Percent Population over 70 Years Old

This EnviroAtlas community demographic map layer depicts the number of individuals in U.S. Census Block Groups that were over seventy years of age in 2010.

Why is the population over 70 years old important?

The elderly, along with children and minorities, are considered a vulnerable group that is subject to greater environmental risk than the general population. Due to frailty and the greater likelihood of pre-existing illness, the elderly are especially vulnerable to hazardous events such as natural disasters and extreme weather, degraded community infrastructure, crime, heavy traffic, and poor air quality. Older adults often have one or more chronic conditions, such as heart disease, chronic obstructive pulmonary disease (COPD), or diabetes, which cause a decline in function and resiliency.[1] Natural features, primarily green space and well-functioning waterbodies, provide ecosystem services to communities that improve the lives of the elderly through enhancements in air and water quality, flood and heat mitigation, and provision of open space for physical activity and mental well-being.

Neighborhood and home environments are particularly important for the well-being of elderly inhabitants. A degraded or poorly designed neighborhood environment can keep elderly residents indoors, inactive, and socially isolated. A 2002 study found that surveyed Medicare recipients who reported multiple neighborhood problems, such as heavy traffic, crime, poor lighting, and lack of adequate public transportation, were at increased risk of losing physical function within a year. Functional loss was 2½ times higher among participants reporting multiple neighborhood problems compared to non-problem neighborhoods.[2]

Elderly residents may suffer from excessive heat in urban areas. Impervious surfaces (streets, parking lots, and rooftops) store heat during the day and slowly release it at night, preventing the area and its residents from cooling down after a hot day. Elevated daytime and nighttime temperatures can amplify the effects of heat and increase the incidence of heat stroke and other heat-related health effects. The elderly are particularly vulnerable to the effects of heat, either directly or secondarily as heat can exacerbate existing health conditions such as kidney and heart disease.[3]

Photo: US Department of Health and Human Services

Higher ambient temperatures also contribute to the chemical reactions that produce ground-level ozone and smog that threaten public health. The elderly with pre-existing health conditions are susceptible to relatively small increases in particulate matter in the air. A recent study of 11.5 million Medicare enrollees in 204 U.S. urban counties showed that for every 10 micrograms/cubic meter increase in fine particulates ($PM_{2.5}$) in the air there was a short term increase in hospital admission rates for heart problems, COPD, and respiratory infections.[4] Studies such as these help guide the creation of National Ambient Air Quality Standards (NAAQS) that protect vulnerable populations.

From a city planning perspective, the risks of adverse health conditions in the elderly could be reduced by creating walkable city designs, including the provision of street trees and other tree cover, and easy access to parks and other open space. The opportunities for physical exercise and engagement with nature provided by these features have been linked in numerous studies to health and well-being in all age groups. Urban trees provide filtration and cleaner air by reducing concentrations of fine airborne particles and gaseous air pollutants. Tree canopies reduce the heat generated by impervious surfaces and offer natural shade. Parks and green spaces provide opportunities for physical activity and socializing, two of the most important elements in preventing loss of function in elderly populations.[2] Physical activity may help to delay or prevent health conditions such as heart disease and diabetes. It also reduces the risk of cognitive impairment and depression in elderly populations.[5,6]

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How can I use this information?

This demographic information can be used in conjunction with other EnviroAtlas data to identify the percent population over 70 years of age 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 percent of elderly adults could be overlaid onto block groups showing high impervious land cover or large populations living next to busy roadways. Older residents living in these block groups could be at greater risk for adverse health outcomes. Once identified, these areas could be evaluated locally for opportunities to enhance tree cover as a public health intervention strategy.

Other pertinent EnviroAtlas data layers at the block group level may be found in the Table of Contents under Community Ecosystem Services: Clean Air: Health Benefits of Pollutants Removed by Tree Cover, which includes data layers addressing negative health outcomes avoided (e.g., asthma exacerbation and acute respiratory symptoms) and the estimated monetary value of avoided health and productivity losses. Users may examine populations within 300 meters of busy roadways and roadways with and without tree buffers under Clean Air: Near Road Environments. Residents without window views of trees or park access are mapped under Recreation, Culture and Aesthetics.

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 P12: Sex by Age). For percent population over 70 years of age, males and females were added together, and this figure was divided by the total population in the block group. These tabular data were joined to the US Census 2010 boundary data using the block-group code.

What are the limitations of these data?

Block-group population data are derived from 2010 U.S. Census data that are 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 information quality guidelines and statistical quality standards.

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 aging, 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.

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Selected Publications

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6. Federal Interagency Forum on Aging-Related Statistics. 2012. Older Americans 2012: Key indicators of well-being. Federal Interagency Forum on Aging-Related Statistics, U.S. Government Printing Office, Washington, DC.