Modes Less Traveled—Bicycling and Walking to Work in the United States: 2008–2012

American Community Survey Reports

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Bicycling and walking make up a relatively small portion of commuting activity in the United States, but these nonmotorized travel modes play important roles within many of the nation's local transportation systems. Infrastructure that supports bicycling and walking expands transportation options and may complement other forms of transportation by supplementing segments of trips. Several state and local agencies have taken steps to promote pedestrian and bicycle travel. Strategies to accommodate nonmotorized travel vary across communities, but may include sidewalk modifications, pedestrian-oriented commercial centers, or bicycle lanes to name a few. In recent years, the number of cities with bicycle sharing programs has increased considerably.[1] These efforts reflect ongoing changes in infrastructure and travel options across the nation's dynamic transportation systems. Such changes influence decisions people make about their trip to work. The American Community Survey (ACS) is an important tool for tracking how the nation's travel patterns change across time and places.

Among other questions on work-related travel, the ACS asks respondents how they get to work. Respondents may choose from among several transportation modes, including bicycle or walked (Figure 1). The ACS commuting questions have served as the basis for several U.S. Census Bureau reports, but this is the first report to focus on bicycling or walking.[2] This report provides a national overview of commuting by bicycle and walking in the United States. It highlights differences in rates of nonmotorized travel for selected social and economic population characteristics and across geographic areas.[3] The report uses the 5-year 2008–2012 ACS data to take advantage of its large sample size relative to the 1-year data, thus reducing margins of error of estimates for small subpopulations.[4]

Figure 1.
2012 American Community Survey Questionnaire

31 How did this person usually get to work LAST WEEK? *If this person usually used more than one method of transportation during the trip, mark (X) the box of the one used for most of the distance.*

- ☐ Car, truck, or van
- ☐ Bus or trolley bus
- ☐ Streetcar or trolley car
- ☐ Subway or elevated
- ☐ Railroad
- ☐ Ferryboat
- ☐ Taxicab
- ☐ Motorcycle
- ☐ Bicycle
- ☐ Walked
- ☐ Worked at home → *SKIP to question 39a*
- ☐ Other method

Source: U.S. Census Bureau, 2012 American Community Survey Questionnaire.

[1] Bicycle sharing programs include networks of bicycles available for short-term public use with designated pick-up and drop-off bicycle locations.

[2] For more Census Bureau reports on specific commuting modes, see <www.census.gov/hhes/commuting/data/commuting.html>.

[3] All comparisons presented in this report have taken sampling error into account and are significant at the 90 percent confidence level unless otherwise noted.

[4] The analysis is limited to workers 16 years and over who worked during the ACS reference week, the calendar week preceding the date respondents completed their questionnaire, and who did not work at home.

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United States Census Bureau

HIGHLIGHTS

- The number of U.S. workers who traveled to work by bicycle increased from about 488,000 in 2000 to about 786,000 in 2008–2012, a larger percentage increase than that of any other commuting mode.
- The combined rate of bicycle commuting for the 50 largest U.S. cities increased from 0.6 percent in 2000 to 1.0 percent in 2008–2012.
- The Northeast showed the highest rate of walking to work at 4.7 percent of workers, while the West had the highest rate of biking to work at 1.1 percent. The South had the lowest rate of biking and walking to work.
- Among large cities, Portland, OR, has the highest bicycle commuting rate at 6.1 percent.
- Workers living in principal cities walked to work at a rate of 4.3 percent, compared with 2.4 percent for workers in suburbs.
- Several “college towns” showed high rates of walking to work, including Ithaca, NY, and Athens, OH, where about 42.0 percent and 37.0 percent of workers walked to work, respectively.
- Younger workers,those aged 16 to 24, had the highest rate of walking to work at 6.8 percent.
- At 0.8 percent, the rate of bicycle commuting for men was more than double that of women at 0.3 percent.
- At 0.9 percent, the most educated workers, those with a graduate or professional degree, had the highest rate of bicycle commuting, followed by the least educated workers, those who did not graduate from high school at 0.7 percent.
- Workers who walked to work had an average commute time of 11.5 minutes, considerably shorter than that of bicycle commuters at 19.3 minutes, and all other workers who did not work at home at about 25.9 minutes.

The ACS is a survey conducted annually by the Census Bureau to gather information about changes in the socioeconomic, housing, and demographic characteristics of communities across the United States and Puerto Rico.[5] It provides one of the most robust sources of information on commuting by bicycle and walking. ACS questions related to travel focus solely on commuting and do not ask about leisure travel or other nonwork trips. Commutes may involve multiple transportation modes, but ACS respondents are restricted to indicating the single mode used for the longest distance.

[5] Estimates for Puerto Rico are not included in this report.

Information on nonmotorized travel is limited relative to that of travel by automobile or transit. This presents challenges for transportation planners and researchers interested in gaining a better understanding of bicycle and pedestrian travel behavior and demand.[6] Analysis of trends in commuting by bicycle and walking is complicated by the relatively low prevalence of these modes, creating issues related to small sample size. Because bicycling and walking often serve as secondary travel modes that supplement modes such as transit or driving, some commutes that involve bicycling and walking are not reflected as such in the ACS because another mode is used for a longer distance.

[6] Greg Griffin, Krista Nordback, Thomas Götschi, Elizabeth Stolz, and Sirisha Kothuri, “Monitoring Bicyclist and Pedestrian Travel and Behavior, Current Research and Practice,” Transportation Research Board, Washington, DC, 2014. Please see <http://onlinepubs.trb.org/onlinepubs/circulars/ec183.pdf>.

DEFINITIONS

Nonmotorized travel refers to travel by bicycle and walking.

Workers are civilians and members of the Armed Forces, 16 years and older, who were at work the previous week. Persons on vacation or not at work the prior week are not included.

Means of transportation to work refers to the principal mode of travel that the worker usually used to get from home to work during the reference week. People who used different means of transportation on different days of the week were asked to specify the one they used most often. People who used more than one means of transportation to get to work each day were asked to report the one used for the longest distance during the work trip. Workers who worked at home are not included in information presented in this report unless otherwise stated.

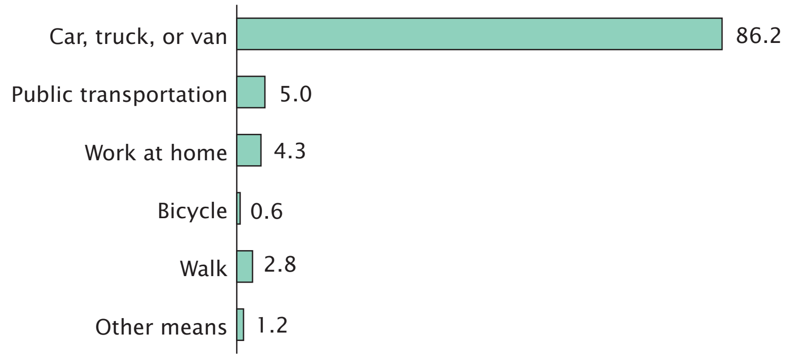
The largest city in each metropolitan or micropolitan statistical area is designated a ***principal city***. Additional cities qualify if specific requirements are met concerning population size and employment. For more detailed definitions of these terms and other ACS terms, see the ACS subject definitions list at <www.census.gov/acs/www/data_documentation/documentation_main/>.

As bicycling and walking become integral to the national conversation about transportation, demand for data related to nonmotorized travel will increase. Initiatives to integrate bicycle and pedestrian-oriented infrastructure into local transportation systems are far from uniform across cities and regions. Rates of bicycling and walking to work also vary considerably across geographies. Though not without limitations, the size and geographic reach of the ACS make it a valuable source of information on nonmotorized travel.

NATIONAL TRENDS IN NONMOTORIZED COMMUTING

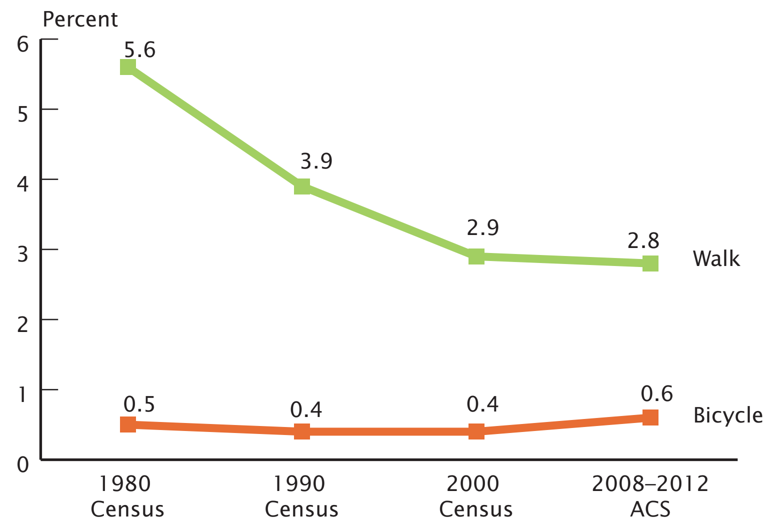
Much of the developed landscape in the United States was designed to accommodate automobile travel, complicating travel by walking or bicycling in many areas. The 2008–2012 5-year ACS data show that, among the approximately 140 million workers in the United States during that period, 2.8 percent walked to work and 0.6 percent commuted by bicycle, compared with 86.2 percent of workers who drove alone or carpooled to work (Figure 2). Between 2000 and 2008–2012, the number of workers who traveled to work by bicycle increased by 60.8 percent, from about 488,000 in 2000 to about 786,000.[7] This increase in the number of bicycle commuters exceeded the percentage increase of all other travel modes during that period (not shown), but the overall share of workers who commute by bicycle remains low. In 1980, 0.5 percent of workers commuted by bicycle. This rate dropped to 0.4 percent in 1990, where it remained in 2000.[8]

Figure 2.
How People Commute to Work: 2008–2012
(In percent. Data based on sample. For information on confidentiality protection, sampling error, nonsampling error, and definitions, see *www.census.gov/acs/www/*)



Source: U.S. Census Bureau, American Community Survey, 2008–2012.

