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 20th 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.[2] 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%.

	Table 2-1 Pedestrian Commuting in the Ten Largest Metropolitan Areas[1]	% Walk to Work 2000 Census	% Walk to Work 2006-2008	% Walk to Work 2008-2012
1	New York	5.55%	6.2%	6.2%
2	Boston	4.12%	4.8%	5.3%
3	San Francisco	3.25%	4.2%	4.3%
4	Philadelphia	3.88%	3.7%	3.7%
5	Washington	3.10%	3.0%	3.2%
6	Chicago	3.13%	2.9%	3.1%
7	Los Angeles	2.56%	2.6%	2.7%
8	Detroit	1.83%	1.5%	1.4%
9	Houston	1.62%	1.5%	1.4%
10	Dallas-Fort Worth	1.48%	1.3%	1.2%
	United States	2.93%	2.8%	2.8%

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

In the first decade of the 21st Century, growth in solo driving share appears to have stopped, and transit, walking and bicycling mode shares have stabilized. 76% of workers drove alone in 2012, which is essentially the same as in 2000, and public transportation grew from 4.7% to 5%.

	Table 2-2: Bicycle Commuting in the Ten Largest Metropolitan Areas	% Bike to Work 2000	% Bike to Work 2006-2008	% Bike to Work 2008-2012
1	San Francisco	1.12%	1.4%	1.7%
2	Los Angeles	0.63%	0.7%	0.9%
3	Boston	0.38%	0.7%	0.9%
4	Philadelphia	0.33%	0.5%	0.6%
5	Chicago	0.31%	0.5%	0.6%
6	Washington	0.30%	0.5%	0.6%
7	New York	0.30%	0.4%	0.5%
8	Houston	0.30%	0.3%	0.3%
9	Detroit	0.18%	0.2%	0.2%
10	Dallas--Fort Worth	0.14%	0.2%	0.2%
	United States	0.38%	0.5%	0.6%

1 2000 US Census, 2006-2008, 2008-2012 American Community Survey
2 1960 Census of Population, Characteristics of Population, United States Summary

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 purposes. The most recent data documenting mode of transportation for all trips taken in the U.S. comes from the 2009 National Household Travel Survey (NHTS). According to the NHTS 1.0% of all trips taken in the U.S. are made by bicycle and 10.4% are by foot.[3]

Ethnicity, gender, 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, with 13% of the U.S. population and but 10% of all walking trips and 6% of all bicycling trips. Children, as would be expected, are most likely to walk and bike - Estimates from NHTS indicate that youth under age 16 make up 39% of bicycling trips, despite accounting for just 21% of the U.S. population. This age group also accounts for 17% of walking trips.

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. Only 24% of bike trips in the United States are taken by women.

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 stabilize. 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.

Cold weather/winter is a major barrier to commuter cycling, along with distance, absence of safe routes, and lack of end-of-trip facilities such as showers and lockers.[4] 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 short.

Transit and walking are interdependent, with 80% of bus and 60% of Metrorail access

3 Alliance for Bicycling and Walking, *Bicycling and Walking in the United States: 2014 Benchmarking Report*, page 35.
4 Metropolitan Washington Council of Governments, *2013 Bike to Work Day Survey- Summary of Results*, January 2014. Page 11.

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.

Walking and Bicycling Trends According to the US Census

The 2010 decennial US census form was shortened, and the decennial census no longer provides 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.

The ACS data is currently the most up to date source of information on walk and bike mode shares The five-year 2008-2012 rolling averages are reasonably accurate down to the census tract level. At the County level we show the 2012 American Community Survey Data.

The 20th Century trend towards less walking and bicycling also held for the Washington Metropolitan Statistical Area (MSA). 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. In the first decade of the 21st century walk mode stabilized, at 3.2%, while bike mode share doubled, to 0.6%.

Charts 2-14 and 2-15 below show the changes in walking and biking to work by jurisdiction.

Chart 2-14: Percentage of Workers Walking to Work

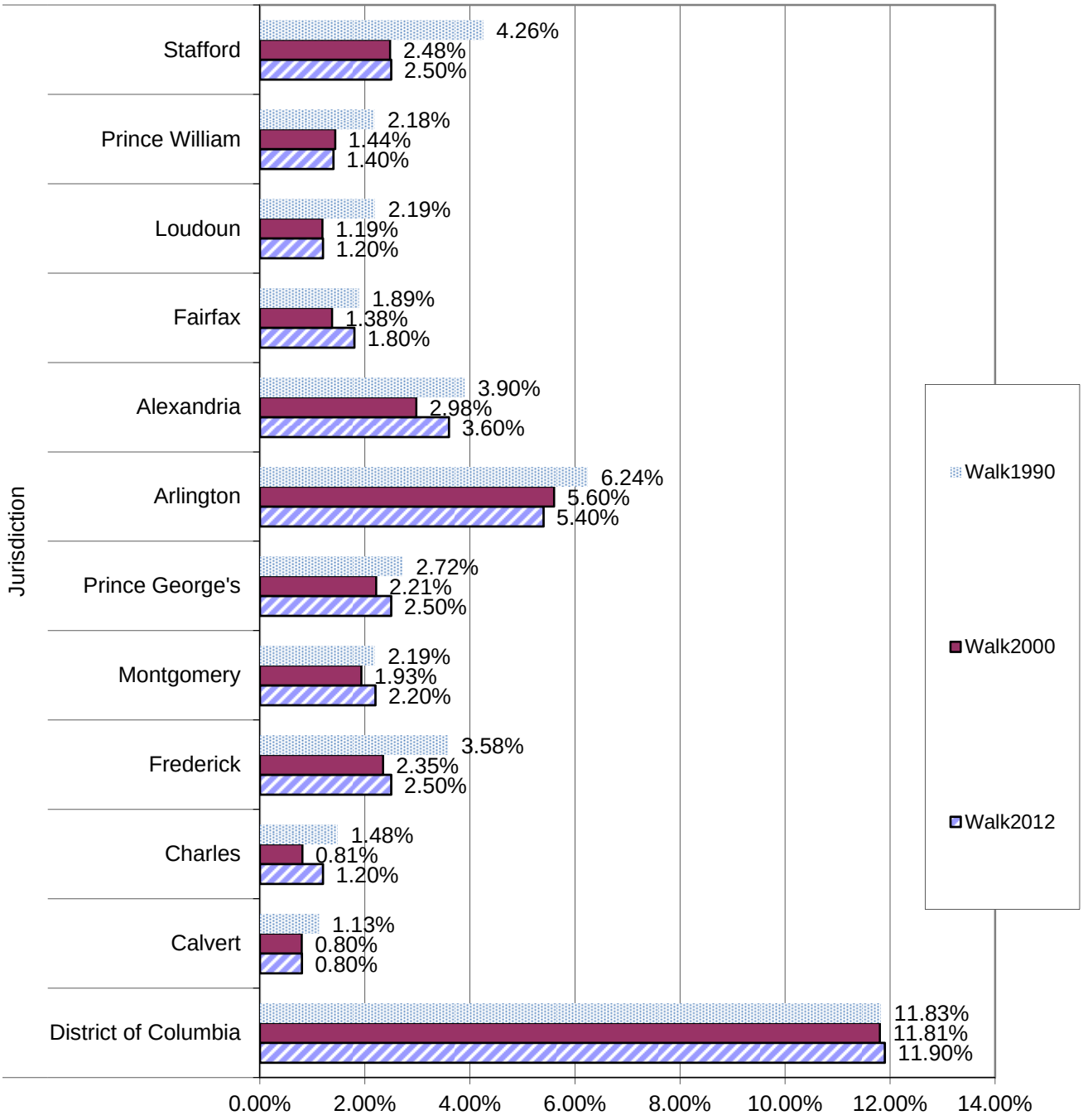
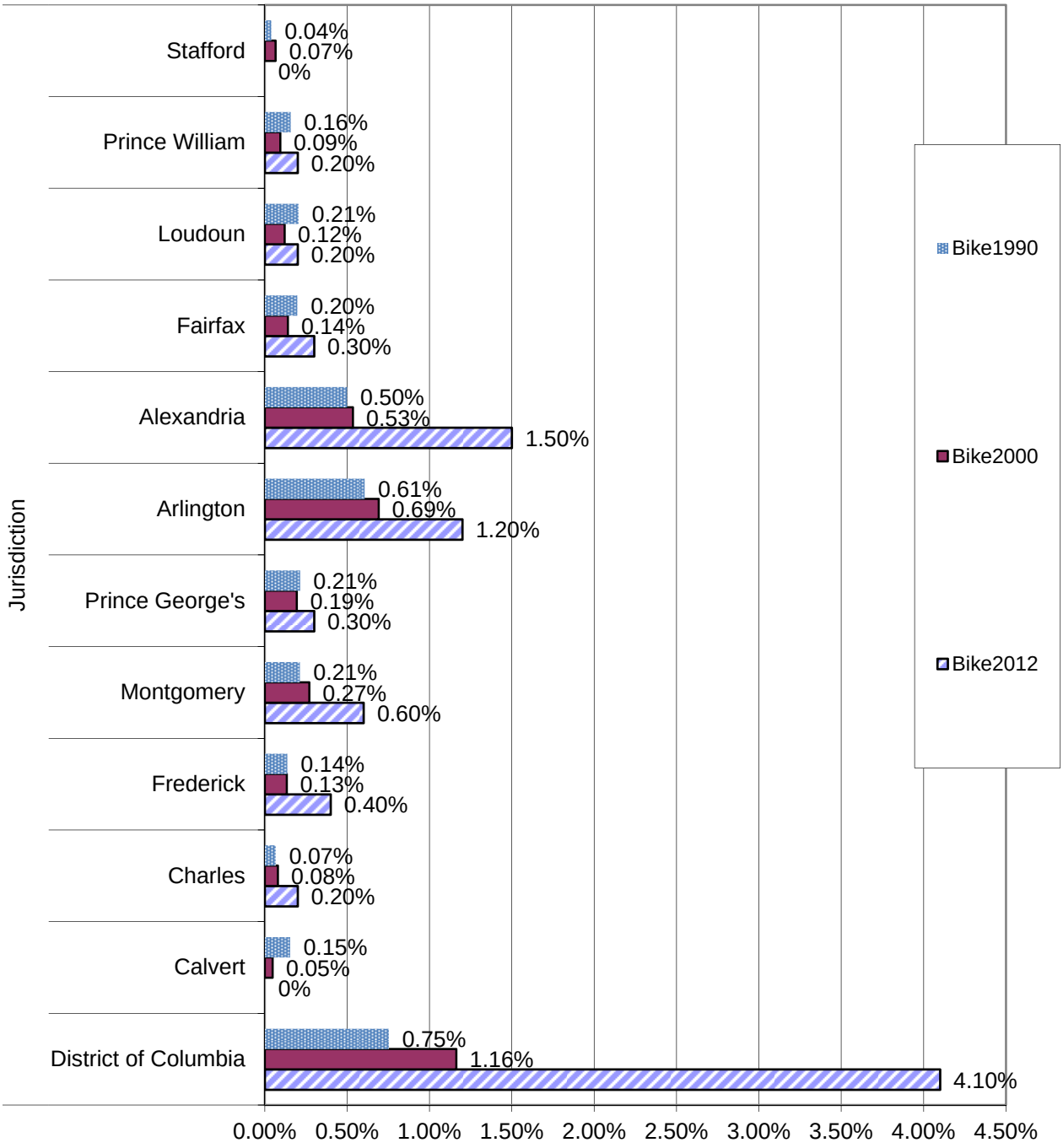


Chart 2-15: Percentage of Workers Biking to Work



Generally, the urban core of the Washington region, consisting of the District of Columbia, Arlington, and Alexandria, experienced stable pedestrian mode share and major gains in bicycling between 1990 and 2012. The District of Columbia nearly quadrupled its bicycle mode share.

The inner suburban jurisdictions of Fairfax, Montgomery, and Prince George's saw a decline in walking to work in the 1990's, which was reversed in the 2000's, leaving them roughly where they were in 1990. Bike mode share increased from 1990-2012, but from a low base.

The outer suburban counties of Frederick, Loudoun, Prince William, and Charles also saw a decline in walking to work in the 1990, which stabilized in 2000-2012, leaving them with less walking to work than in 1990. Bicycling mostly increased, but from a very low base. Frederick County more than doubled its bike mode share, to 0.6%.

The exurban counties of Calvert and Stafford had few people bicycling or walking to work in 1990, and that number fell further during the decades that followed. The American Community Survey counted 18 bicycle commuters in Stafford County in 2012, and 25 in Calvert County.

