Percent Green Space along Walkable Roads

This EnviroAtlas community map estimates the percentage of green space within an estimated pedestrian area alongside walkable roads.

Why is green space along walkable roads important?

Green space provides many services, including air and water filtration, carbon storage, natural hazard mitigation, and pleasing settings that encourage people to spend time outdoors. Street trees in particular can reduce noise, buffer pedestrians from traffic, and cool summer temperatures, making these frequently traveled spaces more hospitable. There are many health benefits that can be gained from the natural services that green spaces provide; examples from scientific studies show improvements to mental health, and increased physical activity and social interaction.

Green space provides access to the natural environment while individuals go about their daily lives. Green space along walkable roads increases the aesthetic value and comfort of walking outdoors. In urban centers, people frequent parks and tree-lined districts to socialize, recreate, and engage with nature. Spending time in these settings has been shown to decrease stress, depression, and feelings of hostility.

Green spaces are generally cooler and more shaded than other areas in the same vicinity and thus can offer a reprieve from extreme summer temperatures. This cooling effect is created by shading and evapotranspiration and often extends beyond the green space itself, increasing with parcel size and the amount of woody vegetation. During heat events, some green spaces can significantly reduce local ambient air temperatures, helping to reduce stress, hospital admissions, and mortality associated with extreme heat.

Green space further serves communities by filtering and absorbing water that flows off of impervious surfaces like roads and parking lots. Green space helps to regulate the flow of water through a watershed by intercepting, absorbing, and slowly releasing water. This “sponge” effect can reduce negative impacts of stormwater runoff. The lack of significant tree cover and other vegetation in and around populated areas can result in more frequent and/or severe flooding, potentially resulting in adverse health effects associated with these events.


Photo by Eric Vance, U.S. EPA

How can I use this information?

The map, Percent Green Space along Walkable Roads, can be used to assess green infrastructure across city blocks and neighborhoods. This map can be combined with intersection density to estimate areas that may be more or less conducive to walking. Additionally, demographic layers can be added to assess disproportionate access to health-boosting green space along roads. Communities can also use these data to identify locations for landscaping or conservation efforts. Comparing areas of low street green space with flood and heat maps can support these community decisions. Finally, the data may be downloaded for communities, decision-makers, and researchers to combine with their own data for a variety of purposes.

How were the data for this map created?

This map is based on the land cover data derived for each EnviroAtlas community, and road centerlines from the NAVTEQ mapping database. The land cover data were classified to one-meter resolution from aerial photography and supplemental data through remote-sensing methods. Classified land cover considered green space included water, trees and forest, grass and herbaceous cover, shrubs, agriculture, orchards, and woody and emergent wetlands.

Only NAVTEQ roads with a speed limit less than 55 miles per hour were included to isolate potentially walkable streets. The centerlines were used to create 25 meter buffers on each side of the road. These buffers were intersected with total green space derived from the classified land cover data (Figure 1).

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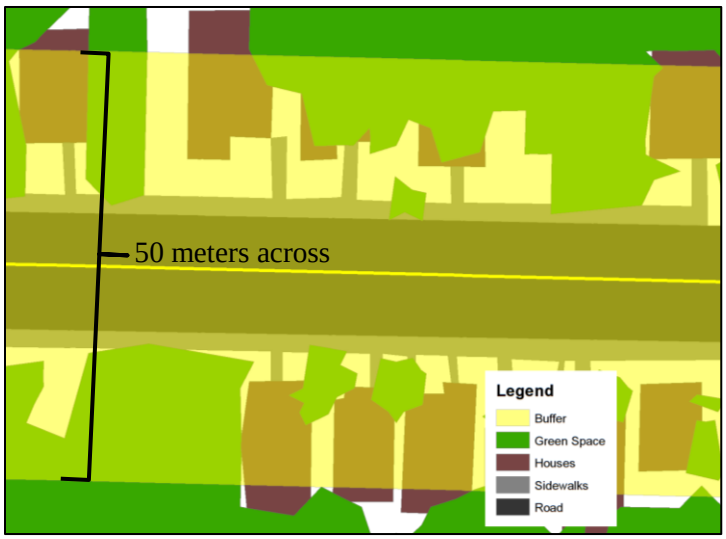

Figure 1. Illustration of the area contained in a 25 meter buffer (50 meters edge to edge) of a road centerline.

Percent green space for each city block (the distance between intersections) was then determined.

What are the limitations of these data?

All of the EnviroAtlas community maps that are based on land cover use remotely-sensed data. Remotely-sensed data in EnviroAtlas have been derived from imagery and have not been verified. These data are estimates and are inherently imperfect.

A general definition was used to screen for walkable roads (speed limit <55 miles per hour). However, it is possible that not all of the included roads have conducive or safe walkways. Actual walkability is a factor of many aspects of the environment such as sidewalks and connectivity.

How can I access these data?

EnviroAtlas data can be viewed in the interactive map, accessed through web services, or downloaded. To find the EnviroAtlas 1-meter land cover grids created for each community, enter *land cover community* in the interactive map search box.

Where can I get more information?

Numerous resources are available on the relationships among green space, ecosystem services, and human health and well-being; a small selection of these is listed below. In-depth information on the relationships between urban green space and human health and well-being can be found in EPA's Eco-Health Relationship Browser. 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 these data, contact the EnviroAtlas Team.

Acknowledgments

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Selected Publications

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