

2016

STATE OF THE COMMUTE

“At-a-Glance” Survey Section



From the Metropolitan Washington DC Region

National Capital Region Transportation Planning Board

Metropolitan Washington Council of Governments

This is an “At-a-Glance” section from the 2016 State of the Commute (SOC) Report showing key figures and tables for commute patterns. To view the full report, go to www.commuterconnections.org.

Current Commute Mode

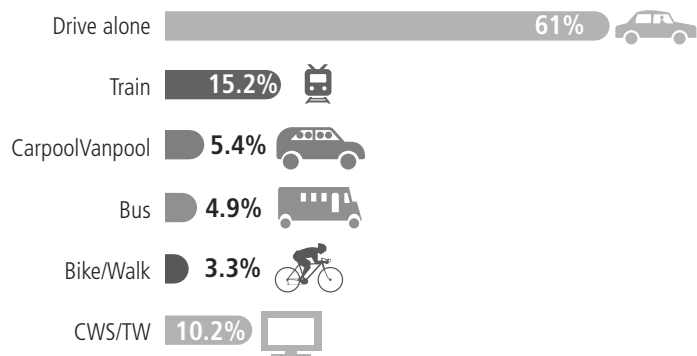
Respondents were asked what modes they used to travel to work each weekday (Monday-Friday) during the survey week. If they were sick, on holiday or vacation, or otherwise absent from work one or more days during the week, they were asked to report how they likely would have traveled to work on those days. The following figures present two views of modal distribution.

Weekly Work Days by Mode in 2016

The figure below presents mode shares as a percentage of commuters’ weekly work days for five traditional “on the road” mode groups: drive alone, train (Metrorail/commuter rail), carpool/vanpool, bus, and bike/walk. The figure also includes the mode share for telework and compressed work schedule. These are not actually travel modes, but are included to show the percentage of weekly work trips eliminated through use of these work schedule options.

Weekly Commute Trips by Modes – 2016

(n = 5,503)



Commuters drove alone to work on about six in ten (61.0%) of their total work days. They rode on a train for 15.2% of work days and used a bus for 4.9%. Respondents carpooled or vanpooled to work on 5.4% of work days and biked or walked on 3.3% of days.

Compressed work schedule days off and telework days (CWS/ TW) eliminated 10.2% of weekly work trips. These days are officially assigned as part of the work week and commuters would make a trip if they did not use these work arrangements. If the telework and compressed schedule days off were excluded, to estimate the “on the road” mode share of commute trips that actually were made, the percentage use of each of the five travel modes increased. Without

telework and CWS, the drive alone share would rise to 67.9% of weekly commute trips. The weekly commute trip distribution would be:

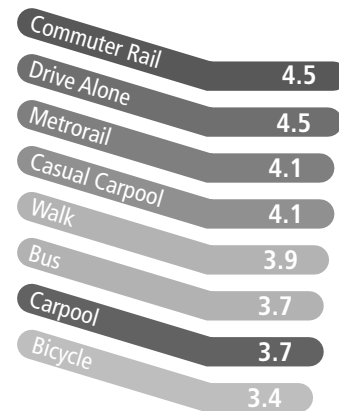
| | | | |
|-------------------|-------|-------------|------|
| • Drive alone | 67.9% | • Bus | 5.5% |
| • Train | 16.9% | • Bike/walk | 3.7% |
| • Carpool/vanpool | 6.0% | | |

Mean Days Used

The figure below details the average number of days each mode was used. All modes were used at least three days per week on average. Commuter rail, driving alone, Metrorail, and casual carpool all were used at least four days per week. This is consistent with other results in the survey, which showed that 81% of commuters used a single mode four or more of their commute days and 67% used a single mode all of their commute days.