Figure 3.
Walking and Bicycling to Work: 1980 to 2008–2012
(Data based on sample. For information on confidentiality protection, sampling error, nonsampling error, and definitions, see *www.census.gov/acs/www/*)



Sources: U.S. Census Bureau, Decennial Census, 1980, 1990, 2000; American Community Survey, 2008–2012.

By 2008–2012, the share of bicycle commuters reached 0.6 percent.

Between 1980 and 1990, the rate of walking to work declined from 5.6 percent to 3.9 percent, and continued to decline over the 1990s, reaching 2.9 percent in 2000 (Figure 3). The rate of decline slowed during the 2000s, reaching 2.8 percent by 2008–2012.[9] Although the share of workers who walked to work declined slightly over the 2000s, the number of walkers increased from

[7] Source: U.S. Census Bureau, American Community Survey, 2008–2012, Table B08006.
[8] Rates of bicycle commuting for 1980, 1990, and 2000, are not statistically different from one another.
[9] Rates of walking to work for 2000 and 2008–2012 are not statistically different from one another.

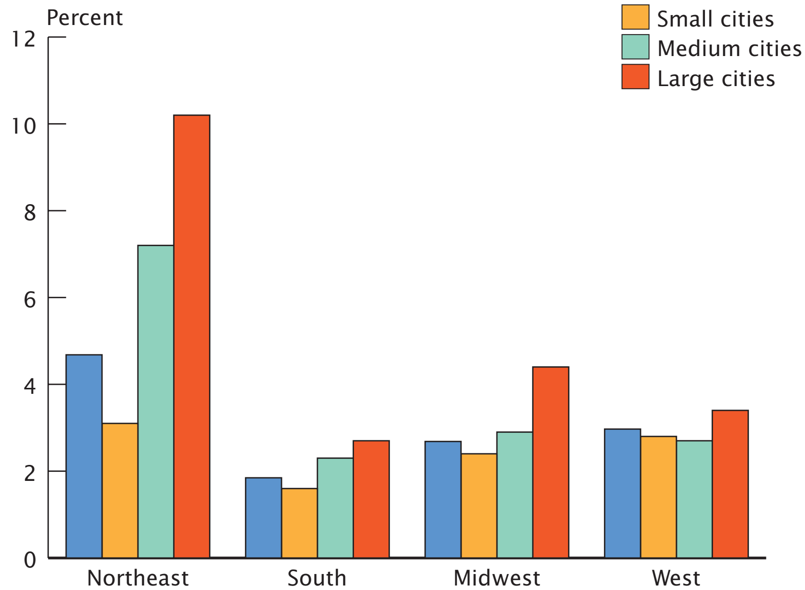
about 3,759,000 in 2000 to about 3,938,000 in 2008–2012. When comparing decennial Census estimates with those from the ACS, it is important to note that decennial Census data were collected primarily during a single month, April, while ACS data are collected continuously throughout the year. The timing of data collection might influence many workers' likelihood of walking or riding a bicycle to work, especially in more severe climates.

WALKING AND BICYCLE COMMUTING ACROSS REGIONS AND TYPES OF COMMUNITIES

Rates of walking and bicycle commuting vary considerably across communities and regions. Local factors such as community size, design, infrastructure, and climate influence the availability, attractiveness, and affordability of each transportation mode. For example, in smaller cities, a greater percentage of the area's potential destinations are likely to be within biking or walking distance and automobile traffic might be relatively light, increasing the attractiveness of nonmotorized travel.[10] Cities with large, dense populations are more likely to offer public transportation, making bicycling and walking more attractive as travel modes that supplement transit.

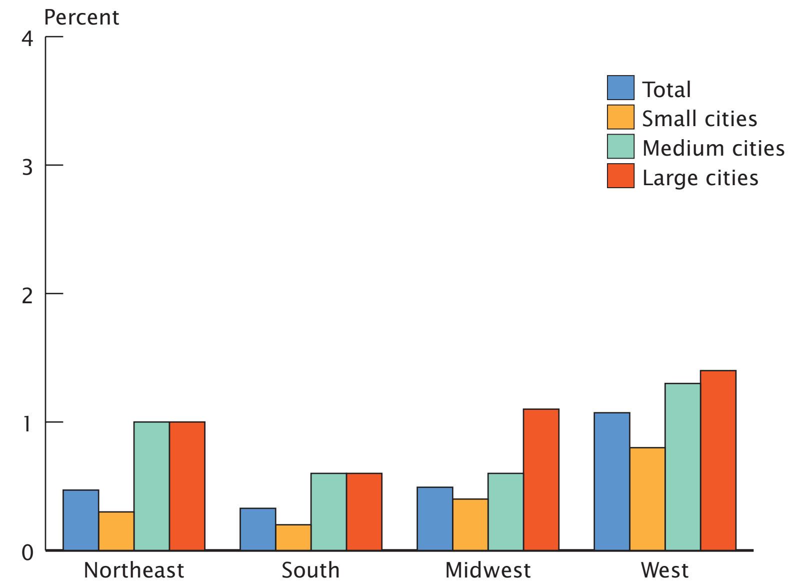
Figures 4 and 5[11] show rates of nonmotorized commuting by region and population of workers' place of residence.[12] For Figures 4 and 5, small cities are defined as those with populations between 20,000 and 99,999,

Figure 4.
Walking to Work by Region and City Size: 2008–2012
(Data based on sample. For information on confidentiality protection, sampling error, nonsampling error, and definitions, see *www.census.gov/acs/www/*)



Source: U.S. Census Bureau, American Community Survey, 2008–2012.

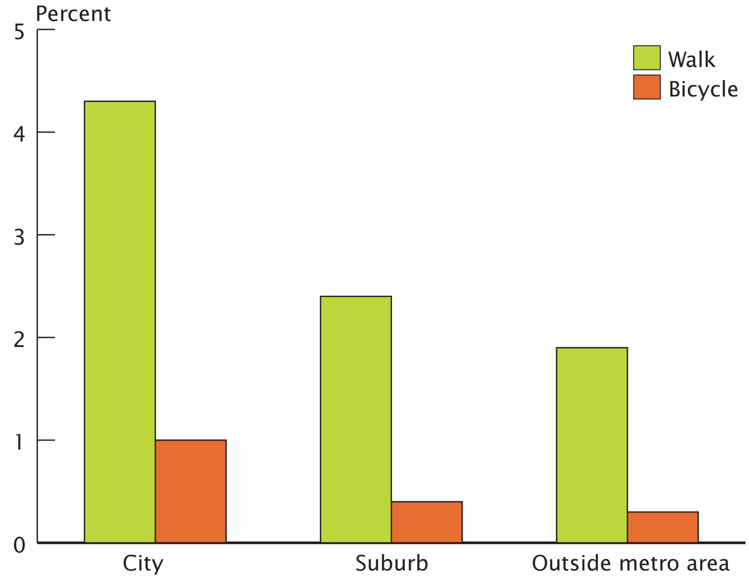
Figure 5.
Bicycling to Work by Region and City Size: 2008–2012
(Data based on sample. For information on confidentiality protection, sampling error, nonsampling error, and definitions, see *www.census.gov/acs/www/*)



Source: U.S. Census Bureau, American Community Survey, 2008–2012.

[10] Susan Handy, Eva Heinen, and Kevin J. Krizek, "Cycling in Small Cities," in *City Cycling*, edited by John Pucher and Ralph Buehler, 2012; 257–286.
[11] For estimates and margins of error associated with Figures 4 and 5, see Appendix Table A-1.
[12] For more information on regions, see <www.census.gov/popest/about/geo/terms.html>.

Figure 6.
Walking and Bicycling to Work by Residence Community Type: 2008–2012
(Data based on sample. For information on confidentiality protection, sampling error, nonsampling error, and definitions, see *www.census.gov/acs/www/*)



Source: U.S. Census Bureau, American Community Survey, 2008–2012.

medium-sized cities as those with populations between 100,000 and 199,999, and larger cities as those of 200,000 people or greater.[13] Although ACS data are collected continuously throughout the year, data for specific segments of the year are not differentiated due to data weighting concerns. If this were possible, regional variation in rates of nonmotorized travel might be evident across seasons. The Northeast showed the highest rates of walking to work at 4.7 percent, while the West had the highest rate of biking to work at 1.1 percent, about four times higher than that of the South. In large Northeastern cities, about 1 in 10 workers walked. The South had the lowest rates of walking to work for all place size categories. Bicycle commuting was highest in large Western cities, where 1.4 percent of workers biked to work. Within each region, walking was more prevalent in large cities than small or medium-sized cities.

Within regions and metropolitan areas, the likelihood of walking or bicycling to work varies across community types such as cities or "suburbs."[14] Downtown areas within cities accommodate high population and worker densities, particularly during typical business hours. Cities respond to the challenge of accommodating a large number of people traveling to, from, and within their boundaries with varied strategies, but walkability is a common concern. Figure 6 shows that rates of walking to work are highest for workers living in a principal city within a metropolitan area at 4.3 percent, compared with 2.4 percent for workers in suburbs (those living in a metropolitan area, but outside of a principal city), and 1.9 percent outside of metropolitan areas.

Workers in principal cities also had a high rate of bicycle commuting at 1.0 percent, compared to 0.4 percent for suburban workers or those who lived outside of a metropolitan area. In recent years, several large cities such as New York and Washington, DC, have invested in programs and infrastructure to support bicycle usage. To the extent that principal cities tend to be large compared with others in the same metropolitan area, the high rate of nonmotorized travel in principal cities is consistent with that observed for large places.