Mode Share by Census Tract

The Census Bureau recently released a web application that provides commuter mode share information, including bicycle and walking commuting numbers, for each state, county, and census tract.

http://www.census.gov/censusexplorer/censusexplorer-commuting.html

Zooming in to the Washington region, the maps show that bicycling and walking are concentrated in the neighborhoods surrounding downtown D.C., Capitol Hill, and North Arlington. Downtown DC and the surrounding neighborhoods show the highest walk mode shares, as much as 52%, while those a little further out have the highest bike mode shares. Outside DC, North Arlington, Old Town Alexandria, downtown Bethesda, and the City of Frederick the highest (non-campus) walk mode shares.

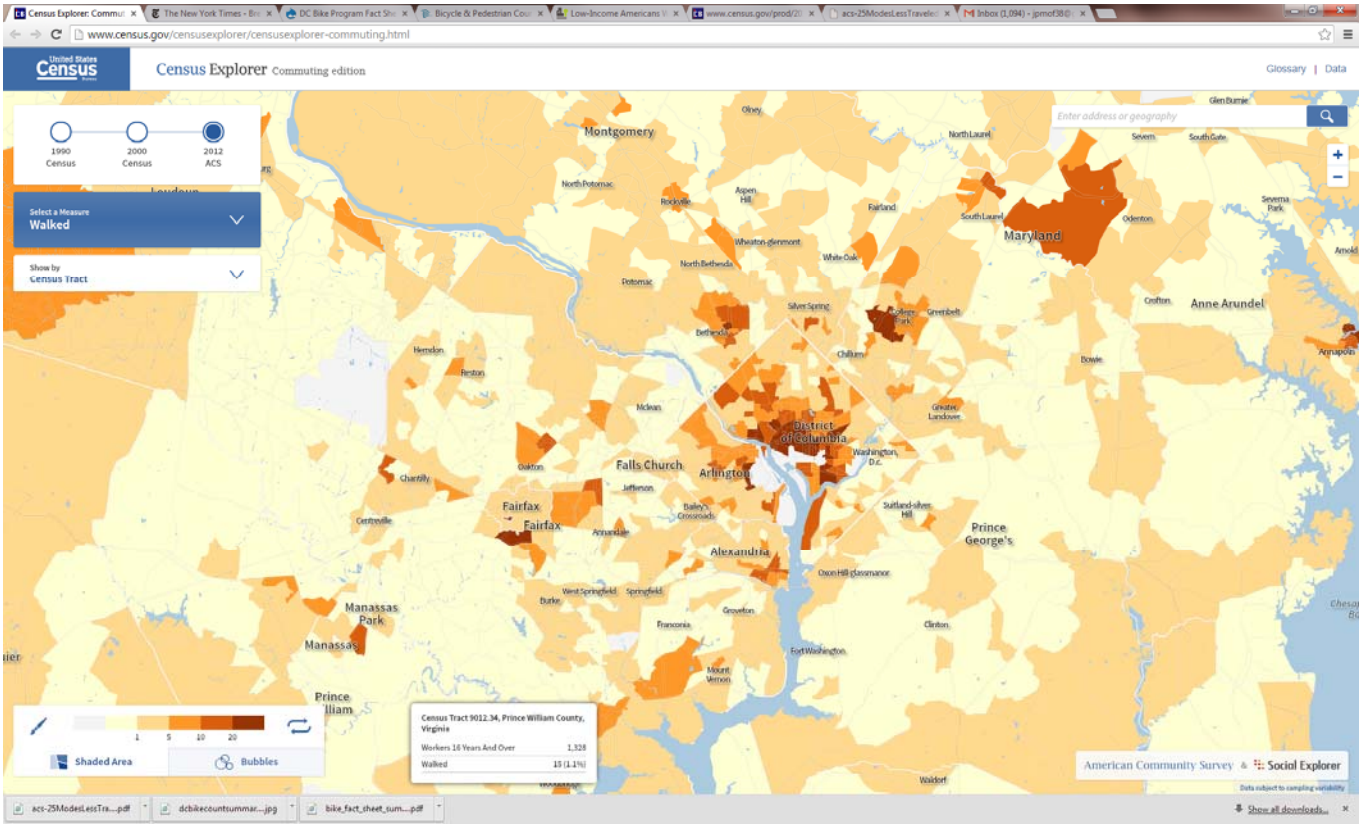
College campuses and military bases such as University of Maryland, Ft. Meyers, Bolling Air Force Base, the National Institute of Health, George Mason, Howard, Georgetown and Gallaudet all have high walk and bike mode share.

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 than the surrounding suburban tracts.

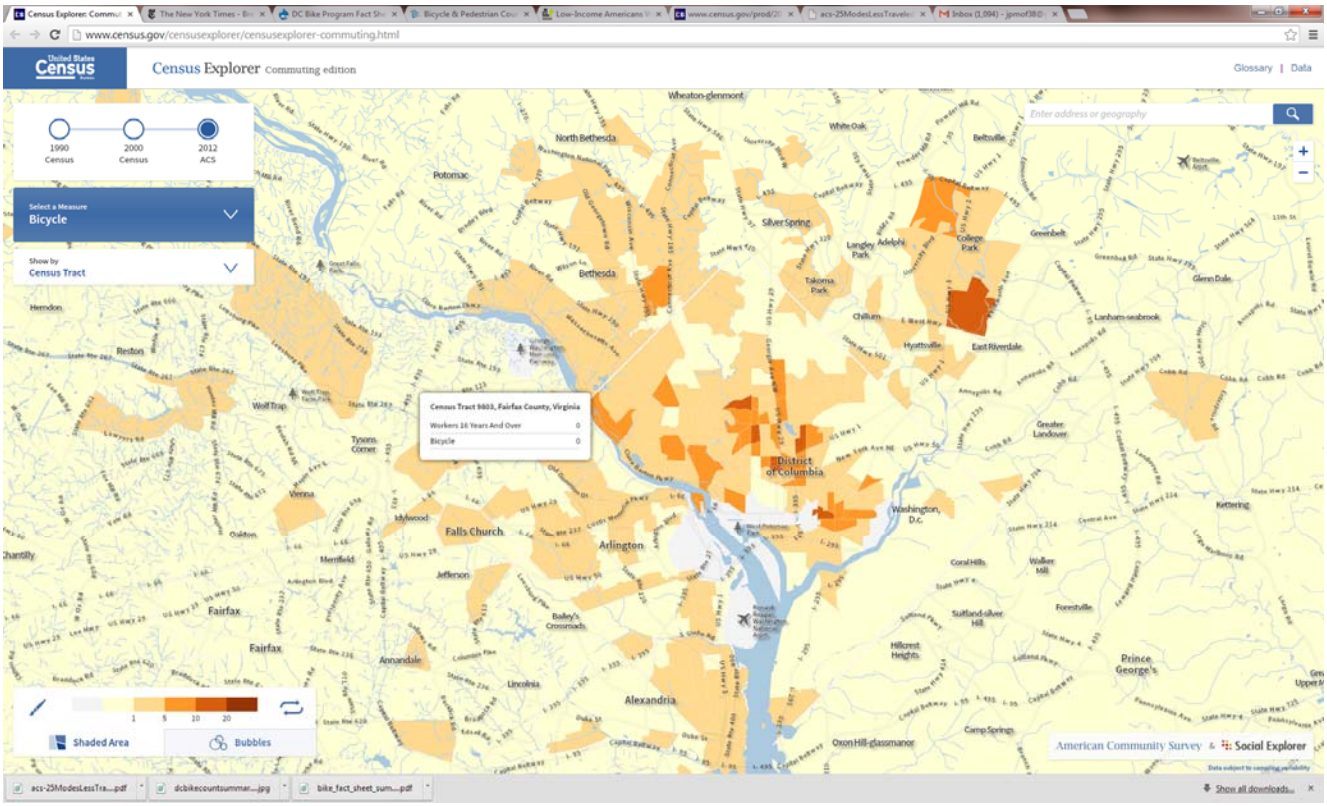
However, the highest bike mode share by far is in the ring of neighborhoods within easy biking distance of downtown DC, on the order of 10-15%. A dense network of on-street bicycle facilities, and proximity between housing and employment, seems to be more predictive of bicycling than an isolated trail.

(screen captures for bike, ped)

Walk to Work by Census Tract



Bike to Work by Census Tract



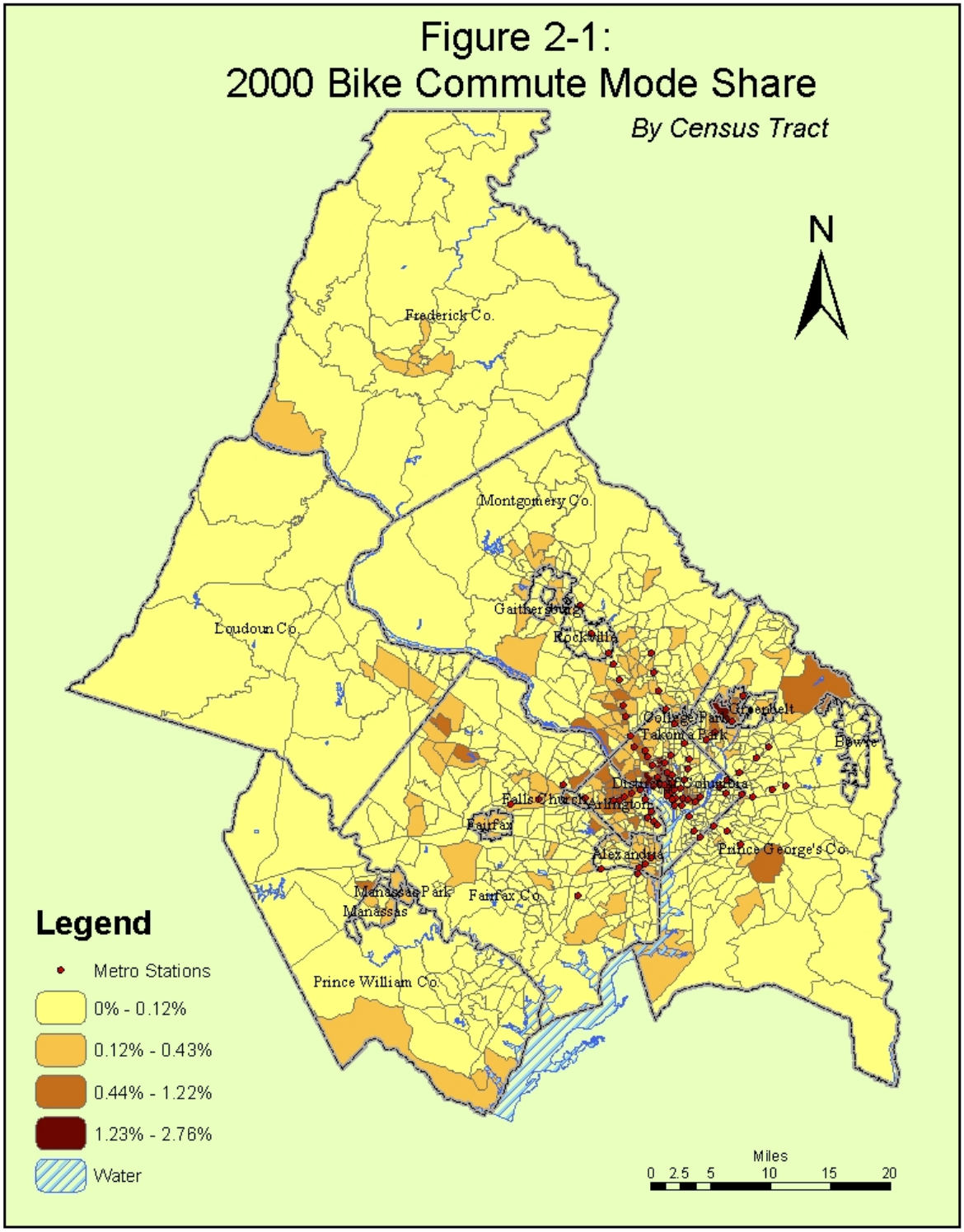


Figure 2-1:
2000 Bike Commute Mode Share
By Census Tract
N
Frederick Co.
Montgomery Co.
Loudoun Co.
Gaithersburg
Rockville
College Park
Greenbelt
Takoma Park
Bowie
District of Columbia
Falls Church
Arlington
Fairfax
Alexandria
Prince George's Co.
Manassas Park
Manassas
Fairfax Co.
Prince William Co.
Legend
Metro Stations
0% - 0.12%
0.12% - 0.43%
0.44% - 1.22%
1.23% - 2.76%
Water
Miles
0 2.5 5 10 15 20

