



MEASURING VULNERABILITY AND RESILIENCE TO CLIMATE CHANGE

February 24, 2021

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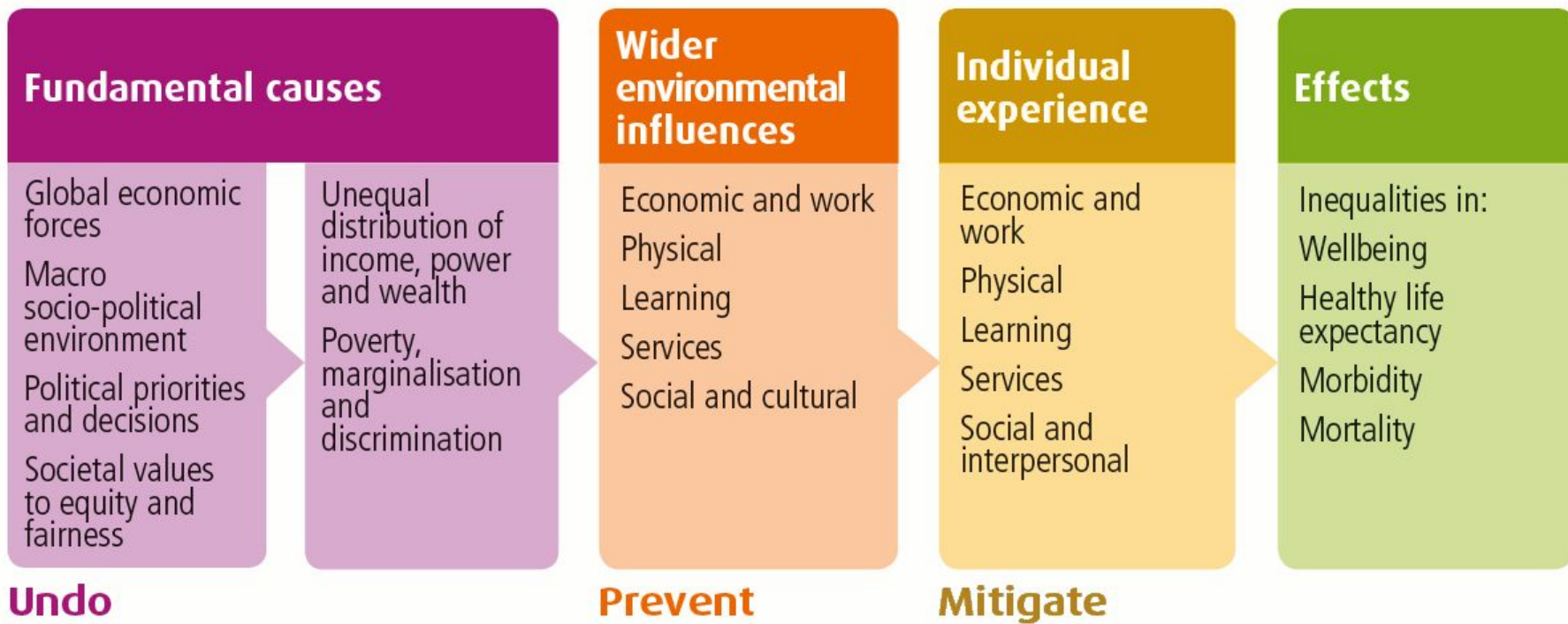
Associate Professor of Medicine and Sociology
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OBJECTIVES

- Discover the basics of area-based measures of vulnerability and disadvantage.
- Grasp the historical context for area-based vulnerabilities.
- Examine how area-based measures of vulnerability and disadvantage relate to climate change and health.
- Describe and discover pathways to building and measuring resilience in vulnerable communities.

Proposition: Climate Change can be considered as a Fundamental Cause of Health Inequality



From National Health Service, Scotland

Most present day climate disasters are neither “natural” nor egalitarian.

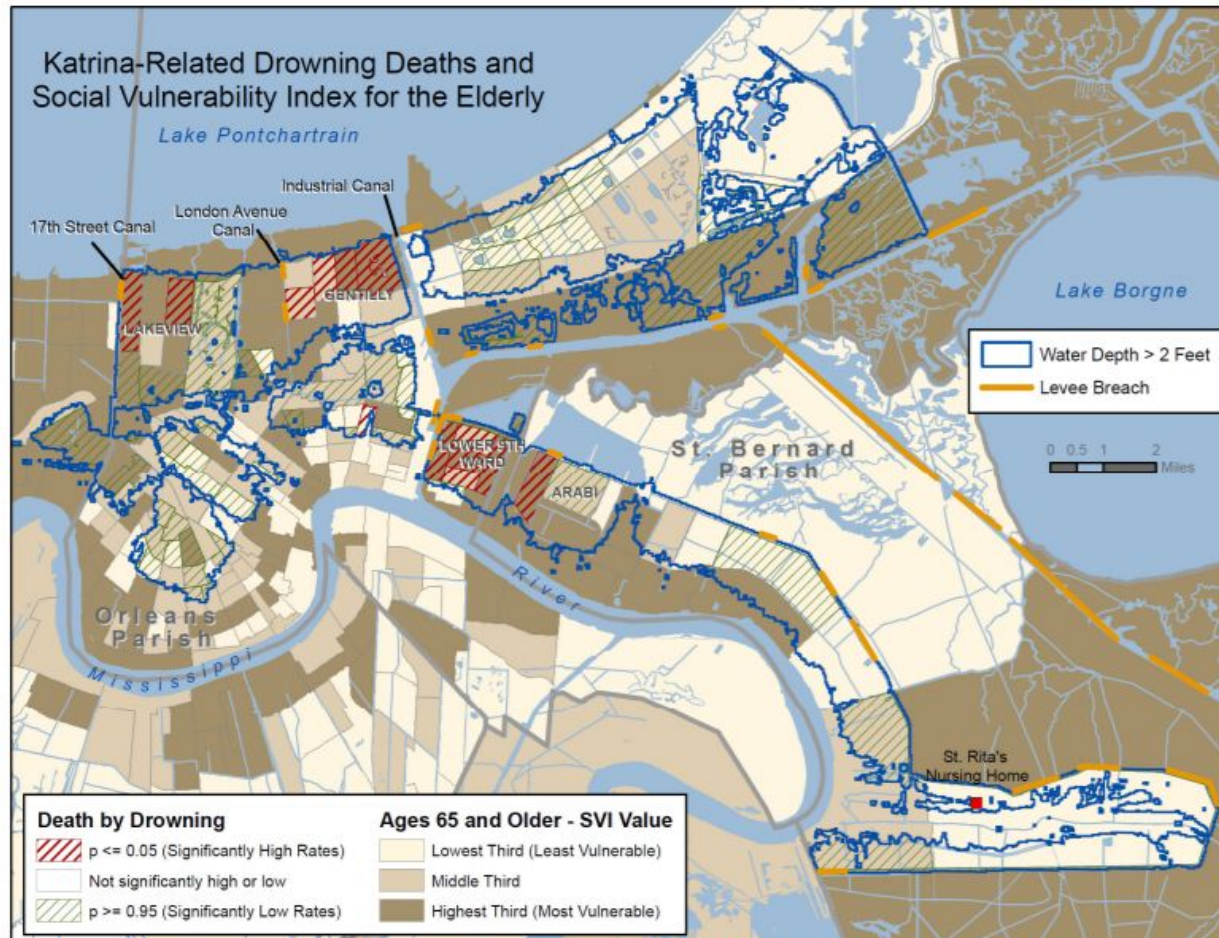


Figure 2. Overlay of Katrina-related drowning deaths and the elderly social vulnerability index (SVI) value, i.e., percentile rankings for population older than age 65 years. Data sources: NOAA 2006, Louisiana Department of Health and Hospitals 2006, Swenson 2009, Jonkman et al. 2009, and U.S. Census Bureau 2000b.



ECODISTRICTS

**WE'RE A GROWING COMMUNITY
OF COMMITTED CHANGE MAKERS
REDEFINING BUSINESS AS USUAL
FOR CITY BUILDING**

Setting a new standard for urban and
community development.



