



# Nature, Physical Activity and Health

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Professor and Director

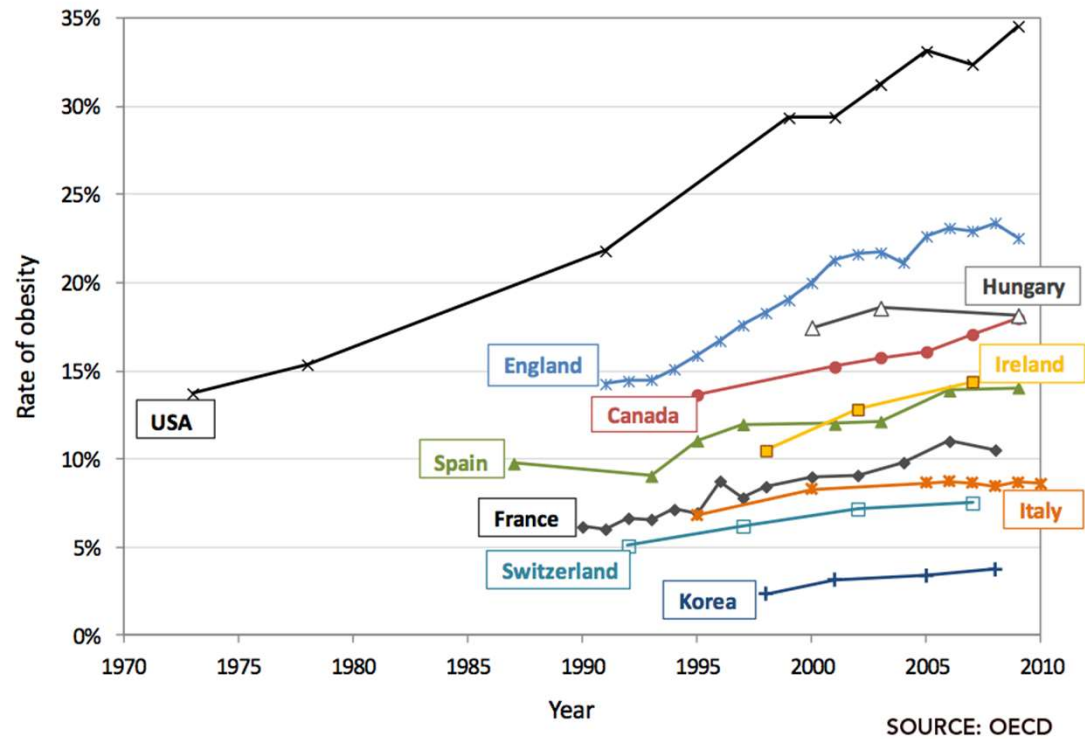
Center for Health & Nature

# Nature and Physical Activity

- <https://www.youtube.com/watch?v=GuENAWds5B0>



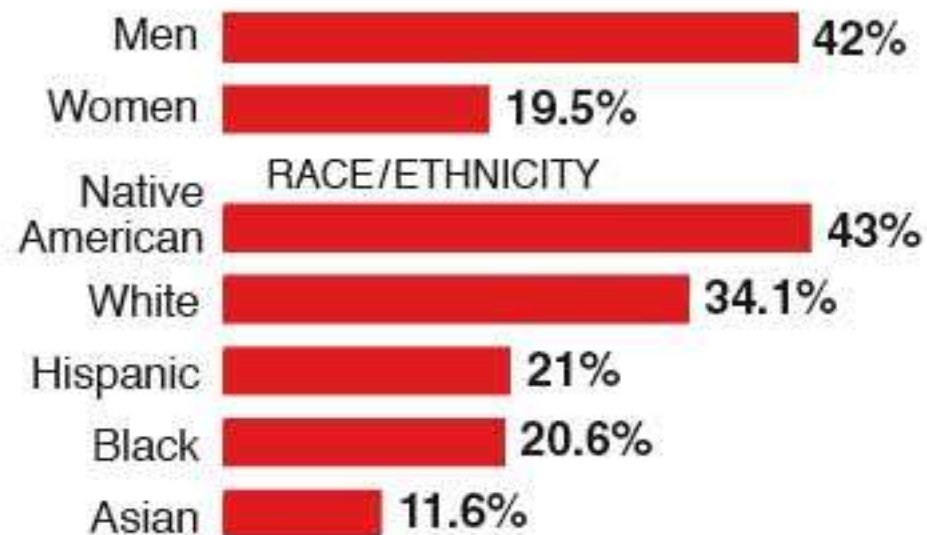
# Obesity Rates



## Alcohol abuse high

Rates for alcohol abuse and alcoholism were found to be highest in men and in Native Americans, as reported in a new government study.

