



## Employment to Housing Ratio

This EnviroAtlas national demographics map estimates the employment to housing ratio or jobs to household balance (total employment divided by total occupied housing units) within each U.S. Census block group for 2010.

### Why is the employment to housing ratio important?

Employment to Housing Ratio or jobs per household is one of many measures or variables used by city planners to examine the proportions of residents, jobs, and services in urban areas and to guide development planning for efficient city plans and transit networks. An employment to housing ratio in the range of 0.75 to 1.5 is considered beneficial for reducing vehicle miles traveled.<sup>1</sup> Ratios higher than 1.5 indicate that there may be more workers commuting into the area because of a surplus of jobs. The employment to housing ratio indicates whether an area (e.g., a block group) has enough housing for employees to live near employment centers and sufficient jobs in residential areas. An imbalance in jobs and housing creates longer commute times, more single driver commutes, loss of job opportunities for workers without vehicles, traffic congestion, and poor air quality.<sup>2</sup>

Ideally, the types of housing should match the income levels of workers in nearby employment centers. Workers in higher income levels tend to benefit from a positive employment to housing ratio because they are more able to afford housing closest to prominent employment centers. Many communities across the U.S. have experienced a decline in traditional downtown employment centers in favor of office parks and retail in outer suburbs. Such dispersion of employment to the suburbs can result in reduced accessibility by workers due to longer average trip distances, increased traffic, and lack of public transit in outlying areas.

Unfortunately, the movement of jobs to the suburbs has been most pronounced in industries that offer low- and middle-skill jobs. The lack of affordable housing near employment is a common problem in central urban areas as well, requiring low- and middle-income workers to travel longer distances to work.<sup>2</sup> To counter these trends, some communities have rezoned land from commercial to residential uses and set affordability mandates for new housing in an effort to diversify neighborhoods and reduce commuter vehicle miles traveled for those unable to afford housing near their workplaces.<sup>3</sup>



Photo: Castro District, San Francisco, C. Beland

Three out of 4 people in the U.S. drive to work.<sup>4</sup> Workplaces that are centrally located and accessible to more households can reduce not only vehicle miles traveled (VMT) but fuel consumption and [greenhouse gas emissions](#) (GHGs) associated with commuting trips. In addition to receiving these environmental benefits, the local economy and standard of living improve by providing a local workforce with ready access to available jobs. A recent study found that doubling the number of jobs accessible to working age populations residing within 20 minutes driving time led to an increase in real average wages of 6.5%.<sup>5</sup>

Employment to housing ratio is also a measure of land use diversity. Ranges in the ratio are used by local governments to justify cost-effective transit investment.<sup>6</sup> Studies suggest that employers, especially large employers, can influence housing and transportation choices through travel subsidies. Employers may offer discounted transit passes and carpool parking permits, subsidized vanpool programs, and on-line rideshare programs to encourage the use of alternative transportation modes.<sup>2</sup>

The employment to housing ratio is likely to be more balanced in compact neighborhoods that contain a mix of residences, employment opportunities, and services. Research indicates that people who live in compact neighborhoods walk more, use transit more, and drive less than people living in lower density neighborhoods.<sup>4</sup> A recent study found that every 10% increase in the number of jobs in the same occupational category within 4 miles of one's residence was associated with a 3.3% decrease in daily work-related vehicle miles traveled.<sup>3</sup>

## How can I use this information?

The employment to housing ratio within an area of study can be useful in a number of different urban planning contexts. Planners may want to identify neighborhoods with optimal densities of jobs and housing that can support new or enhanced transit service. Localities may also consider employment to housing ratio when providing services or when prioritizing neighborhood improvements such as sidewalks, street lighting, or bike lanes. Focusing improvements in compact neighborhoods can ensure that the greatest number of people benefit from services.

This data layer may be used with other EnviroAtlas demographic and Smart Location data layers to compare the proportions of residents, jobs, and services among community block groups. An aerial-image base map can be used to show the spatial distribution of the built environment within the census block groups. 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 Census](#) provided a count of the number of jobs per census block group. The 2010 [Census LEHD](#) (Longitudinal Employer-Household Dynamics) gave total employment at the census block group level for all states except Massachusetts. Total employment (TotEmp) was noted for each block group from the LEHD WAC tables, using the C000 field (total number of jobs). Massachusetts employment data (2011) came from InfoUSA. The number of households (or occupied housing units) for each census block group came from the 2010 Census Summary File 1 (SF1). Total employment divided by total occupied housing units provided the employment to housing ratio for each census block group. For more information, please see variable D2a\_JpHH, Jobs per Household, in the [Smart Location Database User Guide](#).

## Selected Publications

1. Cox, W. 2013. [U.S. suburbs approaching jobs-housing balance](#). *New Geography* blog. Accessed August 2016.
2. Zhou, J., Y. Wang, and L. Schweitzer. 2012. [Jobs-housing balance and employer-based travel demand management program returns to scale: Evidence from Los Angeles](#). *Transport Policy* 20: 22–35.
3. Cervero, R., and M. Duncan. 2006. [Which reduces vehicle travel more: Jobs-housing balance or retail-housing mixing?](#) *Journal of the American Planning Association* 72(4):475–490.
4. 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.
5. Melo, P.C., D.J. Graham, D. Levinson, and S. Aarabi. 2012. [Agglomeration, accessibility, and productivity: Evidence for urbanized areas in the U.S.](#) Paper submitted to the Transportation Research Board 92<sup>nd</sup> Annual Meeting, January 13–17, 2013, Washington, D.C. 20 p.
6. Florida Department of Transportation. 2009. [Transit-oriented development design guidelines](#). Accessed November 2014.

## What are the limitations of these data?

Some census block groups include both developed and undeveloped areas. This indicator is most useful for drawing attention to regional patterns or specific neighborhoods that would benefit from further study. Using the aerial-image base map will give an indication of the proportions of developed and undeveloped land in each census block group. Also, a balance of workers and jobs across block groups does not necessarily indicate that the majority of residents avoids commuting and works locally.

## 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 among jobs and housing, 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, mixed-use, walkable, and transit-oriented development strategies to protect public health and the environment. For additional information on the data creation process, 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](#).

## Acknowledgments

Alexander Bell, Renaissance Planning Group, generated the data. The fact sheet was created by Kevin Ramsey, former EPA ORISE Fellow, and Sandra Bryce, Innovate!, Inc., and reviewed by Ted Cochin, EPA Office of Sustainable Communities.