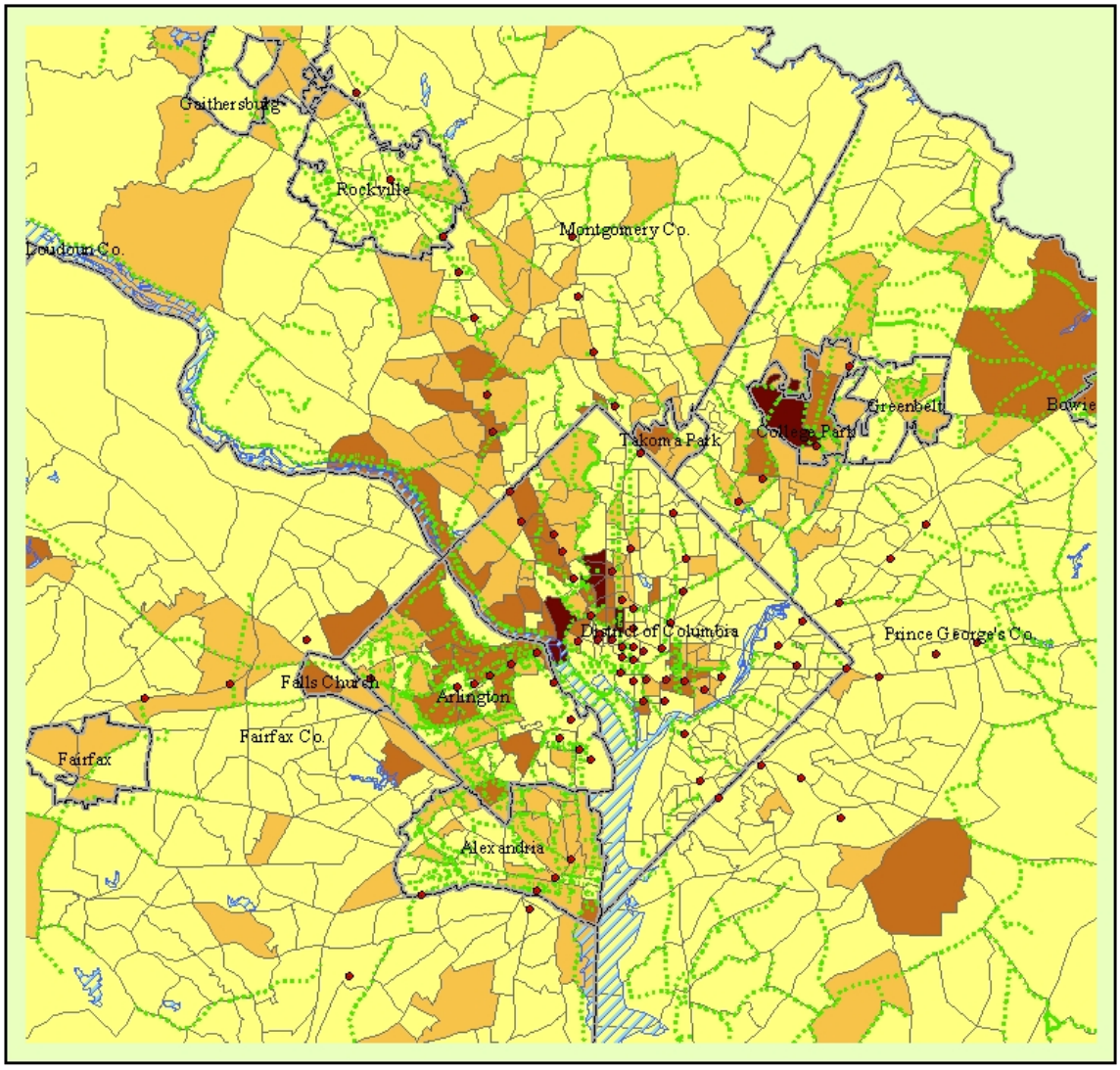


Figure 2-2:
2000 Bike Commute Mode Share
By Census Tract

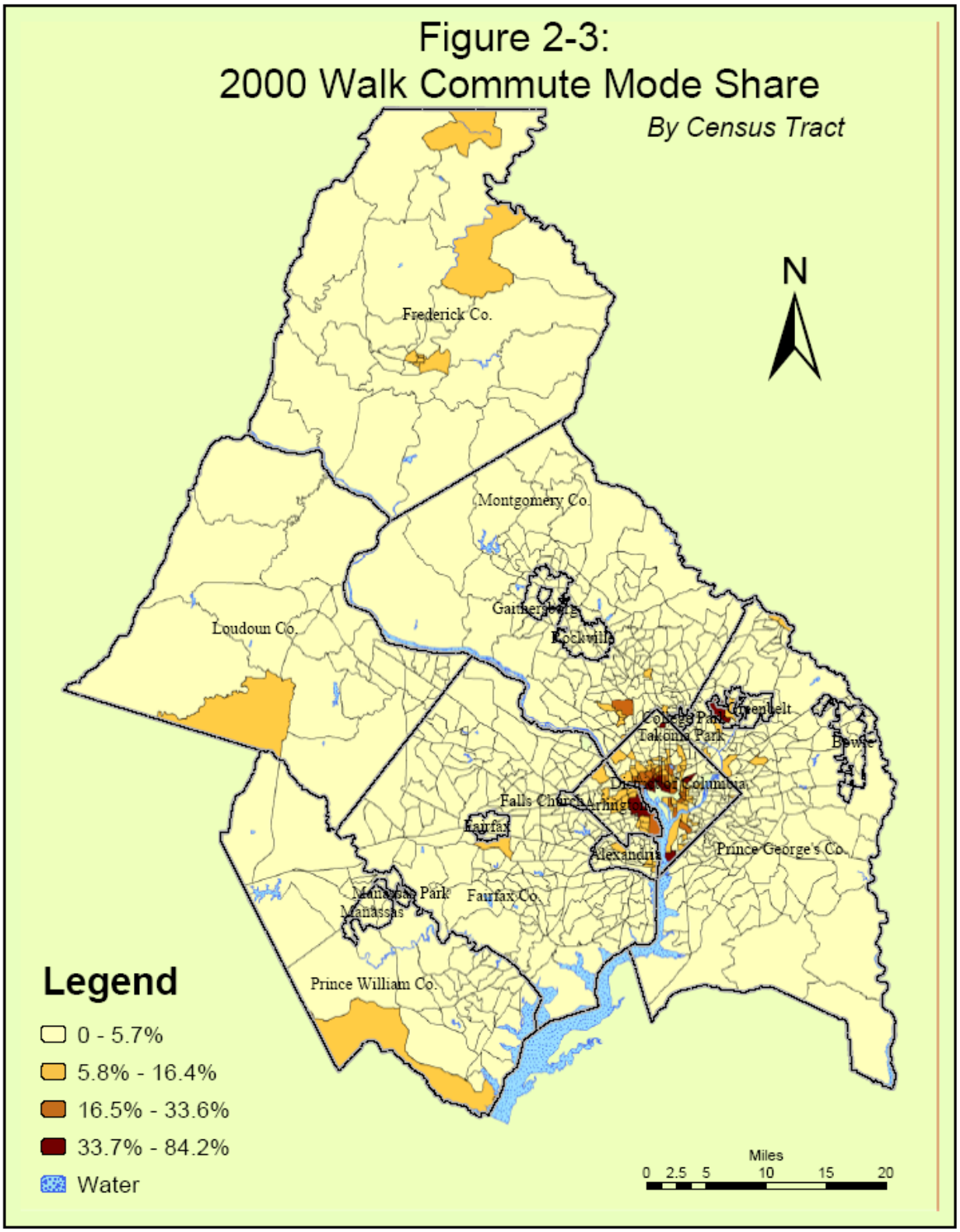


Figure 2-3:
2000 Walk Commute Mode Share
By Census Tract
N
Frederick Co.
Montgomery Co.
Loudoun Co.
Gaithersburg
Rockville
College Park
Takoma Park
Greenbelt
Bowie
Falls Church
Arlington
Fairfax
Alexandria
Prince George's Co.
Manassas Park
Manassas
Fairfax Co.
Prince William Co.
Legend
0 - 5.7%
5.8% - 16.4%
16.5% - 33.6%
33.7% - 84.2%
Water
Miles
0 2.5 5 10 15 20

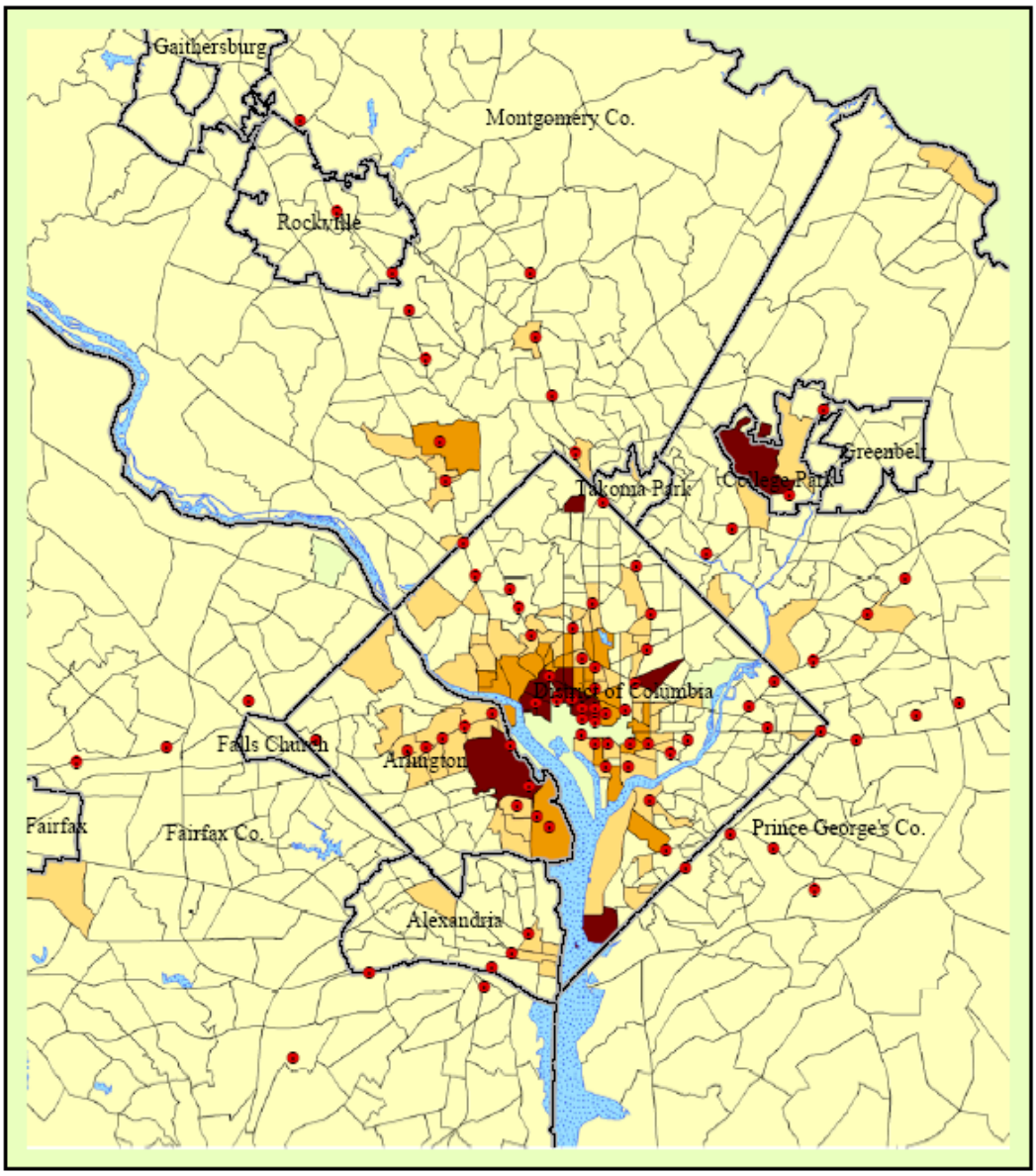


Figure 2-4:
2000 Walk Commute Mode Share
By Census Tract

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 commute mode share the US Census American Community Survey provides more recent data.

