

# SHIFT health & nature

webinar series

## CHAPTER 3: CONSERVATION

### The Green Heart Project

June 9, 2020

*Presented by*



# About the Webinar Series

March-September 2020

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## CHAPTER 1

The Health & Nature Movement

## CHAPTER 2

Public Health:  
Nature as an Intervention Strategy

## CHAPTER 3

Conservation:  
Public Health as an Ecosystem Service

## CHAPTER 4

Land Management:  
Land Use and Public Health

## CHAPTER 5

Outdoor Recreation:  
The Health Benefits of Time Outside



Photo by James Wheeler

# The Green Heart Project



**Aruni Bhatnagar, PhD**

Director, The Christina Lee Brown  
Envirome Institute



**Chris Chandler**

Director of Urban Conservation,  
The Nature Conservancy



**Joy Hart, PhD**

Professor of Communication and  
Executive Director of the University  
Honors Program, University of  
Louisville



GREEN HEART

LOUISVILLE



# GREEN SPACES

Living in green areas decreases cardiovascular mortality







## NATURAL ENVIRONMENT

Forests  
Grasslands  
Brush  
Mosses  
Wetlands



## SOCIAL ENVIRONMENT

Parks  
Yards  
Yard trees  
Street trees  
Gardens

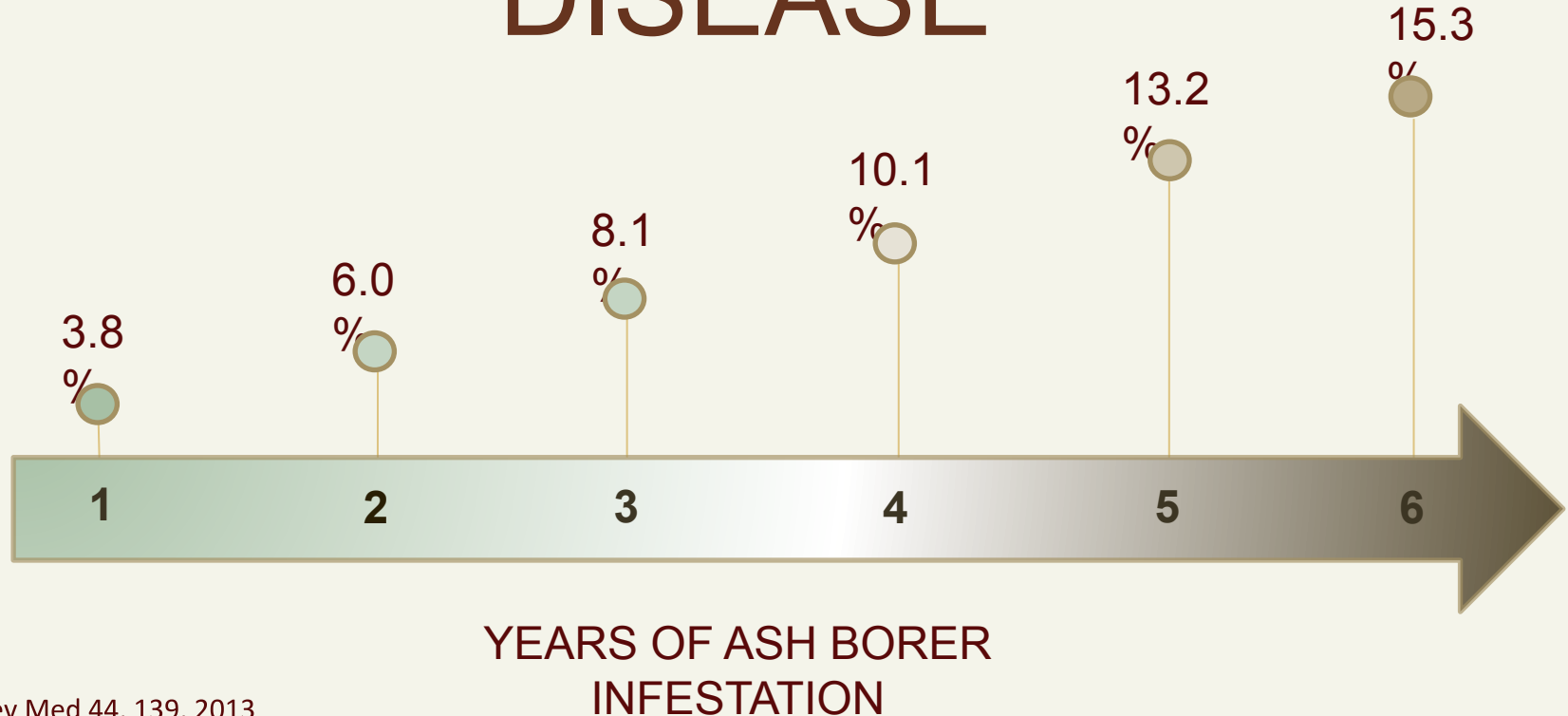


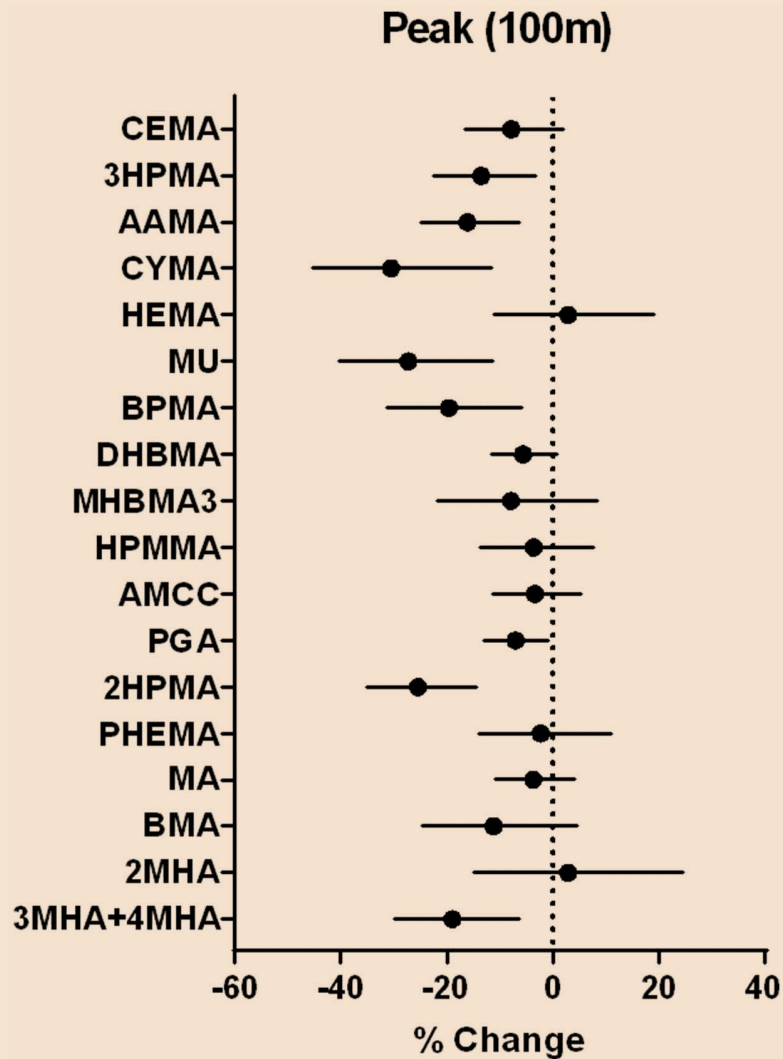