Average Days Modes Used

(Commuter Rail n = 66, Drive Alone n = 3,844, Metrorail n = 700, Casual Carpool n = 50, Walk n = 127, Bus n = 319, Carpool n = 267, Bicycle n = 103; Note: Vanpool not included due to insufficient sample size; multiple responses permitted)



Mode Use within Mode Groups

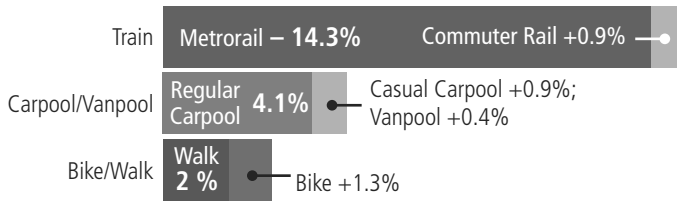
The next figure shows relative use of individual modes within the three alternative mode groups: train, carpool/vanpool, and bike/walk.

Train – The train mode group was comprised of Metrorail and three commuter rail companies: MARC (Maryland commuter rail), Virginia Railway Express (VRE), and Amtrak.

Carpool/Vanpool – Among respondents who carpooled or vanpooled, regular carpooling dominated.

Bike/Walk – Walking accounted for about six in ten trips in the bike/walk mode group (2.0% of 3.3% bike/walk use).

Composition of Alternative Mode Groupings – Modes Used 1+ Days per Week
(n = 5,503)



Primary Commute Mode by Demographic Group

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

Weekly Trips by Mode in 2016, 2013, 2010, 2007, and 2004

The figure below presents mode shares as a percentage of weekly commute trips for 2016 and for the previous four SOC surveys: 2013, 2010, 2007, and 2004. The comparison shows that the share of drive alone trips was the lowest rate of the SOC surveys since 2004. Use of telework/compressed work schedules continued the upward trend observed since the 2004 SOC survey; the share of weekday trips eliminated by these modes has nearly tripled over the past 12 years, from 3.6% of weekday commute trips to 10.2% in 2016. Trends for other mode groups were less definitive. Transit regained the high mode share observed in 2010 (20.2%). The carpool/vanpool mode share fell in 2016 back to the level observed in 2004. Bike/walk mode share grew in 2016 when compared with past SOC surveys.

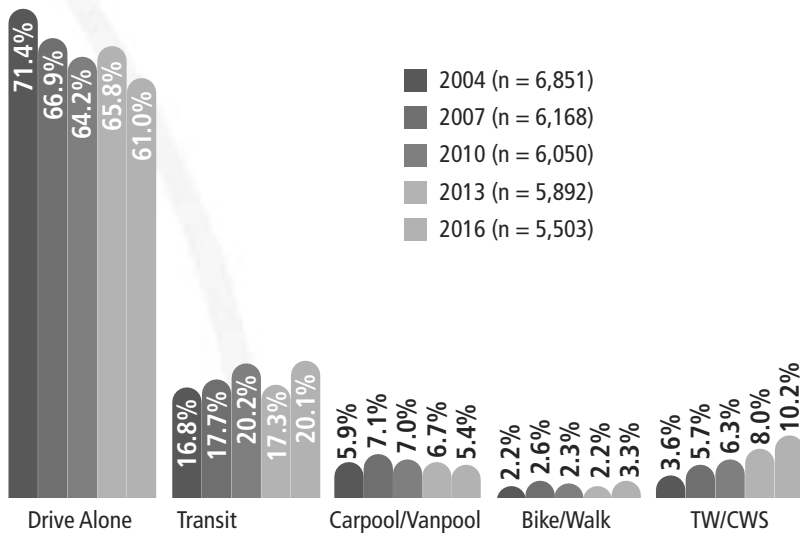
Primary Mode by Age

(Note: row totals might not add to 100% because telework is not included; Bolded numbers indicate statistically higher percentages)

| Age | (n =) | Primary Commute Mode | | | | |
|--------------------|--------|----------------------|-----------------|-----------|------------|-----------|
| | | Drive Alone | Carpool/Vanpool | Bus | Train | Bike/Walk |
| Under 35 years old | 711 | 55% | 5% | 8% | 20% | 6% |
| 35-44 years old | 1,099 | 66% | 6% | 3% | 14% | 3% |
| 45-54 years old | 1,683 | 67% | 7% | 4% | 13% | 2% |
| 55 years or older | 2,189 | 66% | 5% | 5% | 15% | 3% |

Percentage of Weekly Trips by Mode – 2016, 2013, 2010, 2007, and 2004

(Including telework and compressed schedules)



Age

As illustrated in the table above, respondents who were younger than 35 years old were less likely to drive alone and more likely to use the bus or train or to walk than were older respondents. Use of these modes was consistent for respondents in the other age groups. Carpool/vanpool use was approximately equal among all age groups.

