool / Vanpool Services</b>	
Matchlist - names of potential carpool / vanpool partners	27%
Carpool rider bulletin board	12%
Park & Ride lot information	12%
Other carpool / vanpool information	10%
Map showing home / work locations of potential pool partners	9%
Vanpooling assistance	5%
'Pool Rewards carpool financial incentive	4%
HOV lane information	3%
<b>Transit-Related Services</b>	
Transit fare information, SmarTrip	24%
Transit route / schedule information	22%
<b>Other / Multi-Mode Services</b>	
Guaranteed Ride Home	71%
Information on special events (e.g., Bike to Work Day)	6%
Bicycle to Work Guide, bicycle information	4%
Online bicycle route planning	3%
Telework information	3%

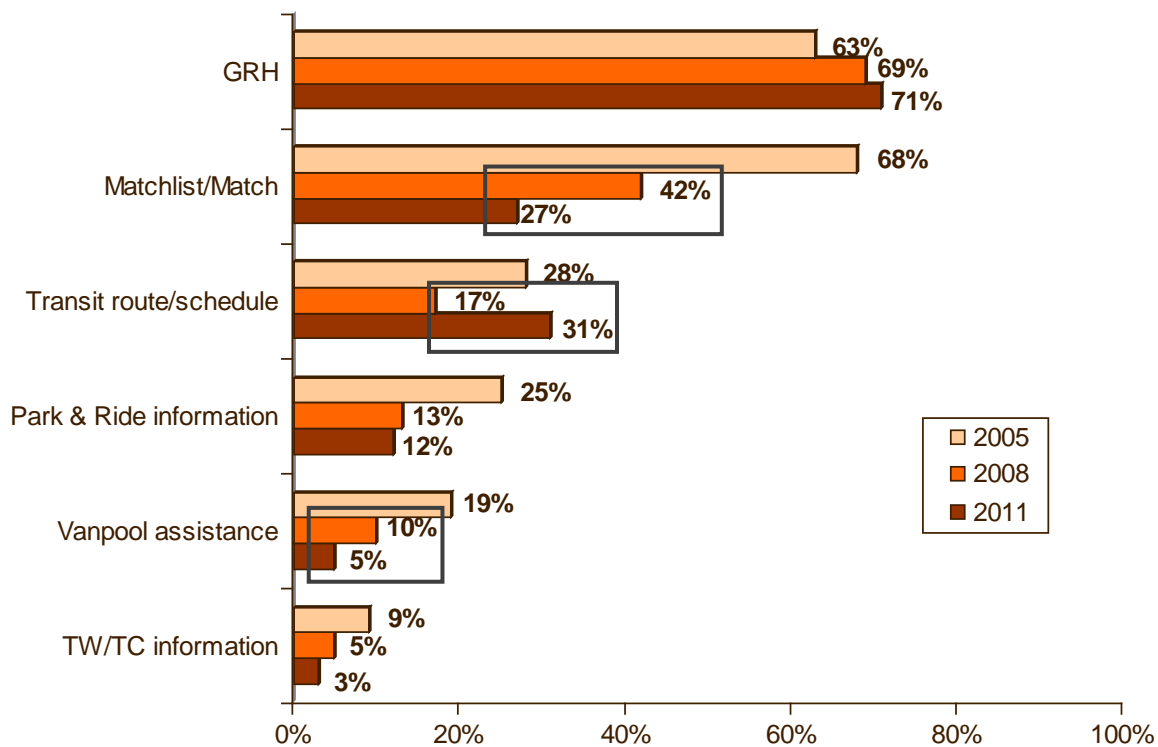
*Comparison of Services Received in 2011 to Services Received in 2008 and 2005* – Figure 16 shows the percentages of applicants who received various services in 2011 compared to the percentages noted in the 2008 and 2005 applicant surveys. These results show a distinct shift in service delivery over the six year period, in nearly all services.

*Guaranteed Ride Home* – Guaranteed Ride Home continues to be a popular Commuter Connections service among applicants. In 2005, 63% of applicants received this service. In 2008, the share increased to 69%, and remained approximately the same in 2011 (71%).

**Figure 16**  
**Information Received or Accessed from Commuter Connections – 2011, 2008, and 2005**

(2011 n = 892, 2008 n = 703, 2005 n = 701, multiple responses permitted)

(2008 to 2011 significant differences noted)



Carpool/Vanpool Assistance – The share of applicants who received information related to carpooling / vanpooling has exhibited an unquestionable downward trend since 2005. In 2011, 27% of applicants received a matchlist, compared with 42% in 2008 and 68% in 2005. The shares of applicants who received vanpool assistance also declined dramatically, from 19% in 2005 to five percent in 2011. And use of Park & Ride services, received by 25% in 2005, was cut in half in 2008, then remained at the same level in 2011.

Transit Route and Schedule Information – In 2011, 31% of applicants received transit information. This was slightly higher than the 2005 share (28%), but much higher than the 2008 percentage (17%). However, the 2005 and 2008 results overestimate the share of applicants who requested transit information; only 11% of applicants requested transit information in 2005 and five percent requested it in 2008.

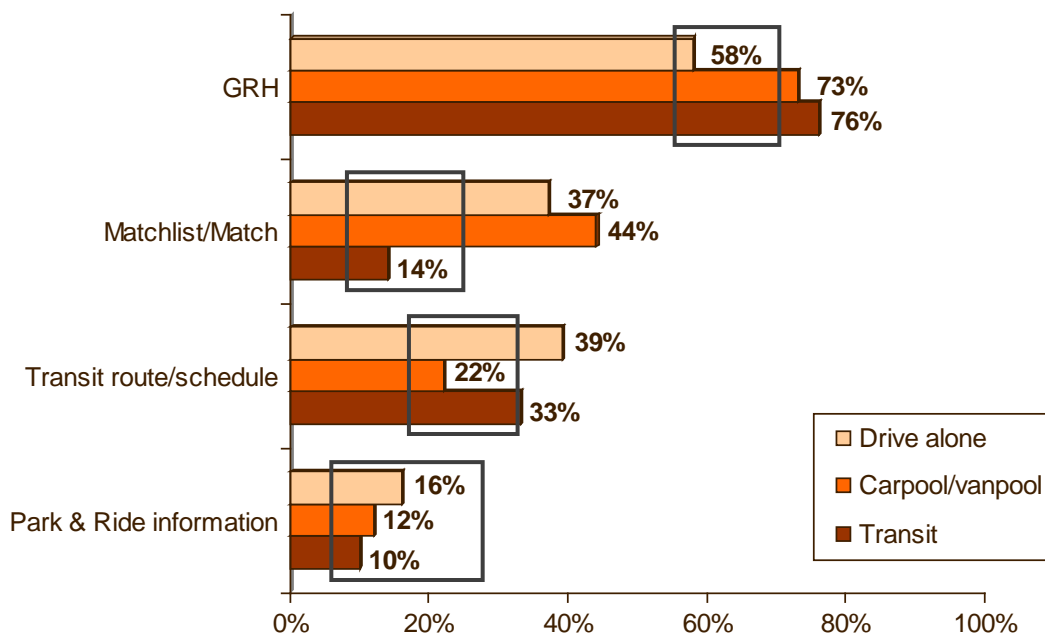
The difference in the percentages who requested and who recalled receiving this information reflects Commuter Connections’ “Integrated Rideshare” program, in which matchlists include information about transit options for the commute origin and destination, even if the applicants didn’t request transit information. Applicants who received a matchlist in 2011 also would have received transit information, however the online system offers self-service access to a wider range of transit information than in 2008, thus it is likely that a larger share of the “received transit information” actually reflects a request for this service.

