Industrial: Number of Jobs

This map estimates the number of industrial jobs within each census block group in 2010.

Why is the number of industrial jobs important?

Number of industrial jobs 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 within a specific job class, the metric also suggests a level of economic activity in the block group. Number of jobs in a particular job class may also be used as a component in other more complex Smart Location metrics such as employment diversity, which is calculated for each block group using employment figures from eight different job categories.

The industrial employment classification includes jobs in agriculture, forestry, mining, oil and gas, construction, manufacturing, wholesale, transport, and warehousing. The wages within the class range from entry-level wages to managerial salaries. Since 2009, construction, wholesale trade, manufacturing, transportation, and warehousing have shown good job growth during the post-recession recovery. However, employment in all of these categories remains far below pre-recession levels except in transportation and warehousing.[1] Though manufacturing has experienced at least two decades of offshoring, 12 million workers, or 9% of the workforce, are still employed in the sector, and it is seeing modest post-recession gains.[2] The oil shale boom has fueled the increase in oil and gas jobs that led the industrial sector since 2007, particularly in states with large shale reserves like North Dakota and Pennsylvania.[3] However, the boom may be cooling as more than 50,000 oil and gas jobs were lost in early 2015.[4] Industrial jobs traditionally have been a source of good middle wage jobs. Deregulation, consolidation, and the offshoring of jobs have all contributed to the insecurity of the middle wage worker.[5]

In spite of a trend toward land use diversity, industrial job densities still tend to be concentrated in zoned industrial parks. Just as with the location of office or retail centers in metropolitan areas, industrial zones tend to be distributed near central downtown core areas as well as in outlying suburban subcenters, generally along major highways or railways. Knowing the distribution of various job densities is

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prerequisite to planning for transportation networks and affordable housing centers that are accessible to jobs of all wage classes. The occurrence of affordable housing with easy access to industrial work locations gives workers the ability to save on transportation costs.

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. Residential proximity to clean industries or warehouse districts is consistent with mixed-use planning.[6] In addition, the redevelopment of industrial brownfields can revitalize neighborhoods by transforming blight, producing jobs, and preserving greenspace through infill development.[7] 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.[8]

How can I use this information?

This map, Industrial: Number of Jobs, allows users to evaluate various block groups by the number of industrial jobs relative to other characteristics. Using this map to identify the number of industrial jobs by census block group within an area of study can be useful in a number of urban planning contexts. 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 industrial employment density and a low resident working population. They may identify neighborhoods with optimal numbers 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 employment 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. For select communities, users can overlay EnviroAtlas community land cover maps that show impervious surfaces, street trees, and other common land covers at 1-meter resolution.

How were the data for this map created?

The 2010 Census LEHD (Longitudinal Employer-Household Dynamics) database gave the total number of industrial jobs (NAICS sectors 11, 21–23, 31–33, 42, 48, and 49) by U.S. Census block group. The number of jobs was summarized from LEHD Work Area Characteristics (WAC) tables that report employment based on work location. Data for Massachusetts came from InfoUSA. The metric, listed as E8_Ind10, may be found in the Smart Location Database User Guide.

What are the limitations of these data?

A block-group is a collection of census blocks, the smallest area mapped by the U.S. Census Bureau. 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. The U.S. Census Bureau maintains a website on methodology and reliability of data.

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 industrial jobs, city planning, and environmental quality is listed below. In addition, EPA's Smart Growth Program provides tools, resources, and technical assistance to communities seeking to pursue compact 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

Selected Publications

1. Evangelist, M. 2014. The low wage recovery: Industry employment and wages four years into the recovery. National Employment Law Project Data Brief, accessed May, 2015.

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3. Greenstone, M., and A. Looney. 2012. The role of oil and gas in driving job growth. Brookings on Job Growth, June 1, 2012. Accessed May, 2015.

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5. Autor, D.H., L.F. Katz, and M.S. Kearney. 2006. Measuring and interpreting trends in economic inequality: The polarization of the U.S. labor market. AEA Papers and Proceedings 96(2):189–194.

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8. National Research Council. 2009. Driving and the built environment: The effects of compact development on motorized travel, energy use, and CO_2 emissions. Special Report 298, The National Academies Press, Washington, D.C. 240 p.