RATES OF WALKING AND BICYCLE COMMUTING ACROSS PLACES

Population and infrastructure characteristics that foster high rates of nonmotorized travel tend to be spatially concentrated, often contributing to considerable differences in travel patterns across cities and neighborhoods within the same metropolitan area. For example, 4.1 percent of workers in the city of Minneapolis commuted by bicycle, compared with only 0.9 percent for workers in the Minneapolis-St. Paul-Bloomington, MN-WI, metropolitan area. Similarly, 12.1 percent of District of Columbia workers walked to work, compared with only 3.2 percent of the Washington-Arlington-Alexandria, DC-VA-MD-WV, metro area.[15] For several regions, comparatively low rates of nonmotorized travel within surrounding suburbs contribute to lower overall nonmotorized commuting rates for the metropolitan area than for the central city. Still, numerous smaller places have higher rates of walking or bicycling

[13] Population thresholds based on 2012 ACS population estimates.

[14] For this report, the term "city" refers to a principal city within a metropolitan area and "suburb" refers to areas within a metropolitan area but outside of a central city.

[15] For more information on commuting by bicycle and walking in metropolitan areas, see American Community Survey Table S0801, 2008–2012 ACS on American Factfinder at <www.Factfinder2.census.gov>.

than their larger principal city counterpart within the same metropolitan area. For example, Davis, CA, has a bicycle commuting rate of 18.6 percent, but Sacramento, the largest city within the same metropolitan area, has a bicycle commuting rate of 2.5 percent.

Across the nation's largest cities, growth in commuting by bicycle outpaced that of walking during the 2000s. Table 1 lists biking and walking commuting rates for the 50 largest U.S. cities, sorted by population size. The combined rate of bicycle commuting for the 50 cities increased from 0.6 percent in 2000 to 1.0 percent in 2008–2012. The combined rate of walking did not change significantly, which is notable given that the national rate of walking to work declined slightly over the 2000s. Twenty-four cities on the list experienced a significant change in the rate of walking to work between 2000 and 2008–2012 (Table 1), 15 of which showed a decline in walking to work. Boston had the highest rate of walking to work in 2008–2012 at 15.1 percent, up from 13.0 percent in 2000. Washington, DC, follows Boston at 12.1 percent. Among cities that experienced a significant change, more cities declined in their rate of walking to work than increased across the 2000s, while changes in bicycle commuting rates showed almost universal increases. Among the 29 cities that experienced a significant change, only two—Phoenix, AZ, and Mesa, AZ—declined in their rate of bicycle commuting.

Some of the nation's largest cities, such as Chicago, IL, more than doubled their rate of bicycle commuting between 2000 and 2008–2012, although bicycle commuting rates remain low relative to other travel modes. Among large cities, Portland, OR, stands out for its relatively high bicycle commuting rate of 6.1 percent in 2008–2012, but also for its notable increase in bicycle commuting since 2000, when it was at 1.8 percent. Minneapolis is also notable in this respect, increasing from 1.9 percent in 2000 to 4.1 percent in 2008–2012. Five cities on the list had bicycle commuting rates of at least 3.0 percent in 2008–2012,[16] while no city reached 3.0 percent in 2000. Although several cities showed increases in their rates of bicycle commuting over the decade, in 2008–2012, the rate of walking exceeded that of bicycle commuting in every city except Portland, OR.[17]

WALKING AND BICYCLE COMMUTING RATE COMPARISON BY CITY SIZE

Table 2 lists 15 places among those with the highest walking and bicycle commuting rates for each of three population size categories presented previously. Due to small sample sizes of nonmotorized travel and large margins of error associated with them, the lowest population category is restricted to places with populations of at least 20,000.[18] Margins of error for some areas are still relatively high and readers should consider this when making comparisons.[19]

Davis, CA, and Key West, FL, stand out as having high bicycle commuting rates among places with populations of 20,000 or larger at 18.6 percent and 17.4 percent of workers, respectively. Most of the top biking cities listed are in the Pacific or Mountain divisions. Many of them are also "college towns," or home to at least one large college or university. Portland, OR, has the highest rate of bicycle commuting among large places at 6.1 percent. Portland is among cities such as Washington, DC, Minneapolis, MN, Denver, CO, and Madison, WI, that have made infrastructure investments aimed at achieving more bicycle-friendly landscapes.

Ithaca, NY, had the highest rate of walking at 42.4 percent of workers, although its rate was not statistically different from that of Athens, OH. Ithaca is among several places with a significant university or college presence. This is particularly relevant to the small and medium-sized cities listed such as Athens, OH, State College, PA, Boulder, CO, and Cambridge, MA, where students and others associated with educational institutions make up a large percentage of the total population. Across all place size categories, relatively few places in the South are listed among those with high rates of walking. Among larger places, Boston had the highest rate of walking to work at 15.1 percent, followed by Washington, DC, and Pittsburgh, PA at 12.1 and 11.3 percent, respectively. Among large cities with high walking rates, several also have high rates of transit commuting (not shown). This reflects the complimentary relationship between transit and walkable neighborhoods.[20]

[16] The bicycle commuting rate for Washington, DC, was not significantly different than 3.0 percent.

[17] For Portland, OR, the rates of walking and bicycle commuting in 2008–2012 were not statistically different from one another.

[18] For a complete list of rates of commuting by bicycle and walking for places within the population thresholds specified in Table 2, see Supplemental Tables 1 through 6 at <www.census.gov/hhes/commuting/data/commuting.html> or visit ACS Table S0801 on American Factfinder, which includes estimates for all places, including those of fewer than 20,000 people.

[19] Estimates from the 5-year ACS sample might differ from those of the most recent 2012 single-year ACS data available on American FactFinder at <www.Factfinder2.census.gov>.

[20] Jeff Speck, "Walkable Cities: How Downtown Can Save America, One Step at a Time," North Point Press, New York, 2013.

WALKING AND BICYCLE COMMUTING ACROSS STATES

Mapping state-level rates of commuting by bicycle and walking illuminates broad regional patterns that might go undetected from city-level data (Figure 7 and Figure 8). States with relatively high rates of bicycle commuting are largely concentrated in the West, with exceptions such as the District of Columbia. Oregon, for example, has a bicycle commuting rate of 2.3 percent, and the District of Columbia has a rate of 3.1 percent, higher than any state.[21] The five states with bicycle commuting rates lower than 0.2 percent are in the South, including Arkansas, Alabama, Mississippi, Tennessee, and West Virginia. Geographic patterns are also apparent across rates of walking to work. States with the lowest rates of walking to work make up a distinct cluster spanning much of the South. Alabama has the lowest rate of walking to work at 1.2 percent, followed by Tennessee at 1.3 percent. In two states, Alaska and New York, at least 6.0 percent of workers walked to work. The District of Columbia also fell into this category, with a walking rate of 12.1 percent of workers, higher than any state.

WALKING AND BICYCLE COMMUTING RATES ACROSS SOCIAL AND ECONOMIC CHARACTERISTICS

Just as nonmotorized rates of commuting vary across places and regions, they also vary across population characteristics such as age, sex, race, and income. The rate of nonmotorized commuting by a particular population group to some extent may reflect travel preferences, but it is also influenced by group differences in factors such as financial constraints, region of residence, household location within a city, physical ability, or the presence of children within a household. Disentangling the independent effects of each population characteristic on travel mode choice is beyond the scope of this report. For all workers, Table 3 compares rates of commuting by bicycle, walking, and all other modes of travel combined for several population characteristics. Although biking and walking rates vary by social and economic characteristics, rates of nonmotorized travel are uniformly low, relative to other forms of commuting.

Age, Sex, Race, and Ethnicity

Younger workers had relatively high rates of nonmotorized commuting compared with their older counterparts (Figure 9). The highest rate of bicycle commuting occurred for workers between 16 and 24 years of age at 1.0 percent. As each subsequent category increased in age range, the rate of bicycle commuting declined. Workers ages 55 years and older showed the lowest rate of bicycle commuting at 0.3 percent. The decline in the prevalence of bicycle commuting with increased age may be linked to factors such as workers' physical abilities, residential location, and income. At 6.8 percent, workers in the youngest age category—aged 16 to 24—had the highest rate of walking to work. This rate sharply declined to 3.1 percent for workers in the next oldest age category and remained lower than 3.0 percent for all subsequent categories.

In the United States, men walked to work at a rate of 2.9 percent, compared to 2.8 percent for women. Differences in bicycle commuting rates between men and women were sharper than walking rates. At 0.8 percent, the rate of bicycle commuting for men was more than double that of women at 0.3 percent. Such stark differences in the rates of bicycle commuting between men and women are also found in other countries with relatively low overall rates of bicycle usage, such as Canada and Australia.[22]

Black workers had the lowest rate of bicycle commuting at 0.3 percent, and those who identified as Some other race or Two or more races and Hispanic workers had the highest rates of bicycle commuting at 0.8 percent and 0.7 percent, respectively (Figure 10).[23] Workers who identified as Some other race or Two or more races had the highest rates of walking at 4.2 percent, while those who identified as White had the lowest walking rate at 2.6 percent.

HOUSEHOLD INCOME

Rates of nonmotorized travel generally declined as household income increased, with some exceptions (Figure 11). Workers living in households making less than $10,000 biked to work at a

[21] For rates of commuting by bicycle and walking for states, see American Community Survey Table S0801, 2008–2012 ACS on American Factfinder at <www.Factfinder2.census.gov>.

[22] John Pucher and Ralph Buehler, "International Overview: Cycling Trends in Western Europe, North America, and Australia," in *City Cycling*, edited by John Pucher and Ralph Buehler, 2012; 9–30.

[23] Federal surveys now give respondents the option of reporting more than one race. Therefore, two basic ways of defining a race group are possible. A group such as Asian may be defined as those who reported Asian and no other race (the race-alone or single-race concept) or as those who reported Asian regardless of whether they also reported another race (the race-alone or in-combination concept). This report shows data using the first approach (race alone). Use of the single-race population does not imply that it is the preferred method of presenting or analyzing data. The Census Bureau uses a variety of approaches. For further information, see the *Census 2000 Brief Overview of Race and Hispanic Origin: 2000* (C2KBR/01-1) at <www.census.gov/population/www/cen2000/briefs.html>.

