



## Number of Households with Zero Vehicles

This EnviroAtlas national demographics map estimates the number of zero-vehicle households for each U.S. Census block group in 2010. The word *vehicle* refers to privately-owned motor vehicles such as cars and trucks.

### Why are zero vehicle households important?

In an auto-centric society, successfully living and working without a vehicle depends on a number of associated factors such as the size of the community, locations of jobs, and availability of mass transit. A recent study by the Brookings Institute found that in 100 of the largest U.S. metropolitan areas, 7.5 million households do not have access to a private vehicle.<sup>1</sup> A small percentage of these households, in middle- to high-income brackets, have voluntarily given up their vehicles, because they live in neighborhoods where driving is not necessary—urban centers with easy access through walking, bicycling, or mass transit to high-skill jobs, retail services, health care, and recreation. However, the majority of urban residents without vehicles live in low-income neighborhoods in urban centers.<sup>1</sup>

Though over 90% of zero car households in all income levels have ready access to public transit in urban centers, existing transit lines do a better job of serving the high-wage jobs located in city centers.<sup>2</sup> Transportation is the biggest impediment to finding and keeping a job for low-income jobseekers.<sup>3</sup> A study evaluating the success of Welfare to Work programs in Wisconsin counties near Minneapolis, Minnesota found that 70% of the jobs available to low-income workers were scattered throughout surrounding suburban areas, which were not as well-served by public transit.<sup>3</sup> Further complicating the task of connecting potential workers and jobs is the fact that more than half of suburban zero-vehicle households occur in neighborhoods without transit coverage.<sup>1</sup>

In 2012, in the midst of the recession, there were more Americans living in poverty in the suburbs than in central cities, a 65% increase in suburban poor since 2000.<sup>4</sup> While driving is the only way to effectively get around in most suburban areas, car ownership is a financial burden for poor families. Lacking access to a vehicle can severely limit the ability of a household to meet its daily needs. Changing demographic patterns in suburbia suggest that more emphasis is needed in planning for walkable and bike-able neighborhoods, employment centers, and increased access to public transportation within suburban communities.



Photo: Bike commuters, U.S. DOT

A national average of 69% of working-age residents live in metropolitan areas with access to public transit.<sup>2</sup> Continued progress in improving and extending transit networks into uncovered metro areas, including suburbs, will help to connect more working-age zero-car residents with employment. In addition, expanded transit helps reduce auto emissions that contribute to respiratory health risks and climate change.

Mixed use development is a city planning strategy that can minimize travel distances and improve access to jobs, services, and recreation.<sup>5</sup> Planning strategies for compact neighborhoods promote housing in job-rich areas and new employment centers in dense residential zones. Land use diversity allows people to drive less if they choose. Communities that pursue compact growth patterns and mixed use development facilitate workplace accessibility by automobile, transit, biking, and walking.

### How can I use this information?

Identifying zero-car households in neighborhoods can be helpful in a number of different urban planning contexts, particularly when considered alongside other built-environment metrics such as residential density, employment density, and street connectivity. In U.S. communities where living without a vehicle is not a viable option, neighborhoods with a high percentage of zero car households warrant special attention. In the short-term, these neighborhoods may benefit from targeted pedestrian infrastructure improvements to improve safety in key locations. They may also benefit from programs that seek to

bring services directly to communities in need (e.g., mobile libraries and community health clinics or farmers' markets).

This data layer also provides insights into neighborhoods where households are choosing the zero vehicle option voluntarily. These may be areas with mixed land uses or the critical mass to support new services such as car and bike share systems that can help to provide additional mobility on demand to residents and visitors.

The variable, Number of Zero-Car Households, is often used as an input variable in transportation models that estimate trip generation, vehicle miles traveled, transit mode share, walking, and bicycle trips. This data layer may be compared to other EnviroAtlas demographic and Smart Location data layers. For select communities, users can overlay EnviroAtlas community land cover maps that show impervious surfaces, street trees, and other common land cover at 1-meter resolution.

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

The 2010 [American Community Survey](#) (ACS) 5-year estimate provided sample-based counts of occupied households with no vehicles by census block group. The ACS statistics are relative, meaning the sampling is ongoing throughout the year. Auto ownership fields were derived from the ACS table B25044. Percent auto ownership fields were calculated as the share of all households having zero cars with respect to total households reported in the ACS table. These percent auto ownership rates were then applied to the housing units count from the [2010 U.S. Census SFIHOUBG](#) tables to estimate the number of households having no car. More details about this metric, AutoOwn0, are available in the demographics section of the [Smart Location Database User Guide](#).

### Selected Publications

1. Tomer, A. 2011. [Transit access and zero vehicle households](#). *Brookings* (August 2011):1–14.
  2. Tomer, A., E. Kneebone, R. Puentes, and A. Berube. 2011. [Missed opportunity: Transit and jobs in metropolitan America](#). *Brookings*.
  3. Brabo, L.M., P.H. Kilde, P. Pesek-Herriges, T. Quinn, and I. Sanderud-Nordquist. 2003. [Driving out of poverty in private automobiles](#). *Journal of Poverty* 7:183–196.
  4. Kneebone, E., and A. Berube. 2013. [Confronting suburban poverty in America](#). Brookings Institution Press, Washington, D.C. 169 p.
  5. National Research Council. 2009. [Driving and the built environment: The effects of compact development on motorized travel, energy use, and CO<sub>2</sub> emissions, Special Report 298](#). The National Academies Press, Washington, D.C. 240 p.
- 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.
- Walker, J. 2012. [Human transit: How clearer thinking about public transit can enrich our communities and our lives](#). Island Press, Washington, DC.

### What are the limitations of these data?

American Community Survey estimates for block groups can have high margins of error. This indicator is most useful for drawing attention to regional patterns or specific neighborhoods that would benefit from further study.

### How can I access these data?

EnviroAtlas data can be viewed in the interactive map, accessed through web services, or downloaded. This data layer is incorporated into a larger EPA data product called the [Smart Location Database](#). The Smart Location Database is a nationwide geographic data resource for measuring location efficiency. Most attributes are available for every census block group in the United States.

### Where can I get more information?

A selection of resources on the relationships between transportation choices and environmental quality is listed below. EPA's [Smart Growth Program](#) provides tools, resources, and technical assistance to communities seeking to pursue compact and mixed-use development strategies to create vibrant neighborhoods while protecting public health and the environment. For information on how city planning strategies may affect human health, visit the [Eco-Health Relationship Browser](#). For additional information on the data creation process, access the [metadata](#) for the data layer from the drop down menu on the interactive map layer list. To ask specific questions about this data layer, please contact the [EnviroAtlas Team](#).

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