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 value includes private vehicle use, carpooling, public transit, bicycling, and walking.

Why is commute time to work important?

This group of metrics presents patterns of commuting time by census block group for working populations. The map indicates the efficiency of transportation systems that may be influenced by community development patterns, labor market shifts, and technological changes.[1] A larger percentage of workers having a long commute time may indicate a sprawling region with a lack of efficient public transit or other transport alternatives.

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 commuting time, fuel consumption, and congestion as it benefits the local economy and standard of living. Workplaces that are centrally located and accessible to more households can reduce vehicle miles traveled (VMT), energy use, and greenhouse gas emissions (GHGs) associated with employee commuting trips. Three out of 4 people in the U.S. drive to work.[2] Research results support associations among vehicle commuting travel time and worker stress and obesity.[3,4] Locating residences and services in development centers that also offer jobs helps reduce the health risks and costs associated with long commutes.

When workers have easy access to employment, they are more likely to drive less frequently and choose public transit, bicycling, or walking as a preferred travel option. 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 it also increases transit trip time. Consolidating stops can reduce trip time, but doing so may increase local residents' walking distance to the nearest transit stop. Transit planners must strike a balance between increasing accessibility to attract riders and retaining reasonable commuting trip durations.[5]

Understanding pedestrian movement is an important element in planning transit-oriented development. Walkability is an issue at both the origin and the destination of a transit ride.


Photo: Portland, OR Transit, S. Morgan, Wikimedia Commons

Studies have shown a relationship between walkable environments and the amount of walking that actually occurs.[6] Other elements besides distance to transit are important for walking to be an acceptable option for residents—pedestrian-friendly routes, street grid design, traffic density and speed, sidewalk setback, presence of landscaping and street trees, lighting, and security.[6] Improving walkability and encouraging more people to use public transit can have significant human health and environmental benefits. 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.[7]

Besides being an indicator of commuting times, this metric suggests the presence or absence of land use diversity. Communities that pursue compact growth patterns, mixed use development, and strong central cities facilitate mobility by multiple transportation modes. Locating residences, jobs, and services together in development centers helps reduce commuting time to work. Research indicates that people who live in compact neighborhoods walk more, use transit more, and drive less than people living in lower density neighborhoods.

How can I use this information?

Commute-time maps allow users to evaluate different neighborhoods by the workers' travel time between home and work by various transportation modes. The data illustrate patterns of commuting that may facilitate community development and research. Federal, state, and local policymakers can use the commuting information to

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guide decisions about how to allocate limited public resources devoted to transportation. Analysts can overlay commuting travel times with other built-environment metrics associated with transit-supportive land use (e.g., land use diversity and street intersection density) to highlight areas needing improved accessibility. Planners can use these maps to guide transportation improvement strategies, predict future travel demand, and gauge the amount of pressure placed on transportation infrastructure. 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 new transit service to new locations may wish to encourage new 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 provided data at the census block group scale. ACS obtained the data through survey questions related to commuting time. 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. Summarizing and estimating various metrics across block groups may create misleading results. It is important to remember that development is not distributed evenly throughout the area of a block-group. (The EnviroAtlas aerial-image base map gives 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 distributed with low accessibility. In urban centers with smaller block groups, some 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, and environmental quality is listed below. For additional information on data creation, access the metadata for the data layer from the drop down menu on the interactive map table of contents and click again on metadata at the bottom of the metadata summary page for more details. To ask specific questions about this data layer, please contact the EnviroAtlas Team.

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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. 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.

3. Frumkin, H. 2002. Urban sprawl and public health. *Public Health Reports* 117(3): 201–217.

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. Murray, A., and X. Wu. 2003. Accessibility tradeoffs in public transit planning. *Journal of Geographic Systems* 5:93–107.

6. Schlossberg, M., and N. Brown. 2004. Comparing transit-oriented development sites by walkability indicators. *Transportation Research Record* 1887:34–42.

7. 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.