### Percentage of Americans suffering from alcohol abuse or alcoholism in their lifetime



SOURCE: American Medical Association

AP

SOURCE: THE AMERICAN PSYCHOLOGICAL ASSOCIATION

MORE THAN 8 IN 10 AMERICANS



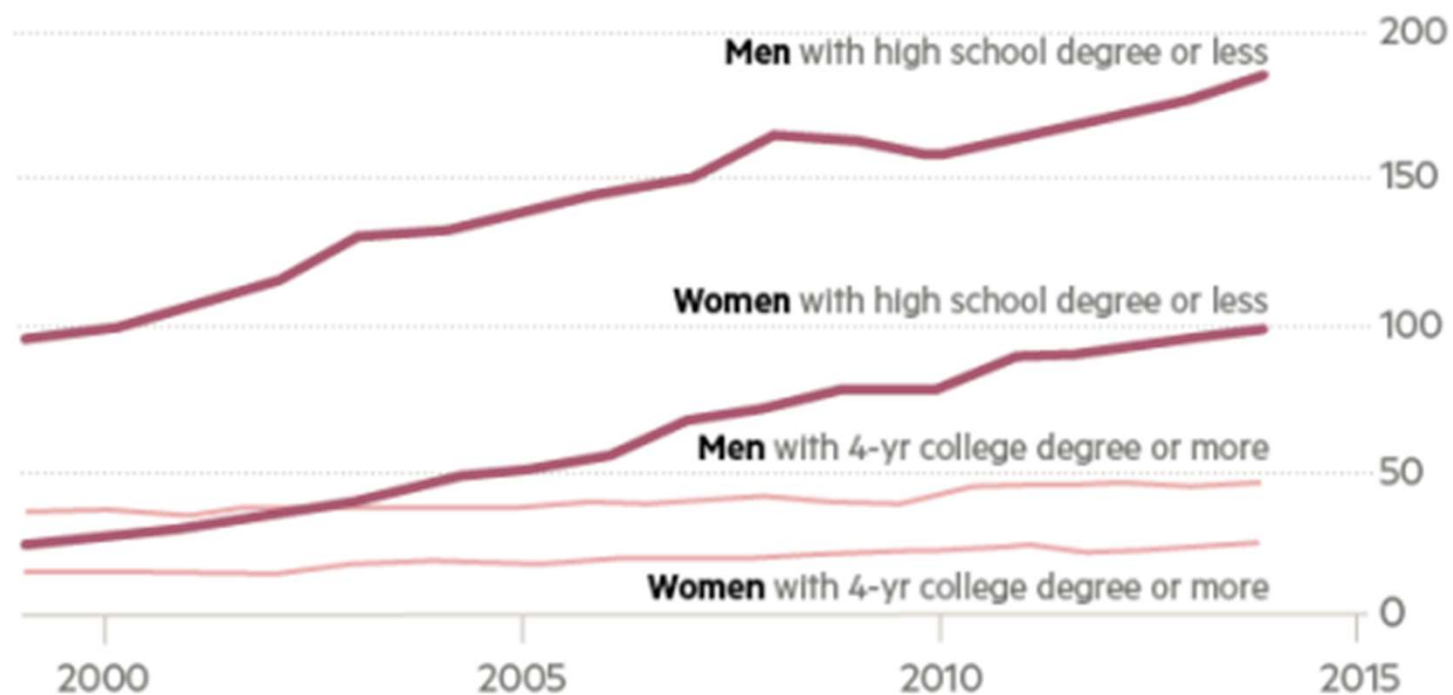
REPORT FEELING

**STRESSED**

IN THE LAST TWO WEEKS

## “Deaths of despair” have skyrocketed for less-educated whites

Deaths by drugs, alcohol and suicide per 100,000 white, non-Hispanic 50-54 year olds



Source: Anne Case and Angus Deaton, Brookings Papers

#CHOOSEHEALTH

**1**  
EAT A  
HEALTHY DIET

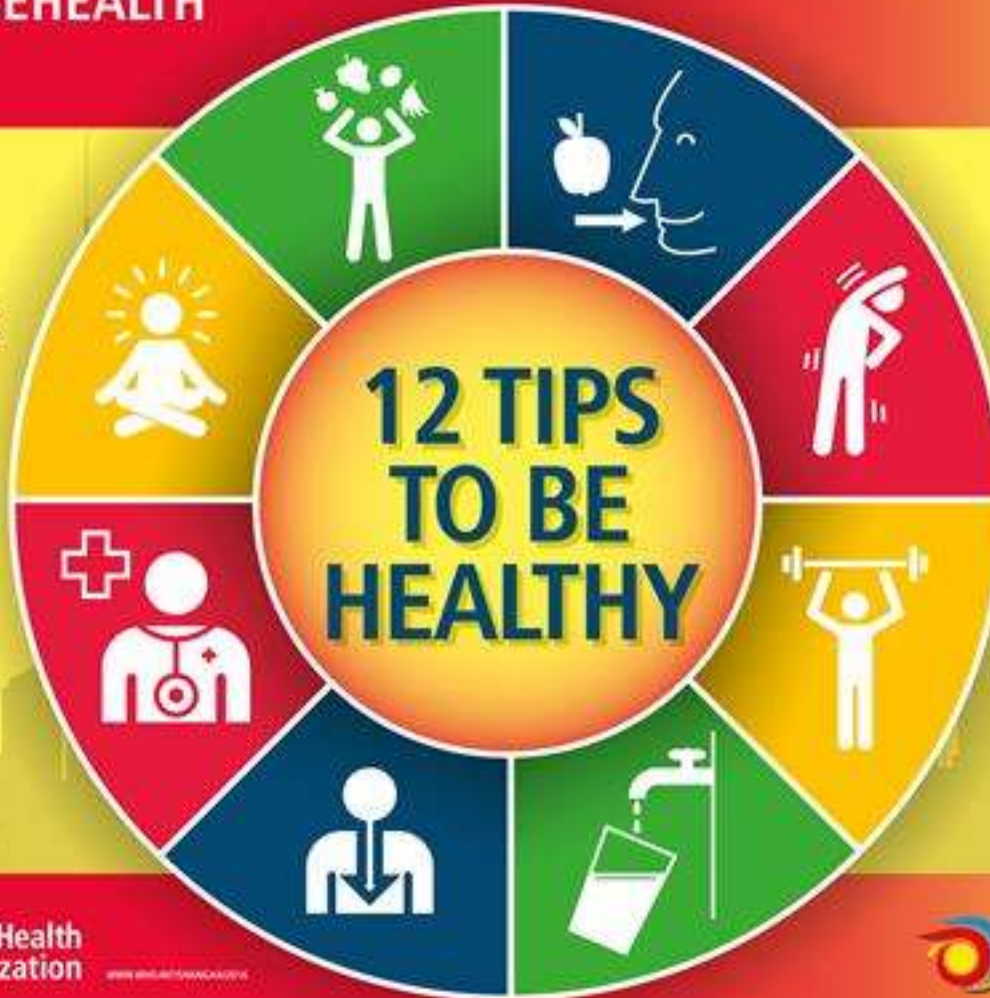
**2**  
BE PHYSICALLY ACTIVE,  
EVERY DAY, YOUR WAY

**3**  
GET  
VACCINATED

**4**  
DON'T USE  
ANY FORM  
OF TOBACCO

**5**  
AVOID OR MINIMIZE  
USE OF ALCOHOL

**6**  
MANAGE STRESS FOR  
YOUR PHYSICAL  
AND MENTAL HEALTH



**7**  
PRACTICE  
GOOD HYGIENE

**8**  
DON'T SPEED,  
OR DRINK AND DRIVE

**9**  
WEAR A SEAT-BELT  
WHEN DRIVING  
AND HELMET  
WHEN CYCLING

**10**  
PRACTICE  
SAFE SEX

**11**  
REGULARLY CHECK  
YOUR HEALTH

**12**  
BREAST FEEDING:  
BEST FOR BABIES



World Health  
Organization

[www.who.int/wha/2016](http://www.who.int/wha/2016)



