



# MainStreetNews

THE MONTHLY JOURNAL of THE NATIONAL TRUST MAIN STREET CENTER



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### Shop Talk

In this month's Shop Talk column, Margie Johnson offers a simple 12-step series of **"Winning Strategies for Uncertain Times"** to help small businesses stay competitive in during this economic downturn.

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### Network Notes

Find out how a Howell, Mich., business owner raised more than \$30,000 to support breast cancer research, with the help of the local Main Street program. Congratulate the 10 Main Street communities that made *Money* magazine's **"100 Best Places to Live"** list. Read about a project that is re-mapping America, one Main Street at a time, and see how a small South Carolina town brought in eight new businesses with its "I am Conway" image campaign.

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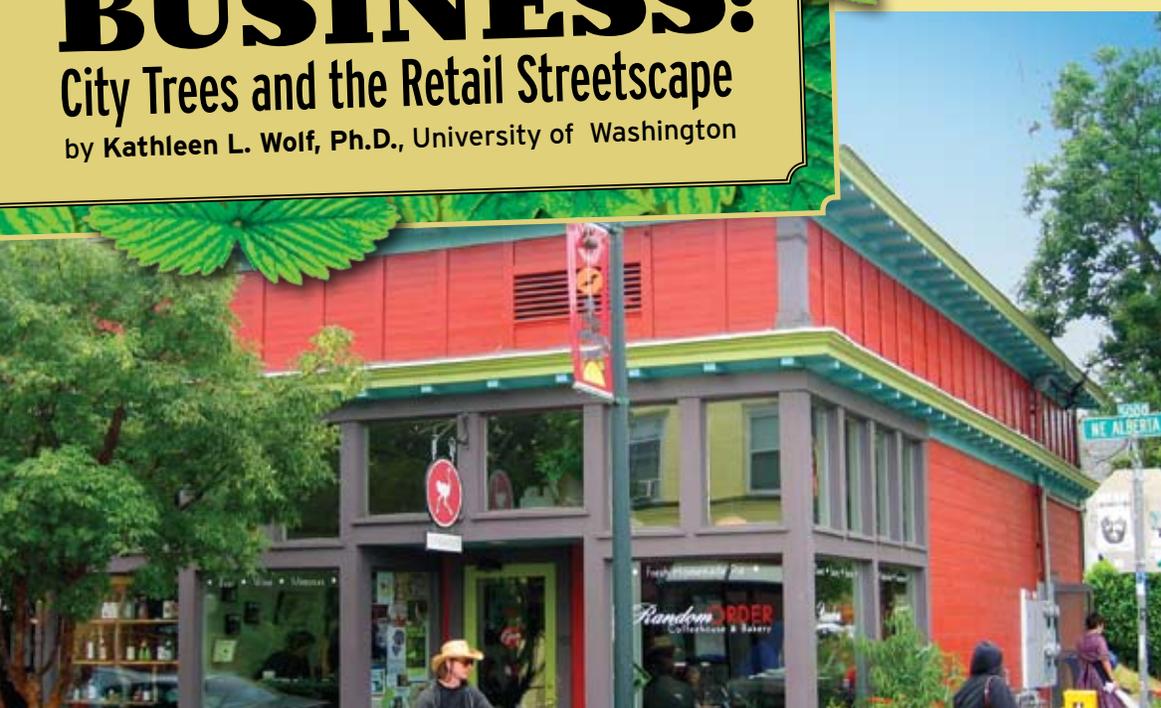
### Main Street Allied Services Directory

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## TREES MEAN BUSINESS:

### City Trees and the Retail Streetscape

by Kathleen L. Wolf, Ph.D., University of Washington



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# TREES MEAN BUSINESS:

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A walkable retail district is more than a place where people run their errands. Central business districts are the heart and soul of communities. They are places where people can enjoy an appealing atmosphere and have a memorable experience, which gives Main Street a definite edge over its online or strip mall competitors. The design of a commercial district that uses landscaping and trees can enhance a customer's experience and further strengthen its competitive edge. 🌿 Gardeners and philosophers have celebrated the pleasures of trees and nature for centuries, noting the role of plants in aesthetics, cultural symbolism, and therapy. Psychologists and sociologists confirm that people gain many benefits from experiencing nature. Studies during the last 40 years on humans and landscapes generally find that people of all ages and cultural backgrounds prefer natural views to built settings and that urban spaces with trees receive higher ratings for visual quality.<sup>i,ii</sup>

Meanwhile, retail research shows that consumers' perceptions of stores are affected by environmental cues such as light, sound, color, and product placement. Their general perceptions, in turn, influence how much time they will spend in a store and how much money they will spend, among other behaviors.

