

Redlining persistence in US cities

Segregation through the lens of urban spatial configuration

Ilgi Toprak, NYU CUSP

‘Two Americas’

‘Every city in our country has this kind of dualism, this schizophrenia, split at so many points and so every city ends up being two cities rather than one, there are two Americas’.

Martin Luther King Jr.



The Detroit Eight Mile Wall

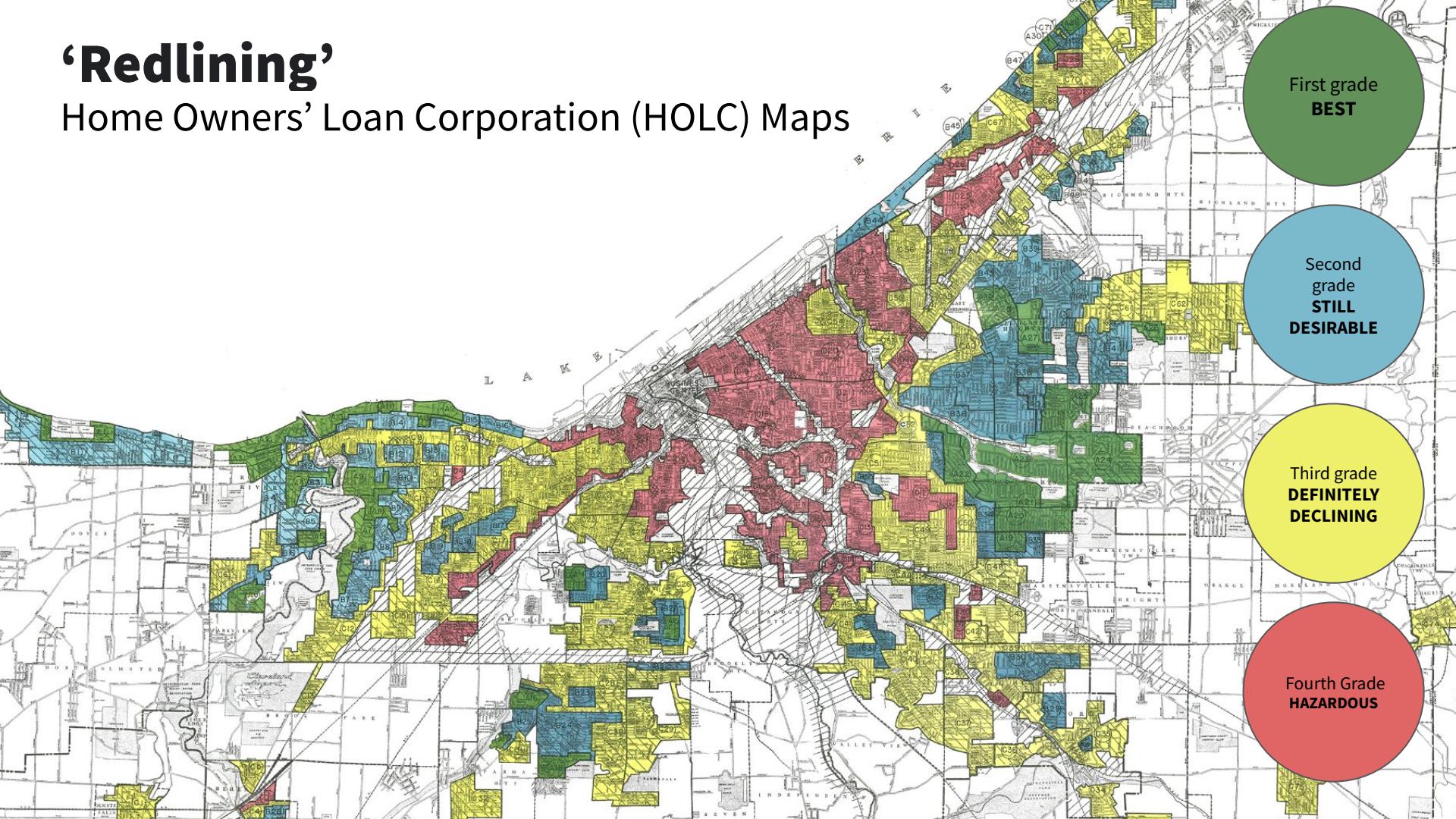
'Racial restrictive covenants'



F. - No persons of any race other than the Caucasian race shall use or occupy any building or any lot, except that this covenant shall not prevent occupancy by domestic servants of a different race domiciled with an owner or tenant.

'Redlining'

Home Owners' Loan Corporation (HOLC) Maps



'Blockbusting'



Would you panic if a Negro moved next door?

"I'm broad-minded," said one home owner when Negroes moved into his block. But a short time later he panicked—and sold his house at a loss.

In this week's Post, you'll read how speculators decide which blocks are "ripe" for racial change. How they use vicious tactics to force

out the whites. And how one speculator brags that he could "bust" your block in no time at all.

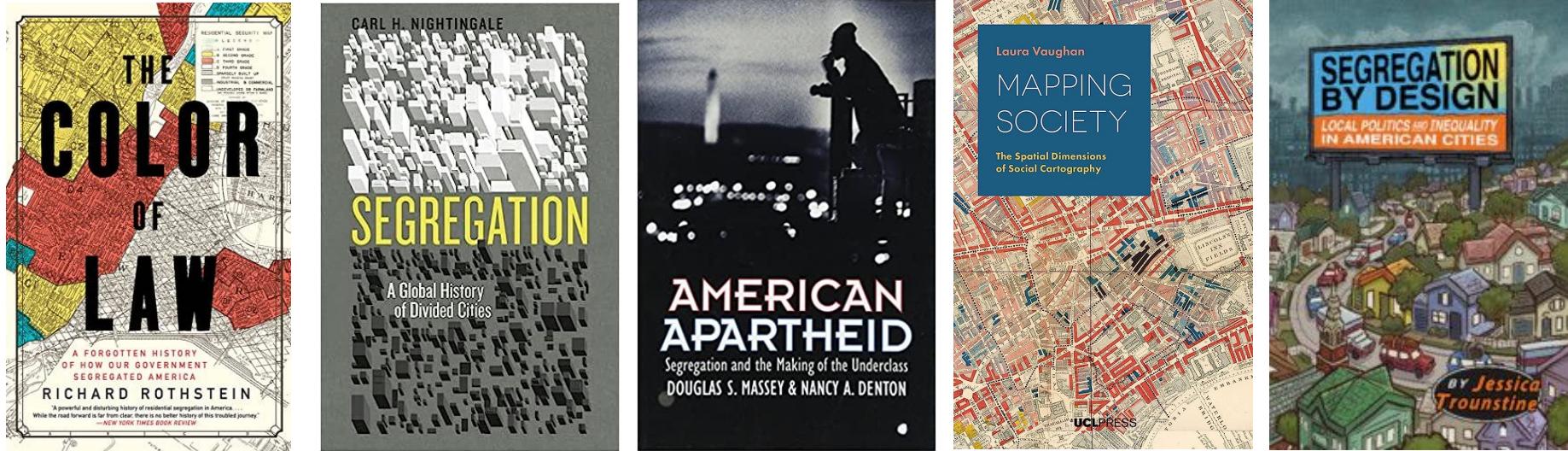
The Saturday Evening
POST
July 14-21 issue.
A Curtis Magazine





'Redlined cities around the US'

<https://dsl.richmond.edu/panorama/redlining>



A collection of articles and blog posts by the Urban Institute

<https://www.urban.org/projects/structural-racism-explainer-collection>

15 Cities

Charlotte, NC

Houston, TX

Louisville, KY

Nashville, TN

Atlanta, GA

Indianapolis, IN

Kansas City, MO

Richmond, VA

Boston, MA

Philadelphia, PA

Chicago, IL

Cleveland, OH

Detroit, MI

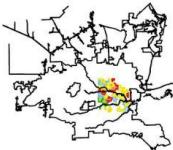
Pittsburgh, PA

Baltimore, MD

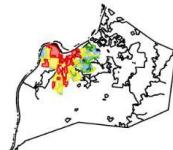
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Charlotte NC



Houston TX

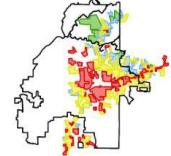


Louisville KY

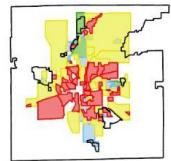


Nashville TN

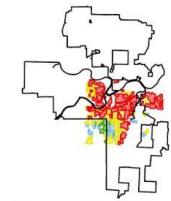
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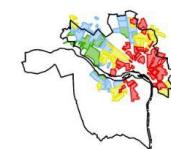
Atlanta GA



Indianapolis IN



Kansas City MO



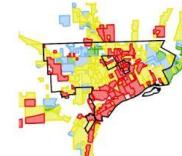
Richmond VA

3

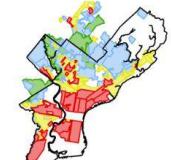


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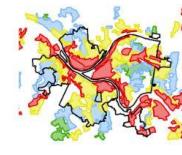
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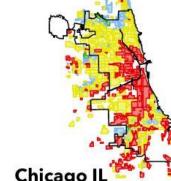
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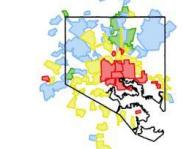
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Chicago IL



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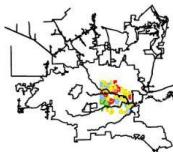
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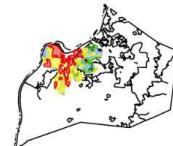
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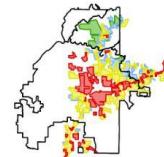


Louisville KY

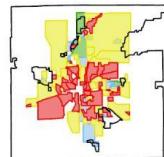


Nashville TN

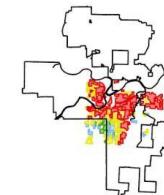
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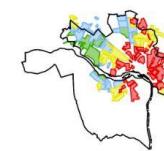
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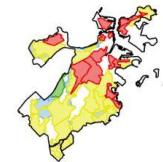


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Richmond VA

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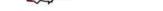
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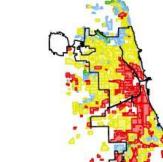
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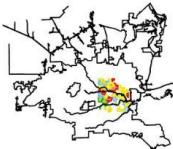
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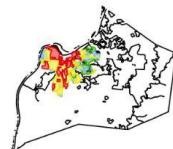
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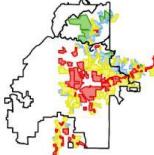


Louisville KY

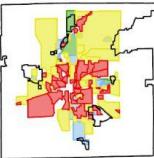


Nashville TN

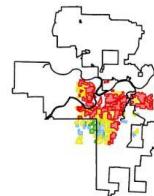
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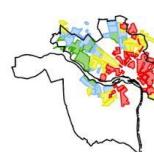
Atlanta GA



Indianapolis IN

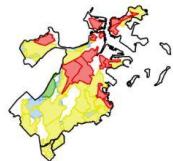


Kansas City MO



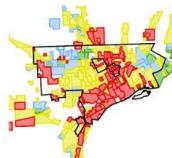
Richmond VA

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Cleveland OH

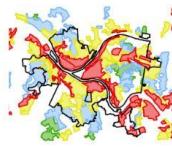
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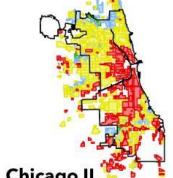
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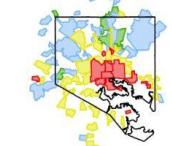
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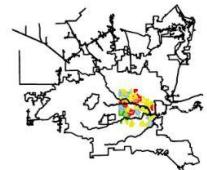
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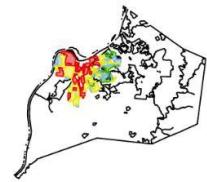
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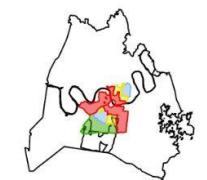
Charlotte NC



