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generate a “health-optimizing scenario.” Rather than starting with a particular plan and testing its impacts, this approach would start by identifying the desired quality-of-life goals, and conducting iterative testing to find a scenario that is able to come closest to achieving those goals.

Next steps

The method presented in the Palomar case study in Chula Vista is now being applied statewide. This work is part of the Strategic Growth Council’s Urban Footprint tool development effort initiated to predict carbon dioxide impacts of regionally developed sustainable community strategies pursuant to California’s SB 375, passed in 2008. UD4H is working with Calthorpe Associates to develop the health module within Urban Footprint and is applying the results first in the Sacramento and Los Angeles regions.

This statewide effort offers considerable promise because it increases the variation in urban settings and walkability across age and income subgroups. The Sacramento Council of Governments and the Office of Policy Research in the California governor’s office have provided considerable leadership and oversight in this effort. Urban Footprint was developed by Calthorpe Associates as a scenario-planning software platform to address many previous limitations, including an improved user interface and cloud computing.

It should come as little surprise that not all major transportation agencies embrace research showing that more roads could undermine public health. No doubt, evidence and the ability to apply it directly to real-world decisions in a visually compelling manner are essential to fostering the momentum needed for improved public health. ■

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The emerald ash borer, an invasive Asian beetle that feeds on and kills ash trees, was first discovered in the U.S. in 2002 near Detroit, Michigan. To date, it has spread to 24 U.S. states and two Canadian provinces and caused tens of millions of dollars in damage.

CAN TREES SAVE YOUR LIFE?

Tree die-off points to a link between trees and human health.

By Rachel White

A tiny, metallic-green forest pest laid the groundwork. Known as the emerald ash borer, this invasive insect has recently killed huge numbers of trees across 15 Midwestern states, making possible a unique study into man’s affinity to nature.

Geoffrey Donovan, a researcher with the U.S. Forest Service, started with the hypothesis that trees improve people’s health. “If that’s true, then killing 100 million trees in 10 years should have a measurable effect,” he says. “Because it spreads quickly, the emerald ash borer provides a rare opportunity to quantify the human health impacts of widespread tree mortality.”

The insect attacks all 22 species of North American ash and kills nearly every tree it infests. Fort Wayne, Indiana, has seen this devastation. Emerald ash borers showed up there in 2006, says Chad Tinkel, manager of forestry operations for Fort Wayne Parks and Recreation. “Before the emerald ash borer hit, we had 14,000 ash trees,” he says. “By 2008 we had thousands of standing dead trees, and neighborhoods were just bare.”

Donovan’s results, published in 2013 in the *American Journal of Preventive Medicine*, suggest that these tree deaths

had serious public health consequences. Infested counties were associated with increased human mortality—more than 21,000 human deaths beyond the expected number (after taking account of other factors like education, income, and race). Some 6,113 deaths were related to lower respiratory illnesses, another 15,080 to cardiovascular problems. These types of death are the first and third most common in the U.S.

Does the distress of deforestation push fragile people to the breaking point? Or is a decline in air quality a decisive factor? Either factor could explain the increase in human mortality. But what matters is simply knowing there’s a link. Trees are an aspect of the natural environment we can change. And as we are learning, trees are part of a city’s public health infrastructure—an effective argument for allocating resources to the protection and expansion of urban forests.

“This study is about the positive things that trees can do for people,” says Donovan. “You don’t always understand what trees give us until you take them away.”

Rachel White is a science writer with the USDA Forest Service.

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