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 fell from 3% to 2.7%, but bicycle commuting 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

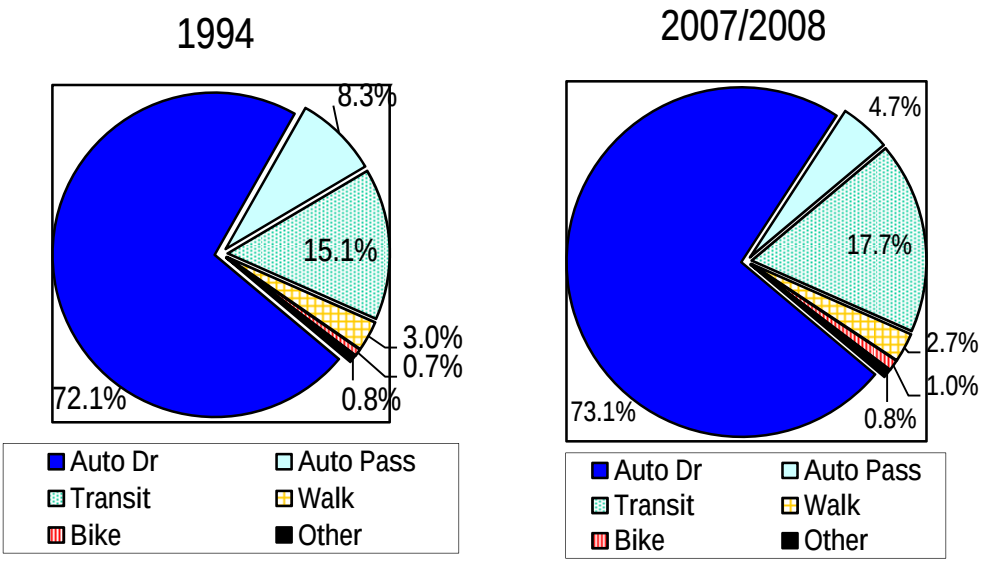


Chart 2-2: Walk Commute Share by Jurisdiction

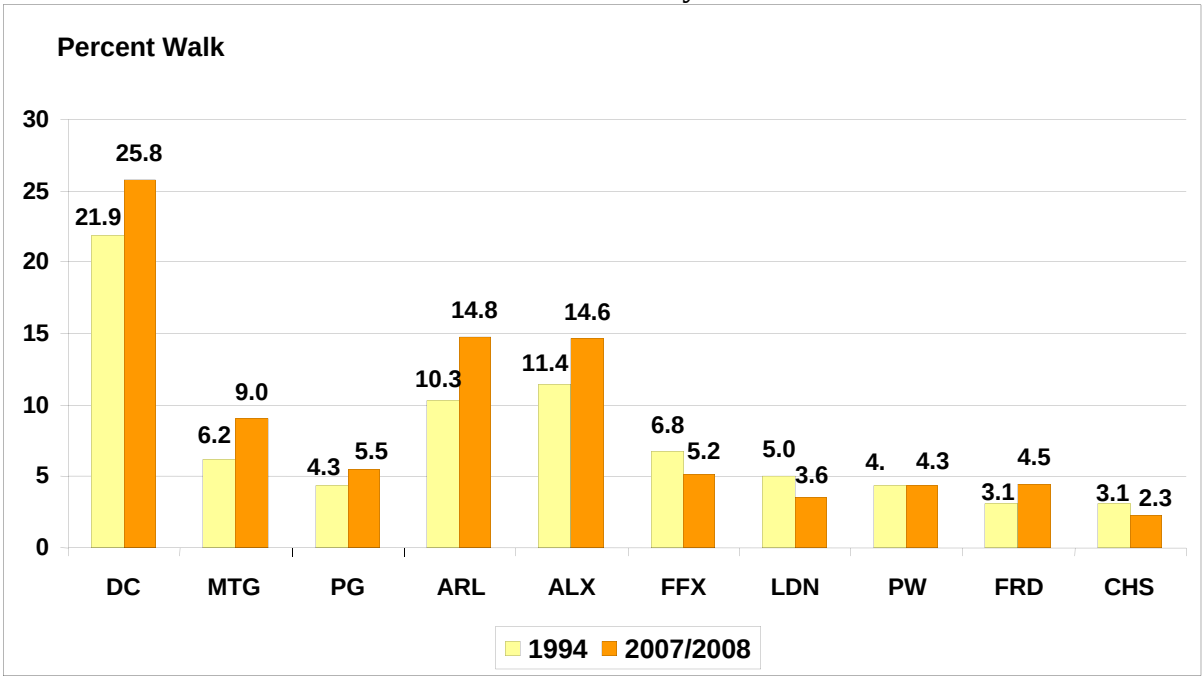
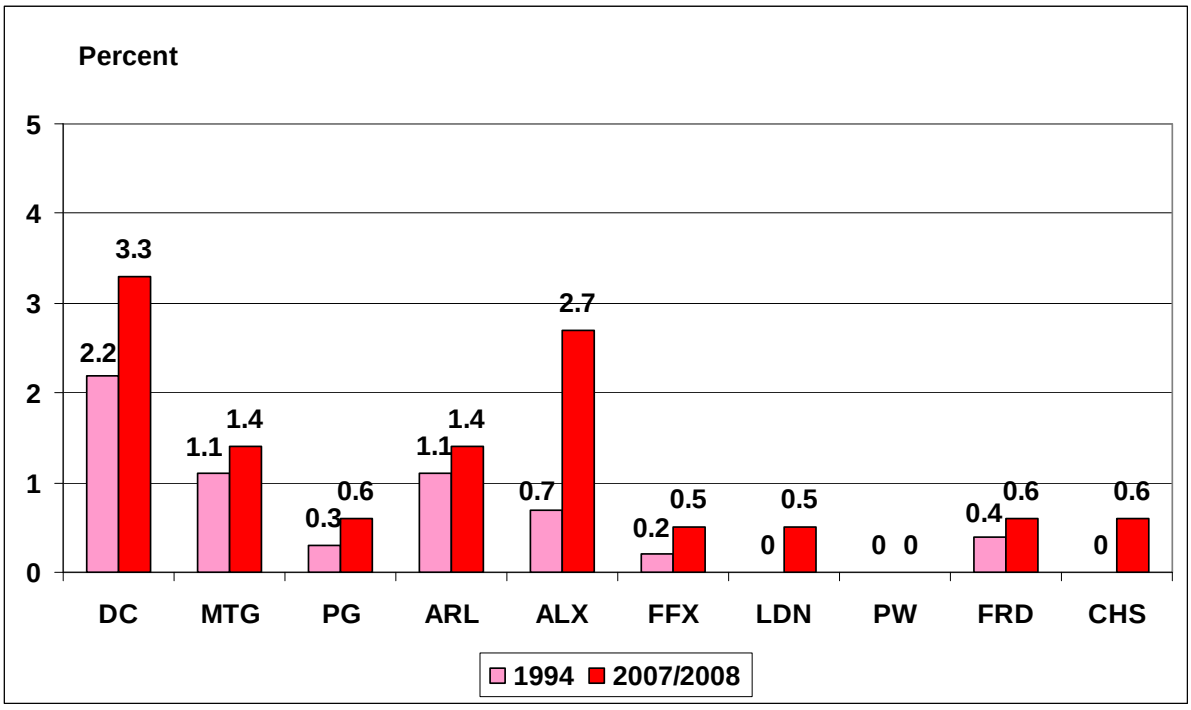


Chart 2-3: Bike Commute Mode Share by Jurisdiction



At the jurisdictional level, walk commuting declined in the District of Columbia, but grew in Alexandria, Arlington and Frederick Counties.

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.

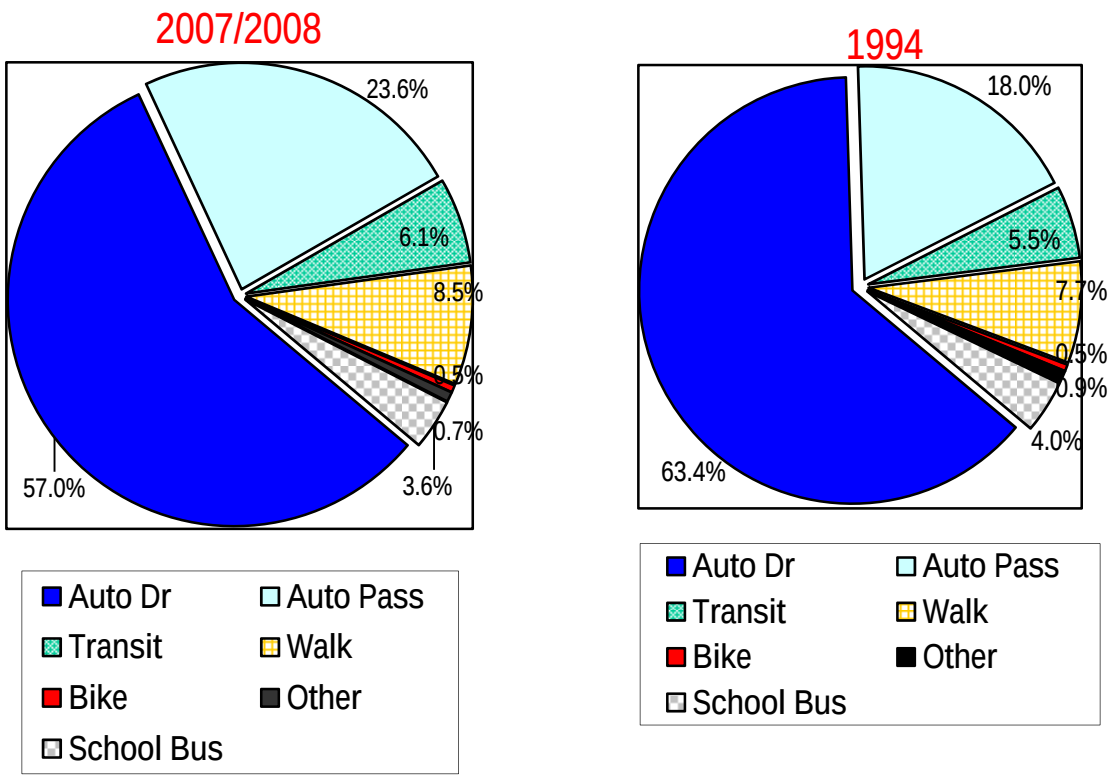
Bike commuting grew in most jurisdictions from a low base, with the biggest increases in the District of Columbia and Alexandria.

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.

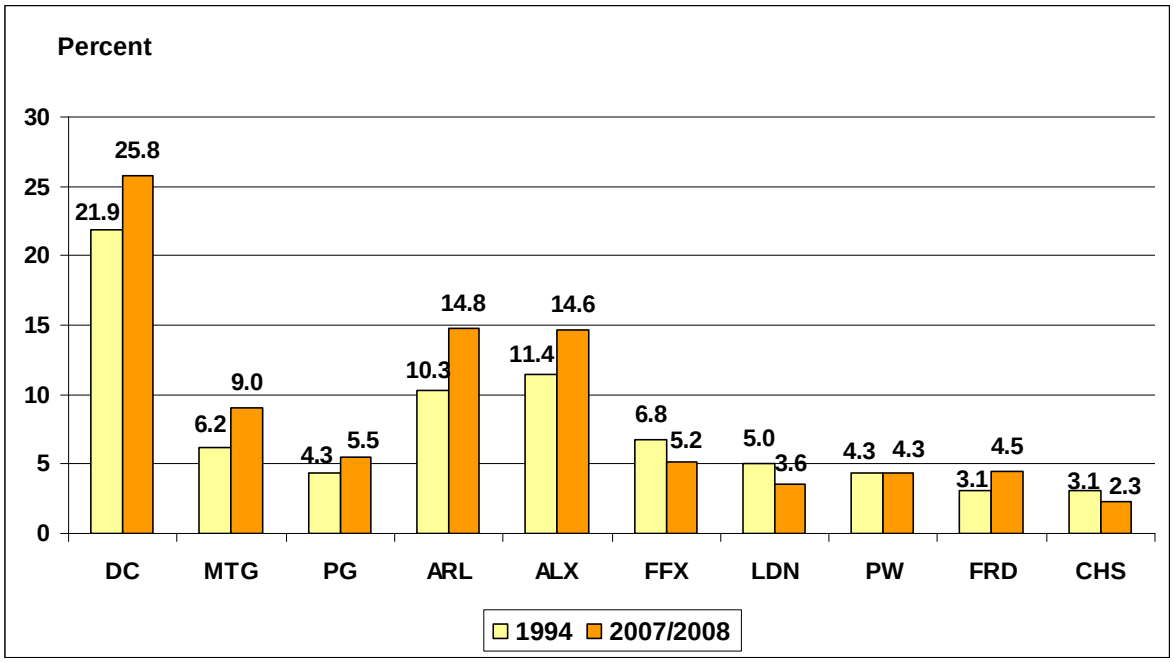
Chart 2-4: Mode Share for All Trips



Walk and Bike Mode Share by Jurisdiction

Walking increased in 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)