Telework – Finally, the percentage of applicants who receive telework information has dropped from nine percent in 2005 to three percent in 2011. The change from 2005 to 2011 is a statistically significant change, perhaps related to the reduced level of telework promotion sponsored by Commuter Connections in 2008 and 2011, compared with 2005. It also could be related to greater promotion of telework by employers. In the 2010 regional State of Commute (SOC) survey, 71% of teleworkers said they learned of telework from their employers, a substantial increase over the 55% who reported their employer as the source of telework information in the 2007 SOC survey. Thus, applicants might have less need to seek telework information from Commuter Connections now than in 2008 and 2005.

Comparison of Services Received by Mode Before Seeking Services – Figure 17 presents the percentages of applicants who received various services in 2011 by the type of mode they used at the time they were seeking the services: drive alone, carpool/vanpool, or transit. These results show different service user patterns.

Drive Alone Commuters – Applicants who were driving alone to work had strong interest in both matchlists and transit route / schedule information. They also sought Park & Ride lot information at a higher rate (16%) than did applicants who already were either carpooling / vanpooling (12%) or using transit (10%).

**Figure 17**  
**Information Received or Accessed from Commuter Connections by Mode**  
 (Drive alone n = 178, Carpool / vanpool n = 236, Transit n = 462, multiple responses permitted)  
 (Significant differences noted)



Carpoolers / Vanpoolers and Transit Riders – Applicants who were carpooling or vanpooling or using transit at the time they sought information were equally likely to have sought information on Guaranteed Ride Home and were much more likely than were drive alone commuters to have sought this information.

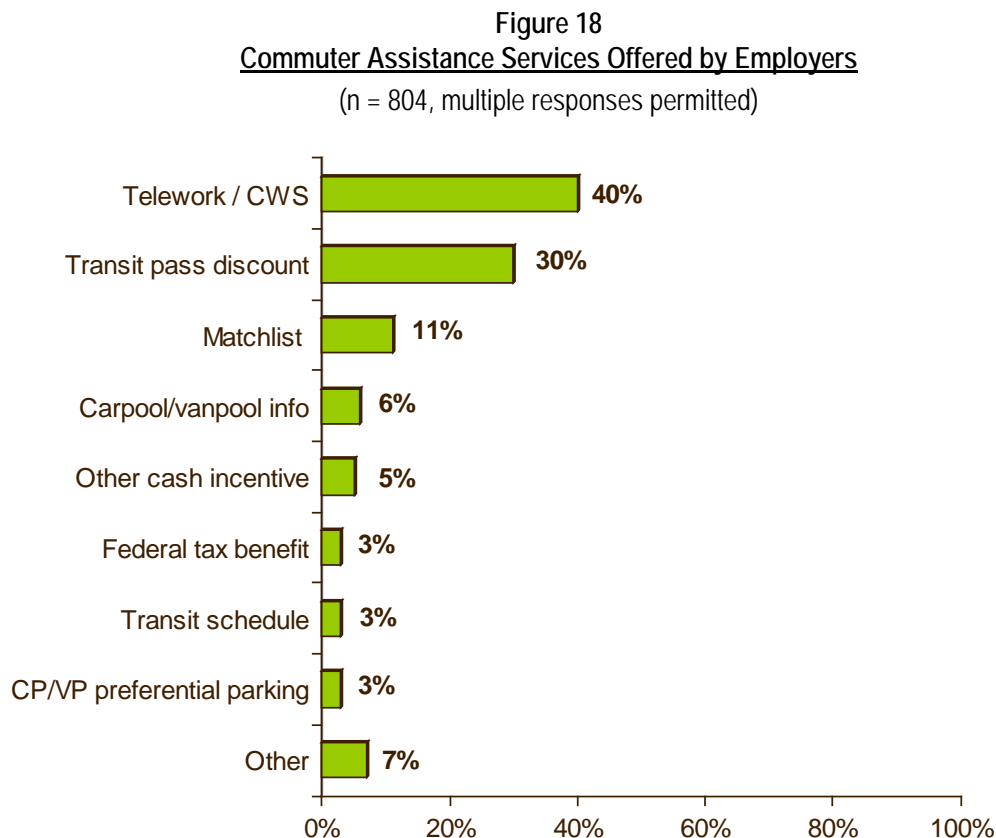
This is likely related to the fact that GRH is only available to commuters who use an alternative mode, but heavy promotion of GRH by some transit agencies to their riders also could contribute to this result.

Carpoolers / vanpoolers sought matchlists at a slightly higher rate than did drive alone applicants and a much higher rate than did transit riders. The high matchlist use 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.

A third (33%) of applicants who were using transit when they sought information also sought transit information. Carpool / vanpool riders were least likely of the three mode groups to seek transit information. 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 nine in ten (95%) applicants said their employers do offer some services. Figure 18 lists individual services noted by applicants.





The most common employer services were telework or compressed work schedule, offered by 40% of employers and transit pass discounts, noted by 30% of applicants. One in ten (11%) said their employers offer assistance with finding carpool or vanpool partners (matchlist). Smaller percentages of applicants named carpool/vanpool information (6%), other cash incentives (5%), Federal “Commuter Choice” tax benefit incentive (3%), transit schedules (3%), Federal tax benefit/Commuter Choice (3%), or preferential parking for carpools/vanpools (3%).

### Assistance Offered by Other Commute Assistance Groups

Applicants are not relying substantially on other organizations for commuter information or assistance; only two percent of applicants indicated they received information from another organization. Most received either transit route/schedule information or transit fare information.

## 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 19.

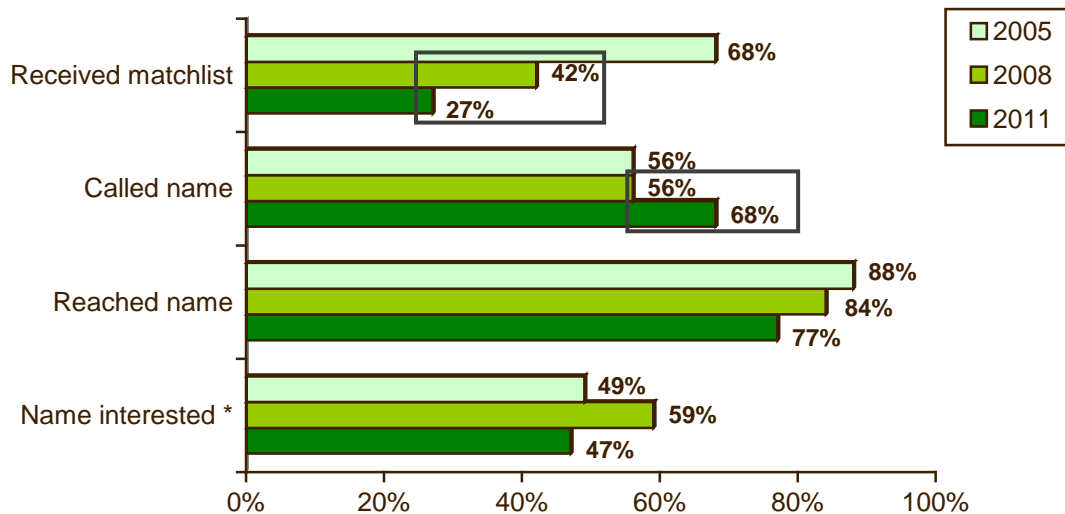
As noted earlier, the share of applicants who received matchnames dropped substantially from 2005 (68%) to 2011 (27%), but applicants who received a matchlist in 2011 were about equally likely to use the list as were applicants surveyed in 2005 and 2008.

*Tried to Make Contact* – About two-thirds (68%) of the applicants who received a matchlist in 2011 tried to call one or more of the people named, an increase from the 56% who tried to call in 2005 and 2008. This suggests that 2011 matchlist applicants were more motivated to use the information they received than were applicants in past years.

