Office Job Density

This map estimates the number of office jobs per unprotected acre within each census block group in 2010.

Why is office job density important?

Office job density 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 design and transit networks. Besides indicating the number of jobs per unprotected acre within a census block group, the metric also suggests a level of economic activity in the block group. Job densities in particular job classes may be compared with overall employment density to highlight job distributions within and among block groups.

The office employment classification includes jobs in information (publication, telecommunications, internet hosting, data processing, and entertainment), finance and insurance, real estate, and management of companies. The wages within the class range from entry-level wages to managerial salaries. Of these white collar job types, finance and insurance, entertainment, and managerial jobs have a positive forecast for future job opportunities. In 2012, finance and insurance employed almost 6 million workers and represented almost 8% of U.S. gross domestic product.[1] In the early 2000s, wages in finance were more than 40% higher than those in the rest of the private sector (based on similar skills and education).[2]

For the remaining job classes in the office job category, automation and the offshoring of jobs have contributed to the insecurity of the low- and middle-wage office worker. In 2000, information workers composed 59% of the total number of workers.[3] Since then, low- and middle-skill office jobs have become major candidates for offshoring. Between 2001 and 2011, publishing jobs dropped by 28%, telecommunications by 42%, and data entry by 11%.[4] A reduction in demand for middle-wage workers can reduce wages for the remaining workers in that class and send some former middle-wage workers into the low-wage ranks.[5]

Office job density tends to be higher in downtown central business districts and in outlying suburban subcenters. While data from the 2000 Census showed that just 19% of commuter trips led to downtown central business districts, downtown is still where most finance, insurance and real

Photo: Office building, melburnian Creative Commons

estate businesses tend to locate.[6] Knowing the distribution of various job densities is prerequisite to planning for transportation networks and affordable housing developments that are accessible to jobs of all wage classes. The occurrence of affordable-accessible housing near office work locations gives workers the option to save on time and transportation costs. A common benchmark states that housing and transport should together total less than 45% of income. Transport costs can vary from about 10% of earnings in compact communities up to about 25% in automobile-dependent suburban communities.[7]

Smart Growth planning programs promote the development of a diversity of residences, employment opportunities, and services within compact neighborhoods. Planning strategies promote housing in job-rich areas and new employment centers in dense residential zones. Research indicates that people who live in compact neighborhoods walk more, use transit more, and drive less than people living in lower density neighborhoods. Resident workers with easy accessibility to a diversity of job types in various wage classes can reduce not only vehicle miles traveled (VMT) but fuel consumption and greenhouse gas emissions (GHGs) associated with employee commuting trips.

How can I use this information?

This map, Office Job Density, allows users to evaluate various block groups by the number of office jobs per unprotected acre relative to other characteristics. Comparing this map to areas of relatively high-, low- and middle-wage worker residential density may indicate the

effectiveness of community design and road networks to link potential workers with job opportunities. Planners may want to promote increased affordable housing in block groups with high office employment density and a low resident working population. They may identify neighborhoods with optimal densities of jobs and housing that can support new or enhanced transit service. Economic development agencies in regions with limited transit service may use this map to encourage the siting of new office centers in areas that are highly accessible to the regional workforce.

This data layer may be compared to other EnviroAtlas demographic and Smart Location data layers. The aerial-image base map (seen by increasing the transparency of the map layers) can be used to show the spatial distribution of the built environment within the block groups.

How were the data for this map created?
The 2010 Census LEHD (Longitudinal Employer-Household Dynamics) database gave the total number of office jobs (NAICS sectors 51–53 and 55) by U.S. Census block group. EPA then isolated areas of the block group that were not protected from development. NAVTEQ data (2011) provided the location of federal, state, and local parks, zoos, cemeteries, public beaches, and water bodies. The Protected Area Database (PAD-US v1.3) provided the locations of parks and protected natural areas as well as privately-owned land area with restrictions on development (such as conservation easements). The relevant portions of each protected area dataset were intersected and dissolved into a single polygon layer that represented all areas in which development was restricted. The resulting protected areas layer was then integrated with the block group areas in GIS. EPA used this block group unprotected acreage as the denominator to calculate office employment density. The metric, listed as D1c8_Off10, may be found in the Smart Location Database User Guide.

What are the limitations of these data?
It is important to remember that jobs or residences are not distributed evenly throughout the area of a block group. A diversity of land uses or activities may be sparsely distributed in large census block groups. On the other hand, a small block group may be uniform and low in diversity, but it may be located within easy access to a more diverse block group. Using the aerial-image base map will give an indication of the proportions of developed and undeveloped land in each census block group.

How can I access these data?
EnviroAtlas data can be viewed in the interactive map, accessed through web services, or downloaded. Data from the 2010 U.S. Census may be viewed and downloaded from the census website.

Where can I get more information?
A selection of resources on the relationships among office jobs, city planning, 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, walkable neighborhoods while protecting 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

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