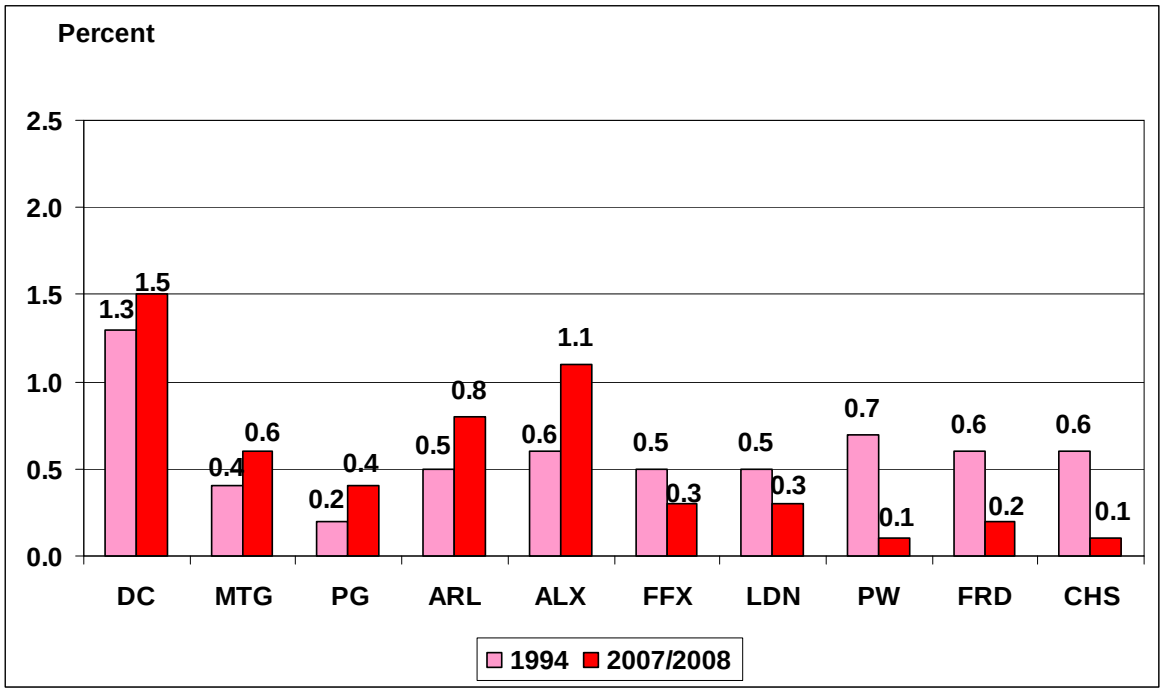


Bike mode share grew in the urban core, but fell steeply from low starting levels in the outer surburban counties. .Growth in bicycling in the core has been offset by an equal decline in the outer suburbs, adding up to zero growth at the metropolitan level. The outer counties have experienced greatly 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)

.Daily Trips by Trip Purpose in the Washington Region



Commute 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. Commute trips also have the highest median trip length, at 9.3 miles.

Chart 2-7: Daily Trips by Trip Purpose

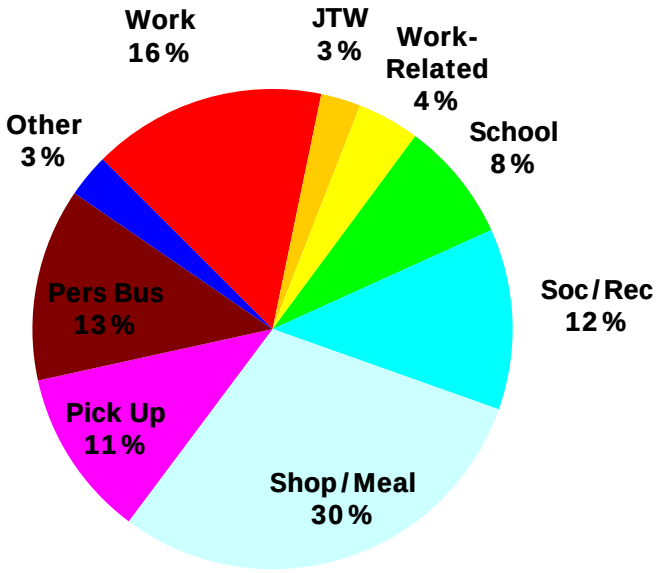
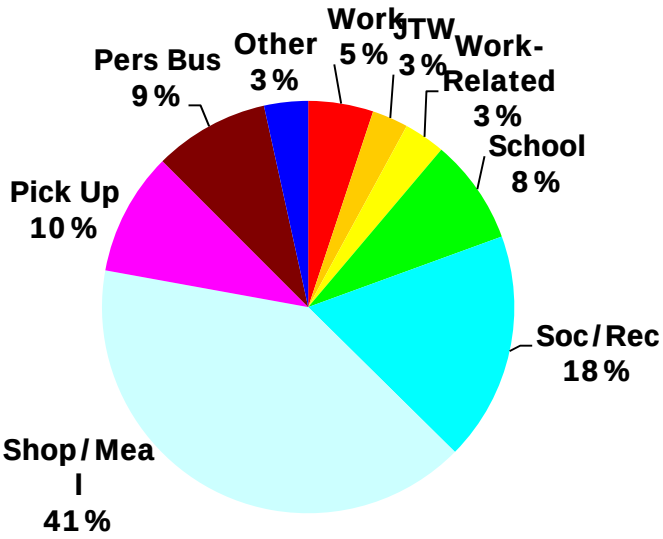
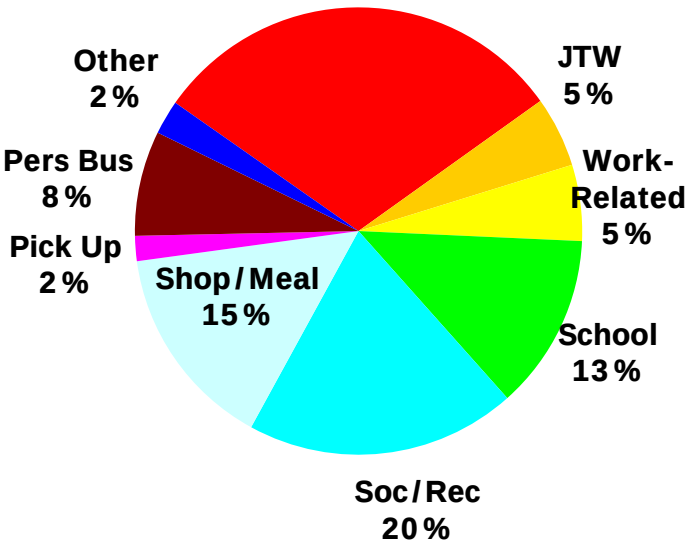


Chart 2-8: Walk Trips by Purpose



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



Bicyclists 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 that bicyclists, while few in number, tend to stick with their chosen mode for all 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)

Purpose	25%	Median	75%	90%
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)

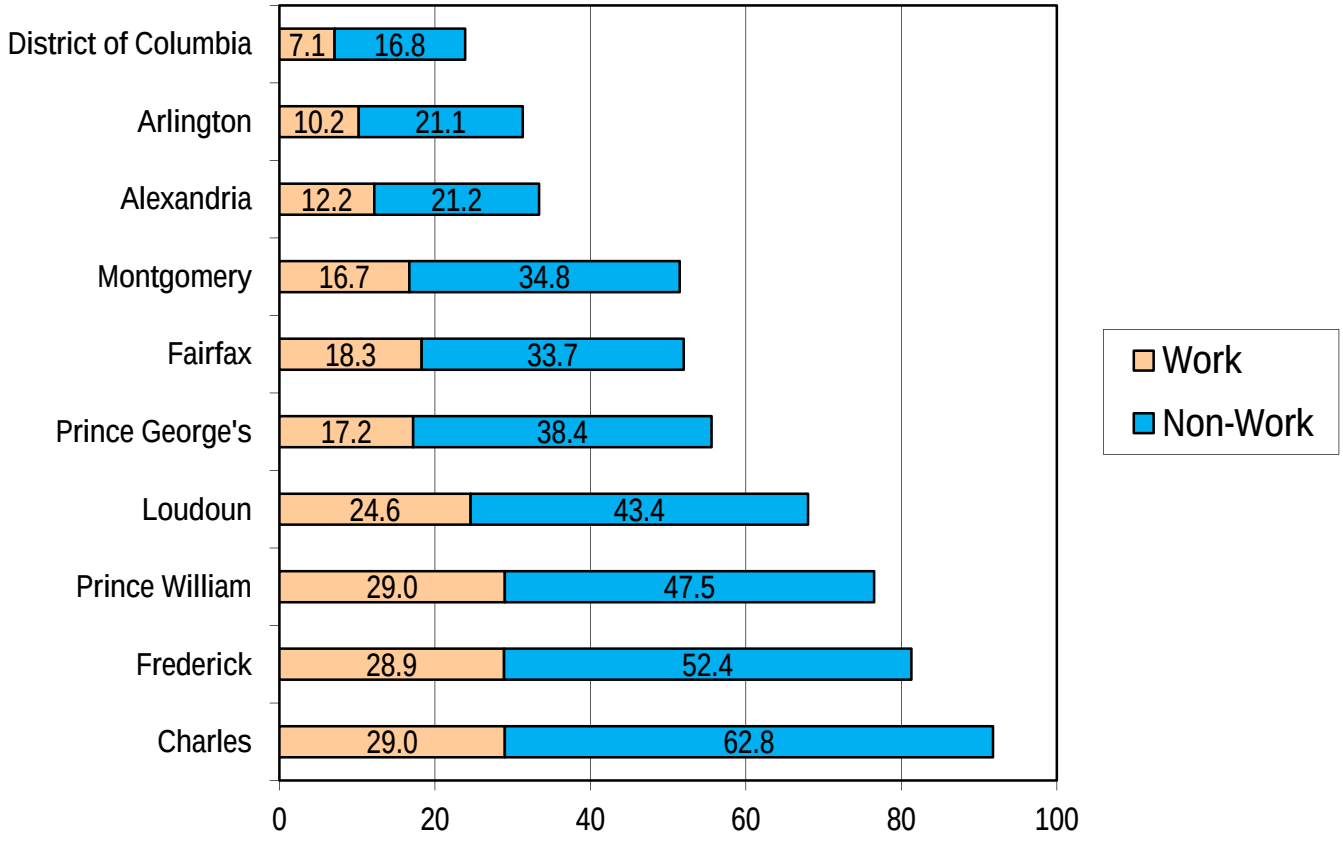
Mode	25%	Median	75%	90%
Auto Driver	1.5	4.0	9.7	18.7
Auto Passenger	1.2	2.8	6.4	12.9
Transit	3.5	6.9	14.1	23.4
School Bus	1.2	2.3	4.6	8.2
Walk	0.1	0.3	0.5	0.9
Bike	0.8	1.5	4.1	7.3

Average Daily Miles Traveled By Jurisdiction

Households in the urban core make slightly fewer trips per day, anbd travel far fewer miles per day than households in the outer jurisdictions. The average DC household

