

**Overview**

Residents of the Washington region walk and bicycle at about the same rate as the nation as a whole. Tables 2-1 and 2-2 show the share of walking and bicycling trips to work for the ten largest metropolitan areas.

*Nationally,  
10% of all  
urban area  
trips are made  
on foot or by  
bike*

Throughout the second half of the 20<sup>th</sup> Century, driving increased, while walking, bicycling, and public transportation declined. In 2000

2.93% of Americans walked to work, and 0.38% bicycled. By comparison, in 1960 9.9% of workers walked to work.<sup>2</sup> The number of people driving alone rose from 73.2% in 1990 to 75.7% in 2000, while use of public transportation fell by 0.5%.

*Trips in the  
Urban Core are  
Usually Short  
Enough to Walk  
or Bike*

In the first decade of the 21<sup>st</sup> Century, growth in solo driving share appears to have stopped, and transit, walking and bicycling mode shares have stabilized. 75.8% of workers drove alone in 2006-2008, which is essentially the same as

in 2000, and public transportation grew from 4.7% to 4.9%.

The walk and bike modes are more common than the census commute mode numbers would lead one to believe. Work trips account for less than 20% of all trips, and walking and biking are more common for other

	Table 2-1 Pedestrian Commuting in the Ten Largest Metropolitan Areas <sup>1</sup>	% Walk to Work 2000 Census	% Walk to Work 2006- 2008
1	New York	5.55%	6.2%
2	Boston	4.12%	4.8%
3	San Francisco	3.25%	4.2%
4	Philadelphia	3.88%	3.7%
5	Washington	3.10%	3.0%
6	Chicago	3.13%	2.9%
7	Los Angeles	2.56%	2.6%
8	Detroit	1.83%	1.5%
9	Houston	1.62%	1.5%
10	Dallas-Fort Worth	1.48%	1.3%
	United States	2.93%	2.8%

	Table 2-2: Bicycle Commuting in the Ten Largest Metropolitan Areas	% Bike to Work 2000	% Bike to Work 2006- 2008
1	San Francisco	1.12%	1.4%
2	Los Angeles	0.63%	0.7%
3	Boston	0.38%	0.7%
4	Philadelphia	0.33%	0.5%
5	Chicago	0.31%	0.5%
6	Washington	0.30%	0.5%
7	New York	0.30%	0.4%
8	Houston	0.30%	0.3%
9	Detroit	0.18%	0.2%
10	Dallas--Fort Worth	0.14%	0.2%
	United States	0.38%	0.5%

1 2000 US Census, 2006-2008 American Community Survey

2 1960 Census of Population, Characteristics of Population, United States Summary

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purposes. Nationally, 9.5% of all urban area trips were made on foot, and 0.9% by bicycle in 2001. In the Mid-Atlantic region, 15.8% of all trips are made on foot, and 0.8% by bicycle.<sup>3</sup>

Regionally, bicycling and walking are concentrated in the core neighborhoods of the Washington region, especially areas near downtown D.C. and certain Metro stations, as well as college campuses and military bases.

In the past decade walk mode shares for all trips have grown, while bike mode shares have stabilized. Walking and bicycling have grown in the core. Bicycling, however, suffered a steep decline in the outer jurisdictions, resulting in no net increase between 1994 and 2007/2008.

Ethnicity, geography, age, and car ownership affect the decision to walk or bicycle. People under the age of 44 are more likely to walk or bicycle than people older than age 44, and people over age 65 have the lowest rates of walking and bicycling. People living in households without cars are more likely to walk or bicycle than those that have one, and those living in households with only one car are more likely to walk or bicycle than those owning two. Middle-income groups are slightly less likely to walk or bicycle than either low-income or high-income groups. Whites are more likely to bicycle.

Distance is a major barrier to commuter cycling, along with absence of safe routes, and lack of end-of-trip facilities such as showers and lockers.<sup>4</sup> Trips in the outer suburbs are usually farther than most people are willing to walk or bicycle. However, most commute trips that are short enough to be bikable or walkable are still taken by car. The average trip distance to transit or carpool is very short.

Transit and walking are interdependent, with 80% of bus and 60% of Metrorail access trips on foot. Mode of access varies tremendously by Metro station. Bicycling to transit is less common and varies greatly by Metro station, with the lowest rates of bicycle access found east of the Anacostia river.

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<sup>3</sup> Pucher, John, "Socioeconomics of Urban Travel: Evidence from the 2001 NHTS". *Transportation Quarterly*, Vol. 57, No. 3, Summer 2003 (49-77). Page 54.

<sup>4</sup> Metropolitan Washington Council of Governments, *2004 Bike to Work Day Survey- Summary of Results*, June, 2005. Page 6.

**Walking and Bicycling According to the COG/TPB Household Travel Survey**

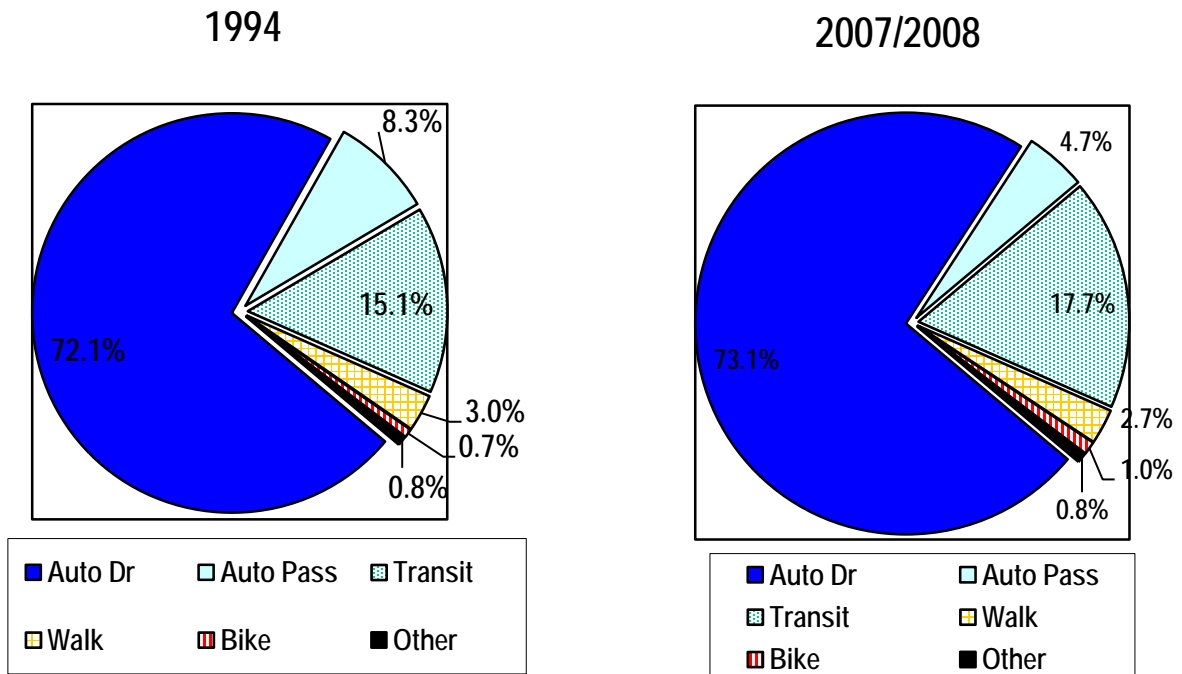
The household travel survey is a roughly once in a decade survey of households in the greater Washington region. The survey was done in 1994, and again in 2007-2008. It is the best available source of information on travel mode shares in the Washington region.

For the most recent survey, 11,000 randomly selected households in TPB Region and adjacent areas (+3,500 in the Baltimore Region) were surveyed. Higher numbers of samples were taken in higher density, mixed use urban areas, and regional activity centers. The sample was address-based. Interviews were conducted between February 2007 and March 2008. Travel is weekday travel only; week-end travel was not counted.

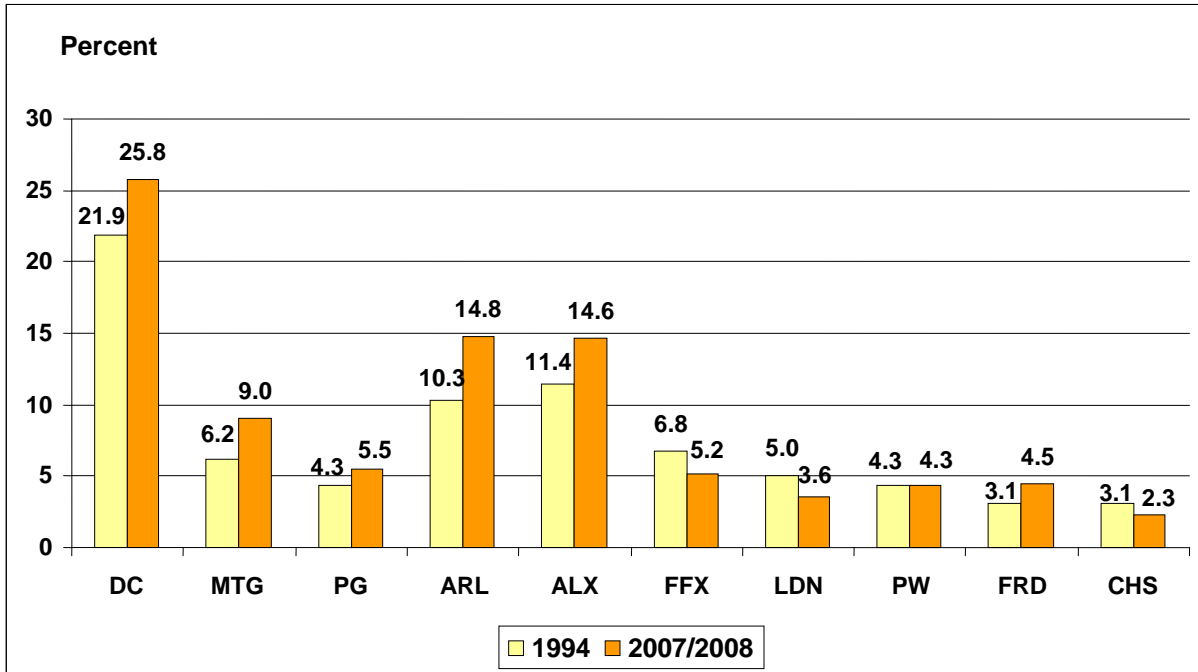
Comparing the results of the 1994 and the 2007/2008 surveys, walk commuting has fallen from 3% to 2.7%, but bicycle commuting has increased slightly, from 0.7% to 1%. Bicycling grew by the same amount as walking declined. Auto commute trips remained stable, while auto passenger (carpooling) declined steeply, and transit use grew.

These results are generally consistent with the 2000 US Census and 2006-2008 American Community Survey results for the Washington region, which also show walk commuting decreasing and bicycle commuting increasing.

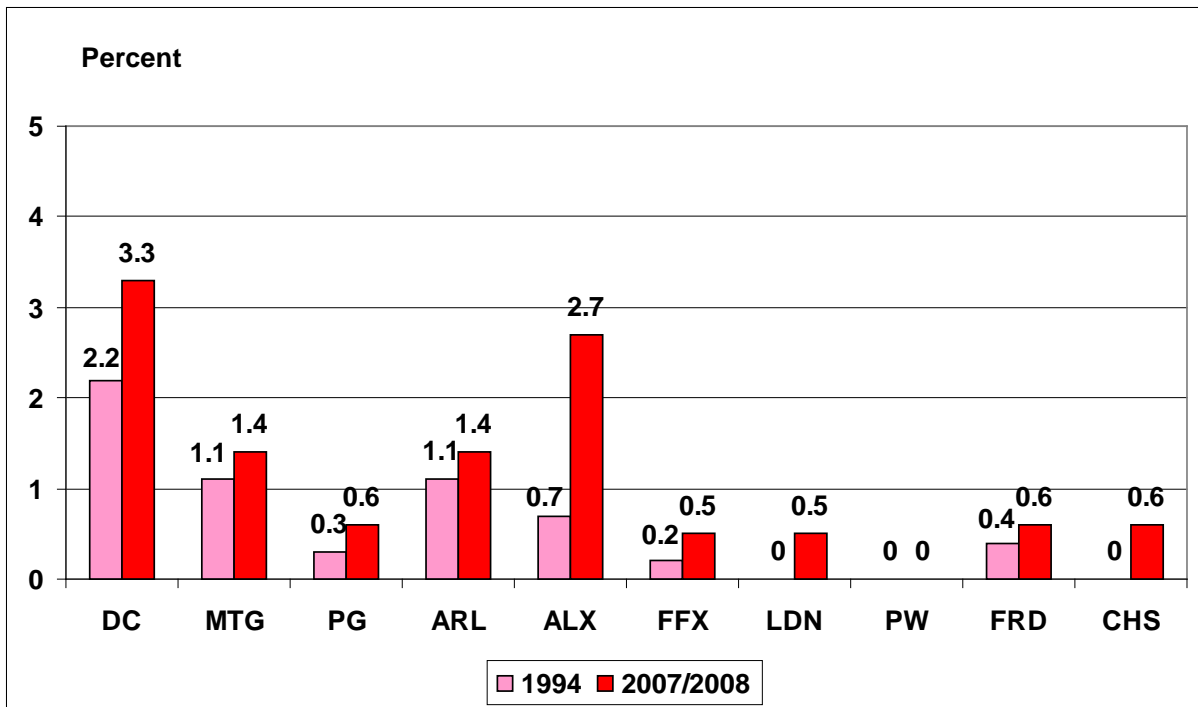
**Chart 2-1: Change in Commuting Mode Shares 1994-2007/2008**



**Chart 2-2: Walk Commute Share by Jurisdiction**



**Chart 2-3: Bike Commute Mode Share by Jurisdiction**



Walk commuting grew in urban core, and in Montgomery and Frederick Counties, but fell in other suburban areas, notably Fairfax and Loudoun Counties, which experienced considerable auto-oriented suburban growth.

