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Spreading the Green and Sharing the Wealth

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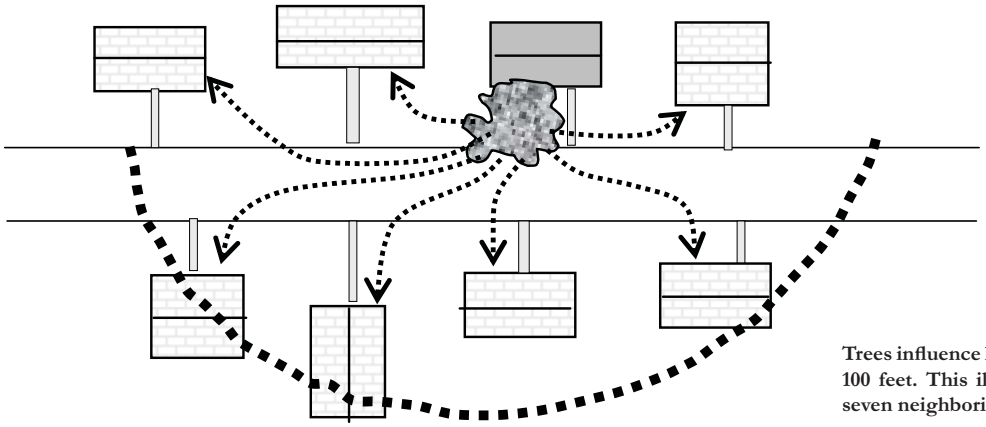
by Rachel White

Instead of sleeping late on a winter morning, some hardy souls head outside to stand for hours in the cold rain. They most likely also get a sore back from heavy shoveling. Nonetheless, each year thousands of people donate part of a Saturday to help Friends of Trees, a local non-profit, plant trees in various neighborhoods around Portland, Vancouver, Tualatin, Tigard, Clackamas, and other areas. In exchange they can get help planting a tree at their own house. Eric, a volunteer who has helped out in the past, described why this trade-off made sense to him. "It rained so much the morning we planted that my boots weighed about ten pounds. But fifteen years from now, when I'm sitting in the shade of my magnolia tree, I won't remember how cold my feet were."

Most people recognize the benefits they derive from having trees: natural beauty, shade, and cleaner air. And city governments understand these benefits as well. But they have been difficult to quantify, making it hard for local planners to weigh the right amount of effort and resources to apply to urban forestry programs. In her work as a botanic specialist with the City of Portland's Urban Forestry Commission, Jennifer Karps has wrestled with the challenge of setting citywide targets that will maximize the benefits of trees. "In our urban forestry management plan, we set tree canopy coverage goals for Portland, but these are not scientifically generated. Our numbers are basically a mix of guesswork and extrapolation from what other cities have done." John Floyd, associate planner for the City of Tigard, says much the same. "We are always looking for concrete ways to inform decision makers about the value of trees," he said. "The more information we have, the easier it is to talk to people about it."

Now, however, there is a little more science to draw on. A new study, examining how trees af-



Trees influence house prices within 100 feet. This illustration includes seven neighboring houses.

fect house prices in Portland, has taken a big step toward providing more definitive information on the benefits of urban trees.

There's a reason why not many studies like this have been done: collecting the on-site data takes a long time, and it's tedious. But lead scientist Geoffrey Donovan, a Portland-based forest economist with the U.S. Forest Service, knew he could find a college student willing to spend a summer looking at trees and recording data. His student, Elisabeth Babcock, visited over 3,000 residences in Portland that had recently sold, and documented attributes of street trees at each one. For the most part, Babcock enjoyed visiting each address and exploring parts of the city she had never seen. "I tried not to think about the total number of addresses that had to be visited and just focused on getting 50-80 done per day," she admitted. As she roamed the neighborhoods, her presence occasionally caused a reaction. "Since I carried a clipboard, a lot of people thought I was a [political] canvasser and would preemptively cross the street as I approached."

The attributes Babcock measured included things like species, height, whether the trees were flowering or fruiting, tree condition, and diameter. After the on-site data were all collected, Donovan sat down to crunch the numbers. "I was really curious to see if these trees provided some kind of quantifiable benefits to the property owners who look after them," he said. He used additional data from aerial photographs to calculate tree crown area, as well as data on each house, including size, age, number of rooms, and its selling price. Controlling for confounding factors such as neighborhood and distance to downtown, he then analyzed which of the tree variables influenced the house's selling price. Of all the attributes, only two were significant: number of trees fronting a property, and crown area within 100 feet of the house. When combined, these two variables add an average of $8,870 to the price of a house—the equivalent of adding 129 finished square feet to its floor plan. Extrapolating this benefit to the entire city, the total value of Portland's street trees is $1.35 billion. When converted to an annual value (much the same way a lump sum mortgage is converted to periodic payments) this translates to a $54 million benefit annually. For comparison, the City of Portland estimates that the annual maintenance of Portland's street trees costs $4.6 million. In other words, the benefits of street trees in Portland outweigh their costs roughly 12 to 1.