## PERSONAL ENVIRONMENT

Indoor plants  
Residential Yards



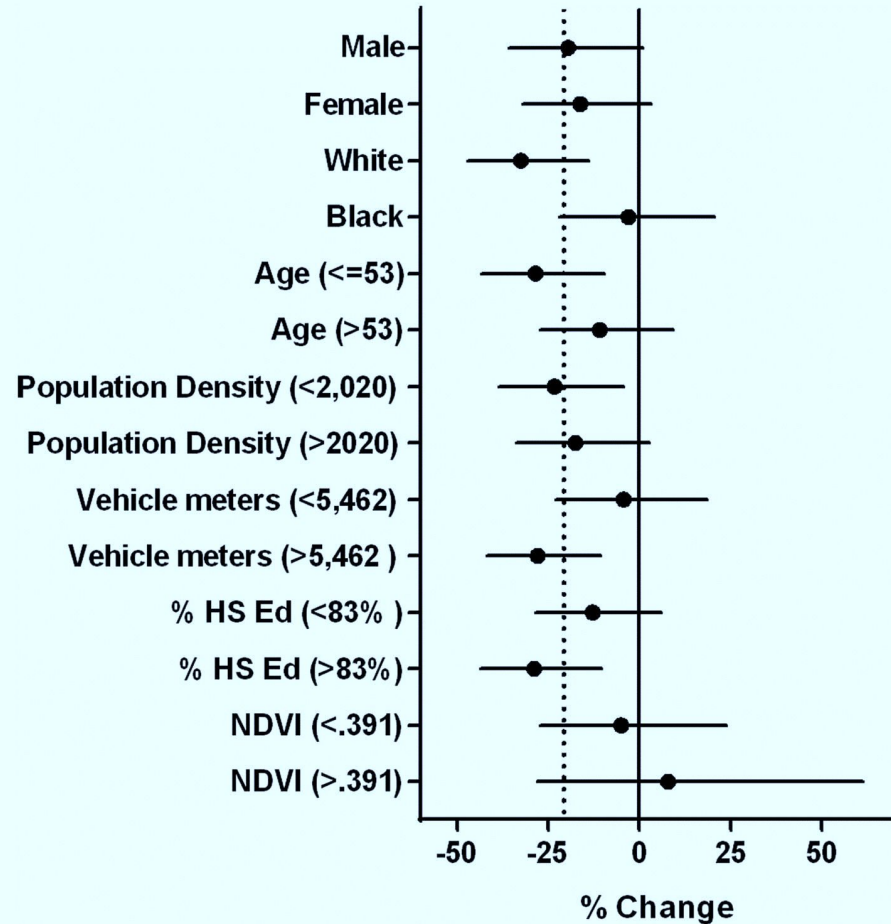
# INCREASE IN HEART DISEASE





Association between  
urinary VOC  
metabolites and  
residential greenness





## Sensitivity to Residential Greenness

**LOW GREEN**



**HIGH GREEN**

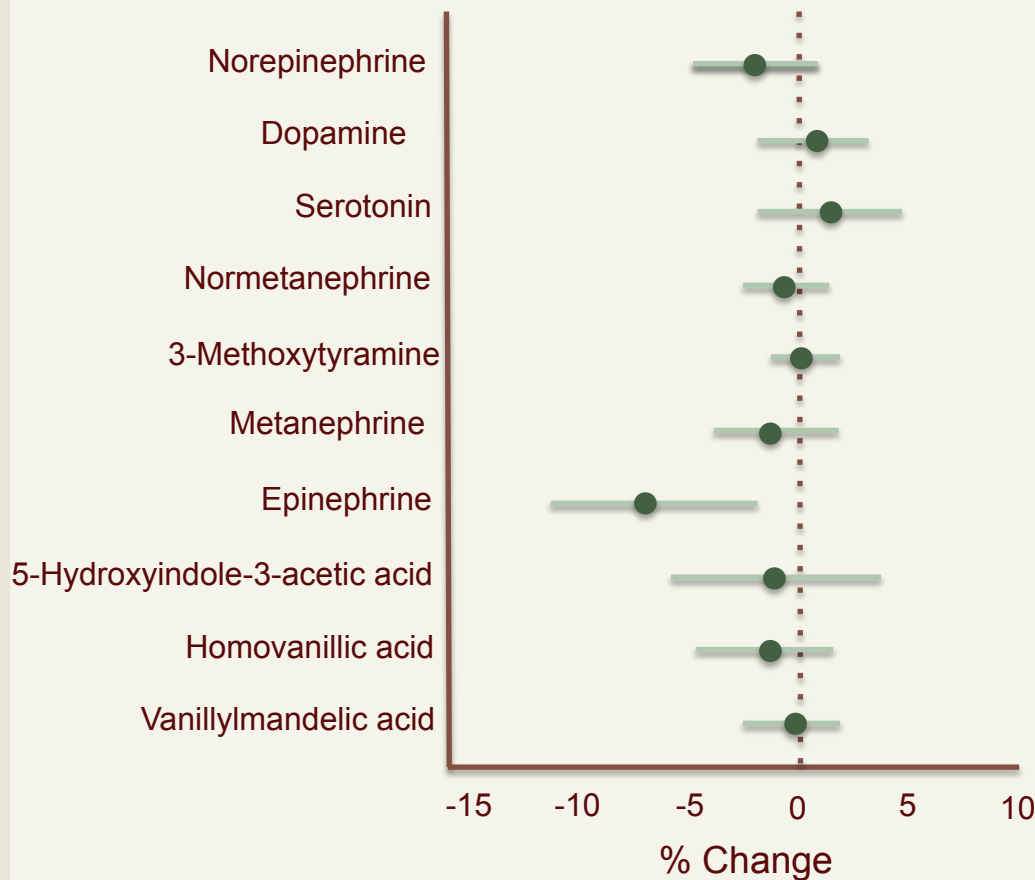


**VOCs**

**HIGH**

**LOW**

# ASSOCIATION OF RESIDENTIAL GREENNESS WITH SYMPATHETIC ACTIVATION



## URBAN GREENNESS



## ENVIRONMENTAL MEDIATORS



## PHYSIOLOGICAL MEDIATORS



## CARDIOVASCULAR DISEASE RISK FACTORS



## CARDIOVASCULAR DISEASE ↓



Air Pollution ↓  
Light Pollution ↓  
Noise Pollution ↓  
Area Characteristics ↑  
(walkability, neighborhood quality)

Physical Activity ↑  
Pollution Exposure ↓  
Stress ↓  
Sleep ↑  
Immune Challenge ↑  
Social Cohesion / Interactions ↑

Blood Pressure ↓  
Cholesterol ↓  
Insulin Resistance ↓  
Diabetes ↓  
Obesity ↓



GREEN FOR GOOD



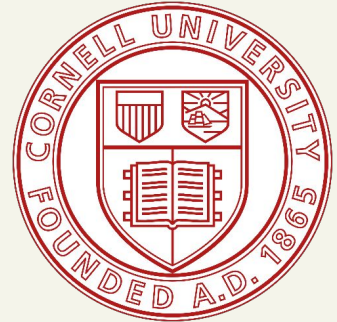
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National Institute of  
Environmental  
Health Sciences





# CENTRAL HYPOTHESIS

Exposure to neighborhood greenery diminishes the risk of cardiovascular disease by decreasing the levels of air pollution