WE FACE UNPRECEDENTED CHALLENGES

Overshooting the Ecological Ceiling:

- Rapid (but uneven) urbanization
- Climate change
- Biodiversity loss
- Land conversion
- Nitrogen and phosphorous loading



WE FACE UNPRECEDENTED CHALLENGES

Shortfalling the Social Foundation:

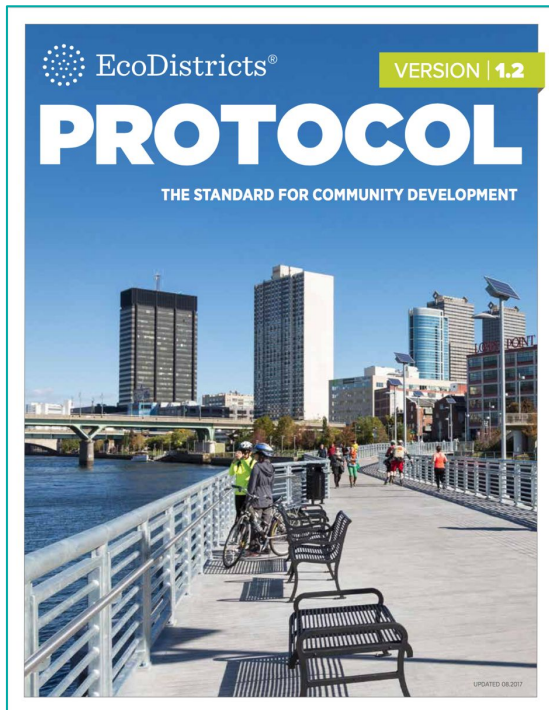
- Health disparities
- Peace and justice
- Political voice
- Social equity
- Education
- Housing
- Income and work
- Gender equality
- Networks and social disconnection



WE NEED NEW MODELS

- Systems Thinking
- Root cause-focused
- Collective Impact framework leads to forming a Backbone Organization
- Performance-focus/Data-driven
- Neighborhood scale

WHAT IS ECODISTRICTS CERTIFIED?



1. A **management framework** to help project teams guide long term district and neighborhood investments
2. An **international standard that stands for excellence** in urban and community regeneration



WHAT WE'RE DESIGNING TOWARDS

- Powerful framework for comprehensive action and implementation
- Holistic and rigorous: accountability for social and sustainability goals
- Rewards collaboration: aligns community, institutions, developers, policy makers, and investors
- A focus of upstream performance and transparency
- Recognition for leadership
- Compliments existing rating tools



IMPERATIVES



Equity



Resilience



Climate
Protection

PRIORITIES



Place



Prosperity



Health + Wellbeing



Connectivity



Living
Infrastructure



Resource
Regeneration



PLACE



GOAL
Create inclusive and vibrant communities

OBJECTIVE CATEGORIES

- Engagement & Inclusion
- Culture & Identity
- Public Spaces
- Housing

PROSPERITY



GOAL:
Support education and economic opportunities that build prosperity & accelerate innovation

- OBJECTIVE CATEGORIES**
- Access to Opportunity
 - Economic Development
 - Innovation



HEALTH + WELLBEING



GOAL:
Nurture people's health and happiness

OBJECTIVE CATEGORIES

- Active Living
- Health
- Safety
- Food Systems



CONNECTIVITY



GOAL:
Build effective connections between people
and places

OBJECTIVE CATEGORIES

- Street Network
- Mobility
- Digital Network



LIVING INFRASTRUCTURE



GOAL:
Enable flourishing ecosystems and connections

- OBJECTIVE CATEGORIES**
- Natural Features
 - Ecosystem Health
 - Connection with Nature



RESOURCE REGENERATION



GOAL:
Move towards a net positive world and restore natural capital

OBJECTIVE CATEGORIES

- Air
- Water
- Land





Review of examples at EcoDistricts website



Connect with us:

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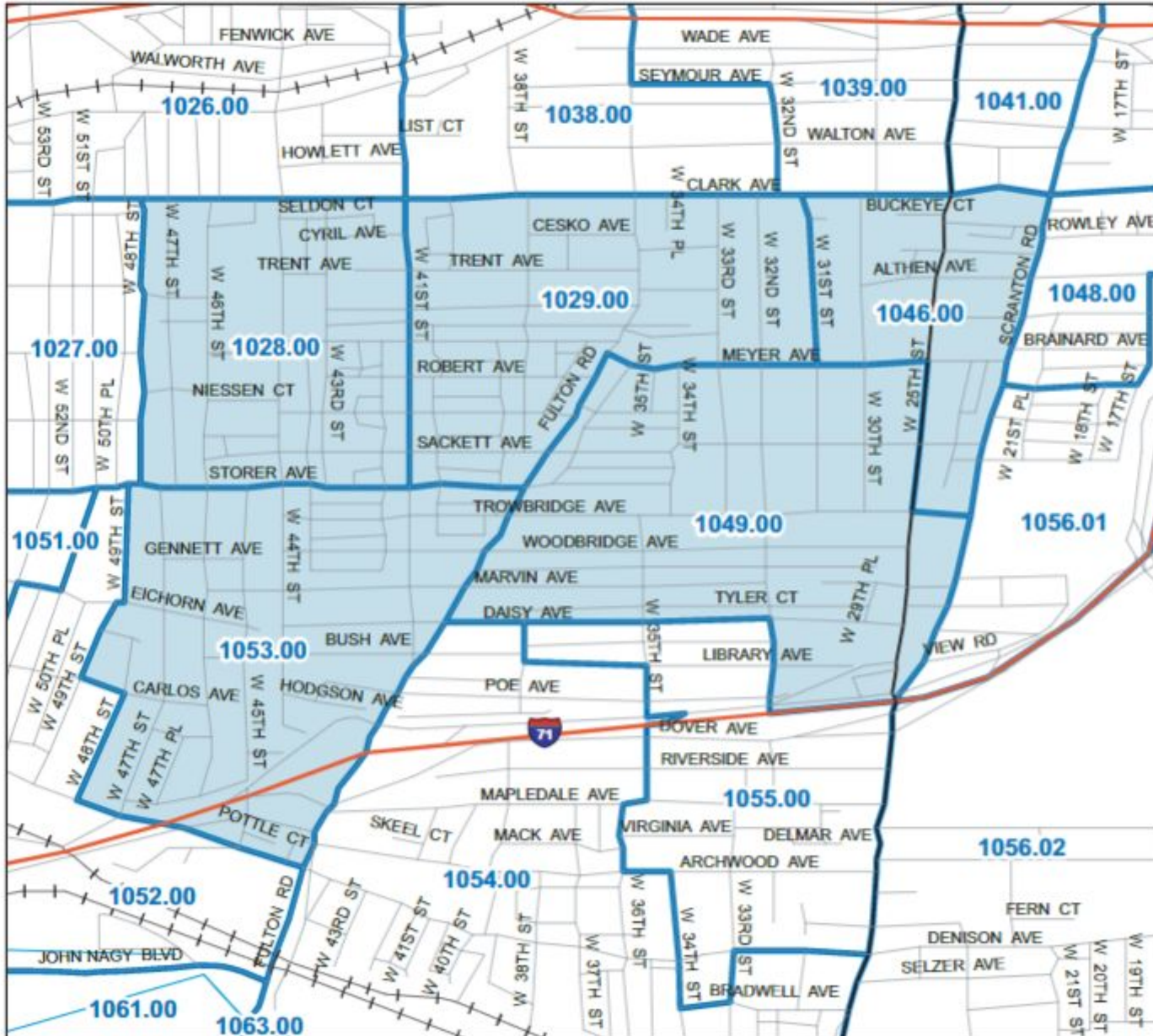
CATALYST QUESTIONS



WHO are the most vulnerable and most impacted populations in the Clark-Fulton community and the wider city/county?

HOW do we ensure that a wide diversity of people in Clark-Fulton have the opportunity to meaningfully, participate, lead and thrive?

WHAT are indicators of HEALTH EQUITY?

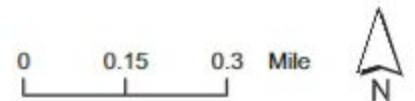
Clark-Fulton Cleveland, OH (2000)



 Census Tract Boundary
 Neighborhood Boundary



Prepared by: Center on Urban Poverty
 and Social Change,
 Mandel School of Applied Social Sciences,
 Case Western Reserve University
 Source: ESRI



What do we know about Clark/Fulton?