Sex

Male respondents were more likely than were females to carpool/vanpool and to bike/walk to work. There were no significant differences in mode use rates for other modes; men and women were equally likely to drive alone, ride a bus, or ride a train.

Primary Mode by Sex

(Note: Row totals might not add to 100% because telework is not included; bolded numbers indicate statistically higher percentages)

| Sex | Primary Commute Mode | | | | | |
|--------|----------------------|-------------|-----------------|-----|-------|-----------|
| | (n=) | Drive Alone | Carpool/Vanpool | Bus | Train | Bike/Walk |
| Female | 2,911 | 63% | 4% | 7% | 15% | 2% |
| Male | 2,903 | 62% | 7% | 5% | 16% | 5% |

Ethnic Group

The table shows primary mode distribution for respondents of the three primary race/ethnic groups.

Primary Mode by Race/Ethnic Group

(Note: Row totals might not add to 100% because telework is not included; bolded numbers indicate statistically higher percentages)

| Ethnic Group | Primary Commute Mode | | | | | |
|------------------|----------------------|-------------|-----------------|-----------|------------|-----------|
| | (n=) | Drive Alone | Carpool/Vanpool | Bus | Train | Bike/Walk |
| Hispanic | 331 | 58% | 12% | 8% | 15% | 3% |
| White | 4,107 | 64% | 4% | 4% | 15% | 4% |
| African-American | 1,028 | 64% | 5% | 7% | 19% | 1% |



Income

The table below presents primary mode by annual household income.

Primary Mode by Annual Household Income

(Note: Row totals might not add to 100% because telework is not included; bolded numbers indicate statistically higher percentages)

| Income | Primary Commute Mode | | | | | |
|---------------------|----------------------|-------------|-----------------|------------|------------|------------|
| | (n=) | Drive Alone | Carpool/Vanpool | Bus | Train | Bike/Walk |
| Less than \$40,000 | 267 | 67% | 7% | 10% | 9% | 4% |
| \$40,000 – 59,999 | 300 | 60% | 6% | 7% | 13% | 6% |
| \$60,000 – 79,999 | 398 | 61% | 5% | 7% | 21% | 1% |
| \$80,000 – 99,999 | 332 | 59% | 5% | 3% | 19% | 10% |
| \$100,000 – 119,999 | 632 | 64% | 4% | 3% | 20% | 4% |
| \$120,000 – 139,999 | 484 | 60% | 5% | 11% | 14% | 2% |
| \$140,000 – 159,999 | 442 | 64% | 5% | 4% | 18% | 2% |
| \$160,000 – 179,999 | 350 | 64% | 6% | 6% | 15% | 2% |
| \$180,000 – 199,999 | 300 | 68% | 4% | 1% | 14% | 2% |
| \$200,000 + | 962 | 61% | 6% | 3% | 19% | 3% |

Vehicles Available – This table shows the primary mode distribution by the number of vehicles per adult resident in the respondent's household.

Primary Mode by Number of Vehicles Per Adult in the Household

(Note: Row totals might not add to 100% because telework is not included; bolded numbers indicate statistically higher percentages)

| Number of Vehicles per Adult | Primary Commute Mode | | | | | |
|------------------------------|----------------------|--------------|------------|------------|-----------------|------------|
| | (n=) | Drive Alone* | Train | Bus | Carpool/Vanpool | Bike/Walk |
| 0 vehicles | 239 | 19% | 31% | 25% | 2% | 18% |
| 0.1 to 0.5 vehicles | 649 | 41% | 26% | 11% | 8% | 8% |
| 0.6 – 0.9 vehicles | 383 | 61% | 17% | 5% | 9% | 3% |
| 1 vehicle or more | 4,054 | 73% | 12% | 3% | 4% | 2% |

* Drive alone includes motorcycle, taxi, Uber and Lyft, in addition to driving personal vehicle.