The remaining 32% 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” (26%) or work or home location not compatible with mine” (10%). But one in five (22%) 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 13% decided they didn’t want to carpool or vanpool. Eleven percent said they “haven’t gotten around to it.”

**Figure 19**  
**Actions Taken by Applicants who Received Matchnames**

(Received matchlist: 2011 n = 892, 2008 n = 703, 2005 n = 701, multiple responses permitted)  
 (2008 to 2011 significant differences noted)



\* In 2011, an additional 18% 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 2011, 77% of applicants who did try to make contact were successful in reaching someone named on this list. This represented a slight drop from the 2008 result of 84%, but was still relatively high. This suggests that the information provided on the matchlists was generally current and accurate.

**Interest in Ridesharing** – About half (47%) of applicants who reached someone said that person was interested in ridesharing, a smaller share than the 59% observed in 2008, but about the same as the 2005 percentage. It is possible the higher 2008 result was due to the motivation of higher gas prices. Another 18% said the people they reached were interested, but their schedules or destinations were not compatible. Fifteen 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

Twelve 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 = 102)

Bulletin Board Actions	Percentage
<b>No action taken / don't remember</b>	<b>78%</b>
Looked at site – did not post or respond	20%
Don't remember	58%
<b>Actions Taken</b>	<b>22%</b>
Posted a message	11%
Responded to other commuters' messages	3%
Posted a message AND responded to messages	8%
<b>Results of Actions</b>	
Reached an interested commuter	55%
Reached interested commuter with incompatible commute	19%
Reached commuter who was not interested in carpooling	13%
Did not reach an commuters	13%

About two in ten applicants who said they used the bulletin board noted that they posted a message or responded to a message from another commuter; eight percent both posted and responded to messages. Two in ten said they looked at the postings on the bulletin board but did not take any further action. The remaining 58% of applicants said they did not remember if they had taken any action. The bulletin board has been in place for more than 10 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 said they posted a message, 73% said another commuter had responded to their messages. About six in ten (62%) said one or two commuters responded and the remaining 11% said three or more commuters responded.

More than half (55%) of bulletin board users who tried to make contact with another commuter reached a commuter who was interested in carpooling. Another 19% said the people they reached were interested, but their schedules or destinations were not compatible. The remaining users were evenly divided between an inability to reach any commuter (13%) and reaching commuters who were not interested in carpooling (13%).

### Transit Information

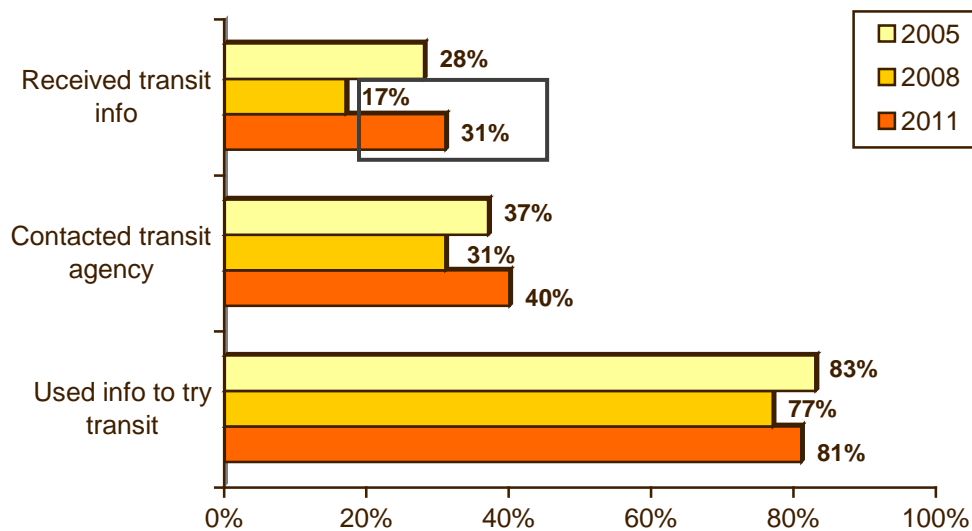
Three in ten (31%) applicants said they received transit information. As noted earlier, Commuter Connections includes on the matchlist information on transit organizations that offer transit service that might meet the applicant's travel needs. This information is provided to all ridematch recipients, even if they did not request information. But the online system also offers direct links to websites of local and re-

gional transit services, so the website has become an excellent self-service portal to access transit information directly.

Four in ten (40%) applicants who received transit information used the information to contact a transit agency. (Figure 20) This was higher than the 2008 percentage (31%) and about the same percentage who had used the information in 2005 (37%). Eight in ten (81%) of those who contacted a transit agency said they used information they received to try transit, essentially the same as the percentages reported in 2008 (77%) and 2005 (83%).

**Figure 20**  
**Actions Taken by Applicants who Received Transit Information**

(Received transit info: 2011 n = 892, 2008 n = 703, 2005 n = 701, multiple responses permitted)  
(2008 to 2011 significant differences noted)



**Reasons for Not Contacting Transit Agency** – Six in ten (60%) of applicants who received transit information said they did not contact a transit agency. Their reasons for not calling for transit schedule or route information are listed in Table 13.

Two in ten (19%) said they “didn’t need more information.” This response could have several meanings, however, such as the applicant was not interested in using transit. It also could mean that the applicant already had as much transit information as needed, either from Commuter Connections’ online system or from another source. All of these specific responses also were noted, by three percent, seven percent, and four percent of applicants, respectively. Nine percent preferred using a mode other than transit.

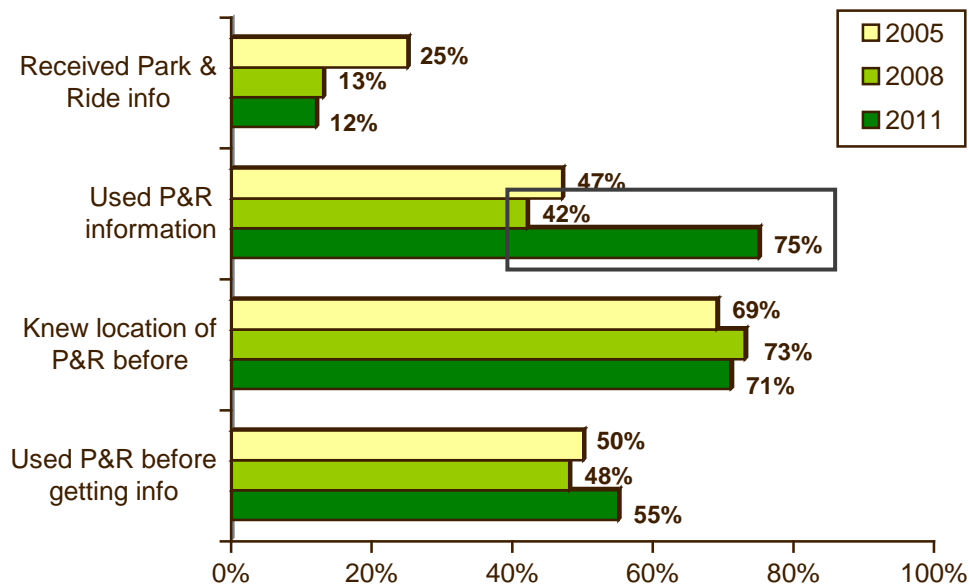
**Table 13**  
**Reasons Applicants Did Not Contact Transit Agency**  
 (n = 157, multiple responses permitted)

Reasons	Percentage
Didn't need more information	19%
Prefer current mode/other modes	9%
Got what I needed from the website	7%
Just wanted for information purposes	4%
Got information from another source	4%
Wasn't interested, didn't ask for transit info	3%
Too far from home / work	3%

**Park & Ride Information**

Commuter Connections also provides Park & Ride lot location information on matchlists and on the website. About 12% of applicants remembered receiving or accessing Park & Ride information in 2011.