Houston TX



Louisville KY



Nashville TN

Phase 1: Exploring Racial Divide

Racial Segregation in cases of Urban Sprawl

Key Takeaways

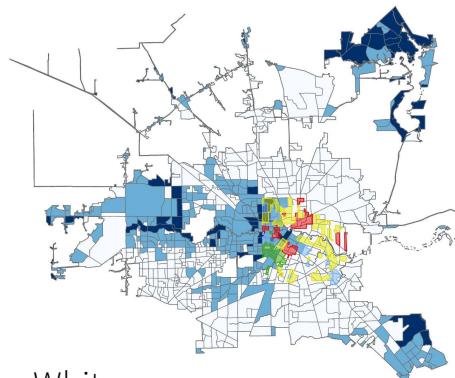
Urban sprawl

White affluent neighbourhoods

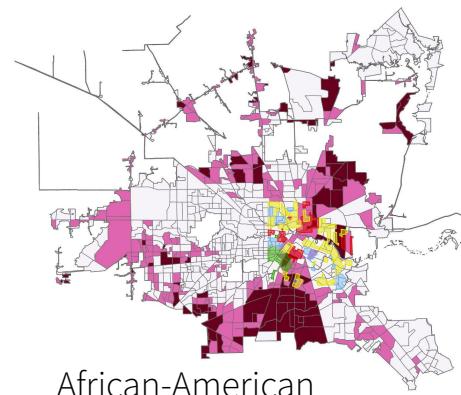
Mutual exclusion of black and white neighbourhoods

Ethno clusters

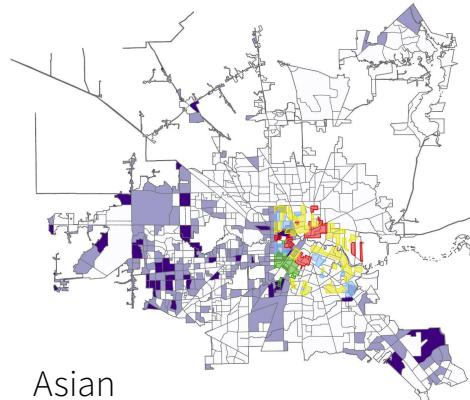
HOUSTON, TX



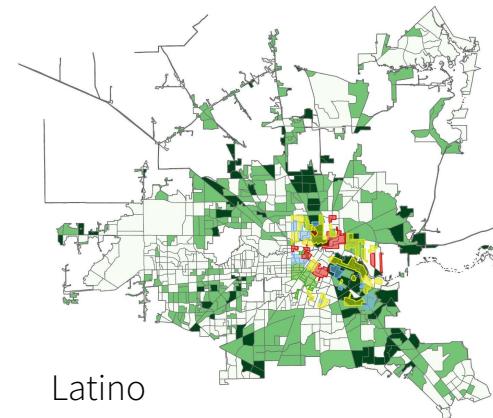
White



African-American



Asian



Latino

Key Takeaways

Urban sprawl

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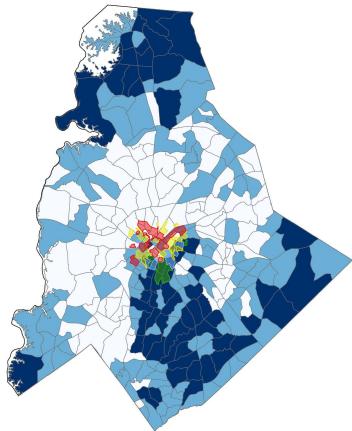
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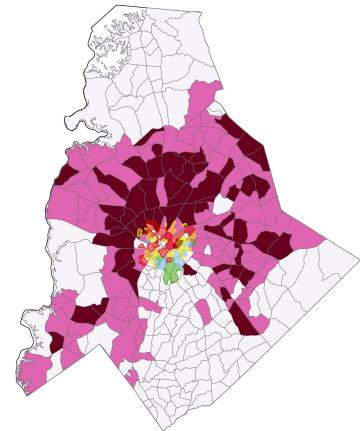
Urban fringe - inclusive or exclusive?

'Color line' – Divided cities

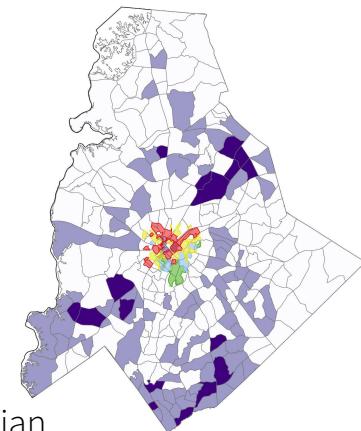
CHARLOTTE, NC



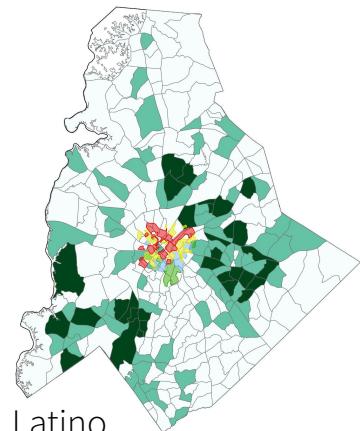
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Key Takeaways

Urban sprawl

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Mutual exclusion of black and white neighbourhoods

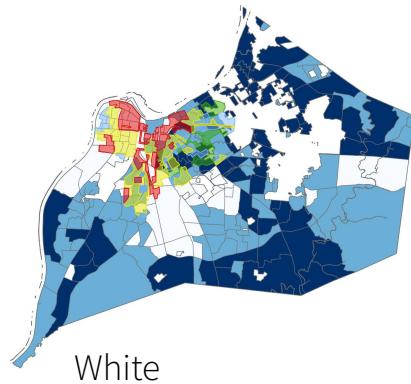
Ethno clusters

Urban fringe - inclusive or exclusive?

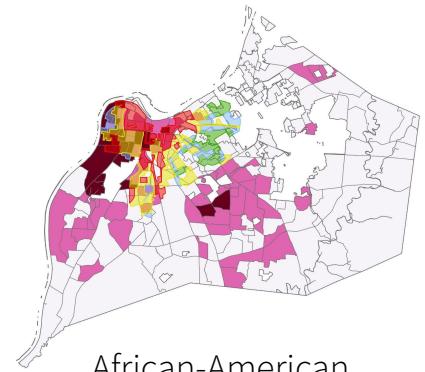
'Color line' – Divided cities

Overlap of African American and Latino populations

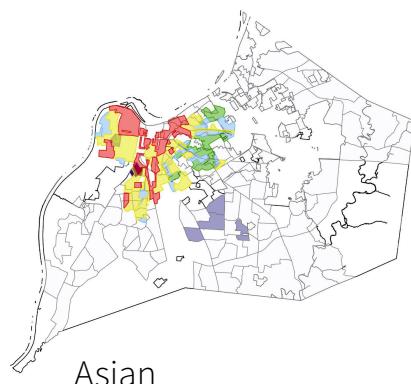
LOUISVILLE, KY



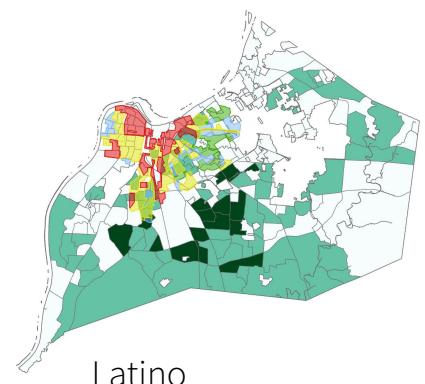
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Urban sprawl

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Urban fringe - inclusive or exclusive?

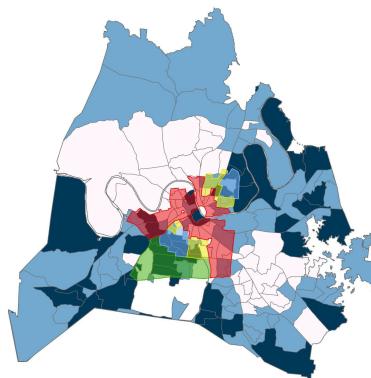
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Overlap of African American and Latino populations

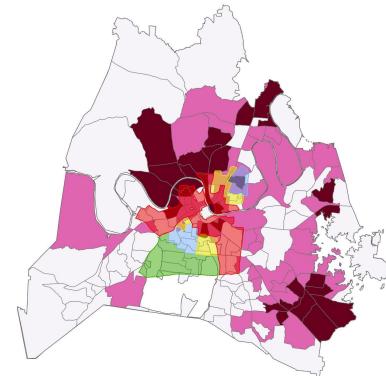
Gentrification in the city center

Black displacement

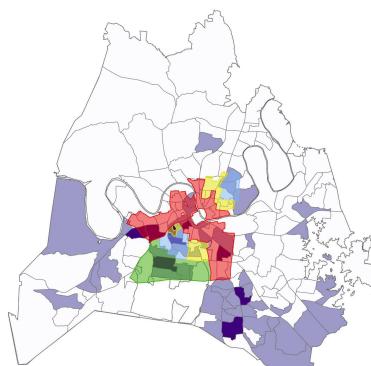
NASHVILLE, TN



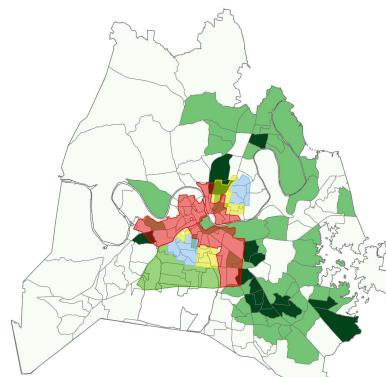
White



African-American



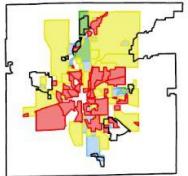
Asian



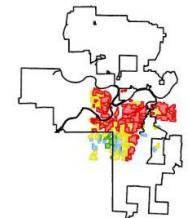
Latino



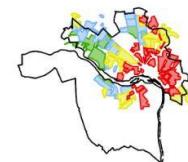
Atlanta GA



Indianapolis IN



Kansas City MO



Richmond VA

Phase 2: Exploring ‘vicious circles’

Uncovering causes and consequences of segregation

ATLANTA, GA

Median Income

among the lowest in
previously redlined areas.

OTHER:

- Unemployment
- Poverty



INDIANAPOLIS, IN

Urban amenities and street quality

lower in previously redlined areas.

OTHER:

- Health amenities
- Schools
- Food

Redlining

■ Previously redlined

Sidewalk Ratings

rating

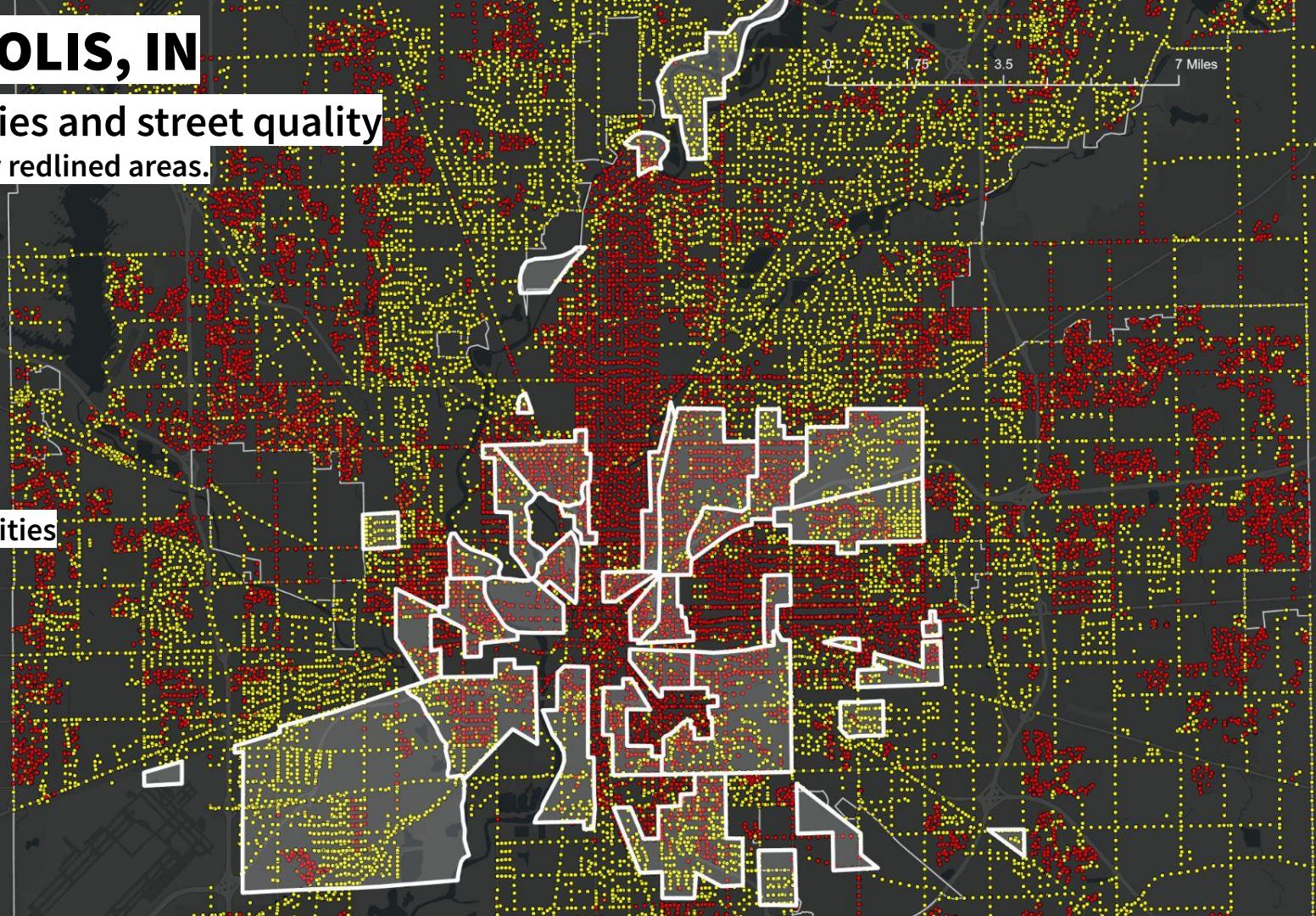
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1

2

3

Indianapolis boundary



KANSAS CITY, MO

Homeownership rate

among the lowest in
previously redlined areas.

