



**CHICAGO
REGION
TREES
INITIATIVE**

Our Trees.
Our Communities.
Our Future.

What's Going on with our Trees?

Melissa Custic

What is the urban forest?



2010 Tree Census Overview



Invasive species are a problem

Pre-settlement species (especially oaks and hickories)
are not abundant

Ashes and maples were very common



2020 Update?



New 2020 Tree Census by spring 2021



What has happened since then?



- **13 million ash trees are dead**
- Our canopy has dropped to 18% (national avg. for metro areas is 41%)
- Canopy continues to grow in communities with resources and is getting smaller in communities without resources
- Climate change continues to increase

Emerald Ash Borer



Average 2014 cost: \$250,000

Range of costs: \$100 to \$2.8 million

EAB programs:

Tree removal (97%)

Public education (64%)

Pesticide application (37%)

Tree ordinances specific to EAB
(33%)



What has happened since then?



- 13 million ash trees are dead
- **Our canopy has dropped to 18% (national avg. for metro areas is 41%)**
- Canopy continues to grow in communities with resources and is getting smaller in communities without resources
- Climate change continues to increase

Urban tree canopy



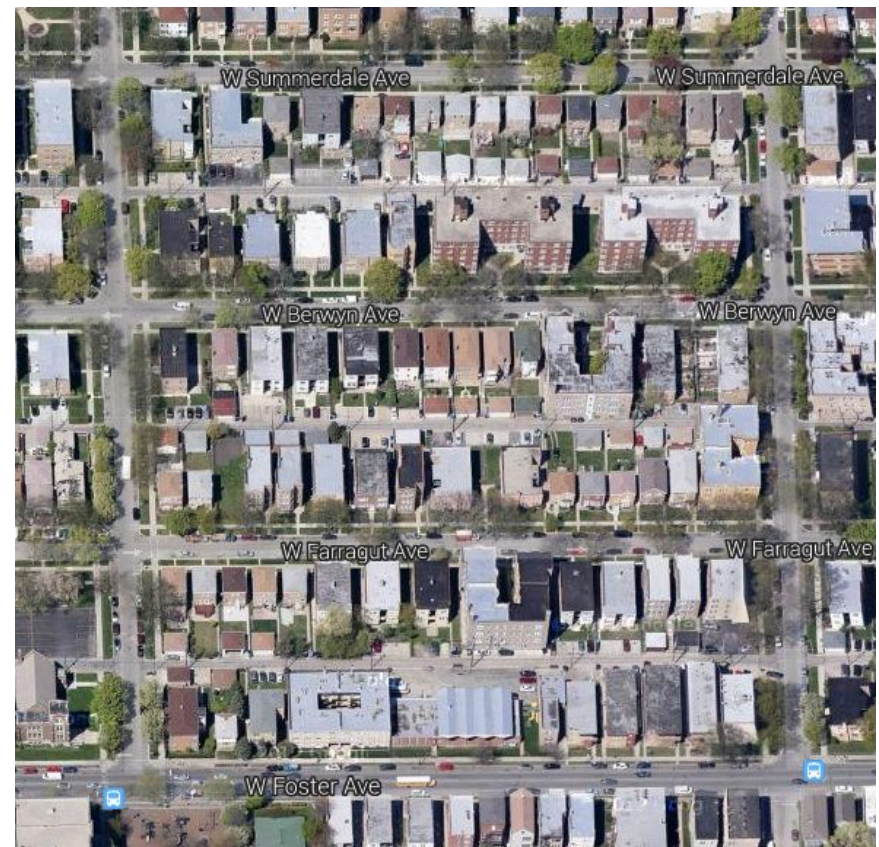
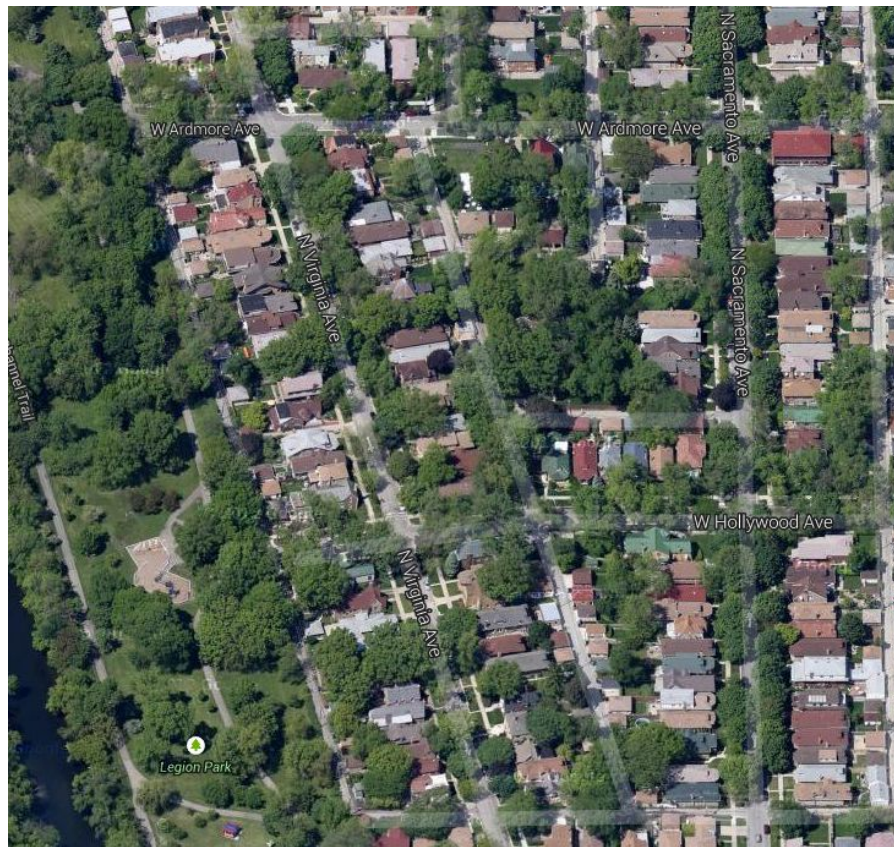
Larger trees offer more benefits



Urban tree canopy



Extent of tree benefits correlates
with tree canopy abundance



LiDAR Analysis



Trees

Vegetation

Road/Rail

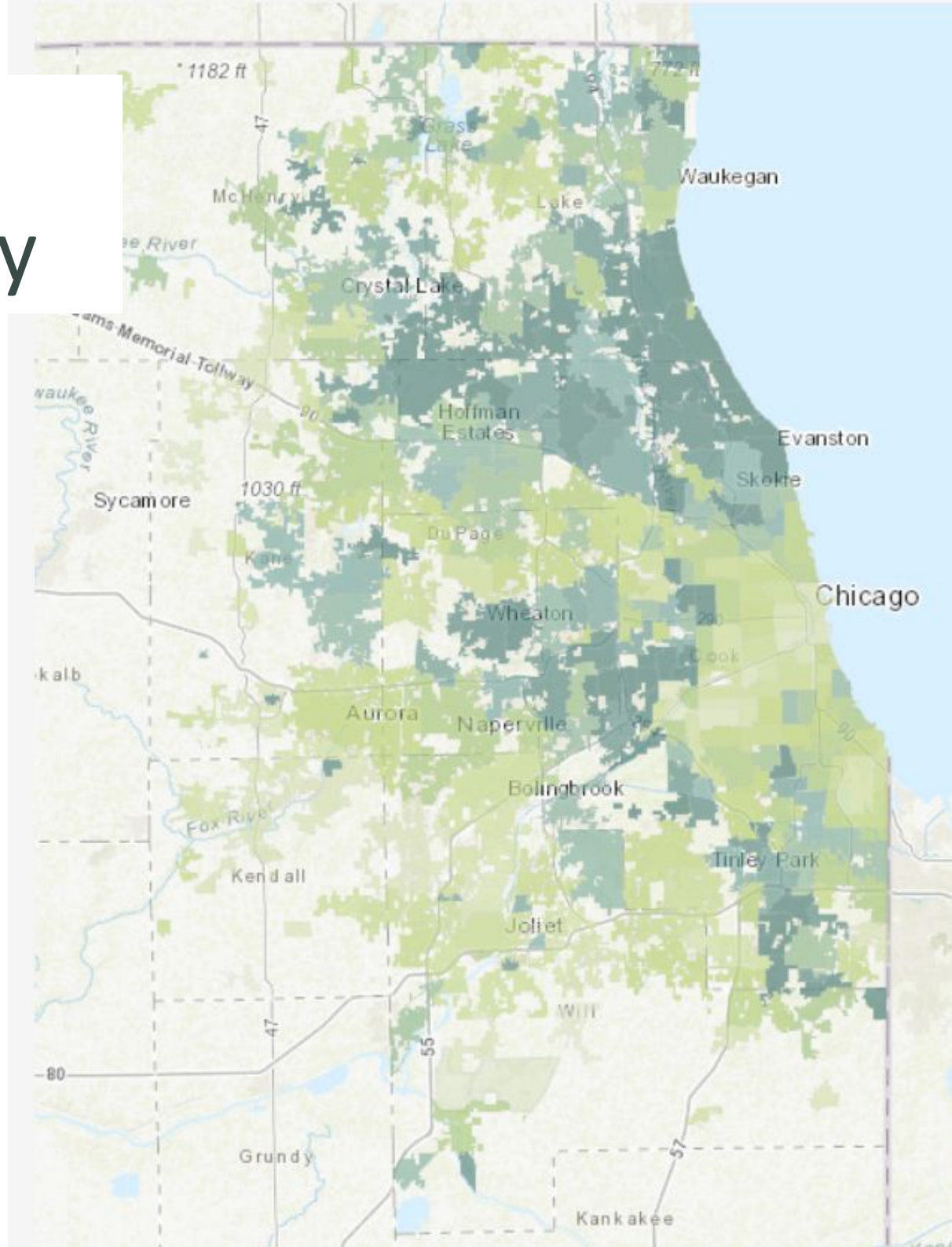
Buildings

Other Paved Surfaces

Water

Bare Dirt

Tree Canopy



What has happened since then?



- 13 million ash trees are dead
- Our canopy has dropped to 18% (national avg. for metro areas is 41%)
- **Canopy continues to grow in communities with resources and is getting smaller in communities without resources**
- Climate change continues to increase

2020 Update?



New 2020 Urban Tree Canopy Assessments by spring 2021



What has happened since then?



- 13 million ash trees are dead
- Our canopy has dropped to 18% (national avg. for metro areas is 41%)
- Canopy continues to grow in communities with resources and is getting smaller in communities without resources
- **Climate change continues to increase**



Midwest:

Extreme heat

Heavy downpours

Flooding

Drought

Pest and pathogens



Ancillary impacts to:

Infrastructure

Health

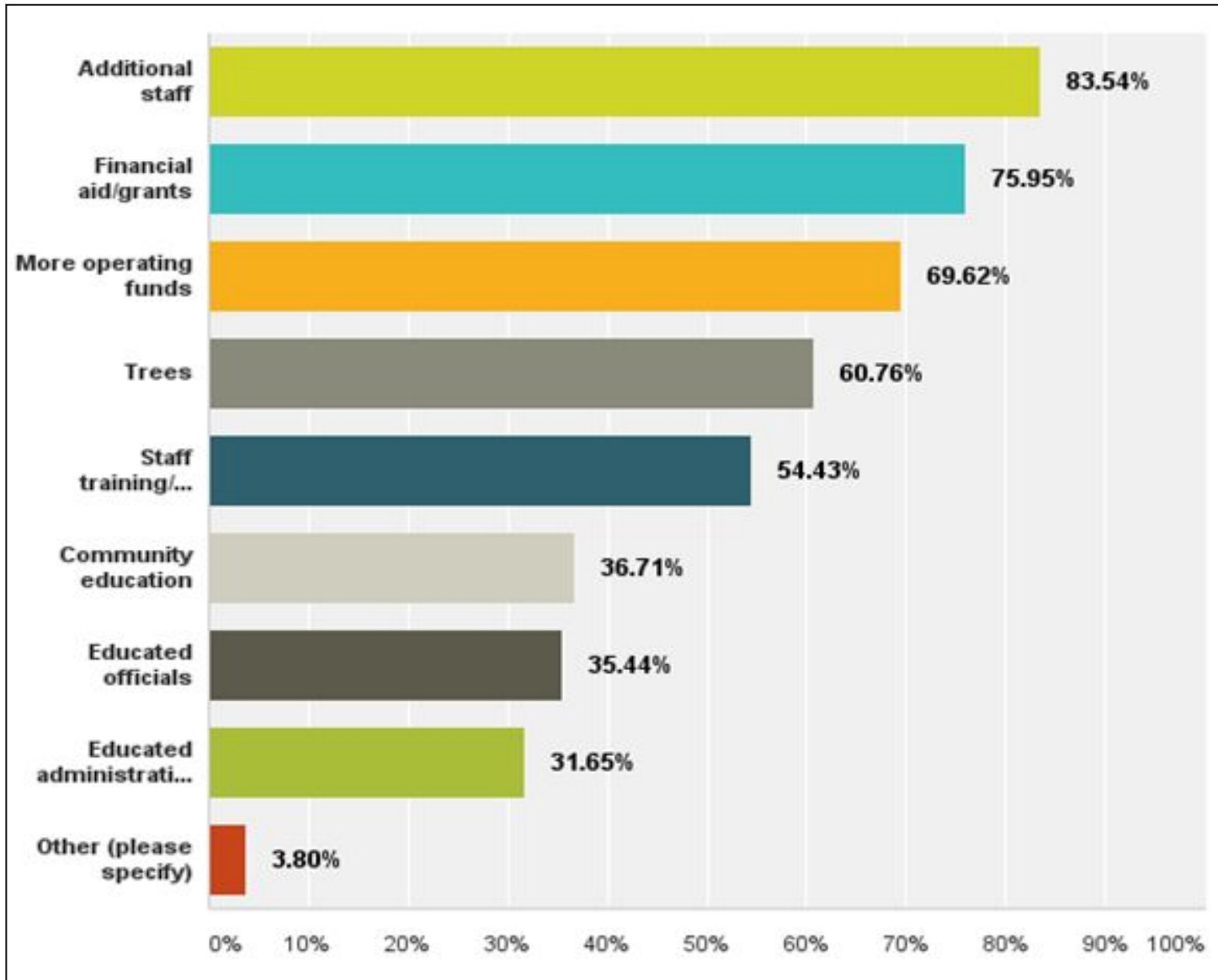
Agriculture

Forestry

Transportation

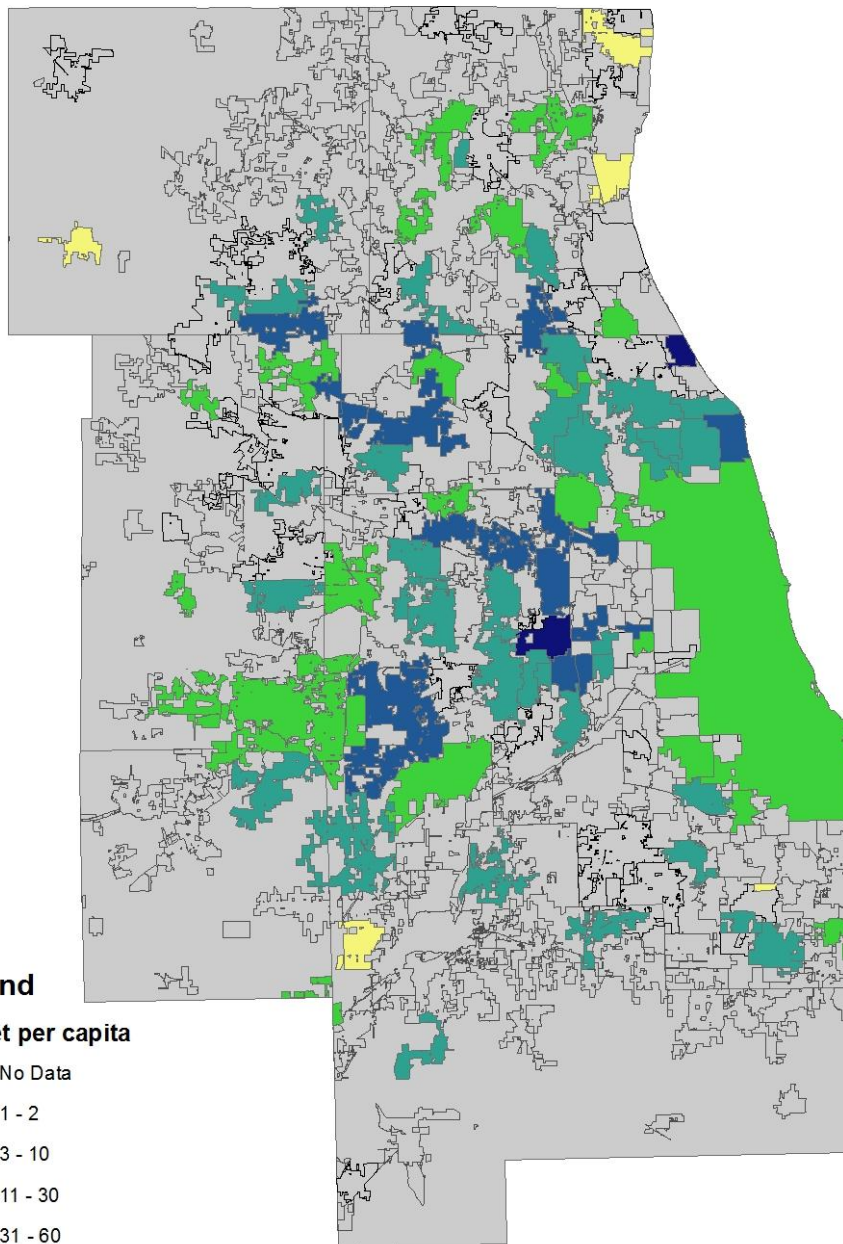
Air and Water Quality

Capacity to care for trees



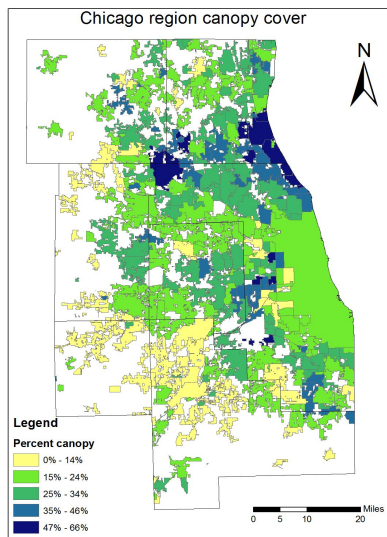
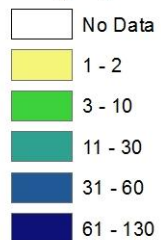


Budget Per Capita



Legend

Budget per capita



Return on investment

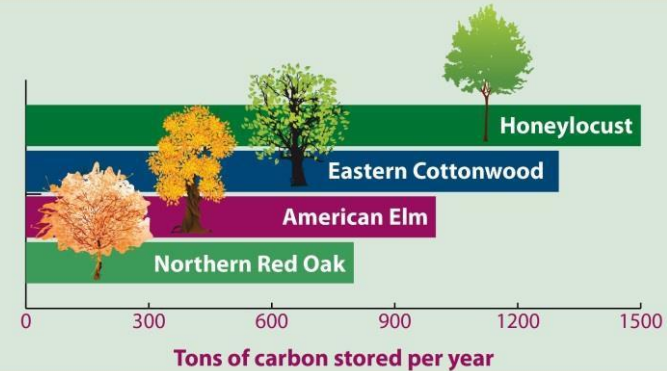
Find specific studies here:
ChicagoRTI.org/TreeBenefits

\$1 Spent on mgmt → **\$1.37-3.09** returned in services

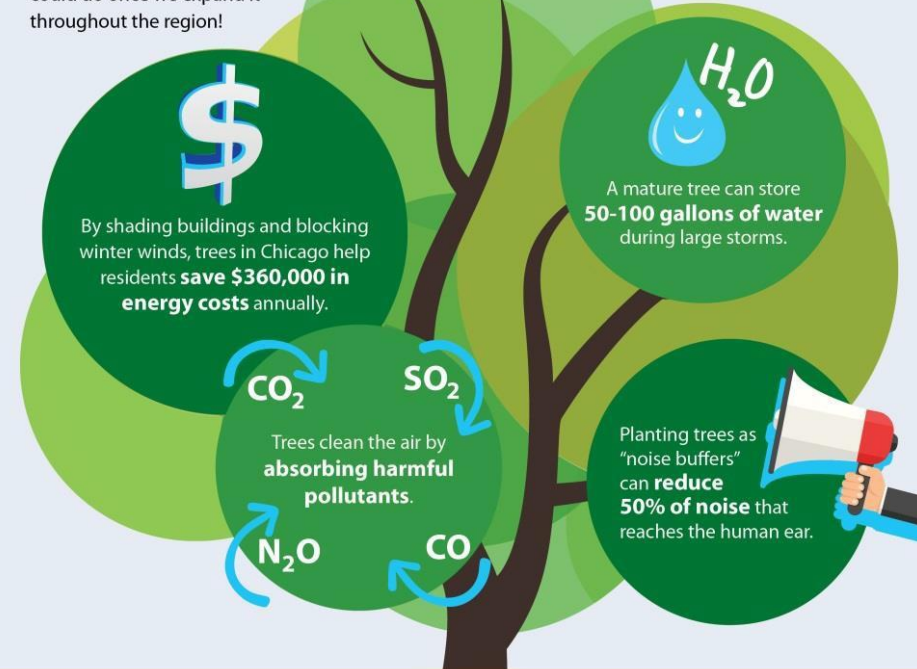
Trees are a Person's Best Friend

Trees aren't only pretty to look at; they also provide numerous benefits for society. The Chicago region's tree canopy is already contributing to the human and environmental health of the area.

As trees grow, they store more carbon dioxide, a greenhouse gas that contributes to climate change. In the Chicago region, trees sequester an estimated **17,700 tons of carbon** per year.



Imagine what the canopy could do once we expand it throughout the region!



Bluestem Communications is proud to be a part of the Chicago Region Trees Initiative, a coalition of organizations working to improve the Chicago region's tree canopy size, health and diversity. The data presented here is part of the research being conducted by the CRTI. If you're interested in learning more about the CRTI, click this image.

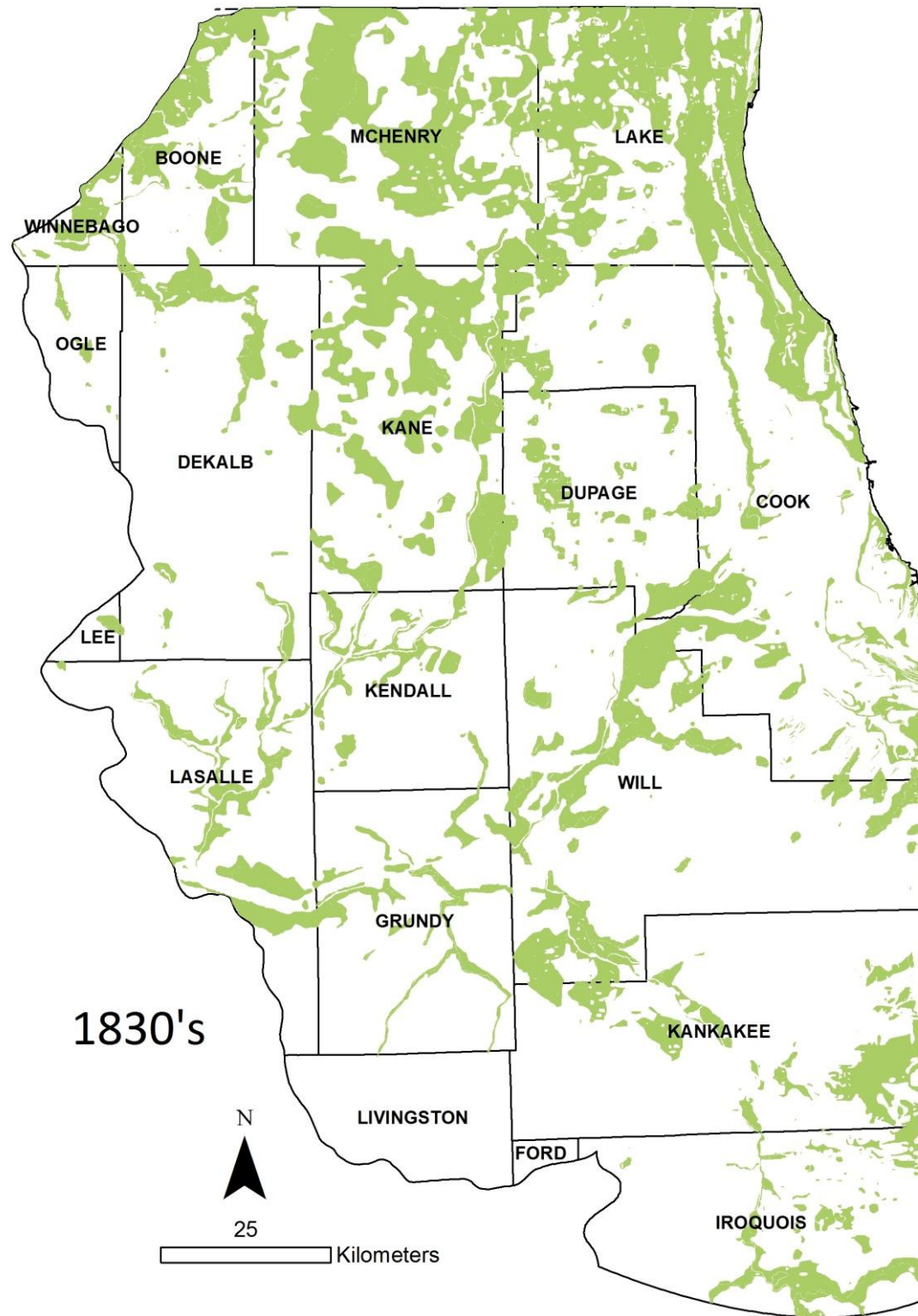
Do you need help with your marketing, outreach or communications work? Give Bluestem a call, **(312-754-0403)** we are ready to help you tell your story and engage your audience.

Forest Management Survey



Please complete the survey!