Table 1.

Rates of Walking and Bicycling to Work for the Nation's 50 Largest Cities: Census 2000 and American Community Survey 2008–2012

(For information on confidentiality protection, sampling error, and definitions, see *www.census.gov/acs/www/Downloads/data_documentation/ Accuracy/ACS_Accuracy_of_Data_2012.pdf*)

Rank	City	Total workers (all modes)		Percent walked			Percent bicycled		
		Census 2000	ACS 2008–2012	Census 2000	ACS 2008–2012	Direction of change	Census 2000	ACS 2008–2012	Direction of change
	Total for 50 largest cities . . .	**19,320,642**	**21,563,097**	**4.9**	**5.0**		**0.6**	***1.0**	▲
1	New York, NY.	3,192,070	3,685,786	10.4	10.3		0.5	*0.8	▲
2	Los Angeles, CA	1,494,895	1,745,818	3.6	3.7		0.6	*1.0	▲
3	Chicago, IL	1,192,139	1,213,901	5.7	*6.4	▲	0.5	*1.3	▲
4	Houston, TX.	841,686	988,261	2.3	*2.1	▼	0.5	0.4	
5	Philadelphia, PA.	569,761	601,331	9.1	*8.6	▼	0.9	*2.0	▲
6	Phoenix, AZ.	599,592	648,328	2.2	*1.8	▼	0.9	*0.7	▼
7	San Antonio, TX.	491,435	598,236	2.2	*2.0	▼	0.2	0.2	
8	San Diego, CA.	580,318	635,805	3.6	*2.9	▼	0.7	*0.9	▲
9	Dallas, TX	537,006	557,672	1.9	*1.8	▼	0.1	0.1	
10	San Jose , CA	427,984	442,728	1.4	*1.8	▲	0.6	*0.9	▲
11	Austin, TX	353,109	428,445	2.5	2.5		0.9	*1.5	▲
12	Jacksonville, FL	350,458	382,986	1.8	*1.4	▼	0.4	0.4	
13	Indianapolis, IN	385,208	378,820	2.0	2.0		0.2	*0.4	▲
14	San Francisco, CA.	418,553	439,726	9.4	9.9		2.0	*3.4	▲
15	Columbus, OH	367,387	388,186	3.2	*2.8	▼	0.3	*0.7	▲
16	Fort Worth, TX	235,799	332,892	1.7	*1.2	▼	0.1	0.1	
17	Charlotte, NC.	280,528	364,855	1.5	2.1		0.1	0.2	
18	Detroit, MI	319,449	209,600	2.8	3.1		0.2	0.3	
19	El Paso, TX	208,101	267,531	2.0	1.9		0.1	0.2	
20	Memphis, TN	274,934	272,054	1.9	1.9		0.1	0.2	
21	Boston, MA	278,463	317,930	13.0	*15.1	▲	1.0	*1.7	▲
22	Seattle, WA	316,493	350,673	7.4	*9.1	▲	1.9	*3.4	▲
23	Denver, CO	278,715	311,360	4.3	4.4		1.0	*2.3	▲
24	Washington, DC.	260,884	306,336	11.8	12.1		1.2	*3.1	▲
25	Nashville, TN	274,028	299,021	2.4	*1.9	▼	0.1	*0.3	▲
26	Baltimore, MD	249,373	265,053	7.1	6.5	▼	0.3	*0.8	▲
27	Louisville, KY.	110,930	270,657	4.1	*2.2	▼	0.4	0.4	
28	Portland, OR	270,996	298,389	5.2	5.7		1.8	*6.1	▲
29	Oklahoma City, OK	234,222	277,957	1.6	1.6		0.1	0.2	
30	Milwaukee, WI	249,889	253,783	4.7	5.0		0.3	*0.8	▲
31	Las Vegas, NV	210,806	257,665	2.2	1.9		0.4	0.4	
32	Albuquerque, NM.	215,222	257,389	2.7	*2.0	▼	1.1	1.3	
33	Tucson, AZ.	216,314	225,987	3.4	3.6		2.2	2.4	
34	Fresno, CA.	156,569	183,813	2.1	1.9		0.8	0.8	
35	Sacramento, CA	166,419	197,486	2.8	*3.2	▲	1.4	*2.5	▲
36	Long Beach, CA	184,479	207,072	2.5	2.8		0.7	*1.1	▲
37	Kansas City, MO	208,554	219,966	2.3	2.1		0.1	*0.3	▲
38	Mesa, AZ.	182,582	193,281	2.1	*1.6	▼	1.2	*0.9	▼
39	Virginia Beach, VA.	222,648	230,566	2.0	2.2		0.3	*0.7	▲
40	Atlanta, GA	178,970	198,677	3.5	*4.7	▲	0.3	*0.8	▲
41	Colorado Springs, CO	183,806	199,043	2.5	2.6		0.5	0.5	
42	Raleigh, NC.	151,655	204,399	2.9	*2.1	▼	0.3	0.6	
43	Omaha, NE	196,801	206,463	2.4	*2.8	▲	0.1	0.2	
44	Miami, FL.	126,539	175,513	3.7	3.9		0.6	0.7	
45	Oakland, CA	170,503	178,694	3.7	4.2		1.2	*2.4	▲
46	Tulsa, OK.	187,612	183,576	2.2	2.0		0.2	*0.4	▲
47	Minneapolis, MN	203,951	204,885	6.6	6.4		1.9	*4.1	▲
48	Cleveland, OH	175,727	146,263	4.0	*4.8	▲	0.2	*0.6	▲
49	Wichita, KS	164,725	179,294	1.4	1.3		0.2	0.3	
50	Arlington, TX	172,355	178,945	1.6	1.8		0.2	0.2	

* Denotes a statistically significant change since 2000.

▲ Denotes a statistically significant increase between estimates.

▼ Denotes a statistically significant decrease between estimates.

Notes: "Largest" refers to the size of the population. Population thresholds are based on 2012 Population Estimates. Margins of error for American Community Survey estimates in this table are available at <www.Factfinder2.census.gov>.

Sources: U.S. Census Bureau, American Community Survey 2008–2012, Tables S0801 and B08006, available on American Factfinder at <www.Factfinder2.census.gov>.

Table 2.

Rates of Walking and Bicycling to Work by City Size: 2008–2012

(For information on confidentiality protection, sampling error, and definitions, see *www.census.gov/acs/www/Downloads/data_documentation/ Accuracy/ACS_Accuracy_of_Data_2012.pdf*)

Small Cities (Population of 20,000–99,999)

	Walk			Bicycle		
Rank	City	Percent	Margin of error (±)[1]	City	Percent	Margin of error (±)[1]
1	Ithaca, NY	42.4	3.8	Davis, CA	18.6	1.8
2	Athens, OH	36.8	5.4	Key West, FL	17.4	2.9
3	State College, PA	36.2	3.2	Corvallis, OR	11.2	1.5
4	North Chicago, IL	32.2	4.2	Santa Cruz, CA	9.2	1.7
5	Kiryas Joel, NY	31.6	4.2	Palo Alto, CA	8.5	1.1
6	Oxford, OH	29.7	3.8	Menlo Park, CA	7.6	1.6
7	Pullman, WA	23.5	3.2	East Lansing, MI	6.8	1.2
8	East Lansing, MI	23.3	2.2	Laramie, WY	6.8	1.8
9	College Park, MD	21.5	3.2	San Luis Obispo, CA	6.6	1.3
10	Burlington, VT	20.3	1.9	Ashland, OR	6.2	1.9
11	Moscow, ID	20.2	3.6	Missoula, MT	6.2	0.9
12	Morgantown, WV	18.2	2.9	Chico, CA	5.8	1.0
13	Rexburg, ID	18.0	3.7	Santa Barbara, CA	5.8	1.1
14	Atlantic City, NJ	17.8	2.7	Bozeman, MT	5.8	1.2
15	Urbana, IL	16.6	2.3	Urbana, IL	5.8	1.2

Medium-Sized Cities (Population of 100,000–199,999)

	Walk			Bicycle		
Rank	City	Percent	Margin of error (±)[1]	City	Percent	Margin of error (±)[1]
1	Cambridge, MA	24.0	1.2	Boulder, CO	10.5	1.0
2	Berkeley, CA	17.0	1.1	Eugene, OR	8.7	0.9
3	Ann Arbor, MI	15.6	1.3	Berkeley, CA	8.1	1.0
4	Provo, UT	14.5	1.2	Cambridge, MA	7.2	0.8
5	New Haven, CT	12.4	1.0	Fort Collins, CO	6.8	0.6
6	Columbia, SC	11.3	1.3	Gainesville, FL	6.5	1.0
7	Providence, RI	10.6	0.8	Tempe, AZ	4.2	0.6
8	Syracuse, NY	10.4	0.9	Ann Arbor, MI	3.7	0.5
9	Boulder, CO	9.2	0.8	Provo, UT	3.1	0.5
10	Hartford, CT	8.2	0.8	New Haven, CT	2.7	0.5
11	Dayton, OH	7.9	0.8	Salt Lake City, UT	2.5	0.3
12	Eugene, OR	6.8	0.8	Charleston, SC	2.2	0.4
13	Elizabeth, NJ	6.8	1.0	Costa Mesa, CA	2.2	0.6
14	Columbia, MO	6.7	0.8	Pasadena, CA	2.1	0.6
15	Wichita Falls, TX	6.3	1.3	Athens-Clarke County, GA	1.7	0.5

Larger Cities (Population of 200,000 or Greater)

