Economic and Social Values of the Urban Forest

What is the Research?

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University of Washington
November 2011
Research Reviews

sponsors:
University of Washington
USDA Forest Service, U&CF Program
ARRA funding
NGO partners
City Trees & Nature
Community Economics

- Residential real estate values - 3-7% with trees in yard
- Residential real estate values - 5-20%, proximity to natural open space
- Commercial property rental rates - 7%
- Increased rent values – ROW & yard trees (Donovan 2011)
- Improved consumer environments in business districts - 9-12% product spending
Trees & Retail Environments Research
Visibility = customer appeal?
“low maintenance”
Trees & Retail 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 & NUCFAC
Methods

surveys

mailings across selected districts

person-to-person contact

interviews
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)
Small Malls (strip malls)

1: Mixed Screen - mean 3.18, 0.91 sd

2: Ordered Trees, mean 3.09, 0.78 sd

3: Shrub Edge, mean 2.35, 0.96 sd

4: No Vegetation, mean 1.39, 0.83 sd

Preference ratings 1-5

mean
1.39

mean
2.35

mean
3.09

mean
3.18
Small Malls (strip malls)

Mall Having Trees

- Amenity: much higher
- Business Quality: higher
- Positive Merchants: higher
- Wayfinding: much lower

Product Pricing

- willingness-to-pay
- 8.8% more

Wolf, Arb & UF, 2009
funding by ISA Tree Fund
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%
Product Pricing

- **convenience**
- **shopping**
- **specialty**

Categories: goods, no vegetation, mature vegetation

- **Mean Reported WTP**
  - Convenience: Low
  - Shopping: Moderate
  - Specialty: High
Companies stage an experience when they engage customers in a memorable way.

Retail & Place Marketing

The Experience Economy

Work Is Theatre & Every Business a Stage

B. Joseph Pine II
James H. Gilmore
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. Information below includes research studies, booklet 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 business success. The most positive consumer response is associated with well-maintained urban forests. These findings have been consistent across large, small, and medium-sized cities. The most positive consumer response is associated with urban forests where overarching tree canopies help create a sense of community. Details of research found in sections below.

www.naturewithin.info
Bell Town District, Seattle, WA
Double row trees, Conifer plantings
sponsors:
University of Washington
USDA Forest Service, U&CF Program
ARRA funding
NGO partners
Finding that study . . . . . .
Research Reviews

Green Cities: Good Health

Metro nature - including trees, parks, gardens, and natural areas - enhance quality of life in cities and towns. The experience of nature improves human health and well-being in many ways. Nearly 40 years of scientific studies tell us how. Here’s the research...

RESEARCH THEMES
- Livable Cities
- Place Attachment & Meaning
- Community Building
- Community Economics
- Social Ties
- Crime & Fear
- Reduced Risk
- Wellness & Physiology
- Active Living
- Healing & Therapy
- Mental Health & Functioning

http://www.greenhealth.washington.edu

first phase: June 2010
summaries complete: Dec 2011
additional products
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.
Urban Green :: Public Health & Well Being

> 1,800 articles

% distribution
City Trees and Public Health

- risks and toxics in the environment – one side of the story
- another perspective . . . .
  Howard Frumkin
  Centers for Disease Control
  nature as health asset
- community and nature planning for health
Physical Inactivity & Obesity

majority of Americans not active enough
goal-30 minutes per day of moderate activity
to reduce risk factors for chronic diseases
(heart, stroke, cancer, diabetes)
significant costs to national health services

$168 billion medical costs
17% of all U.S. medical costs

CDC 2010
Obesity Trends* Among U.S. Adults

1985

(*BMI ≥30, or ~ 30 lbs overweight for 5’ 4” person)

Source: Behavioral Risk Factor Surveillance System, CDC.
Obesity Trends* Among U.S. Adults
2008

(*BMI ≥30, or ~ 30 lbs. overweight for 5’ 4” person)

doubling of U.S. obesity rate since 1980s

Source: Behavioral Risk Factor Surveillance System, CDC.
Obesity Trends* Among U.S. Adults
(*BMI ≥30, or about 30 lbs. overweight for 5’4” person)

2009

1990

1999

doubling of U.S. obesity rate since 1980s

No Data          <10%           10%–14%           15%–19%           20%–24%          25%–29%          ≥30%

Source: Behavioral Risk Factor Surveillance System, CDC.
Age-adjusted % of adults aged ≥20 years who are obese, 2007

A brisk walk in the park keeps Harry II in shape however dog owners like owner Coloradan resident Chris Spencer get up early to give her 2-year-old Dachshund his regular exercise. They typically run 3 miles a day in Larimer Park.
parks, open spaces & trails
### Table 1: Determinants of City Walkability

<table>
<thead>
<tr>
<th>Positive Elements</th>
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<tbody>
<tr>
<td><strong>Physical Environment</strong></td>
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<tr>
<td>higher population density (city core rather than suburbs)</td>
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<tr>
<td>higher housing density</td>
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<tr>
<td>mix of land uses (such as residential and retail)</td>
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<tr>
<td>street design with more connectivity (rather than cul-de-sacs)</td>
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<tr>
<td>availability of public transit</td>
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<tr>
<td>walking and biking infrastructure (such as sidewalks and bike lanes)</td>
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<td><strong>Psycho-Social Environment</strong></td>
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<tr>
<td>safety from crime</td>
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<tr>
<td>safety from traffic</td>
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<tr>
<td>absence of social disorder</td>
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<tr>
<td>aesthetics (including trees and landscape)</td>
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<tr>
<td>educational campaigns (such as Walk-to-School)</td>
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<tr>
<td>incentive programs (such as workplace reimbursement for transit use)</td>
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make room for pedestrians
Parks Prescription
San Francisco
Albuquerque
Nature and Students

- emerging science
- hot topic in the human dimensions of urban greening
Nature & Psych Development
children’s play & imagination
Nature Deficits
Richard Louv
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
City Trees and Volunteers

- extending budgets, but not free labor
  1:4 event managing
- getting the greening done in communities
  NGOs, ‘Friends’ of Groups, Forest Stewards/Master Gardeners
- and more!
Tree Plantings
Build Community

community cohesion, connecting for good
Community Resilience

Cornell Univ
Green in the Red Zone
more research – better knowledge
Urban Trees and Birth Outcomes

“We found that a 10% increase in tree-canopy cover within 50m of a house reduced the number of small for gestational age births by 1.42 per 1000 births. Results suggest that the natural environment may affect pregnancy outcomes and should be evaluated in future research.”

Donovan et al., Health & Place, 2011
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 roadways.

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 . . .

Projects Director
Kathleen L. Wolf, Ph.D.

www.naturewithin.info