Demographics (2010-2014 ACS 5-Year Estimates)				
	Clark-Fulton		City of Cleveland	
	Count	%	Count	%
<i>Total Population</i>	7,451		392,114	
Under age 18	1,901	25.5%	92,121	23.5%
Age 18-64	4,804	64.5%	251,135	64.1%
Age 65+	746	10.0%	48,788	12.4%
<i>Race and Ethnicity</i>				
White	4,733	63.5%	157,419	40.1%
Black/African American	1,379	18.5%	204,249	52.1%
Asian/Pacific Islander	68	0.9%	6,711	1.7%
Other/More than one race	1,271	17.1%	23,735	6.1%
Hispanic or Latinx (of any race)	3,586	48.1%	39,406	10.0%
<i>Household Makeup</i>				
Families with own children	730	25.5%	40,180	24.1%
Single-parent families w/ children	510	17.8%	28,154	16.9%
Health Coverage (2010-2014 ACS 5-Year Estimates)				
	Clark-Fulton		City of Cleveland	
<i>Note: Current uninsured rates are likely lower due to the implementation of the ACA</i>				
Percent of people with no health insurance coverage	21%		16%	

Employment and Income (2010-2014 ACS 5-Year Estimates)				
	Clark-Fulton		City of Cleveland	
	Count	%	Count	%
Labor Force Participation, age 16+	3,040	52.0%	182,834	58.9%
Median Household Income	\$21,083		\$26,170	



Center for Health Research

Health

Poverty (2010-2014 ACS 5-Year Estimates)

	Clark-Fulton		City of Cleveland	
	Count	%	Count	%
Persons living below poverty	3,434	46.6%	136,860	35.9%
Children (Age 0-17) living below poverty	1,127	61.6%	48,267	53.5%
Families w/ children living below poverty	504	58.3%	21,622	46.3%
Seniors (Age 65+) living below poverty	171	25.0%	9,819	21.0%
Persons in deep poverty (under 50% of poverty)	1,797	24.4%	68,532	18.0%
Persons in or near poverty (under 200% of poverty)	5,335	72.4%	233,518	61.2%

Education (2010-2014 ACS 5-Year Estimates)

	Clark-Fulton		City of Cleveland	
	Count	%	Count	%
Persons (Age 25+) w/ High School diploma or less	3,466	71.1%	141,855	55.6%
Persons (Age 25+) w/ Bachelor's degree or higher	305	6.2%	38,705	15.2%
Youth who are high school dropouts	15	-	2,045	-

Housing Affordability (2010-2014 ACS 5-Year Estimates)

	Clark-Fulton	City of Cleveland
<i>Unaffordable housing: Housing costs are more than 30% of household income</i>		
Owner-occupied households in unaffordable housing	36.6%	32.6%
Renter-occupied households in unaffordable housing	69.0%	52.8%
Overall households in unaffordable housing	55.0%	44.0%

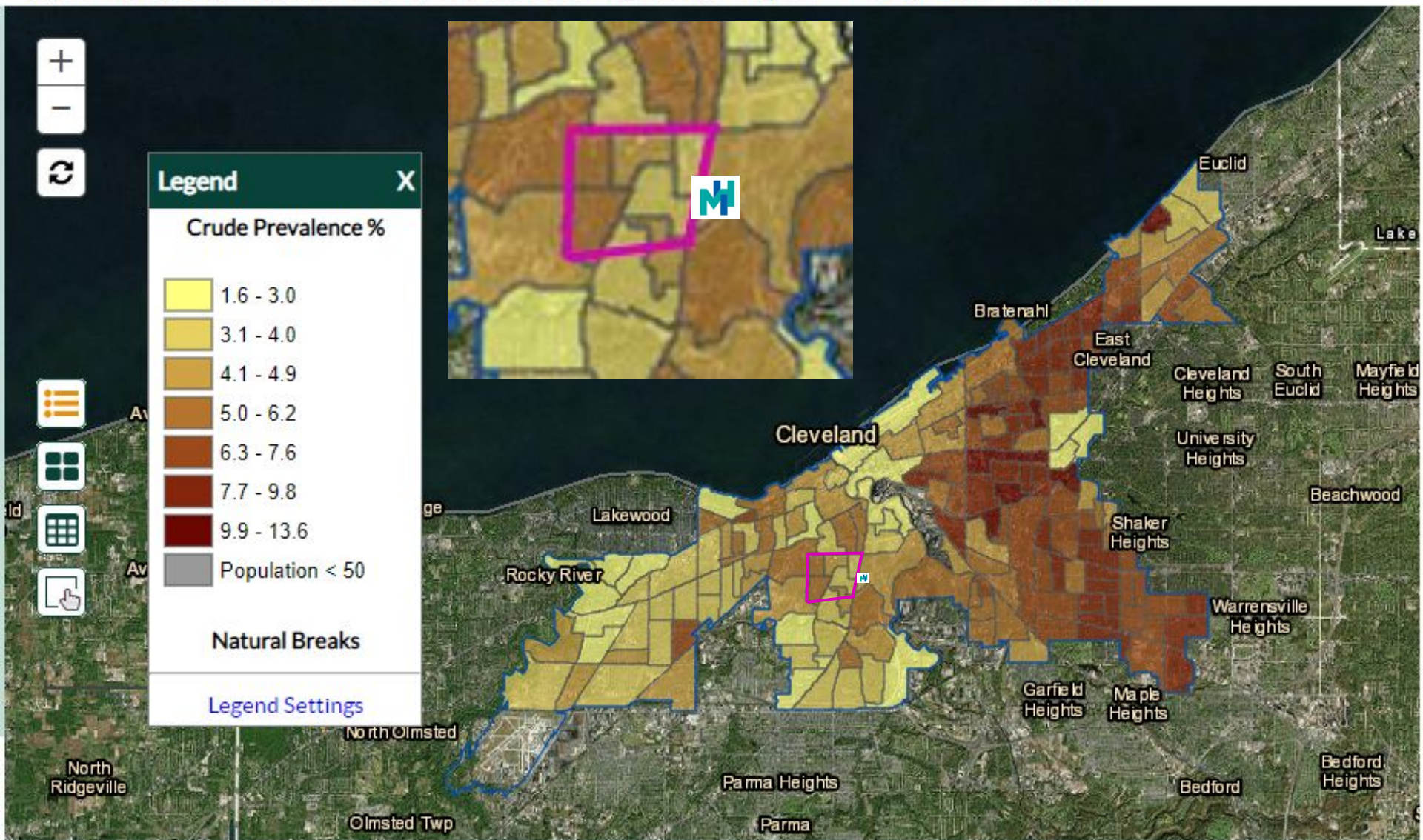
Teen Birth (2010-2014 Ohio Department of Health, U.S. Census Bureau)

Rates are per 1,000 Females	Clark-Fulton		City of Cleveland	
	5-Year Total	Rate	5-Year Total	Rate
Teen Births	177	126	4,172	59