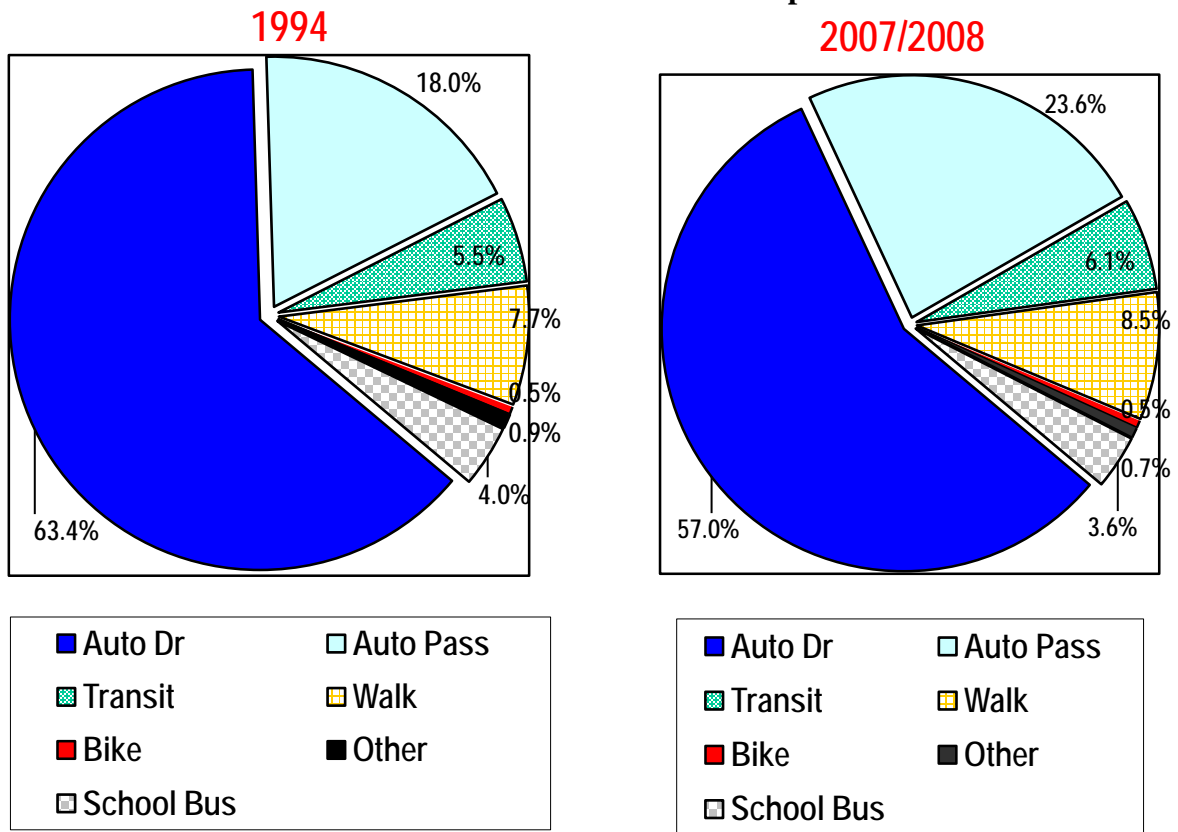
Bike commuting grew in most jurisdictions from a low base, with the biggest increases in the District of Columbia and Alexandria.

**Mode Share Trends for All Trips in the Washington Region**

Commute trips, while they get a lot of attention, account for less than 20% of all trips in the Washington region. Nonwork trips have different characteristics than work trips, and overall trends in mode share are different from trends in commuter mode share.

Solo driving declined significantly in the Washington region between 1994 and 2007/8, while auto passenger, transit, and walk modes increased. Bicycling remained stable at the regional level.

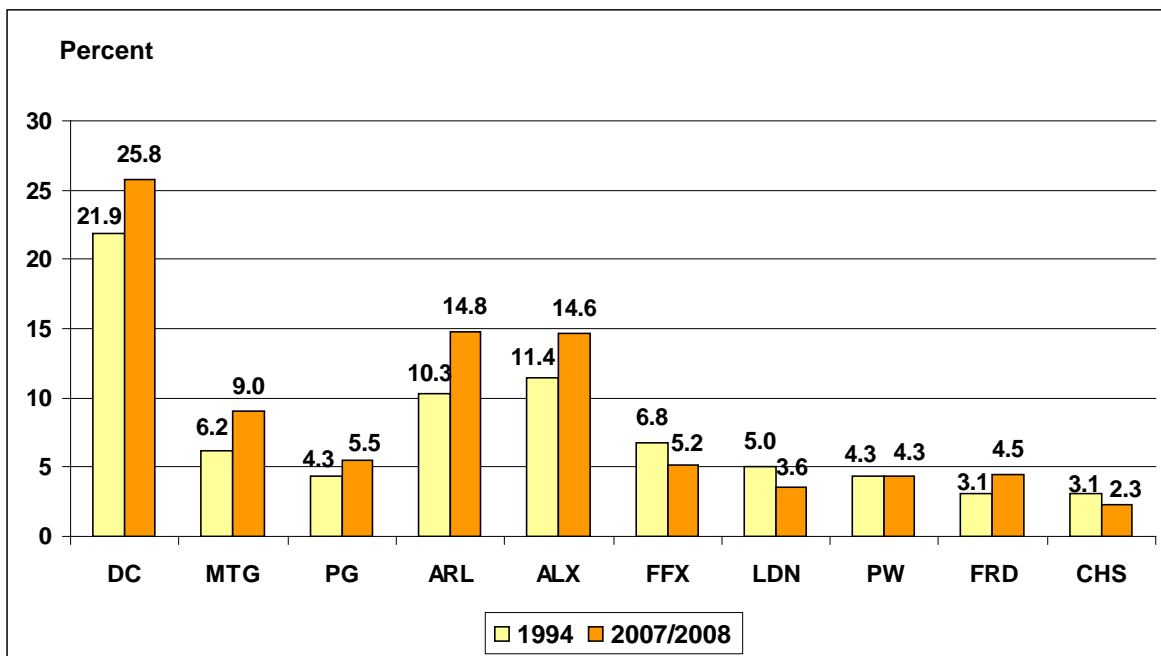
**Chart 2-4: Mode Share for All Trips**



**Walk and Bike Mode Share by Jurisdiction**

Walking has increased most jurisdictions, with the notable exceptions of declines in Fairfax and Loudoun Counties. The biggest increases were in the urban core and in Montgomery County.

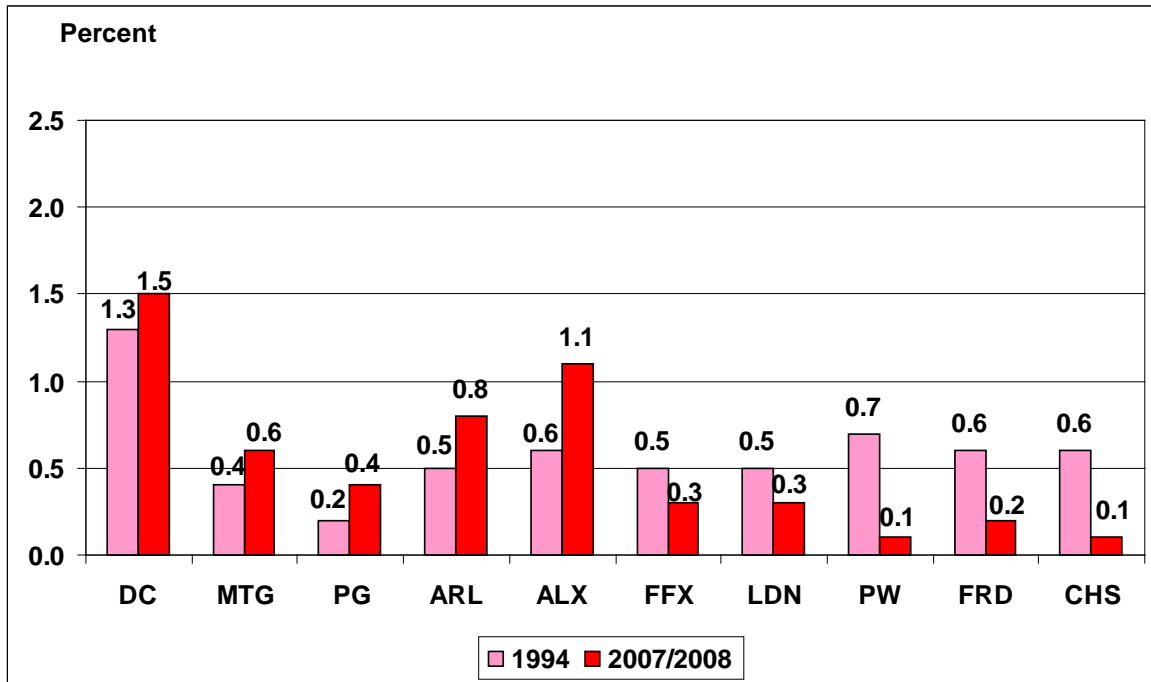
**Chart 2-5: Daily Walk Trip Share by Jurisdiction of Residence  
(1994 – 2007/2008)**



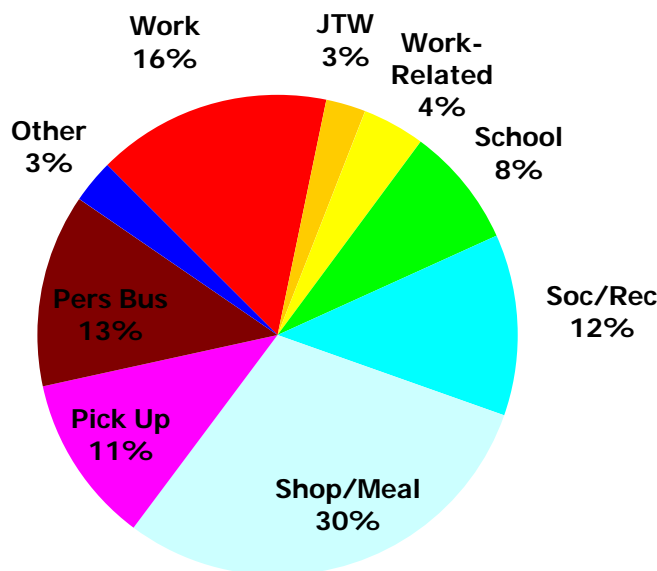
Bike mode share grew in the urban core, but fell steeply from low starting levels in the outer suburban counties. Growth in bicycling in the core has been offset by an equal decline in the outer suburbs, adding up to zero growth at the metropolitan level. The outer counties have experienced greatly increased auto traffic, much of it on narrow country roads without bike lanes or other accommodation. Fear of traffic is a commonly cited reason in surveys for not riding.

Alexandria had the largest increase at .5% followed by Arlington at .3%.

**Chart 2-6: Daily Bike Trip Share by Jurisdiction of Residence  
(1994 – 2007/2008)**



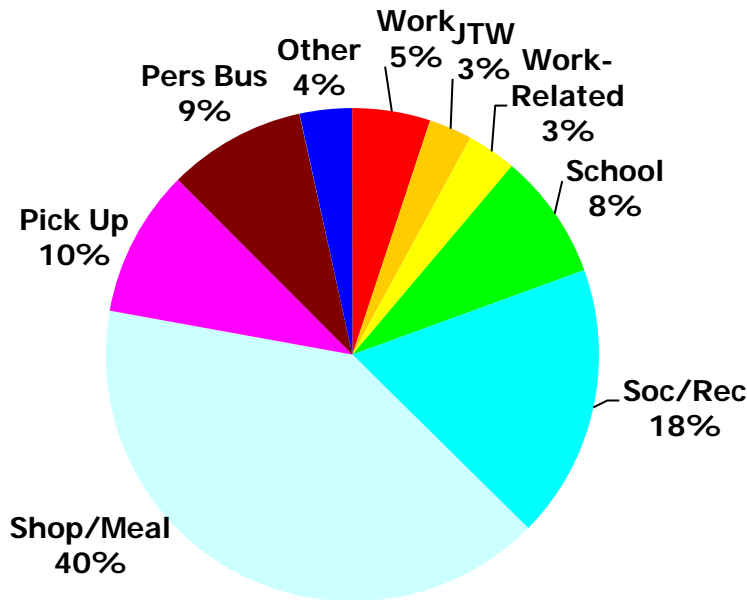
**Chart 2-7: Daily Trips by Trip Purpose**



**Daily Trips by Trip Purpose in the Washington Region**

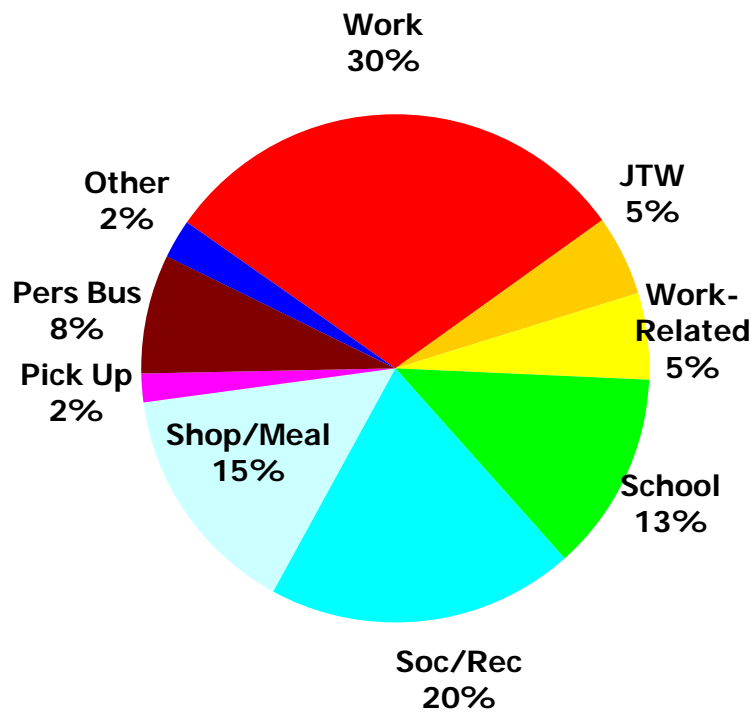
Commuter trips account for less than 20% of total daily trips in the Washington region, but have average trip lengths 3 times the distance of other trips for non-work purposes. Commuter trips also have the highest median trip length, at 9.3 miles.

