

Exploring Green Gentrification by Linking Satellite Imagery, Land Use, and Census Data

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Green Gentrification

Neighborhoods change

- “processes of physical and socioeconomic change within and in-between neighborhoods” (Bäing, 2014, p.185, in Encyclopedia of Quality of Life and Well-Being Research)

Green gentrification

- Gentrification
- Greenspaces

Environmental justice concern

“Just green enough” strategy

- Parks vs. informal greenspaces

Research Question and Context

Research Question

- How are different types of greenspaces (parks vs. informal greenspaces) correlated with socioeconomic status in improving (potentially gentrifying) or declining neighborhoods?

City of Chicago

- One of seven cities that accounted for half of the gentrification that occurred in the United States between 2000 and 2013 (Richardson et al., 2019)

Data

Where is the greenspace?

Satellite Imagery

What type of greenspace is it?

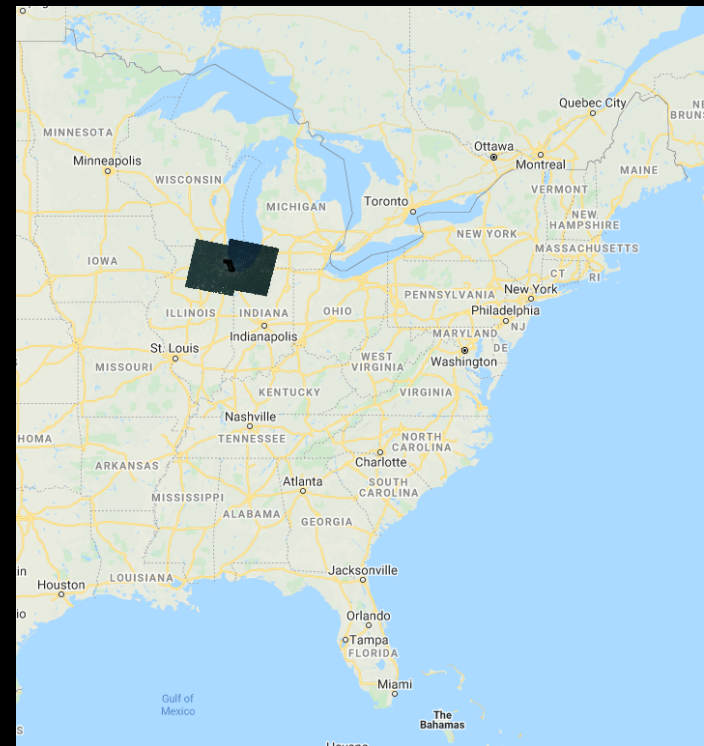
Land Use

Who lives nearby?

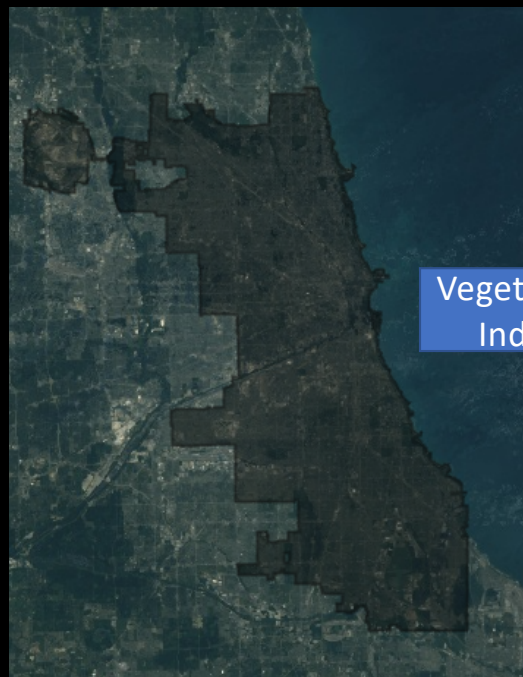
Census Data

And how is it changing over time?

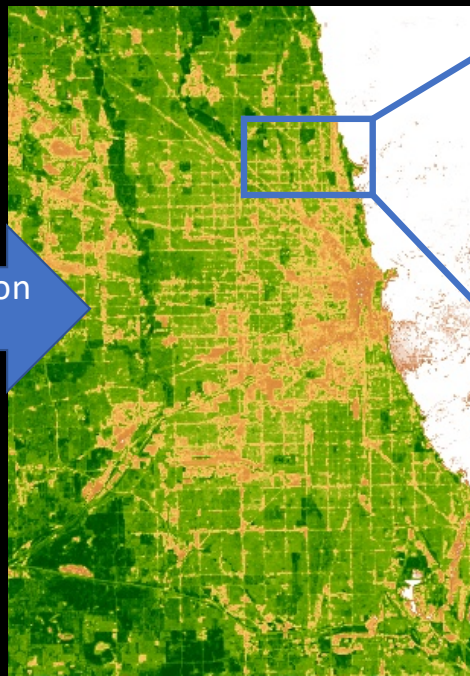
Combine data into longitudinal dataset
(1990, 2000, 2010 & 2015).