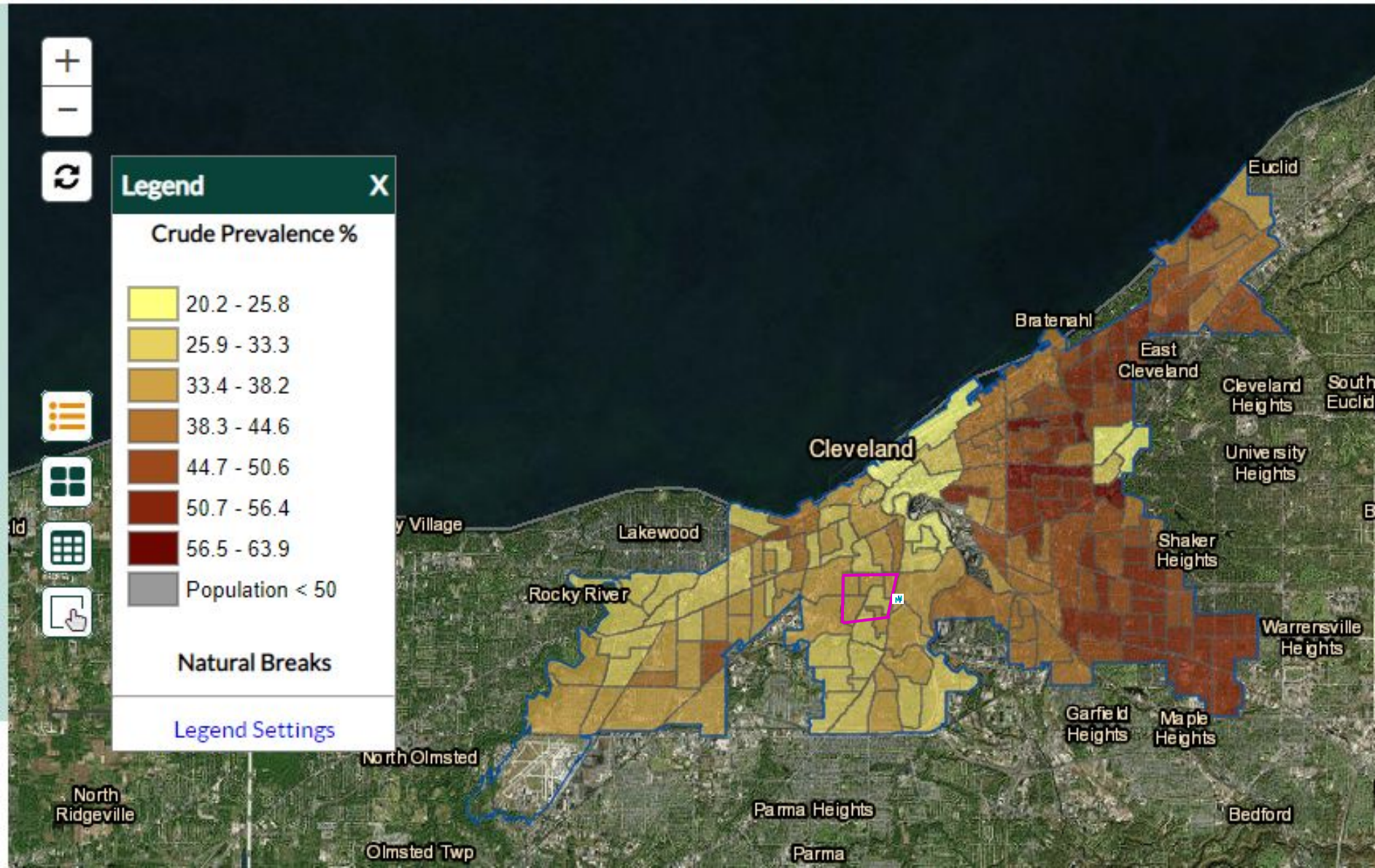
Some data from CDC 500 Cities

Model-based estimates for stroke among adults aged ≥ 18 years - 2015



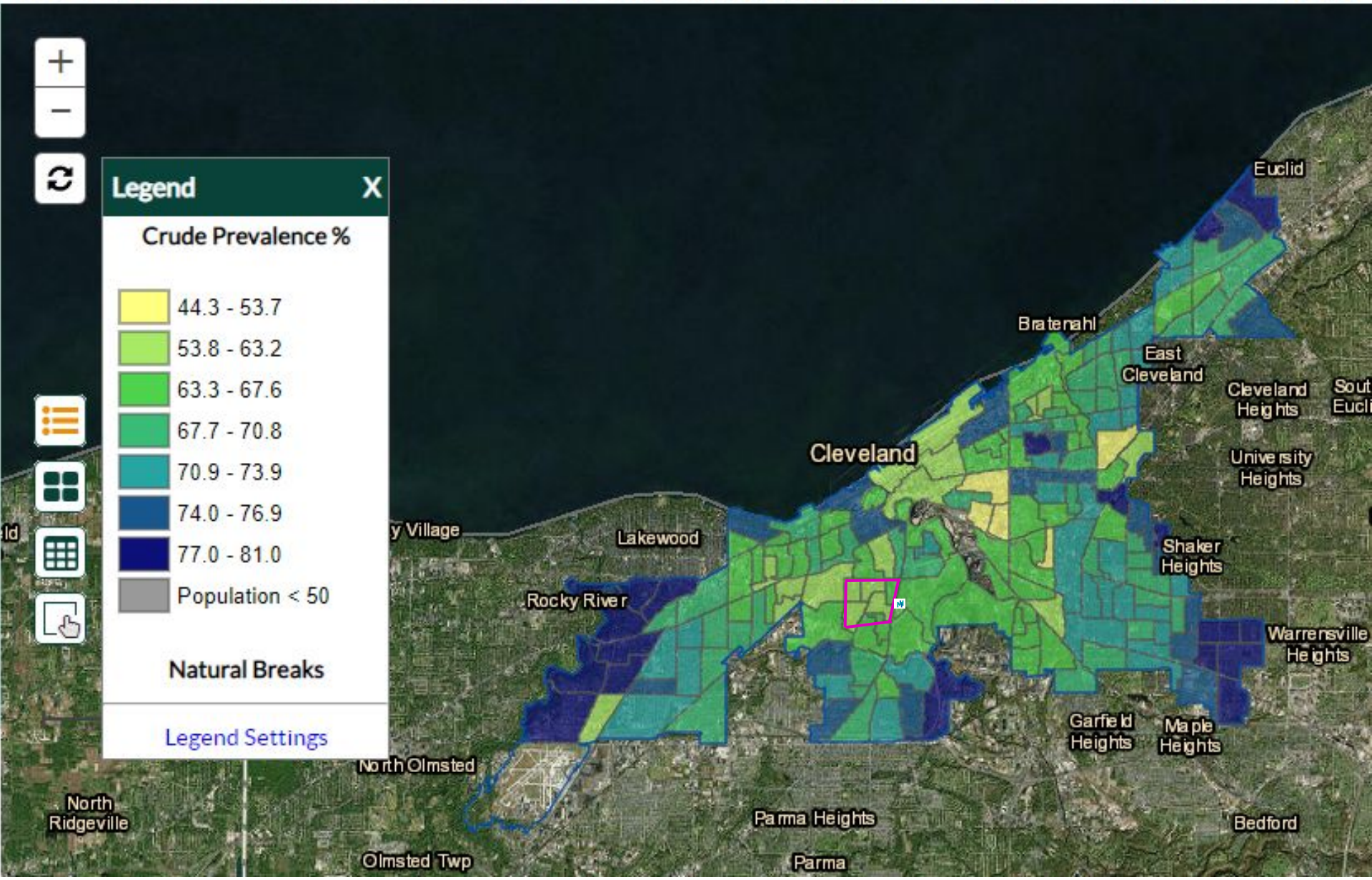
Some data from CDC 500 Cities

Model-based estimates for high blood pressure among adults aged ≥ 18 years - 2015



Some data from CDC 500 Cities

Model-based estimates for cholesterol screening among adults aged ≥ 18 years - 2015



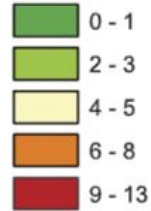
Local data on infant deaths from CCBH

Map 4

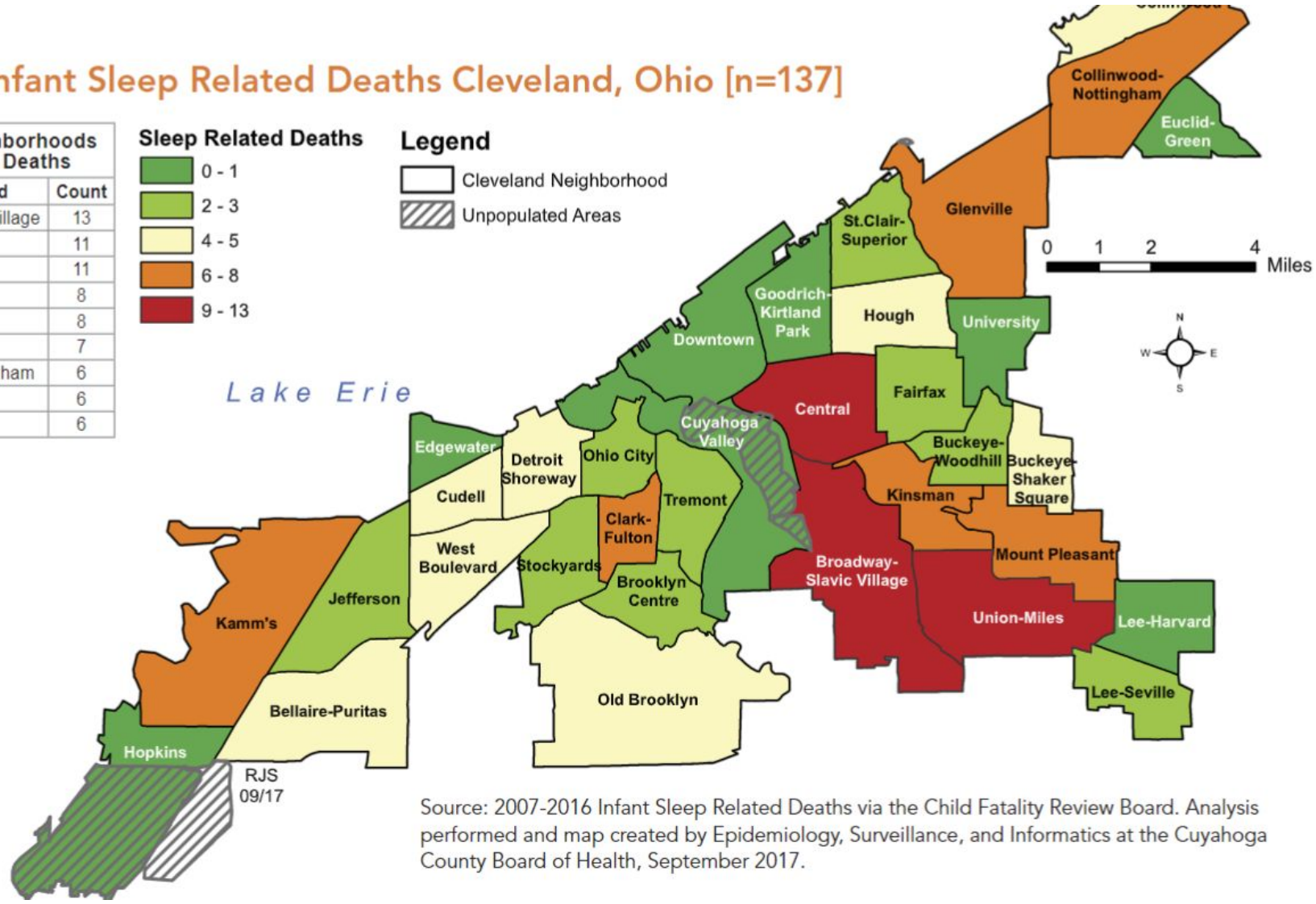
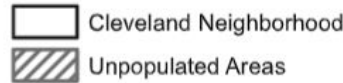
2007-2016 Infant Sleep Related Deaths Cleveland, Ohio [n=137]