OTHER:

- Housing quality
- Home value
- Homelessness

Redlining

■ Previously redlined

Homeownership

Percent Homeowners

■ 7.000000 - 33.600000

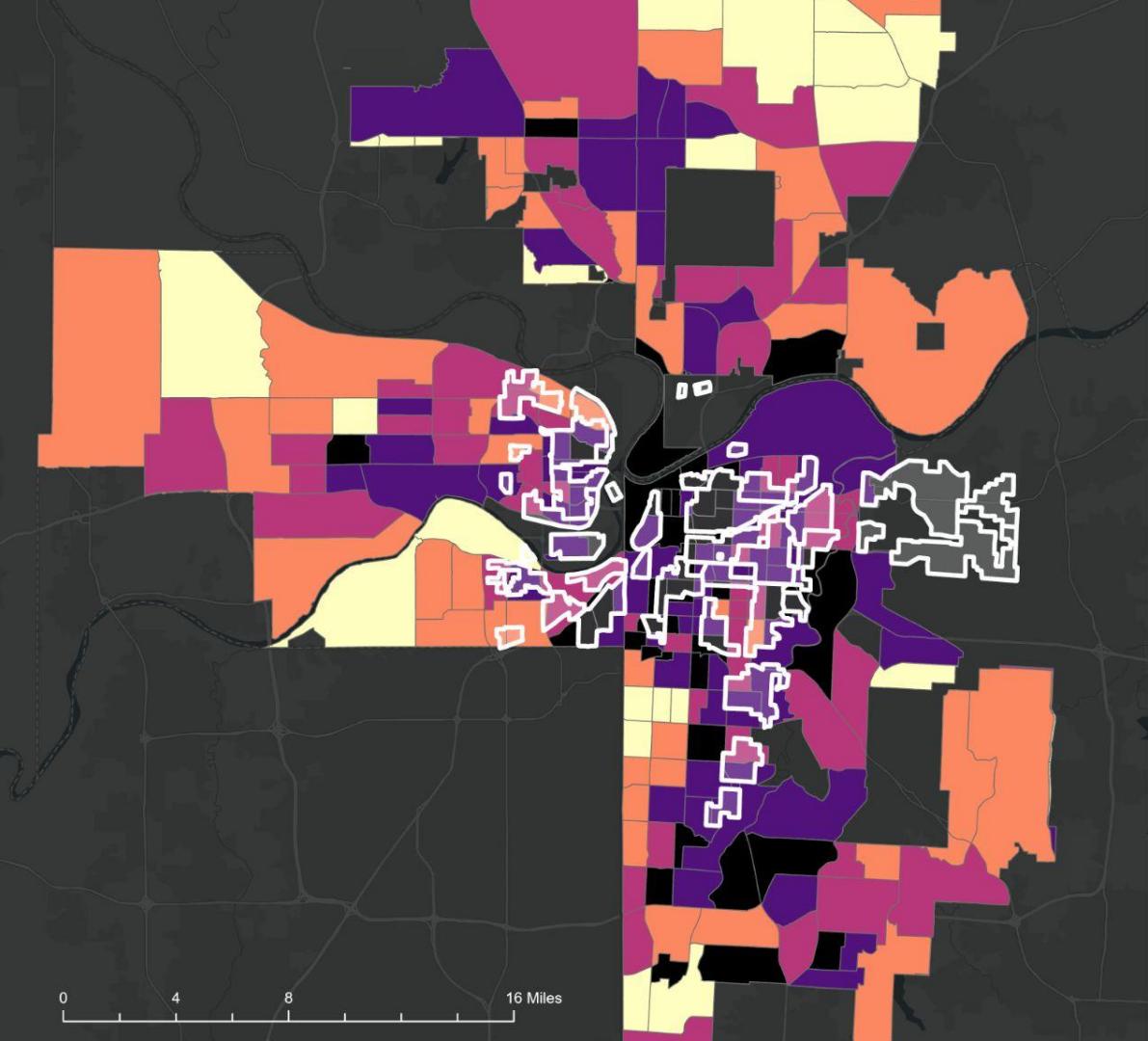
■ 33.600001 - 53.100000

■ 53.100001 - 68.300000

■ 68.300001 - 83.700000

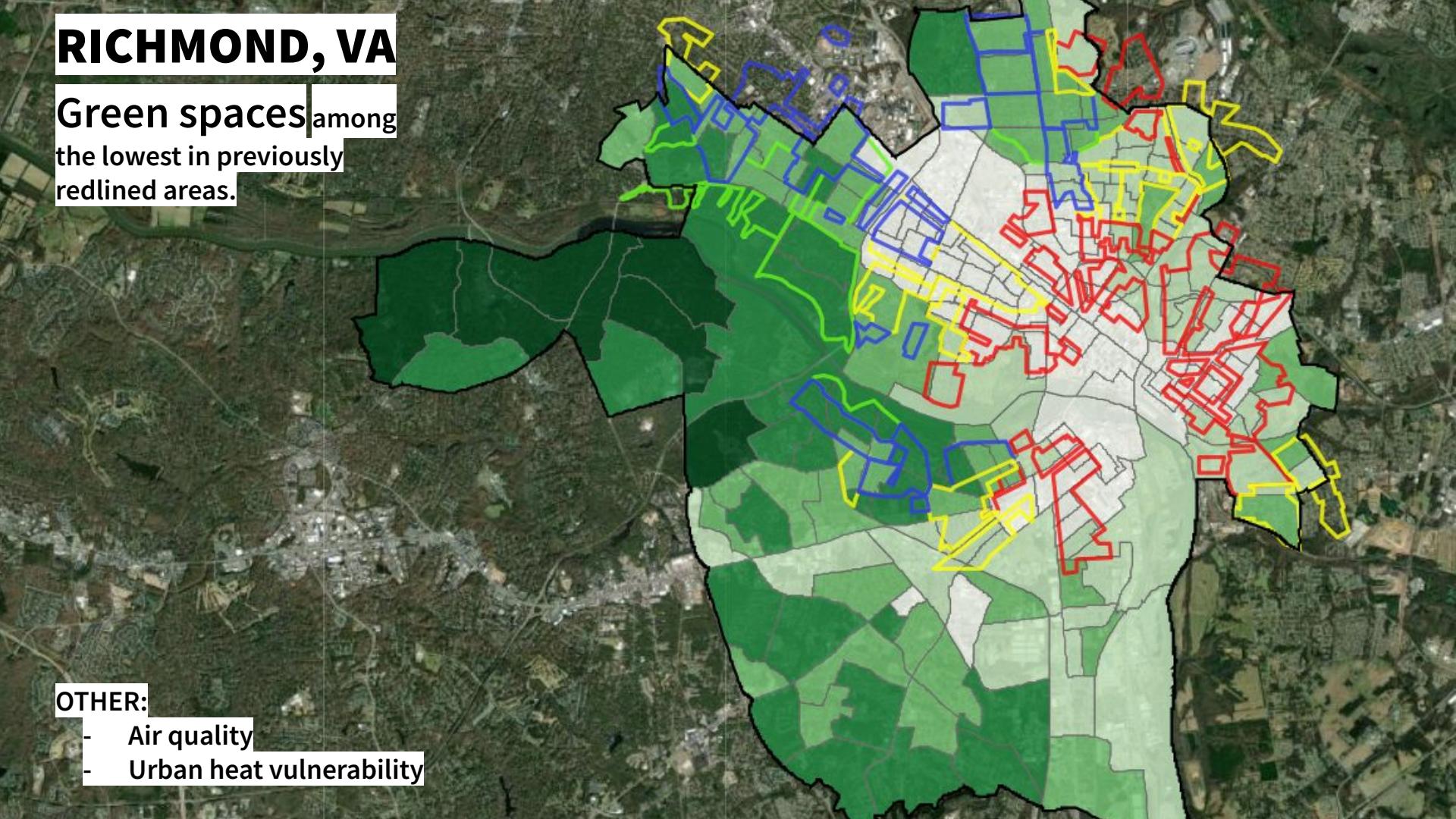
■ 83.700001 -
100.000000

0 4 8 16 Miles



RICHMOND, VA

Green spaces among
the lowest in previously
redlined areas.

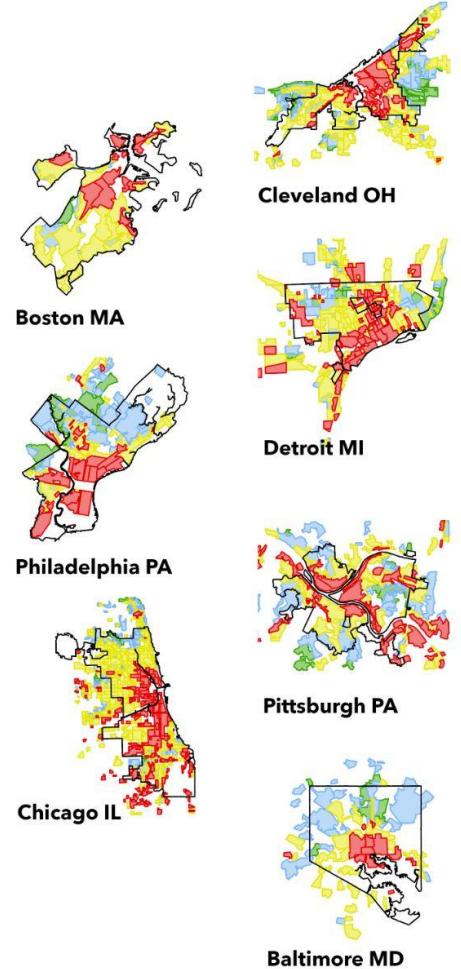


OTHER:

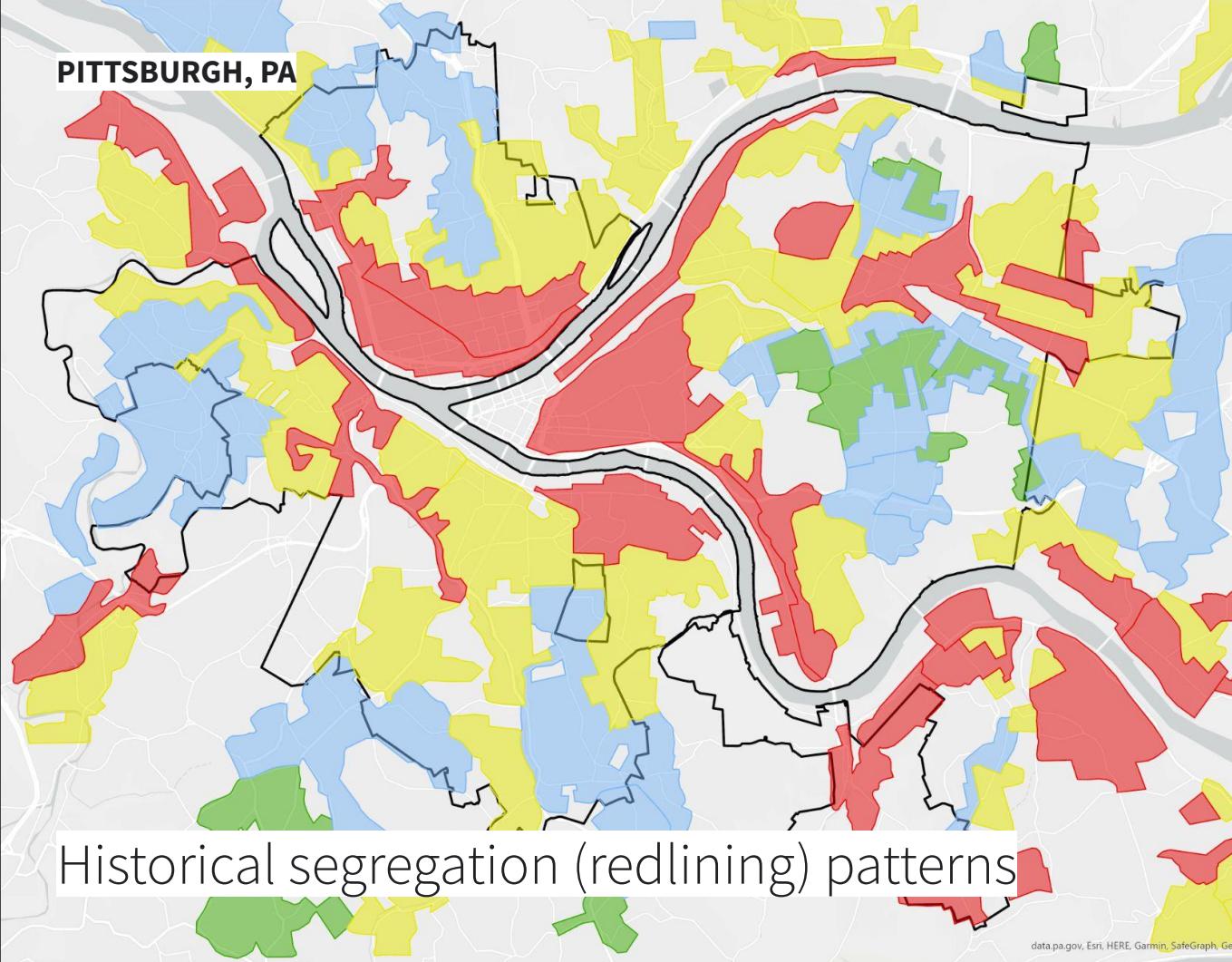
- Air quality
- Urban heat vulnerability

Phase 3: Regression Model

Segregation from the lens of urban configuration



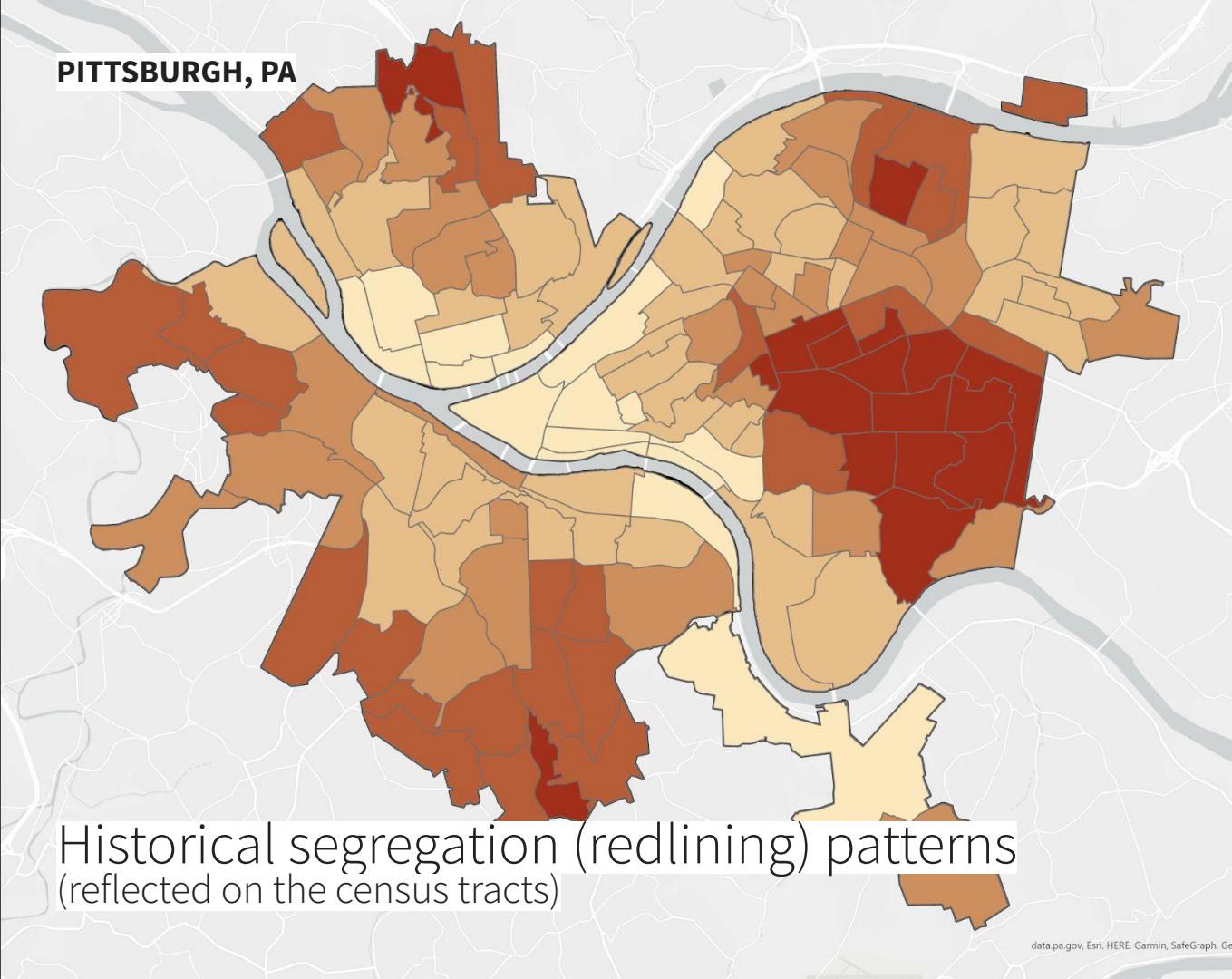
PITTSBURGH, PA



INDEPENDENT VARIABLES

Historical segregation patterns
(HOLC)

PITTSBURGH, PA

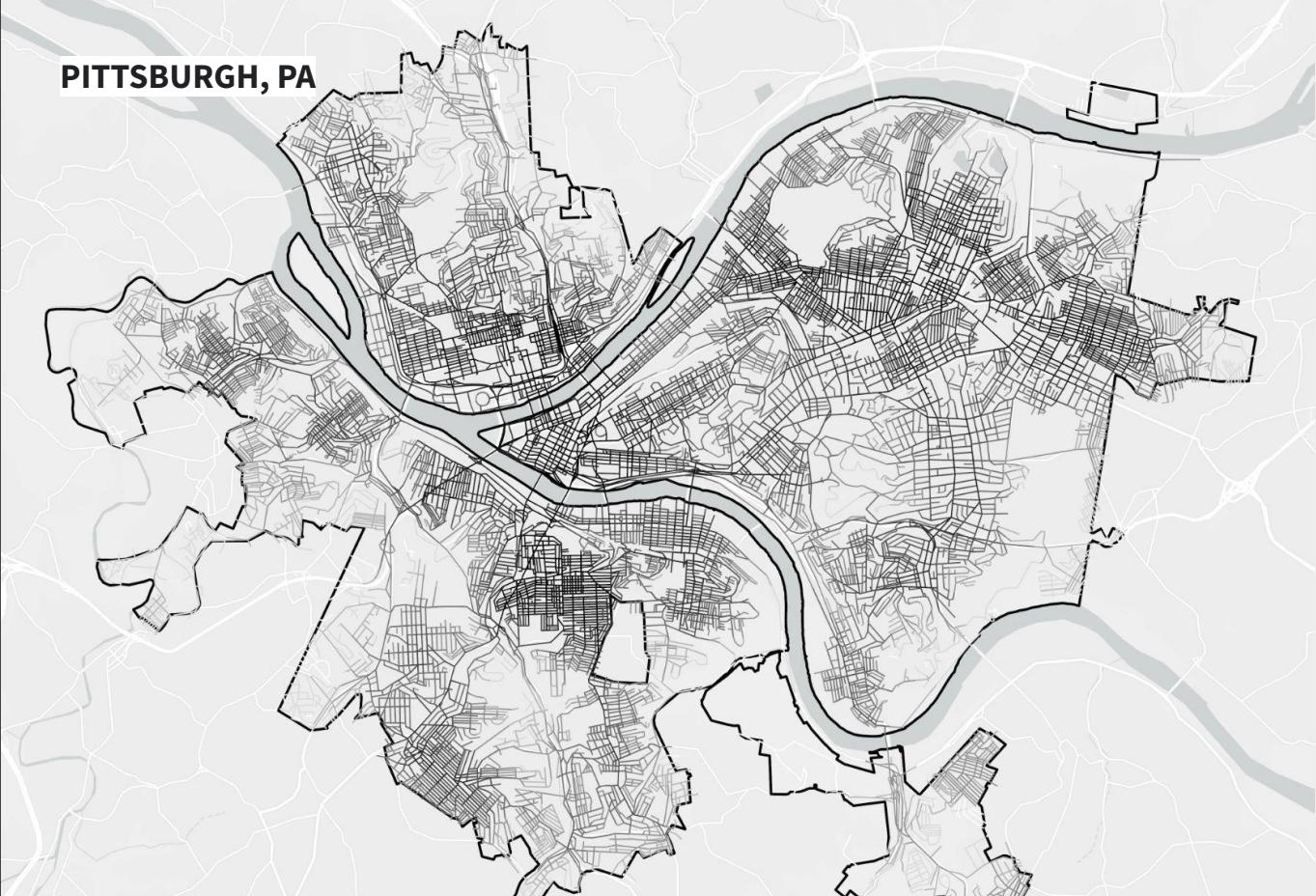


Historical segregation (redlining) patterns
(reflected on the census tracts)

INDEPENDENT VARIABLES

Historical segregation patterns
(HOLC)

PITTSBURGH, PA



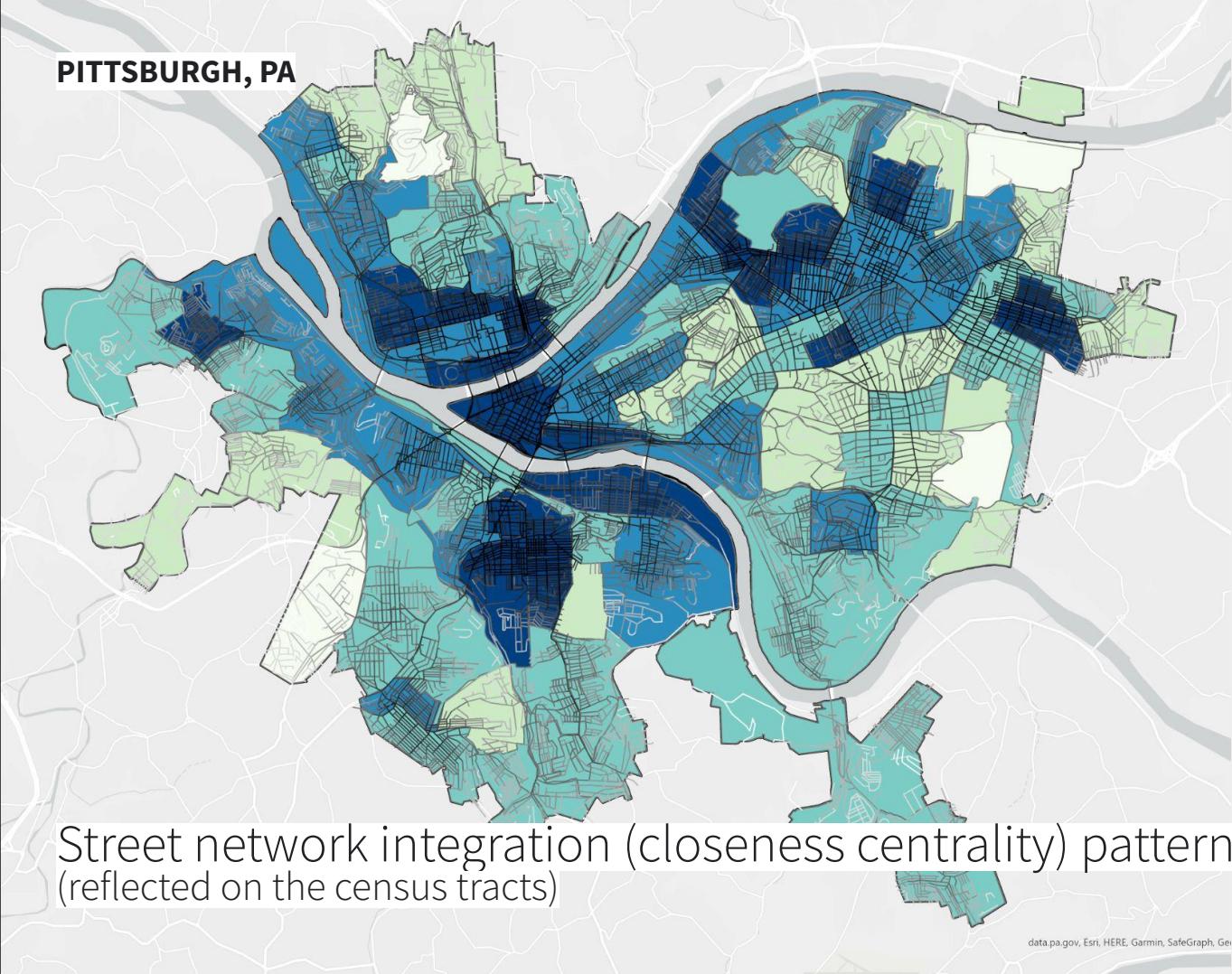
INDEPENDENT VARIABLES

Historical segregation patterns
(HOLC)