**Figure 21**  
**Actions Taken by Applicants who Received Park & Ride Lot Information**  
 (Received Park & Ride info: 2011 n = 892, 2008 n = 703, 2005 n = 701, multiple responses permitted)  
 (2008 to 2011 significant differences noted)



Three-quarters (75%) of applicants who received Park & Ride information used the information provided, well above the percentages in 2008 (42%) and 2005 (47%). This suggests a larger share of commuters deliberately sought out the information in 2011. But the shares of applicants who were aware of the location of the Park & Ride lots before they received the information from Commuter Connection and the percentage who had used the lot before getting the information were essentially the same in 2011 as in 2008 and 2005, suggesting no greater need for the information in 2011. Seven in ten (71%) of the 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.

Applicants who received but did not use the Park & Ride lot information were asked why they had not done so. About a third (9 respondents) said they “didn’t need a Park & Ride lot.” Three applicants (10%) said the lot was not in a convenient location.

### Bicycle Information

Four percent of applicants reported that they had received bicycle information. More than a third of these applicants made a bicycle travel change and four in ten of these applicants said the information was Commuter Connections was a factor in their decision to make the change. Sixteen percent started bicycling to work and 11% bicycle to work more often. (Table 14) Ten percent said they rode a bicycle more often for non-work trips.

**Table 14**  
**Actions Taken After Receiving Bicycle Information**

(n = 38, multiple responses permitted)

Bicycle Actions	Percentage
Started bicycling to work	16%
Bicycle to work more often	11%
Bicycle more often for non-work trips	10%
Did not take any bicycle action	61%
Don’t remember	2%

### Telework Information

Three percent of applicants (22 applicants) said they had received information from Commuter Connections about telework. About half (12) of the applicants used the information to talk to their employers about telework. Four applicants said they used the information to start teleworking or to telework more often. Three applicants said they took no action with the information and five didn’t recall if they had used it.

### Guaranteed Ride Home

Finally, the survey included questions about applicants' use of the Guaranteed Ride Home (GRH) program. Seven in ten (71%) applicants received or accessed information on GRH. Nearly all (96%) of these applicants subsequently registered for GRH.

As illustrated in Table 15, about six percent of applicants who received GRH information were driving alone to work at the time they requested the information. The remaining 94% were using an alternative mode; almost two-thirds (63%) were riding transit, 17% vanpooled, and 13% carpooled.

Table 15  
Modes Used When Requesting GRH Information

(n = 560, multiple responses permitted)

<b>Modes Used</b>	<b>Percentage</b>
<b>Drive alone</b>	<b>6%</b>
<b>Alternative modes</b>	<b>94%</b>
- Bus, Metrorail, commuter rail	63%
- Vanpool	17%
- 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 collects 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 2014, as part of the FY 2012-2014 TERM analysis.

### PARTICIPATION, UTILIZATION, AND SATISFACTION

The results of six participation, utilization, and satisfaction measures are presented in Table 16 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 16**  
**Commuter Connections Program Activity Summary and**  
**Overall Participation, Utilization, and Satisfaction Performance Measures**  
**Placement Survey, July-September 2011**

• Commuter applicants	8,483	
• Applicant placement rates	52.6%	
- Continued placement rate		35.4%
- Occasional placement rate		6.1%
- Temporary placemen rate		5.1%
- One-time placement rate		6.0%
• Applicants placed in alternative modes	4,458	
- Continued placements	2,997	
- Occasional placements	517	
- Temporary placements	435	
- One-time placements	509	
• Applicants who received matchlist		27%
• Applicants who received vanpool assistance		5%
• Applicants who received Park & Ride info		10%
• Applicants who received transit information		31%
• Applicants who received GRH information/registration		71%

## PROGRAM IMPACT MEASURES

COG 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 17.

**Table 17**  
**Commuter Connections Program**  
**Program Impact Performance Measures**  
**Placement Survey, July-September 2011**

• Daily vehicle trips (VT) reduced	<b>1,677</b>	<b>trips</b>
- Continued placements	1,638	trips
- Temporary placements (prorated credit)	39	trips
• Daily VMT reduced	<b>45,967</b>	<b>VMT</b>
- Continued placements	45,038	VMT
- Temporary placements (prorated credit)	929	VMT
• Daily tons of Emissions reduced		
- NO <sub>x</sub>	<b>0.017</b>	<b>tons</b>
- VOC	<b>0.009</b>	<b>tons</b>
- PM 2.5	<b>0.001</b>	<b>tons</b>
- PM 2.5 NO <sub>x</sub> precursors	<b>0.019</b>	<b>tons</b>
• Annual tons of Emissions reduced		
- CO <sub>2</sub> / Greenhouse gas	<b>5,612</b>	<b>tons</b>
• Gallons of gasoline saved	<b>1,853</b>	<b>daily gallons of gas</b>
• Commuter costs reduced		
- Annual cost saving per placement	<b>\$610</b>	<b>per year</b>

*\* 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 – July 2008 – June 2011” (DATE\_\_\_\_\_). 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 must also account, however, for 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.

	<u>Within Area</u>	<u>Outside Area</u>
• Continued VTR =	0.51	0.58
• Temporary VTR =	0.53	0.53

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 **1,638 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 8.9 weeks on average. Thus only about 17% of the temporary trip reduction was allocated to the placements, representing the portion of a year (8.9 / 52 weeks) when the mode was used. This resulted in **39 daily trips were 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, 1,638 + 39, equaled **1,677 daily vehicle trips reduced.**

#### Vehicle Miles Traveled (VMT) Reduced

The reduction in vehicle miles traveled, or VMT, is the second travel impact measures. 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 27.5 miles for respondents with continued changes and 23.7 miles for respondents with temporary changes.

The actual one-way distance for the outside-Area applicants was considerably higher; 50.6 miles for continued changes and 43.2 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 was set equal to those of the distances for the within-Area respondents. This resulted in a loss of 23.1 one-way miles per trip for outside-Area applicants who made continued changes and 19.5 miles per trip for outside-Area applicants who made a temporary change. The VMT calculation thus was as follows, resulting in 45,967 VMT reduced daily:

$$(1,638 \text{ continued trips reduced} \times 27.5 \text{ miles}) + (39 \text{ temporary trips reduced} \times 23.7 \text{ miles}) \\ = \mathbf{45,967 \text{ VMT reduced}}$$

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 (NO<sub>x</sub>), Volatile Organic Compounds (VOC), Particulate Matter, 2.5 Microns (PM 2.5), PM 2.5 NO<sub>x</sub> precursors, and Carbon Dioxide (CO<sub>2</sub>, greenhouse gas).

For 2011, the emission factors are:

NO<sub>x</sub>:

Trip end (cold start)	=	0.5182 grams per one-way vehicle trip reduced
VMT (running)	=	0.3444 grams per vehicle mile reduced

VOC:

Trip end (cold start + hot soak)	=	1.4592 grams per one-way vehicle trip reduced
VMT (running)	=	0.1558 grams per vehicle mile reduced

PM 2.5:

Trip end (cold start + hot soak)	=	None
VMT (running)	=	0.0115 grams per vehicle mile reduced

PM 2.5, NO<sub>x</sub> precursor:

Trip end (cold start + hot soak)	=	0.6160 grams per one-way vehicle trip reduced
VMT (running)	=	0.3740 grams per vehicle mile reduced

CO<sub>2</sub> (Greenhouse gas):

Trip end (cold start + hot soak)	=	None
VMT (running)	=	461.7 grams per vehicle mile reduced

The first 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 second 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 **0.005 tons of NO<sub>x</sub> per day, 0.017 tons of VOC per day, 0.009 tons of PM 2.5, and 0.001 tons of PM 2.5 NO<sub>x</sub> precursors. CO<sub>2</sub> emissions were calculated on an annual basis and totaled 5,612 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, **1,853 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 would saved a total of \$1.87 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), this equals a saving of **\$610 per commuter per year**.

