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Trees in the Urban Landscape | Up By Roots | Reversing the Trend of Urban Deforestation in the UK | Sustainable Urban Forest Management Planning | Economics of City Trees



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Economics of CITY TREES

The urban forest provides many economic values. City trees are generally not grown and harvested for products that can be bought and sold on markets. But they do provide many intangible services and benefits that economists estimate as non-market values. Here are evidence-based examples.

Residential Property Values

Most valuation studies have focused on residential property value. Hedonic pricing is used to capture the proportion of property prices that are derived from the non-use value of trees and other landscape elements. Although there have been a few exceptions, properties with trees

are generally preferred to comparable properties without trees, with the trend across studies being a price increase of about 7 percent. Street trees appear to add value even to adjacent properties, up to 100 feet away in one study. Table 1 shows results across several studies.

In more recent studies the *proximate principle* describes how homes adjacent to naturalistic parks and open spaces are

valued from 8 to 20 percent higher than comparable properties.ⁱ Also, having adjacent street trees positively affects home values and time on market for salesⁱⁱ, while yard trees are associated with both higher property values and rental rates.^{iii, iv, v}

Retail Shopping

Retail merchants are often concerned that trees block the visibility of their shops and signs. They may focus on the near-term direct costs (such as pruning and debris clean up), and overlook the more indirect and long-term benefits of a quality urban forest. Contingent valuation studies indicate the potential returns from investing in trees in retail and commercial districts. A series of studies measured how shoppers respond to the urban forest across different business settings. Shoppers and visitors compared places with high quality urban forest canopy to similar places that were kept up well but did not contain trees. Survey participants are then asked what they would be willing to pay for a set of goods and

Table 1: Contribution of Trees to Property Valuations

PRICE INCREASE	CONDITION
2 percent	Mature yard trees (greater than 9-inch dbh)
3 percent	Larger street trees
3 to 5 percent	Trees in front yard landscaping
6 to 9 percent	Good tree cover in a neighbourhood
10 to 15 percent	Mature trees in high-income neighbourhoods



Table 2: Trees and Higher Stated Prices for Retail Goods and Services

PRICE INCREASE	CONDITION
9 percent	Goods and services in forested business districts in small cities
11 to 12 percent	Good and services in forested business districts in large cities
9 percent	Goods and services in landscaped strip malls
7 to 11 percent	Goods and services in retail districts adjacent to vegetated freeway rights-of-way
23 percent	Homes within 1/4 mile of “excellent commercial corridors

Tree-lined retail area - San Luis, Obispo, CA.

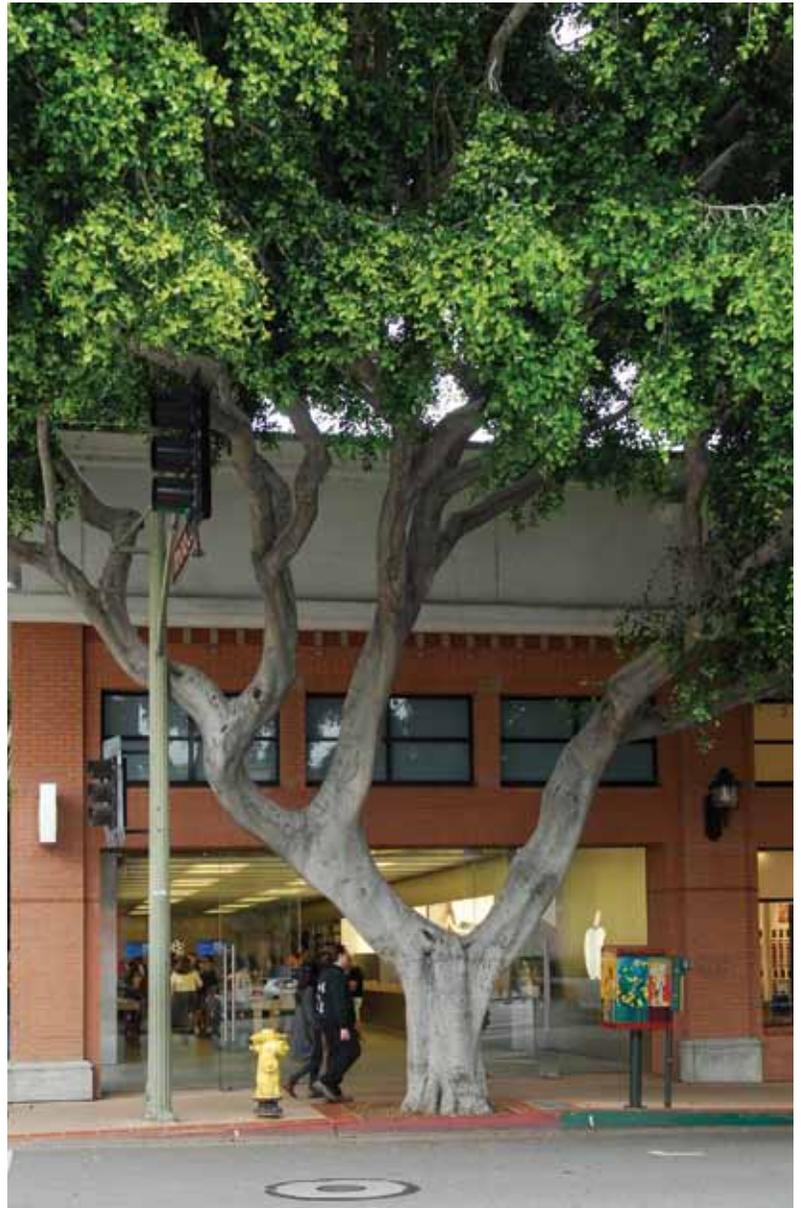
services in each, and their responses were statistically compared. Generally, shoppers are willing to spend more when shopping in the midst of trees in a variety of retail settings (Table 2).