Street network integration
patterns

Street network integration (closeness centrality) patterns
Normalised angular integration (NAIN) with different metric values 1000,2000,5000

PITTSBURGH, PA



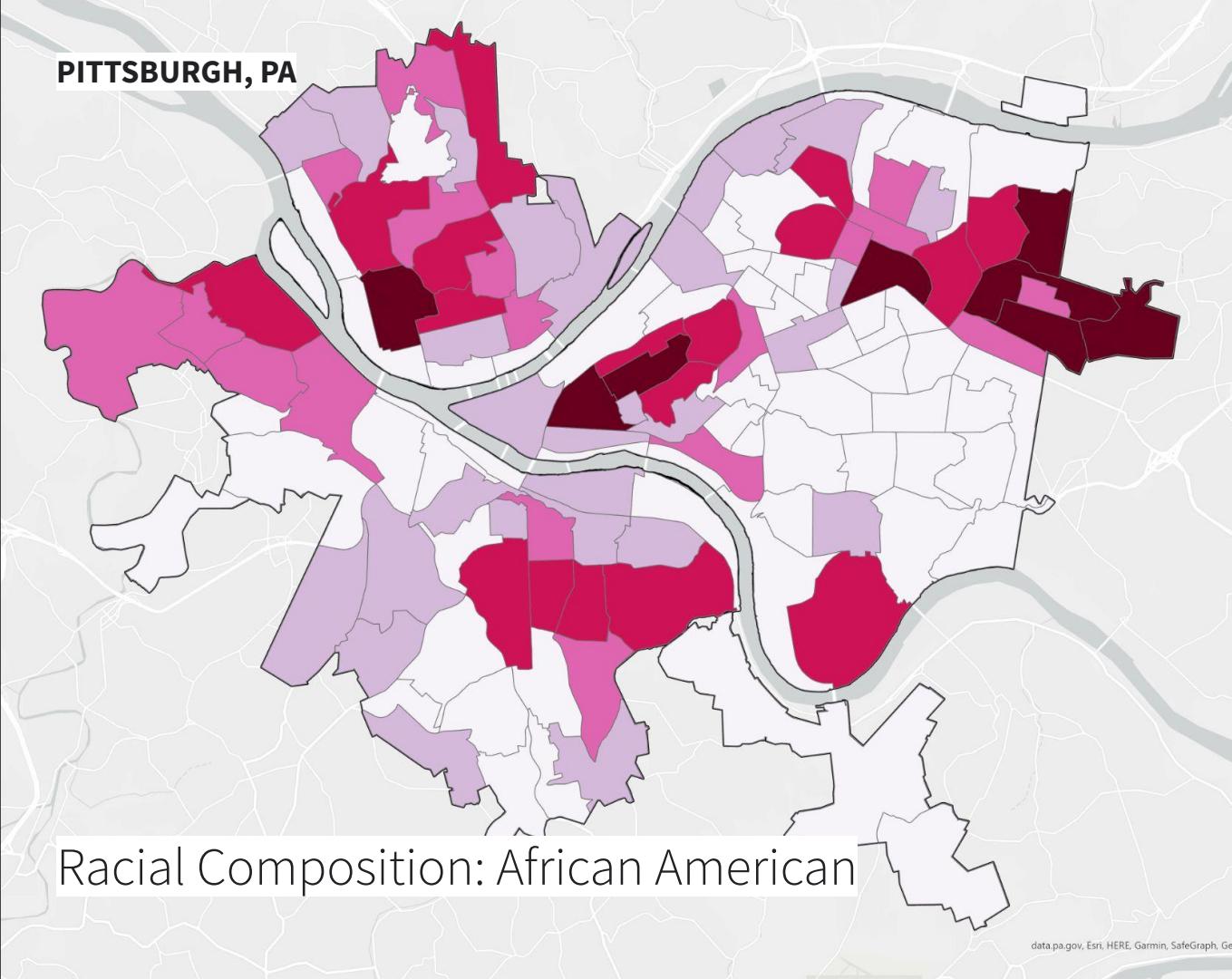
Street network integration (closeness centrality) patterns
(reflected on the census tracts)

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Historical segregation patterns
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Street network integration
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PITTSBURGH, PA



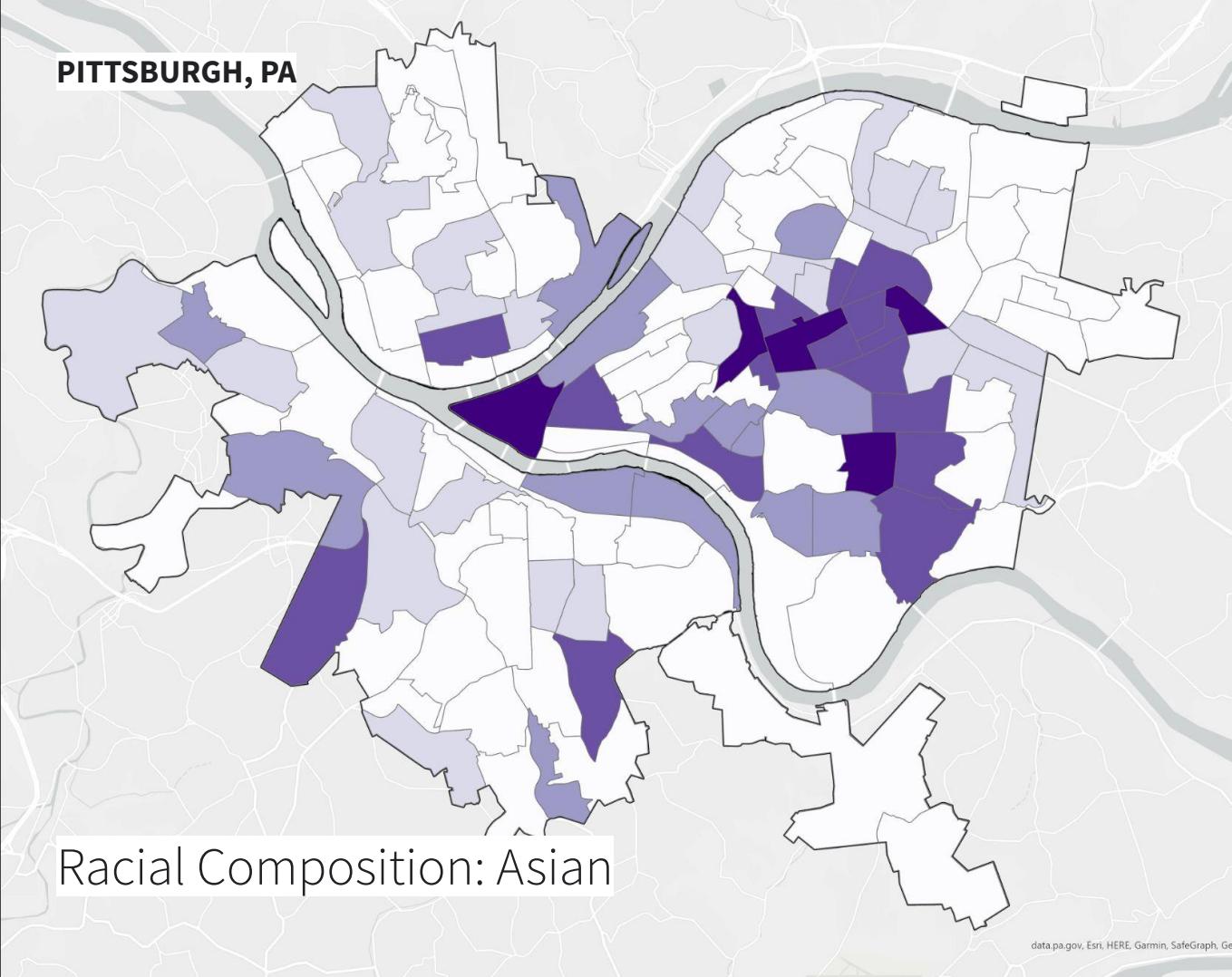
INDEPENDENT VARIABLES

Historical segregation patterns
(HOLC)

Street network integration
patterns

Racial composition:
● African American

PITTSBURGH, PA



INDEPENDENT VARIABLES

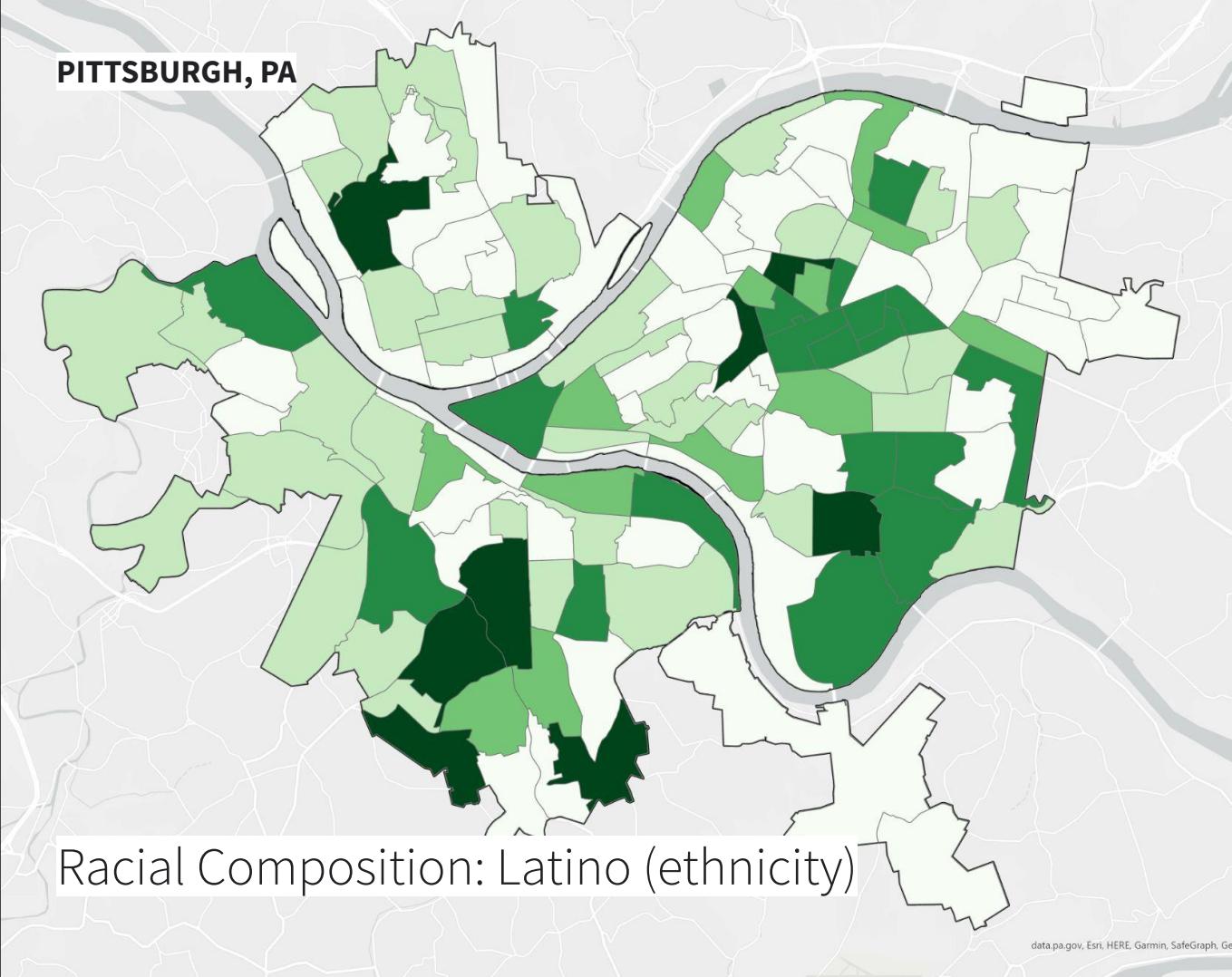
Historical segregation patterns
(HOLC)