Residence and Employment Location

Residence State – As shown in this table respondents' commute modes differed by where they lived.

Employment State – This table also displays primary mode by state of employment.

Primary Mode by State of Residence and State of Employment

(Note: Row totals might not add to 100% because telework is not included; bolded numbers indicate statistically higher percentages)

| | Primary Commute Mode | | | | | |
|----------------------------|----------------------|-------------|-----------------|------------|------------|------------|
| | (n=) | Drive Alone | Carpool/Vanpool | Bus | Train | Bike/Walk |
| State of Residence | | | | | | |
| District of Columbia | 553 | 35% | 4% | 12% | 30% | 16% |
| Maryland | 2,372 | 65% | 6% | 4% | 17% | 2% |
| Virginia | 2,562 | 67% | 6% | 6% | 11% | 2% |
| State of Employment | | | | | | |
| District of Columbia | 1,710 | 38% | 6% | 8% | 37% | 6% |
| Maryland | 1,656 | 76% | 6% | 4% | 6% | 3% |
| Virginia | 2,036 | 73% | 5% | 5% | 6% | 2% |

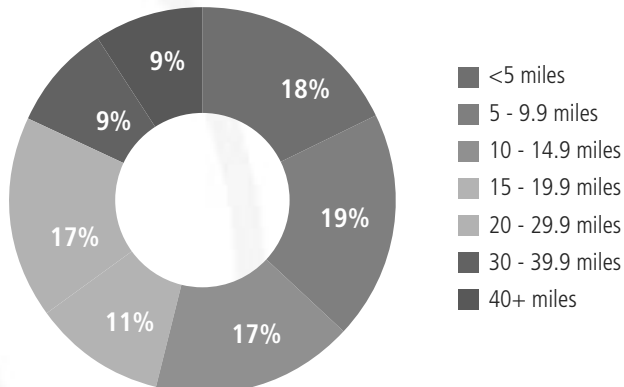
Length of Commute

Number of Miles

Commuters in the sample had a wide range of commute distances, ranging from less than one mile to more than 100 miles, with an overall average of 17.3 miles one-way.

Commute Distance (miles)

(n = 4,766)

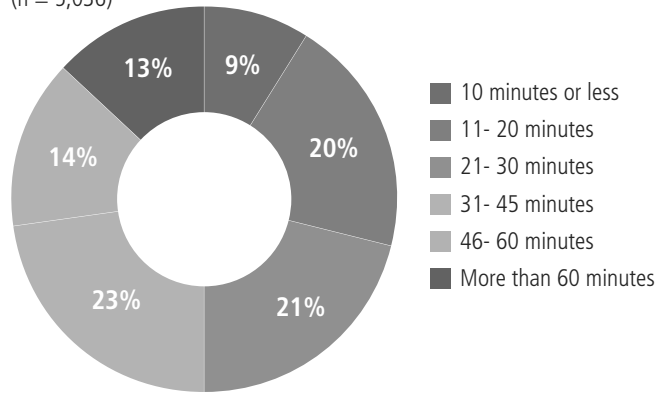


Commute Travel Time

Survey respondents commuted, on average, about 39 minutes one-way.

Commute Time (minutes)

(n = 5,036)



Commute Distance By Mode

Survey respondents' travel distance varied by the type of transportation they used to commute.