Rank	Neighborhood	Count
1	Broadway-Slavic Village	13
T-2	Central	11
T-2	Union-Miles	11
4	Clark-Fulton	8
5	Glenville	8
6	Kinsman	7
T-7	Collinwood-Nottingham	6
T-7	Kamm's	6
T-7	Mount Pleasant	6

Sleep Related Deaths



Legend



Source: 2007-2016 Infant Sleep Related Deaths via the Child Fatality Review Board. Analysis performed and map created by Epidemiology, Surveillance, and Informatics at the Cuyahoga County Board of Health, September 2017.

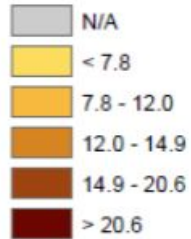


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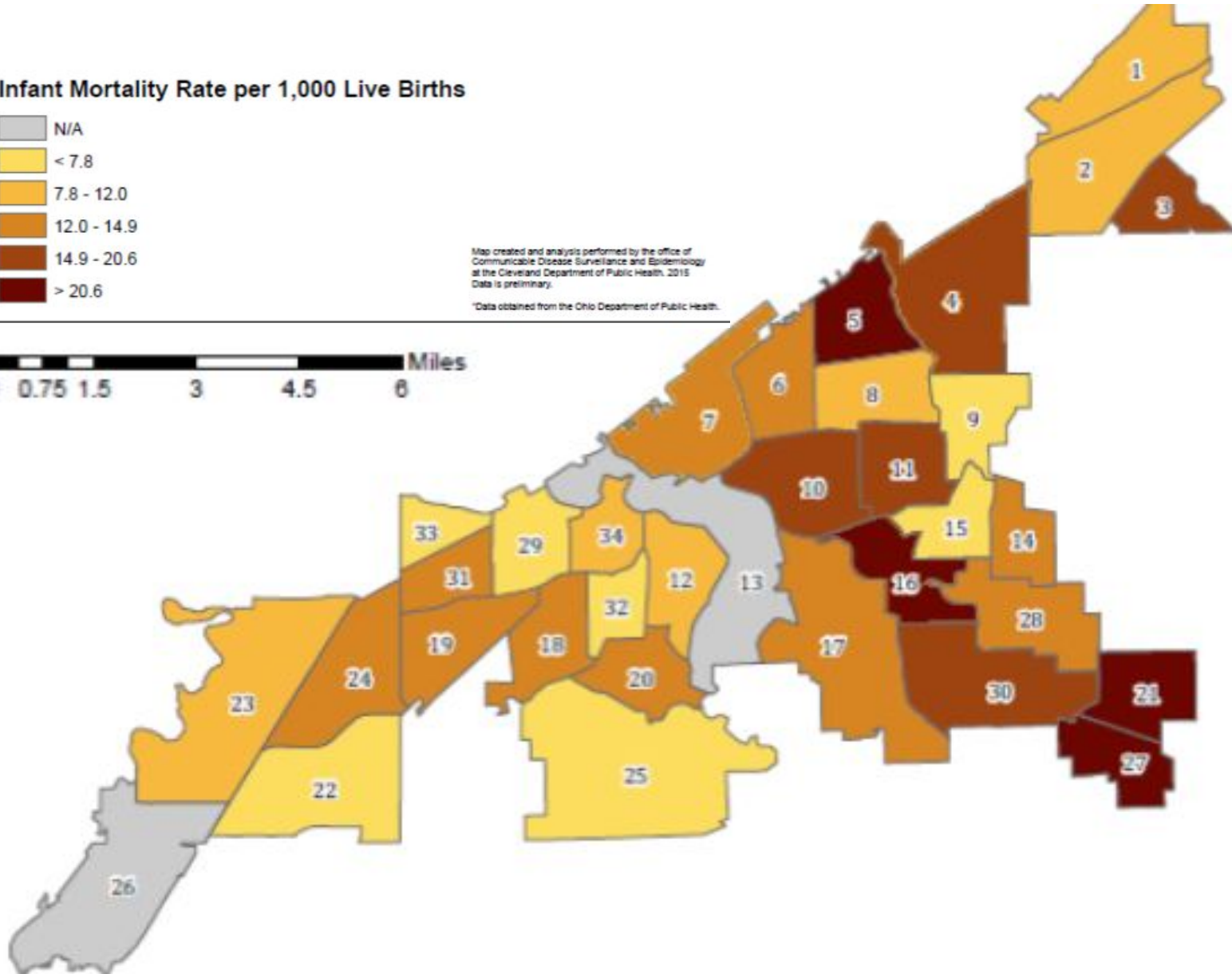
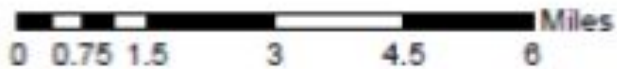
Data on Infant Mortality from Ohio Department of Health, 2012-2015

Infant Mortality Rate per 1,000 Live Births



Map created and analysis performed by the office of Communicable Disease Surveillance and Epidemiology at the Cleveland Department of Public Health, 2015. Data is preliminary.

*Data obtained from the Ohio Department of Public Health.



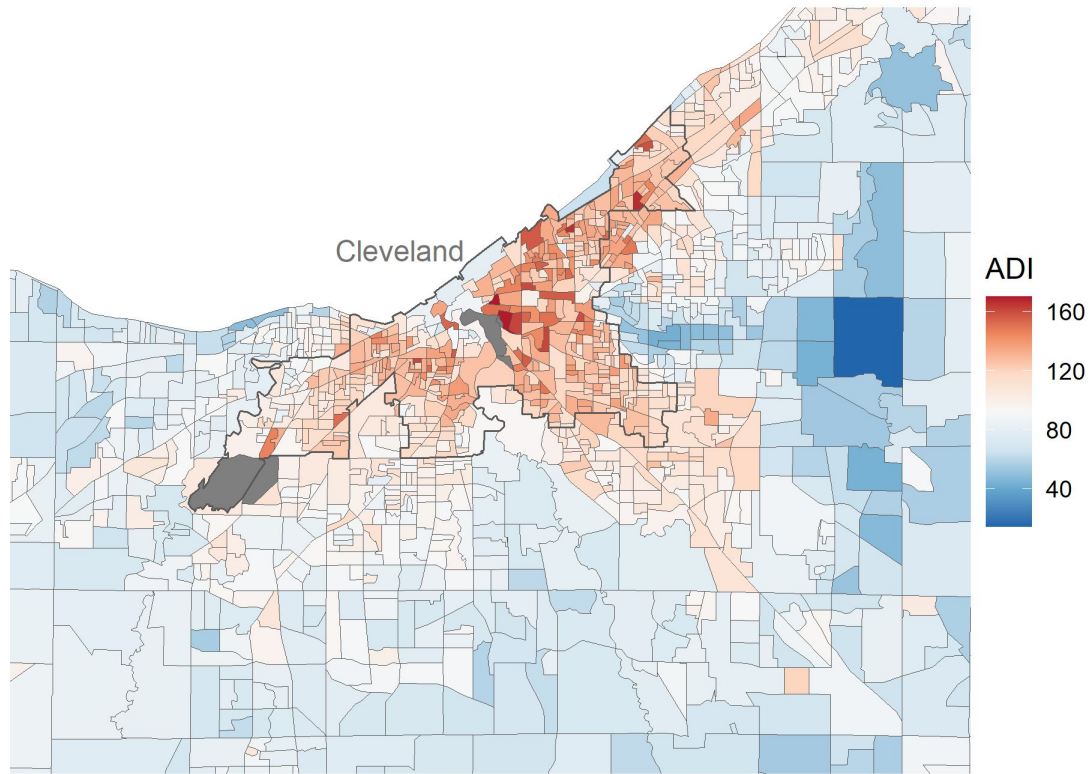
Data on Infant Mortality from Ohio Department of Health, 2012-2015