*What will we do?*



# NEIGHBORHOOD GREENING

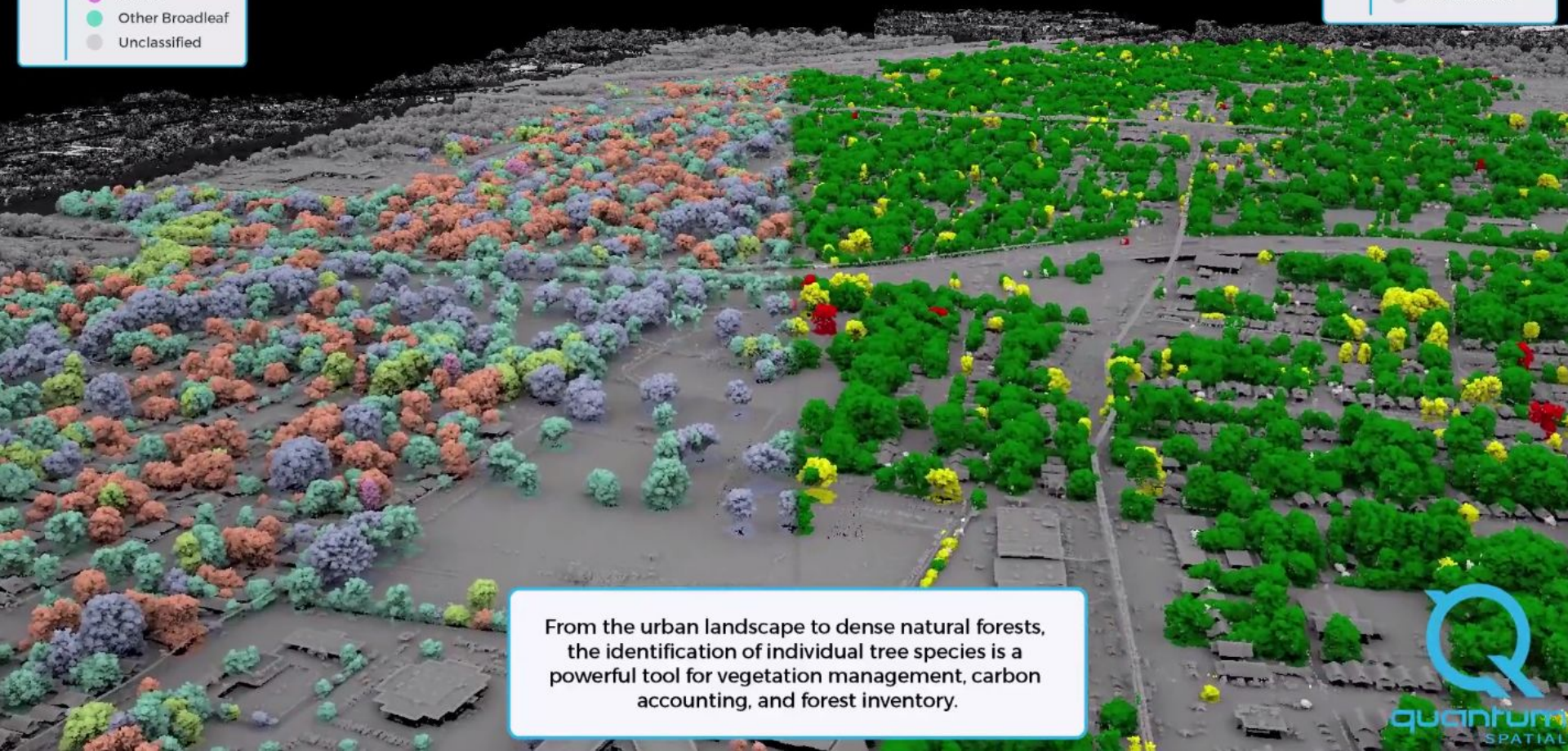


Tree Type

- Ash
- Oak
- Maple
- Conifer
- Other Broadleaf
- Unclassified

Tree Canopy Health

- Very Stressed
- Stressed
- Fair to Healthy
- Not Assessed



From the urban landscape to dense natural forests, the identification of individual tree species is a powerful tool for vegetation management, carbon accounting, and forest inventory.





Oakdale

Wilder Park

Jacobs Addition

Wyandotte Park

Wyandotte Park





# CARDIOVASCULAR EXAM

Blood Pressure, Lipids, Obesity and Diabetes  
Cardiovascular disease risk, biomarkers of cardiovascular injury

# PSYCHOSOCIAL EVALUATION



# LOCAL AIR POLLUTION MEASUREMENTS



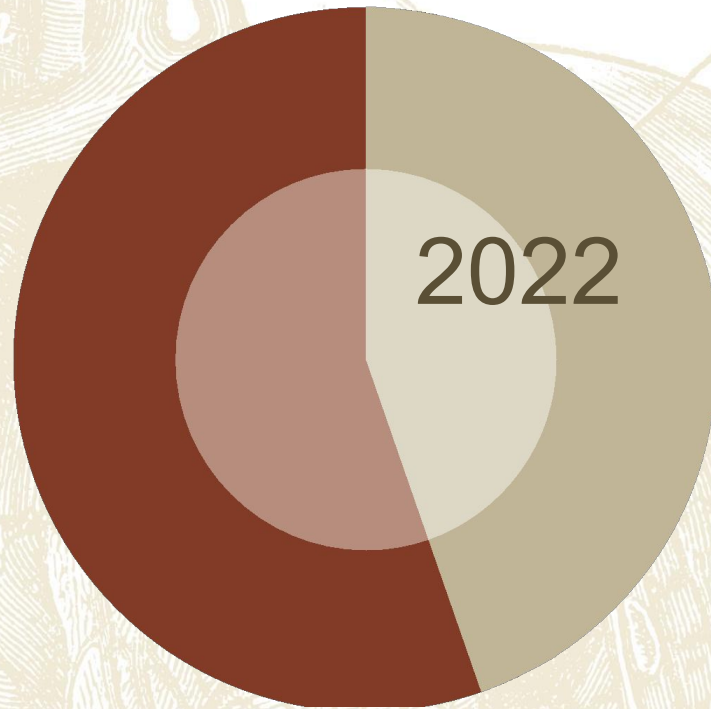




*After four years...*



2018



Reevaluation of physical, mental, social, and environmental health  
Assess change in pollution