<http://chicagorti.org/MGMTsurvey>



1830's

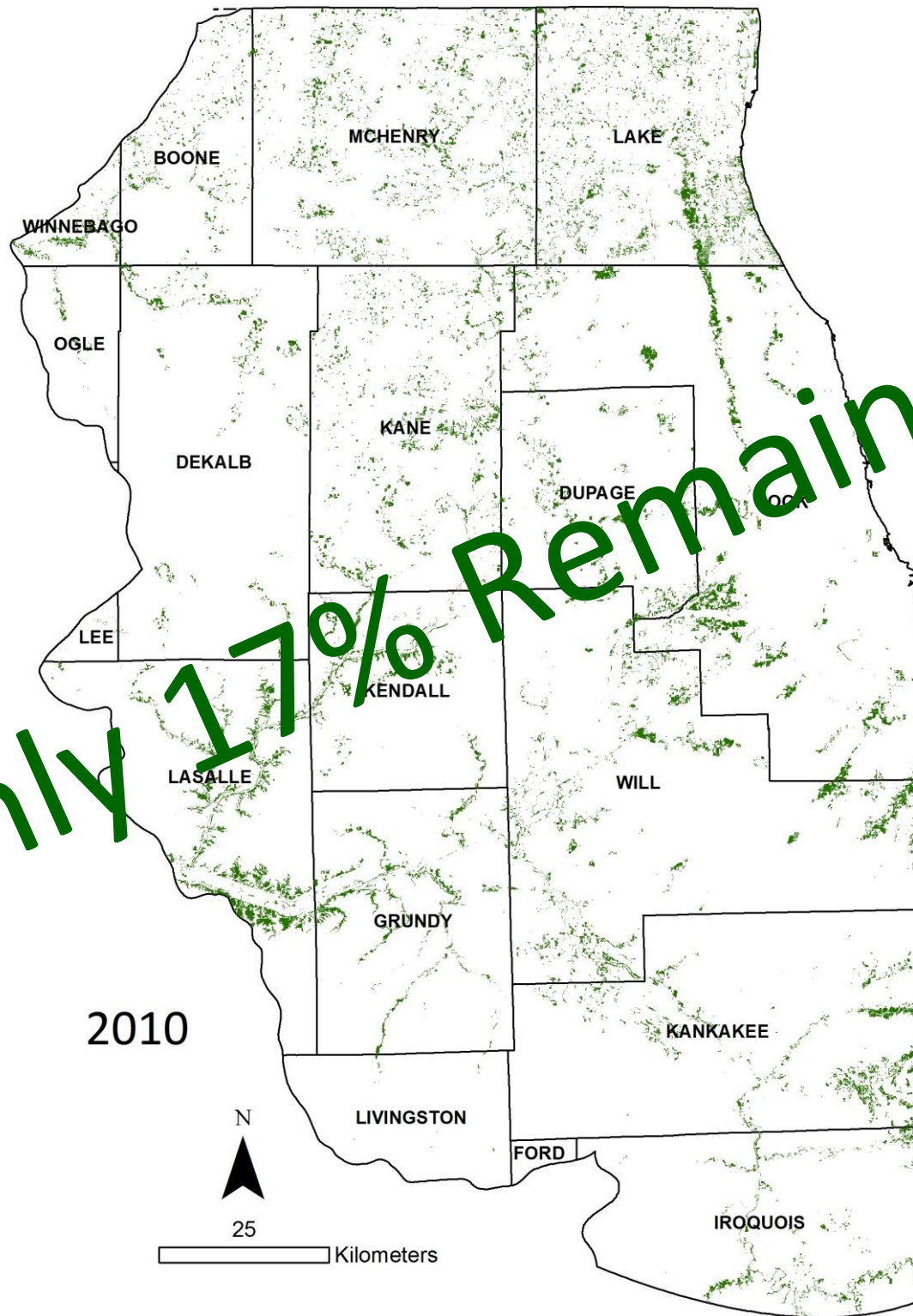
N



25

Kilometers

Only 17% Remains



2010

N

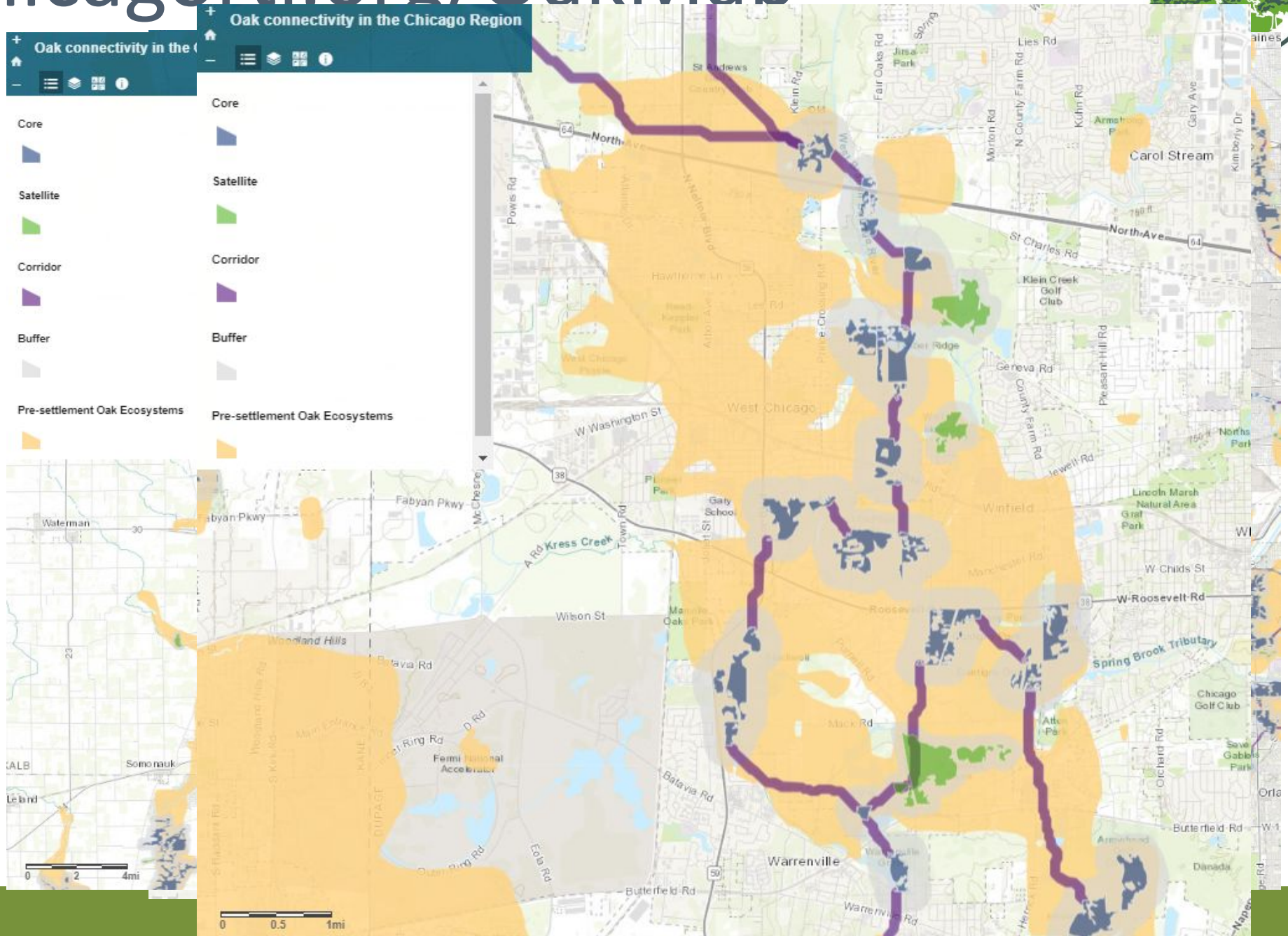
25

Kilometers

ChicagoRTI.org/UTC



chicagorti.org/OakMap





Interactive priority map

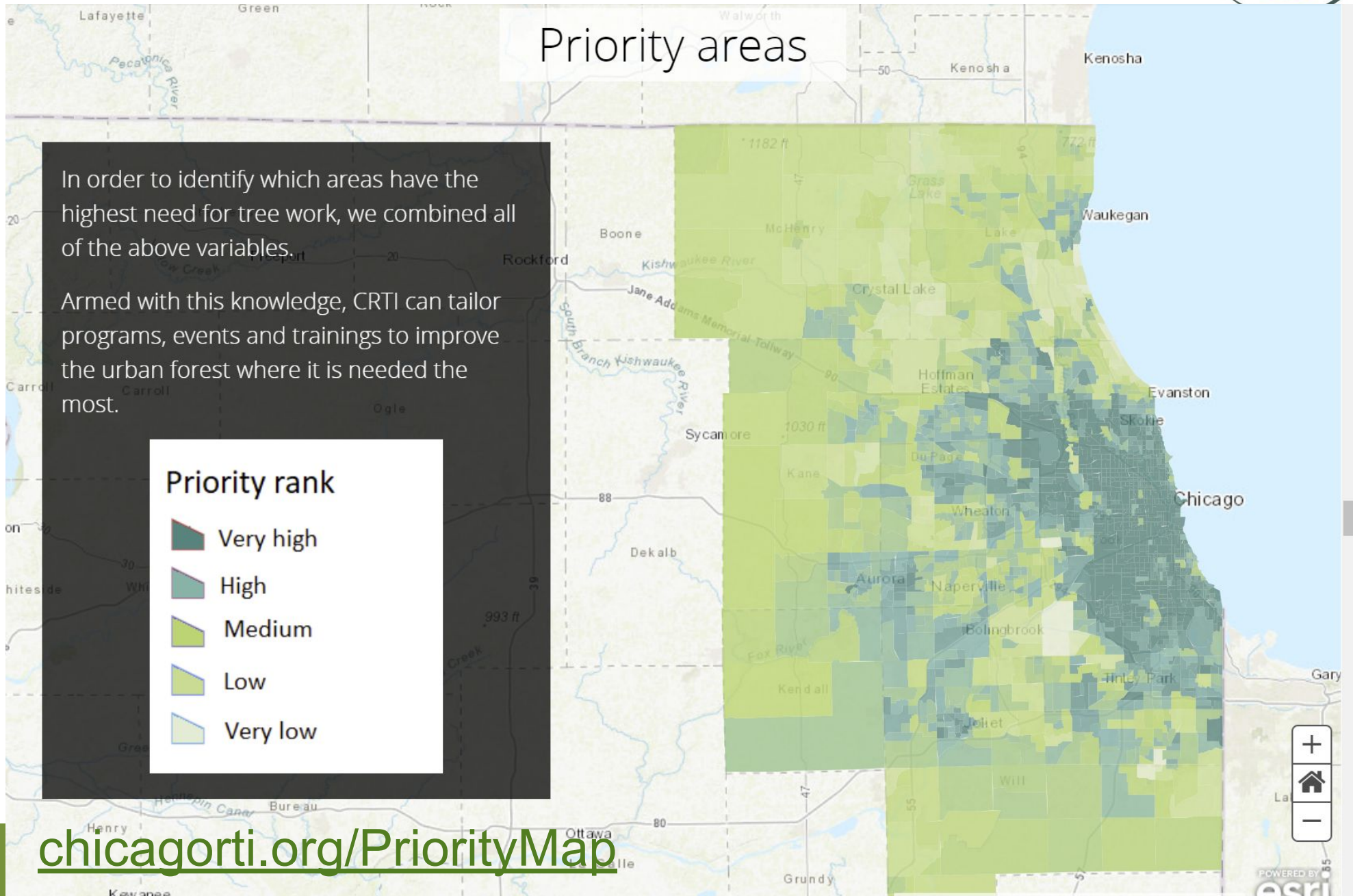
Priority areas

In order to identify which areas have the highest need for tree work, we combined all of the above variables.

Armed with this knowledge, CRTI can tailor programs, events and trainings to improve the urban forest where it is needed the most.