9th Global Conference  
on Health Promotion  
SHANGHAI, 2016



# Jeju Olle Trail, South Korea, 2014





# Hawaii to Texas - 2015



## Average Time Spent with Media in the US, 2018-2022

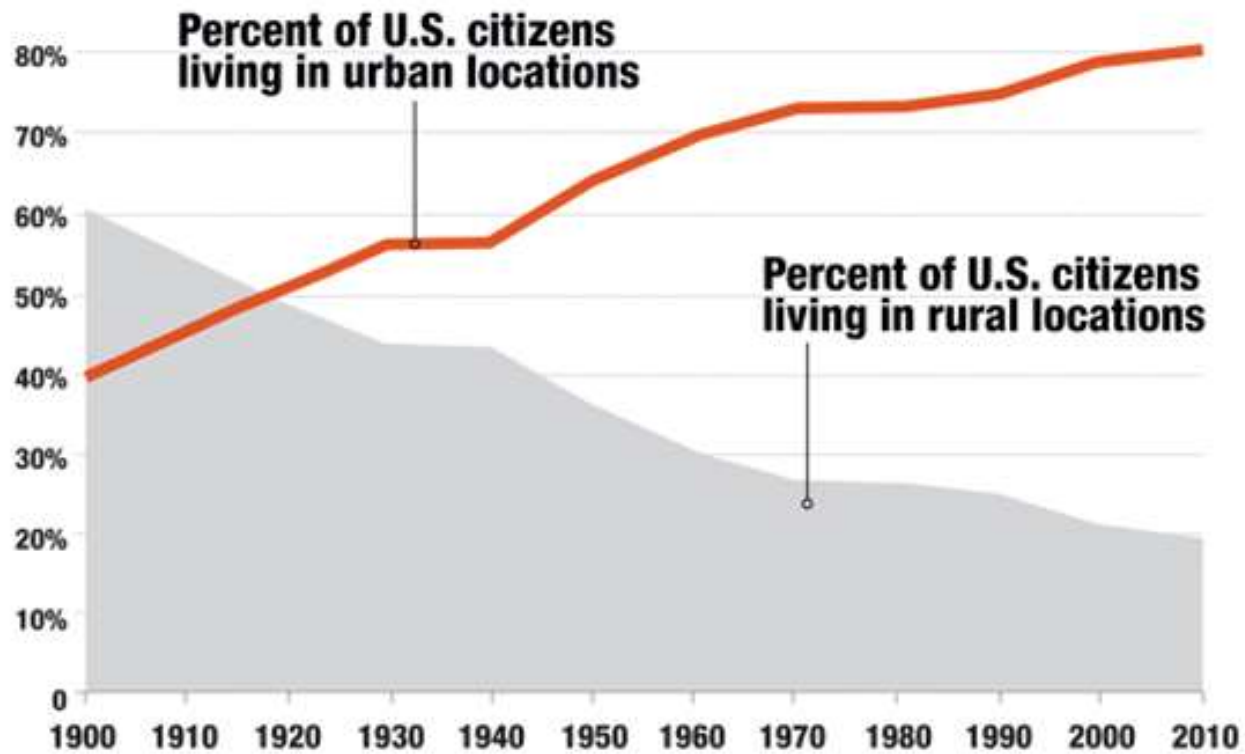
*hrs:mins per day among population*

	2018	2019	2020	2021	2022
<b>Digital</b>	<b>6:20</b>	<b>6:49</b>	<b>7:50</b>	<b>7:57</b>	<b>8:02</b>
—Mobile (nonvoice)	3:36	3:57	4:31	4:36	4:41
—Audio	0:59	1:07	1:08	1:13	1:17
—Social networks	0:45	0:47	0:54	0:53	0:53
—Video*	0:38	0:43	0:50	0:52	0:54
—Other	1:06	1:12	1:31	1:30	1:30
—Desktop/laptop	1:57	1:54	2:02	1:58	1:56
—Video*	0:23	0:23	0:24	0:24	0:24
—Audio	0:07	0:07	0:07	0:07	0:07
—Social networks	0:08	0:06	0:06	0:06	0:05
—Other	1:19	1:18	1:25	1:21	1:20
—Other connected devices	0:47	0:58	1:17	1:22	1:26
<b>TV***</b>	<b>3:42</b>	<b>3:27</b>	<b>3:34</b>	<b>3:19</b>	<b>3:07</b>
<b>Radio***</b>	<b>1:41</b>	<b>1:39</b>	<b>1:32</b>	<b>1:31</b>	<b>1:31</b>
<b>Print***</b>	<b>0:21</b>	<b>0:19</b>	<b>0:19</b>	<b>0:19</b>	<b>0:18</b>
—Newspapers	0:12	0:10	0:10	0:10	0:10
—Magazines	0:09	0:09	0:09	0:09	0:08
<b>Other traditional media</b>	<b>0:20</b>	<b>0:19</b>	<b>0:22</b>	<b>0:21</b>	<b>0:22</b>
<b>Total</b>	<b>12:24</b>	<b>12:33</b>	<b>13:38</b>	<b>13:27</b>	<b>13:21</b>