This type of research, called atmospherics research, is largely limited to store interiors.<sup>iii</sup> However, outdoor conditions deserve greater attention since building exteriors influence consumers' opinions about the whole community, as well as its individual businesses. Features such as storefronts and sidewalks can create favorable or negative impressions that subconsciously affect what shoppers do.

Trees are an important element in a revitalization strategy. Shoppers do not purchase goods and services just to meet needs. They seek positive

experiences while shopping; and the appearance of the streetscape is an important part of creating a welcoming, interesting shopping environment.

While street trees are only one element of shopping experience management, recent research suggests that green streetscapes are an important contributor to positive experiences. But despite their many benefits, the presence of trees raises valid concerns from merchants and other stakeholders. Will the branches block business signs? Will the root system ruin sidewalks?

This article provides a review of several research projects conducted by the University of Washington on consumer response to the urban forest in business districts, addresses some technical aspects of tree planting and care, and describes design ideas that can make trees a positive asset on any Main Street.<sup>1</sup>

## THE RESEARCH PROGRAM

Urban forestry addresses the planning and management of all city trees, including trees in parks, in the commercial district, and in residential neighborhoods.<sup>iv</sup> The science of urban forestry covers a range of studies of human experience, perception, and behavior in nature settings. The University of Washington's research studies explored the role of trees in consumer environments, with a focus on Main Streets and central business districts.

Largely funded by the U.S. Forest Service, we designed shopper surveys to assess if trees influenced visual quality, place perceptions, shopper patronage, and pricing perceptions. Individual survey projects covered central business districts for large cities (those with popula-

tions greater than 250,000, including Los Angeles; Washington, D.C.; Chicago; Portland, Ore.; Pittsburgh; Austin, Texas; and Seattle), a downtown shopping district for a mid-sized city (Athens, Georgia, which has a population of approximately 100,000 people), and Main Street shopping districts in 14 smaller cities and towns (having populations between 10,000 and 20,000). Two additional surveys measured the effect of trees on regional malls (viewed from freeways) and small open-air or strip shopping centers (located on arterials).

All of the surveys were structured similarly. Each asked participants to rate their preferences for images that depicted streetscapes with varying forest character. Each survey also presented participants with an image collage, called a scenario, of a shopping district and asked them to indicate their probable shopping behavior based upon what the district looked like.<sup>v</sup> Scenarios basically differed as to whether the streetscapes were "with trees" or had "no trees."

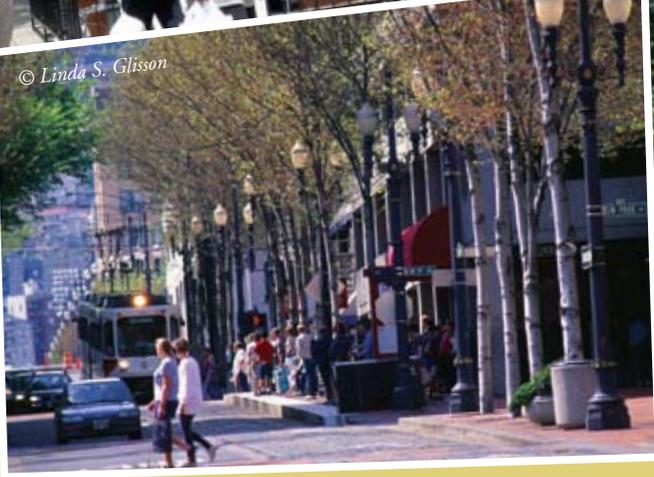
The scenarios with trees were of districts with a well-managed urban forest rather than scattered or haphazardly placed trees. In this study, we asked people to gauge the *visual quality* of a shopping environment, which indicates which settings they found more pleasing and desirable. Participants were asked to share their *place perceptions*, defined as the mental representations or assumptions

<sup>1</sup> To see the full range of studies, visit <http://www.naturewithin.info/consumer.html>

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The University of Washington studied the role of trees in several large cities, including Washington, D.C., (above); Seattle (far right); and Portland, Ore. (right) as well as Main Street districts in 14 small cities and towns.

a person has for a place. The surveys also analyzed *shopper patronage*, which describes the frequency and duration of consumers' actions, such as length of a visit, and *pricing perceptions*, which measure consumers' willingness to pay for products and services.