Priority rank

- Very high
- High
- Medium
- Low
- Very low

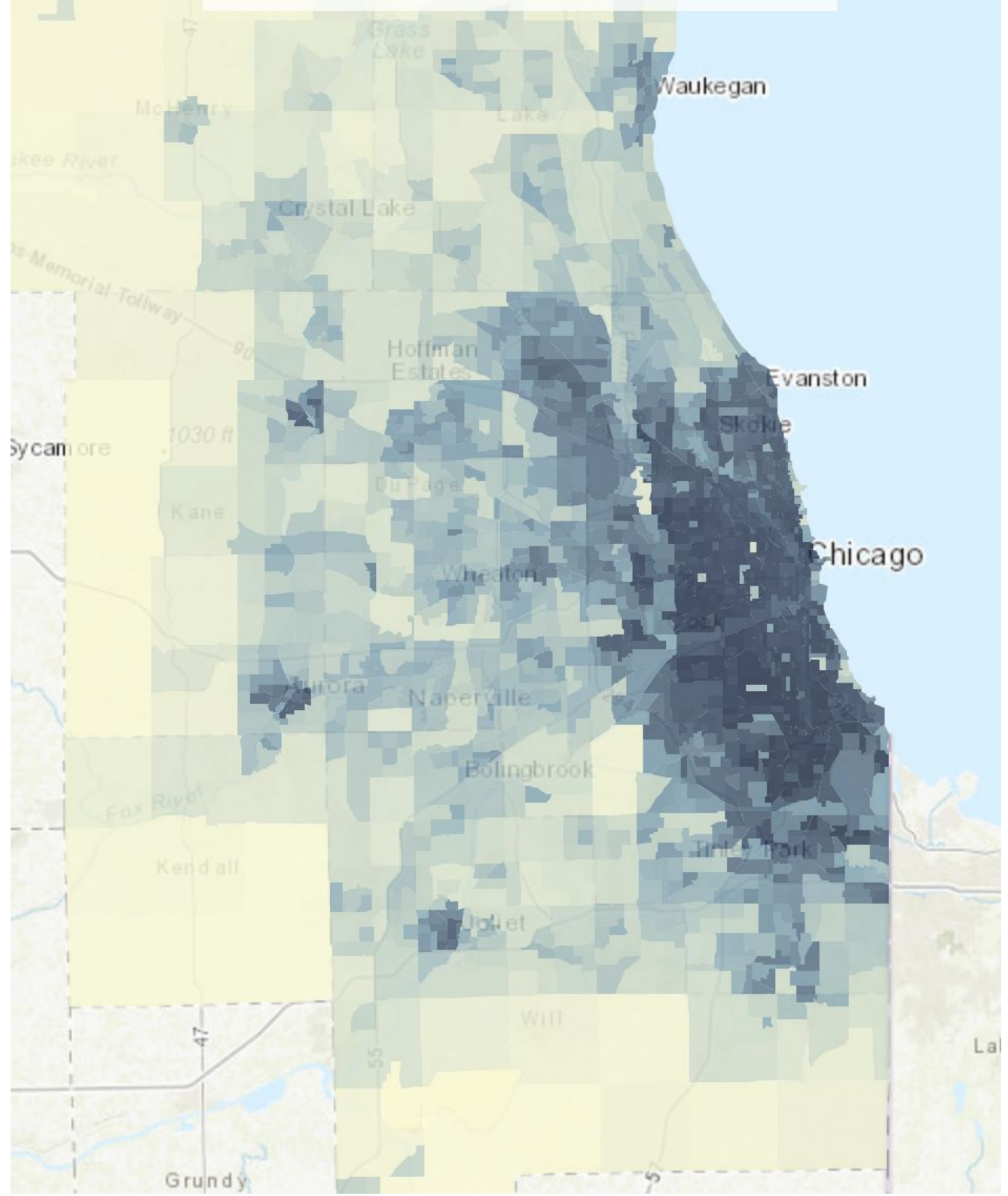


chicagorti.org/PriorityMap

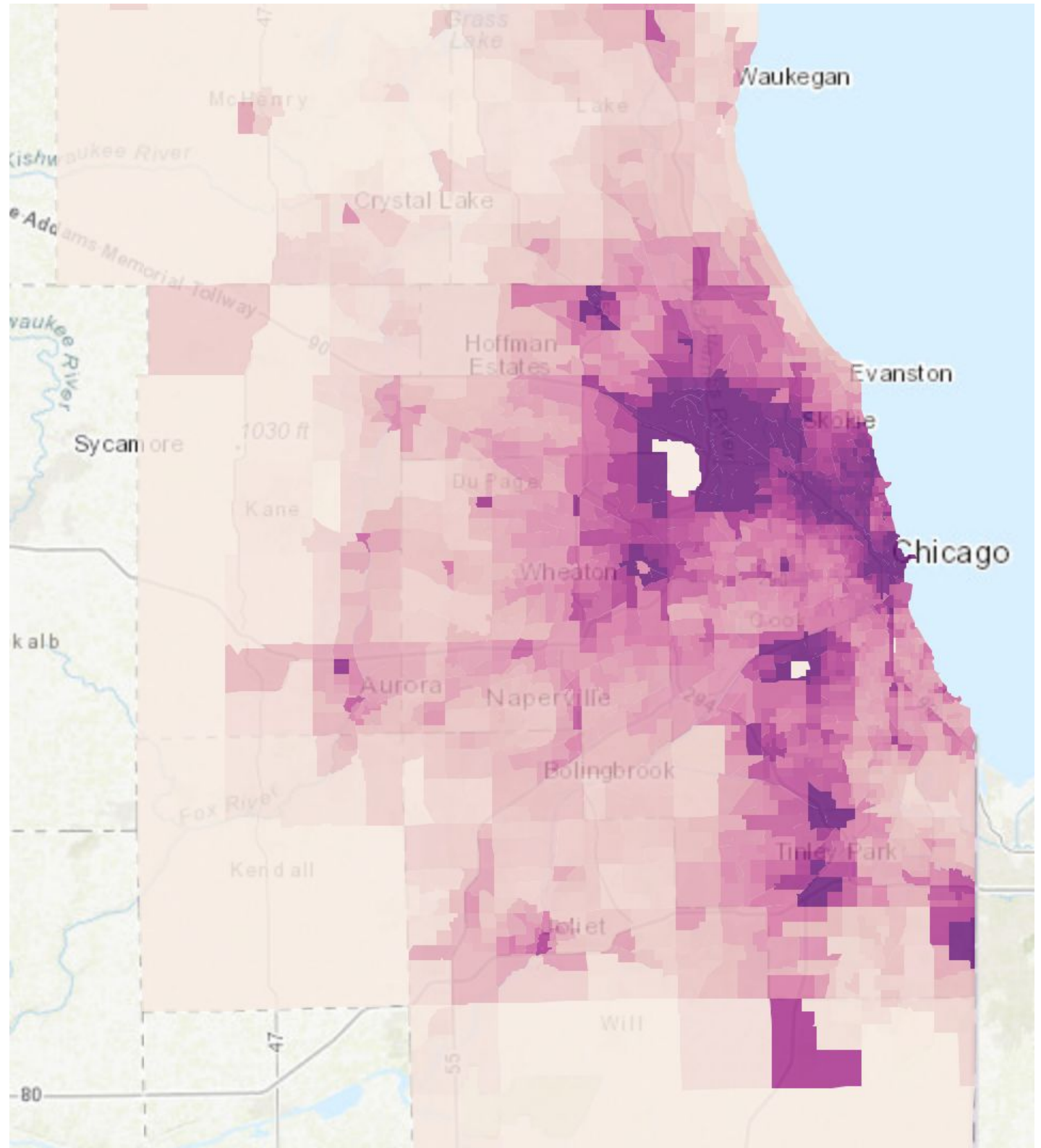


POWERED BY
ESRI

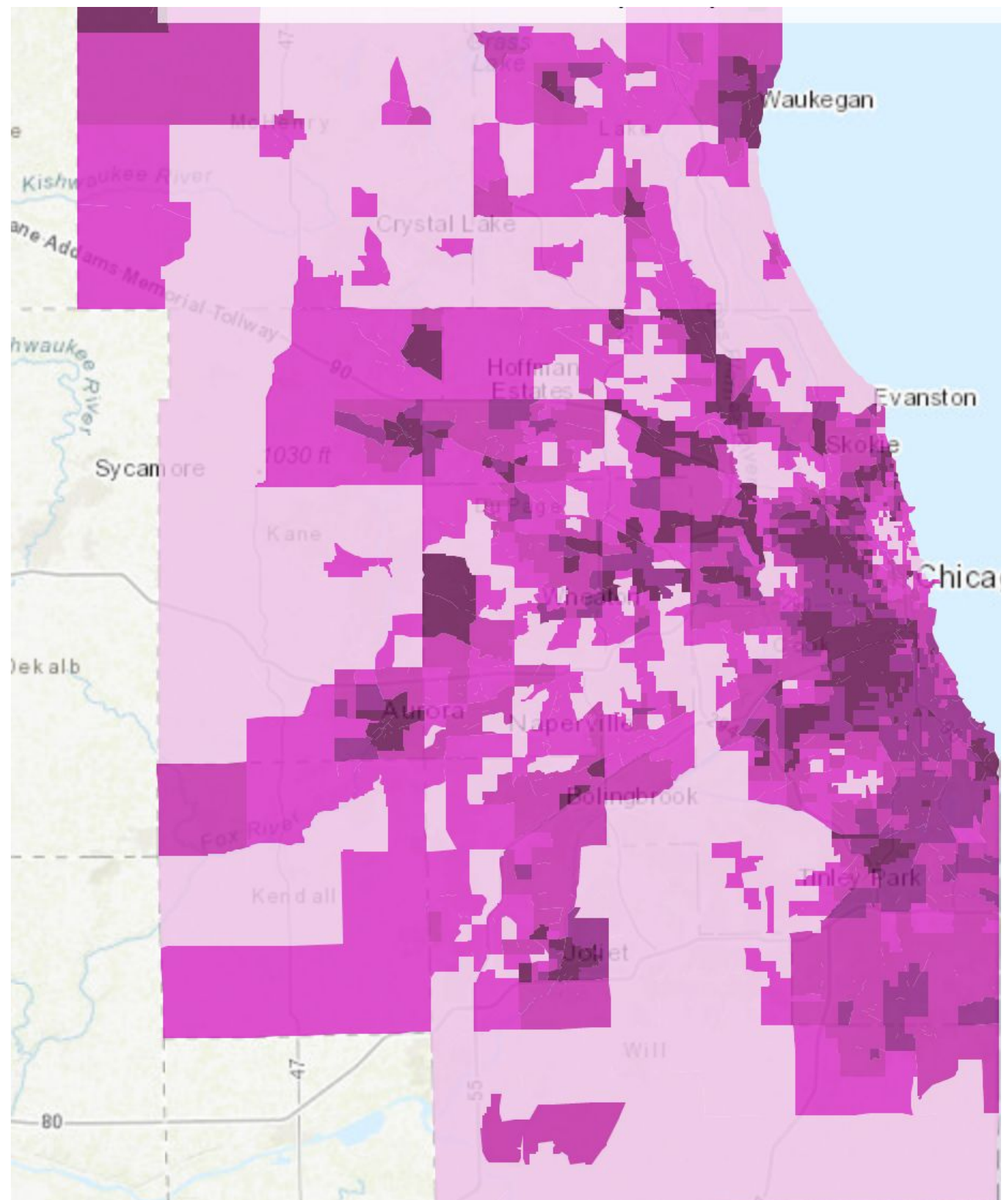
Flooding



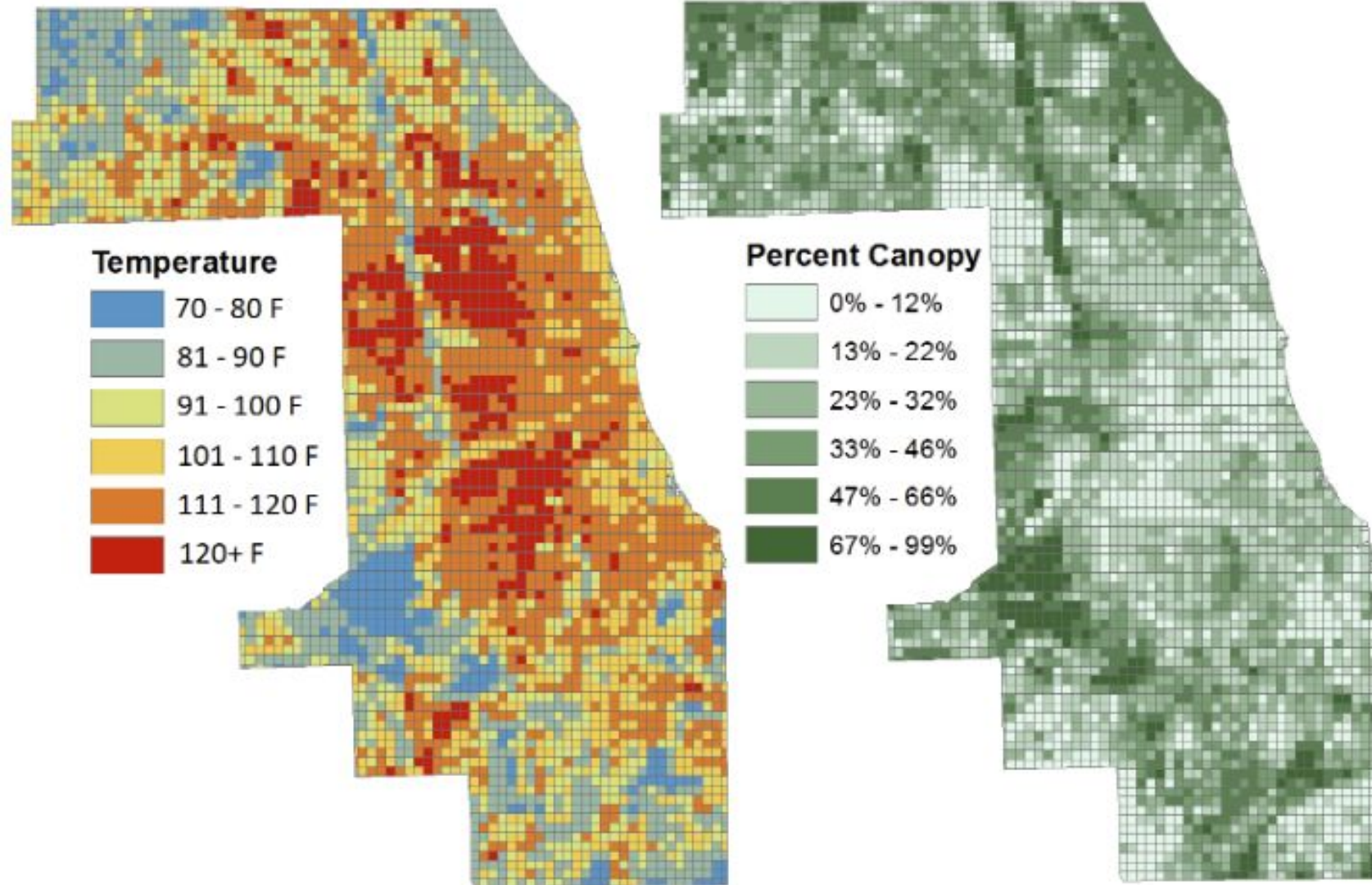
Air Quality



Vulnerable Populations



Heat

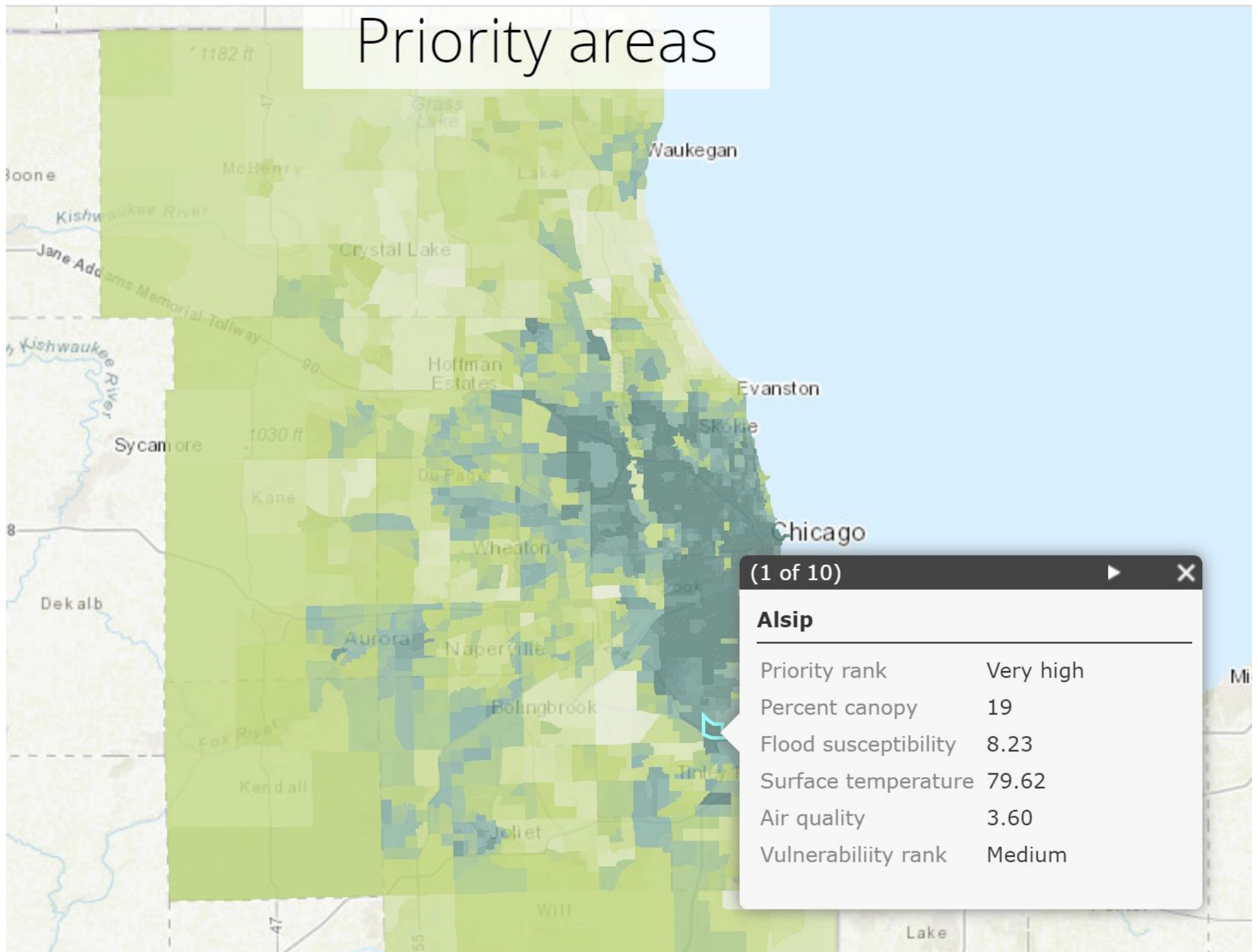


Temperature Map

chicagorti.org/surface-temperature-and-tree-canopy



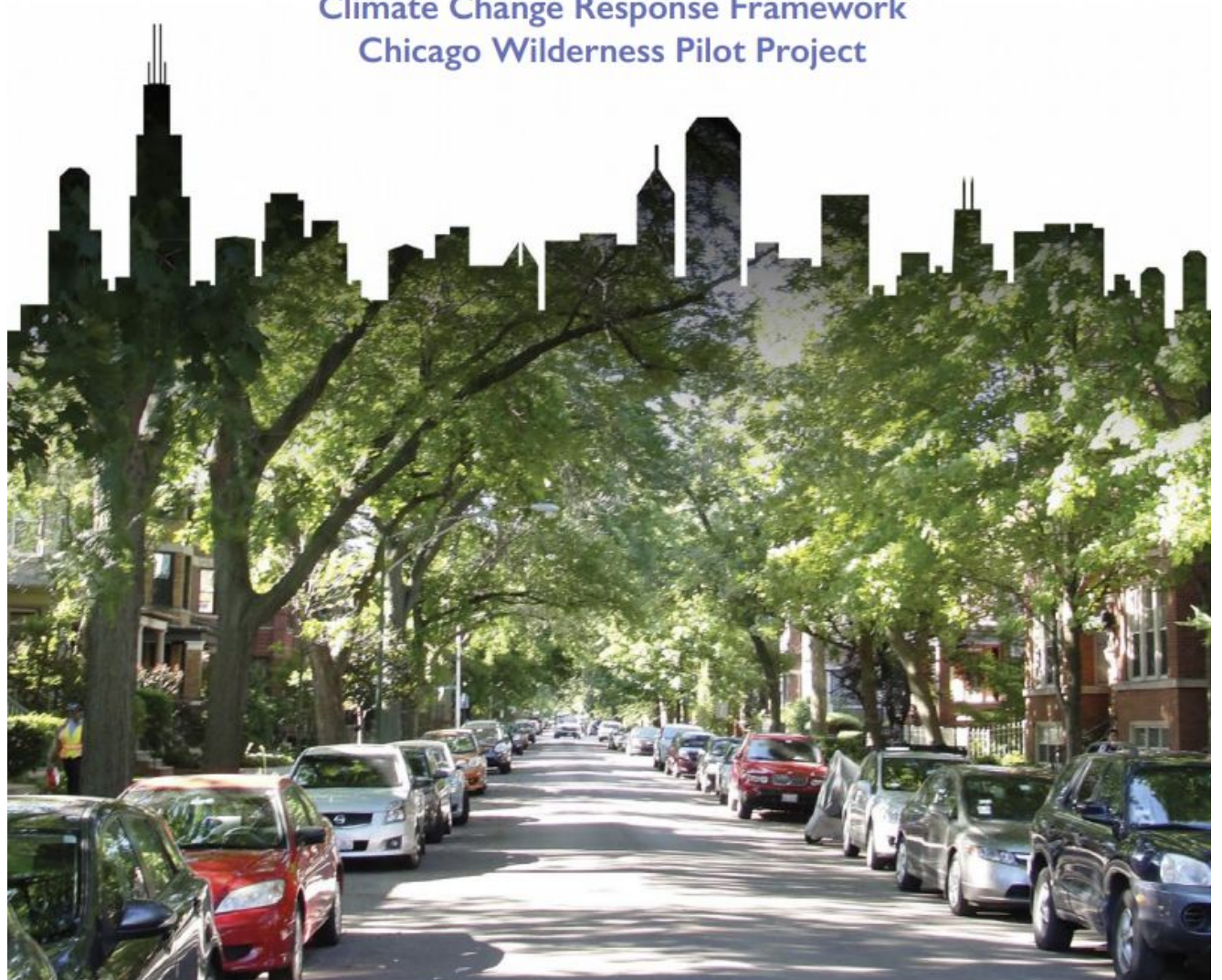
Priority areas



Climate Vulnerability

CHICAGO WILDERNESS REGION URBAN FOREST VULNERABILITY ASSESSMENT AND SYNTHESIS:

A Report from the Urban Forestry
Climate Change Response Framework
Chicago Wilderness Pilot Project





**CHICAGO
REGION
TREES
INITIATIVE**

Our Trees.
Our Communities.
Our Future.

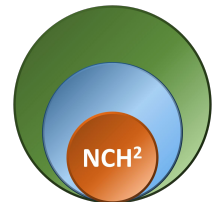
Melissa Custic, MCustic@mortonarb.org
ChicagoRTI.org [@ChicagoRTI](https://www.facebook.com/ChicagoRTI) [facebook.com/ChicagoRTI](https://www.facebook.com/ChicagoRTI)



The Health Benefits of Trees

Teresa H. Horton, PhD
Department of Anthropology
Northwestern University
Thorton@northwestern.edu

September 30 , 2020
GreenTown Conference



Take home messages

- Science shows time in nature is essential for our health