## LIST OF APPENDICES

**Appendix A** – Questionnaire for December 2011 Applicant Survey

**Appendix B** – Comparison of December 2011 Survey Results with Results for November 2008, November 2005, November 2004, November 2003, and November 2002 Surveys

**Appendix C** – Commuter Connections Impact Calculations, All Placements – July-September 2011

## Appendix A

### Questionnaire for December 2011 Applicant Survey

#### INTRODUCTION

Commuter Connections is conducting this online survey of people who received commute information or assistance from the Commuter Connections program or website. 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.

#### 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 through a letter, email, or phone call. Please check all that apply.

##### **ACCEPT MULTIPLES FOR 1-7, 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 financial incentive
- 90 Did not receive any of these services from Commuter Connections
- 99 *Question left blank*

- S2 Commuter Connections also offers information on telework, transit, 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 services from Commuter Connections
- 99 *Question left blank*

**IF Q\_S1 = ANY RESPONSE 1-7 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 1-15, SHOW “90-no services” AT THE END OF THE LIST. ACCEPT MULTIPLES FOR 1-15, 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 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)
- 90 Did not request or seek any of these services
- 99 Question left blank

**IF Q\_S3 = 90 or 99 ONLY, SKIP TO DEFINE USER**

**IF Q\_S3 = ANY RESPONSE 1 – 15, 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.

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**DEFINE USER – FOR LATER BRANCHING**

**CLASSIFY IN THE FOLLOWING ORDER:**

**IF Q\_S1 = ANY RESPONSE 1, 2, OR 4 – 7, USER = 1 (RECEIVED)**

**IF Q\_S2 = ANY RESPONSE 1 – 9, USER = 1 (RECEIVED)**

**IF Q\_S1 = 90 OR 99 AND Q\_S2 = 90 OR 99 AND Q\_S3 = ANY RESPONSE 1, 2 OR 4 – 15, USER = 2 (REQUESTED)**

**IF Q\_S1 = ONLY 3 AND Q\_S2 = 90 OR 99 AND Q\_S3 = 90 OR 99, USER = 3 (BB ONLY)**

**IF Q\_S1 = 90 OR 99 AND Q\_S2 = 90 OR 99 AND Q\_S3 = ONLY 3, USER = 3 (BB ONLY)**

**IF Q\_S1 = 90 OR 99 AND Q\_S2 = 90 OR 99 AND Q\_S3 = 90 OR 99, USER = 4 (UNKNOWN)**

**IF USER = 1, 2, OR 3, CONTINUE TO Q1**

**IF USER = 4, THANK AND TERMINATE**



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 schedule, less than 35 hours per week
  - 2 Full-time, five or more days per week, 35 or more hours per week
  - 3 4/40 compressed schedule (4 10-hour days per week, 40 hours)
  - 4 9/80 compressed schedule (9 days every 2 weeks, 80 hours)
  - 5 3/36 compressed schedule (3 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 days a week
  - 8 other (**SPECIFY**) \_\_\_\_\_
  - 9 Question left blank
- 4a 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.

**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.”

Indicate also how many weekdays 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 Use (0 to 5)
<b>Days you travel to your usual work location</b>	
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	
<b>Days you do not travel to your usual work location</b>	
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**

**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**  
**BKDAY = 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 BKDAY > 0, Q5 MODE = 9 BICYCLE**  
**IF WKDAYS > 0, Q5 MODE = 10 WALKING**

**DEFINE PRIMARY MODE**

**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 = TOTAL Q5 DAYS USING MODES 5, 6, 7, 9, 10, 11, 12, 13, 14, 15**

- 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

**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 carpool or 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, OTHERWISE, SKIP TO Q20.**

**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 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 leave 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 another carpool or vanpool, including dropped off by HH members
- 5 bicycle
- 6 walk
- 7 bus/transit
- 8 taxi
- 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**

- 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
  - 99 LEFT BLANK
- 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
  - 99 LEFT BLANK
- 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
  - 99 LEFT BLANK

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

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

**IF Q20 = 90 OR 99 AND Q21 = 90 OR 99 AND Q22 = 9, 90 OR 99, 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.**

- 24 You indicated you made a change to a new type of transportation but you reported that you don't typically use it 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)**

	(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, 3, 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
- 99 LEFT BLANK

- 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
- 99 LEFT BLANK

**Q27 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 OR 99, 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

**28 ALL CHANGES – AUTOCODE ONLY – MULTIPLE RESPONSE**

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

**IF Q23 = 90 OR 99 AND Q27 = 90 OR 99, 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 OR 99 FOR carpool, Q28 = 31 (One-time carpool)**  
**IF Q24 = 1 FOR vanpool AND Q25 = 1 OR 99 FOR vanpool, Q28 = 32 (One-time vanpool)**  
**IF Q24 = 1 FOR bus AND Q25 = 1 OR 99 FOR bus, Q28 = 33 (One-time bus)**  
**IF Q24 = 1 FOR Metrorail AND Q25 = 1 OR 99 FOR Metrorail, Q28 = 34 (One-time Metrorail)**  
**IF Q24 = 1 FOR commuter rail AND Q25 = 1 OR 99 FOR commuter rail, Q28 = 35 (One-time commuter train)**  
**IF Q24 = 1 FOR bicycle AND Q25 = 1 OR 99 FOR bicycle, Q28 = 36 (One-time bicycle)**  
**IF Q24 = 1 FOR walking AND Q25 = 1 OR 99 FOR walking, Q28 = 37 (One-time walking)**  
**IF Q24 = 1 FOR telework AND Q25 = 1 OR 99 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

List continues on following page

## Q30 – Responses (cont.)

- 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**

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."

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)
<b>Days you traveled to your usual work location</b>	
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	
<b>Days you did not travel to your usual work location</b>	
1 Compressed work schedule day off	
2 Telecommute / telework all day	
17 Regular day off	
18 Other (describe)	
<b>Total Days (DO NOT SHOW THIS LINE ON SCREEN)</b>	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\_MRDAY = SUM OF Q43, RESPONSE 10**  
**D\_CRDAY = SUM OF Q43, RESPONSE 11, 12, 13**  
**D\_BKDAY = SUM OF Q43, RESPONSE 14**  
**D\_WKDAY = 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\_MRDAY > 0, Q43 MODE = METRORAIL**  
**IF D\_CRDAY > 0, Q43 MODE = COMMUTER TRAIN**  
**IF D\_BKDAY > 0, Q43 MODE = BICYCLE**  
**IF D\_WKDAY > 0, Q43 MODE = WALKING**

**DEFINE DALTDAYS = TOTAL Q43 DAYS USING MODES 5, 6, 7, 9, 10, 11, 12, 13, 14, 15**

**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\_MRDAY = 0, ASK Q44, INSERTING “METRORAIL” AS Q43 MODE**  
**IF Q30 = 15 AND D\_CRDAY = 0, ASK Q44, INSERTING “COMMUTER TRAIN” AS Q43 MODE**  
**IF Q30 = 16 AND D\_BKDAY = 0, ASK Q44, INSERTING “BICYCLE” AS Q43 MODE**  
**IF Q30 = 17 AND D\_WKDAY = 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 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**)
- 9 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.”

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.