*Note: ages 18+; time spent with each medium includes all time spent with that medium, regardless of multitasking; \*excludes time spent with video via social networks; \*\*includes all internet activities on desktop and laptop computers; \*\*\*excludes digital*

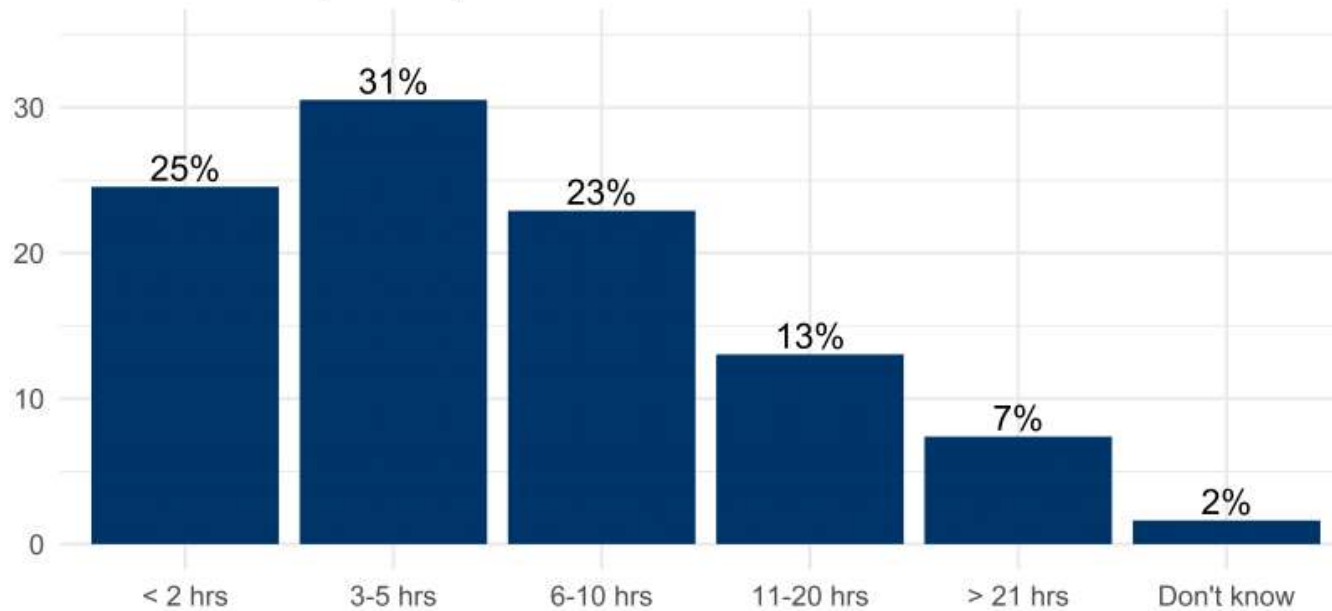
*Source: eMarketer, Jan 2021*

## Out of the Countryside, Into the City



## American Adults Report Spending Little Time Outside Each Week

Over half of American adults report spending 5 hours or fewer outside in nature each week. Over three-quarters spend 10 or fewer hours.