- Science reveals the many mechanisms for this
- Science reveals inequities of access to nature correspond to known health disparities
- Nature can help us cope with the COVID-19 pandemic

Perspectives of Nature



Features untouched by humans,

- ◆ Forests
- ◆ Plants and animals
- ◆ Still and running water,



Features produced by humans

- ◆ Indoor plants
- ◆ Parks
- ◆ Gardens



www.a-v-designs.com

Science Speaks

- Kondo, M. C., J. M. Fluehr, T. McKeon and C. C. Branas (2018). "Urban Green Space and Its Impact on Human Health." Int J Environ Res Public Health **15**(3).
- South, E. C., M. C. Kondo and N. Razani (2020). "Nature as a Community Health Tool: The Case for Healthcare Providers and Systems." Am J Prev Med.
- Wolf, K. L., S. T. Lam, J. K. McKeen, G. R. A. Richardson, M. van den Bosch and A. C. Bardekjian (2020). "Urban Trees and Human Health: A Scoping Review." Int J Environ Res Public Health **17**(12).

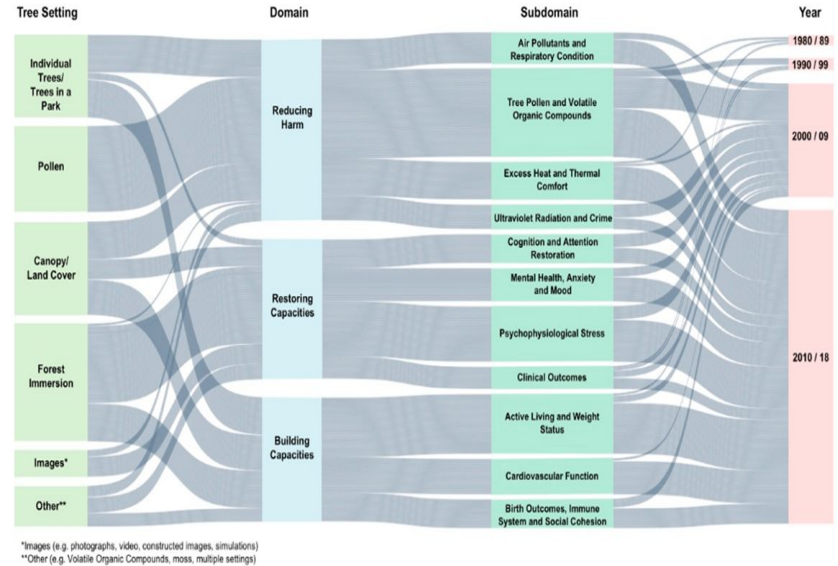


Figure 2. Scoping review of city trees and human health—synthesis of 201 studies.

Wolf et al. 2020 Int J Environ Res Public Health

Epidemic of Chronic Disease

 = 5 million people

HYPERTENSION

75,000,000



DIABETES

30,000,000



MENTAL ILLNESS

10,000,000

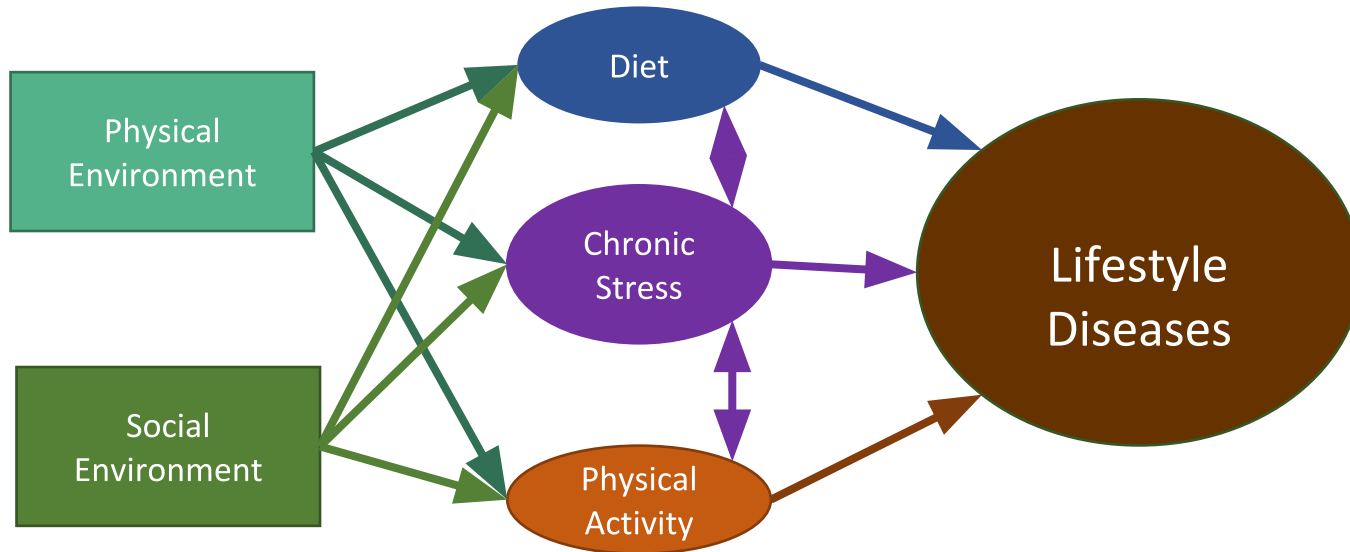


OBESITY (adults)

