Trees For Our Good Health: a science review

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Baton Rouge Green
Arbor Day Luncheon
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Awesomeness!
overview

trees in retail settings
evidence of metro nature health benefits
example studies – city trees & health
conclusions
Trees & Retail Environments Research
Trees & Shopper Environments Research

• Research Questions •
  trees and visual quality?
  trees and consumer behavior?
  trees and product pricing?

• Methods:
  mail out/in surveys
  national or local sample
  residents/nearby city residents

partners: U of Washington, NGOs, business organizations
funded by USDA Forest Service
Image Categories (sorted by ratings)

Pocket Parks
mean 3.72
(highest)

Full Canopy
mean 3.63

Scale: 1=not at all, 5=like very much,
26 images
Enclosed Sidewalk 3.32

Intermittent Trees 2.78
No Trees
mean 1.65 (lowest)
(high - 3.72)
1. Place Perceptions
   • Place Character
   • Interaction with Merchants
   • Quality of Products

2. Patronage Behavior
   • travel time, travel distance
   • duration & frequency of visits
   • willingness to pay for parking

3. Product Pricing
   • higher willingness to pay for all types of goods
   • higher in districts with trees – 9-12%
strip malls
vegetation
varied using
image editing
shopper survey
freeway roadside
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social science of consumer behavior

‘atmospherics’
retail & place marketing

“Companies stage an experience when they engage customers in a memorable way.”
Nature and Consumer Environments

Shoppers are increasingly interested in the experience of shopping, as well as the goods and services they expect to purchase. A series of studies has investigated associations between the urban forest and people’s response to shopping settings.

These studies show that providing for trees in the streetscape is an important investment for a business community. The presence of a quality urban forest positively influences shoppers’ perceptions, and probably, their behavior. The information below includes research studies, reports, and guides to help create and sustain beautiful streetscapes.

Studies

Trees and Business - Growing Together: A National Research Program

Trees provide environmental benefits in cities, but also contribute to the well-being of urban residents. Studies have shown that shoppers respond positively to trees in shopping districts. These findings have been consistent across large, medium, and small cities. The most positive consumer response is associated with urban forests where overhanging tree canopies create a "shaded" environment, enhancing the experience of walking.

Details of research found in sections below.
next research phase ::
human health & wellness

city trees and metro nature
environmental & public health
testimonial vs science & evidence
WHO health definition

*a state of complete physical, mental, and social well-being and not merely the absence of disease or infirmity* (1946)

health costs in U.S. = ~ 18% GDP

science & evidence re: environment role of community trees & forests?
nearly 40 years of research
observing a life in nature . . . . .
Urban Forests and Newborns
the natural environment may affect pregnancy outcomes . . .

10% increase in tree-canopy cover within 50m of a house
= lower number of low weight births (1.42 per 1000 births)

*Donovan et al., Health & Place 2011; Hystad et al., Env Health Perspectives 2014*
Nature & Psych Development
children’s play & imagination

Richard Louv - Last Child in the Woods
School & Learning
Green High School Campuses

- cafeteria & classroom window views with greater quantities of trees and shrubs
- positively associated with:
  - standardized test scores,
  - graduation rates
  - %s of students planning to attend a four-year college
  - fewer occurrences of criminal behavior

Matsuoka. 2010. Landscape & Urban Planning
College students with more natural views from their dorm windows

- scored higher on tests of capacity to direct attention
- rated themselves as able to function more effectively

Journal of Environmental Psychology
Trees & Crime Reduction

- trees in the public right of way are associated with lower crime rates
  - smaller, view-obstructing trees are associated with increased crime
  - larger trees are associated with reduced crime

Donovan & Prestemon. 2012. Environment and Behavior
EAB Tree Loss & Public Health

1990 to 2007, 1,296 counties in 15 states
infected areas vs. no bugs
15,000 more deaths from cardiovascular disease
6,000 more deaths from lower respiratory disease
controlled for demographic, human mortality, and forest health data at the county level

Toledo, Ohio in 2006, pre EAB
2009, EAB in neighborhood

photos: Dan Herms, Ohio State University
Shinrin-yoku  Forest Bathing

- extended forest walks
  - reduced ‘fight or flight’ nervous system activity
  - lower cortisol – a stress indicator
  - increased immune function
  - lower pulse rate & blood pressure
Physical Activity & Depression Reduction

- Review of 13 high quality studies
  - exercise recommended for mild to moderate depression
  - people who are willing & motivated
  - associated meditation and mindfulness are important

hospital healing gardens: patients; family and friends; professional staff

health care $$ savings
Effects of nature window view on recovery from surgery (Roger Ulrich, 1984)

- Shorter stays
- Less pain
- Fewer minor complications
- Better emotional well-being
Legacy Good Samaritan Medical Center
Stenzel Healing Garden 1997
Rehabilitation Institute of Oregon
Hospital Staff – Respite and Support
Elders: mobility & social connections
health & well being
community trees & forests

how do I learn more?
Research Review and Summaries
www.greenhealth.washington.edu

Sponsors:
USDA Forest Service, U&CF Program
University of Washington
NGO partners

thanks!

to U of WA students:
Katrina Flora
Mary Ann Rozance
Sarah Krueger
Local Economics

Trees in cities are not grown and managed for products that can be bought and sold on markets, but they do provide many intangible services and functions! This article serves two purposes. First, it introduces valuation methods that are used to convert intangible benefits to dollar sums. Then, it shows how nonmarket valuations can support local decision-making.

Fast Facts

- The presence of larger trees in yards and as street trees can add from 3% to 15% to home values throughout neighborhoods.

- Averaging the market effect of street trees on all house values across Portland, Oregon yields a total value of $1.35 billion, potentially increasing annual property tax revenues $15.3 million.

- A study found 7% higher rental rates for commercial offices having high quality landscapes.

- Shoppers claim that they will spend 9% to 12% more for goods and services in central business districts having high quality tree canopy.

- Shoppers indicate that they will travel greater distance and a longer time to visit a district having high quality trees, and spend more time there once they arrive.
in the background of today’s busyness
measure the canopy of a city :: i-Tree
Environmental Benefits

Improved Air Quality

Image courtesy of the Center for Urban Forest Research
individual, household, community ::
trees for health & wellness
Summary

• trees in communities
• are essential – not ‘nice to have’
• benefits evidence portal: Green Cities: Good Health
• trees/metro nature emerging as infrastructure systems
• economic implications? multiple health benefits ROI
Human Dimensions of Urban Forestry and Urban Greening

featuring research on peoples' perceptions and behaviors regarding nature in cities

Nature and Consumer Environments
Research about how the urban forest influences business district visitors.

Trees and Transportation
Studies on the value of having quality landscapes in urban roadsides.

Civic Ecology
Studies of human behaviors and benefits when people are active in the environment.

Policy and Planning
Integrating urban greening science with community change.

Urban Forestry and Human Benefits
More resources, studies and links

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www.naturewithin.info
Metro Nature :: Human Health & Well Being

> 3,000 articles in database

% distribution of entire database