**VISUAL QUALITY**  
People rated up to 30 scenes per survey in response to "how much do you like the image?" on a scale of 1 (low) to 5 (high). Across all studies, consumer ratings increased steadily with the presence of trees. Visual preference scores were lower

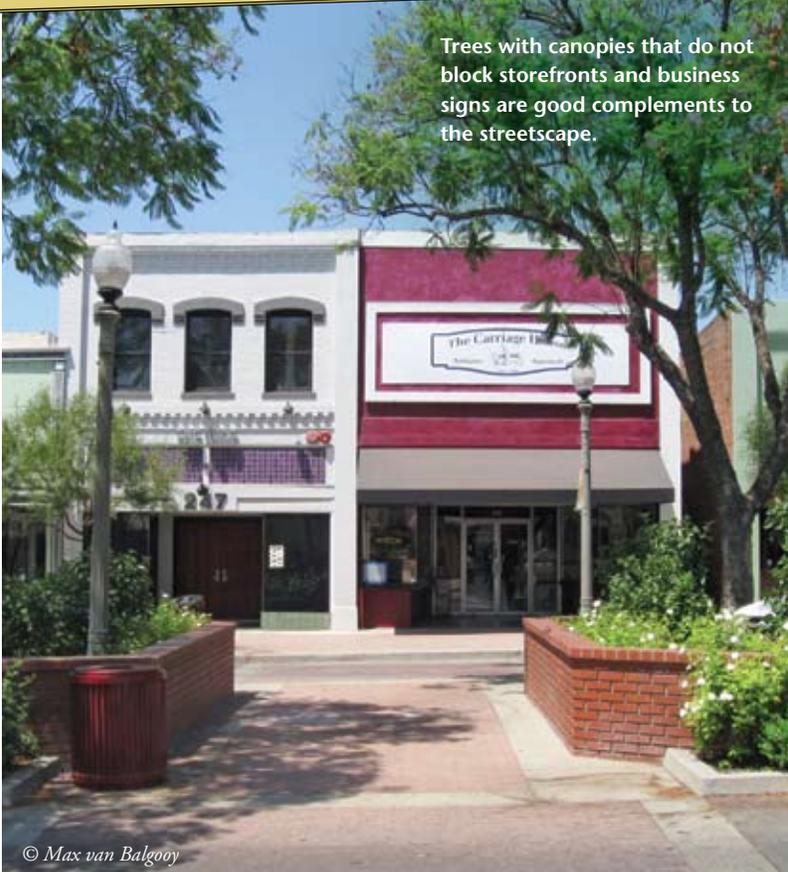
**“Favorable expectations of shopping experiences are initiated long before a consumer enters a store.”**

Surveys were randomly distributed to respondents by mail or during sidewalk intercepts,<sup>vi</sup> using accepted social science practices of sampling and respondent recruitment, followed by data analysis. Here are the results:

for places without trees and much higher for places with trees. Figure 1 (on page 4) shows sample category images. Images of business district settings with tidy sidewalks and quality buildings, but no trees, were at the low end of

*continued on page 4.*

Trees with canopies that do not block storefronts and business signs are good complements to the streetscape.



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# TREES MEAN BUSINESS:

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**FACT:** One tree can absorb as much carbon in a year as a car produces while driving 26,000 miles.

<http://www.savatree.com/tree-facts.html>

## FIGURE 1

### HIGH



Green Street  
mean 4.00 (sd 0.60)

### MEDIUM



Enclosed Sidewalk  
mean 3.32 (sd 0.63)

### LOW



No Trees mean  
1.65 (sd 0.72)

Research participants scored districts with no trees on the low end of the spectrum while rating districts with large trees and big canopies at the highest end.

*continued from page 3.*

the scores, while the images of districts with well-tended, large trees received the highest preference ratings, particularly when large trees formed a canopy over the sidewalk and street.

### PLACE PERCEPTIONS

In a second survey section, participants were asked to make inferences about various commercial environments with and without trees. Again, trees were associated with higher ratings of amenity and visual quality. When shown images of districts with and without trees, but with the same level of building care and street tidiness, participants gave more positive scores for maintenance to districts with trees over those without. Judgments of retail products and merchants were more positive in forested places, as were inferences about product value, product quality, and merchant responsiveness. It seems that favorable expectations of shopping experiences occur long before a consumer enters a store.