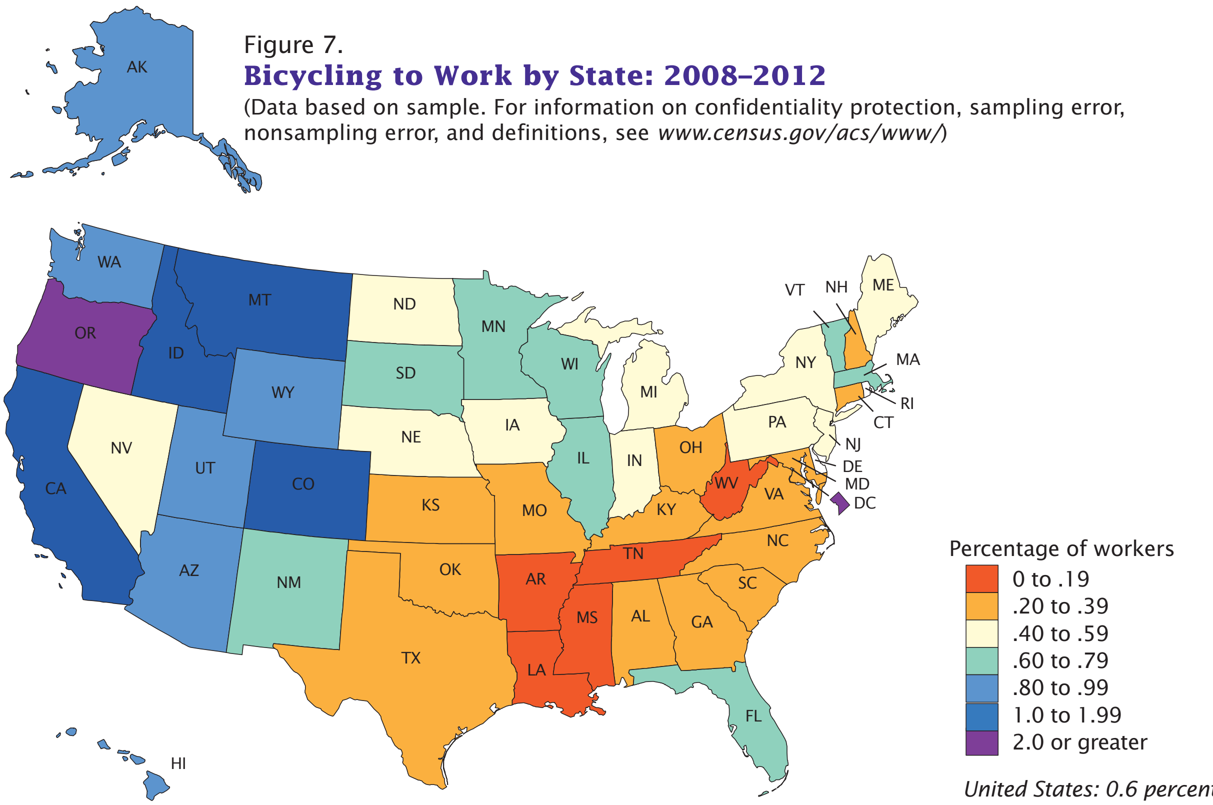
	Walk			Bicycle		
Rank	City	Percent	Margin of error (±)[1]	City	Percent	Margin of error (±)[1]
1	Boston, MA	15.1	0.5	Portland, OR	6.1	0.3
2	Washington, DC	12.1	0.5	Madison, WI	5.1	0.5
3	Pittsburgh, PA	11.3	0.6	Minneapolis, MN	4.1	0.3
4	New York, NY	10.3	0.1	Boise, ID	3.7	0.4
5	San Francisco, CA	9.9	0.4	Seattle, WA	3.4	0.2
6	Madison, WI	9.1	0.7	San Francisco, CA	3.4	0.2
7	Seattle, WA	9.1	0.3	Washington, DC	3.1	0.2
8	Urban Honolulu CDP, HI	9.0	0.6	Sacramento, CA	2.5	0.3
9	Philadelphia, PA	8.6	0.3	Tucson, AZ	2.4	0.2
10	Jersey City, NJ	8.5	0.6	Oakland, CA	2.4	0.3
11	Newark, NJ	8.0	0.8	Denver, CO	2.3	0.2
12	Baltimore, MD	6.5	0.4	New Orleans, LA	2.1	0.2
13	Minneapolis, MN	6.4	0.3	Richmond, VA	2.1	0.3
14	Chicago, IL	6.4	0.2	Philadelphia, PA	2.0	0.2
15	Rochester, NY	6.2	0.7	Urban Honolulu CDP, HI	1.8	0.2

[1] Data are based on a sample and are subject to sampling variability. A margin of error is a measure of an estimate's variability. The larger the margin of error in relation to the size of the estimates, the less reliable the estimate. When added to and subtracted from the estimate, the margin of error forms the 90 percent confidence interval.

Notes: For total number of workers who commute by bicycle or walk for these places and others, see American Community Survey (ACS) 2008–2012, Table B08006. Population thresholds are based on 3-year 2010–2012 ACS population estimates.

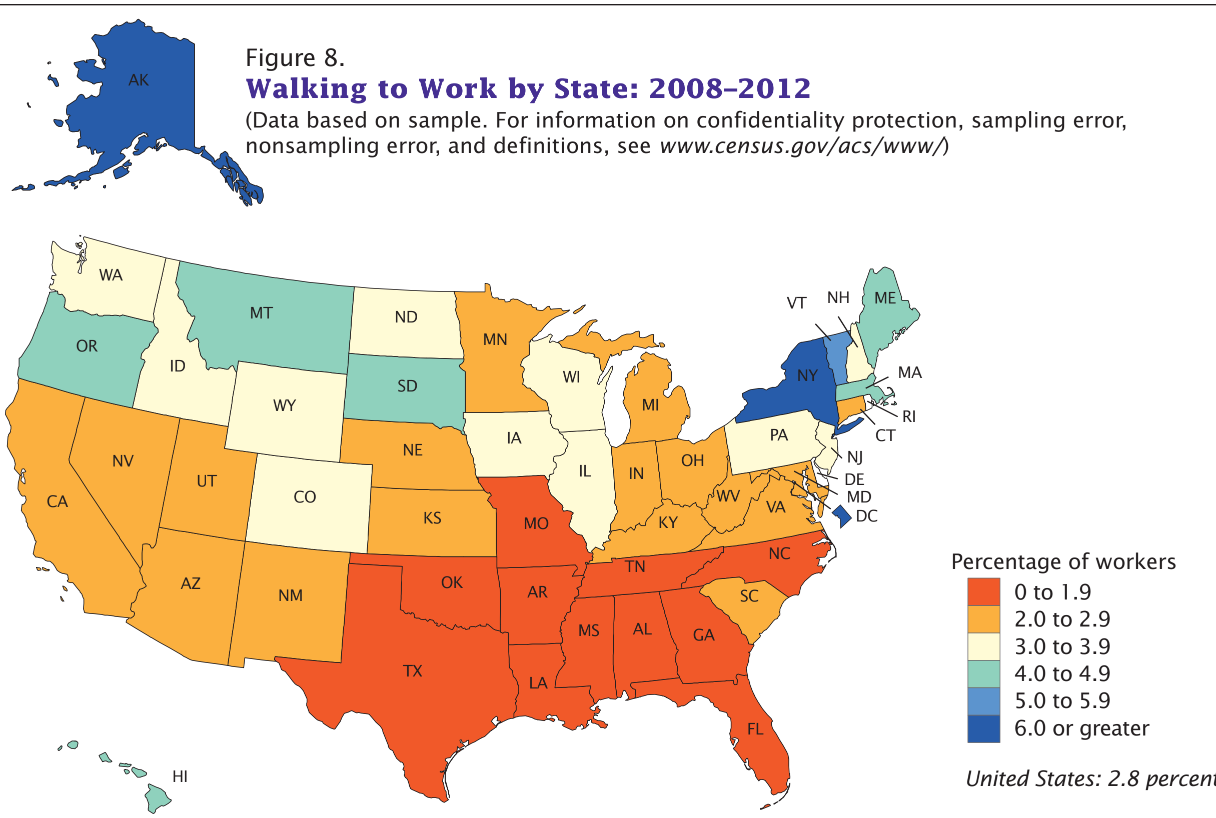
Sources: U.S. Census Bureau, American Community Survey 2008–2012, Tables S0801 and B08006, available on American Factfinder at <www.Factfinder2.census.gov>.

Figure 7.
Bicycling to Work by State: 2008–2012
(Data based on sample. For information on confidentiality protection, sampling error, nonsampling error, and definitions, see *www.census.gov/acs/www/*)



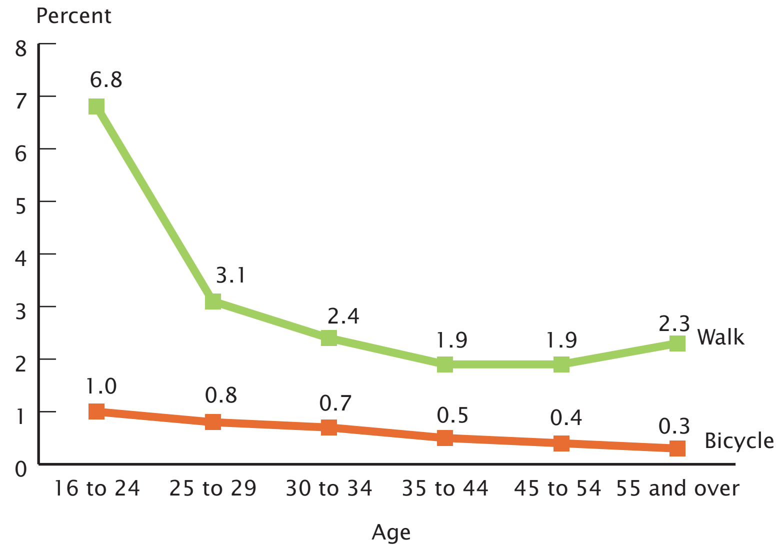
Source: U.S. Census Bureau, American Community Survey, 2008–2012.

