The Roots of Success
How Nearby Nature Nurtures & Heals

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Reconnecting with Nature: A Prescription for Better Health
Cleveland Museum of Natural History Conservation Symposium
6 September 2019
Claude Monet
1920
Monet, Poppies, 1873
Monet's home, Giverny, France
Monet, Water Lilies, 1906
Monet, Reflections of Clouds on the Water, Lily Pond, 1920
Albert Bierstadt, *Valley of the Yosemite*, 1864

www.albertbierstadt.org
Albert Bierstadt, Puget Sound on the Pacific Coast, 1870

www.albertbierstadt.org
Thomas Moran, The Grand Canyon of the Yellowstone, 1872
Enchanted Valley, Olympic National Park, 2019
Lubbesmeyer studio, Bend Oregon
lubbesmeyer studio, Bend Oregon
Mountain Meadows in Autumn
lubbesmeyer studio, Bend Oregon
lubbesmeyer studio, Bend Oregon

Broken Top

Juniper and Fields
Nature in Culture & Art

Health!! What do we know?

A focus on mental health & function
public health officials
moderate activity recommendations

parks, active living, active transit
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
Healthy Microbiome

- control obesity & asthma
- boost immune function
- improve mental health

Bloomfield et al. 2016 Perspectives in Public Health

put aside the Hygiene Hypothesis

need contact with ‘Old Friends’
~10 to 100 trillion microbes in healthy gastrointestinal (GI) tract

intestinal microbiome development

Arrieta et al. 2014. Frontiers in Immunology
The medicine of being in the forest
We are the leading global voice for forest bathing and forest therapy

Santa Rosa, California
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.\(^1\)\(^,\)\(^2\)

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.\(^3\)

- A study found 7% higher rental rates for commercial offices having high quality landscapes.\(^4\)

- Shoppers claim that they will spend 9% to 12% more for goods and services in central business districts having high quality tree canopy.\(^5\)

- 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.\(^6\)
Green Cities: Good Health > 4,500 peer reviewed publications
Outside Our Doors

The benefits of cities where people and nature thrive.

design: milepost

coa-author: UAS

coa-author & printing: The Nature Conservancy
design: milepost
author: The Nature Conservancy
printing:
also in Spanish! and Arabic!
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**

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**CHILDREN & TEENS**

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**ADULTS**

**DEPRESSION AND STRESS**

**CARDIOVASCULAR DISEASE**

**MOBILITY & QUALITY OF LIFE**

**HYPERTENSION**

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**OLDER ADULTS**

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**Cognitive Disorders**

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**Contributing Analysts:**

Dr. Stephen Grado & Marcus Measells, MSU; Dr. Alicia Robbins, Weyerhaueser
Nearby Nature for Human Health

Nearby nature includes a variety of spaces and places

- Urban Forest Canopy
- Biophilic Design
- Parks and Gardens
- Green Stormwater Infrastructure

Image by MIG / SVR
Data Story: Nature for Human Health Benefits Across the Life Cycle
Nature in Culture & Art

Health!! What do we know?

A focus on mental health & function
constant busyness

attempted multi-tasking

‘out of balance’

Anna and Elena Balbusso, NY Times
Mindfulness/Meditation Training

• meta analysis; clinical/non situations
• focus on moment-to-moment experience and mental awareness

Results
• more veridical perception (reality check)
• reduce negative affect
• improve vitality and coping
• medical symptoms & sensory pain

Nature and Mindfulness
Attention Restoration Theory, Kaplan & Kaplan

focus
soft fascination
undirected attention

credit: Michael Hellgren
Nature and Creativity
Give Your Ideas Some Legs

creative test – analogy generation

conditions: sit inside, treadmill walk, walk outside, wheelchair outside

- walking opens up free flow of ideas
- walking outside produced most novel & highest quality analogies

Oppezzo & Schwartz. 2014.
Journal of Experimental Psychology
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
Classroom Views & Stress

Classroom Views & Stress
high school student response

Fig. 2. Attention scores at the end of class activity and break (Means and SE).

Fig. 3. Physiological stress at the end of class activity and break (Mean and SE).

attention scores

stress scores
Canopy Cover & Stress

Images of canopy cover varied 0-60%

physically disabled & tree climbing!
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 & affective improvements after walking in a nature setting
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
Tree cover shows an inverse relationship with depressive symptoms in elderly residents living in U.S. nursing homes.

Matthew H.E.M. Browning a, b, c, Kangjae Lee b, Kathleen L. Wolf c
:: Nature Sacred ::
TKF Foundation

> 10 years
> 100 gardens
> 10,000 journal entries
The Green Road: Walter Reed National Military Medical Center
Stream restoration heals the landscape and invites access to the water
woody debris :: fallen tree trunks symbolize the fallen soldiers’ legacy in conflicts
Nature in Culture & Art

Health!! What do we know?

A focus on mental health & function importance of nearby nature!
Monet, The Artist's Garden at Vétheuil, 1880
www.naturewithin.info

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.

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