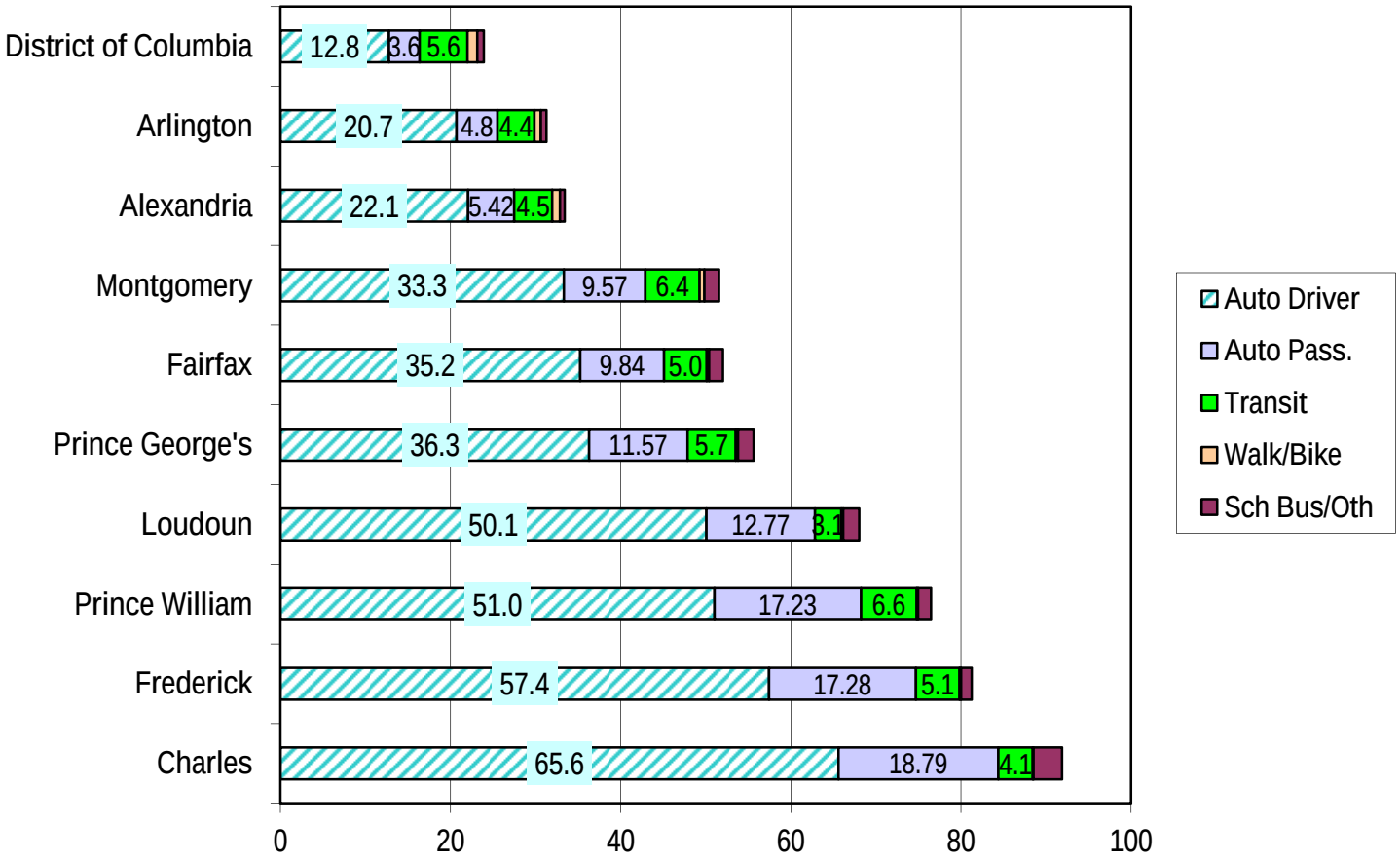
makes seven trips per day and travels 23.9 miles, while the average Charles County household makes nine trips per day, and travels 91.8 miles, or nearly four times as far.

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
Total	2,427.1	102.7

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

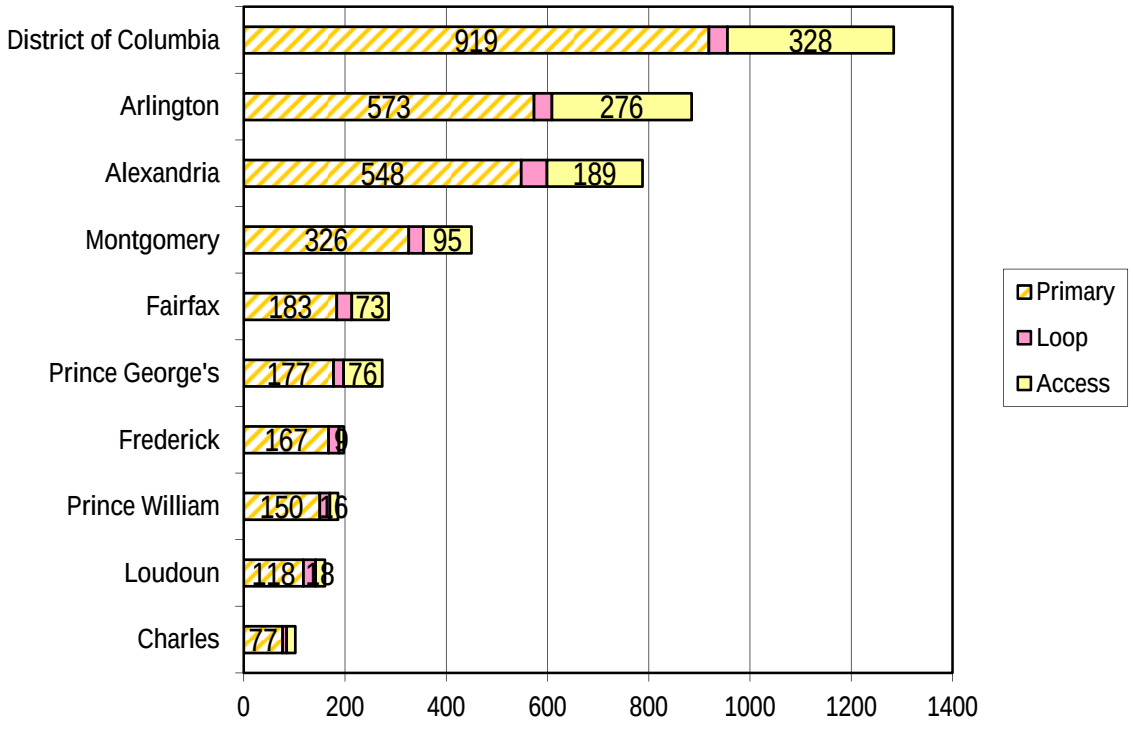
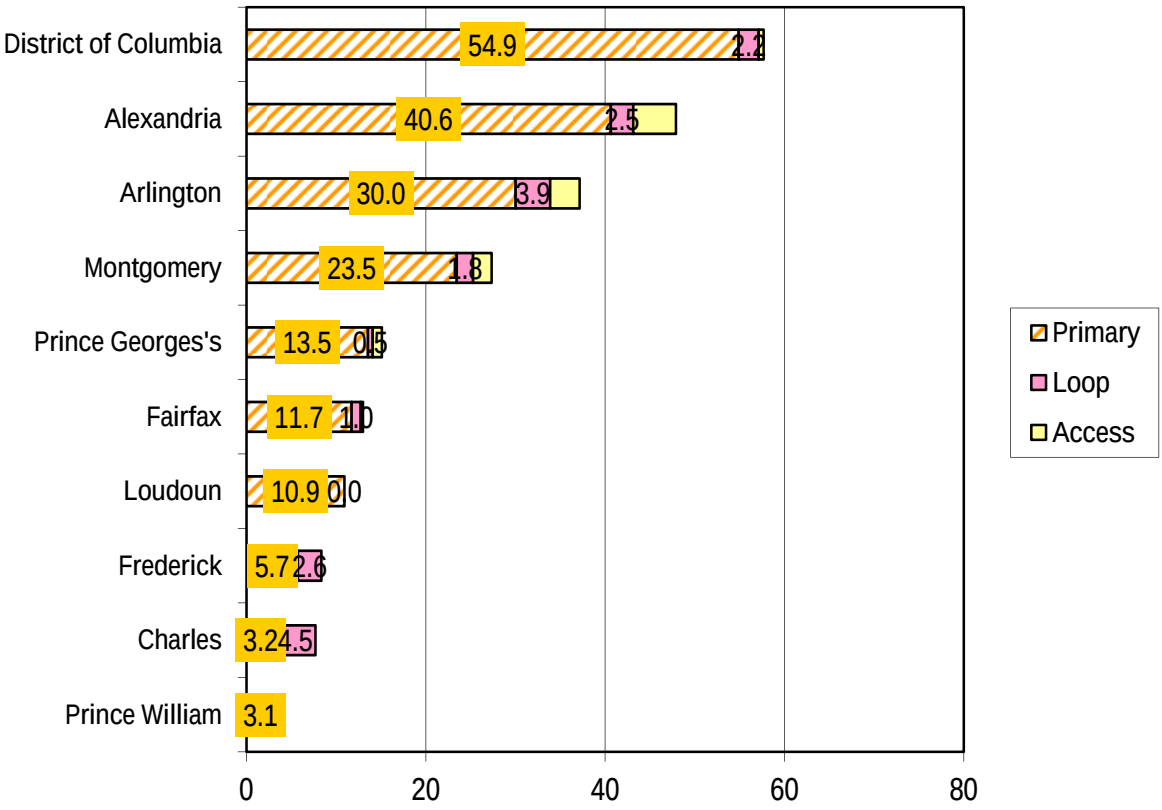


Chart 2-13: Weekday Bike Trips by Jurisdiction of Residence and Type Per 1,000 Population in Households



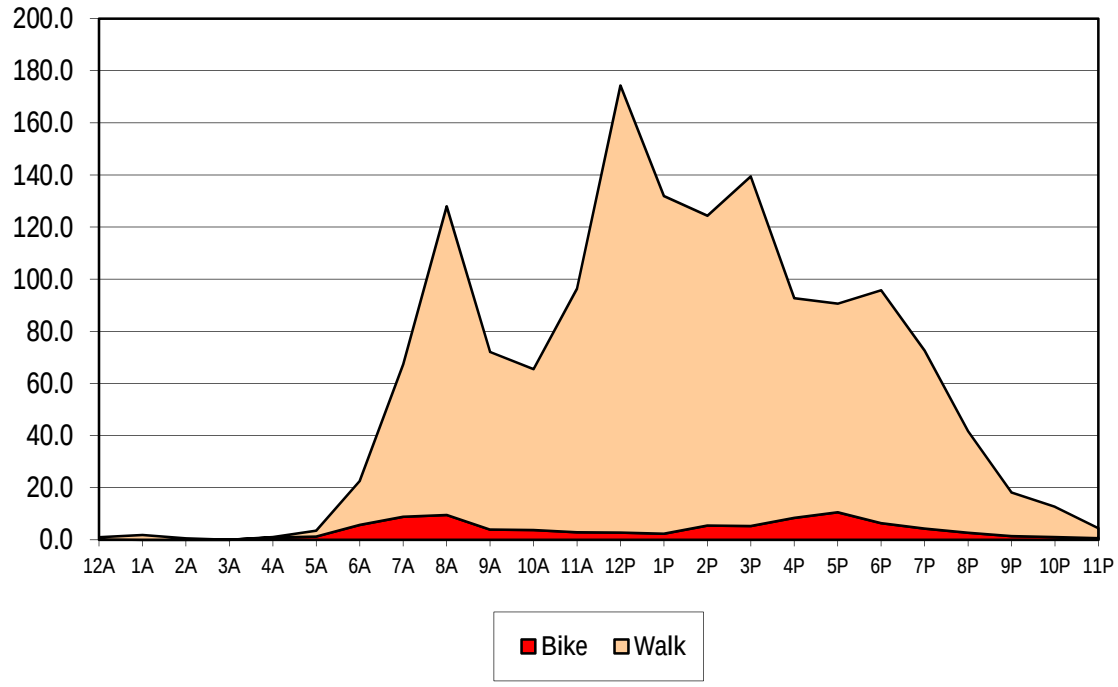
While DC residents are most likely to bicycle, Alexandria and Arlington are most likely to use bicycle to access Metrorail. Charles County has the highest rate of "loop" bicycle trips.