Figure 8.
Walking to Work by State: 2008–2012
(Data based on sample. For information on confidentiality protection, sampling error, nonsampling error, and definitions, see *www.census.gov/acs/www/*)



Source: U.S. Census Bureau, American Community Survey, 2008–2012.

Figure 9.
Walking and Bicycling to Work by Age: 2008–2012
(Data based on sample. For information on confidentiality protection, sampling error, nonsampling error, and definitions, see *www.census.gov/acs/www/*)



Source: U.S. Census Bureau, American Community Survey, 2008–2012.

rate of 1.5 percent. The rate for subsequent categories declined or held steady as household income increased with the exception of the two highest income categories. Households with income between $150,000 and $199,000 had a slightly higher bicycle commuting rate than the previous income category, as did the highest income category of $200,000 or more. Households in the lowest income category of less than $10,000 per year showed the highest walking rate at 8.2 percent. Rates of walking showed patterns of decline similar to biking as income increased, but this pattern reversed slightly for the two highest income categories. Workers with incomes of $200,000 or more walked to work at a higher rate than those in the three lower income categories below it. The relatively high rates of biking and walking among lower-income workers may reflect financial necessity and lower rates of automobile ownership. The slight increase in biking and walking for high-income households may reflect their prevalence in large pedestrian-friendly cities such as New York, San Francisco, and Washington, DC, where average incomes are relatively high.

EDUCATIONAL ATTAINMENT AND PRESENCE OF CHILDREN

Workers in households without their own children are more likely to walk and ride a bicycle to work than those in households with children. Workers in households without children biked to work at a rate of 0.7 percent, followed by those in households with children under 6 years old at 0.5 percent. The rate of walking to work was highest for workers in households with no children at 2.8 percent, about a percentage point higher than each category of workers in households with children.[24]

Rates of nonmotorized commuting by educational attainment are presented for workers aged 25 and older. The two groups with the highest rates of commuting by biking and walking were the most educated and least educated workers. At 0.9 percent, the most educated workers, those with a graduate or professional degree, had the highest rate of bicycle commuting, followed by the least educated workers, those who did not graduate from high school at 0.7 percent. The least educated workers had the highest rate of walking to work at 3.7 percent, followed by the most educated workers at 2.7 percent.

WALKING AND BICYCLE COMMUTING RATES ACROSS COMMUTING CHARACTERISTICS

Travel mode choices influence other aspects of travel, such as how long it takes to get to work and what time to leave home in order to arrive on time. The availability of vehicles and the relationship between the home and workplace location also influence the likelihood of traveling by a particular mode. For selected worker and household characteristics, Table 4 shows rates of commuting for bicycle, walking, and other modes.[25]

[24] Analysis is limited to workers in households.

[25] Appendix Table A-2 shows the distribution of several commuting characteristics by travel mode, an alternative way of showing the relationship between these characteristics and workers who bicycle or walk to work.

Table 3.

Travel Mode by Selected Social and Economic Characteristics: 2008–2012

(For information on confidentiality protection, sampling error, and definitions, see *www.census.gov/acs/www/Downloads/data_documentation/ Accuracy/ACS_Accuracy_of_Data_2012.pdf*)

Selected characteristics for workers 16 years and over	Total workers	Bicycle		Walk		All other modes	
		Percent	Margin of error (±)[1]	Percent	Margin of error (±)[1]	Percent	Margin of error (±)[1]
Nation							
Age							
16 to 24 years	18,419,637	1.0	Z	6.8	0.1	92.2	0.1
25 to 29 years	15,301,696	0.8	Z	3.1	Z	96.1	Z
30 to 34 years	14,824,955	0.7	Z	2.4	Z	96.9	Z
35 to 44 years	31,043,598	0.5	Z	1.9	Z	97.6	Z
45 to 54 years	32,874,031	0.4	Z	1.9	Z	97.7	Z
55 years and over	27,429,722	0.3	Z	2.3	Z	97.4	Z
Sex							
Male	73,887,429	0.8	Z	2.9	Z	96.4	Z
Female	66,006,210	0.3	Z	2.8	Z	96.9	Z
Race and Hispanic origin							
Hispanic or Latino (any race)	20,803,714	0.7	Z	3.3	Z	96.0	Z
Not Hispanic or Latino	119,089,925	0.5	Z	2.7	Z	96.7	Z
White alone	94,084,919	0.6	Z	2.6	Z	96.8	Z
Black or African American alone	14,762,128	0.3	Z	2.8	Z	97.0	Z
Asian alone	7,132,081	0.5	Z	4.0	0.1	95.4	0.1
Some other race or Two or more races	3,110,797	0.8	Z	4.2	0.1	95.1	0.1
Presence of children in household							
Under 6 years and 6 to 17 years	9,768,648	0.4	Z	1.8	Z	97.8	Z
Under 6 years only	11,102,415	0.5	Z	1.9	Z	97.7	Z
6 to 17 years	32,128,022	0.4	Z	1.9	Z	97.8	Z
No own children present	85,494,497	0.7	Z	2.8	Z	96.5	Z
Household income in the past 12 months							
Less than $10,000	2,270,324	1.5	0.1	8.2	0.2	90.3	0.2
$10,000 to $14,999	2,559,351	1.1	0.1	6.6	0.1	92.2	0.1
$15,000 to $24,999	7,567,161	1.0	Z	5.0	0.1	94.0	0.1
$25,000 to $34,999	10,193,150	0.7	Z	3.8	0.1	95.5	0.1
$35,000 to $49,999	17,007,317	0.6	Z	2.9	Z	96.5	Z
$50,000 to $74,999	28,486,645	0.5	Z	2.2	Z	97.3	Z
$75,000 to $99,999	23,042,419	0.4	Z	1.7	Z	97.8	Z
$100,000 to $149,999	26,991,873	0.4	Z	1.5	Z	98.1	Z
$150,000 to $199,999	10,723,452	0.5	Z	1.6	Z	98.0	Z
$200,000 or more	9,651,890	0.5	Z	2.1	Z	97.4	Z
Educational attainment for workers aged 25 and older							
Less than high school graduate	10,232,045	0.7	Z	3.7	0.1	95.6	0.1
High school graduate	30,427,068	0.3	Z	2.2	Z	97.4	Z
Some college or associates degree	37,966,296	0.3	Z	1.7	Z	97.9	Z
Bachelors degree	26,164,533	0.6	Z	2.0	Z	97.5	Z
Graduate or professional degree	15,841,086	0.9	Z	2.7	Z	96.5	Z

Z Rounds to zero.

[1] This number, when added to or subtracted from the estimate, represents the 90 percent confidence interval around the estimate.

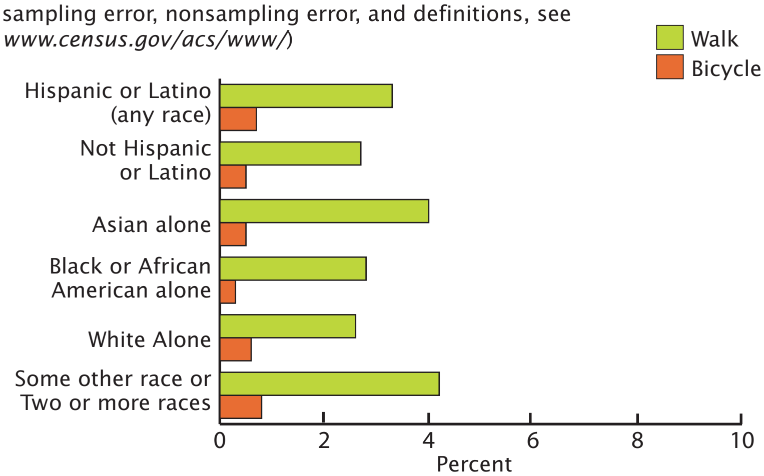
Sources: U.S. Census Bureau, American Community Survey 2008–2012, Tables S0801 and B08006, available on American Factfinder at <www.Factfinder2.census.gov>.

TRAVEL TIME AND TIME OF DEPARTURE FROM HOME

Nonmotorized travel is often suited for relatively short trips or as supplements to other travel modes such as transit. This is reflected in the low average travel time and high percentage of relatively short commutes for workers using nonmotorized travel modes. Workers who walked to work had an average commute time of 11.5 minutes, considerably shorter than that of bicycle commuters at 19.3 minutes, and all other workers who did not work at home at about 25.9 minutes (Figure 12). About 1 out of 10 workers with a commute of less than 10 minutes walked to work. As the length of the work trip increased, the percentage of workers who walked to work declined or held steady, reaching 0.5 percent for trips of 35 to 44 minutes and longer. Bicycle commuting was most prevalent for commutes between 10 and 14 minutes in length, with longer trips showing a relatively low percentage of bicycle commutes.