93,000,000



Linking social and physical environment to non-communicable “lifestyle” diseases



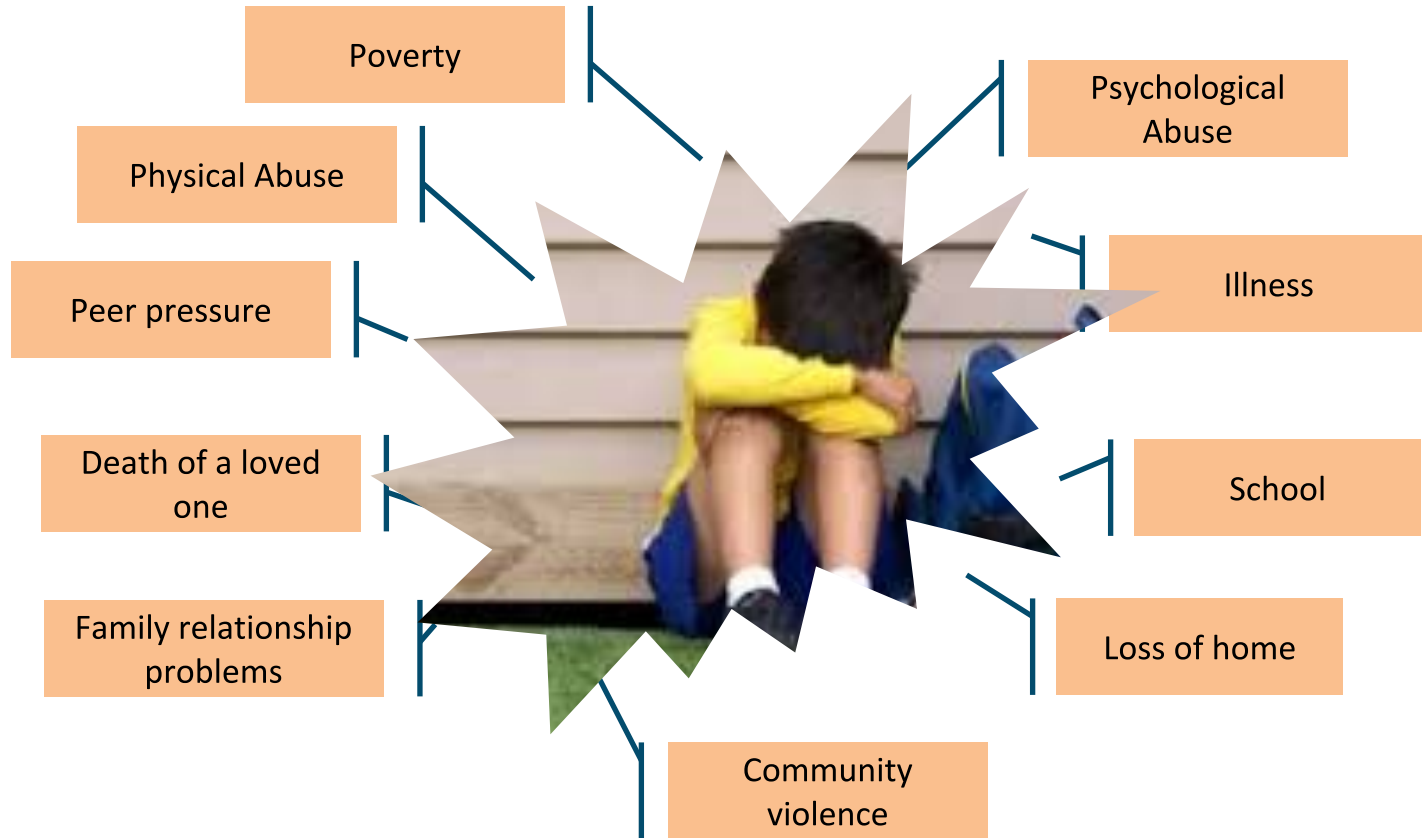
After: Kumanyika et al. 2002; Set 2012;
Homer et al. 2006

Zip code better predictor of health than genetic code



Harvard, T.J. Chan School of Public Health, 2014

Chronic Stress



How to Spot Income Inequality From Space? Count the Trees

June 10, 2012, by [Theresa Riley](#)



Hyde Park:

Life expectancy: 82 yrs

Median household income: \$48,663



Woodlawn:

Life expectancy: 75 yrs

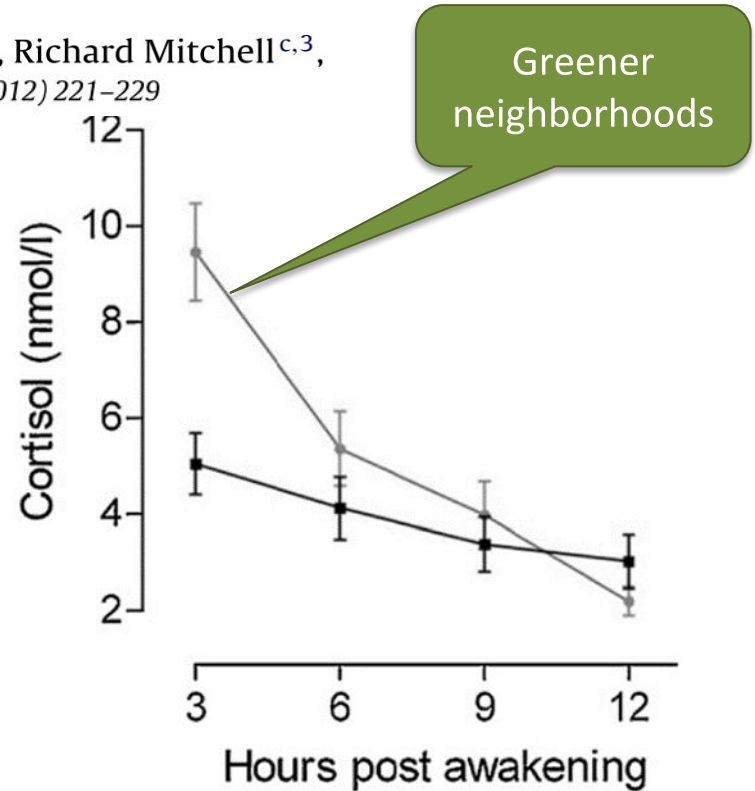
Median household income: \$23,986

<http://billmoyers.com/2012/06/10/how-to-spot-income-inequality-from-space-count-the-trees/>

More green space is linked to less stress in deprived communities: Evidence from salivary cortisol patterns

Catharine Ward Thompson^{a,*}, Jenny Roe^{b,1}, Peter Aspinall^{b,2}, Richard Mitchell^{c,3},
Angela Clow^{d,4}, David Miller^{e,5} *Landscape and Urban Planning* 105 (2012) 221–229

- Flatter cortisol slopes indicate
 - Increased risk of
 - Poor mental health
 - Poor physical health
 - Exposure to chronic psychosocial stress
 - See work by NU Faculty Emma K. Adam, Greg Miller, Edith Chen, and their colleagues.



Greenspace reduces risk of Type 2 Diabetes

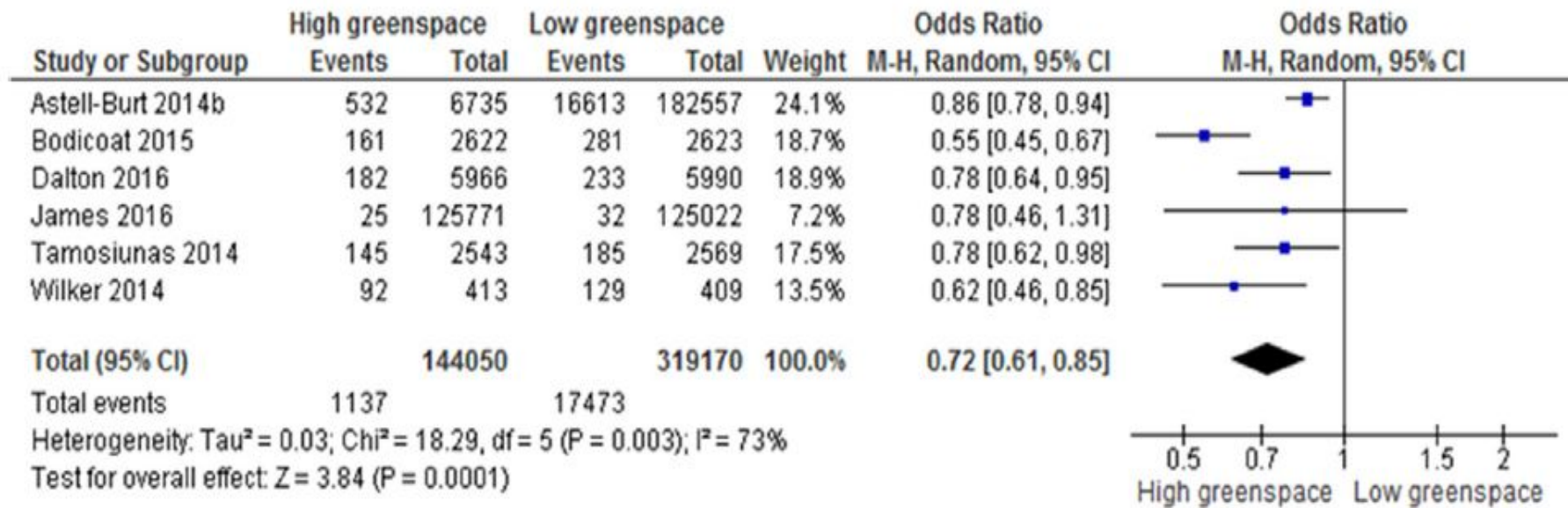


Fig. 2. Meta-analysis of the effects of greenspace exposure on incidence of type II diabetes.

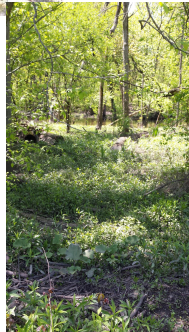
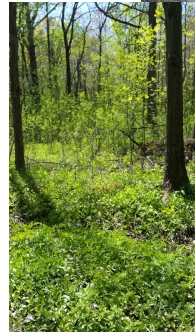
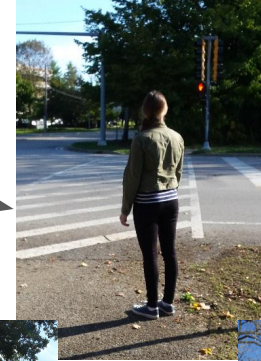
Twohig-Bennett, C. and A. Jones (2018). Environmental Research 166: 628-637.

Walk Locations

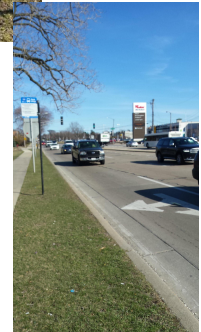
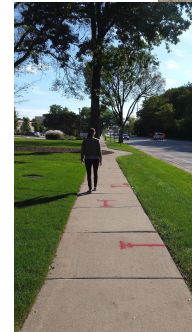
Forest path



Old Orchard Rd.