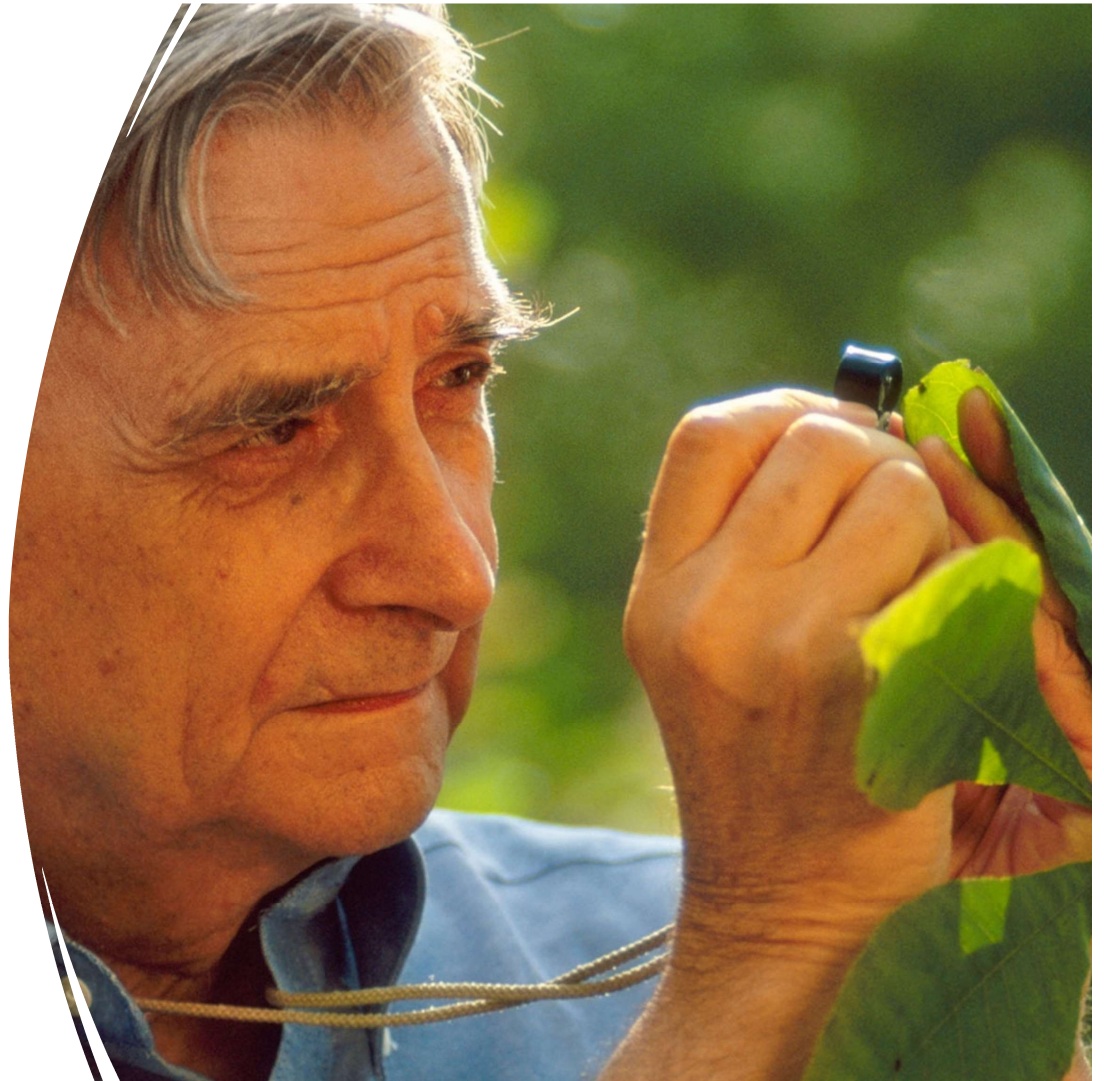


*"In a typical week, when weather allows, about how many hours do you spend outside in nature?"*  
Adults 18+. N = 5,550. Source: [NatureofAmericans.org](http://NatureofAmericans.org)

# Biophilia Hypothesis

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- “The innately emotional affiliation of human beings to other living organisms”
- E. O. Wilson 2001



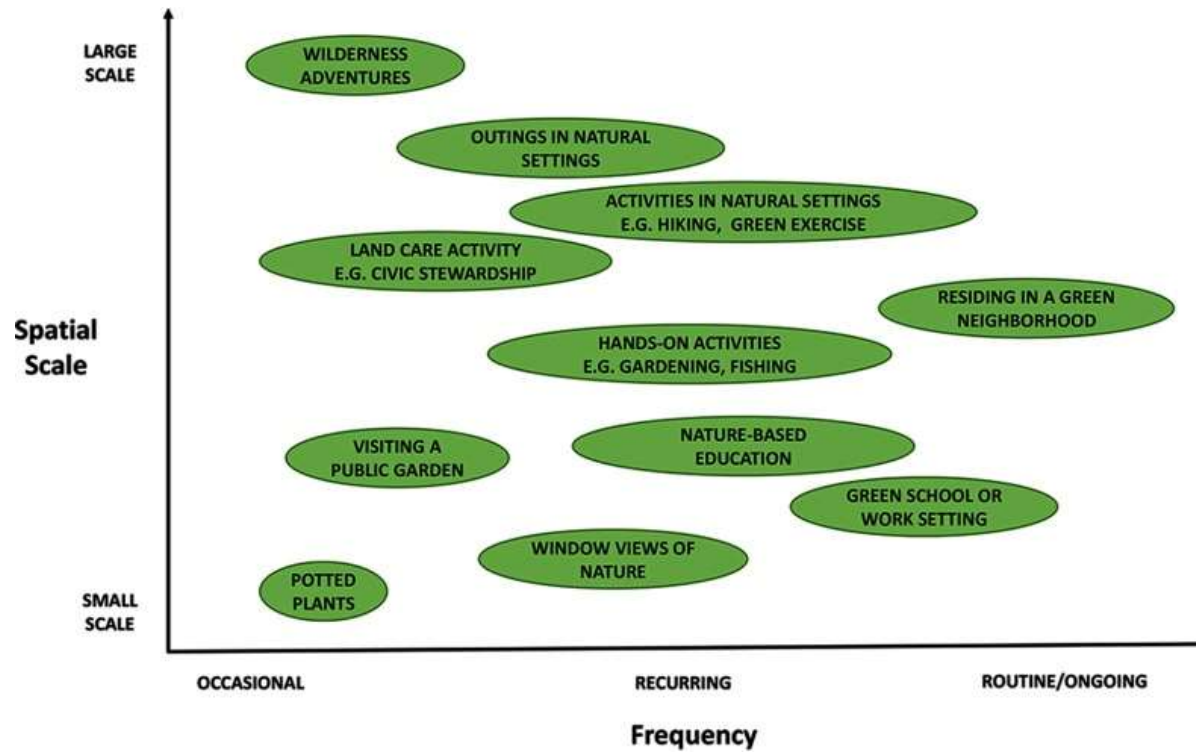


# What is Nature?

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# Spectrum of nature contact



Frumkin et al., 2017

# Types of Space

- Green space – Areas dominated by natural and/or planted vegetation such as trees, flowers, and grass
- Blue space – Visible surface water including lakes, streams, and oceans
- Brown space – areas dominated by rocks and soil including desert landscapes
- Grey space – Areas dominated by concrete, asphalt, buildings and other non-natural materials

Christiana et al., 2021



## Hospital Patients

- Who viewed natural signs through their windows:
  - Recovered faster
  - Less time in hospital
  - Less pain killers
  - Less post-op complications
- Ulrich, 1984





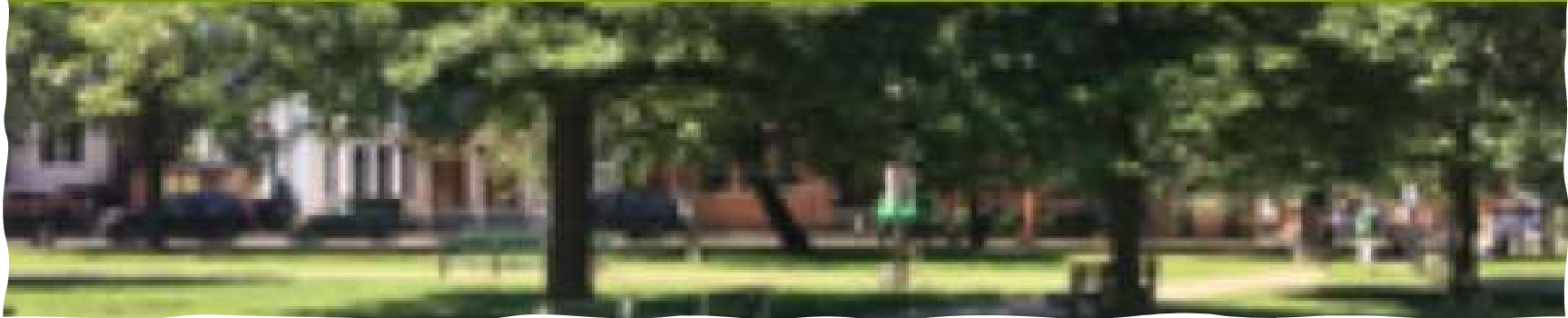
# Being in nature

- Urban dwellers brought to a natural environment for a few days had:
  - Less mental fatigue
  - Less irritability & accidents
  - Increased problem solving
  - Increased concentration
- Herzog et al. 1997





