



## Population under 1 Year Old

This EnviroAtlas community demographics map layer depicts the number of individuals in U.S. Census Block Groups that were under one year of age in 2010. This metric serves as an indicator of young families.

### Why is the population under 1 year old important?

Children in the womb and under one year of age are in critical stages of physical and mental development. Environmental conditions play an important role in the current and future health of a child, both directly and through parental health and well-being. [Ecosystem services](#) support child development by providing healthful food and water provisioning, air filtration, natural hazard buffering, and a lifelong connection with the natural world and cultural traditions.

Ecosystem services help provide a clean and healthy environment for pregnant and nursing mothers. Breastfeeding has numerous demonstrated benefits, including decreased risks for allergies, diabetes, cancer, infections, and arthritis. However, due to the high fat content in mother's milk, it can pass some persistent organic pollutants such as polychlorinated biphenyls (PCBs), bisphenol A (BPA), and certain pesticides on to a nursing infant. Infants can ingest relatively large doses of contaminants in comparison to their size. The long-term toxic effects of these chemicals on breastfeeding infants are of potential concern since they can persist and accumulate in the body. The filtration of polluted runoff by natural vegetation in source watersheds can reduce maternal exposure to contaminants in drinking water.

Air filtration by tree cover is important to infants because their still-developing respiratory tract is more likely to absorb pollutants. Children have a greater lung surface area compared to their body weight; they breathe 50% more air in relation to their body weight than adults. Therefore, air pollutants will have a greater impact on a child than an adult. Air pollution generated by factories, car exhaust, and coal-fired power plants is known to contribute to the development of respiratory disorders such as asthma and acute respiratory illnesses. Studies have shown that breathing high amounts of airborne particles can increase the risk of infant death from respiratory illnesses. Living near trees can help provide filtration and cleaner air for infants.



The benefits of ecosystem services to infants extend to the increase in parental physical and mental health attributed to proximity to green space. Lack of green space contributes to feelings of loneliness and perceptions of lack of social support, which influence mental health. Parents who have high mental and physical well-being have lower rates of depression and health disorders, which allow space for engagement with their infants. It has been demonstrated that fully engaged parents have positive effects on infant development.

Recent research has also found that mothers living near tree cover and other green space are less likely to give birth to underweight babies. Increased social contact and reduced stress associated with proximity to tree cover have been proposed as explanations. The long-term health effects of underweight children include a lower immunity to childhood diseases such as diarrhea and pneumonia, iron deficiencies, slower mental and physical development, and a higher likelihood of developing psychological problems as adults. If the amount of green space affects the birth weight of children, health risks could be reduced by increasing the amount of green space.

It is in the best interest of society to ensure that children grow up healthy and meet their full physical and mental potential. Healthy children grow into healthy adults who are able to contribute to society and the economy by living productive lives.

## How can I use this information?

This demographic information can be used in conjunction with other EnviroAtlas data to identify the numbers of infants under 1 year old within census blocks relative to nearby ecosystem services and benefits. Areas with significant disparities can be identified, and planners can consider additional investments to provide services to meet existing or projected demand.

For example, the number of infants in a given area could be combined with other data layers such as busy roadways or facilities with air discharge permits. Infants living in close proximity to these air pollution sources could be at increased risk for developing asthma and potentially subject to delayed cognitive development. Once risks are identified, tree cover could be enhanced to help filter harmful air pollution.

Other pertinent EnviroAtlas data layers relate to the health benefits gained from pollutants removed by tree cover, including data layers addressing negative health outcomes avoided (e.g., asthma exacerbation and acute respiratory symptoms) and the estimated monetary value of health and productivity losses avoided. In addition, users may examine populations within 300 meters of busy roadways and roadways with and without tree buffers.

## How were the data for this map created?

This map layer was created by combining the US Census 2010 TIGER/Shapefile boundary data with the age data found in US Census 2010 Summary File 1 Population Subjects Summarized to the Block Level (Table P14: Sex by Age for the Population Under 20 Years). All numbers of children under 1 year of age were summed for males and females. These tabular data were joined to the US Census 2010 TIGER/Shapefile boundary data using the block-group code.

## Selected Publications

Taylor, A.F., and F.E. Kuo. 2006. [Is contact with nature important for healthy child development? State of the evidence](#). Pages 124–140 in Spencer, C., and M. Blades (eds.), *Children and Their Environments*. Cambridge University Press, Cambridge, United Kingdom.

Taylor, A.F., and F.E. Kuo. 2001. [Coping with ADD: The surprising connection to green play settings](#). *Environment and Behavior* 33:57–77.

Kirkland, J. 2011. [Growing quality of life: Urban trees, birth weight, and crime](#). *Science Findings* 137. U.S. Forest Service, Pacific Northwest Research Station, Portland, Oregon.

Ritz, B., and M. Wilhelm. 2008. [Air pollution impacts on infants and children](#), UCLA Institute of the Environment and Sustainability. Accessed March 14, 2012.

Environmental Protection Agency. 2013. [America's Children and the Environment Third Edition](#). U.S. Environmental Protection Agency, Washington, D.C. 504 p.

## What are the limitations of these data?

Block-group population data are derived from 2010 U.S. Census data that is presented at the census block-group scale. A block-group is a collection of census blocks, the smallest area mapped by the U.S. Census Bureau. Population data are supplied by census blocks to preserve the privacy of individuals. It is important to remember that residents are not distributed evenly throughout the area of a 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 relationship between infant health and ecosystem services is listed below. 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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