**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)
<b>Days you traveled to your usual work location</b>	
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	
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	
<b>Days you did not travel to your usual work location</b>	
1 Compressed work schedule day off	
2 Telecommute / telework all day	
17 Regular day off	
18 Other (describe) _____	
<b>Total Days (DO NOT SHOW THIS LINE ON SCREEN)</b>	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\_BKDAY = SUM OF Q52, RESPONSE 14**  
**P\_WKDAY = 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\_BKDAY > 0, Q52 MODE = BICYCLE**  
**IF P\_WKDAY > 0, Q52 MODE = WALKING**

**DEFINE PALTDAYS = SUM OF Q52 DAYS USING MODES 5, 6, 7, 9, 10, 11, 12, 13, 14, 15**

**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      How many people were in your [Q52 MODE, carpool, vanpool] before you made that change?

\_\_\_\_\_

- 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, vehicle 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 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 Other (specify)

**IF USER = 2 (REQUESTED), AUTOCODE Q55 = 90, THEN SKIP TO Q56**

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

91 No, services did not influence or assist

99 Don't know

\* 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 financial incentive
- 15 Special events information (e.g., Bike to Work Day, Car Free Day)
- 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?

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 RESPONSE 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 Smart Tag / 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 RESPONSE 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)
- 29 Other
- 99 *Left blank*

61 Which of the following sources did you use to contact Commuter Connections for assistance? **(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 RESPONSE 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
- 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 MULTIPLES**

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\_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 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)
- 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 Smart Tag / E-Z Pass subsidy
- 14 Shuttle bus to Metrorail or bus stop
- 15 Federal Tax Benefit/ "Commuter Choice" program
- 16 Zipcar carshare service account
- 17 other (SPECIFY)
- 90 no, employer doesn't offer any services

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?

- 90 Did not receive any services
- 98 Don't know
- 99 *Left blank*

\* Yes (please specify)

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

**(DO NOT SHOW THESE RESPONSE 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 – MULTIPLE RESPONSE**

**IF Q63 = 1, SET Q66 = 1 (Commuter Connections matchlist)**

**IF Q64 = 1 OR Q65 = 1, SET Q66 = 2 (other matchlist)**

**IF Q63 = 2 OR Q65 = 2, SET Q66 = 3 (map)**

**IF Q63 = 3, SET Q66 = 4 (bulletin board)**

**IF Q63 NE 1, 2, OR 3 AND Q64 NE 1, SET Q66 = 9**

- 1 Commuter Connections matchlist
- 2 Other matchlist
- 3 Map
- 4 Bulletin board
- 9 No matching info

**INSTRUCTIONS BEFORE Q67 – BULLETIN BOARD**

**IF Q66 = 4, 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 - MATCHLIST**

**IF Q66 = 1 OR 2, ASK Q70, OTHERWISE, SKIP TO INSTRUCTIONS BEFORE Q80**

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 Q80, 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 Q80**

- 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 Q80 – TRANSIT INFO**

**IF Q63 = 8 OR 9, RECEIVED TRANSIT INFO FROM COMMUTER CONNECTIONS, CONTINUE.**

**IF Q63 NE 8 OR 9, SKIP TO INSTRUCTIONS BEFORE Q84**

- 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 Q83**)
- 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 (P&R INFO), SKIP TO INSTRUCTIONS BEFORE Q90**

**IF Q63 = 10, 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 Q88**)

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

- 1 Yes
- 2 No (**SKIP TO Q87**) 9 Left blank

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

- 1 Yes
- 2 No
- 9 Left blank

**IF Q30 = 90 OR 99, 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

**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 (bicycle info), SKIP TO INSTRUCTIONS BEFORE Q95**

**IF Q63 = 12 OR 13, 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 changes9 Don't remember, don't know

**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 (telework info), SKIP TO INSTRUCTIONS BEFORE Q100****IF Q63 = 11, 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? **(PERMIT MULTIPLE RESPONSES WITH 1 – 5. DO NOT PERMIT MULTIPLE RESPONSES WITH 6 OR 9)**

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

**IF Q95 NE 3 OR 4, SKIP TO INSTRUCTIONS BEFORE Q100****IF Q95 = 3 OR 4, 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 = 14, ASK Q100****IF Q63 NE 14, SKIP TO Q103**

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 eligibility 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 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 carpool/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

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#### DEMOGRAPHICS

The last few questions are for classification purposes only.

104 Do you currently own an electric vehicle, either all electric, such as a Nissan Leaf, or a plug-in hybrid, such as a Chevy Volt?

- 1 Yes **(SKIP TO Q105)**
- 2 No
- 8 Don't know
- 9 *Prefer not to answer - Left blank(internet)*

104a How likely are you to purchase an electric vehicle within the next two years? Are you...

- 1 Very likely
- 2 Somewhat likely
- 3 Not at all likely
- 8 Don't know
- 9 *Prefer not to answer - Left blank(internet)*

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
- 5 self-employed
- \* 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 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 2011 Survey Results with Results for November 2008, November 2005, November 2004, November 2003, and November 2002 Surveys

Unless otherwise indicated, sample sizes are: 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)

(2011 n = 863, 2002-2008 n = 700)

	<u>2011</u>	<u>2008</u>	<u>2005</u>	<u>2004</u>	<u>2003</u>	<u>2002</u>
<b>CWS</b>	<b>3.7%</b>	2.2%	2.4%	2.5%	2.8%	2.6%
<b>Telework</b>	<b>5.5%</b>	3.2%	2.3%	1.9%	1.2%	1.2%
<b>DA/Motorcycle</b>	<b>9.7%</b>	24.6%	25.6%	27.4%	24.9%	30.0%
<b>CP</b>	<b>13.5%</b>	16.9%	21.4%	24.4%	17.9%	23.0%
<b>VP</b>	<b>13.9%</b>	15.2%	13.8%	11.6%	9.1%	12.7%
<b>Bus</b>	<b>24.7%</b>	17.5%	11.4%	11.8%	9.5%	10.1%
<b>Train</b>	<b>28.7%</b>	20.4%	22.8%	20.3%	34.2%	20.0%
Metrorail	8.5%	11.3%	12.4%	11.4%	12.8%	12.4%
Commuter rail	20.2%	9.1%	10.4%	8.9%	21.4%	7.6%
<b>B/W</b>	<b>0.3%</b>	0.1%	0.4%	0.3%	0.2%	0.3%
Bicycle	0.3%	0.1%	0.1%	0.1%	0.1%	0.2%
Walk	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)  
 (2011 n = 863, 2002-2008 n = 700)

	<u>2011</u>	<u>2008</u>	<u>2005</u>	<u>2004</u>	<u>2003</u>	<u>2002</u>
<b>DA/Motorcycle</b>	10.6%	26.0%	26.8%	28.6%	26.0%	31.1%
<b>CP</b>	15.3%	17.8%	22.4%	25.5%	18.7%	23.9%
<b>VP</b>	14.9%	16.1%	14.5%	12.1%	9.5%	13.2%
<b>Bus</b>	27.2%	18.5%	11.9%	12.3%	9.9%	10.5%
<b>Train</b>	31.6%	21.5%	24.0%	21.2%	35.7%	20.8%
<b>B/W</b>	0.4%	0.1%	0.4%	0.3%	0.2%	0.5%

Table B-3  
Work Compressed Work Schedules

	<u>2011</u>	<u>2008</u>	<u>2005</u>	<u>2004</u>	<u>2003</u>	<u>2002</u>
<b>Yes</b>	<b>26%</b>	23%	18%	18%	15%	17%
4/40	3%	4%	2%	1%	2%	2%
9/80	23%	19%	16%	17%	13%	15%

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

	<u>2011</u>	<u>2008</u>	<u>2005</u>	<u>2004</u>	<u>2003</u>	<u>2002</u>
<b>Distance</b>	36.2 mi	36.3 mi	36.5 mi	34.9 mi	35.6 mi	31.6 mi
<b>Time</b>	63 min	63 min	67 min	62 min	66 min	57 min

