Residential Population with Minimal Views of Trees

This EnviroAtlas community map estimates the number of people who have less than 5 percent tree cover within 50 meters of their home within each census block group.

Why are views of trees important?

Humans have a natural affinity for nature, and thus are generally happier in the presence of aesthetically pleasing and interesting green spaces. Trees, in particular, are often appreciated for their beauty and their ability to provide appealing settings that encourage people to spend time outdoors. Viewing trees from a window can also be a relaxing and pleasurable experience and has been linked to many human health benefits.

Though viewing trees through a window is not equivalent to activities that provide direct engagement with nature like relaxing in a park or running along a tree-lined street, the ability to view trees from indoors has its own set of rewards. Views of trees from windows have been linked to numerous positive health effects, including reductions in stress and blood pressure, decreased healing times, and increased attention and cognitive functioning. Even viewing photos of nature is associated with reductions in anxiety and blood pressure.

There are several potential mechanisms that might explain why viewing trees may result in positive health outcomes. It has been proposed that experiencing nature may cause physiological reductions in stress[1] or reduce directed attention fatigue.[2]

People who have minimal views of trees from their home may not receive the same benefits as those who have tree views. This lack of benefits may be especially pertinent for

those who spend a significant amount of time at home or those who may benefit disproportionately from stress reduction or attention restoration. These groups may include the economically disadvantaged, students of all ages, pre-school children, and the elderly.

How can I use this information?

The map, Residential Population with Minimal Views of Trees, can be used by citizens and planners to identify housing areas few tree views in the immediate vicinity. Demographic data can be overlaid on this map to illustrate areas that may benefit from tree plantings for improved window views. For instance, block groups could be highlighted that have both minimal views of trees and large populations who spend a lot of time at home (e.g. retirees); this information could help inform interventions. The documented benefits of physical and visual access to green space are particularly important to children and the elderly for health protection and promotion. Neighborhood green space may be particularly beneficial to populations with limited outdoor access beyond their residential settings.

How were the data for this map created?

This map is based on the land cover data derived for each EnviroAtlas community. The land cover data were created from one-meter aerial photography through remote-sensing methods. This dataset also uses the EnviroAtlas 30-m dasymetric population data. The amount of tree cover within

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50 meters of every 1-m land cover pixel was calculated and then averaged within each 30-m dasymetric population pixel. If the average area of tree cover within 50m for a particular dasymetric pixel was less than 5% of the total analyzed area, the dasymetric pixel was considered to have very little potential window views of trees. The population associated with these pixels within each census block group was summed to represent the population with minimal potential window views of trees. The calculation was summarized by 2010 U.S. Census block group boundaries.

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. The land cover maps used in the community component of EnviroAtlas typically have an overall accuracy of between 80 and 90 percent. This level of accuracy means that there is a probability of at least 80 percent that the land cover reported at any given point on the map is correct.

These data utilize the best available information for the scale and objectives of the map layer. However, large datasets often have errors because they are an estimation of the truth. This map layer is not intended to explicitly portray the number or characteristics of residents that do not have window views of trees. It is designed to provide an estimate of the distribution of the population that may or may not have window views of trees. The presence or direction of a window, the slope of the landscape, and the land cover between the given location and the potentially viewed tree cover are not taken into account.

The land cover maps will be updated over time; updates may have improved accuracy as data and classification methods improve.

How can I access these data?

EnviroAtlas data can be viewed in the Interactive Map, accessed through web services, or downloaded. The EnviroAtlas land cover maps created for each community are available under the Supplemental Maps tab in the interactive map table of contents.

Where can I get more information?

There are a number of resources on forest views and potential health benefits; a selection of these resources 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 these data, please contact the EnviroAtlas Team.

Acknowledgments

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Selected Publications

1. Ulrich, R.S.1983. Aesthetic and affective response to natural environment. *Human Behavior and Environment: Advances in Theory and Research* 6:85–125.

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