### PATRONAGE BEHAVIOR

Participants indicated their probable patronage behavior while considering the street and sidewalk scenarios. More favorable responses were found for places having trees, compared to “no-tree settings,” across cities of different sizes. Potential shoppers claim they are willing to travel more often, longer, and over greater distances, and once they arrive there, will spend more time in a retail district that has trees.

Why is patronage behavior important? The study’s findings could translate to an expanded trade area radius that adds thousands of people within urban population centers. Once they get to these districts, people report that they will stay longer, which could mean greater sales revenue.<sup>vii</sup>

### PRODUCT PRICING

Lastly, *contingent valuation*<sup>viii</sup> was used to determine the impact of streetscape trees on local economics. Respondents were presented with a list of goods and services and asked to state prices for each. Price response varied somewhat between different-sized cities, yet trees were consistently associated with higher price points. Consumers claimed they were willing to pay 9 percent more in small cities and 12 percent more in large cities for equivalent goods and services in business districts having trees. Visitors also claim they will pay more to park on streets with trees.

The surveys also included demographics questions. Survey participants in the large and small city studies were generally slightly older, somewhat more affluent, and less culturally diverse than the general U.S. populace. Respondents in Athens, the mid-size city, were younger and had lower household incomes, which is not surprising for a college town. While there were some minor differences in responses associated with respondent traits, the high degree of consistency across all studies was remarkable.

## MAKING TREES WORK IN YOUR DISTRICT

Districts with scattered or neglected trees may not evoke positive responses from consumers. Therefore, a comprehensive streetscape plan should include the addition of trees and a plan for their ongoing maintenance. Selecting the right trees and giving them proper care can help your community avoid potential problems and nuisances, such as sign obstruction, foliage debris, and sidewalk damage.

Your Main Street can use trees and other plants to enhance a sense of place and identity for the business district while boosting foot traffic and sales revenue. (See table at right.)

### TREE SELECTION

Trees vary dramatically in size, shape, and growth patterns, as well as in their soil, sun, and water needs. Different trees require different planting conditions, placement, and care. When selecting trees for your district, consider the local site conditions, as well as the trees’ characteristics so that what you plant fits your community’s vision. Tree professionals refer to this as choosing the “right tree, right place.”

Many cities have an arborist or urban forester on staff; they can often provide a list of local or recommended species for the area. If your community doesn’t have specialists on staff, try to obtain a recommended tree list from a nearby city or work with your local chamber

CONCERN	SOLUTION
Trees block views of signs and storefronts.	<b>Co-design signs with trees.</b> In Palo Alto, Calif., businesses and a non-profit worked with the city to relax the sign ordinance to allow for adjustments while trees grew. Prune the canopy to open up views as trees grow larger, but don't top the canopy.
Trees cost money; what do we get back?	<b>Small investments pay off big!</b> Initial planting and maintenance costs for small trees may be about \$500. As the tree grows, it generates greater economic benefits every year – air and water quality, property value, and human health.
Trees get into power lines and underground pipes.	<b>All trees are not the same.</b> Careful choices of tree species suited to the root and canopy space available can minimize damage to utilities.
Tree roots crack the sidewalk!	<b>Trees are living things and their roots need space to grow, as does the tree canopy.</b> Many new technologies are available to increase root space under sidewalks and give roots more space so they don't push up paving.
Trees are messy!	<b>Careful plant selection can reduce problems of falling flowers, fruit, and leaves.</b> In addition, a routine maintenance program takes care of debris before it becomes a problem.
Tree upkeep and maintenance is expensive.	<b>Choose the right tree for the right place to reduce problems.</b> Yearly tree care and maintenance will prevent major tree failures. As with other improvements, costs for a maintenance plan can be shared by all merchants in a district.

of commerce or other association to hire an arborist or landscape architect for advice on tree selection, planting, and maintenance. Trees that work well in someone's front yard may not thrive in a commercial setting.

Native species may be good choices because they are often well adjusted to local growing conditions. For example, in drier areas, some native species may need less watering because they tolerate the climate better. Native trees are more likely to be resistant to regional tree diseases as well. They can also provide people with a connection to familiar and interesting local vegetation.