Commute Distance by Primary Mode

| Primary Commute Mode* | Average Distance (mi.) | | Average Distance (min.) | |
|-----------------------|------------------------|----------|-------------------------|---------|
| | (n=) | Average | (n=) | Average |
| Commuter rail | 49 | 29.1 mi. | 59 | 72 min. |
| Carpool | 248 | 19.0 mi. | 259 | 42 min. |
| Bus | 2,298 | 18.4 mi. | 267 | 47 min. |
| Drive alone | 3,359 | 17.7 mi. | 3,417 | 35 min. |
| Metrorail | 484 | 15.0 mi. | 614 | 48 min. |
| Bike | 67 | 4.4 mi. | 68 | 22 min. |
| Walk | 107 | 1.2 mi. | 108 | 17 min. |

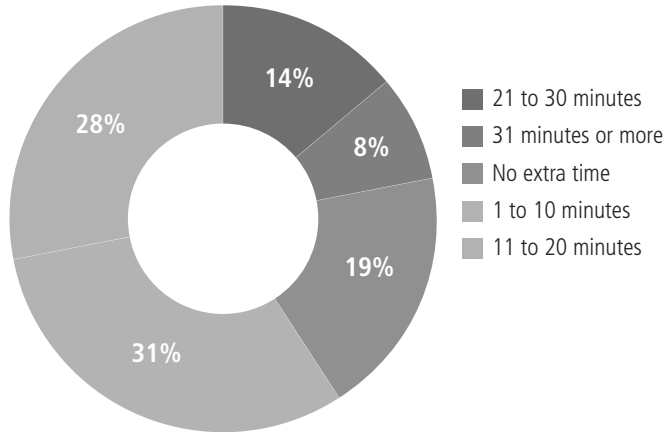
* Vanpool is excluded due to very small sample size.

Extra Time “Cushion” to Ensure On-time Arrival

The survey instructed respondents to report their “typical” commute time. But travel times can vary from one day to another, due to traffic, roadway incidents, transit service disruptions, and other factors.

Extra Travel Time (minutes) to Ensure On-time Arrival

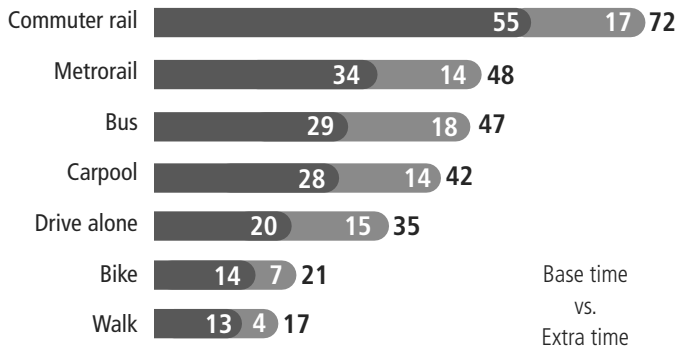
(n = 4,995)



This figure shows the average minutes of travel time that respondents who used each commute mode estimated was “extra” time in their commute.

Total Travel Time and Extra Time to Ensure On-time Arrival by Commute Mode

(Commuter rail n = 59, Metrorail n = 614, Bus n = 267, Carpool n = 259, Drive alone n = 3,417, Bike n = 68, Walk n = 108)

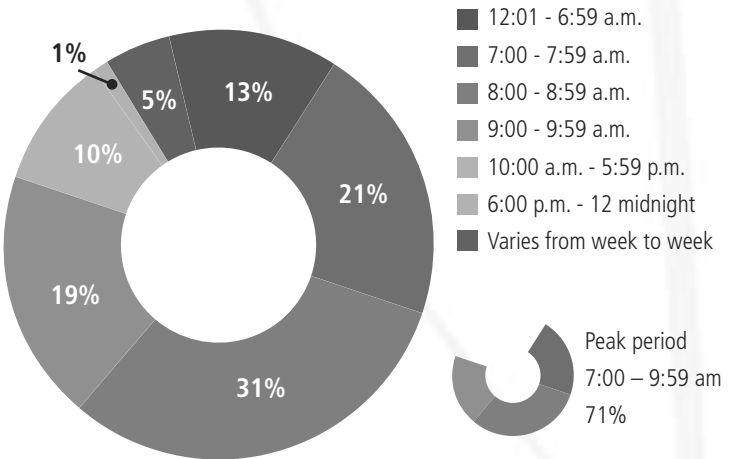


Work Arrival Time

More than half (52%) of all respondents typically arrived at work between the hours of 7:00 am and 8:59 am.

