Feeling Down?
Trees Improve Mental Health

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Tree School – 20 Year Anniversary
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Green Cities: Good Health  
www.greenhealth.washington.edu

Sponsors:
USDA Forest Service,  
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Thanks!  
to U of WA students:  
Katrina Flora  
Mary Ann Rozance  
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 $135 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.
INTRODUCTION

Writers, philosophers, and naturalists have praised the benefits of nature for human health, happiness, and well-being for centuries, but only relatively recently have researchers begun studying and quantifying the complex relationship between human health and nature.

In 1954, Roger Ulrich, professor and director of the Center for Health Systems and Design at Texas A&M University, published the results of a pioneering study that looked at the recovery rates of gall bladder surgery patients in relation to the views from their rooms in a Texas hospital. Some of the patients looked out over a garden and grove of trees, while others had a view of a brick wall. Ulrich found that patients with a natural view spent fewer days in the hospital and used fewer pain medications (Ulrich 1984).

Ulrich’s study helped open the door to a new field of inquiry focused on illuminating the ways that nature influences our physical, mental, and social lives. More than three decades later, a broad and diverse body of scientific literature describes the human health value of nature, confirming that trees, parks, gardens, and other natural settings are as essential to livable and sustainable cities as the other critical systems that keep their residents moving and working. Findings from the current literature indicate the wide range of effects.
Story: Trees for Human Health Benefits Across the Life Cycle
Nature & Mental Health

Nature as protection for wellness

Nature as therapy & treatment
General Wellness

Therapy & Treatment

credit: UK National Health Service

credit: marieclaire.org
Attention Restoration Theory
Rachel & Stephen Kaplan, U of MI
directed attention fatigue . . . .
Workplace Nature & Attention Recovery

• **Well-being**
  - desk workers without view of nature reported 23% more ailments in prior 6 months

• **Job Satisfaction**
  - less frustrated and more patient
  - higher overall job satisfaction and enthusiasm

ART Design Elements

- being away
- ‘soft’ fascination
- extent
- compatibility
Canopy Cover & Stress

images of canopy cover varied 0-60%

Canopy Cover & Stress

Images of canopy cover varied 0-60%.

Nature and Creativity

http://www.jimkukral.com/
nature and creativity

http://daycare.sulekha.com
Nature & Creative Professionals

focused interviews, Denmark
makes us more curious
supports flexible thinking
recharges directed-attention

aids 2 phases of the creative process:
Preparation phase and Incubation phase
sensory dimensions: space & serene

Plambech & Konijnendijk van den Bosch.
2015. Urban Forestry & Urban Greening
Nature & Mental Health

Nature as protection for wellness

Nature as therapy & treatment
Improving Depression

20 adults with major depression walk in park setting or built setting

• 50-minute walks one week apart

• before-after testing:
  • Mood: Positive and Negative Affect
  • Cognition: Backward Digit Span

Berman et al. 2012. *Journal of Affective Disorders*

cognitive and affective improvements after walking in a nature setting
How Walking in Nature Changes the Brain

**rumination**: Maladaptive self-referential thoughts, heightened risk for depression and other mental illnesses

**90-min walk in a natural setting decreased**
- self-reported rumination
- neural activity in the subgenual prefrontal cortex
- no reduced effects from built environment walks

Bratman et al. 2015. *Proceedings of the National Academy of Sciences of the USA*
Group Walks Improve Mental Health

England, Walking for Health national program test Nature Group Walkers vs Non Group Walkers

**results:**
- lower depression, perceived stress, negative affect
- enhanced positive affect and mental well-being
- group walks synergize with physical activity to improve positive affect and mental well-being

Marselle et al. 2014. Ecopsychology
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

image credits: Teresia Hazen
Nature: A stress coping resource for employees 24-7

Impact of Nurses Taking Daily Work Breaks in a Hospital Garden on Burnout

By Maysalda Cordova, PhD, RN, CCRN-K, Roger S. Ulrich, PhD, Bette J. Manuhik, MPH, Stuart K. Gardner, PhD, Paul S. Fitzpatrick, BS, Teresia M. Hazen, MS, MB, Alaz Mehta, MD, PhD, and R. Serene Perkins, MD

image credits: Teresia Hazen
Tree cover shows an inverse relationship with depressive symptoms in elderly residents living in U.S. nursing homes

Matthew H.E.M. Browning, Kangjae Lee, Kathleen L. Wolf
Urban Trees & Green Space for Mental Health

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Old-growth Ecology Tour

The third aspect of the Old Growth Eco Tour is a vertical exploration in an ancient grove of towering Douglas-fir, Grand Fir and Western Red Cedar. Here, the ATG team will assist your 80 foot ascent toward the top of an old growth tree with PhD Ornithologist, Dr. David Anderson, for a captivating view over the nation’s largest and wildest city park. Forest Park. Dr. Anderson will be your personal guide explaining the ecological functionality of this forest and the forest/urban forest interface.

Explore and experience the true Northwest in an actual Oregon old-growth forest grove in a real and unique manner that is guaranteed to be safe and unforgettable.
Ascending the Giants, Portland OR
Human Dimensions of Urban Forestry and Urban Greening

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.

www.naturewithin.info