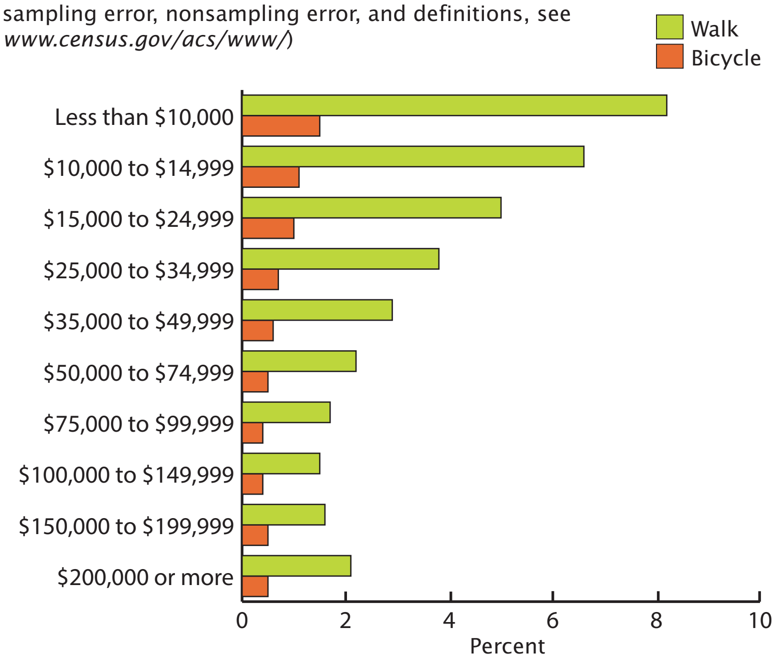
Compared with other workers, those who commuted by walking or bicycle generally departed for work later in the day. The highest rate of bicycle commuting occurred between 9:00 a.m. to 11:59 a.m. at 1.1 percent. Earlier departure time periods, particularly those before 8:00 a.m., had the lowest rates of bicycle commuting. Similarly, the highest rate of walking to work occurred between 9:00 a.m. and 11:59 a.m. at 5.7 percent. Industries or occupations that require later arrival or allow more scheduling flexibility may disproportionately employ workers who walk or bicycle to work.

Figure 10.
Walking and Bicycling to Work by Race and Ethnicity: 2008–2012
(Data based on sample. For information on confidentiality protection, sampling error, nonsampling error, and definitions, see *www.census.gov/acs/www/*)



Source: U.S. Census Bureau, American Community Survey, 2008–2012.

Figure 11.
Walking and Bicycling to Work by Household Income: 2008–2012
(Data based on sample. For information on confidentiality protection, sampling error, nonsampling error, and definitions, see *www.census.gov/acs/www/*)



Source: U.S. Census Bureau, American Community Survey, 2008–2012.

VEHICLE AVAILABILITY

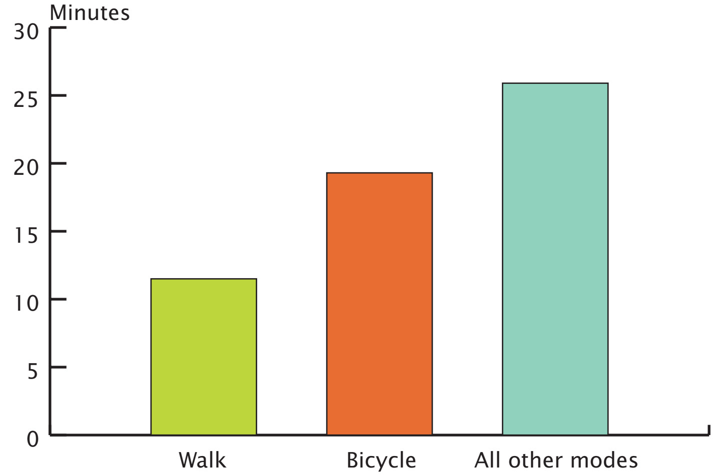
Vehicle availability influences the likelihood of traveling by bicycle or walking. Workers with no available vehicles biked to work at a rate of 2.8 percent, compared with 0.8 percent for workers with one available vehicle, 0.4 percent for workers with two available vehicles, and 0.3 percent for workers with three or more available vehicles (Figure 13). Similarly, 14.8

percent of workers with no available vehicle walked to work, compared with 3.7 percent for workers with one available vehicle. At 1.5 percent and 1.3 percent, respectively, workers with two available vehicles and three or more available vehicles walked to work at rates below the national average of 2.8 percent.

RELATIONSHIP BETWEEN HOME AND WORKPLACE

For any given commute, the utility of different travel modes is influenced by distance traveled. The ACS does not ask respondents about distance traveled to work, but the relationship between the place of residence and the workplace location may serve as a rough proxy for distance. Workers who live and work in the same place (meaning the same census-defined city, not those who work at home) have notably higher rates of walking and bicycling to work than workers who travel outside of their city of residence for work. Workers who live and work in the same place commute by bicycle at a rate of 1.2 percent, about four times higher than those who live and work in different places at 0.3 percent. Similarly, people who live and work in the same place walk at a rate of 6.6 percent, compared with 0.9 percent for other workers. These patterns are consistent with the relatively short travel times observed for nonmotorized commuting modes.

Figure 12.
Average Travel Time for Bicycling, Walking, and Other Modes: 2008–2012
(In minutes. Data based on sample. For information on confidentiality protection, sampling error, nonsampling error, and definitions, see *www.census.gov/acs/www/*)



Source: U.S. Census Bureau, American Community Survey, 2008–2012.

CONCLUSION

This report highlights the geographic, social, and economic dimensions that shape work-related travel by bicycle and walking. It unpacks the local variation overlooked in national snapshots of nonmotorized commuting rates and it reinforces that local factors play an important role in shaping travel behavior. A regional comparison shows that bicycle commuting is highest in the West, where a handful of cities, particularly college towns, consistently show notably high rates of bicycle commuting. The Northeast stands out as having high rates of walking to work, which is driven by large, densely populated cities. Among the nation's largest cities that experienced a significant change in the rate of bicycle commuting during the 2000s, almost all experienced an increase. Across large cities, changes in walking were more mixed over the decade. Where workers live also matters, as workers who live in cities had a higher rate of walking and bicycle commuting than those in suburbs or outside of a metropolitan area.

ACS data, with its geographic reach and mix of social, economic, and housing information, provide an important tool for addressing unique transportation challenges across communities and the diverse set of transportation needs across local populations. Men were more than twice as likely to bicycle to work as women were. Younger workers and those with low household incomes were more likely to walk and bicycle to work than their older counterparts and workers with higher household incomes. Workers reporting Hispanic or Some other race or Two or more races had relatively high rates of bicycle commuting. The presence of children in the household is associated with relatively low rates of nonmotorized travel.

The rapid increase in the number of bicycle sharing programs and the implementation of other bicycle-related facilities, along with the proliferation of local events such as "bike to work day," reflect local-level interest in incorporating bicycle travel into the overall transportation mix across communities. In 2013, New York City became one of several large U.S. cities to have implemented a bicycle sharing

Table 4.

Travel Mode to Work by Selected Commuting Characteristics: 2008–2012

(For information on confidentiality protection, sampling error, and definitions, see *www.census.gov/acs/www/Downloads/data_documentation/ Accuracy/ACS_Accuracy_of_Data_2012.pdf*)

Selected characteristics for workers 16 years and over	Total workers	Bicycle		Walk		All other modes	
		Percent	Margin of error (±)[1]	Percent	Margin of error (±)[1]	Percent	Margin of error (±)[1]
Nation							
Average travel time to work[2]	133,916,010	19.3	0.1	11.5	0.1	25.9	Z
Travel time to work							
Less than 10 minutes	18,281,648	0.8	Z	10.5	0.1	88.7	0.1
10 to 14 minutes	19,304,483	0.9	Z	4.0	Z	95.1	Z
15 to 19 minutes	20,787,002	0.7	Z	2.5	Z	96.8	Z
20 to 24 minutes	19,785,976	0.6	Z	1.5	Z	97.9	Z
25 to 29 minutes	8,144,297	0.4	Z	1.0	Z	98.6	Z
30 to 34 minutes	18,189,632	0.5	Z	1.0	Z	98.5	Z
35 to 44 minutes	8,537,406	0.4	Z	0.5	Z	99.1	Z
45 to 59 minutes	10,073,930	0.3	Z	0.5	Z	99.2	Z
60 or more minutes	10,811,636	0.3	Z	0.5	Z	99.2	Z
Time of departure							
12:00 a.m. to 4:59 a.m.	5,607,965	0.5	Z	2.0	Z	97.5	0.1
5:00 a.m. to 5:59 a.m.	11,326,773	0.4	Z	1.5	Z	98.1	Z
6:00 a.m. to 6:59 a.m.	25,223,444	0.4	Z	1.5	Z	98.1	Z
7:00 a.m. to 7:59 a.m.	37,337,021	0.4	Z	2.0	Z	97.6	Z
8:00 a.m. to 8:59 a.m.	22,153,870	0.7	Z	3.8	Z	95.5	Z
9:00 a.m. to 11:59 a.m.	13,860,156	1.1	Z	5.7	0.1	93.2	0.1
12:00 p.m. to 3:59 p.m.	9,391,080	0.8	Z	5.1	0.1	94.0	0.1
4:00 p.m. to 11:59 p.m.	9,015,701	0.7	Z	4.6	0.1	94.7	0.1
Vehicles available for workers in household							
No vehicle available	6,134,666	2.8	0.1	14.8	0.1	82.4	0.1
1 vehicle available	29,608,754	0.8	Z	3.7	Z	95.5	Z
2 vehicles available	58,600,079	0.4	Z	1.5	Z	98.2	Z
3 or more vehicles available	44,150,083	0.3	Z	1.3	Z	98.5	Z
Workplace location for workers who lived in a place							
Workplace and residence are within the same place	44,092,758	1.2	Z	6.6	Z	92.2	Z
Workplace is located outside place of residence	59,927,706	0.3	Z	0.9	Z	98.8	Z

Z Rounds to zero.

[1] This number, when added to or subtracted from the estimate, represents the 90 percent confidence interval around the estimate.

[2] Travel time estimates do not include workers who worked at home.

Sources: U.S. Census Bureau, American Community Survey 2008–2012, Tables S0801 and B08006, available on American Factfinder at <www.Factfinder2.census.gov>.

program and several more cities have plans for bicycle sharing programs of some sort. Several communities have also demonstrated public and private interest in promoting more walkable built environments. In some large cities, indicators of neighborhood walkability have become a selling point in real estate advertising, and several communities have invested in pedestrian-oriented commercial spaces for economic development purposes.[26] The U.S. Department of Transportation has also expressed its support for the development of integrated transportation systems that include bicycle and pedestrian infrastructure.[27]

As cities invest in walkability and bicycle-friendly programs and infrastructure, the demand for and relevance of bicycle and pedestrian data will increase. Local governments and planning agencies are interested in not only understanding changes in the rates of nonmotorized forms of travel, but also how these rates relate to transportation safety and performance standards, environmental protection, economic development, and

[26] Christopher B. Leinberger and Mariela Alfonzo, "Walk This Way: The Economic Promise of Walkable Places in Metropolitan Washington, D.C.," Metropolitan Policy Program at Brookings, Washington, DC, 2012.