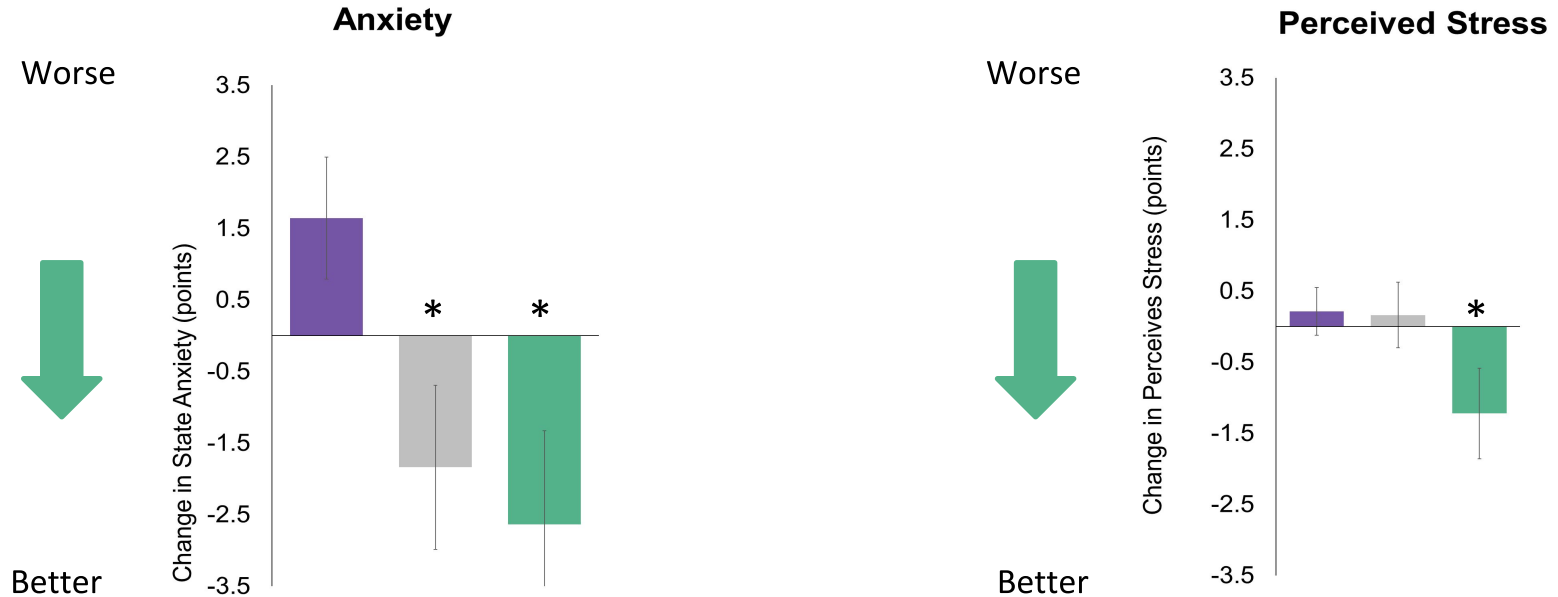


50 Minute Walks



Forest Walks Reduced Stress and Anxiety

Control (no walk) Sidewalk Forest

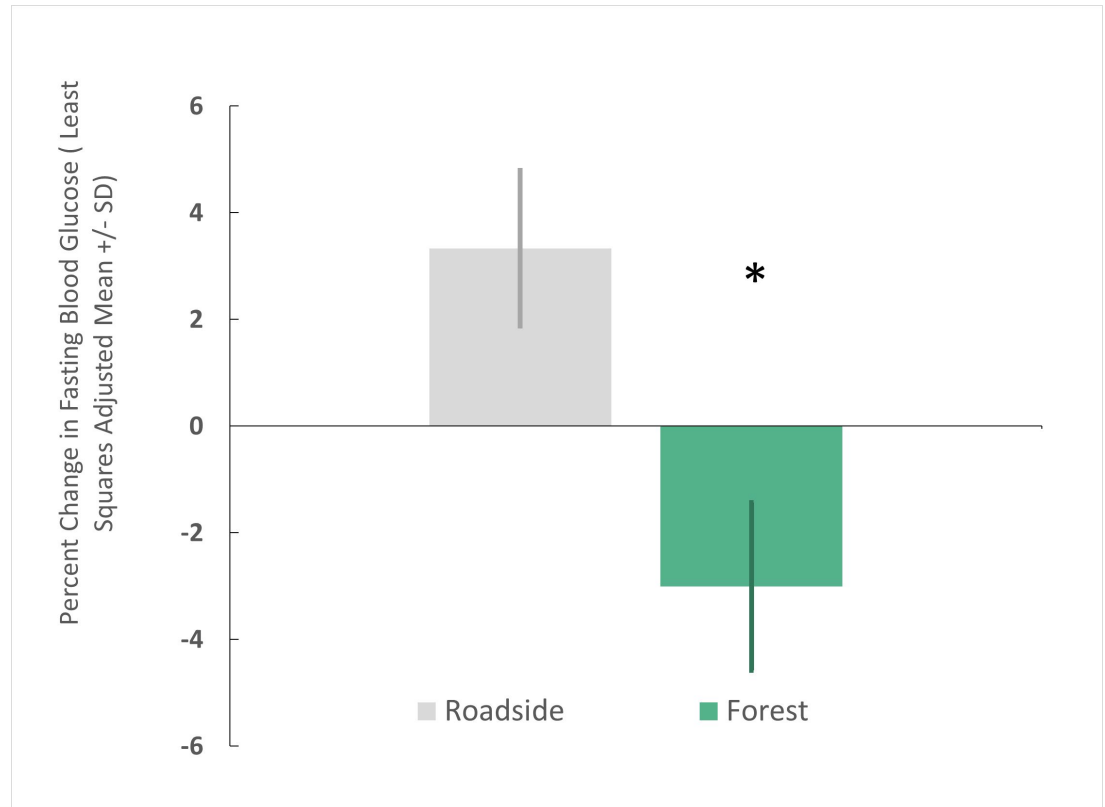


Koselka, et al. (2019). Int J Environ Res Public Health **16**(22).

Forest Walks Reduced Fasting Blood Glucose

(Horton et al. unpublished)

- Participant characteristics
 - N = 38 (20 female)
 - Age (22.9 ± 4.6 yr.; range 18-35)
 - % body fat
 - Women 24.02 ± 7.04
 - Men 16.6 ± 6.97
 - Initial Fasting Blood Glucose:
 - 91.0 ± 18.5 mg/dl



The COVID-19 Pivot

April 10, 2020

The Mental Health Consequences of COVID-19 and Physical Distancing

The Need for Prevention and Early Intervention

Sandro Galea, MD¹; Raina M. Merchant, MD²; Nicole Lurie, MD³

» Author Affiliations | Article Information

JAMA Intern Med. Published online April 10, 2020. doi:10.1001/jamainternmed.2020.1562

Parks are essential — especially during the coronavirus pandemic

During the COVID-19 pandemic, parks should be celebrated, protected, and ultimately leveraged to support public health.

By [Julia Africa](#), [Cheri Ruane](#), [Gary Hilderbrand](#), and [Chris Reed](#) Updated May 6, 2020, 4:51 a.m.



Boston Globe 5 May 2020

Coping with the pandemic's hidden mental health toll



Kim Hart

Axios. 7 May 2020 <https://www.axios.com/coronavirus-mental-health-toll-ab771036-8424-4011-b86e-fa0029a1ca96.html>

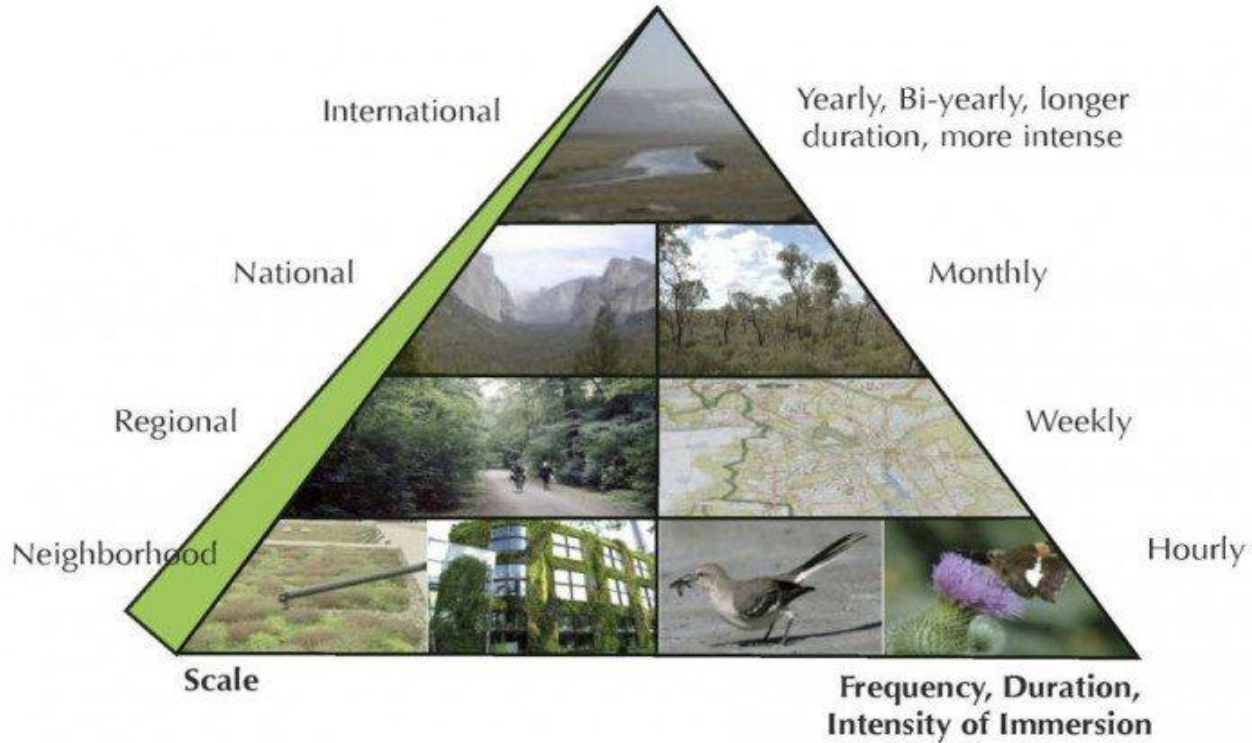
Commentary: Take a hike! Getting outside will help us through this pandemic



By [TERESA H. HORTON](#) AND [SUZANNE BARTLETT-HACKENMILLER](#)
CHICAGO TRIBUNE | MAR 20, 2020 | 3:59 PM



THE NATURE PYRAMID



Concept by: Tanya Denckla-Cobb
University of Virginia, School of Architecture.

Access to nature is a necessity

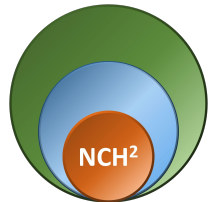
Not an amenity

Contact me at
Thorton@northwestern.edu

Join Nature, Culture, and Human Health

Email: nch2.Chicago@gmail.org

NCH2.org



Forests and Health

In the Forest Preserves of Cook County



**FOREST
PRESERVES**
of Cook County

Lands

Forest

Preserves of

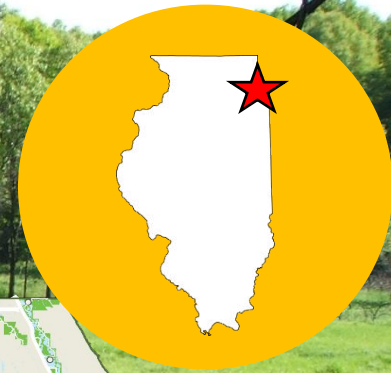
Established in 1915

Cook County

We are the nation's largest urban conservation district, and one of the oldest.

70,000 acres

The Forest Preserves make up about 11% of the land area of Cook County, with a population of ~5.2 million people.



Lands

Tree Cover

55,000 acres or 78% of our lands are wooded.

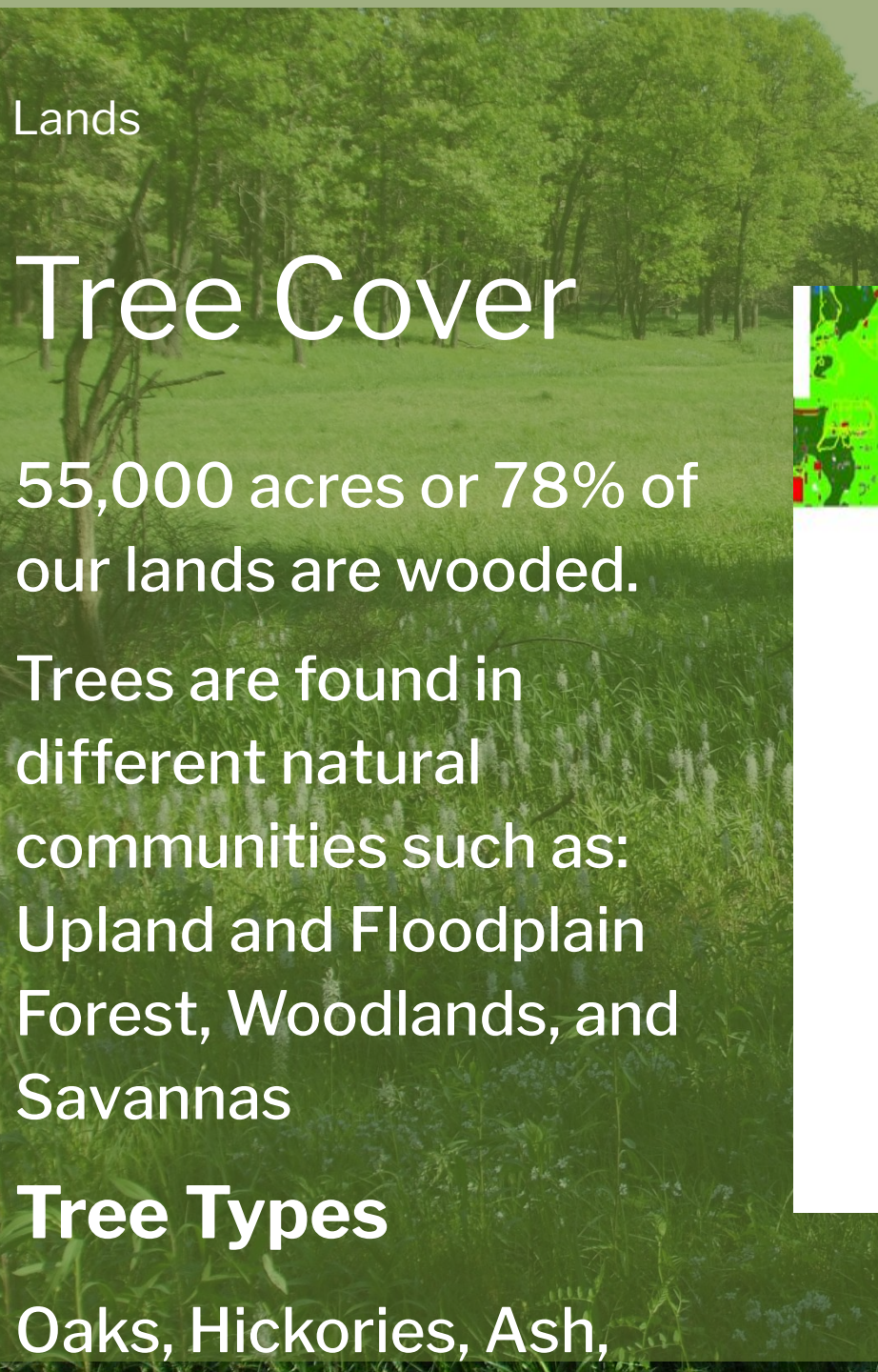
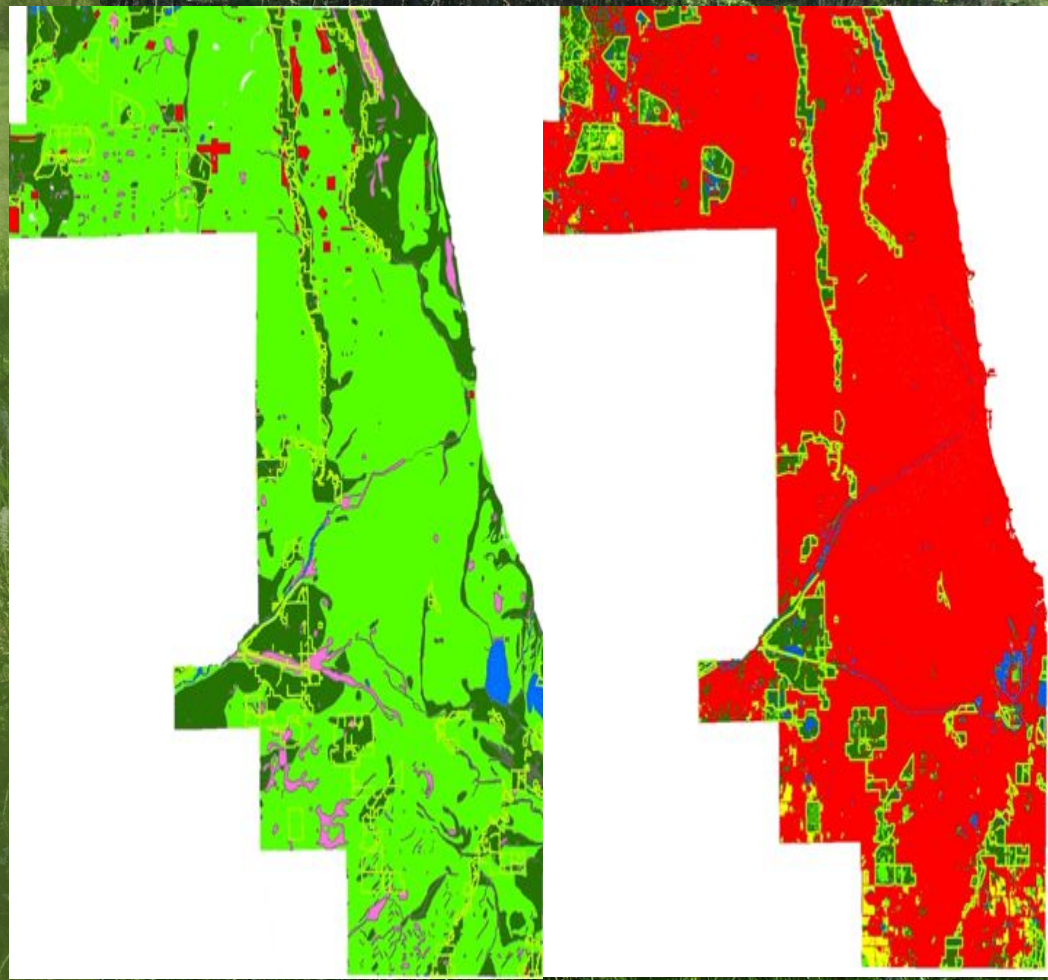
Trees are found in different natural communities such as: Upland and Floodplain Forest, Woodlands, and Savannas