**Chart 2-8: Walk Trips by Purpose**



The vast majority of walking trips are for shopping, meals, recreation, or social visits. Compared to all trips, pedestrians are more likely to be doing a shopping, dining, or social/recreational trip, and less likely to be going to work.

**Chart 2-9: Bike Trips by Purpose**



Bicyclist are more likely to be going to work or school than either “all trips” or “walk trips”, and are less likely to be on shopping, dining, or social/recreational trips. This is the opposite of what one might expect based on median trip lengths. A possible explanation is that most bicyclists now live in walkable urban areas and have short, but not quite walkable commutes, so

they will commute to work by bicycle but are more likely to walk for other purposes. Alternately, it may be



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that bicyclists, while few

in number, tend to stick with their chosen means for all different types of trips (like car drivers). Walking is more conducive to being an access mode or being used for only some legs of a trip chain.

**Trip Lengths by Purpose**

Based on trip lengths and number of trips shown below, school, shopping/meal, social/recreational, and personal business trips might be more susceptible to being shifted to walk or bike modes than commute trips.

**Table 2-1: Trip Length Distribution by Purpose  
(Distance in Miles, 2007/2008 Household Travel Survey)**

<b>Purpose</b>	<b>25%</b>	<b>Median</b>	<b>75%</b>	<b>90%</b>
Work	4.3	9.3	17.1	25.8
To Work after other stop (JTW)	1.5	4.8	12.9	22.1
Work-Related	1.8	5.6	13.4	24.8
School	0.9	2.1	4.7	9.3
Social/Recreational	1.0	2.9	6.7	13.7
Shop/Meal	0.7	2.1	5.4	12.0
Pick-Up	0.8	2.2	5.2	11.2
Personal Business	1.4	3.5	7.5	14.9
Other	0.8	1.5	4.1	7.3

**Trip Lengths by Mode**

The median auto trip length in the Washington region is only four miles, and 25% of auto trips are 1.5 miles or less. The median auto passenger trip, which includes many child passengers, is only 2.2 miles, with 25% of auto passenger miles being 1.5 miles or less.

The median walk distance of 0.3 miles is consistent with most estimates of people’s willingness to walk. The median bike trip distance of 1.5 miles is brought down in the household travel survey by some short trips that are part of trip chains. Other sources show typical bike trip lengths as being five miles or less.

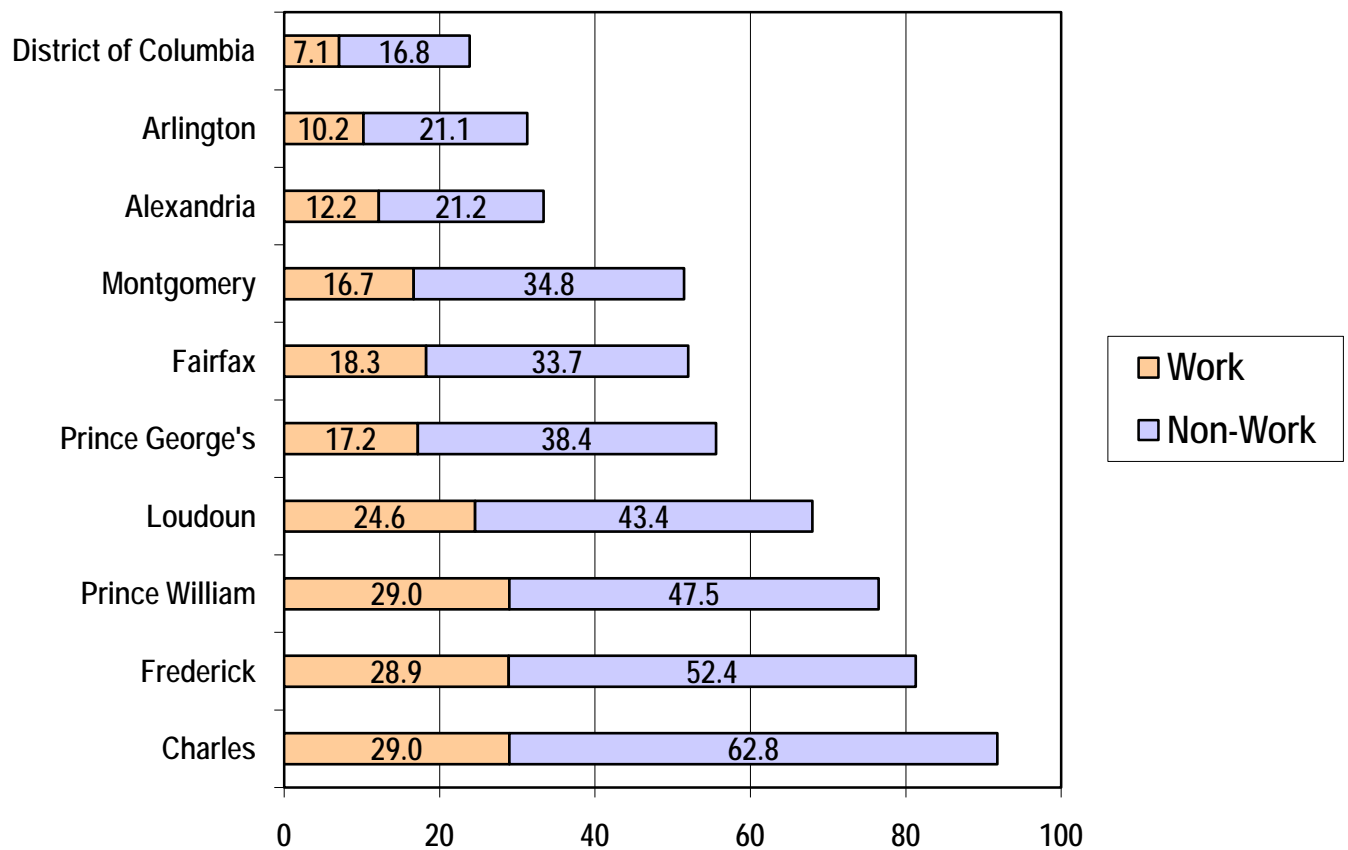
**Table 2-2: Trip Length Distribution by Mode  
(Distance in Miles)**

<b>Mode</b>	<b>25%</b>	<b>Median</b>	<b>75%</b>	<b>90%</b>
<b>Auto Driver</b>	1.5	4.0	9.7	18.7
<b>Auto Passenger</b>	1.2	2.8	6.4	12.9
<b>Transit</b>	3.5	6.9	14.1	23.4
<b>School Bus</b>	1.2	2.3	4.6	8.2
<b>Walk</b>	0.1	0.3	0.5	0.9
<b>Bike</b>	0.8	1.5	4.1	7.3

**Average Daily Miles Traveled By Jurisdiction**

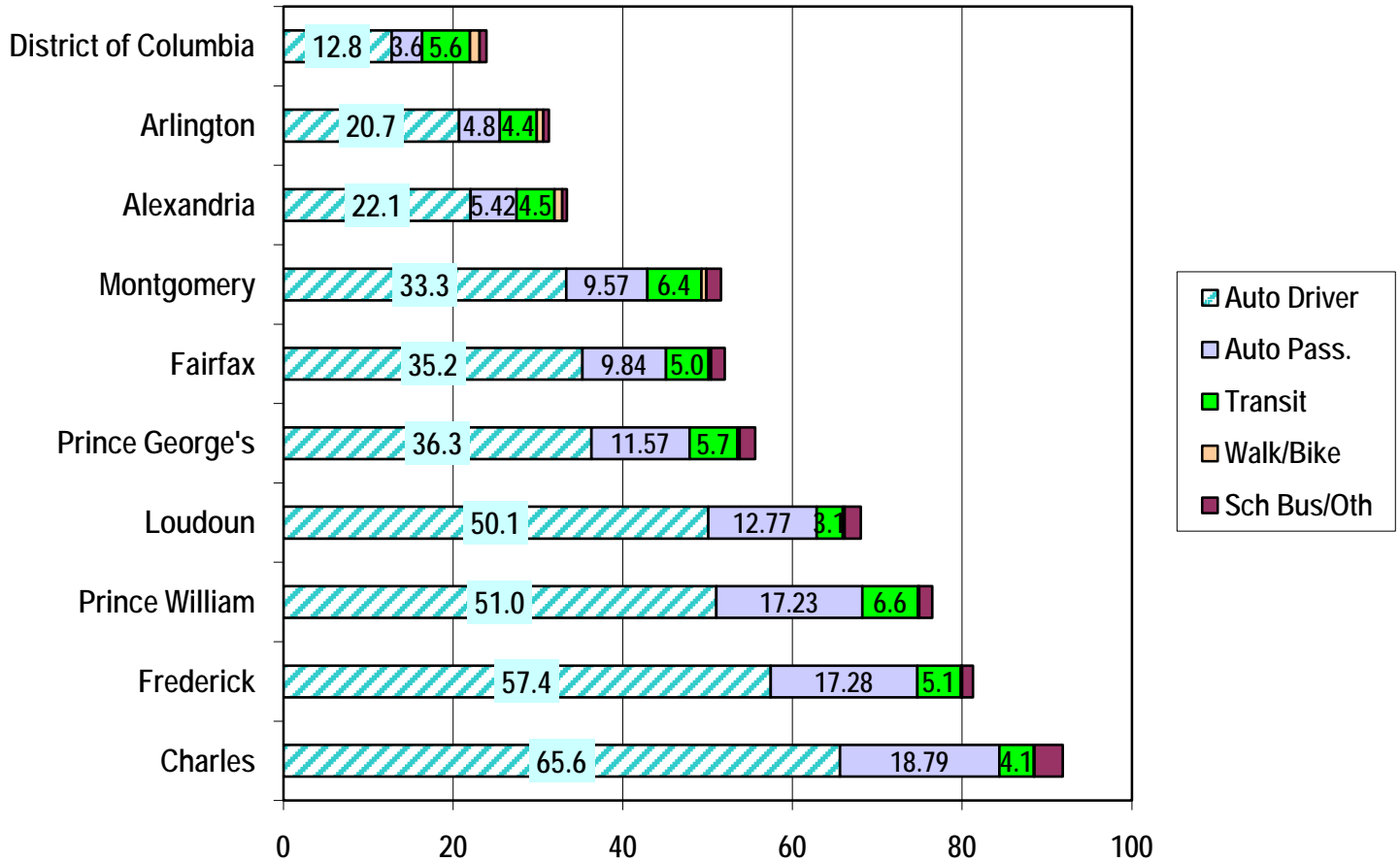
Households in the urban core make slightly fewer trips per day, and travel far fewer miles per day than households in the outer jurisdictions. The average DC household makes seven trips per day and travels 23.9 miles, while the average Charles County household makes nine trips per day, and travels 91.8 miles, or nearly four times as far.

**Chart 2-10: Average Daily Miles Traveled Per Household  
by Jurisdiction and Purpose**



Nor are all the long trips in the outer suburbs commute trips; outer suburban households travel three to four times as many non-work miles as DC households. Low-density development patterns in the outer suburbs appear to be generating trip distances which are significantly longer than what most people are willing to walk or bicycle.

