



## Percent of Workers with Greater than 90 Minutes Travel Time to Work

This EnviroAtlas map portrays the percent of workers within each U.S. Census block group during 2008–2012 with greater than 90 minutes of travel time to work. This metric includes private vehicle use, carpooling, public transit, bicycling, and walking.

### Why is commute time to work important?

This group of metrics indicates the efficiency of transportation systems that may be influenced by community development patterns, labor market shifts, and technological changes.<sup>1</sup> From a city planning perspective, it is desirable to have concentrations of jobs near a large working-age population. A regional balance of jobs and housing reduces congestion while benefitting the local economy and standard of living. A large percentage of workers with long commute times may indicate a sprawling region lacking efficient public transit or affordable housing near jobs. Affordable housing in job-rich urban areas allows lower- and middle-wage workers to avoid long commutes and save as much as 15 percent of earnings that would be spent on long-distance fares or car maintenance.<sup>2</sup>

Three out of four people in the U.S. drive to work.<sup>3</sup> Research shows associations among vehicle commuting travel time and worker stress and obesity.<sup>4</sup> Locating residences and services in development centers that also offer jobs helps reduce the health risks and costs associated with long commutes. Workplaces that are centrally located and accessible to more households can also reduce energy use and [greenhouse gas emissions](#) (GHGs) associated with employee commuting trips.

When workers have easy access to employment, they are also more likely to choose public transit, bicycling, or walking as a preferred travel option. Transit users spend a median of 19 minutes per day walking to and from transit stations. This is more than half of the 30 minutes of physical activity per day recommended by the U.S. Surgeon General.<sup>5</sup>

Public transit is a more convenient and viable transportation option for commuters when transit service is frequent and accessible. Increasing the number of transit stops increases accessibility but also trip time. Consolidating stops can reduce trip time but may increase distance to the nearest transit stop. Transit planners must strike a balance between increasing accessibility to attract riders and retaining reasonable commuting trip durations.<sup>6</sup>



Understanding human behavior and preferences is critical to designing for active transportation and transit-oriented development. Important factors include street layout, traffic density and speed, sidewalks and setbacks, bike lanes, landscaping and street trees, lighting, and security. Studies have shown a relationship between walkable environments and the amount of walking that actually occurs.<sup>7</sup>

Besides being a measure of commuting times, this metric is an indicator of land-use diversity. Communities that pursue compact growth patterns, mixed-use development, affordable housing, and strong central cities facilitate mobility by multiple transportation modes. Research indicates that people who live in compact neighborhoods walk, bike, and use transit more (and drive less) than people living in lower density neighborhoods.

### How can I use this information?

Commute-time maps reveal patterns that can facilitate community development. Federal, state, and local policymakers can use this information to guide decisions about how to allocate limited transportation resources. Planners and analysts can overlay commuting travel times with other maps in EnviroAtlas (e.g., land-use diversity, street intersection density, percent tree cover along walkable roads) and combine them with local transit-related data to target areas for improved accessibility and amenities. These commuting maps can also be used to gauge the amount of pressure placed on transportation infrastructure, guide transportation strategies, and support travel demand modeling.

Researchers might study the relationship of commuting time to other planning metrics such as employment density or the number and density of particular job classes. Comparing these maps to areas of relatively high housing and working-age population density can provide insights into workplace accessibility. Communities seeking to decrease commuting times and reduce the costs of extending transit service to new locations may wish to encourage housing and employment growth in areas already well-served by transit.

### How were the data for this map created?

The metric was compiled from the U.S. Census [American Community Survey \(ACS\)](#) 5-year Summary Data for 2008–2012. Table B08303 provides estimates at the census block group scale. ACS obtained the data through survey questions related to commuting time. The ACS data are collected every month through statistical sampling of the total population; estimates are published on an annual basis. Workers 16 years of age and over who were employed during the week prior to the ACS reference week answered questions about where they worked, what time they left home for work, the means of transportation (private vehicle, carpooling, public transit, bicycling, or walking), and how long it took to travel to work. Commuting time is the amount of travel time in minutes for workers to get from home to work. The percentage of workers within a commute time category was obtained by dividing the number of workers in that category by the total population of workers in the census block group.

### What are the limitations of these data?

This indicator is most useful for drawing attention to regional patterns and to specific neighborhoods that would benefit from further study. The accuracy of the ACS surveys may be limited by multiple collection agencies and calculations.

### Selected Publications

1. McKenzie, B. 2013. [Out-of-state and long commutes: 2011](#). American Community Survey Report 20. U.S. Census Bureau, Washington, D.C.
2. Litman, T. 2009. [Where we want to be: Home location preferences and their implications for smart growth](#). Victoria Transport Policy Institute, Victoria, B.C.
3. Kramer, M. 2013. [Our built and natural environments: A technical review of the interactions among land use, transportation, and environmental quality, Second edition](#). Environmental Protection Agency, Washington, D.C. 139 p.
4. Frank, L.D., M.A. Andresen, and T.L. Schmidt. 2004. [Obesity relationships with community design, physical activity, and time spent in cars](#). *American Journal of Preventative Medicine* 27(2):87–96.
5. Besser, L.M., and A.L. Dannenberg. 2005. [Walking to public transit: Steps to help meet physical activity recommendations](#). *American Journal of Preventive Medicine* 29:273–280.
6. Murray, A., and X. Wu. 2003. [Accessibility tradeoffs in public transit planning](#). *Journal of Geographic Systems* 5:93–107.
7. Schlossberg, M., and N. Brown. 2004. [Comparing transit-oriented development sites by walkability indicators](#). *Transportation Research Record* 1887:34–42.

Summarizing and estimating various metrics across block groups may create misleading results. Estimates for rural areas with low populations should be interpreted with caution. It is important to remember that development is not distributed evenly throughout the area of a block-group. (The EnviroAtlas aerial-image base map and the [dasymetric](#) population map give an indication of the proportions of developed and undeveloped land in each census block group.) A large block group may be diverse, but jobs, housing and services may be widely dispersed with low accessibility. In urban centers, small block groups may be rather uniform in land use but close to other more diverse block groups.

### How can I access these data?

EnviroAtlas data can be viewed in the interactive map, accessed through web services, or downloaded. American Community Survey [annual](#) and [summary file](#) data may be downloaded from the ACS websites. U.S. Census and American Community Survey data, such as [ACS commuting data](#), may be obtained at the U.S. Census Bureau website.

### Where can I get more information?

A selection of resources on the relationships among commuting time, travel mode, public health, and environmental quality is listed below. For additional information on data creation, access the [metadata](#) for the data layer. To ask specific questions about this data layer, please contact the [EnviroAtlas Team](#).

### Acknowledgments

Yan Jiang, Student Services Contractor for the EPA, generated the data. The fact sheet was created by Yan Jiang, Yongping Yuan, Anne Neale, and Laura Jackson, U.S. EPA, and Sandra Bryce, Innovate!, Inc.