Satellite Imagery for Greenspaces



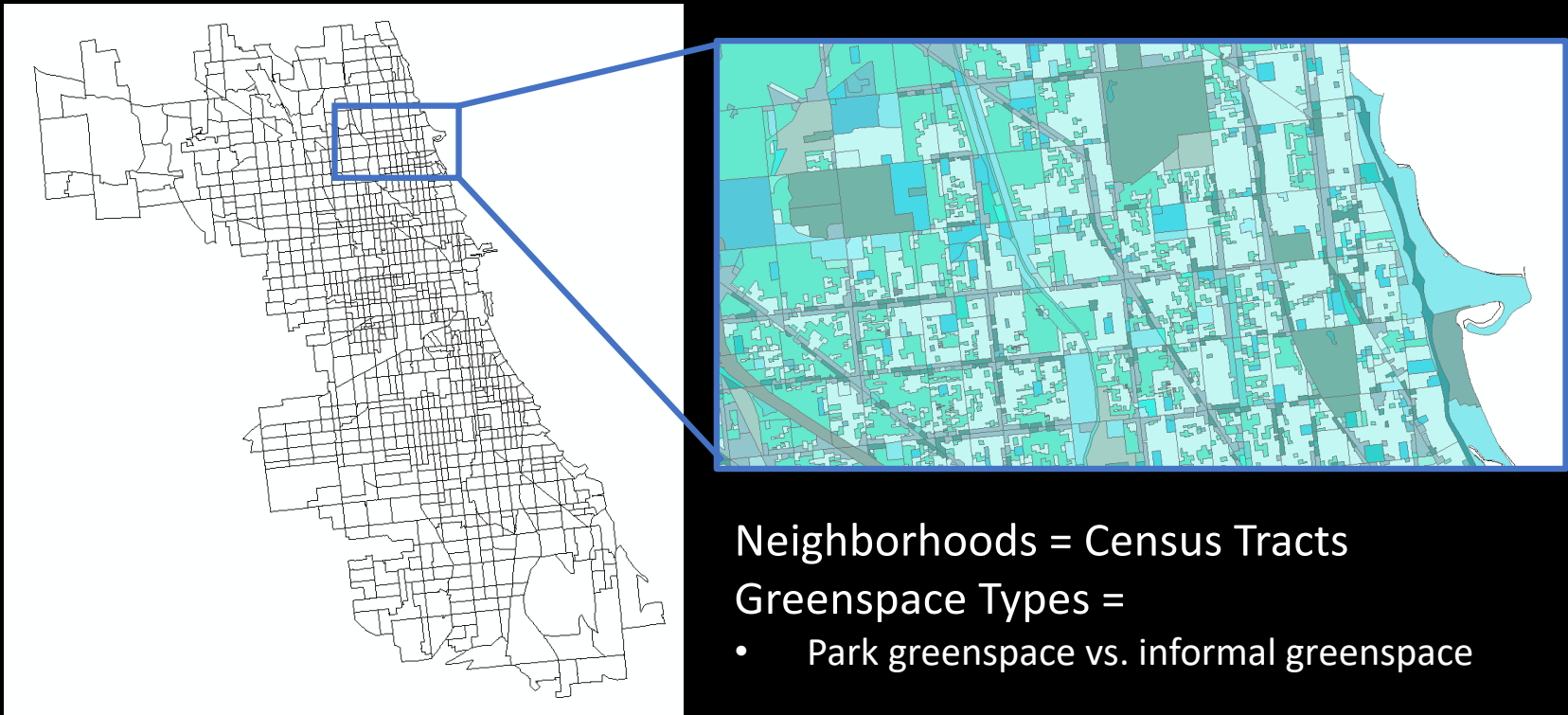
Vegetation
Index



90th percentile vegetation:



Land Use and Census Data



Measures

Greenspace Types

- % Park greenspace (e.g., state, national parks, etc.)
- % Publicly accessible informal greenspace (e.g., schools, hospitals, etc.)
- % Informal greenspace for which public access is restricted (e.g., residential areas, complex, industrial sites, etc.)