Infant Fatalities and Mortality Rate by Neighborhood (2012-2015)			
Geographic Area	# of Live Births	# of Fatalities	Rate per 1,000 Live Births
United States*	3,932,181	23446	6.0
State of Ohio*	139,035	1024	7.4
Cuyahoga County*	14,920	132	8.8
City of Cleveland	22,504	290	12.9
Neighborhood Name (#)			
Bellaire-Puritas (22)	695	5	7.2
Broadway-Slavic Village (17)	1,355	20	14.8
Brooklyn Centre (20)	639	8	12.5
Buckeye-Shaker Square (14)	660	9	13.6
Buckeye-Woodhill (15)	513	2	3.9
Central (10)	1,214	20	16.5
Clark-Fulton (32)	642	3	4.7
Collinwood-Nottingham (2)	651	7	10.8
Cudell (31)	612	8	13.1
Cuyahoga Valley (13)	12	1	**
Detroit Shoreway (29)	705	4	5.7
Downtown (7)	331	4	12.1
Edgewater (33)	232	1	4.3
Euclid-Green (3)	304	5	16.4
Fairfax (11)	362	6	16.6
Glenville (4)	1,533	23	15.0



Area Deprivation Index, Cuyahoga County, 2019 American Community Survey.

Image by Adam Perzynski created using R sociome

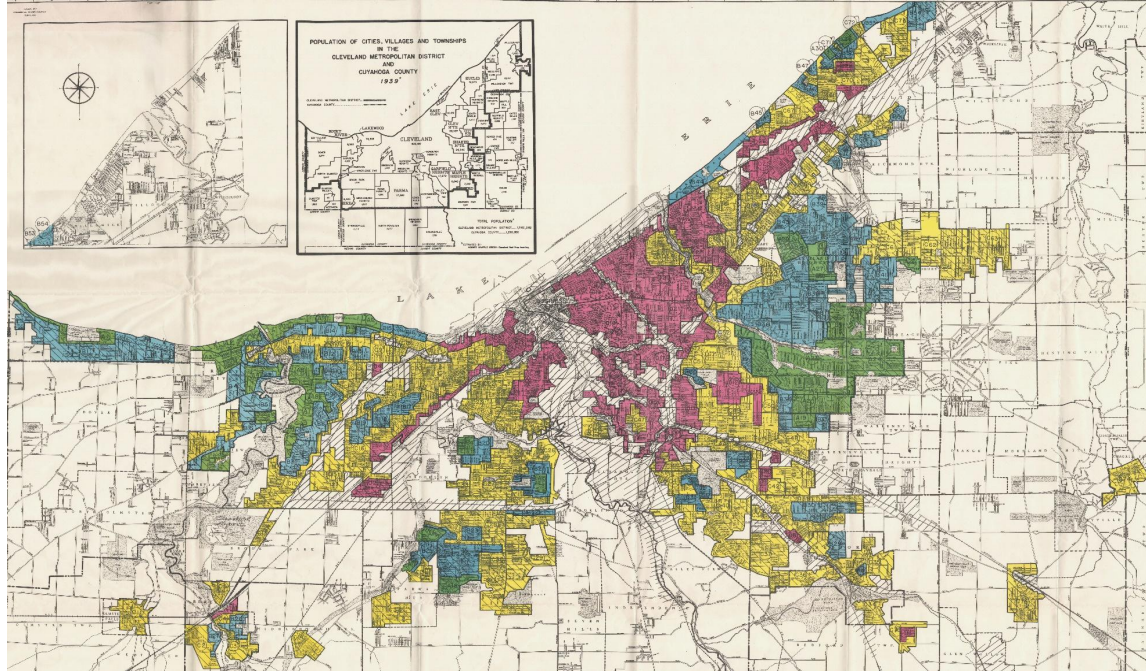


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Home Owners Loan Corporation Map of Redlined Areas in Greater Cleveland from 1940.

Image by Adam Perzynski created using R sociome



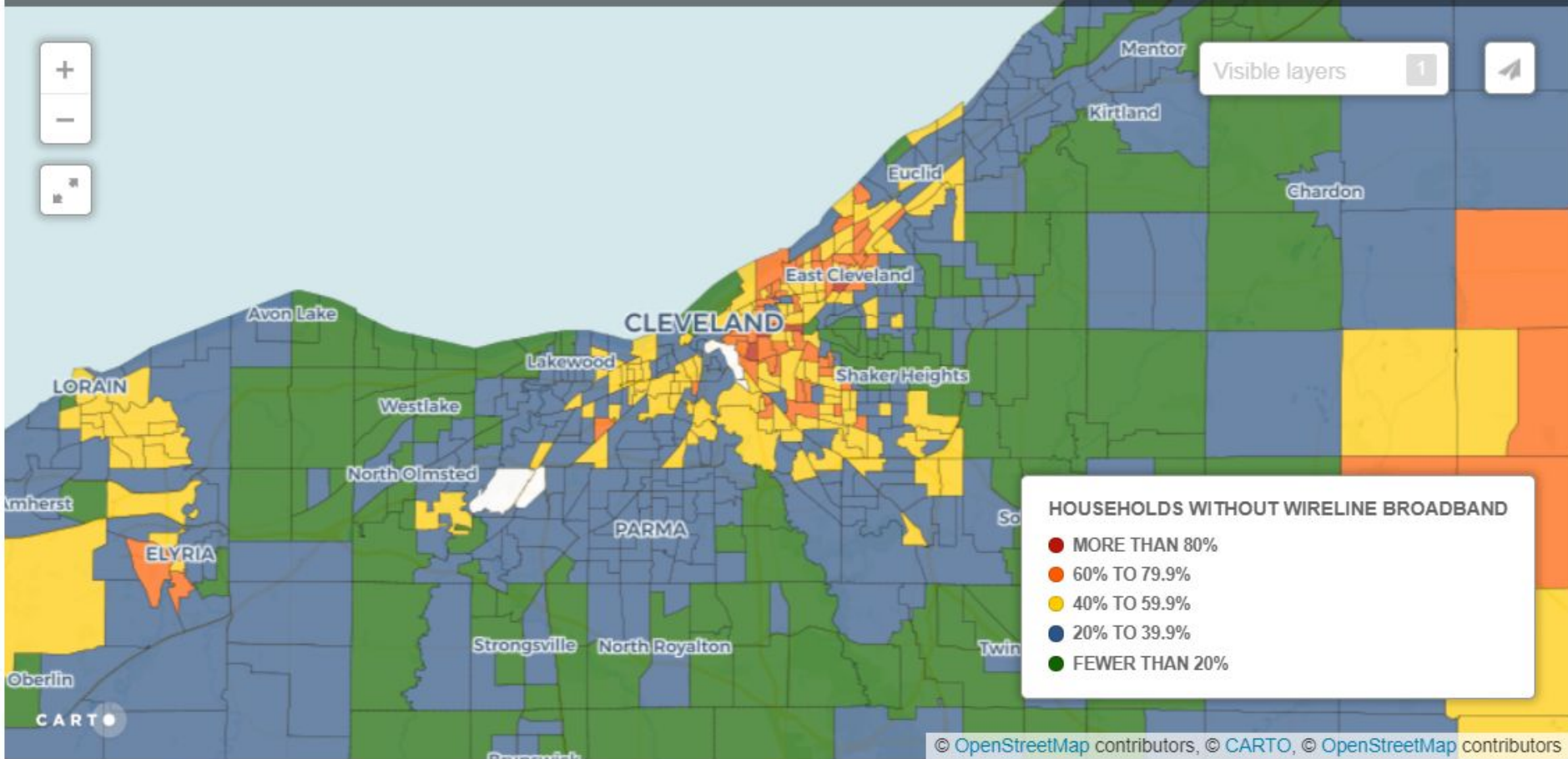
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Image by Bill Callahan, ConnectYourCommunity.org