**Chart 2-11: Average Daily Miles Traveled Per Household  
by Jurisdiction and Mode**



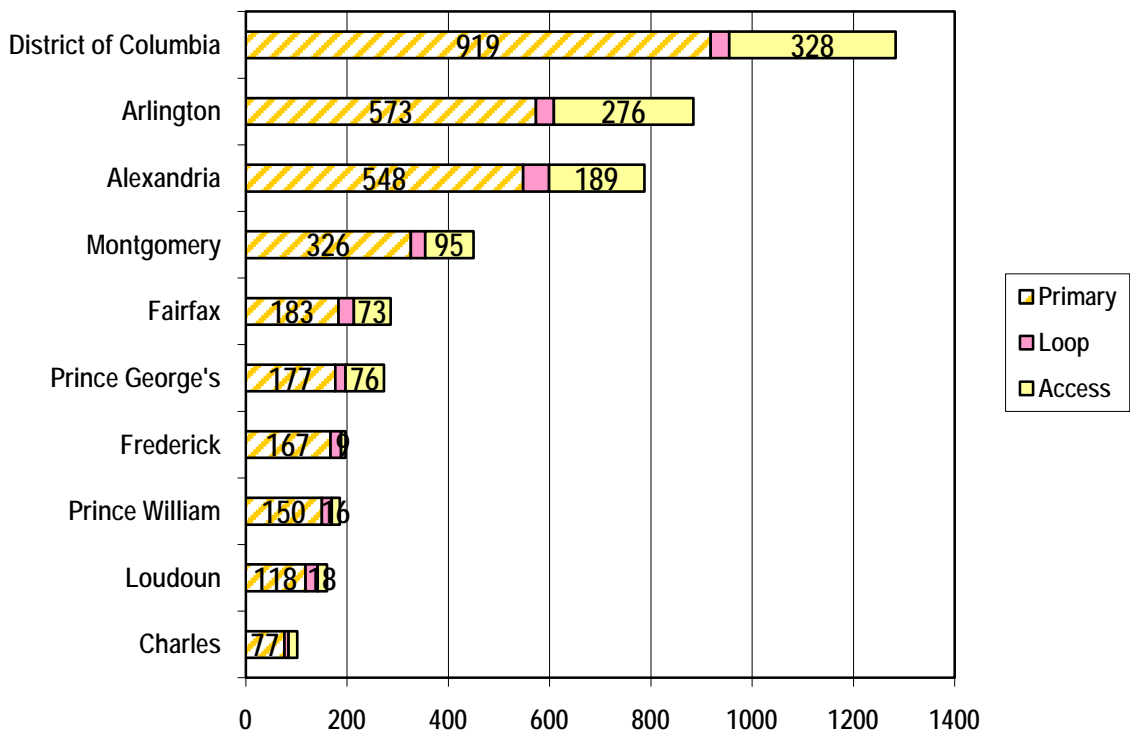
DC residents use an automobile for about half the miles they travel, while more than 90% of outer suburban residents' travel mileage is in a car, with transit and school buses accounting for the rest.

**Table 2-3: Total Weekday Walk and Bike Trips by Type in the Washington Region  
(in Thousands)**

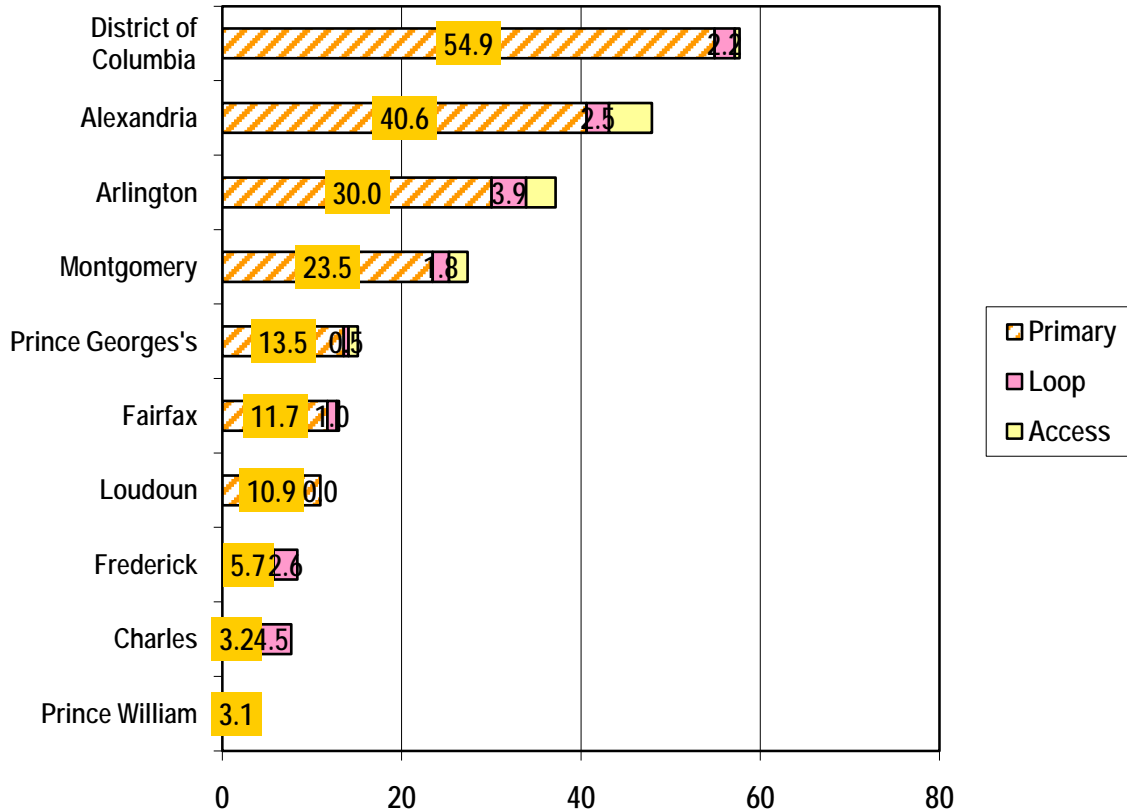
Type of Trip	Walk	Bike
Primary Travel Mode	1,370.0	87.5
“Loop” Trips	123.8	6.9
Metrorail Access	464.3	4.3
Metrorail Egress	469.0	4.0
<b>Total</b>	<b>2,427.1</b>	<b>102.7</b>

Access to transit accounts for a high proportion of the walk trips in the region, especially in the urban core.

**Chart 2-12: Weekday Walk Trips by Jurisdiction of Residence and Type  
Per 1,000 Population in Households**



**Chart 2-13: Weekday Bike Trips by Jurisdiction of Residence and Type Per 1,000 Population in Households**



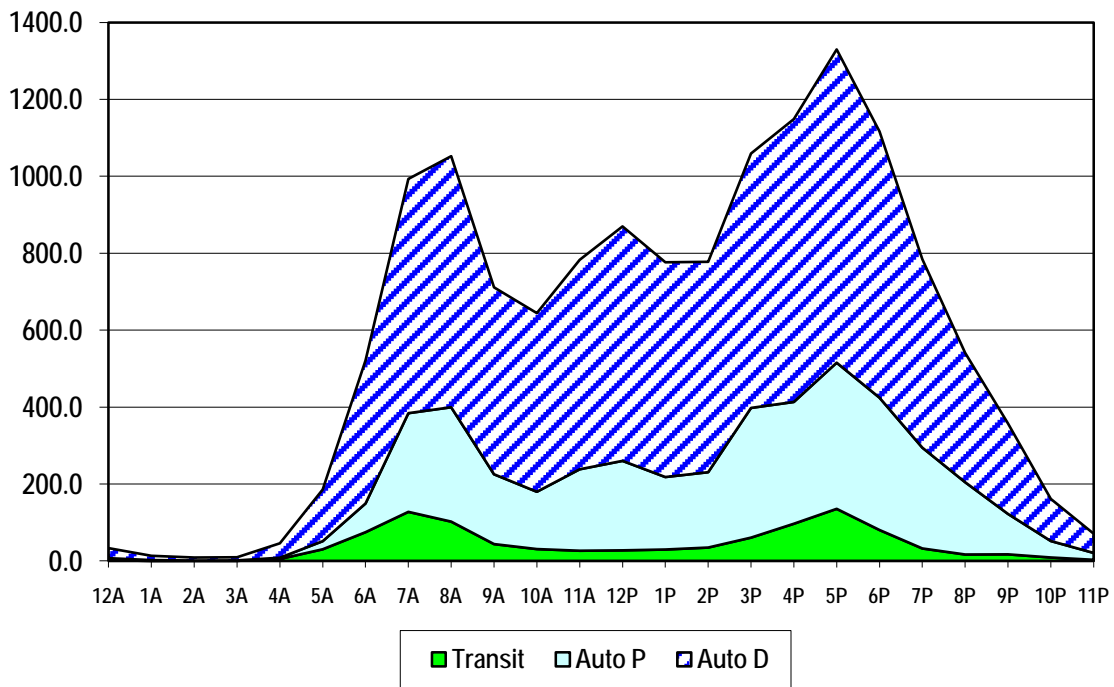
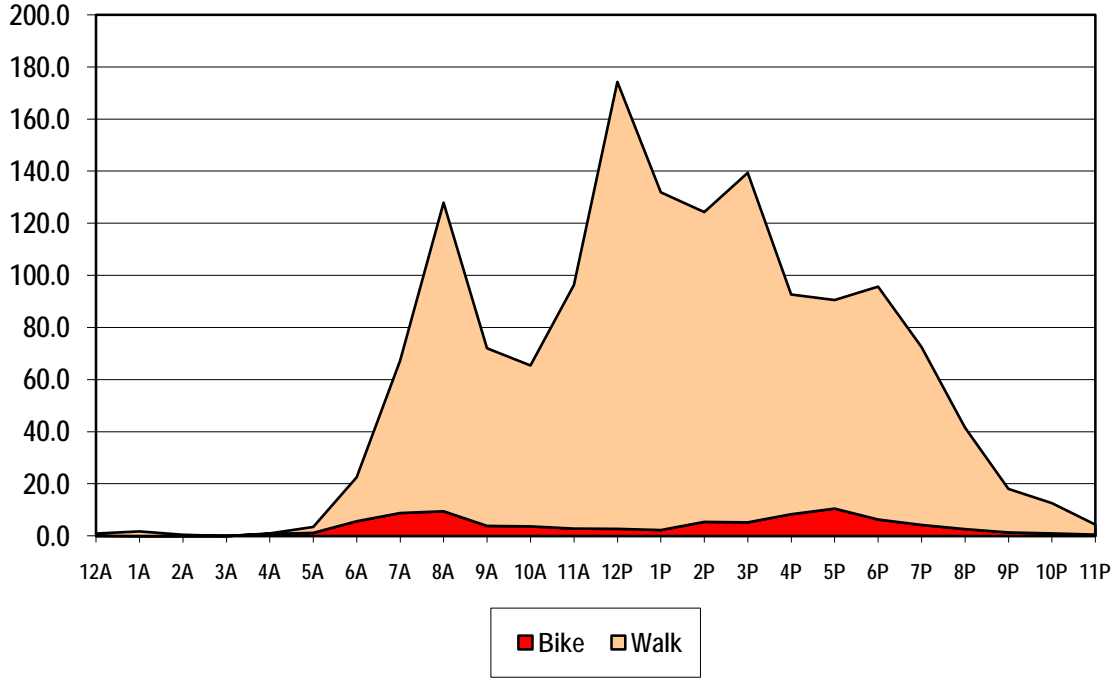
While DC residents are most likely to bicycle, Alexandria and Arlington are most likely to use bicycle to access Metrorail. Charles County has the highest rate of “loop” bicycle trips.

**Walking and Bicycling by Time of Day**

Walk trips peak at lunch hour, then around 3 p.m. when school lets out, and then during the morning rush hour just before 8 a.m. This is different from auto, auto passenger, and transit modes, which are highest at 5 p.m, and next highest at 8 a.m.

Bike trips are much more evenly distributed throughout the day than other modes. Bike trips peak at the evening and morning rush

**Chart 2-14: Walking and Bicycling by Time of Day**



### **Walking and Bicycling Trends According to the US Census**

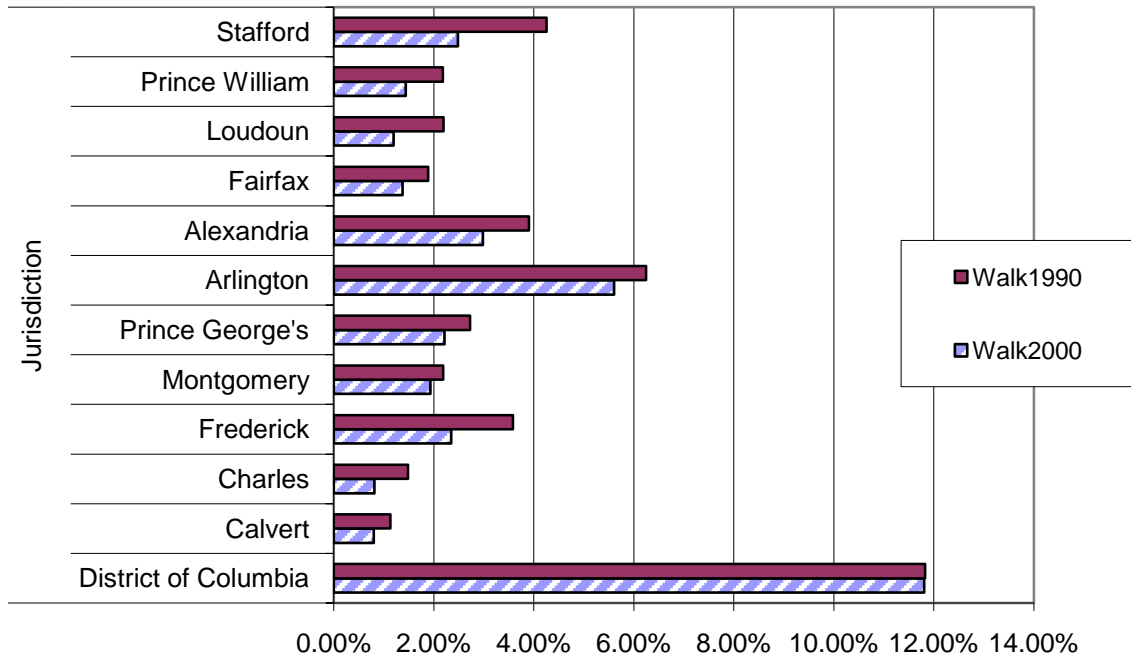
The last United States census was the 2000 census. The Census contains no information on travel in general, but does gather data on journey to work. The main thing the census can offer which the COG/Household Travel Survey does not is accurate information on journey work as the census tract level. Since bicycling and walking vary a lot by neighborhood, even block to block, this kind of fine-grained information is useful. However, at this point the 2000 census information is somewhat dated.