High residential exposure to green spaces is associated with an 8% lower risk of all-cause mortality (Gascon et al. 2016)



# Benefits of nature on human health

- Reduced stress
- Better sleep
- Improved mental health (reduced depression and anxiety)
- Greater happiness, well-being and life satisfaction
- Reduced aggression
- Reduced ADHD symptoms
- Increased prosocial behavior and social connectedness
- Improved immune function
- Improved general health (adults, children, cancer survivors)
- Lower blood pressure
- Improved postoperative recovery
- Improved birth outcomes
- Improved congestive heart failure
- Improved child development
- Improved pain control
- Reduced obesity
- Reduced diabetes
- Better eyesight
- Reduced mortality



# Leisure-time Physical Activity in Public Parks in Diverse Communities

Floyd, Spengler, Maddock et al., 2008

70% Sedentary in Tampa compared to 51% sedentary in Chicago





# China and Park Use

- We observed 75,000 people in parks when the same amount of observations in Chicago yielded only 5,000 people
- More than half of park users were older adults compared to less than 10% in the US



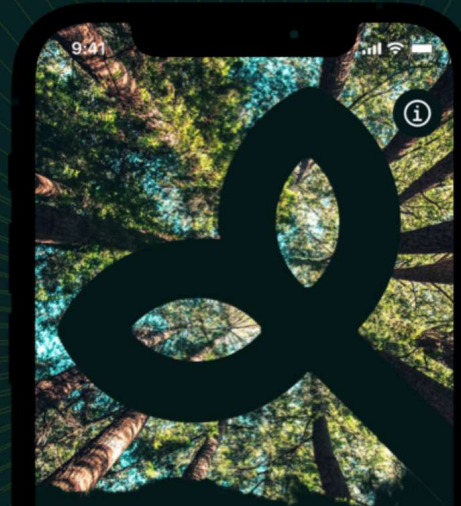


# NatureDose™



Download on the  
 **App Store**

GET IT ON  
 **Google Play**

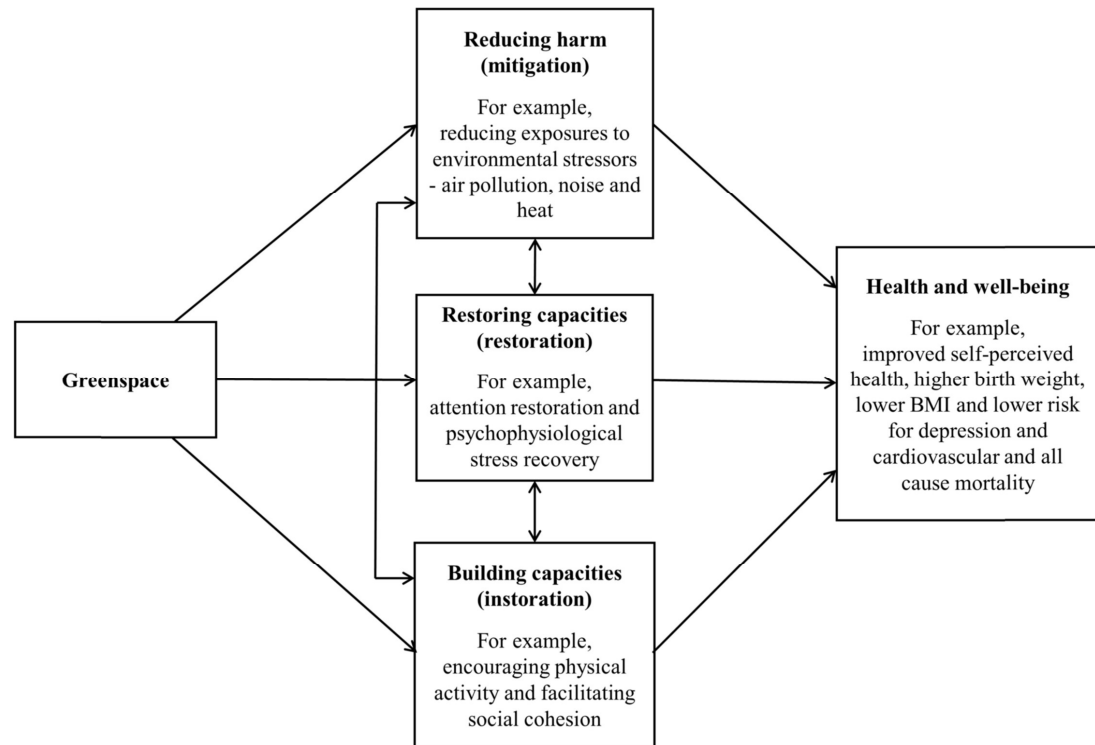


Welcome to NatureDose  
**Better Health. Right Outside.**

A personalized nature prescription  
tracker to help you optimize the  
benefits of time outdoors.

# Pathways linking nature to health

- Markevych et al., 2017





## Reducing Harm

- Increasing green spaces in our urban areas has a direct effect on improving the environment.
- Green spaces typically have lower air pollution levels than other urban areas and may help remove harmful particles from the air.
- Urban green space can also reduce the heat island effect making cities cooler and increasing airspeed. Green spaces can reduce noise levels by 5-10 dBs and supply psychologically beneficial natural sounds.
- Green infrastructure can help reduce flooding during hurricanes and other storm events.