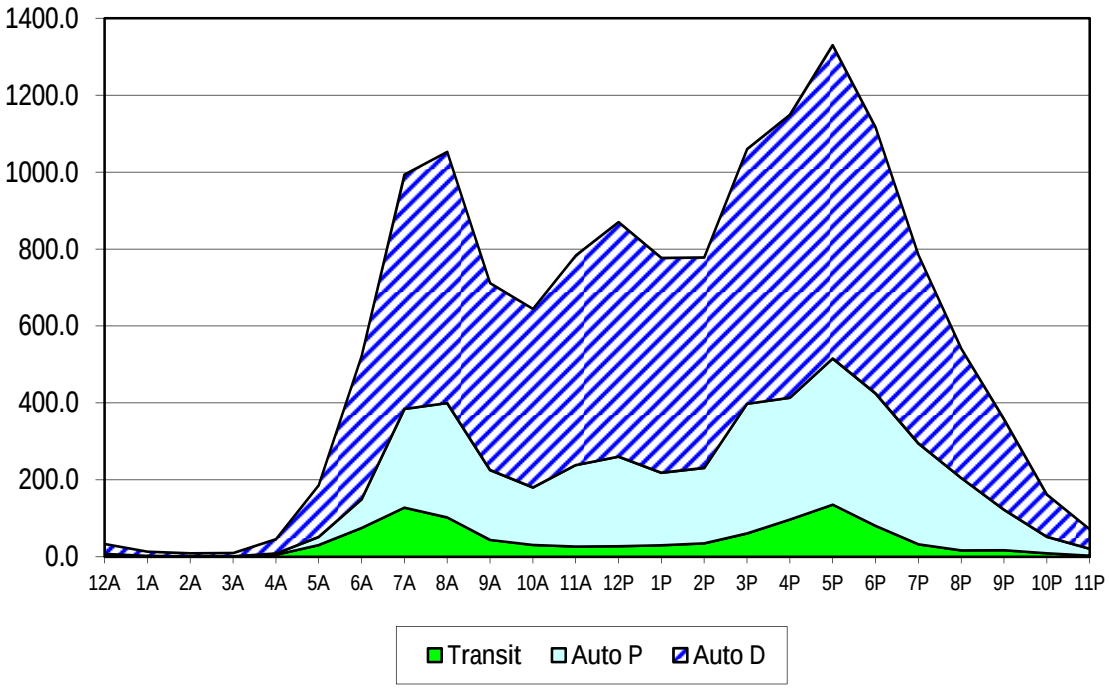
Walking and Bicycling by Time of Day

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





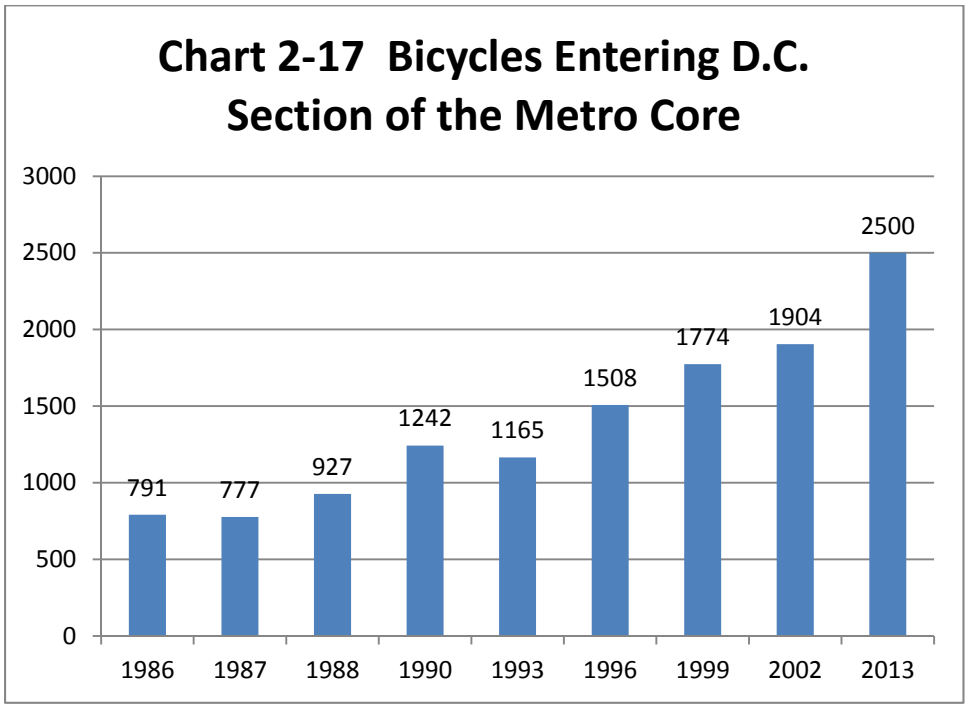
Bicycling in the Metro Core Cordon Counts

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. 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.

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

The most recent counts were done March through June 2013, on Tuesdays, Wednesdays and Thursdays only. Holidays were avoided. Only 5:00 A.M. to 10:00 A.M. inbound traffic was counted. Pedestrians were not counted, but bicycles were.

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 tripling from 1986 to 2013. The number of bicyclists entering the Metro core within the District of Columbia between 6:30 a.m. and 9:30 a.m. has grown steadily from 474 in 1986, 1,379 in 2002, to 2,500 in 2013. The number of cyclists crossing the Potomac bridges grew from 317 in 1986 to 525 in 2002, to 811 in 2013. Chart 2-17 shows the number of bicycles entering the D.C. section of the Metro core from 1986 to 2013.

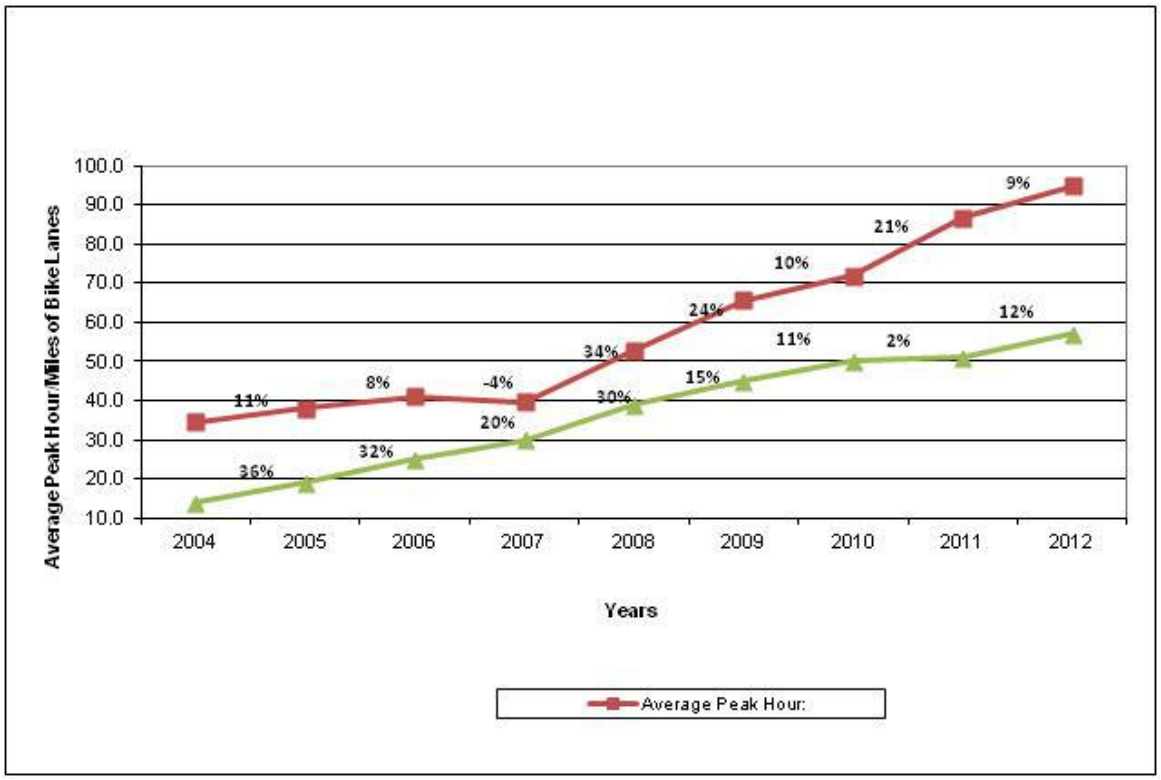


District of Columbia Bicycle Counts

The District of Columbia Department of Transportation has had an annual bicycle count program since 2004. Counts are taken at selected locations in the District 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. Counts are taken at 8 hours at each location, 4 hours in the morning (6 to 10am), and 4 in the evening (3 to 7pm).

DDOT has consistent counts at 19 of the locations dating back to 2004, which are used calculate the growth in *average peak hour* cycling. In 2004, the average peak hour count was 35 cyclists and there were 14 miles of bike lanes. By 2012 these numbers rose to 95 cyclists per hour and 57 miles of bike lanes, a 175% increase in the cycling rate and over 300% increase in the bike lane network.

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



Arlington Automated Counters

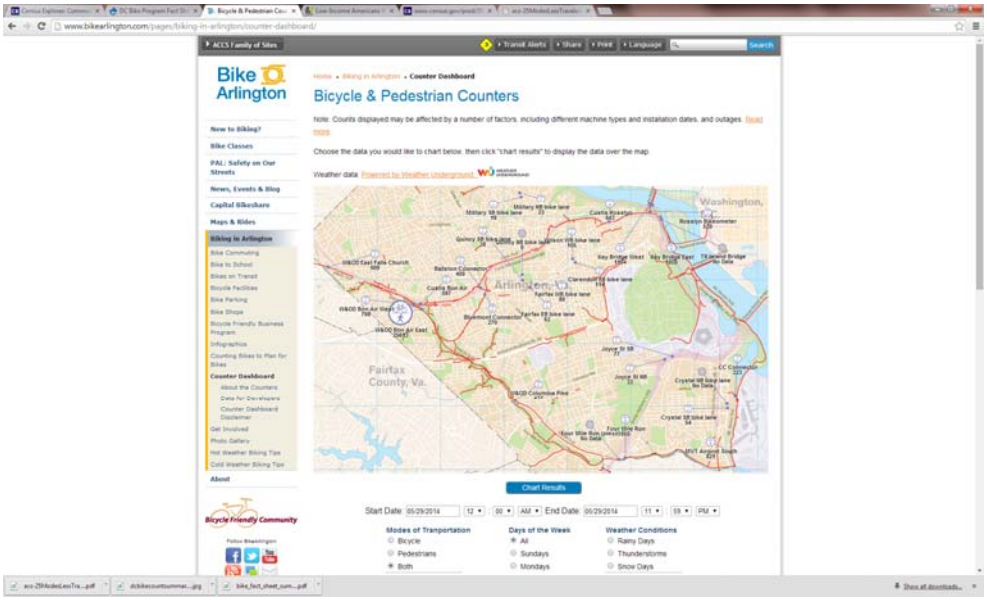
Manual counts have a number of disadvantages, notably cost, an inherently limited time window, unrepresentative counts due to weather events, and a lack of data on cyclists' and pedestrians' off-peak presence. There is strong interest among planners in automated bicycle and pedestrian counters.

Arlington County has by far the largest automated counting program in the region. Arlington's first two automated bike and pedestrian counters were installed in the fall and Spring of 2009-10 on the Custis and Four Mile Run Trails. They use a combination of in-ground inductive loops and passive infrared detectors to collect data on trail volumes and travel direction. The loops detect metal, which distinguishes a bicyclist from a pedestrian.

As of April 2014, the County had sixteen permanently installed bicycle and pedestrian counters on shared-use trails, ten permanent bicycle-only counters in on-street bike lanes, and three mobile counters typically used for short term sidewalk counts. Mobile counters are used to estimate facility needs and guide negotiations with developers.

The data show that people continue to ride in bad weather, but are deterred by snow and ice on the trails, which are not plowed. Weekday bike traffic peaks during the morning and evening rush hours, while week-end traffic peaks mid-day.

The Arlington count data has been posted at bikearlington.com/pages/biking-in-arlington/counter-dashboard/. It can be queried for pedestrians and/or bicyclists by time period, day of the week, temperature, snow, and a number of other variables.



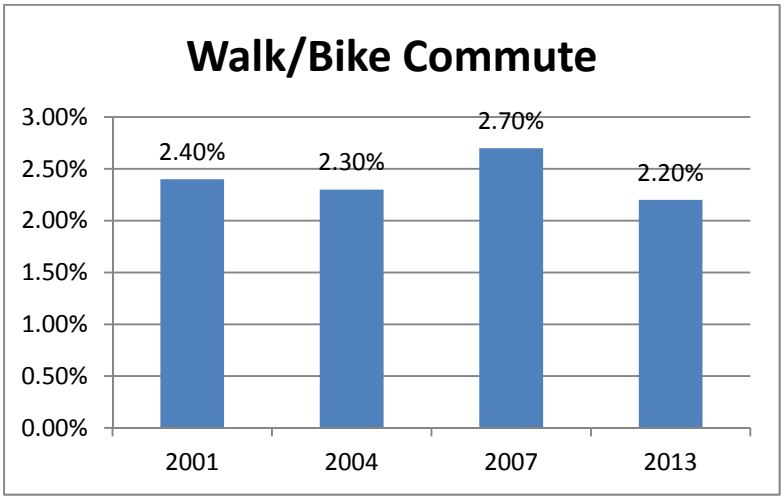
Demographic Characteristics of Pedestrians and Bicyclists

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 2013 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 2009 *National Household Travel 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 2013 *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 2013 *State of the Commute* shows walking and bicycling, from 2.4% in 2001 to 2.2%. However, that change is well within the survey's margin of error, which is 1.2%. *State of the Commute* shows lower mode share for walking and bicycling than does the Census, a discrepancy probably explained by differing methodologies.

