Human Habitat for Health & Wellness
benefits of the urban forest & city trees

Kathleen Wolf, Ph.D.
Research Social Scientist
University of Washington (Seattle)
School of Environmental and Forest Sciences

Tree Survival School
Holden Arboretum, Cleveland
29 March 2017
the canopy of a city :: benefits & values
Eco (UFORE)  
Streets (STRATUM)  
Hydro  
Vue  

tools provided by USDA  
Forest Service
Reducing Stormwater Runoff

Image courtesy of the Center for Urban Forest Research
credit: American Planning Association
WHO Health Definition

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

- General socio-economic, cultural and environmental conditions
- Social and community networks
- Individual lifestyle factors
- Living and working conditions
- Unemployment
- Work environment
- Water sanitation
- Health care services
- Housing
- Agriculture and food production
- Education

Determinants of Health
Finding that study . . . . . .
Green Cities: Good Health
www.greenhealth.washington.edu

Sponsors:
USDA Forest Service,
(U&CF Program + Pacific NW Research)
University of Washington
NGO partners

Thanks!
to U of WA students:
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Sarah Krueger

Research Reviews & Summaries
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.
Outside Our Doors
The benefits of cities where people and nature thrive.

Design: milepost
Co-author
Co-author & Printing: The Nature Conservancy
Evidence-based ‘Story’

Health across the Human Life Cyle
‘Cradle to Grave’
Discovery: Human Health Benefits Across the Life Cycle
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
Hygiene Hypothesis

• presence of soil bacteria in body, *Mycobacterium vaccae* = increased seratonin
• boost immune function
• may alleviate depression (dirt or Prozac?)

Lowry et al. 2007. Neuroscience
Eat Dirt!
ADHD Treatments
Change in % Population
2001 - 2010

America’s State of Mind, Medco Health Solutions, Inc
ADHD Meds
% of Americans Ages 20-44
2001 - 2010

America’s State of Mind, Medco Health Solutions, Inc
ADHD and nature contact

- 96 children aged 7-12 diagnosed ADD or ADHD
- Parents gave postactivity attentional functioning ratings (PAAF) –
  - 4 measures:
    - Can’t stay focused on unappealing tasks (homework or chores)
    - Can’t complete tasks
    - Can’t listen and follow directions
    - Easily distracted

Faber Taylor. 2001. *Environment & Behavior*
ADHD and nature contact

- 17 children aged 7-12 with diagnosed ADHD
- 20-minute guided walks
  - Park
  - Neighborhood
  - Downtown
- Pre-walk puzzles
- Post-walk cognitive test

Faber Taylor & Kuo. 2009. *Journal of Attention Disorders*
CDC moderate activity recommendations

parks, active living, active transit
Shinrin yoku (forest bathing)

- extensive research
- restorative experiences
- workers retirees
- networked system, 52 bases in Japan
Sacramento Study :: LIDAR x CHIS data

7,900 adults, 250 m buffer, covariates

Ulmer et al. 2016. *Health & Place*. Multiple health benefits of urban tree canopy: The mounting evidence for a green prescription

more tree cover
= better overall health
= better social cohesion
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

Improving Depression

20 adults with major depression walk in a park setting and a built setting

- 50-minute walks one week apart
- before-after testing:
  - Mood: Positive and Negative Affect (PANAS)
  - Cognition: Backward Digit Span (BDS)

Berman et al. 2012. Journal of Affective Disorders

cognitive and affective improvements after walking in a nature setting
Effects of nature window view on recovery from surgery (Roger Ulrich, 1984)

- Shorter stays
- Less pain
- Fewer minor complications
- Better emotional well-being
Massachusetts General Hospital

credit: Frank Oudeman
Hospital Staff – Respite and Support
Alzheimer’s Disease & Dementia
Provide wander gardens & horticulture therapy

• 10.5% reduction in amount of medications used in dementia facility
• 30% fewer falls, accompanied by a reduction in fall severity

Detweiler et al. 2009. American Journal of Alzheimer’s Disease and Other Dementias

www.rph.org/eden.html
Summary:
The Goodness of Green

- nearly 40 years of research
- critical mass of evidence re: nature & health
- co-design for co-benefits
- expanding partnerships and collaboration for conservation

Kathleen L. Wolf, Ph.D.

design: milepost

author:

printing: The Nature Conservancy
Nearby nature experiences are important across the entire life cycle, from cradle to grave.

INFANTS

BIRTH WEIGHT

OVERALL HEALTH AND WELL-BEING

IMMUNE FUNCTION

FAMILY DYNAMICS

FUTURE FINANCIAL SUCCESS

ADHD

Note: All economic values are in 2020 U.S. dollars, and are a present annual average across the entire U.S.

CHILDREN & TEENS

OVERALL HEALTH AND WELL-BEING

DEPRESSION AND STRESS

ADHD

FUTURE FINANCIAL SUCCESS

CARDIOVASCULAR DISEASE

CRIME & SAFETY

Note: All economic values are in 2020 U.S. dollars, and are a present annual average across the entire U.S.

ADULTS

DEPRESSION AND STRESS

MOBILITY & QUALITY OF LIFE

HYPERTENSION

COGNITIVE DISORDERS

Note: All economic values are in 2020 U.S. dollars, and are a present annual average across the entire U.S.

OLDER ADULTS

MOBILITY & QUALITY OF LIFE

HYPERTENSION

COGNITIVE DISORDERS

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Contributing analysts:
Dr. Stephen Grado & Marcus Measells, MSU; Dr. Alicia Robbins, Weyerhaueser
Human Dimensions of
Urban Forestry and
Urban Greening

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

What’s New?
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 . . .

Green Cities: Good Health
human health & well-being research

Projects Director
Kathleen L. Wolf, Ph.D.