Ohio Census tracts: Percentage of households without cable, DSL or fiber broadband Internet subscriptions

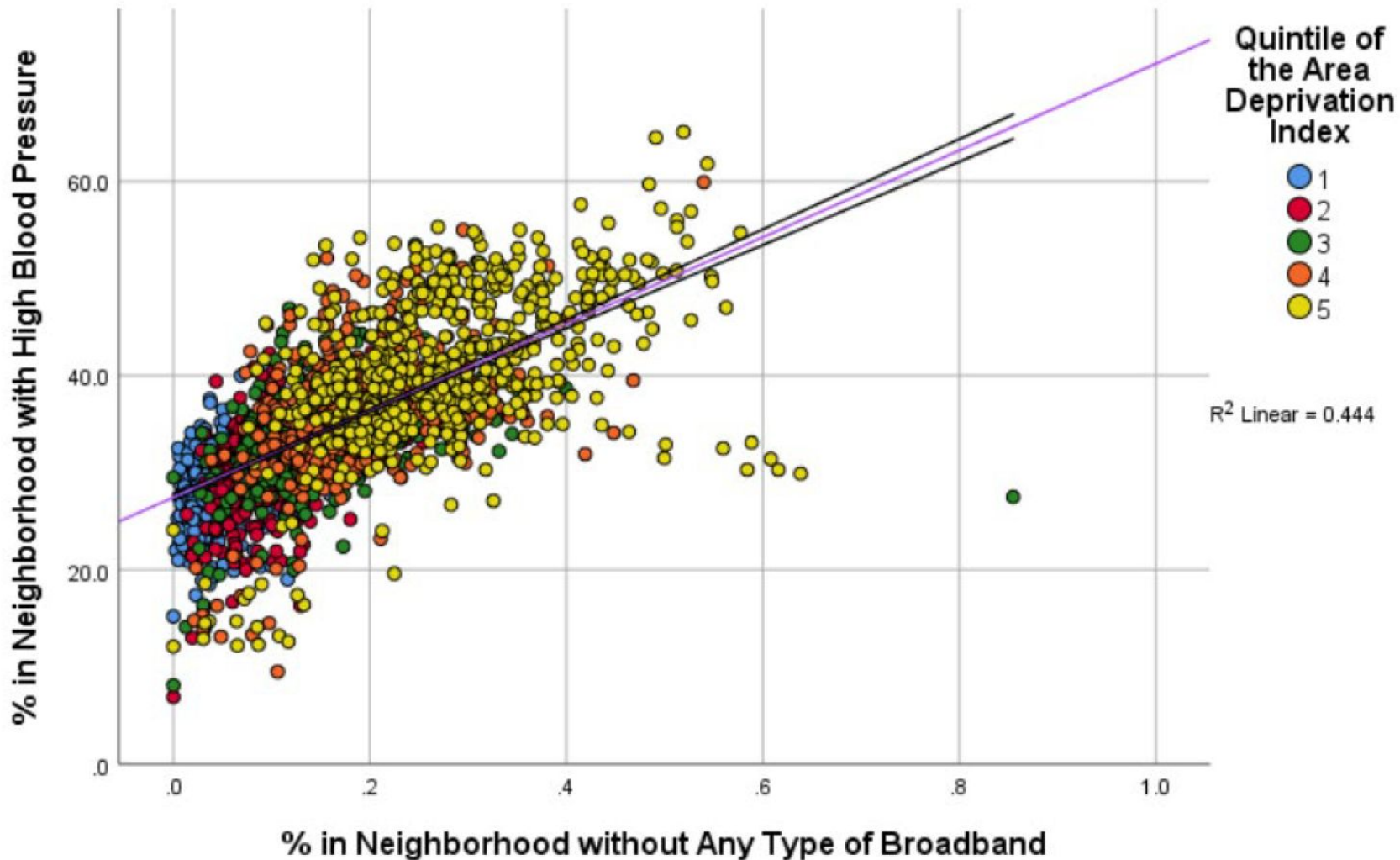
2015-2019 American Community Survey 5-Year Estimates, Table B28002 | Connect Your Community



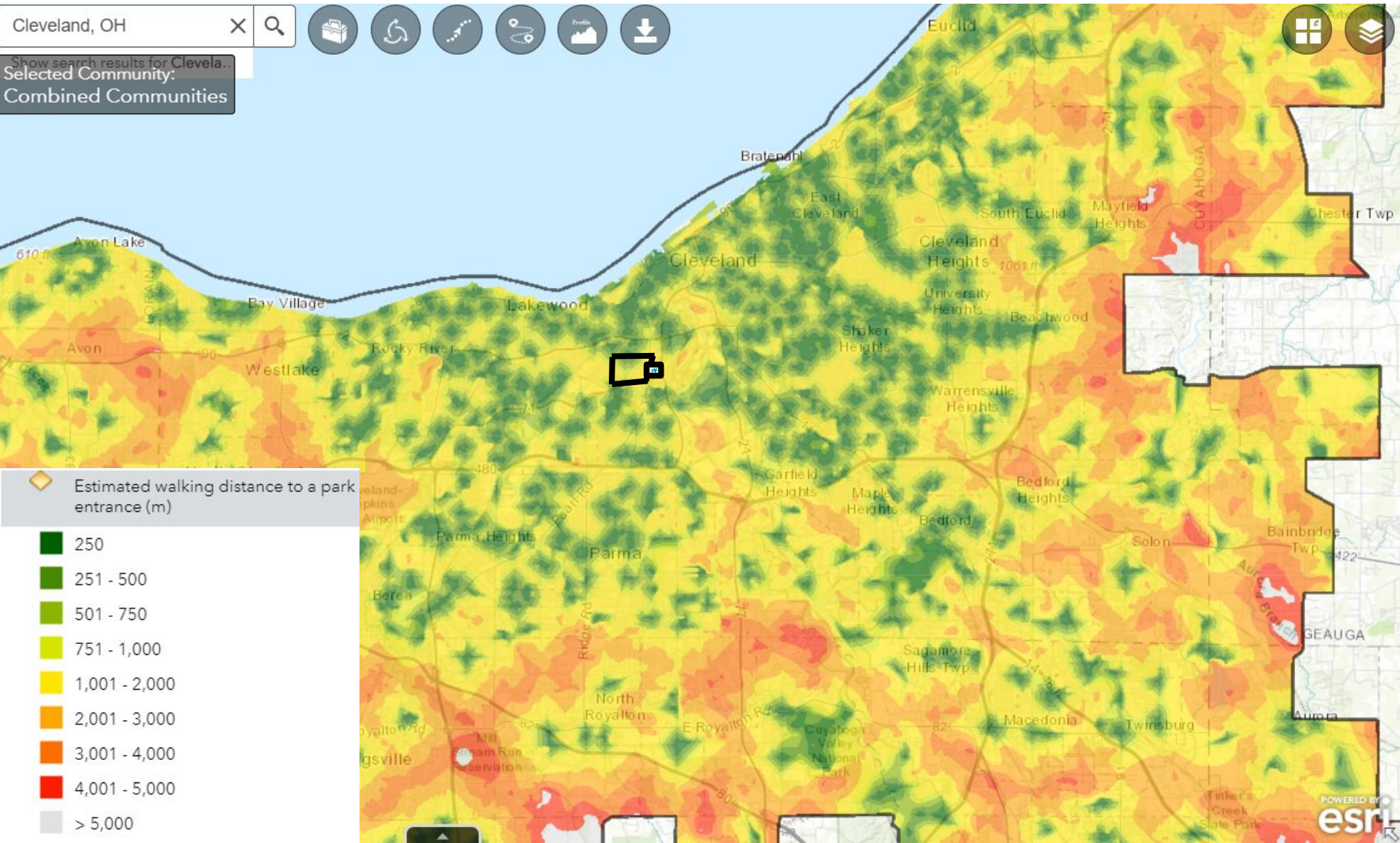
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Figure from Ruff et al, (under review at AMIA)