Table B-5  
Carpool/Vanpool Occupancy

	<u>2011</u>	<u>2008</u>	<u>2005</u>	<u>2004</u>	<u>2003</u>	<u>2002</u>
(n=____) - carpool	147	137	172	191	140	186
(n=____) - vanpool	144	115	104	88	71	96
Carpool/slug	3.1	2.9	3.1	2.9	2.9	2.9
Vanpool	9.9	10.3	11.0	10.5	10.5	11.4

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

	<u>2011</u>	<u>2008</u>	<u>2005</u>	<u>2004</u>	<u>2003</u>	<u>2002</u>
(n=____)	275	252	276	279	211	282
Always drive	7%	8%	12%	11%	9%	12%
Share driving	58%	55%	52%	48%	43%	45%
Never drive	35%	36%	36%	41%	48%	43%

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

	<u>2011</u>	<u>2008</u>	<u>2005</u>	<u>2004</u>	<u>2003</u>	<u>2002</u>
(n=____)	775	508	498	489	511	463
Picked-up at home	5%	7%	9%	8%	7%	8%
Drive to driver's home	13%	6%	13%	10%	2%	4%
Drive to central location	64%	71%	62%	69%	74%	72%
Another pool/drop off	1%	1%	2%	2%	3%	2%
Walk	8%	12%	11%	7%	11%	10%
Drive CP/VP	2%	1%	1%	<1%	1%	1%
Bus/transit	4%	2%	2%	3%	3%	3%
<b>Ave access distance</b>	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

	<u>2011</u>	<u>2008</u>	<u>2005</u>	<u>2004</u>	<u>2003</u>	<u>2002</u>
Started CP/tried CP	11.9%	9.1%	14.0%	15.4%	10.2%	14.3%
Started VP/tried VP	6.8%	4.9%	7.4%	5.8%	5.1%	4.6%
Started transit	23.8%	12.3%	15.6%	11.1%	15.0%	18.3%
Started telework	6.4%	4.4%	4.4%	3.4%	2.2%	4.1%
Inc days using alt modes**	N/A	0.0%	0.0%	1.8%	0.0%	1.9%
Started transit / B/W*	0.5%	N/A	N/A	N/A	N/A	N/A
Added person to CP/VP	3.2%	6.9%	3.1%	3.0%	0.0%	2.5%
<b>TOTAL</b>	<b>52.6%</b>	<b>37.7%</b>	<b>44.5%</b>	<b>40.5%</b>	<b>32.5%</b>	<b>45.7%</b>

\* 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?

	<u>2011</u>	<u>2008</u>	<u>2005</u>	<u>2004</u>	<u>2003</u>	<u>2002</u>
(n=____)	263	285	311	268	264	343
Yes, influenced decision	38%	30%	33%	35%	32%	27%

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

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

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

	<b><u>2011</u></b>	<b><u>2008</u></b>	<b><u>2005</u></b>	<b><u>2004</u></b>	<b><u>2003</u></b>	<b><u>2002</u></b>
(n=____)	454	285	306	271	224	332
Continued change	64%	67%	60%	67%	63%	61%
Temporary change	12%	33%	34%	33%	37%	39%
Occasional use change	14%	N/A	6%	N/A	N/A	N/A
One-time change	10%	N/A	N/A	N/A	N/A	N/A

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

	<b><u>2011</u></b>	<b><u>2008</u></b>	<b><u>2005</u></b>	<b><u>2004</u></b>	<b><u>2003</u></b>	<b><u>2002</u></b>
Continued placement rate	35.4%	25.4%	26.9%	27.4%	20.4%	28.0%
Temporary placement rate	5.1%	12.3%	15.0%	13.2%	12.1%	17.7%
Occasional use placement rate	6.1%	N/A	2.6%	N/A	N/A	N/A
One-time use placement rate	6.0%	N/A	2.6%	N/A	N/A	N/A
Continued VTR	-0.54	-0.37	-0.45	-0.37	-0.44	-0.40
Temporary VTR	-0.53	-0.66	-0.57	-0.31	-0.42	-0.57
Average duration of temporary change	8.9 weeks	6.5 weeks	5.9 weeks	4.3 weeks	4.2 weeks	

## **Information Received**

**Table B-13**  
**How Contact Was Made with Commuter Connections**

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

Table B-14

Types of Information Received from Commuter Connections (multiple responses permitted)

	<u>2011</u>	<u>2008</u>	<u>2005</u>	<u>2004</u>	<u>2003</u>	<u>2002</u>
GRH info / registration	71%	69%	60%	70%	61%	49%
Transit info	31%	17%	28%	28%	33%	27%
Matchlist	27%	42%	67%	66%	48%	64%
Map with pool partners locations	9%	N/A	N/A	N/A	N/A	N/A
P&R info	12%	13%	25%	26%	21%	20%
Information on special events	6%	N/A	N/A	N/A	N/A	N/A
Vanpool assistance	5%	10%	19%	27%	22%	18%
Bicycle information	4%	N/A	N/A	N/A	N/A	N/A
Telework information	3%	5%	9%	11%	9%	8%
HOV lane info	3%	3%	7%	12%	8%	7%

Table B-15

Types of Information Offered by Employer (multiple responses permitted)

	<u>2011</u>	<u>2008</u>	<u>2005</u>	<u>2004</u>	<u>2003</u>	<u>2002</u>
CWS / telework	40%	2%	2%	<1%	<1%	<1%
Discount/free transit pass	30%	60%	56%	55%	58%	47%
Other cash incentive	11%	4%	7%	4%	3%	4%
CP/VP information / matchlist	11%	4%	5%	8%	9%	5%
Transit information / schedule	3%	4%	3%	2%	4%	2%
Federal tax benefit	3%	3%	3%	2%	3%	3%
Preferential parking	3%	2%	2%	2%	3%	2%
None	5%	27%	30%	30%	30%	37%

Table B-16

Received Information from Other Organization

	<u>2011</u>	<u>2008</u>	<u>2005</u>	<u>2004</u>	<u>2003</u>	<u>2002</u>
Yes	2%	4%	7%	6%	5%	5%

Use/Influence of Information Received

Table B-17

Received Match Names?

	<u>2011</u>	<u>2008</u>	<u>2005</u>	<u>2004</u>	<u>2003</u>	<u>2002</u>
Yes, received match info	27%	42%	68%	66%	48%	64%

Table B-18

Try to reach People Named on the List?

	<u>2011</u>	<u>2008</u>	<u>2005</u>	<u>2004</u>	<u>2003</u>	<u>2002</u>
(n=____)	133	310	461	448	332	459
Yes, tried to reach people	68%	56%	56%	52%	49%	53%

Table B-19

Able to Reach People on List?

	<u>2011</u>	<u>2008</u>	<u>2005</u>	<u>2004</u>	<u>2003</u>	<u>2002</u>
(n=____)	90	176	256	231	161	242
Yes, reached people on list	77%	84%	88%	88%	89%	89%

Table B-20  
Commuters Reached Interested in Ridesharing?

	<u>2011</u>	<u>2008</u>	<u>2005</u>	<u>2004</u>	<u>2003</u>	<u>2002</u>
(n=____)	82	146	224	204	141	216
Yes, interested in RS	47%	59%	49%	45%	45%	44%
Interested, but schedule and/or locations not compatible	18%	21%	35%	29%	34%	35%
No, not interested in RS	35%	20%	16%	26%	21%	21%

Table B-21  
Reasons for Not trying to Reach Commuters

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

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

	<u>2011</u>	<u>2008</u>	<u>2005</u>	<u>2004</u>	<u>2003</u>	<u>2002</u>
(n=____)	206	117	189	187	229	184
Yes, contacted agency	40%	31%	37%	38%	32%	30%



Table B-24

Did Respondent Use Information to Try Transit?