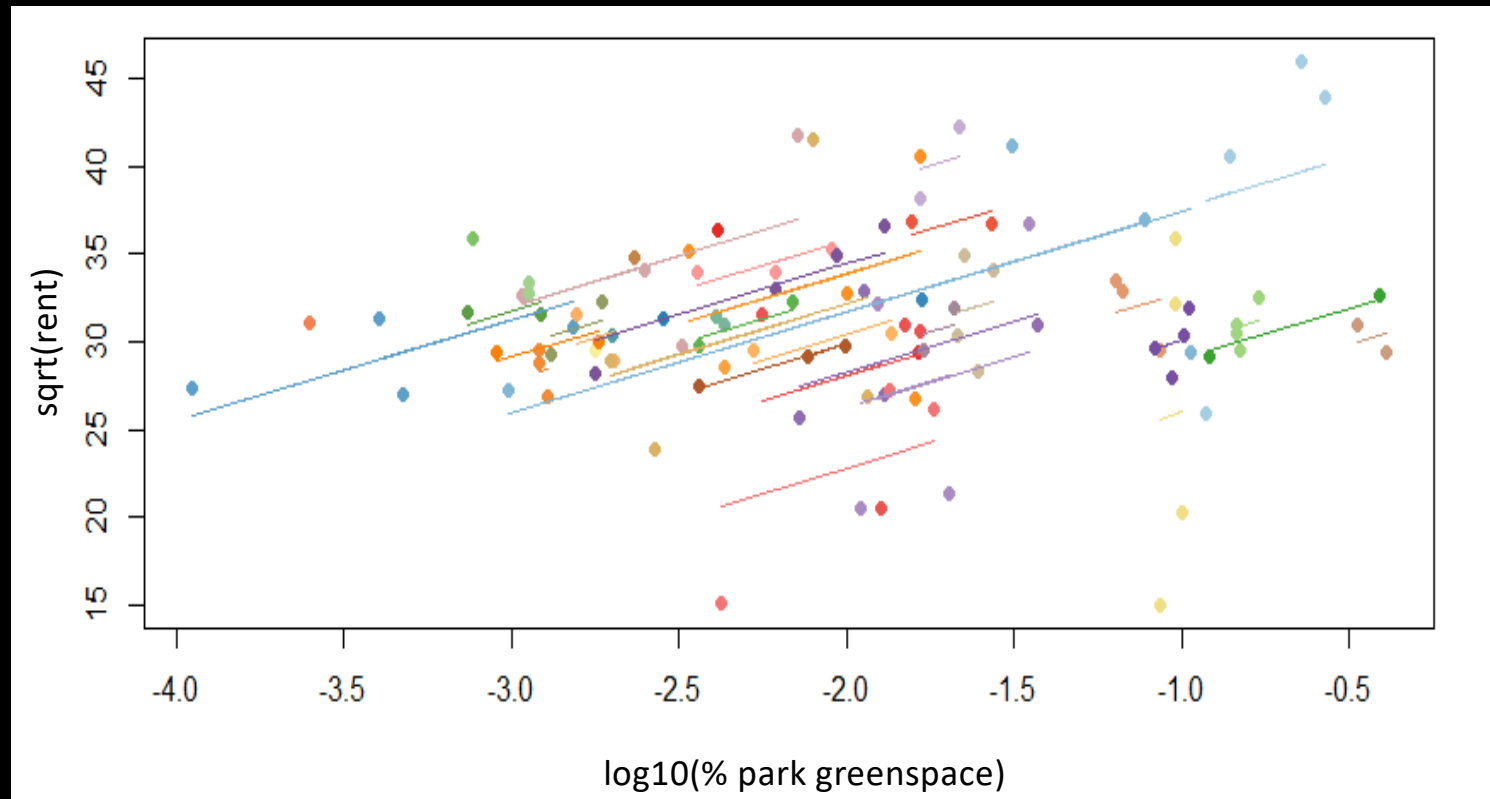
Socioeconomic Status

- Median household income
- % college education
- Median rent
- % white (not included)

Potentially Gentrifying Census Tracts

Median household income moving from below the median for the metro area in 1990 to more than the median household income for the metro area in 2015 (Schuerman, 2019)

Repeated Measures Correlation (example)



Repeated Measures Correlation for *all* Census Tracts in Chicago

R-Values: (non-statistically significant relationships represented with "-")	Median HH Income	Percent College Educated	Median Rent
Percent Census Tract Covered with Greenspace	0.05	-	0.06
Percent Census Tract Covered with Park Greenspace	-	-	-
Percent Census Tract Covered with Informal Greenspace (publicly accessible)	-0.12	0.07	0.11
Percent Census Tract Covered with Informal Greenspace (not publicly accessible)	0.07	-0.3	-0.19

n = ~790

Greenspace Types and Socioeconomic Status

R-Values: (non-statistically significant relationships represented with "-")	POTENTIALLY GENTRIFYING (n = 96)			DECLINING (n = 102)		
	Median HH Income	Percent College Educated	Median Rent	Median HH Income	Percent College Educated	Median Rent
Percent Census Tract Covered with Greenspace	-	-	0.20	0.14	-	-
Percent Census Tract Covered with Park Greenspace	-	-	0.36	-	-	-
Percent Census Tract Covered with Informal Greenspace (publicly accessible)	-	-	-	-0.19	-	-
Percent Census Tract Covered with Informal Greenspace (not publicly accessible)	-0.22	-0.21	-0.28	0.36	-0.22	-0.17

Looking Forward

There are many more questions we want to answer, including:

- Does the correlation we find in Chicago hold in other urban areas?
- What role does the size and shape of greenspace play in green gentrification?

Implications

Managing neighborhood change along with environmental amenities

- Provisional perspective
- Process perspective
 - Role of informal greenspaces