Street network integration
patterns

Racial composition:

- African American
- Asian

PITTSBURGH, PA



INDEPENDENT VARIABLES

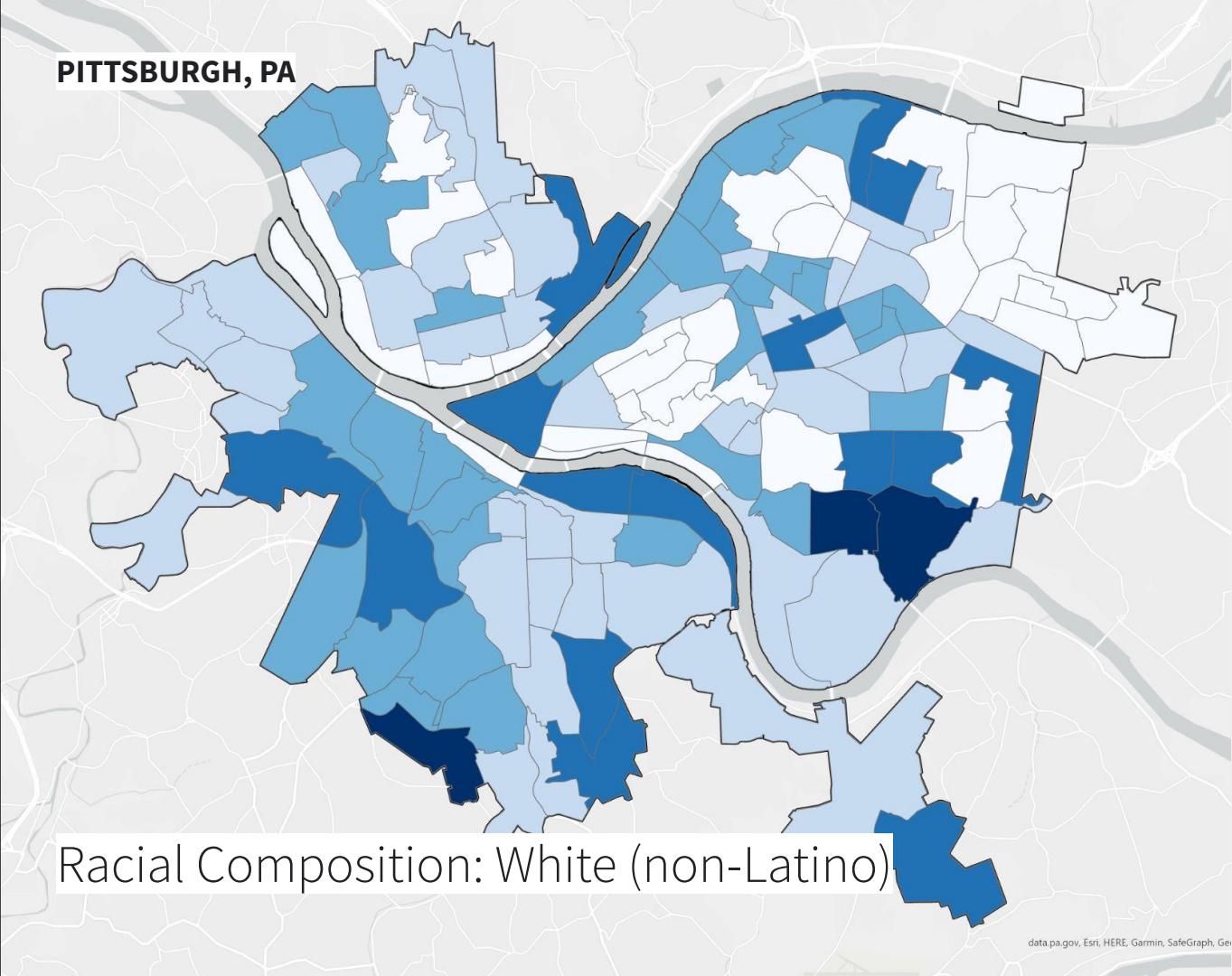
Historical segregation patterns
(HOLC)

Street network integration
patterns

Racial composition:

- African American
- Asian
- Latino

PITTSBURGH, PA



INDEPENDENT VARIABLES

Historical segregation patterns
(HOLC)

Street network integration
patterns

Racial composition:

- African American
- Asian
- Latino
- White

INDEPENDENT VARIABLES

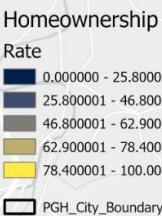
Historical segregation patterns
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Street network integration
patterns

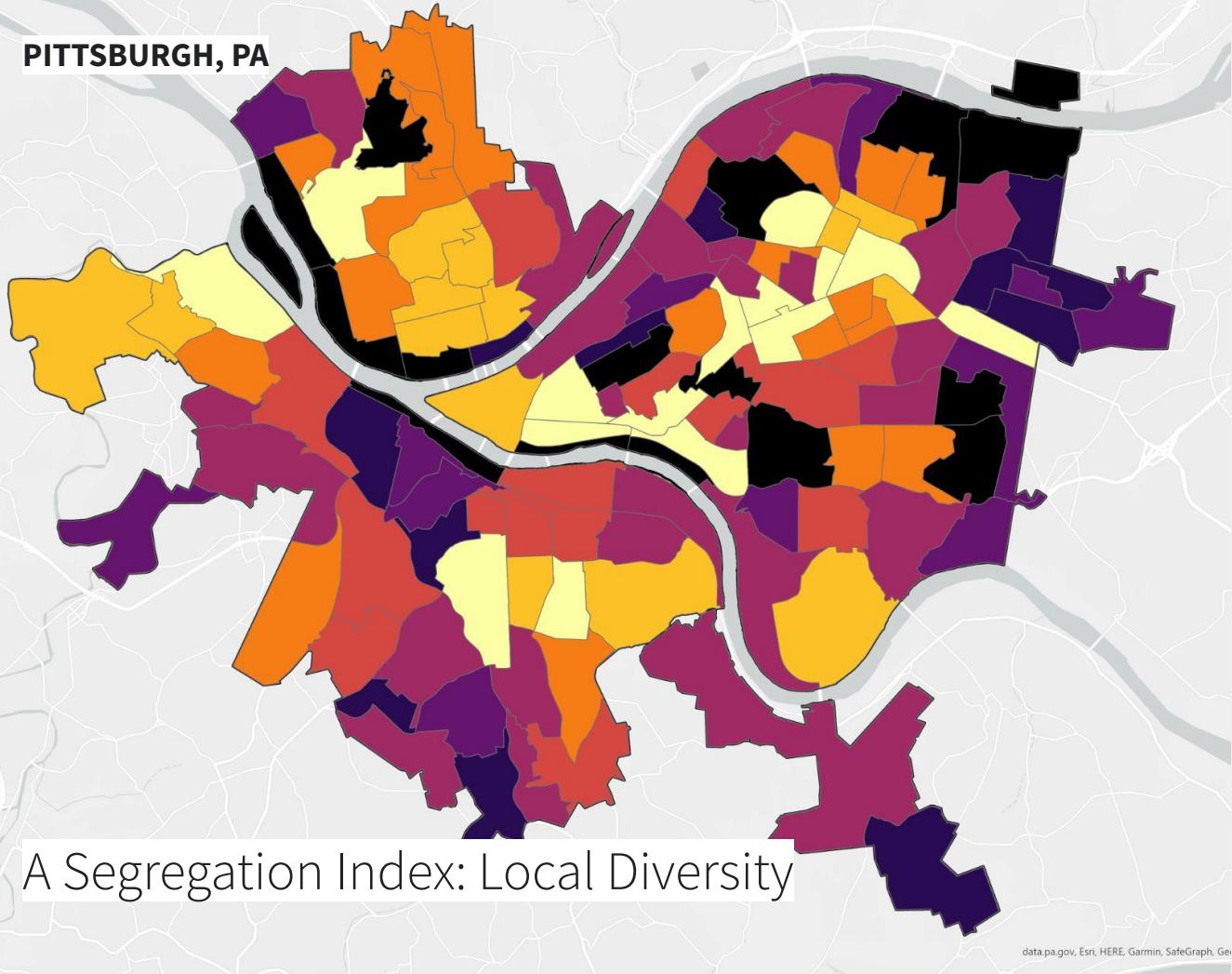
Racial composition:

- African American
- Asian
- Latino
- White

Homeownership rate



PITTSBURGH, PA



INDEPENDENT VARIABLES

Historical segregation patterns (HOLC)

Street network integration patterns (NAIN 1000, 5000)

Racial composition:

- African American
- Asian
- Latino
- White

Homeownership rate

DEPENDENT VARIABLE

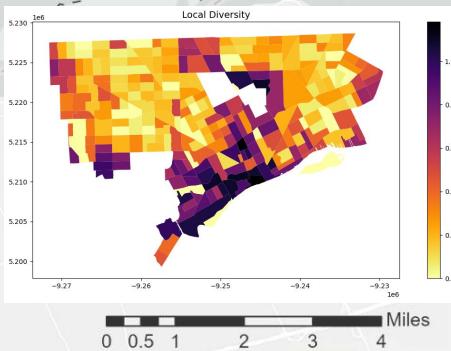
Local Diversity

(see PySal segregation module)