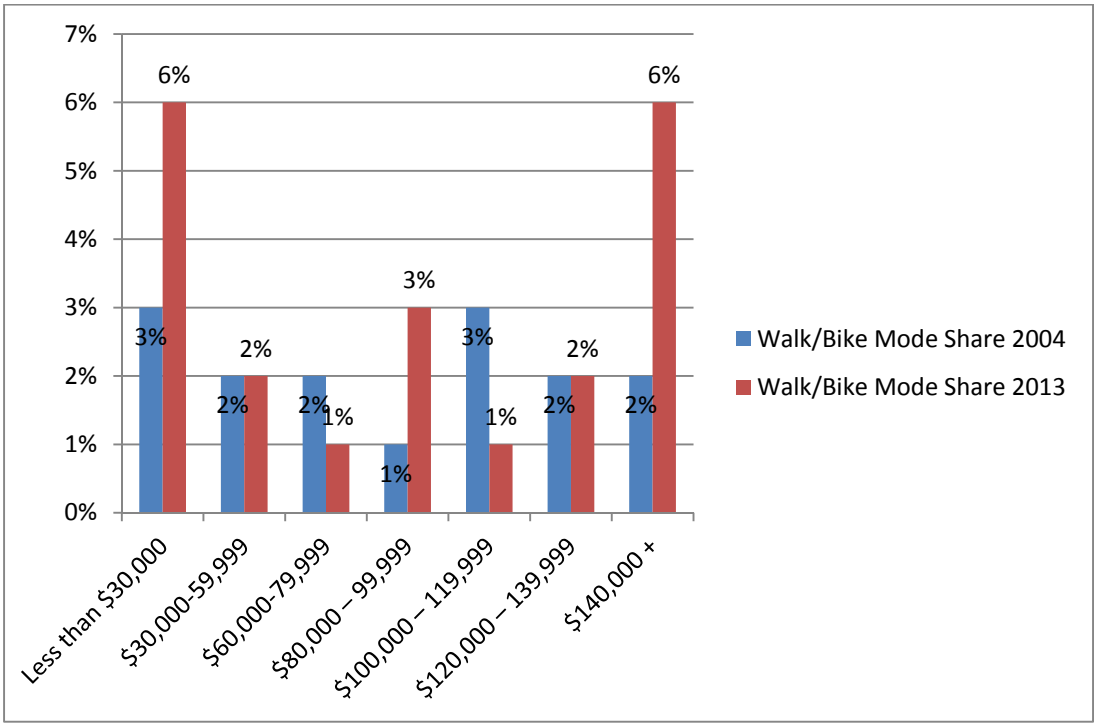
Chart 2-19: Walk/Bike Commute Mode Share



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.

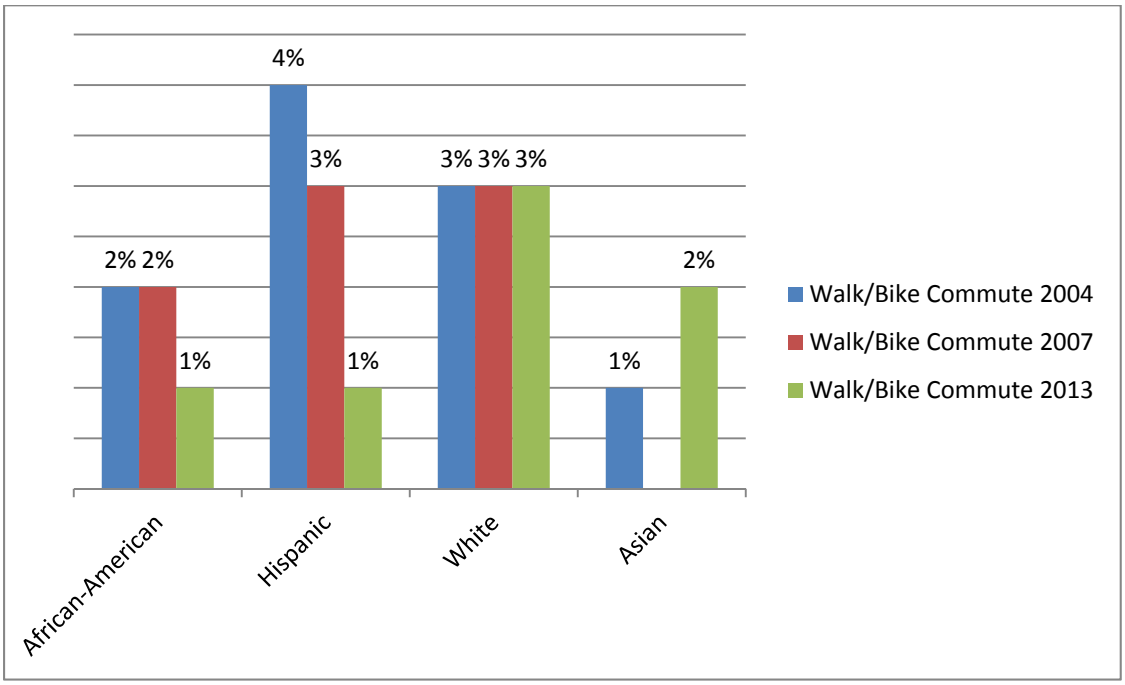
Chart 2-20: Walk/Bike Mode Share by Income



B. Ethnicity

Walk/bike commute mode varies by ethnicity. Whites have the highest walk/bike mode share at 3%, blacks the lowest at 1%. Hispanic walk/bike mode share has apparently declined.

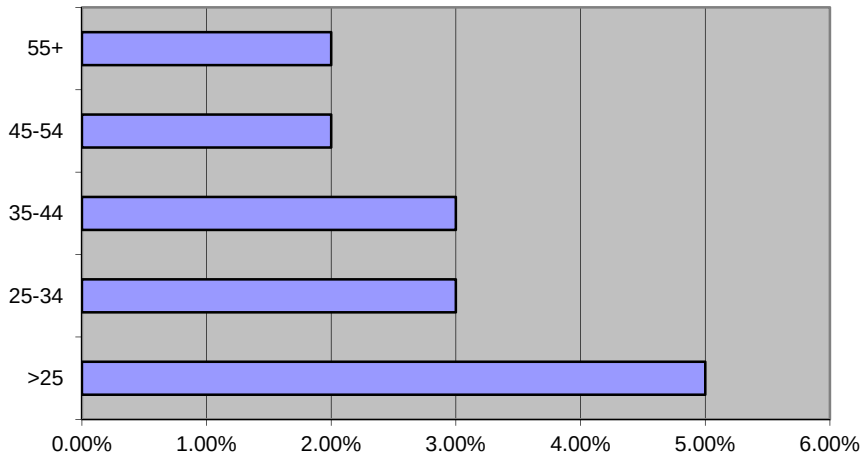
Chart 2-21: Walk/Bike Commute Mode Share by Ethnicity



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.

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

Number of Vehicles in the Household	0	1	2	3+
Walk/Bike Commute Mode Share 2004	11.4%	3.7%	1.2%	2%
Walk/Bike Commute Mode Share 2007	12.4%	4.0%	1.2%	2%
Walk/Bike Commute Mode Share 2013	16%	3%	2%	1%

Trip Distances

Distance was the most frequently cited reason, by 24% of respondents, to COG/TPB's 2013 Bike to Work Day survey to explain why they were *not* riding to work. Reasons One and Three were "Don't ride in cold/winter" (44%) and "No safe route" (21%). So trip distance is of great interest when gauging the potential for increasing bicycling (or walking). The 2013 SOC survey asked respondents about the length of their commutes. Commute mileage is shown in Table 2-5 below.

Table 2-5: Commute Distance
(n = 5,605)

Distance	Less than 5 miles	5 to 9 miles	10 to 14 miles	15 to 19 miles	20+ miles
Percentage	17%	21%	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 16 miles one-way.

Another 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, most access trips to alternative mode meetings points are short. Respondents travel an average of 2.9 miles to the meeting point. Six in ten (61%) respondents travel one mile or less; these are primarily bus and Metrorail riders who walk to the stop or station. About one-quarter (23%) of respondents said they travel between two and five miles. Only 16% of respondents travel more than five miles. Based on the distances being traveled, some of the 29% of 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	2013
1 mile or less	61%
2 to 5miles	23%
6 to 10 miles	11%
11 miles or more	5%

Table 2-7
Means of Getting from Home to Alternative Mode Meeting/Transfer Point
(n=1,442)

Access Mode to Alternative Mode	2004	2007	2013
Walk	39%	35%	34%
Picked up at home	15%	12%	16%
Drive to a central location (e.g., Park & Ride)	18%	18%	19%
Drive alone to driver's/passenger's home	11%	10%	10%
Bus/transit	9%	12%	13%
I am the carpool/vanpool driver	5%	10%	6%
Dropped off/another CP/VP	1%	1%	2%
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.[5]

62% of Metrorail Passengers Walk to the Station

In 2012 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.

5 *2013 State of the Commute Survey Results*. Metropolitan Washington Council of Governments, p. 63.

Appendices E and F show mode of access to Metrorail by station.[6]

Fewer People are Driving to Metrorail, and more are Walking and Biking

In 2012 62.2% of all Metrorail passengers walked to the station, essentially the same as 2007. 0.7% arrived by bicycle, an increase from the 0.31% who arrived by bicycle in 2002. However the AM peak results, which are the best measure of how people access the system (as opposed to any particular station), show higher auto mode and bus mode of access. Pedestrian mode of access for the AM peak is only 37%, up from 33.3% in 2007 and bike access is 1%, up from 0.7% in 2007.

WMATA is making significant progress on increasing walk mode and decreasing drive mode of access to the system. WMATA is also on track to achieve its 2020 goal of 2% bike access to Metrorail.

Table 2-8: Mode of Access to Metrorail	**Percent of Daily Total - 2012**	**Percent of Daily Total – 2007**	**AM Peak - 2012**	**AM Peak - 2007**
Bus	15.3	15.6	21.9	22.2
Auto Driver	12.6	13.7	25.6	29.3
Auto Passenger (drop off)	4.5	5.5	7.8	9.3
Rode with someone who Parked	0.5	0.6	0.9	1
Bike	0.7	0.5	1.0	0.7
Walk	62.2	62.1	37.3	33.3
Commuter Rail	1.5	1.7	3.5	3.8
Shuttle	2.5	n/a	2.0	n/a
Taxi	0.2	0.2	0.1	0.2

6 2012 WMATA Rail Passenger Survey,from the table “Origin Station by Mode of Access”.

Mode of Access varies greatly by station, from Mount Vernon Square, with 95% access by foot, to New Carollton, with 3.7% access by foot. The thirty stations with the greatest share of pedestrian access (as a percentage of total passengers accessing that station) are all located in the District of Columbia, Arlington, or Alexandria.[7]

Stations with a very high share of 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 6.4% at Medical Center to zero at 31 stations.[8] 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 2013, thirteen 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.

7 Appendix E: Origin Station Sorted by All Day Walk Mode of Access.
8 Appendix F: Origin Station Sorted by All Day Bike Mode of Access.

Outlook

Rapid Growth in the Urban Core and Regional Activity Centers favors Walking and Bicycling

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 is growing slowly. Cycling is less common, but is growing rapidly.

Exurban and outer suburban 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. They typically have low levels of walking and bicycling.

The story in the urban core is different. In the District of Columbia, Arlington, Alexandria, and portions of Montgomery County and Frederick County, walking and bicycling are growing rapidly.

Since 2010 the urban core jurisdictions have captured a larger share of the region's growth, and are expanding their share of the region's population, at trend which if it continues will help increase walking and bicycling. The urban core is now growing faster, in absolute and in percentage terms, than the exurban jurisdictions.

It is likely that urban core and inner suburban communities will develop over the next thirty years in ways that will be conducive to walking and bicycling. 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 the current regional activity clusters, as well as fifty-four percent of household growth.[9] Under "Complete Streets" policies new development should accommodate pedestrians and bicyclists.

The most prominent example of this trend is the planned transformation of Tysons

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

Corner, a classic auto-oriented commercial center, into a walkable downtown built around Metrorail.

If growth occurs in ways that are consistent with the TPB *Vision* , *Regional Transportation Priorities Plan*, and *Region Forward 2050*, creating activity centers that mix jobs, housing and services in a walkable environment, we can expect rapid growth in walking and bicycling in the inner suburbs as well as in the core.

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 Survey*s, 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.[10] 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.

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

C. Bike Counts

COG/TPB's cordon counts are conducted by machine or in person, on specific roads or trails. 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 Janaury 31st to April 28th, 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 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.