Sounds like great news for the City of Portland. In fact, the $1.35 billion resource value figure is at least double the city's previous best estimate. Still, it remains to be seen if this information will have any impact on the number of trees people plant. People decide to plant trees for many reasons, just as people decide to buy a particular house for many reasons. Gail Davis, a Portland realtor, has found that people simply react emotionally to trees. "I once sold a house because it had a lilac in bloom," she said. "But normally, I don't think people do any kind of calculation on how much a tree would be worth. Trees just add to the overall charm and character of a neighborhood." Babcock, as she gathered data, found that homeowners care a great deal about their trees. "Once in awhile someone would come out and ask what I was up to, and nearly everyone was very protective of their street trees. They wanted to make sure I wasn't measuring it to have it cut down."

Trees affect whole neighborhoods, not just the individual house they front. Recognizing this, Donovan investigated the effect a tree has on adjacent houses, and found that trees add more than just charm. His analysis showed that the house price benefits of street trees spill over. "This is really the most significant finding from our study," said Donovan. "If you have a tree outside your house, less than half the benefit goes to you. The remaining amount spreads to your neighbors within 100 feet." For example, if you have a tree with about 300 square feet of canopy cover, it adds, on average, about an additional $12,000 to the value of neighboring houses—something you might want to remind your neighbors of next time you want to borrow a cup of sugar.

What do these spillover benefits mean in terms of getting the most out of a city's urban forest? Right now, it means too few trees. In Portland, for example, homeowners currently bear the majority of the maintenance costs of street trees. In fact, of the annual $4.6 million cost to maintain trees, the city pays only $1.3 million (largely for planting, emergency response, and inspections). Homeowners pay the rest. If their street tree disrupts a sewer line or cracks a sidewalk, it's their responsibility to make the repairs. Because they bear all the costs, yet do not receive all the benefits, individual homeowners are unlikely to plant enough trees on their own to maximize Portland's urban tree potential. "It's true, Portland's not there yet," admits Karps. "The Urban Forestry Commission has set a citywide canopy coverage goal of 33%, meaning one-third of the city would be shaded by trees. Right now we're at 26%."

In light of this gap, Donovan sees an opportunity for the city to encourage more trees. "Our study suggests that an increase in urban forestry investment, such as subsidies for planting more trees, or perhaps a property tax break based on trees, would likely yield substantial additional benefits," he said. "In other words, to prevent underinvestment in street trees, the city may find it necessary to bear a larger proportion of maintenance costs." When asked about that possibility, Karps concurred. "It really would be better for trees and for citizens, considering economies of scale, if

A mature tree canopy in Ladds Addition, a Portland neighborhood. Photograph courtesy of Rachel White.

the city could pay for street tree maintenance. But it's written in the city code that we aren't funded to do that work. And, relative to the city's budget, it's really expensive to take care of trees. Still, we are entertaining the idea. It's a '10-year' item in our action plan."

Portland is not alone in trying to promote understanding of the benefits of trees. "There's a region-wide movement toward valuing the urban forest," said associate planner John Floyd. "In Tigard, we are developing an urban forest master plan in an effort to provide better protection for existing trees." Similarly, the Clackamas County Board of County Commissioners is working on a tree conservation ordinance. "The main goal of the ordinance will be to preserve trees at the time of a development request," said Clackamas County planner Jennifer Hughes. Currently, when someone applies for a permit to develop a piece of land, there is no regulation protecting the trees from being cut down. The issue was brought before the county by a citizen group, worried about losing the beautiful old oaks, Douglas-firs, and redwoods in their neighborhoods.

The older trees get, the more care they need. Portland boasts a wide range of ages and sizes of trees, but currently the majority of public trees measure smaller than 6 inches in diameter at breast height. According to Portland's Urban Forest Canopy Report (2007), "These many small, young trees require limited maintenance and care. As they age and require more frequent care and maintenance, however, these trees will grow larger and provide greater net environmental benefits. In this way, young trees represent potential future environmental and aesthetic benefits." And, as Donovan's study revealed, potential future financial benefits as well. It's just one more reason to get people out the door on a rainy winter morning to dig in the mud. M

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