# *What will we learn?*

How to plant trees in urban locations to maximize the removal of air pollutants

How neighborhood greenness affects health

Do greenspaces reduce mental stress and increase social cohesion

Do trees in a neighborhood affect crime rates, property values, storm water runoff, energy use and heat islands in the city



# GLOBAL IMPACT

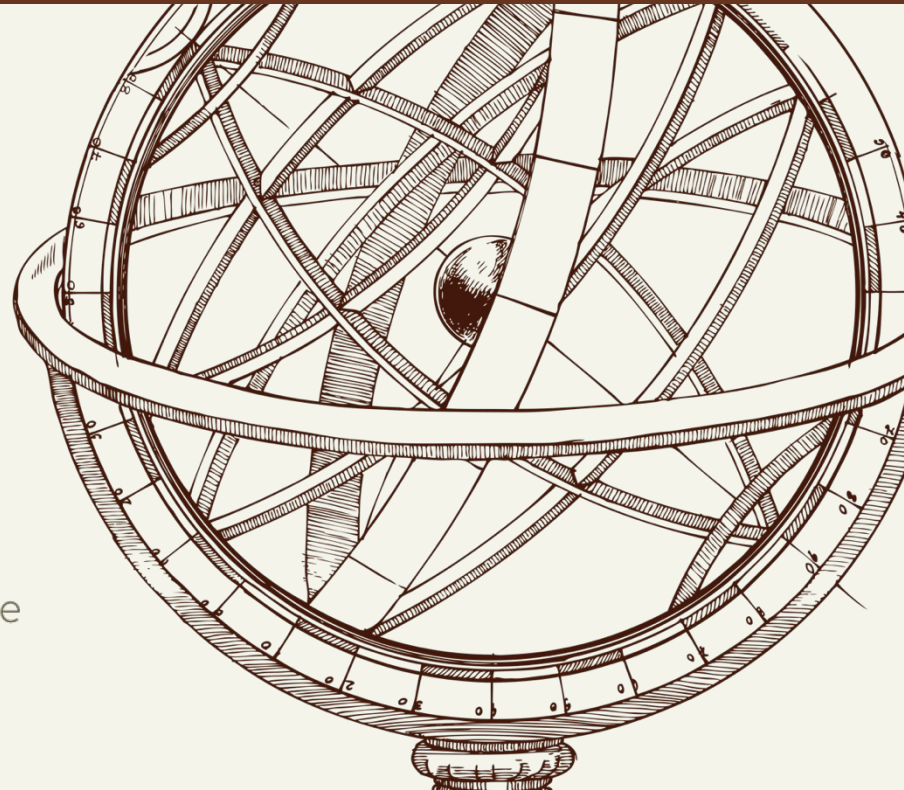
*Creating Healthier Cities of Tomorrow*

New ways to prevent heart disease

New way to decrease air pollution

Development of new urban policies, guidelines  
building codes

A new model of healthy urban living that could be  
replicated world wide





# Stay Connected

Webinar recording on YouTube: <https://bit.ly/2wISnOh>

Slide deck on Figshare: <https://figshare.com/authors/SHIFT/8502495>

Join our Slack Community @ shiftnaturehealth



Photo by Robert Collins



# Upcoming Webinars

**Tuesday, June 23, 10-11 AM MT**

- **Urban Nature**

- *Mickey Fearn, Professor of Practice, North Carolina State University*
- *Eugenia South, MD,*
- *Alden Stoner, Executive Director, Nature Sacred*

**Tuesday, July 14, 10-11 AM MT**

- **Park Rx**

- *Robert Zarr, MD, Founder, Park Rx America*
- *Kathleen Wolf, PhD, Research Social Scientist, University of Washington*

# SHIFT Announcements



## Deadlines: June 15

- ***Nominations for The SHIFT Awards:***  
Contact Arian Davis at [arian@shiftjh.org](mailto:arian@shiftjh.org)
- ***Applications for The Emerging Leaders Program:*** Contact Dr. Morgan Green at [drmorgan@shiftjh.org](mailto:drmorgan@shiftjh.org)
- ***Submissions for Research Abstracts:***  
Contact Christian Beckwith at [cb@shiftjh.org](mailto:cb@shiftjh.org)

# SHIFT

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