[27] For more information, see <www.fhwa.dot.gov/environment/bicycle_pedestrian/overview/policy_accom.cfm>.

mobility options. The ACS provides one of the nation's most robust sources of data on bicycling and walking to work. It provides a valuable resource for planners, policy makers, and the general population to assess changes in these travel modes across communities.[28]

SOURCE OF THE ESTIMATES

The American Community Survey (ACS) is a nationwide survey designed to provide communities with reliable and timely demographic, social, economic, and housing data for congressional districts, counties, places, and other localities every year. It has an annual sample size of about 3.5 million addresses across the United States and Puerto Rico and includes both housing units and group quarters (e.g., nursing homes and prisons). The ACS is conducted in every county throughout the nation, and every municipio in Puerto Rico, where it is called the Puerto Rico Community Survey. Beginning in 2006, ACS data for 2005 were released for geographic areas with populations of 65,000 and greater. For information on the ACS sample design and other topics, visit <www.census.gov/acs/www>.

ACCURACY OF THE ESTIMATES

The data presented in this report are based on the ACS sample interviewed between 2008 and 2012. The estimates based on this sample approximate the actual values and represent the entire U.S. resident household and group quarters population. Sampling error is the difference between an estimate based on a sample and the corresponding value that would be obtained if the estimate were based on the entire population (as from a census). Measures of the sampling error are provided in the form of margins of error for all estimates included in this report. All comparative statements in this report have undergone statistical testing, and comparisons are significant at the 90 percent level unless otherwise noted. In addition to sampling error, nonsampling error may be introduced during any of the operations used to collect and process survey data such as editing, reviewing, or keying data from questionnaires. For more information on sampling and estimation methods, confidentiality protection, and sampling and nonsampling errors, please see the 2012 ACS Accuracy of the Data document located at <www.census.gov/acs/www/Downloads/data_documentation/Accuracy/ACS_Accuracy_of_Data_2012.pdf>.

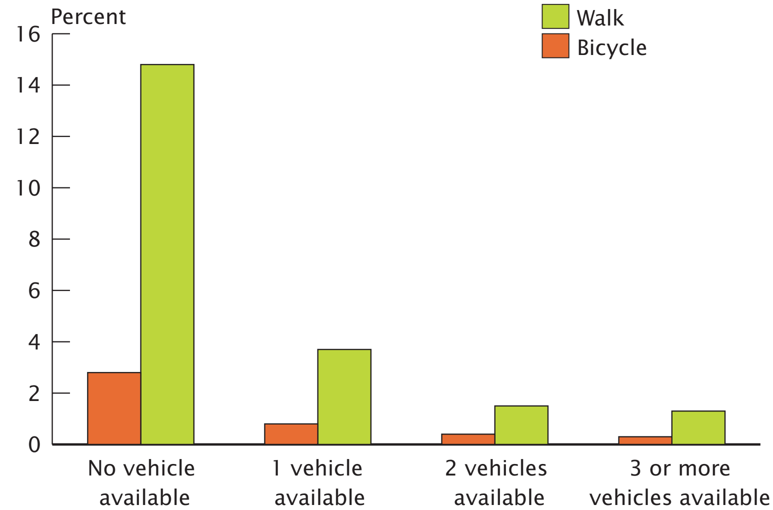
For more information about the commuting patterns of U.S. workers, go to the U.S. Census Bureau's Journey to Work and Migration Statistics Branch Web site at <www.census.gov/hhes/commuting/>, or contact the Journey to Work and Migration Statistics Branch at 301-763-2454.

SUGGESTED CITATION

McKenzie, Brian, "Modes Less Traveled: Commuting by Bicycle and Walking in the United States," 2008–2012, *American Community Survey Reports*, ACS-26, U.S. Census Bureau, Washington, DC, 2014.

[28] For information on bicycle and pedestrian travel as a share of overall travel, see the *National Household Travel Survey* at <www.nhts.ornl.gov>.

Figure 13.
Vehicles Available by Bicycling and Walking to Work: 2008–2012
(Data based on sample. For information on confidentiality protection, sampling error, nonsampling error, and definitions, see *www.census.gov/acs/www/*)



Source: U.S. Census Bureau, American Community Survey, 2008–2012.

Appendix Table A-1.

Rates of Walking and Bicycling to Work by Region and City Size: 2008–2012

(For information on confidentiality protection, sampling error, and definitions, see *www.census.gov/acs/www/Downloads/data_documentation/ Accuracy/ACS_Accuracy_of_Data_2012.pdf*)

Region and city size	Walk		Bicycle	
	Percent	Margin of error (±)[1]	Percent	Margin of error (±)[1]
West				
Total	3.0	Z	1.1	Z
Small cities	2.8	Z	0.8	Z
Medium cities	2.7	0.1	1.3	Z
Large cities	3.4	Z	1.4	Z
Midwest				
Total	2.7	Z	0.5	Z
Small cities	2.4	Z	0.4	Z
Medium cities	2.9	0.1	0.6	Z
Large cities	4.4	0.1	1.1	Z
Northeast				
Total	4.7	Z	0.5	Z
Small cities	3.1	Z	0.3	Z
Medium cities	7.2	0.2	1.0	0.1
Large cities	10.2	0.1	1.0	Z
South				
Total	1.8	Z	0.3	Z
Small cities	1.6	Z	0.2	Z
Medium cities	2.3	0.1	0.6	Z
Large cities	2.7	Z	0.6	Z

Z Rounds to zero.

[1] Data are based on a sample and are subject to sampling variability. A margin of error is a measure of an estimate's variability. The larger the margin of error in relation to the size of the estimates, the less reliable the estimate. When added to and subtracted from the estimate, the margin of error forms the 90 percent confidence interval.

Sources: U.S. Census Bureau, American Community Survey 2008–2012, Tables S0801 and B08006, available on American Factfinder at <www.Factfinder2.census.gov>.

Appendix Table A-2.

Commuting Characteristics for Workers Who Walked or Bicycled to Work: 2008–2012

(For information on confidentiality protection, sampling error, and definitions, see *www.census.gov/acs/www/Downloads/data_documentation/ Accuracy/ACS_Accuracy_of_Data_2012.pdf*)

Travel Time to Work by Travel Mode

Travel mode	Workers who did not work at home	Minutes: Less than 10	10 to 14	15 to 19	20 to 24	25 to 29	30 to 34	35 to 44	45 to 59	60 or more
Bicycle	785,665	18.7	21.0	19.2	14.6	4.6	10.5	3.9	3.8	3.7
Margin of error (±)[1]		0.3	0.3	0.4	0.3	0.2	0.3	0.2	0.2	0.2
Walked	3,938,418	48.7	19.8	13.1	7.7	2.0	4.8	1.2	1.2	1.4
Margin of error (±)[1]		0.2	0.1	0.1	0.1	0.1	0.1	Z	Z	Z
All other modes	129,191,927	12.6	14.2	15.6	15.0	6.2	13.9	6.5	7.7	8.3
Margin of error (±)[1]		Z	Z	Z	Z	Z	Z	Z	Z	Z

Time of Departure to Work by Travel Mode

Travel mode	Workers who did not work at home	12:00 a.m. to 4:59 a.m.	5:00 a.m. to 5:59 a.m.	6:00 a.m. to 6:59 a.m.	7:00 a.m. to 7:59 a.m.	8:00 a.m. to 8:59 a.m.	9:00 a.m. to 11:59 a.m.	12:00 p.m. to 3:59 p.m.	4:00 p.m. to 11:59 p.m.
Bicycle	785,665	3.3	5.5	12.3	20.9	20.3	19.4	9.8	8.6
Margin of error (±)[1]		0.2	0.2	0.3	0.4	0.4	0.4	0.3	0.3
Walked	3,938,418	2.8	4.3	9.7	19.0	21.3	20.2	12.3	10.4
Margin of error (±)[1]		0.1	0.1	0.1	0.2	0.1	0.2	0.1	0.1
All other modes	129,191,927	4.2	8.6	19.2	28.2	16.4	10.0	6.8	6.6
Margin of error (±)[1]		Z	Z	Z	Z	Z	Z	Z	Z

Workplace Location by Travel Mode

Travel mode	Workers who did not work at home	Workplace and residence within the same place	Workplace is located outside place of residence
Bicycle	785,665	73.5	26.5
Margin of error (±)[1]		0.4	0.4
Walked	3,938,418	84.7	15.3
Margin of error (±)[1]		0.2	0.2
All other modes	129,191,927	40.7	59.3
Margin of error (±)[1]		Z	Z

Vehicles Available by Travel Mode

Travel mode	Workers in households	No vehicle available	1 vehicle available	2 vehicles available	3 or more vehicles available
Bicycle	766,475	22.6	31.9	28.9	16.6
Margin of error (±)[1]		0.5	0.4	0.5	0.4
Walked	3,408,036	26.6	32	25.2	16.2
Margin of error (±)[1]		0.2	0.2	0.2	0.2
All other modes	134,319,071	3.8	21.1	42.8	32.4
Margin of error (±)[1]		Z	0.1	0.1	Z

Z Represents or rounds to zero.

[1] This number, when added to or subracted from the estimate, represents the 90 percent confidence interval around the estimate.

Sources: U.S. Census Bureau, American Community Survey 2008–2012, Tables S0801 and B08006, available on American Factfinder at <www.Factfinder2.census.gov>.