Many species have characteristics that may or may not make them a good fit for street plantings. For example, some species of trees are resistant to air pollution, which may make them ideal for a parking lot. On the other hand, a tree that produces lots of fruits or large seeds should not be planted along the sidewalk.

**GROWING SPACES**

Typically, cities have recommended or mandatory planting space requirements for trees. Check with your city arborist or urban forester for local guidelines or regulations. Trees do best when they are at least 12 feet apart and put in planting pits or tree boxes that are no less than 4 feet square. A better option is to create a planting strip that is 4 feet wide by 9 feet long (part of this area can be covered with pervious paving materials); longer planting beds provide even more root space.

Trees planted in smaller pits may not remain healthy and can cause pedestrian problems, such as sidewalk buckling. If your streetscape doesn't have enough space to accommodate the dimensions for favorable growing conditions, consider choosing a species that is more compact and needs less growing space. For all plantings, be aware of overhead utility wires and buildings. If trees

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**If your city doesn't have an arborist or urban forester on staff, hire a consultant or borrow a neighboring city's recommended tree list to make sure you select tree species appropriate for your area.**

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are planted in a parking lot, extended tree lawns are preferable to tree boxes, which are more appropriate for sidewalk plantings.

## SOILS

Adequate soil volume for tree roots is crucial – the more, the better! Urban soils are notorious for being very compacted, which reduces the amount of oxygen and water that can get to the tree roots. Water- or oxygen-starved trees become stressed and are more susceptible to disease.

What can be done? First, create the largest planting area possible for the tree. New technologies, such as structural soils, make it possible to extend a tree's root zone under sidewalk and street pavements while preventing root damage to concrete.

Second, check the drainage of the soil where the tree is to be planted. If water drains too slowly, you may wish to plant trees that tolerate more water around their roots or try mixing mulch into the soil to reduce compaction.

## SIDEWALKS AND INFRASTRUCTURE

Sidewalks are the front yard of a business. Curb appeal starts at the sidewalk, which serves many functions, including pedestrian movement, ADA accessibility, and outdoor dining. New technologies are making it easier to integrate such functions with the needs of trees, particularly below-ground root space.

Tree roots and branches have been known to interfere with utilities and pavement. Many of these problems can be avoided by designing planting spaces to accommodate

expected tree size. Plants are genetically inclined to attain a certain size in both canopy and root areas. Conflicts arise when such growth zones are too confined for the size of the mature plant.

New technologies permit the installation of pavement and pipes near trees, yet provide for air, water, and nutrients. Pervious pavers can support foot traffic while allowing air and water to seep into soils below. Structural soils are soil and gravel mixes that create a support base for a concrete slab while also providing micro-spaces for root growth.

Rubber sidewalks involve placing pre-formed rubber slabs over soils and root spaces. With any choice of material, it is important that adequate soil surface be left around the base of the tree. (To learn more about structural soils, read "Lafayette City Streetscape Utilizes Innovative Green Practices," by Eileen Booth and Belinda Kiger, *Main Street News*, April 2007, issue 238.)

## TREE PROTECTION

If a tree is grown and handled properly at the plant nursery, support staking after planting is generally not necessary. However protective staking may be needed on sites where vandalism or windy conditions are concerns.

Periodic mulching (about once a year) is the best way to maintain healthy, non-compacted soil and provide nutrients to roots. "Sticky" mulches are being developed so that small bits of organic mulches stay put around the tree base. Accumulated mulch should be no more than 4 inches deep; too much mulch can cause root damage.

The root zone should be protected in places of high



Permeable pavers help draw air and water into the soil, which contributes to healthier root systems.

pedestrian use. Consider using pavers and tree grates. They help protect the soil next to the tree from compaction and permit some water to seep into the soil. Brick pavers and other special details can also be interesting streetscape elements and add to the unique character of the district. If a device is used to protect the tree pit opening, plan to enlarge the opening as the tree ages and the trunk base gets wider.