Arrival Time at Work

(n = 4,595)



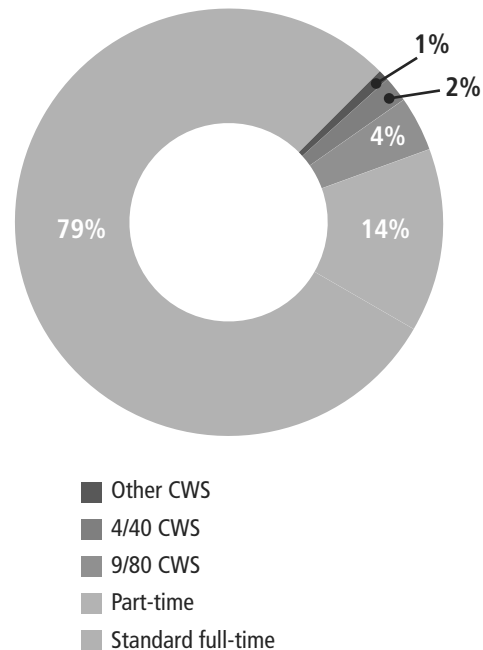
Non-Standard Work Schedules

Non-Standard Work Schedules Used

This figure shows the distribution of work schedules for respondents who said they commuted to an outside work location.

Non-Standard Schedule Types Used

(n = 5,893)



Primary Mode by Non-Standard Schedules

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

Primary Mode by Use of Non-Standard Schedule

Note: Row totals might not add to 100% because telework is not included; bolded numbers indicate statistically higher percentages)

Primary Mode by Use of Non-Standard Schedules

| Type of Schedule | (n=) | Drive Alone | Carpool/Vanpool | Bus | Train | Bike/Walk |
|------------------|-------|-------------|-----------------|-----|------------|-----------|
| Compressed | 446 | 55% | 4% | 6% | 23% | 5% |
| Standard | 4,122 | 66% | 6% | 5% | 16% | 3% |

Alternative Mode Use Characteristics

Carpool and Vanpool Occupancy

The average number of occupants in respondents' carpools and vanpools was 2.5 and 7.5 people, respectively. Overall average pool occupancy was 2.7. Carpool occupancy remained relatively stable over the past 12 years, at about 2.4 to 2.6 occupants per vehicle since 2004. In 2016, about two-thirds (65%) of carpoolers rode with just one other person.

The 2016 vanpool average of 7.5 occupants was well below the 2013 average of 10.8, but was about the same as the average estimated in 2010 (7.6). The survey-to-survey variability could be related to the small sample size for vanpools; in the 2016 survey, only 20 respondents said they rode in a vanpool and past SOC vanpool sample sizes were similarly small.

Access Mode to Alternative Mode Meeting Points

This table presents how carpoolers, vanpoolers, and transit riders traveled to where they met their rideshare partners or where they started their transit trip.

Means of Getting from Home to Alternative Mode Meeting Place

(n = 1,364)

| Access Mode to Alternative Mode | Percentage |
|---|------------|
| Driving access | 26% |
| Drive to a central location (e.g., Park & Ride) | 16% |
| Drive alone to driver's/passenger's home | 10% |
| Non-driving access | 74% |
| Walk | 40% |
| Bus/transit | 12% |
| Picked up at home by carpool/vanpool driver | 12% |
| I am the carpool/vanpool driver or carpool with family member | 5% |
| Dropped off/rode in another carpool/vanpool | 3% |
| Bicycle | 2% |

