

Office of Health Equity

Healthy Communities Data and Indicators Project

Short Title: Percent of workers' daily commute 10 or more minutes by walking or biking.

Full Title: Percent of population aged 16 years or older whose commute to work is 10 or more minutes/day by walking or biking.

1. **Healthy Community Framework:**

Meets basic needs of all.

2. **What is our aspirational goal?**

Safe, sustainable, accessible and affordable transportation options.

3. **Why is this important to health?**

a. **Description of significance and health connection.**

Active modes of transport, bicycling and walking alone and in combination with public transit, offer opportunities to incorporate physical activity into the daily routine. Physical activity is associated with lowering rates of heart disease and stroke, diabetes, colon and breast cancer, dementia and depression. Automobile commuting is associated with health hazards, such as air pollution, motor vehicle crashes, pedestrian injuries and fatalities, and sedentary lifestyles. Consequently the transition from automobile-focused transport to public and active transport offers environmental health benefits, including reductions in air pollution, greenhouse gases and noise pollution, and may lead to greater overall safety in transportation.

People who walk to public transit tend to be non-White, from lower income households, and to live in large urban areas with access to rail and bus systems. Car ownership, race, gender, and built environment features, including safety infrastructure, affect modal choices regarding active transport. In some areas, college education is associated with greater use of non-motorized modes of transportation. Risks of injury in traffic collisions are higher for pedestrians and bicyclists, but lowest for bus and rail passengers.

b. **Summary of evidence.**

There are dozens of longitudinal epidemiologic studies that have documented improved health outcomes with increasing physical activity, including bicycling and walking. Active transportation can contribute to the U.S. Surgeon General's recommended physical activity goals for adults of at least 120 to 150 minutes per week (17-22 minutes per day) of moderate-to-vigorous activity, which lowers the risk of early death, heart disease, high blood pressure, diabetes, stroke, colon cancer, breast cancer, depression, cognitive decline, and osteoporosis.

c. Key References.

1. de Nazelle A, Nieuwenhuijsen MJ, Antó JM, et al. Improving health through policies that promote active travel: a review of evidence to support integrated health impact assessment. *Environ Int.* 2011; 37(4):766-77.
2. Cavill N, Kahlmeier S, Rutter H, Racioppi F, Oja P. [Economic Assessment of Transport Infrastructure and Policies: Methodological Guidance on the Economic Appraisal of Health Effects Related to Walking and Cycling](http://www.euro.who.int/data/assets/pdf_file/0007/87478/E90944sum.pdf) (http://www.euro.who.int/data/assets/pdf_file/0007/87478/E90944sum.pdf). World Health Organization Regional Office for Europe. 2007. Accessed October 25th, 2013.
3. Plaut PO. Non-motorized commuting in the US. *Transport Res D-TR E.* 2005; 10(5):347-356.
4. Physical Activity Guidelines Advisory Committee. [Physical Activity Guidelines Advisory Committee Report](http://www.health.gov/PAGuidelines/Report/) (<http://www.health.gov/PAGuidelines/Report/>). Washington, DC:
5. U.S. Department of Health and Human Services. 2008. Accessed October 25th, 2013.
6. Pucher J, Buehler R, Bassett DR, Dannenberg AL. Walking and cycling to health: a comparative analysis of city, state, and international data. *Am J Public Health.* 2010; 100(10):1986-1992.
7. Freeland AL, Banerjee SN, Dannenberg AL, Wendel AM. Walking associated with public transit: moving toward increased physical activity in the United States. *Am J Public Health.* 2013; 103(3):536-542.

4. What is the indicator?

a. Detailed Definition:

Percent of population aged 16 years or older whose commute to work is 10 or minutes /day by walking or biking.

b. Stratification:

Race/Ethnicity (8 Census groups) and mode of transportation (2 groups).

c. Data Description.

- i. Data sources: U.S. Census Bureau, American Community Survey (ACS): 2005-2007, 2008- 2010, and 2007 to 2011 ([American Fact Finder](http://factfinder2.census.gov/faces/nav/jsf/pages/index.xhtml) <http://factfinder2.census.gov/faces/nav/jsf/pages/index.xhtml>). U.S. Department of Transportation, Federal Highway Administration, National Household Travel Survey (NHTS): 2001 and 2009 ([National Household Travel Survey](http://nhts.ornl.gov) <http://nhts.ornl.gov>). All data accessed 9/2013.
- ii. Years available: 2001, 2005 to 2007, 2008 to 2010, 2009, and 2007 to 2011.
- iii. Updated: 1, 3, 5, 10 year intervals.
- iv. Geographies available: cities/towns, counties, regions (derived), consolidated metropolitan statistical area (CMSA) and state.

Data on walking to work by travel time (one way) for the population aged 16 years or older was obtained from the ACS, table B08134. The table provides nine travel time groupings (less than 10 min, 10-14 min, 15-19 min, 20-24 min, 25-29 min, 30-34 min, 35-44 min, 45-59 min, 60 or more min). The estimated number of people who walk 10 min or more was calculated as the difference between the total numbers of people who walked to work minus those that walked less than 10 min. The standard error of the difference was estimated with the formula:

$SE(\text{no. of people who walk to work})^2 + SE(\text{no. of people who walk less than 10 min to work})^2$.

The percent was calculated as the number of workers who walk 10 min or more over the total number of workers (100). Its standard error was calculated using the approximate method. Data on biking to work by travel time (one way) was obtained from the NHTS person file. To make population and bicycling definitions comparable to the ACS, NHTS survey participants were subset for people 16 year or older who had been employed and traveled to work during the reference week of the survey. Excluded were people that had been employed but worked from home once a week or more (NHTS 2001), or people who worked from home ten days or more per month (NHTS 2009). The estimated number of people who bike 10 minutes or more, the estimated number of people who biked to work, and the percent of people who biked 10 min or more to work and its standard error were calculated using the survey sample weights.

Relative standard errors, 95% confidence intervals, and decile ranking of places were calculated. Regions were based on counties of metropolitan transportation organizations (MPO) as reported in the [2010 California Regional Progress Report](http://www.dot.ca.gov/hq/tpp/offices/orip/Collaborative%20Planning/Files/CARegionalProgress_2-1-2011.pdf) (http://www.dot.ca.gov/hq/tpp/offices/orip/Collaborative%20Planning/Files/CARegionalProgress_2-1-2011.pdf).

5. Limitations.

The indicator is limited to individuals with paid work. Other types of commute trips (i.e., travel to school) are not included. The indicator does not reflect walking or biking to public transportation. Race/ethnicity data was only available from the NHTS. Biking data is only available at the CMSA and state level, with limited county level data (NHTS 2009). Travel time data was missing for 16% of workers in the 2001 NHTS and for 18% of workers in the 2009 NHTS. Calculations of the indicator at Census tract level were not statistically reliable.

6. Projects using this indicator.

[Metropolitan Transportation Commission. Bay Area Plan, Adopted Plan Bay Area Performance Targets, Target #5, 2013, Oakland, California.](http://www.mtc.ca.gov/planning/plan_bay_area/draftplanbayarea/)
http://www.mtc.ca.gov/planning/plan_bay_area/draftplanbayarea/. Accessed October 22, 2013. Source: American Community Survey 2005-2007 and 2008-2010, U.S. Census Bureau.