The 2010 census form will be shortened, and the decennial census will no longer provide information on journey to work. In place of the long form, the census bureau carries out an annual survey, the American Community Survey (ACS), which contains information on journey to work. However, the ACS sample is too small to be reliable on a census tract level. Currently a three-year rolling average of data is available. When five-year averages become available, in about a year, it will be possible to say something about bike and mode share at the census tract level.

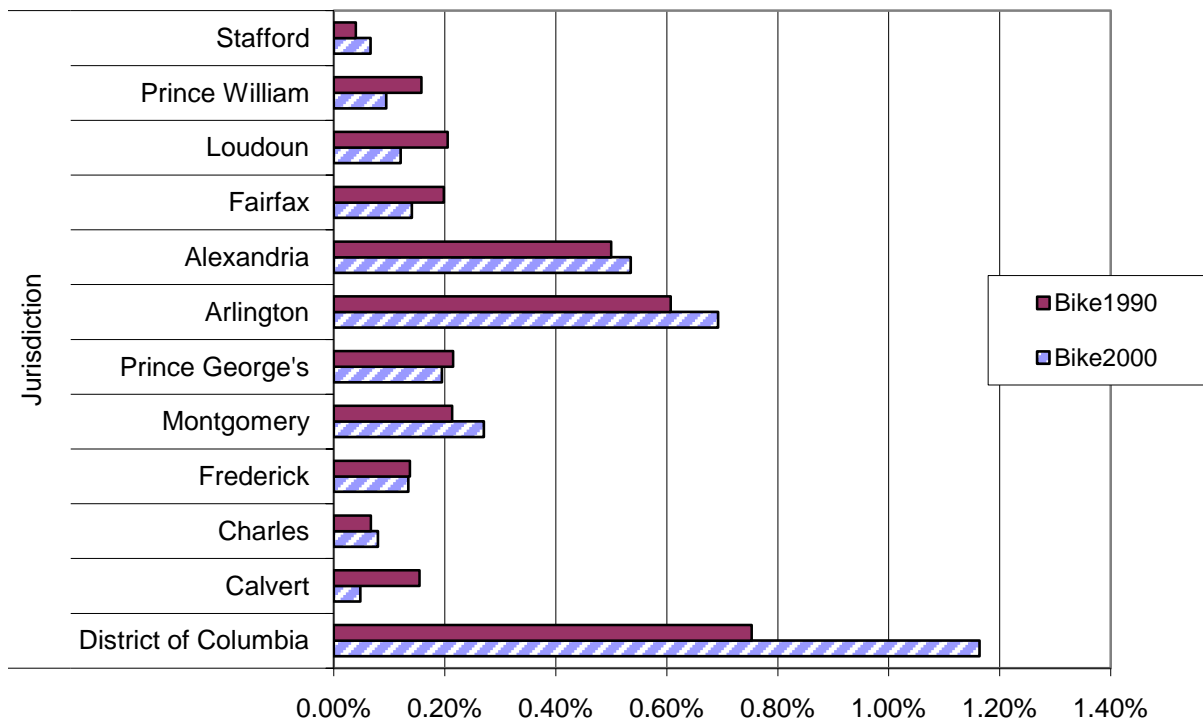
The 20<sup>th</sup> Century trend towards less walking and bicycling also held for the Washington Metropolitan Statistical Area. In 1990, 6,633 people (0.3 %) biked to work on an average day in the Washington area and 85,292 (3.9 %) walked. In 2000, 7,532 people (0.3%) biked to work and 72,700 (3.1%) walked. It should be noted that the census numbers tend to undercount pedestrian trips, since a walk trip to transit is counted as a transit trip, not as a walk trip. Charts 2-15 and 2-16 below show the changes in walking and biking to work by jurisdiction.



**Chart 2-15: Percentage of Workers Walking to Work**



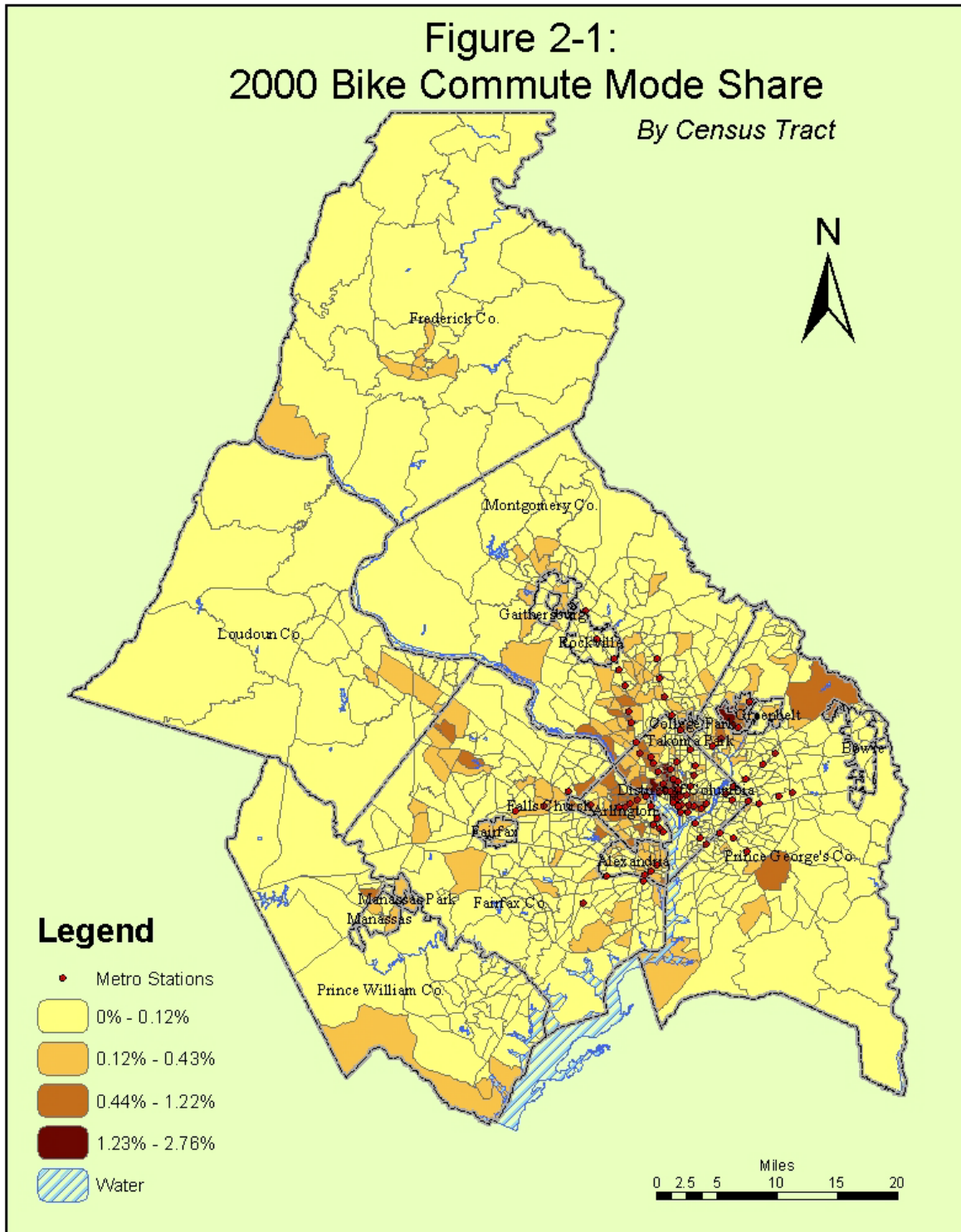
**Chart 2-16: Percentage of Workers Biking to Work**

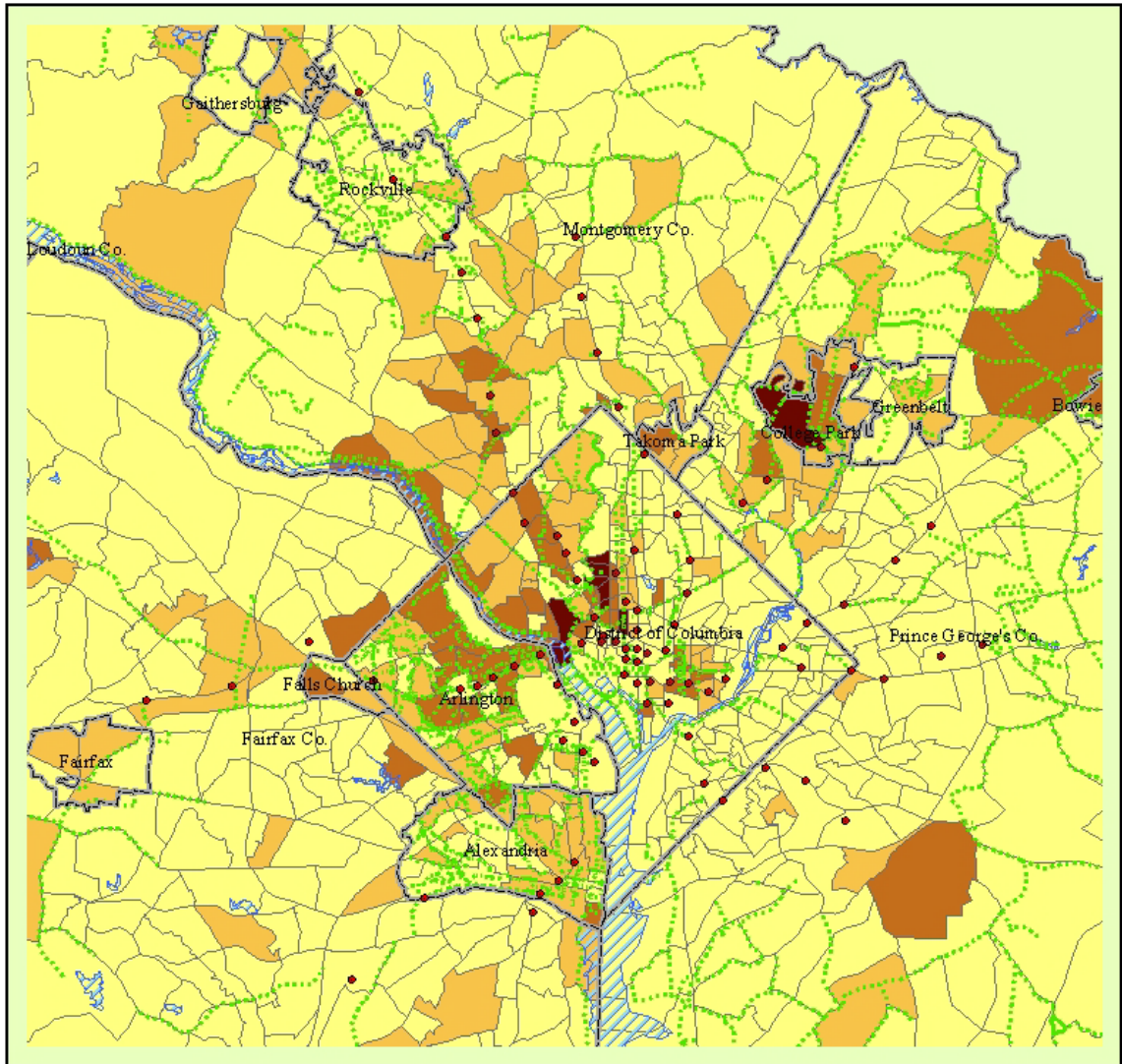


Generally, the urban core of the Washington region, consisting of the District of Columbia, Arlington, and Alexandria, has experienced modest losses in pedestrian mode share and considerable gains in bicycling. The District of Columbia has maintained its pedestrian mode share for the journey to work, while increasing its bicycle mode share considerably. The outer suburban jurisdictions had relatively few people bicycling or walking to work in 1990, and that number fell further during the decade that followed.

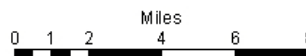
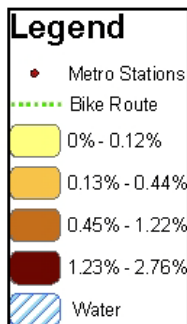
### **Mode Share by Census Tract**

Figure 2-1 shows the percentage of home-based work trips by bicycle for each census tract within the TPB member jurisdictions. Figure 2-3 shows the percentage of home-based work trips by foot. Figures 2-2 and 2-4 show bicycle and walk work trips respectively for the area served by Metrorail. The maps show that bicycling and walking are concentrated in the neighborhoods surrounding downtown D.C., Capitol Hill, and North Arlington. The neighborhoods closest to downtown show the highest walk mode shares, while those a little further out have the highest bike mode shares. Census tracts abutting major facilities such as the W&OD, the C&O, and the Mt. Vernon Trails tend to show higher levels of bicycling. College campuses and military bases such as University of Maryland, Ft. Meyers, Bolling Air Force Base, the National Institute of Health, Walter Reed, Howard, Georgetown and Gallaudet all have high walk or bike mode share.

