



Trees improve life in Portland, OR

Stumptown loves its trees. But most Portlanders don't even realize how much they are benefiting from the trees in their community.

Geoffrey Donovan's research is quantifying the many ways trees improve the quality of life of Portland residents. Increased property value, crime reduction, and improved academic performance barely scratch the surface. The real benefits, by an order of magnitude, come from the positive impact trees have on our physical and mental health.

Trees save lives. We assessed how tree planting in urban neighborhoods affects human mortality in Portland and found that residents in neighborhoods with more newly planted trees experienced lower rates of cardiovascular and nonaccidental mortality. The reduction in mortality was more strongly associated with older trees, 11 to 15 years after planting, meaning that the impact of trees on human mortality grows stronger as trees mature.

Donovan et al. 2022. The association between tree planting and mortality: A natural experiment and cost-benefit analysis. Environment International 170 107609.

Trees are linked to healthier newborns. This study compared tree cover around the homes of 6,000 women who delivered babies in Portland in 2006 and 2007. To rule out other possible effects, the study controlled for over a hundred variables including the mother's age, ethnic background, household income, education, prenatal care, and whether she already had children. Results showed that canopy cover within 50 meters of a house reduced the risk of a baby being born underweight.

Donovan et al. 2011. Urban trees and the risk of poor birth outcomes. Health & Place. 17: 390-393.

Trees and social cohesion. We studied the relationship between the natural environment and social cohesion, which we defined as feelings of connectedness, solidarity, and a sense of community among social groups. Using voting as a metric of social cohesion, we found that tree planting was associated with increased voter turnout, adding to the body of evidence suggesting that community greening is associated with better social cohesion.

Donovan et al. 2022. The natural environment and social cohesion: Tree planting is associated with increased voter turnout in Portland, Oregon. Trees, Forests and People 7 100215.

Trees and house price. On average, street trees add \$8,870 to a home's sales price and reduce time on the market by 1.7 days. In addition, we found that the benefits of street trees spill over to neighboring houses. Because the provision and maintenance of street trees in Portland is the responsibility of adjacent property owners, our results suggest that if the provision of street trees is left solely to homeowners, there will be too few street trees from a societal perspective.

Donovan and Butry. 2010. Trees in the city: Valuing street trees in Portland, Oregon. Landscape and Urban Planning 94:77-83.

Trees and crime. Neighborhoods with street trees experience lower crime rates in Portland. This trend is also true for homes with large yard trees. These results hold for total crime rates as well as specific property crimes such as vandalism and burglary. Trees possibly reduce crime by signaling that a neighborhood is well cared for.

Donovan and Prestemon. 2012. The Effect of Trees on Crime in Portland, Oregon. Environment and Behavior 44: 3-30.

Trees and stormwater. Additional tree canopy cover could help reduce stormwater runoff, particularly in the summer. Results suggest that trees and other vegetation can be effective at moderating stormwater runoff. However, vegetation is not as effective in the winter.

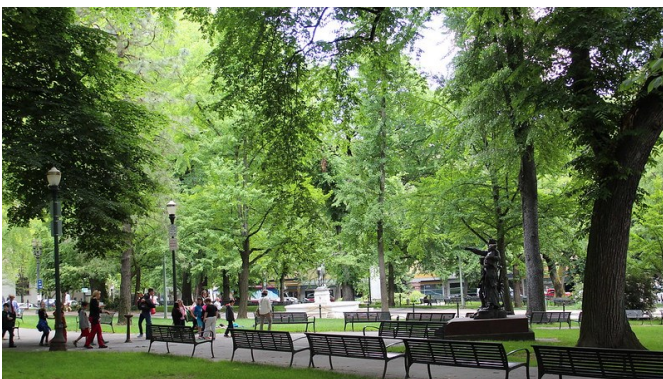
Donovan et al. 2016. Statistical Analysis of Vegetation and Stormwater Runoff in an Urban Watershed During Summer. Arboriculture & Urban Forestry 42(5): 318–328.

Trees and academic performance. Children with more trees around their homes and their schools perform better on standardized tests. In the first study to look at how individual-level school test scores are affected by the environment around a student's home and school, results suggest that exposure to the natural environment, at both home and school, may promote children's cognitive development and academic performance.

Donovan et al. 2020. The Relationship Between the Natural Environment and Individual-Level Academic Performance in Portland, Oregon. Environment and Behavior. 2020 52(2) 164–186.

The affect of trees on gentrification is modest. We examined the effects of tree planting on gentrification in Portland, using tree planting data from Friends of Trees, which planted nearly 58,000 trees over three decades. We found that tree planting improves neighborhood desirability. However, given the benefits of exposure to trees, we believe it would be short-sighted to refrain from tree planting in underprivileged neighborhoods out of fear of gentrification, as withholding tree benefits would compound the disadvantages residents already face. Tree planting is a cost-effective way of improving underprivileged neighborhoods.

Donovan et al. 2021. The politics of urban trees: Tree planting is associated with gentrification in Portland, Oregon. Forest Policy and Economics 124 102387.



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