	<u>2011</u>	<u>2008</u>	<u>2005</u>	<u>2004</u>	<u>2003</u>	<u>2002</u>
(n=____)	68	34	42	36	41	35
Yes, used info to try transit	81%	77%	83%	60%	88%	77%

Table B-25

Why Did Respondent Decide Not to Contact Transit Agency? (multiple responses permitted)

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

Table B-26

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

	<u>2011</u>	<u>2008</u>	<u>2005</u>	<u>2004</u>	<u>2003</u>	<u>2002</u>
(n=____)	97	62	134	140	96	91
Yes, used P&R info	75%	42%	54%	57%	47%	44%

Table B-27

Used Park & Ride Lot Before Receiving Information?

	<u>2011</u>	<u>2008</u>	<u>2005</u>	<u>2004</u>	<u>2003</u>	<u>2002</u>
(n=____)	51	26	73	78	45	40
Yes, used P&R lot before	55%	48%	50%	40%	50%	43%

Table B-28

Aware of Park & Ride Lot Before Receiving Information?

	<u>2011</u>	<u>2008</u>	<u>2005</u>	<u>2004</u>	<u>2003</u>	<u>2002</u>
(n=____)	71	26	73	78	45	40
Yes, knew of P&R before	71%	73%	69%	63%	69%	65%

Table B-30

Mode Used When Requesting GRH Information

	<u>2011</u>	<u>2008</u>	<u>2005</u>	<u>2004</u>	<u>2003</u>	<u>2002</u>
(n=____)	560	487	442	492	464	352
DA/Motorcycle	6%	14%	20%	24%	21%	28%
CP	13%	19%	22%	22%	15%	20%
VP	17%	17%	14%	14%	11%	14%
Bus/train	63%	50%	45%	42%	52%	38%

Table B-31

Register for GRH?

	<u>2011</u>	<u>2008</u>	<u>2005</u>	<u>2004</u>	<u>2003</u>	<u>2002</u>
(n=____)	576	478	441	492	464	352
Yes, registered for GRH	96%	86%	76%	73%	74%	63%

**APPENDIX C****CALCULATIONS OF IMPACTS - ALL PLACEMENTS, JULY – SEPTEMBER 2011****Populations of Interest – Commuter Connections Rideshare Applicants**

<b>Total assisted commuters</b>	<b>8,483</b>
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Within MSA (56%)	4,778
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Outside MSA (44%)	3,705
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<b>COC Placement Rates</b>	<b>In MSA</b>	<b>Out MSA</b>
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• Continued rate	32.8%	38.6%
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• Temporary rate	6.0%	4.0%
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**Placements**

• Continued	1,567	1,430	(Apps x continued rate)
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• Temporary	287	148	(Apps x temporary rate)
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• <b>Total placements</b>	<b>3,432</b>		
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**Daily Vehicle Trips Reduced****VTR Factors**

• Continued	0.51	0.58
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• Temporary	0.53	0.53
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• Temporary discount	17.1%	17.1%
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• Continued trips reduced	804	834	(Placements x cont. VTR factor)
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• Temporary trips reduced	26	13	(Placements x temp. VTR factor)
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<b>Total VT reduced</b>	<b>1,677</b>		
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**Daily VMT Reduced**

Ave one-way trip distance (mi)			
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• Continued	27.5	27.5	(Actual outside-MSA dist. 50.6 miles)
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• Temporary	23.7	23.7	(Actual outside-MSA dist. 43.2 miles)
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• Continued VT reduced	22,109	22,929	(Vehicle trips x ave distance)
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• Temporary VT reduced	611	319	
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<b>Total VMT Reduced</b>	<b>45,967</b>		
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## Appendix C (continued)

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

	In MSA	Out MSA*
• Continued SOV access %	72%	0%
• Temporary SOV access %	41%	0%
• Continued SOV access dist (mi)	3.2	0.0
• Temporary SOV access dist (mi)	3.2	

**VT Reduction**

• No SOV access (cont)	229	834	(VT x (1-SOV access %))
• No SOV access (temp)	15	13	(VT x (1-SOV access %))

**Total VT for AQ analysis      1,091**

**VMT Reduction**

• No SOV access (cont)	6,301	22,929	(VT x SOV % x (dist – access dist))
• No SOV access (temp)	359	319	(VT x SOV % x (dist – access dist))
• SOV access (cont)	13,990	0	
• SOV access (temp)	218	0	

**Total VMT for AQ analysis      44,105**

\* Respondents who lived outside the MSA also used DA to access rideshare modes, but these DA trips and VMT were not counted, because they occurred outside the MSA. Thus, any air quality impact of the DA trips would also have occurred outside the MSA.

**Daily Emissions Reduced**

		11 Emis. Factor	VMT	11 Emis. Factor	Tot gm	Tot ton
<b>NOx</b>	<b>Trips</b>					
• Cold start	1,091	0.5182			566	0.0006
• Running (40 mph)			44,105	0.3444	15,190	<u>0.0167</u>
<b>Total NOx reduced (tons)</b>						<b>0.0167</b>
<b>VOC</b>	<b>Trips</b>	11 Emis. Factor	VMT	11 Emis. Factor	Tot gm	Tot ton
• Cold start	1,091	1.4592			1,593	0.0018
• Running (40 mph)			10,736	0.1558	6,872	<u>0.0076</u>
<b>Total VOC reduced (tons)</b>						<b>0.0094</b>

## Appendix C (continued)

**Daily Emissions Reduced (cont)**

	<b>Trips</b>	<b>11 Emis. Factor</b>	<b>VMT</b>	<b>11 Emis. Factor</b>	<b>Tot gm</b>	<b>Tot ton</b>
<b>PM 2.5</b>						
• Cold start	1,091	0.0			0	0.0000
• Running (40 mph)			44,105	0.0115	507	<u>0.0006</u>
<b>Total PM 2.5 reduced (tons)</b>						<b>0.0006</b>

	<b>Trips</b>	<b>11 Emis. Factor</b>	<b>VMT</b>	<b>11 Emis. Factor</b>	<b>Tot gm</b>	<b>Tot ton</b>
<b>PM 2.5 NOx precursor</b>						
• Cold start	1,091	0.616			672	0.0007
• Running (40 mph)			44,105	0.3740	16,495	<u>0.0182</u>
<b>Total VOC reduced (tons)</b>						<b>0.0189</b>

**Annual Emissions Reduced**

	<b>Trips</b>	<b>11 Emis. Factor</b>	<b>VMT</b>	<b>11 Emis. Factor</b>	<b>Tot gm</b>	<b>Tot ton</b>
<b>CO2</b>						
• Cold start	1,091	0.0			0	0.0000
• Running (40 mph)			44,105	461.7	20,363,426	22.4468
Total CO2 reduced (tons per day)						22.4468
<b>Total CO2 reduced (tons per year)</b>						<b>5,612</b>

**Daily Energy Saving**

**Daily Energy Savings** **1,853 gal/day**  
 (daily VMT reduced / 23.8 miles/gallons)  
 (44,105 / 23.8)

**Annual Commuter Cost Savings Saving \*\***

**Annual Commuter Cost Savings** **\$1,874,476 / year**  
 (VMT reduced x \$0.170/mi. x 250 days)  
 (44,105 x 0.17 x 250)

**Cost Saving per commuter** **\$610 / year**  
 (cost saving / number of placements)\*\*  
 (\$1,874,476 / 3,071)

\*\* 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 = 2,997 continued placements + 74 discounted temporary placements (17.1% \* 435).