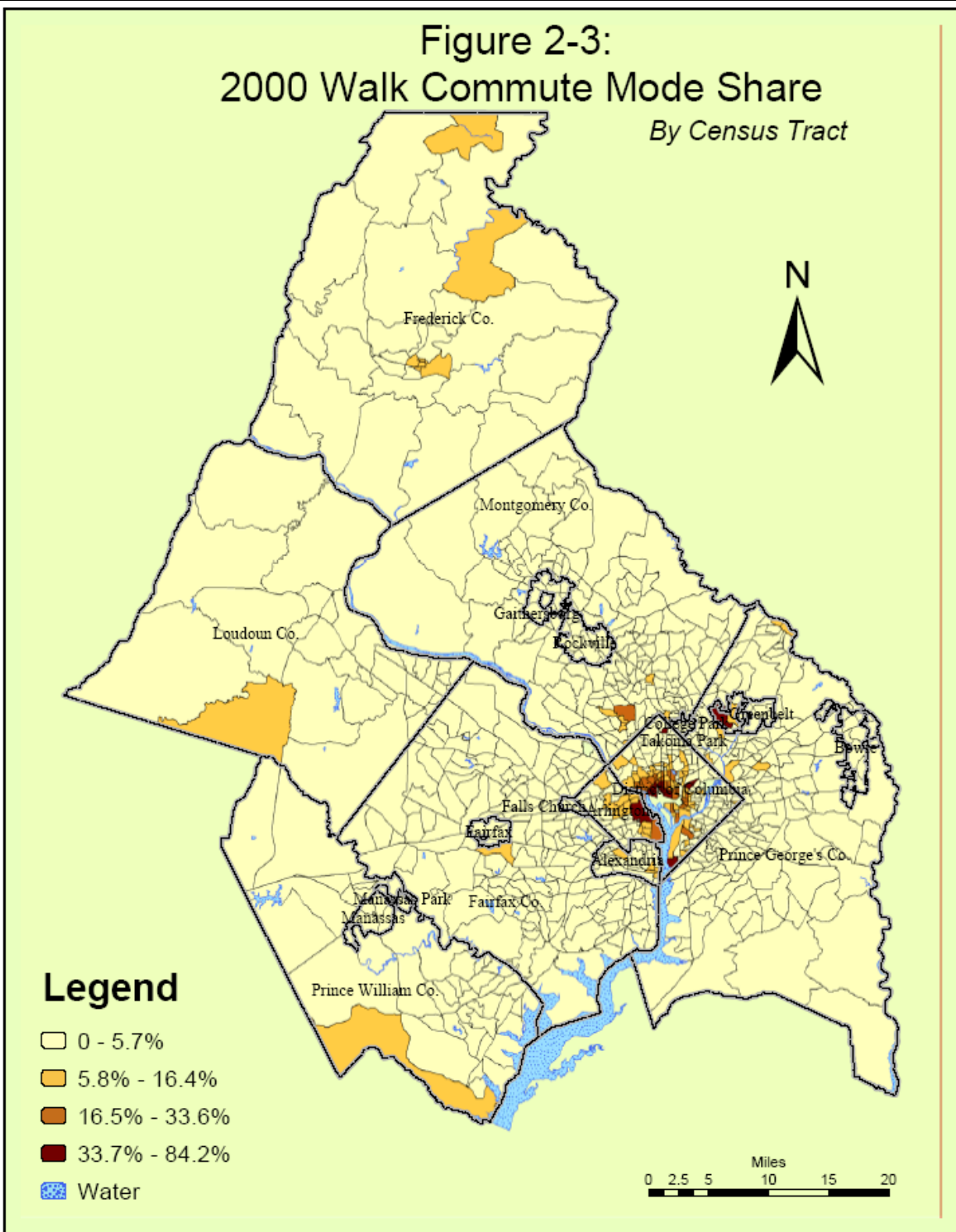


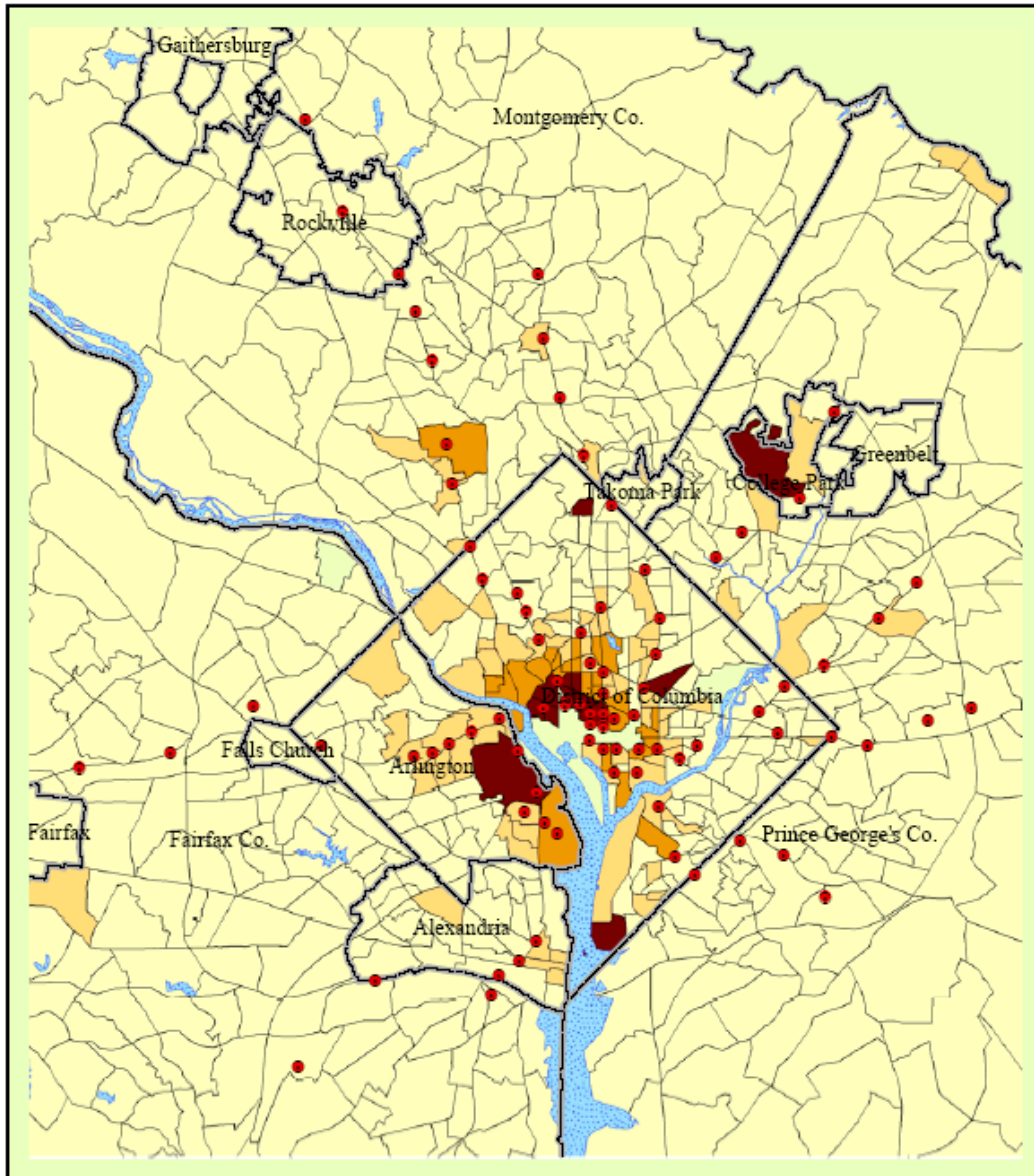


**Figure 2-2:**  
**2000 Bike Commute Mode Share**  
*By Census Tract*

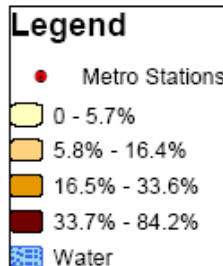


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**Figure 2-4:**  
**2000 Walk Commute Mode Share**  
*By Census Tract*



**Bicycling in the Metro Core**

COG/TPB periodically takes a count of vehicular traffic, including bicycle traffic but excluding pedestrian traffic, entering downtown D.C. and Arlington, as well as traffic crossing the beltway. Cordon counts are not done in other parts of the region.

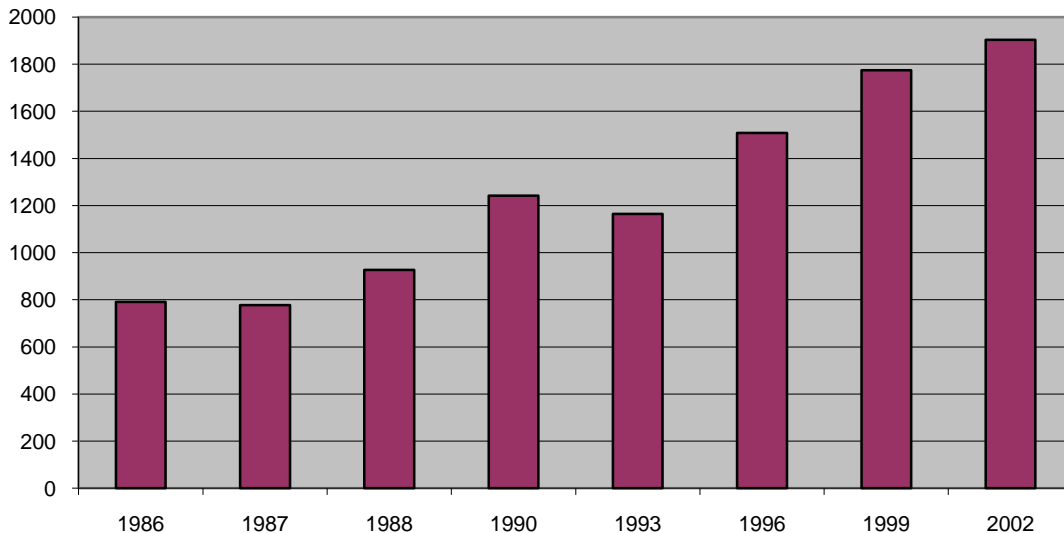
*Bicycling is  
Growing  
Rapidly in  
Downtown D.C.  
and North  
Arlington*

COG/TPB's cordon counts confirm the census data indicating a concentration of bicycling in the neighborhoods close to downtown D.C., Arlington, and Alexandria.

The counts show that bicycle traffic into the downtown Metro core is growing rapidly, with bicycle traffic into the D.C. section of the Metro core more than doubling from 1986 to 2002. The number of bicyclists entering the Metro core within the District of Columbia has grown steadily from 474 in 1986 to 1,379 in 2002. The number of cyclists crossing the Potomac bridges grew from 317 in 1986 to 525 in 2002.

Bicycle traffic into the Arlington section of the Metro core increased from 409 to 645 bicyclists between 1999 and 2002, while Potomac bridge traffic declined slightly over the same period, indicating that more people are bicycling to destinations, probably employment, within Arlington in the morning. Chart 2-17 shows the number of bicycles entering the D.C. section of the Metro core from 1986 to 2002.

Chart 2-17:  
Bicycles Entering D.C. Section of the Metro Core

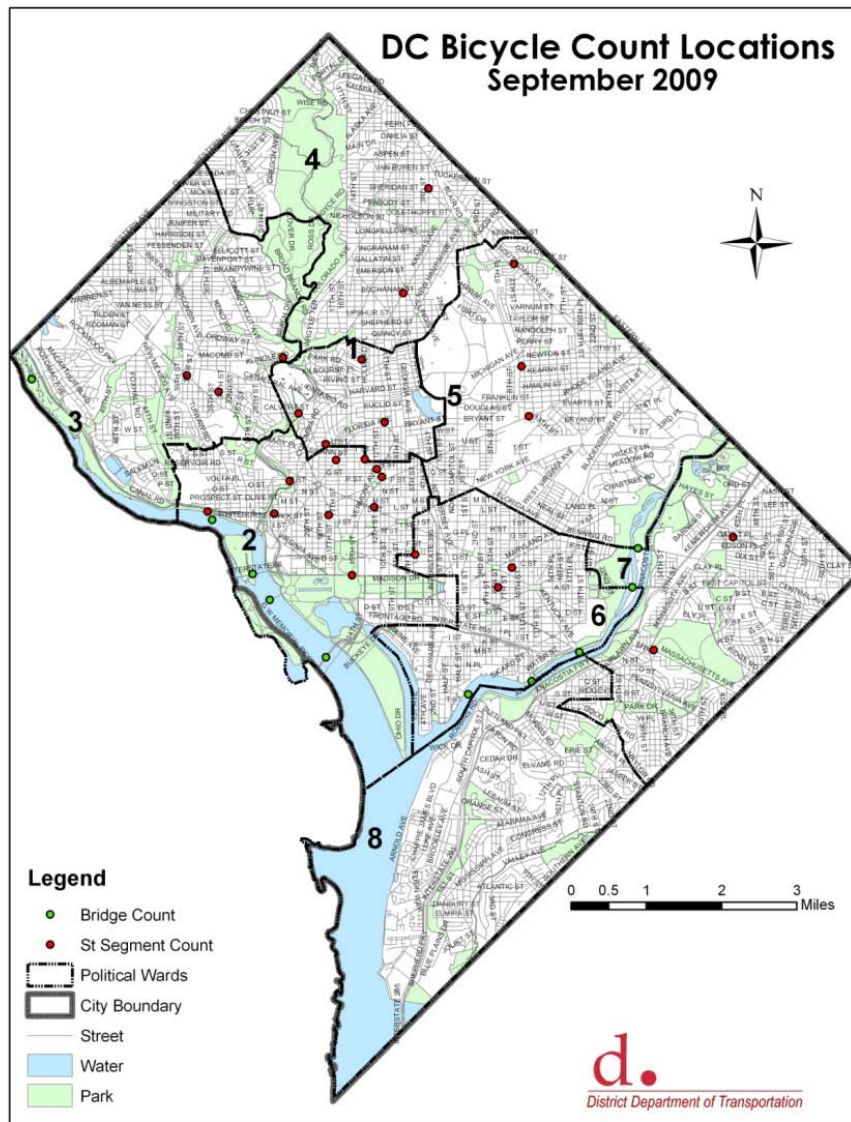


Bicycle traffic is also counted on the beltway cordon, including traffic on shared-use paths, but the a.m. volumes recorded are a fraction of the numbers entering the Metro