# Restoring Capacities

- Nature reduces stress and improves attention.
- Nature may reset our attention abilities – studies have examined office workers and students who have spent time in a natural environment and this exposure showed increased time on task and attention to detail, as well as improved cognitive functioning.
- Improvements in creative tasks have also been demonstrated.







## Building Capacities

- Not only can nature restore us, but it can also promote health by encouraging physical activity and improving relationships in our communities.
- Certain types of green space including parks, walking and hiking trails, and green schoolyards have been found to improve physical activity and potentially increase its benefits.
- Access to green spaces can increase social cohesion, a measure of neighbors knowing and trusting each other.





## Community Gardens

- People who garden tend to eat more fruits and vegetables
- Reduce exposure to pesticides
- Increases physical activity & reduces stress
- Increase property value



# Physical Activity in Natural Environments

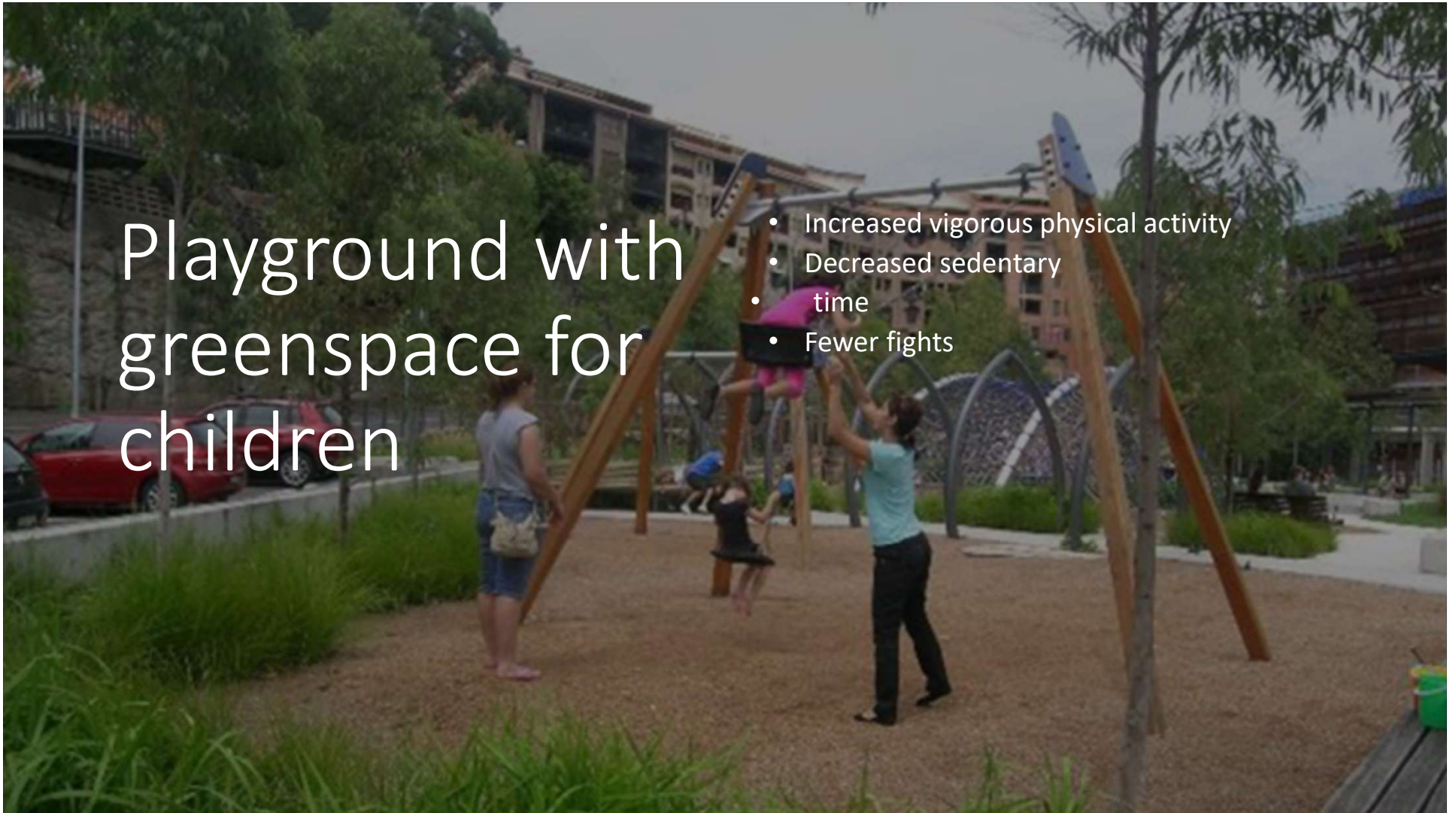
- A study showed that people who exercised in wooded environments had a lower risk (OR = .55) of poor mental health than those that exercised in non-natural environments. (Mitchell, 2013)
- Walking in nature can improve directed-attention abilities. (Berman et al., 2008).