Average Carpool

Occupancy: **2.5 people**



Average Vanpool

Occupancy: **7.5 people**

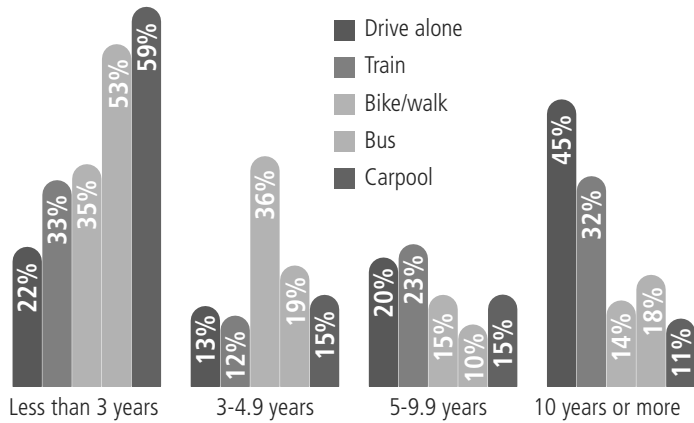
Commute Mode Shifts and Mode Shift Motivations

Alternative mode users had used these modes for shorter times on average, but a substantial portion of alternative mode users still were long-term users. One-third of train riders, 18% of bus riders, 14% of bike/walk commuters and 11% of carpoolers had used these modes for 10 or more years.

Carpoolers and bus riders were most likely to have started using these modes recently; 59% of commuters who carpooled and 53% of bus riders started using these modes within the past three years. One-third of bike/walk commuters and train riders started using these modes less than three years ago.

Duration of Mode Use

(Drive alone n = 2,774, Train n = 671, Bus n = 273, Bike/Walk n = 209, Carpool n = 290)



Average Duration

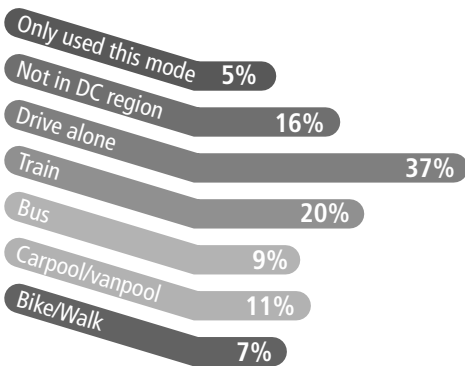
Drive alone: 10.3 years; Train: 8.1 years; Bike/walk: 4.4 years; Bus: 4.9 years; Carpool: 4.0 years

Modes Used Before Starting Current Alternative Modes

Nearly half (49%) of all respondents who were using an alternative mode at the time of the survey said they started using that mode within the past three years. These respondents were asked what modes they used before starting the new alternative mode. Respondents were permitted to select multiple previous modes, so the total of the percentages will add to more than 100%.

Previous Mode of Current Alternative Mode Users

Respondents Who Used Current Alternative Mode Three Years or Less



Previous Mode

Shifted from Driving Alone

Carpoolers – 47%; Walkers/bikers – 25%; Bus riders – 19%; Train riders – 34%

Reasons for Using Alternative Modes

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

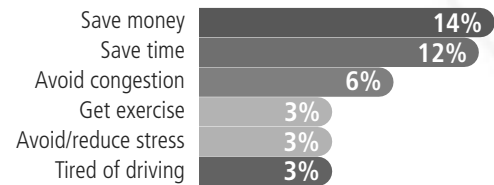
- **Personal benefits** – benefits the respondent would expect to receive by using an alternative mode
- **Commute program** – commute assistance services the respondent received that encouraged or assisted use of the alternative mode
- **Personal circumstances** – personal circumstances or changes experienced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

Current alternative mode users cited motivations in each of the three categories.

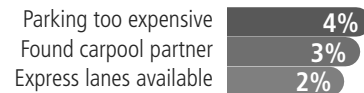
Motivations to Start Using Current Alternative Mode

(Note: Scale extends only to 30% to highlight difference in responses) (n = 504, multiple responses permitted)

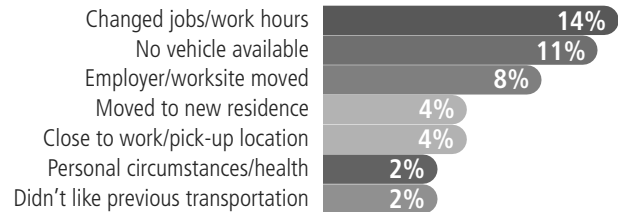
Personal Benefit Motivations



Commute Program Motivations



Personal Circumstances Motivations



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