**District of Columbia Bicycle Counts**

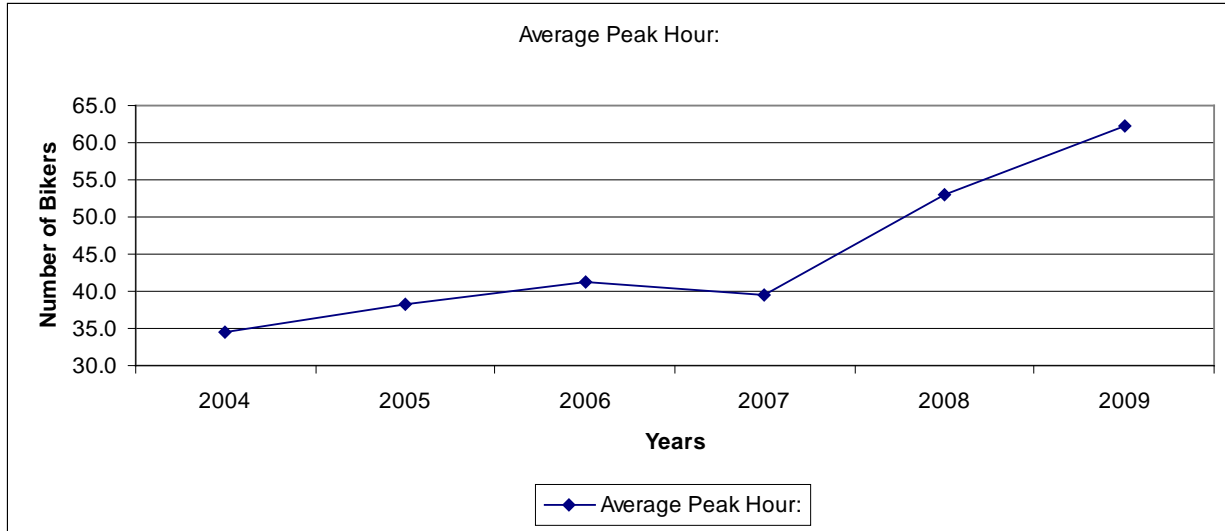
The District of Columbia Department of Transportation has an annual bicycle count program since 2004, which in 2008 and 2009 was performed under contract by COG/TPB. Counts are taken at selected locations in the District of Columbia, and on the bridges entering the District of Columbia. Numbers varied a lot by location; bridge locations and some central locations had hundreds of bicyclists per hour, others, in the outer wards, had few or none.

**Figure 2-5: DC Bicycle Count Locations**





**Chart 2-18: Average Peak Hour Bike Counts in DC**



Overall, peak hour bicycle counts have increased 84% since 2004. The period since 2007 has seen the most rapid growth.

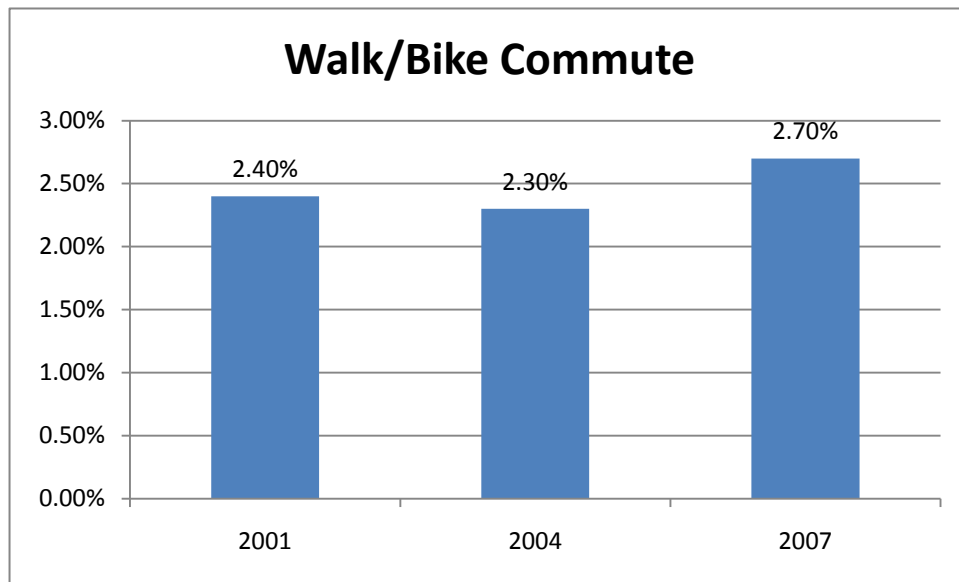
### **Demographic Characteristics of Pedestrians and Bicyclists**

Ethnicity, geography, income, age, and car ownership affect the decision to walk or bicycle to work. The best recent source of this demographic information on pedestrian and bicycle commuters in the Washington region is the 2007 Commuter Connections *State of the Commute Survey*. However, the *State of the Commute Survey* and the US Census both measure work trips only, and the conclusions in terms of both the prevalence and distribution of walking and bicycling can be quite different for all trips than for work trips. Nationally, the 2001 *National Household Personal Transportation Survey* is the best source of demographic data on pedestrians and bicyclists for all types of trips.

All data in the following tables comes from the 2007 *State of the Commute Survey* unless otherwise noted. Walking and bicycling were not calculated separately in the *State of the Commute Survey* for the subcategories of ethnicity, income, age, and state of residence due to sample size issues. All mode shares are for primary commute mode, 3+ days per week. Walk/bike mode share varies by household income, state of residence, number of vehicles in the household, ethnicity, and age.

The 2007 *State of the Commute* shows a modest increase in walking and bicycling, from 2.4% in 2001 to 2.7% in 2007. *State of the Commute Surveys* show lower mode share for walking and bicycling than does the 2000 Census, a discrepancy probably explained by differing methodologies.

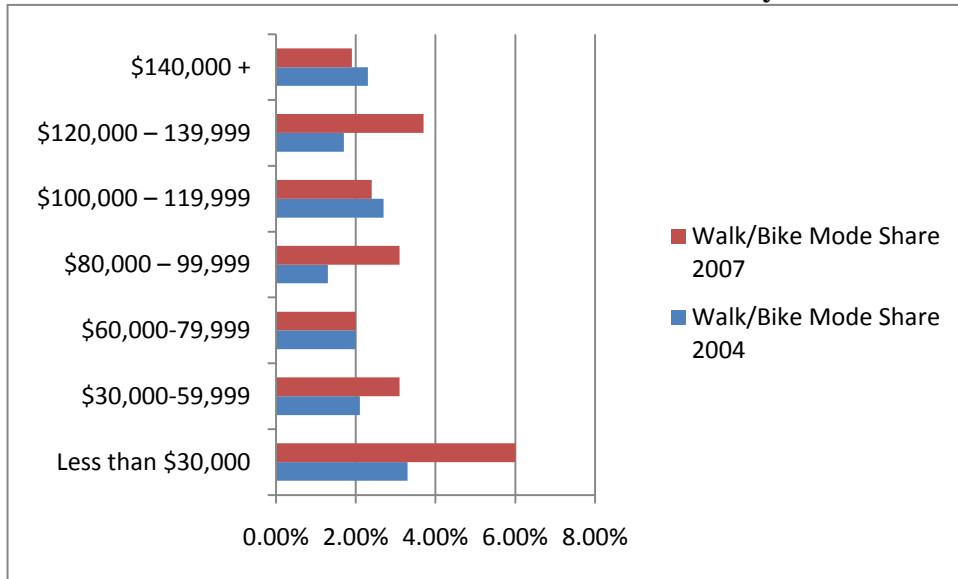
**Chart 2-19: Walk/Bike Commute Mode Share**



**A. Household Income**

Chart 2-4 shows walking and bicycling commute mode share by income. Walking and bicycling to work are somewhat more prevalent among the low-income (less than \$30,000 household income per year) than among the very high-income (more than \$140,000 per year). Bicycling and walking are slightly more common at the top and the bottom of the income distribution than in the middle. This is roughly consistent with the national data for all trips.

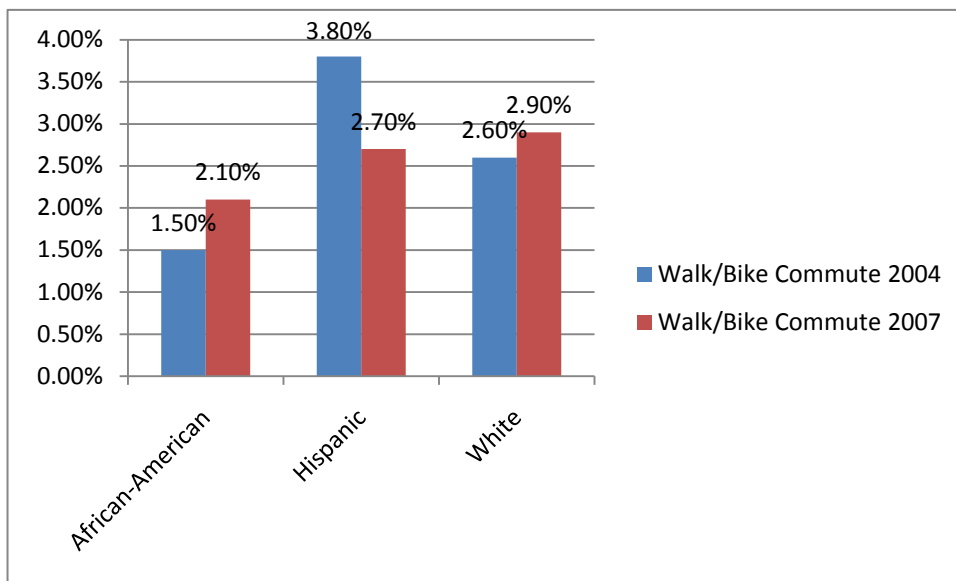
**Chart 2-20: Walk/Bike Mode Share by Income**



**B. Ethnicity**

Walk/bike commute mode share differs more by ethnicity than by income. Whites have the highest walk/bike mode share at 2.9%, African-Americans the lowest at 2.1%.

**Chart 2-21: Walk/Bike Commute Mode Share by Ethnicity**

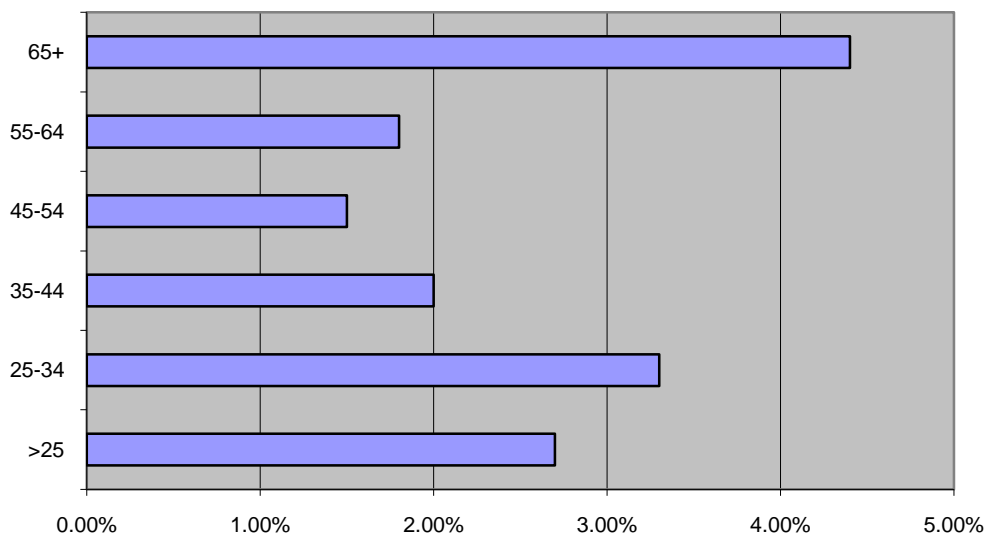


National data for all trips, however, show African-Americans and Hispanics both walking for about 12% of all trips, though African-Americans bicycle less. Whites walk less than any other ethnic group, but take 0.9% of their trips by bike, the same as Hispanics.<sup>5</sup>

**C. Age**

Chart 2-6 shows walk/bike commute mode share by age. People under 35 and over 65 are more likely to walk or bike to work than the middle-aged. Nationally the elderly have a lower than average mode share for bicycling, so we can presume that most of the elderly are walking rather than bicycling.