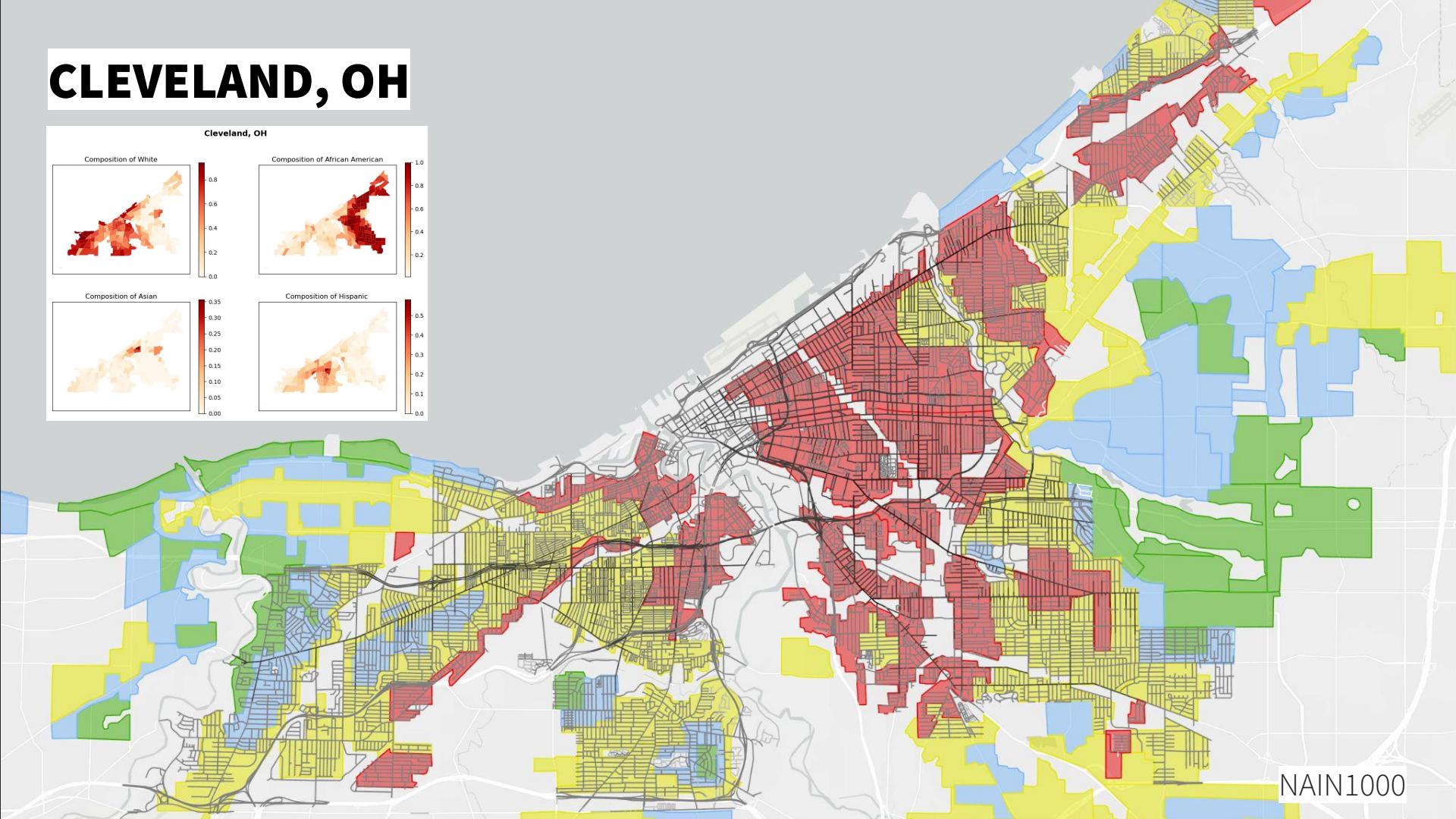
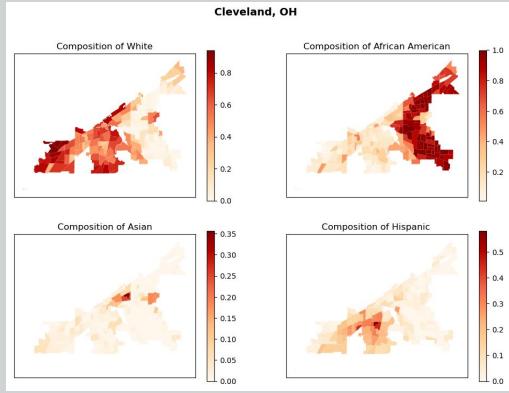
(Alternatively Local Entropy -Theil's H is another measure of multi group diversity giving similar results)

NAIN1000

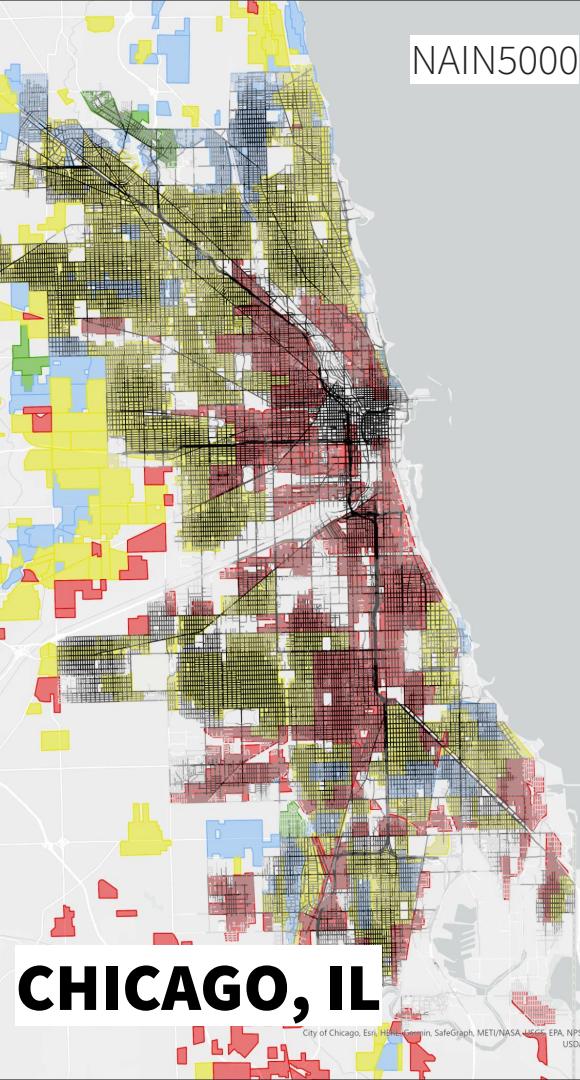
DETROIT, MI



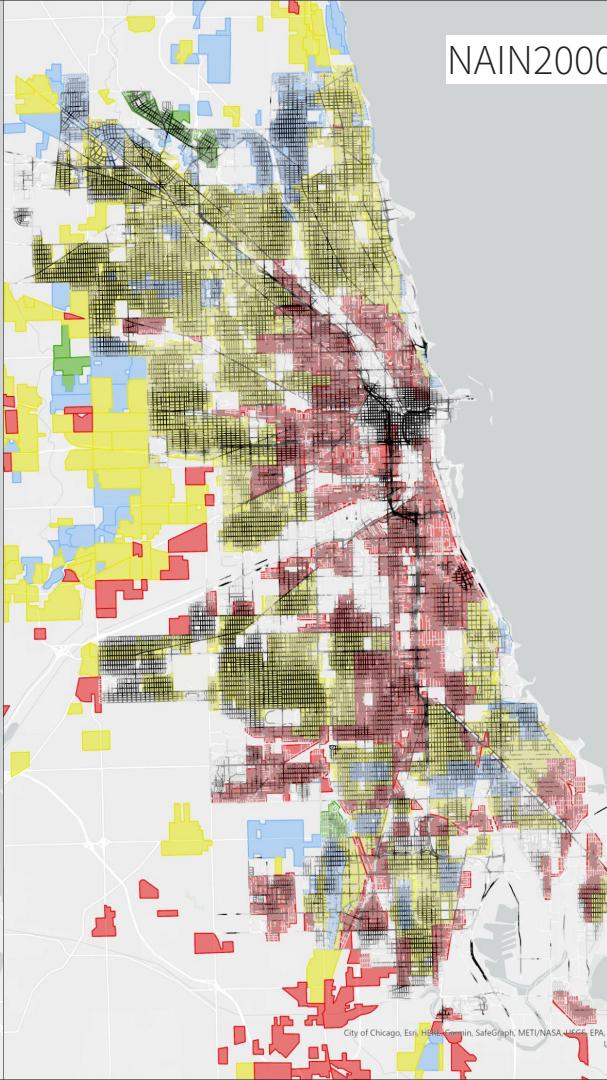
CLEVELAND, OH



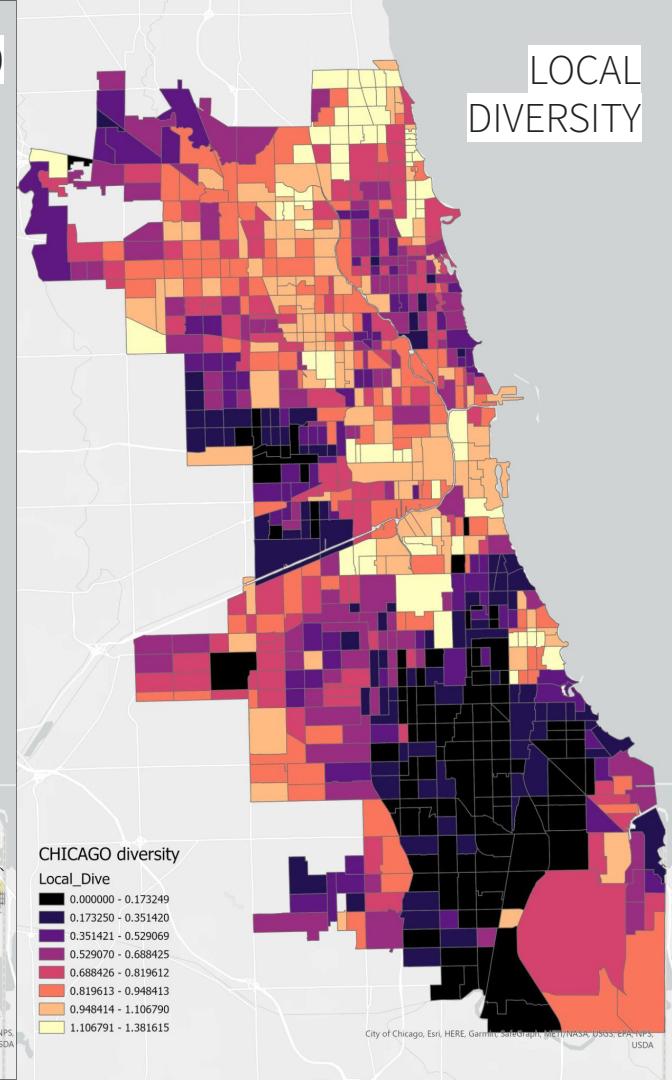
NAIN5000



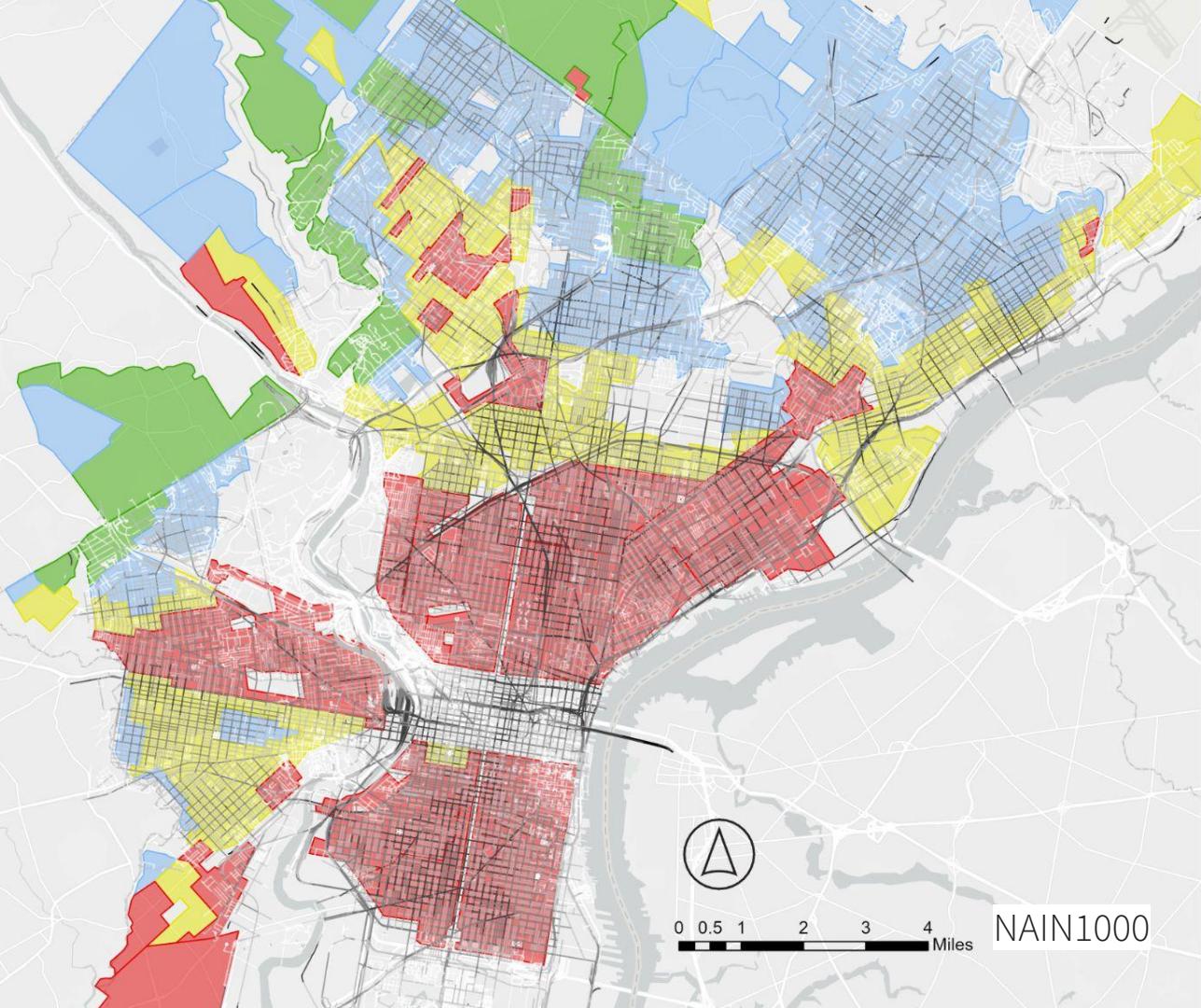
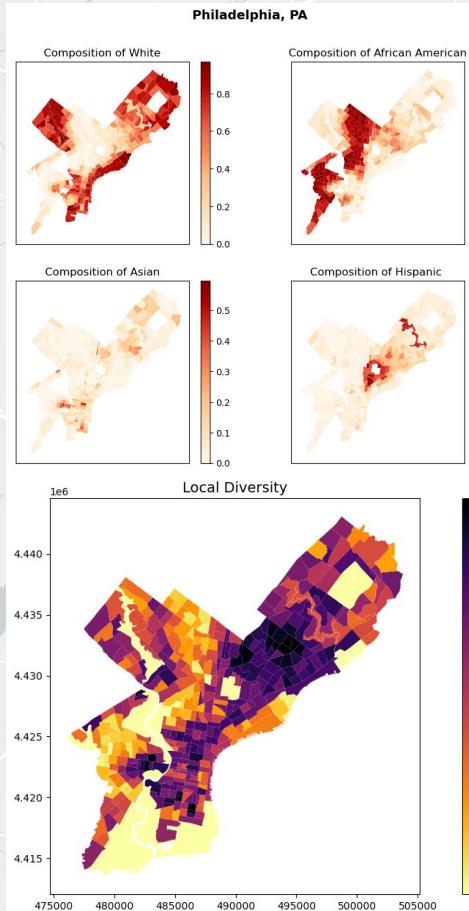
NAIN2000