Tree Types

Oaks, Hickories, Ash,

1840

2015



The Natural Communities of

Forest	Dry-mesic Forest	Prairie	Dry Prairie	
	Mesic Forest		Dry-mesic Prairie	
	Wet-mesic Forest		Mesic Prairie	
	Mesic Floodplain Forest		Wet-mesic Prairie	
	Wet-mesic Floodplain Forest		Wet Prairie	
	Wet Floodplain Forest		Dry Sand Prairie	
	Dry-mesic Sand Forest		Dry-mesic Sand Prairie	
	Mesic Sand Forest		Mesic Sand Prairie	
Woodland	Dry-mesic Woodland		Wet-mesic Sand Prairie	
	Mesic Woodland		Wet Sand Prairie	
	Dry Sand Woodland		Dry-mesic Gravel Prairie	
	Dry-mesic Sand Woodland		Shrub Prairie	
Flatwoods	Northern Flatwoods		Wetland	Shrub Swamp
	Sand Flatwoods			Sedge Meadow
Savanna	Dry-mesic Savanna	Graminoid Fen		
	Mesic Savanna	Graminoid Bog		
	Dry Sand Savanna	Calcareous Seep		
	Dry-mesic Sand Savanna	Sand Seep		



COMMUNITIES OF COOK COUNTY



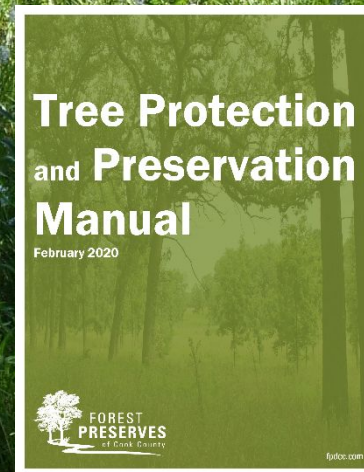
Lands

Protecting Trees into the NCCP & NCRMP resiliency plans future

Tree Protection and
Preservation Manual

Tree Mitigation Plan

Tree Management Plan for
Highly Used Public Areas
(groves, facilities, etc) in
development

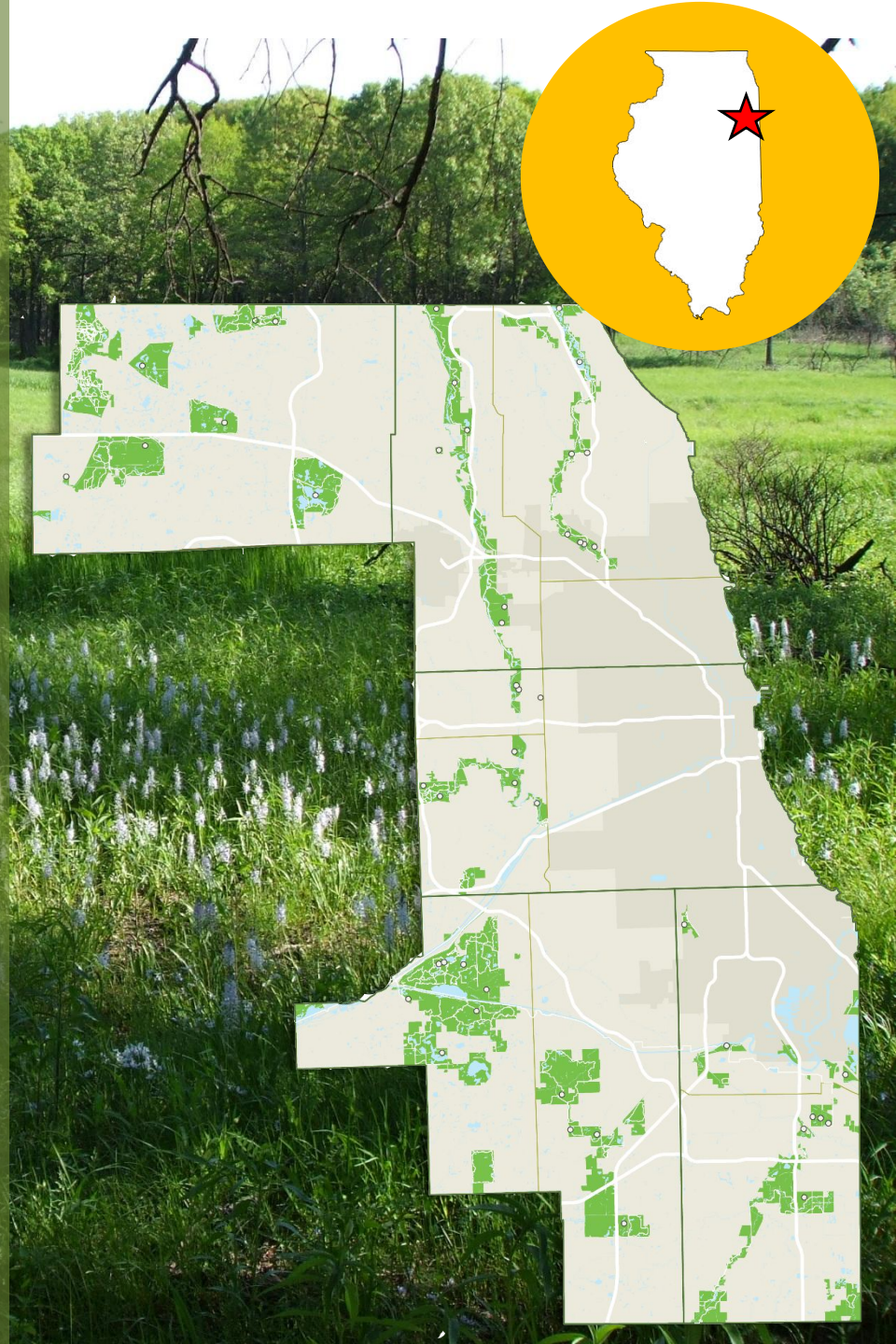


Lands

Neighbors

In our highly developed county, there are 85 municipalities adjacent to FPCC Preserves.

That means plenty of opportunity to provide recreation and other benefits to citizens of the county.



Lands

Benefits

Eco-services: Water storage, Clean Air (CO₂ removal, O₂ supply), Shade/Cooling

Recreation: 325 miles of trails for biking, hiking, cross-country skiing, and exploring; 40 Lakes and 12 rivers and creeks for kayaking, canoeing, fishing; 200 groves for picnicking and outdoor gatherings



Lands

Health Benefits

Exercise/Fitness: Running trails, running events, cross training, hiking programs, kayaking and canoeing, and biking.

Forest Bathing/Relaxation: Nature walks, organized hikes, wildflower walks, birding, nature exploration through naturalist-led



Please

<https://fpdcc.com/places/>
VISIT



**FOREST
PRESERVES**
of Cook County

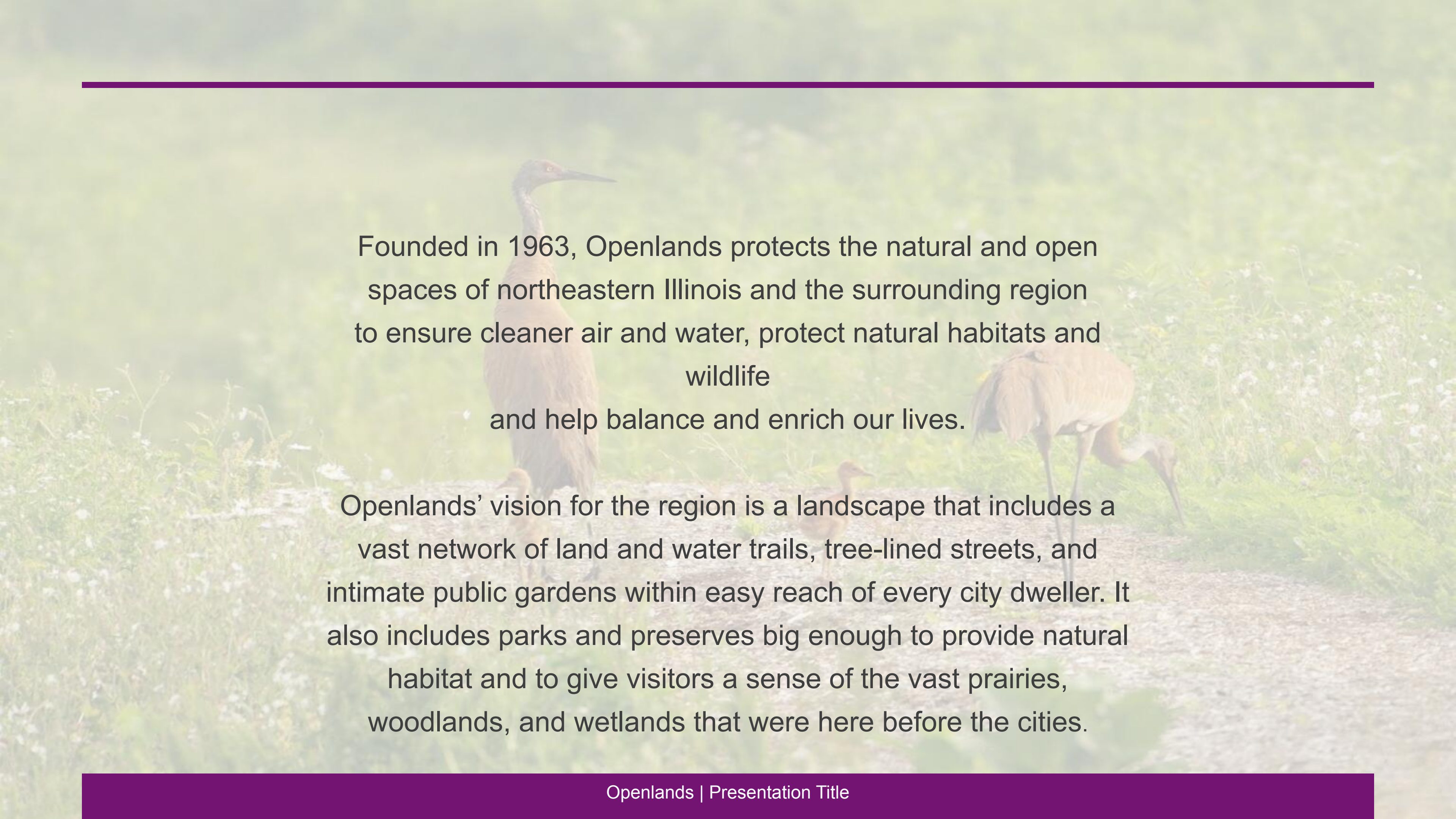


openlands
conserving nature for life

TreeKeepers

Presented by Al DeReu



A photograph of a sandhill crane and its young chicks in a grassy field. The crane is standing on the left, looking to the right. There are several chicks scattered around it. The background is a soft-focus green field.

Founded in 1963, Openlands protects the natural and open spaces of northeastern Illinois and the surrounding region to ensure cleaner air and water, protect natural habitats and wildlife and help balance and enrich our lives.

Openlands' vision for the region is a landscape that includes a vast network of land and water trails, tree-lined streets, and intimate public gardens within easy reach of every city dweller. It also includes parks and preserves big enough to provide natural habitat and to give visitors a sense of the vast prairies, woodlands, and wetlands that were here before the cities.



2019 TK DATA:

Event Type:	Number of Trees/ Vols:
60 Pruning Days	2,600+ Trees
18 Mulching Days	1,600+ Trees
33 Continuing Ed. Events	278 Volunteers in All Events

CONTINUING EDUCATION FOR TREEKEEPERS

Skills TKs can use on their own:

- Insects and Diseases Workshops
- Advocacy Trainings
- Inventory Trainings
- Tree Walks
- i-Tree App





2020 TK Courses:

Event Type:	Number of Trees/ Vols:
Spring Course:	50 Enrollees
Summer Course:	50 Enrollees
Fall Course:	50-60 Enrollees

2020 TK DATA:

Event Type:	Number of Trees/ Vols:
23 Pruning Days	850+ Trees
15 Continuing Ed. Events	709 Volunteers in All Events



Visit Openlands.org to learn more about our urban
forestry work