## INTEGRATING TREES INTO THE COMMERCIAL DISTRICT

Trees are living resources that change in character and form over many decades. While this

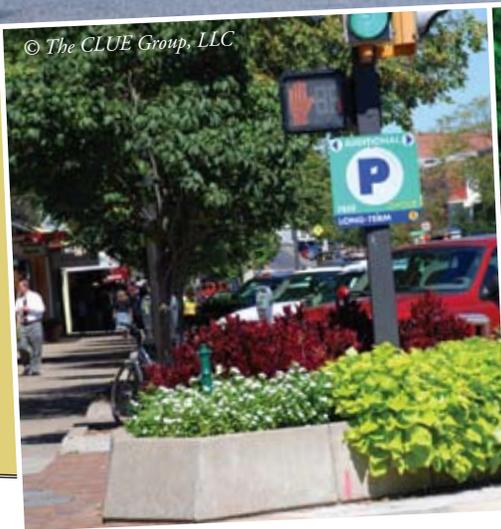
dynamic design element offers opportunities, it also can create tensions in the built environment. Here are guidelines for integrating trees into the retail streetscape.

## PLACE BRANDING

Each species has a distinct mature form, size, and other attributes. Plant selections can "brand" a place through subtle, yet observable, distinctions of texture, seasonal color, and plant massing. Within a shopping district, diverse tree groupings and arrangement help a person distinguish sub-zones, thereby providing cues for orientation and wayfinding. Working within a selected plant palette, the landscape designer can promote variety within unity, creating a place with an overall coherence and attractive features.



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A district-wide streetscaping plan is necessary to create a cohesive appearance as well as to choose planting patterns that are visually appealing and will help the trees grow with the commercial district over time.

Conventional planting patterns are one tree per every 30 linear feet (or more) of sidewalk. Variations on this basic pattern can make a shopping district more interesting. For instance, double rows of trees can be planted if sidewalks are wide enough. Mixed species provide interesting visual patterns. Additional flowers and shrubs add color and focal points.

### ORDER AND TIDINESS

Participants in the aforementioned study preferred scenes where vegetation is presented in patterns, and where there is order within the streetscape. Careful, routine maintenance is also important as tidiness improves preference ratings across all landscapes. Again, there is more to this than meets the eye; during interviews, shoppers claimed that the level of

care for plants in the sidewalk zone provided cues about the level of care and customer service they might expect from nearby merchants.

### SIGNS AND TREES

Merchants often express concerns about trees and the visibility of their signs, awnings, and storefronts. Extra attention to design is necessary to prevent tree-sign conflicts. Here are a few general principles.

🌿 First is tree choice. Trees with a more open and airy canopy, rather than a thick, dense canopy will permit better views. Tree species with a mature height that is ultimately higher than sign heights are good choices.

🌿 Trees take time to grow. Ongoing maintenance should include pruning to guide the shape of the tree's canopy and

remove any limbs that might be hazards. Once the tree grows, the canopy can be "limbed up" to raise branches and foliage above signs and storefronts. The canopy can also be opened up with selective pruning to allow

## "Trees are living resources that change in character and form over many decades."

sunlight to filter down on to the sidewalk, making the street more pleasant for pedestrians.

🌿 Topping is not the answer because it causes a flush of new branch and leaf growth that creates a more dense visual obstruction. Repeated shearing of treetops often causes poor tree health in the long run.

🌿 Consider signage design. Color and material choices for

signs should contrast with foliage, drawing the eye to visual accents. Monumental signage can be used to consolidate several scattered signs into a single streetside structure that is readily seen and understood.

Perhaps "iconic" signs, using quickly interpreted symbols for goods and services, could be installed, reducing the need for many large, highly individualized signs that take more time for passing motorists to comprehend. Indeed, traffic-calming approaches may be another solution, as drivers moving through a business district at high speeds may not notice signs no matter how visible.

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Monumental signage can be used to consolidate several scattered signs into a single streetside structure that is easily seen and read.

### CREATE SOCIAL SPACES

Many people consider shopping a social and recreational experience, shared with family or friends. The design of outdoor seating areas should be given careful consideration. Benches randomly placed along the sidewalk may not be comfortable or visually appealing. You can wrap benches and custom seating around a tree pit or planter to give pedestrians a sense of shelter while they watch activity on the street. Trees and planters can also be used to perceptually break up a large paved area into a series of "rooms," making the space feel friendlier and more human in scale. These small spaces offer places of respite for extended district stays, or can be used for outdoor dining.

The design of outdoor seating should give pedestrians a sense of shelter while they rest and watch the activity along the street.

### TREES MAKE DOLLARS AND SENSE

City trees provide many environmental benefits, the usual justification for urban forestry investment, and are an important concern as the public gains greater interest in urban sustainability. We now know that trees serve other functions, particularly for retail and commercial interests.