LOCAL
DIVERSITY

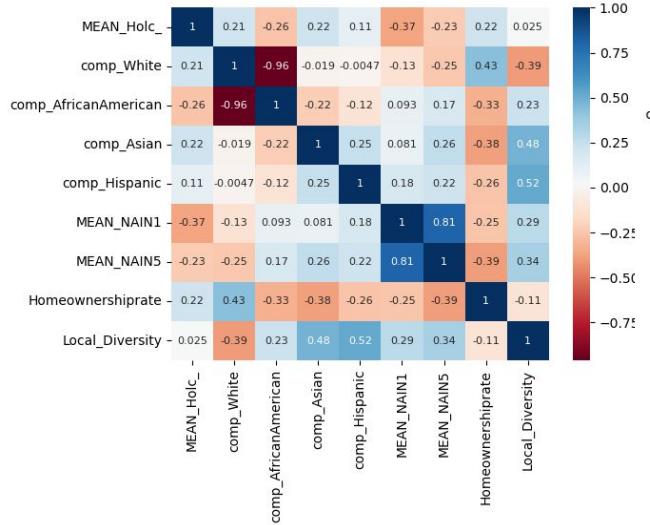


PHILADELPHIA, PA

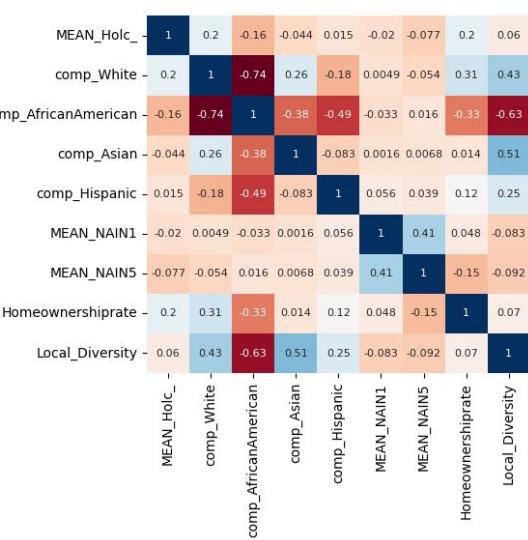


CORRELATION TABLES

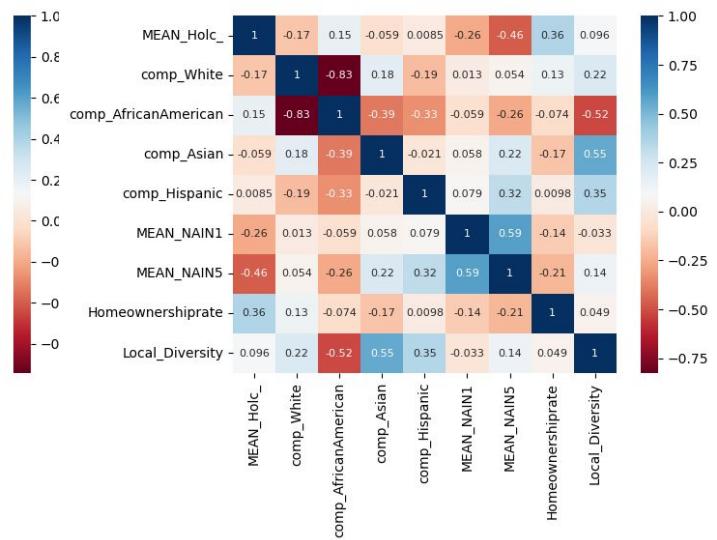
PITTSBURGH, PA



CHICAGO, IL



PHILADELPHIA, PA



REGRESSION ANALYSIS

Regression results - Dependent variable: Local Diversity

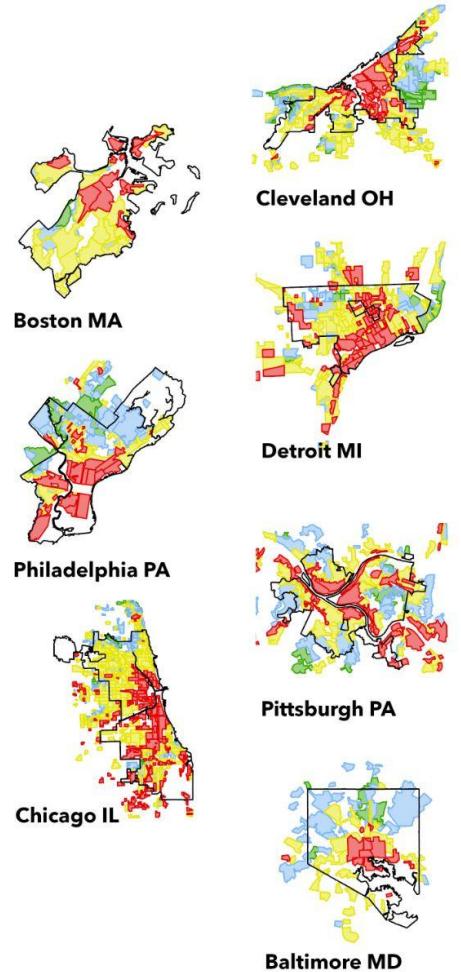
	Boston	Chicago	Cleveland	Detroit	Philadelphia	Pittsburgh
comp-white	-0.26	-0.5	0.21	0.58	-0.05	-1.29*
comp-af-am	0.006	-0.97**	-0.32	-0.01	-0.37	-0.94
comp-asian	1.53**	0.75*	2.17**	1.82**	1.68**	0.73
comp-latino	0.96**	-0.43	1.43**	0.78*	0.42	4.19**
Mean-Holc	-0.03	0.003	-0.05	-0.08**	0.09**	0.01
Homeownership-rate	0.0008	-0.002**	-0.003**	-0.001*	-0.004**	-0.0009
Mean-NAIN1000	-0.39**	-0.019*	-0.005	-0.04	-0.06	0.27
Mean-NAIN5000	0.26	-0.02**		-0.04	0.04	-0.05
R2	0.535	0.52	0.742	0.615	0.536	0.581

* P-value < 0.05

** P-value < 0.01

Phase 4: Next steps

Boston regression analysis for feature selection



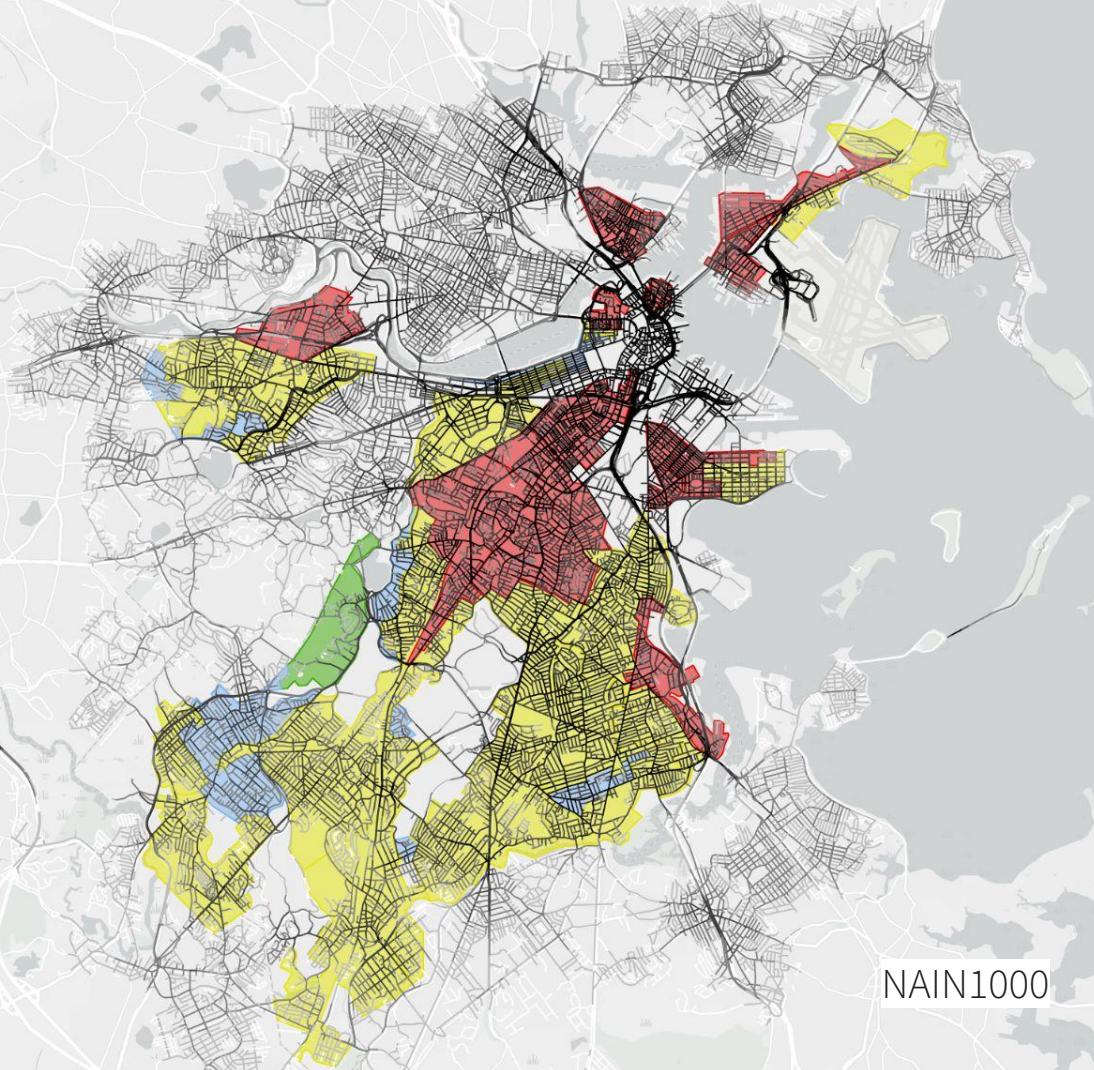
BOSTON, MA

INDEPENDENT VARIABLES

- Historical segregation (redlining) patterns(HOLC)
- Street network integration patterns (NAIN 500,1000,2000,5000)
- Street network choice patterns (NACH 500,1000,2000,5000)
- Racial composition:
 - African American
 - Asian
 - Latino
 - White
- Homeownership rate
- Median Income
- Median Home Value
- Educational Attainment
 - Graduate school, university, highschool...
- Urban Tree Canopy
- Housing types
 - Condo, single family...

DEPENDENT VARIABLE

- Local Diversity



NAIN1000



Thank you!
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