**Chart 2-22: Walk/Bike Commute Mode Share by Age**



**D. Motor Vehicles per Household**

Vehicles per household is another strong predictor, as shown in Table 2-4. People in households without any vehicles are much more likely to walk or bike to work than households that own one, while those living in households with one vehicle are more likely to walk or bicycle to work than those owning more than one vehicle. Non-work trips also shift radically away from walking in households that have at least one car.

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<sup>5</sup> Ibid, p. 68.

**Table 2-4  
Walk/Bike Mode Share by Number of Vehicles**

Number of Vehicles in the Household	0	1	2	3	4+
Walk/Bike Commute Mode Share 2004	11.40%	3.70%	1.20%	1.40%	0.60%
Walk/Bike Commute Mode Share 2007	12.40%	4.0%	1.20%	1.40%	0.60%
Walk Mode Share – All Trips (NPTS) <sup>6</sup>	41.1%	12.5%	7.8%	6.3% (3 or more)	
Bike Mode Share – All Trips (NPTS)	2.4%	0.7%	0.9%	0.8% (3 or more)	

**Trip Distances**

Distance was the third most frequently cited reason, by 28% of respondents, to COG/TPB’s 2007 Bike to Work Day survey to explain why they were *not* riding to work. Reasons One and Two were “Don’t ride in cold/winter” (34%) and “No safe route” (33%). So trip distance is of great interest when gauging the potential for increasing bicycling (or walking). The 2007 SOC survey asked respondents about the length of their commutes. Commute mileage is shown in Table 2-5 below.

**Table 2-5: Commute Distance**

Distance	Less than 5 miles	5 to 9 miles	10 to 14 miles	15 to 19 miles	20+ miles
Percentage	17%	20%	17%	12%	33%

17% of commutes in the Washington region are less than five miles and therefore potentially bikable on a daily basis. The average commute distance for Bike to Work Day survey respondents was 10.1 miles.

Another major potential source of walk or bike trips is the trip to transit, park and ride lot, or vanpool and carpool pick-up point. As shown in Table 2-6, access trips to alternative mode meetings points tended to be short. Respondents traveled an average of 3.1 miles. The majority of respondents (51%) traveled one mile or less to the meeting point. Another 14% said they traveled between two miles. Only 11% of respondents traveled more than five miles. Based on the distances being traveled, many of the 28% of

<sup>6</sup> Ibid, p. 57.

respondents who are currently driving to their alternative mode meeting point might be able to walk or bicycle instead.

**Table 2-6**  
**Distance Traveled from Home to Alternative Mode Meeting Point**  
(n=1,230)

Distance	2004	2007
1 mile or less	59%	51%
2 miles	10%	14%
3 miles	7%	8%
4 to 5 miles	9%	12%
6 to 10 miles	10%	11%
11 miles or more	5%	4%

**Table 2-7**  
**Means of Getting from Home to Alternative Mode Meeting/Transfer Point**  
(n=1,577)

Access Mode to Alternative Mode	2004	2007
Walk	39%	35%
Picked up at home	15%	12%
Drive to a central location (e.g., Park & Ride)	18%	18%
Drive alone to driver's/passenger's home	11%	10%
Bus/transit	9%	12%
I am the carpool/vanpool driver	5%	10%
Dropped off/another CP/VP	1%	1%
Other*	1%	2%

### **Walking and Bicycling to Transit**

Walking is the dominant mode of access to transit. The census walk to work mode share does not include walk trips to transit, since a walk trip to transit is counted as a transit trip

rather than as a walk trip. In areas with high transit ridership the census walk to work numbers significantly undercount the amount of walking to or from work. According to the 2004 *State of the Commute Survey*, 83% of bus commuters walk to the bus.<sup>7</sup>

In 2007 WMATA surveyed passengers at all 86 of its Metrorail stations. The primary purpose of the survey was to estimate the percentage of total ridership residing in each jurisdiction. Passengers *entering* each Metro station were queried throughout the entire day, so the “mode of access” number for any given Metro station includes both people on their way to work or some other destination, and those on their way home. “Mode of Access” is the mode people use to get to the station, not to leave it. Table 2-9 in Appendix G shows mode of access to Metrorail.<sup>8</sup>

*60.7% of  
Metrorail  
Passengers  
Walk to the  
Station*

In 2007 62.1% of all Metrorail passengers walked to the station, which is slightly more than in 2002. 0.55% arrived by bicycle, an increase from the 0.31% who arrived by bicycle in 2002. 13.7% drove, and another 6.1% arrived as auto passenger or were dropped off by someone. 15.6% arrived at the Metro station by bus.

<b>Table 2-8 Mode of Access to Metrorail in 2007</b>	<b>Percent of Total</b>
Bus	15.6
Auto Driver	13.7
Auto Passenger	5.5
Rode with someone who Parked	0.6
Bike	0.5
Walk	62.1
Commuter Rail	1.7
Taxi	0.2

Mode of Access varies greatly by station, from Capitol South, with 95% access by foot, to Branch Avenue, with 3.7% access by foot. The thirty stations for pedestrian access (as a percentage of total passengers accessing that station) are all located in the District of Columbia, Arlington, or Alexandria. Stations with a very high share of

<sup>7</sup> 2004 *State of the Commute Survey Results*. Metropolitan Washington Council of Governments, p. 63.

<sup>8</sup> 2007 WMATA Rail Passenger Survey, from the table “Origin Station by Mode of Access”.

pedestrians tend to be located in major employment centers, with people walking from work to the station, rather than from home to the station. However, largely residential-area stations such as Cleveland Park, Eastern Market, and Columbia Heights are found in the top twenty. Dense, mixed-use areas such as Bethesda, Foggy Bottom, Crystal City, Pentagon City, Friendship Heights, Van Ness, Dupont Circle, Shaw, and the Rosslyn-Ballston Corridor have high percentages of pedestrian access as well.

The bicycle mode of access to Metrorail ranged from 4% at West Hyattsville to zero at 14 stations.<sup>9</sup> Stations with more bicycling tended to be located in the western portion of the region, have access to a major shared-use path, be near a major University, and/or be located in an area with a bicycle-friendly street grid. Stations with no bicycling are either in dense urban employment centers with no bicycle parking, or are located in the eastern portion of the region. Brookland CUA was a notable exception, with no bicycle access despite the presence of a university.

Of the sixteen stations located east of the Anacostia River in 2007, ten had bicycle access that rounded to zero. All stations in Fairfax and Montgomery Counties had some bicycle use. The WMATA *Rail Passenger Survey* confirms what the census tells us about the distribution of walking and bicycling in the region, with walking and bicycling heavily concentrated in the Metro core and at certain inner suburban stations.

## **Outlook**

Walking and bicycling taken together are significant travel modes in the Washington region, especially for non-work trips, and for trips to transit. Walking is the larger mode, and it is growing, while cycling is less common, and is stable at the regional level.

Commutes are getting longer across the region, and the fastest population growth is taking place in outer jurisdictions that have low and declining levels of walking and bicycling. Those areas have developed in ways that make utilitarian walking and bicycling difficult and dangerous, with long distances, lack of direct routes, heavy, fast automobile traffic, and incomplete facilities for walking or bicycling.

*Growth in  
Walking and  
Bicycling will  
likely occur in the  
Urban Core and  
Regional Activity  
Centers*

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<sup>9</sup> 2007 WMATA Rail Passenger Survey, Table "Mode of Access"

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The story in the urban core is different. In the District of Columbia, Arlington, Alexandria, and portions of Montgomery County, walking and bicycling are growing rapidly. In mixed-use activity centers people walk and bicycle. Where land uses are separated and development densities are lower, walking and bicycling are much less common.

It is likely that the urban core and inner suburban communities will develop over the next thirty years in ways that will be conducive to walking and bicycling. In 2005 73% of the region's employment was found within a series of "regional activity clusters", or concentrations of employment and housing identified by the TPB. Many inner suburban activity centers have already reached critical levels of traffic congestion, and regional projections call for rapid employment growth in these same areas. Seventy-two percent of regional employment growth to 2030 is planned to take place within these clusters, as well as fifty-four percent of household growth.<sup>10</sup> Under "Complete Streets" policies new development should accommodate pedestrians and bicyclists. If growth occurs in ways that are consistent with the TPB *Vision* and *Region Forward 2050*, creating activity centers that mix jobs, housing and services in a walkable environment, we can expect walking and bicycling to increase.

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<sup>10</sup> Metropolitan Washington Council of Governments, *Growth Trends to 2030: Cooperative Forecasting in the Washington Region*, October, 2005. Pp. 2, 14-15.

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### **Summary of Data Sources**

Major sources of data for bicycling and walking in the Washington region include the 1994 and 2007/2008 COG/TPB *Household Travel Surveys*, the US Census, the Commuter Connections *State of the Commute Survey*, COG/TPB's cordon counts, DDOT's bicycle counts, pedestrian and bicycle crash data from the Departments of Transportation, WMATA's 2002 and 2007 *Rail Passenger Surveys*, and the 2007 *Bike to Work Day Survey*.

#### **A. COG/TPB Household Survey**

The household travel survey is a roughly once in a decade survey of households in the greater Washington region. The survey was done in 1994, and again in 2007-2008. It is the best available source of information on travel mode shares in the Washington region.

For the most recent survey, 11,000 randomly selected households in TPB Region and adjacent areas (+3,500 in the Baltimore Region) were surveyed. Higher numbers of samples were taken in higher density, mixed use urban areas, and regional activity centers. The sample was address-based. Interviews were conducted between February 2007 and March 2008. Travel is weekday travel only; week-end travel was not counted.

#### **B. 2000 US Census**

The most fine-grained data on travel behavior comes from the Census. Every 10 years the Census Bureau asks roughly one in seven individuals (those who fill out the 'long form') how they get to work. People are polled at their home, not at their place of work. The most recent data available is from the 2000 Census. The biggest limitation of the Census data is that it only contains commute trips. Only one quarter of all trips in the Washington region are commute trips.<sup>11</sup> However, commute trips occur at the most congested time of day.

For the 2010 census there will be no long form. Instead, a five-year rolling average of the annual American Community Survey will be used to discover travel mode shares.

#### **C. Bike Counts**

COG/TPB's cordon counts are conducted by machine or in person, on specific roads or trails.

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<sup>11</sup> National Capital Region Transportation Planning Board, *1994 COG/TPB Household Travel Survey: Summary of Major Findings*. January, 1998. Page 4.

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In cordon counts, COG/TPB counts the volume of traffic crossing a series of points along an imaginary circle. For example, one cordon line is the Capital Beltway. At approximately 60 points along the Beltway, COG/TPB counts all vehicles crossing over or under the Beltway. Another cordon line is known as the Metro Core, circling downtown DC and part of Arlington. Counts take place on a single day, so results may vary widely depending on weather, transportation incidents, security emergencies, or other factors. Pedestrians are not counted. Bicyclists crossing the cordon line may or may not be commuters; they are counted but not stopped or asked their trip purpose. In most cases the numbers represent only one day of counting and can not be viewed as a daily average.

The District of Columbia also contracts with COG/TPB to do bicycle counts within the District, as described on page 2-24.

**D. 2007 Commuter Connections State of the Commuter Survey**

The *State of the Commute Survey* is a random sample survey of 6,610 employed persons in the 11 jurisdictions of the Washington Metropolitan designated (air quality) non-attainment region. Commuter Connections commissions this survey in order to evaluate the effectiveness of its programs. The region polled is the Washington Metropolitan Statistical Area, shown in figure i-1 on page i-4, minus Stafford County but adding Calvert and Charles Counties. The sample size of the *State of the Commute Survey* permitted the calculation of walk/bike mode shares by annual income, ethnicity, age, and state of residence.

The SOC survey does not provide any information on non-work trips. Surveys were carried out from January 31<sup>st</sup> to April 28<sup>th</sup>, 2007, by telephone, and asked about behavior “last week”. This methodology differs somewhat from U.S. Census, which asks about behavior during the first week in April. The 2001 and 2004 SOC surveys show lower numbers for walking and bicycling than does the census.

**E. 2007 WMATA Rail Passenger Survey**

In 2007, Metro conducted a survey of its rail passengers. Surveys were distributed to rail patrons entering stations on weekdays between April 17 and May 24, 2007. Data were collected for the full day, divided into a.m. and p.m. peak and off-peak periods. Riders could drop off responses in collection boxes stationed throughout the system or return them by mail. The primary purpose of the survey was to allow Metro to estimate the percentage of total ridership residing in each jurisdiction. However, the survey also asked riders what

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mode of transportation they used to access or egress the station. 66,321 valid survey responses were obtained.

**F. 2007 Bike to Work Day Survey**

The *Bike to Work Day Survey* is a survey of participants in the regional Bike to Work Day of May 18, 2007. It is not a random sample, but it provides a portrait of a self-selected group of cyclists. In November 2004, COG/TPB mailed surveys to all 6,600 registered participants, and got back 2,411 completed surveys, a response rate of 37%.

Participants in Bike to Work Day often rode considerable distances for the event, with 26% riding 10-15 miles, and another 17% riding more than 15 miles. However, the post-ride survey indicates that people may be willing to ride farther for a one-day event than they will on a daily basis. Several months after the event participants were asked if they still biked to work, and if not why not. Of the 444 respondents who did not continue riding to work after participating in Bike to Work Day, 38% cited weather, while another 33% cited lack of a safe route, 28% cited distance, 16% cited lack of showers or changing facilities, 9% cited lack of bike parking/storage, and 8% cited the need for a car to take care of personal business.