A multi-study research program has investigated how consumers respond to trees in various commercial settings in cities and towns. Some studies by the University of Washington focused on central business districts, while others tested perceptions along freeways and arterials. Results were remarkably consistent.

Trees positively affect judgments of visual quality, but more significantly, appear to influence other consumer responses and behaviors. Survey participants from all regions of the United States favor trees in retail settings; this preference is further reflected in positive



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perceptions, customer behavior, and product pricing. It is important to note that the highest ratings were granted to places having full, mature tree canopy, the result of careful maintenance across decades.

Trees and landscapes can be significant elements in place marketing. Economists have noted that shopping was once a utilitarian activity to fulfill needs and wants, but today shoppers are pursuing places that offer social, memorable experiences. Trees help create place and connect to deeply felt preferences and appreciations that people have for nature. The urban forest is an important part of the vibrant, satisfying places that shoppers enjoy.

*Dr. Kathleen Wolf is a research social scientist at the University of Washington, Seattle. Her work focuses on the human dimensions of urban forests and ecosystems, using theory and methods of environmental psychology. Additional information about urban greening research is at: [www.naturewithin.info](http://www.naturewithin.info). You can reach Dr. Wolf at [kwolf@u.washington.edu](mailto:kwolf@u.washington.edu).*



Street trees have many benefits that include cleaner air, a distinctive sense of place, and positive customer perceptions, all of which help make your Main Street a special destination.



## FOR MORE INFORMATION

To find out more about the benefits of trees in commercial districts, visit the following websites:

- "Shade Crusade: Why Trees are Good Medicine": This article looks at ways city trees provide many environmental, economic, and social benefits.  
[www.washington.edu/alumni/columns/march08/content/view/12/1/](http://www.washington.edu/alumni/columns/march08/content/view/12/1/)
- Tree planting and care in urban environments.  
[www.treesaregood.com/](http://www.treesaregood.com/)
- Structural soils. [www.hort.cornell.edu/uhi/outreach/csc/](http://www.hort.cornell.edu/uhi/outreach/csc/)
- "Trees are Good for Business": This publication by the International Society of Arboriculture provides more details about tree planning and planting in business districts:  
[www.cfr.washington.edu/research.envmind/CityBiz/BizTech.pdf](http://www.cfr.washington.edu/research.envmind/CityBiz/BizTech.pdf)
- You can find more detailed information about the research studies discussed in this article at [www.naturewithin.info/consumer.html](http://www.naturewithin.info/consumer.html).

## FOOTNOTES

- <sup>i</sup>Ulrich, Roger S. "Human Responses to Vegetation and Landscapes," *Landscape and Urban Planning*. Vol. 13, 1986, pp. 29-44.
- <sup>ii</sup>Smardon, Richard C. "Perception and Aesthetics of the Urban Environment: Review of the Role of Vegetation," *Landscape and Urban Planning*. Vol. 15, 1988, pp. 85-106.
- <sup>iii</sup>Turley, L.W., and Ronald E. Milliman. "Atmospheric Effects on Shopping Behavior: A Review of the Experimental Evidence," *Journal of Business Research*. Vol. 49, 2000, pp. 193-211.
- <sup>iv</sup>McPherson, E. Gregory. "Urban Forestry in North America," *Renewable Resources Journal*. Vol. 24 (No. 3), 2006, pp. 8-12.
- <sup>v</sup>Respondents were asked to respond to perceptual verbal items using rating scales, and to indicate likely patronage behavior within categorical indicators of time and distance. Both sets of metrics were derived from prior urban forestry perception and retail marketing studies.
- <sup>vi</sup>In each study, a sample frame of potential shoppers was identified within geographic range of study sites, and included cities of the northern and central U.S. Surveys were distributed by random sampling using commercial mailing lists or sidewalk intercepts. Survey mailings ranged in number from several hundred to several thousand, depending on the scope of each study. Response rates ranged from 10 to 80 percent across studies.
- <sup>vii</sup>Underhill, Paco. *Why We Buy: The Science of Shopping*. Simon and Schuster, New York, NY, 1999.
- <sup>viii</sup>Economists utilize several strategies, including contingent valuation methods (CVM), to value non-market goods and services provided by nature and ecosystems. CVM surveys have been used to assess public willingness-to-pay for use, conservation, or restoration of natural resources, with most applications in wildland or rural settings. Issues of CVM reliability and validity were carefully considered in the research design.