# Playground with greenspace for children

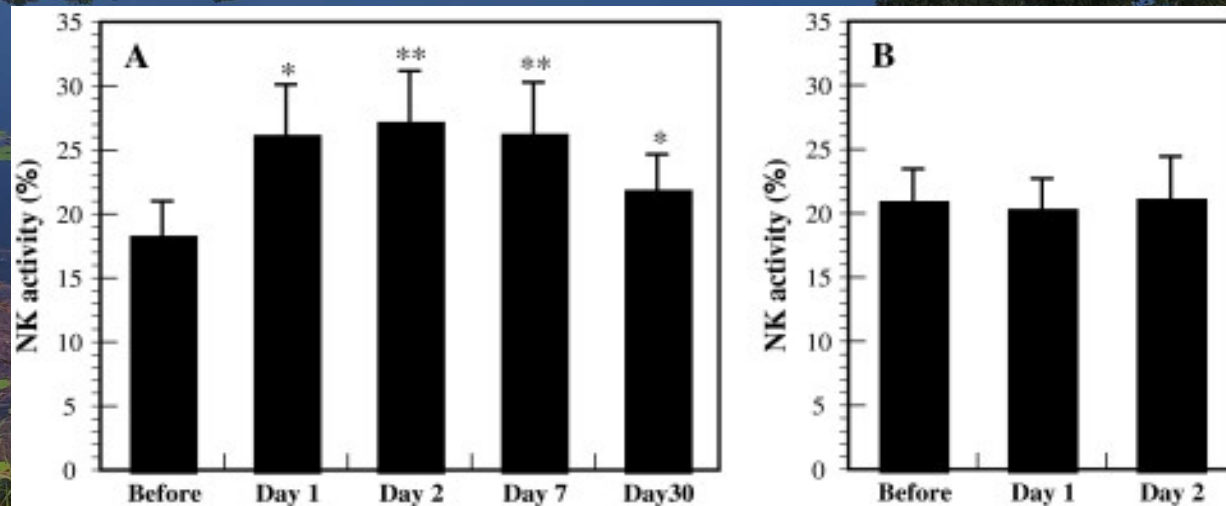
- Increased vigorous physical activity
- Decreased sedentary time
- Fewer fights



# Forest Bathing and NK Cells

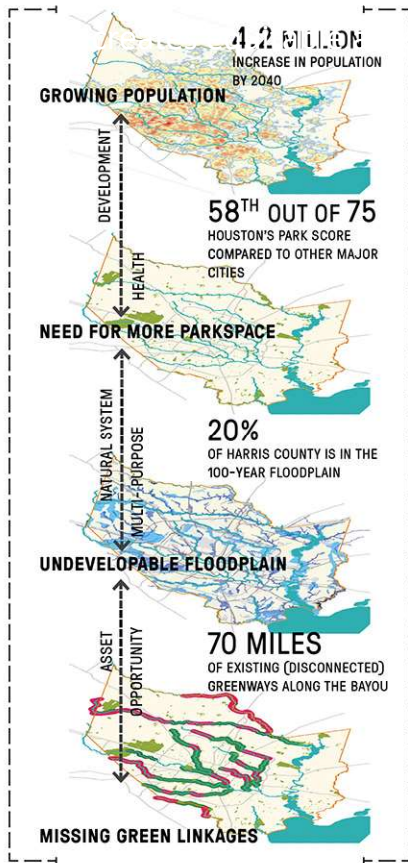
3-day, 2-night trip to the forest

Trip to the City

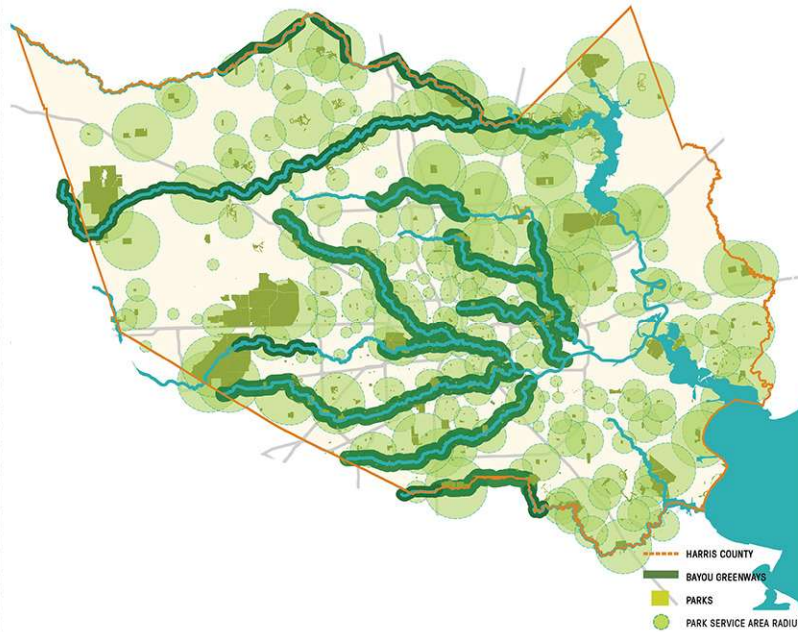


Li, 2010





## BAYOU GREENWAYS APPROACH





# Bayou Greenways Trails

Zip codes > 30% of the population living within a 10-minute walk of the trail had:

93% reduction in obesity related admissions

77% reduction in Ischemic Heart Disease Admissions

71% reduction in heart attack admissions

## Greenspace and Child PA

- 2006-2008 Bristol, UK
- 10-11 years with accelerometers and GPS
- 13% time outside, 2% in greenspace
- 35% of MVPA while outside
- 9% of boys MVPA and 6% of girls while in greenspace

Wheeler et al., 2010

# Quality of Greenspace & PA

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420 Turkish adults

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Distance to nearest urban green  
space

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Quality of greenspace  
(maintenance and cleanliness)

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Both related to increased  
frequency of PA

## Older adults, greenspace & PA

Longitudinal study of 15,672 older adults across 7.5 years in the UK

Neighborhood greenspace was linked to a slower decline in PA

Dog walking may be an important mechanism

Dalton et al., 2016

# Preventive effect

- While nature appears to be helpful in restoring health after illness, can it actually help us keep healthy?
- Forest bathing (“shinrin-yoku”): Japan
- Nature Prescriptions
  - Scotland
  - Educational leaflet with numerous monthly activities (touching the ocean, taking a dog for a walk, following a bumble bee)
- 30 Days Wild: United Kingdom
  - Wildlife Trusts in the UK
  - Encourage people to engage with nature every day for a month
  - 18,000 people signed up in the first year
- Park Rx America
  - Connects publicly available outdoor space to physicians to have them prescribe nature







Thank you for  
your attention

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