Urban Greening and Public Health

Trees are the backbone of urban ecosystems. Trees define the quality and character of natural areas such as conservation open spaces, greenbelts, and riparian corridors. Constructed nature such as parks, streetscapes, community gardens, pocket parks, and recreation paths are all more preferred by people when they include trees.

In recent decades biophysical research has expanded our understanding of the environmental services of urban forests and other natural systems. Social scientists have also expanded our knowledge about nature’s functions for people in cities. We now know that metro nature directly contributes to quality human habitat,^{vi} and is profoundly important for health of mind and body. The website Green Cities: Good Health (<http://depts.washington.edu/hhwb>) represents a collection of more than 2,200 scholarly works that have been sorted into key topics about human health and well-being, each represented by a summary essay with citations.

For example, the public costs of treating diseases related to obesity are staggering. Urban greening helps reduce health risks. Living close to parks and other recreation facilities is related to higher physical activity levels for both adults and youth.^{vii} Older people also benefit, as a study found that seniors that had nearby parks, tree-lined streets, and walkable spaces showed higher longevity over a 5-year study period.^{viii} Stress is a major contributor to ill-health in modern times. Visual exposure to nature (that is trees, grass, and flowers) can effectively reduce stress, particularly if initial ▶



stress levels are high.^{ix} Mental restoration is also gained from spending time in an urban green space, and increased length of stay (up to 1.5 hours) increases the restorative effect.^x Studies in Japan of *Shinrin-yoku*, or forest walking and breathing, have found effects of improved immune system response, lowered stress indicators, reduced depression, and lower glucose levels in diabetics.^{xi}

In addition to physical well-being, nearby nature contributes to better mental health and improves one's capacity to be productive. Office workers with a view of nature are better able to attend to tasks, report fewer illnesses, and have higher job satisfaction.^{xii} Outdoor activities can help alleviate symptoms of Alzheimer's, dementia, stress, and depression and improve cognitive function in those recently diagnosed with breast cancer.^{xiii, xiv, xv} Symptoms of ADD in children can be reduced through activity in green settings, thus Active "green time" in parks reduces ADD symptoms in children, so may be an effective supplement to standard pharmaceutical treatments.^{xvi}

This is but a small sample of the scientific evidence about health and well-being benefits provided by city trees and greening, many having economic consequences.¹ For example, increased worker productivity and school performance have implications for local industry and work force development. Nature-based healing and therapy may be reasonably priced supplements in human services programs. Perhaps the most promising valuation opportunity is the relationship of outdoor space and active living, given the high costs of treating chronic diseases associated with obesity (such as diabetes, heart disease, and stroke). Deferred costs are possible, as medical expenses are lower for people who do routine physical activity and exercise. The potential economic consequences of routine, nature based experiences and activity are enormous, when aggregated across regions, entire cities or the nation.

City trees and urban forests add aesthetic pleasure to our lives - and so much more. Increased property values and more vibrant shopping districts are the indirect returns of investing in high quality urban forests. More recently, scientific

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evidence points to the high value to local economies of human health and well-being as people experience nearby nature in their communities. Perhaps money does indeed grow on trees! **SL**

Kathleen Wolf, Ph.D. is a research social scientist with joint appointments at the University of Washington (Seattle) and USDA Forest Service, Pacific Northwest Research Station. Additional information and source articles about the economics of trees can be found at two web sites: Green Cities | Good Health (<http://depts.washington.edu/hhwb/>), and the Human Dimensions of Urban Forestry and Urban Greening (www.naturewithin.info/).

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Footnotes:

¹ A study at the University of Washington, School of Environmental and Forest Sciences is assessing the economic values of human health and well being benefits that are provided by urban forestry and urban greening.

Metro nature directly contributes to quality human habitat and is profoundly important for health of mind and body.