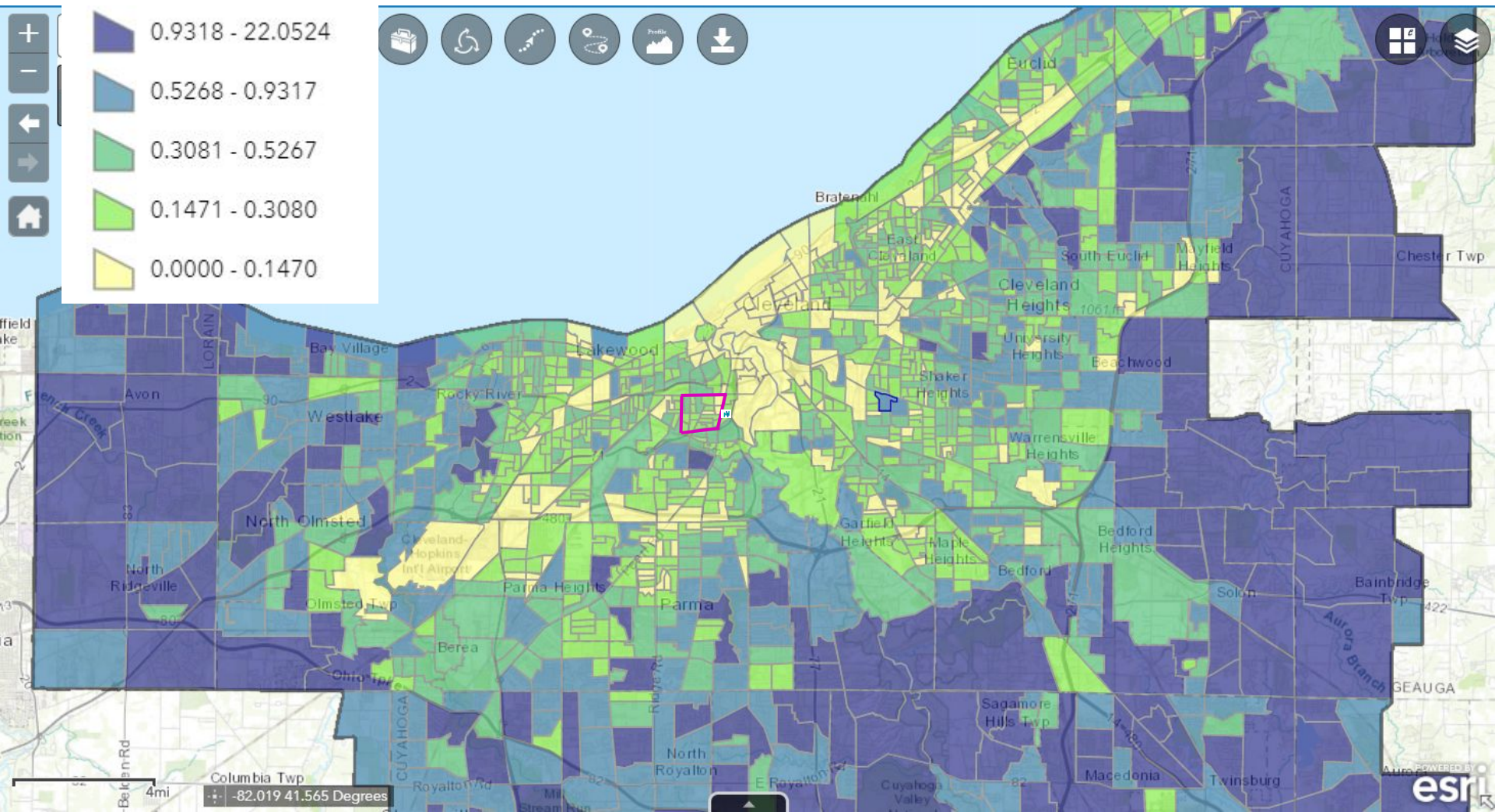
Figure 1. Neighborhood Association between Lack of Broadband Internet and High Blood Pressure N=2938



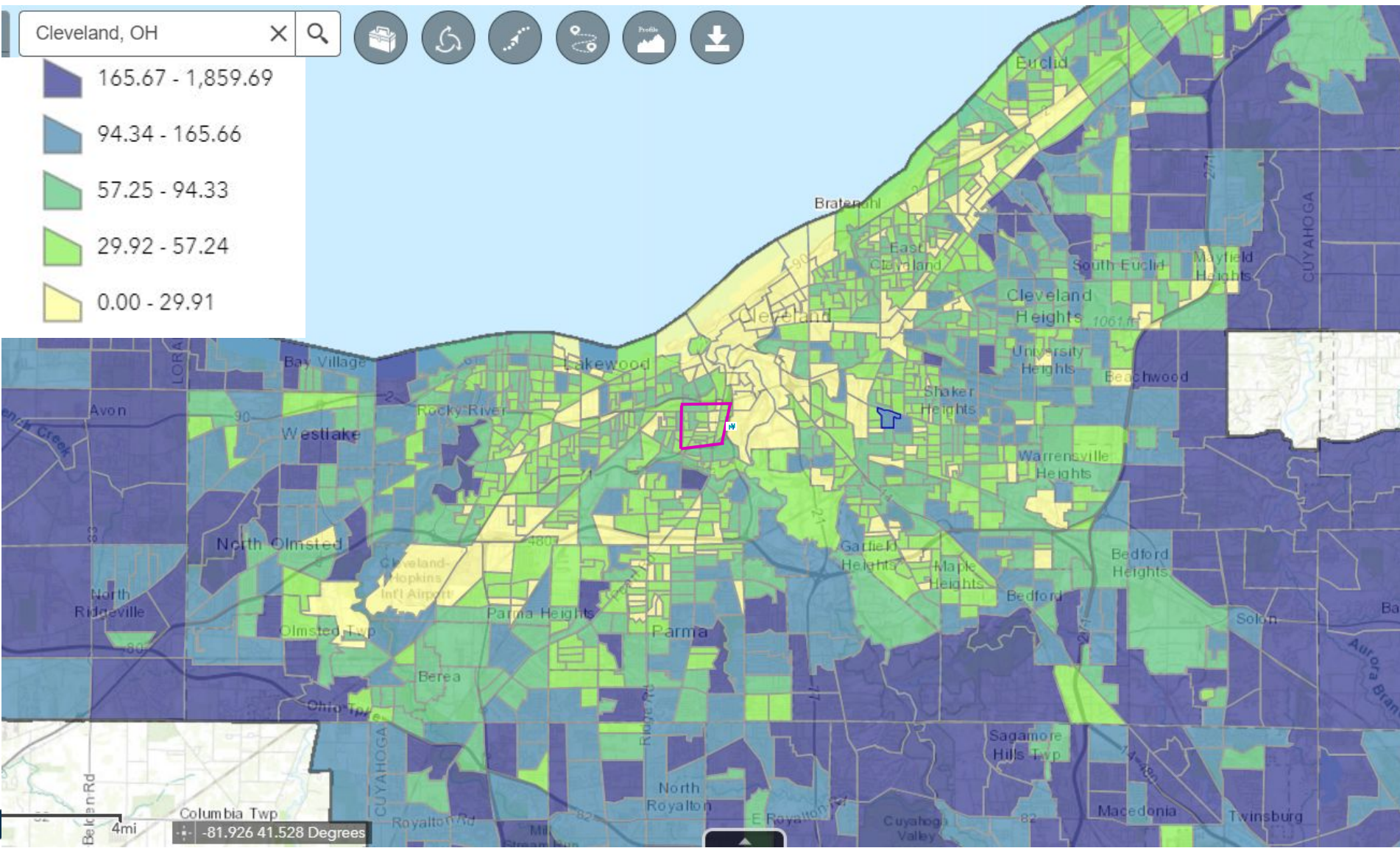
Estimated Walking Distance to a Park Entrance [EPA Enviroatlas]



School days not lost to illness due to ozone removed by tree cover (days per year per block group)



Value of Hospital Admissions avoided due to air toxins removed by tree cover in \$ per year [EPA Enviroatlas]



“Go-Along” Interviews

Health & Place 15 (2009) 263–272



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Health & Place

journal homepage: www.elsevier.com/locate/healthplace



Come take a walk with me: The “Go-Along” interview as a novel method for studying the implications of place for health and well-being


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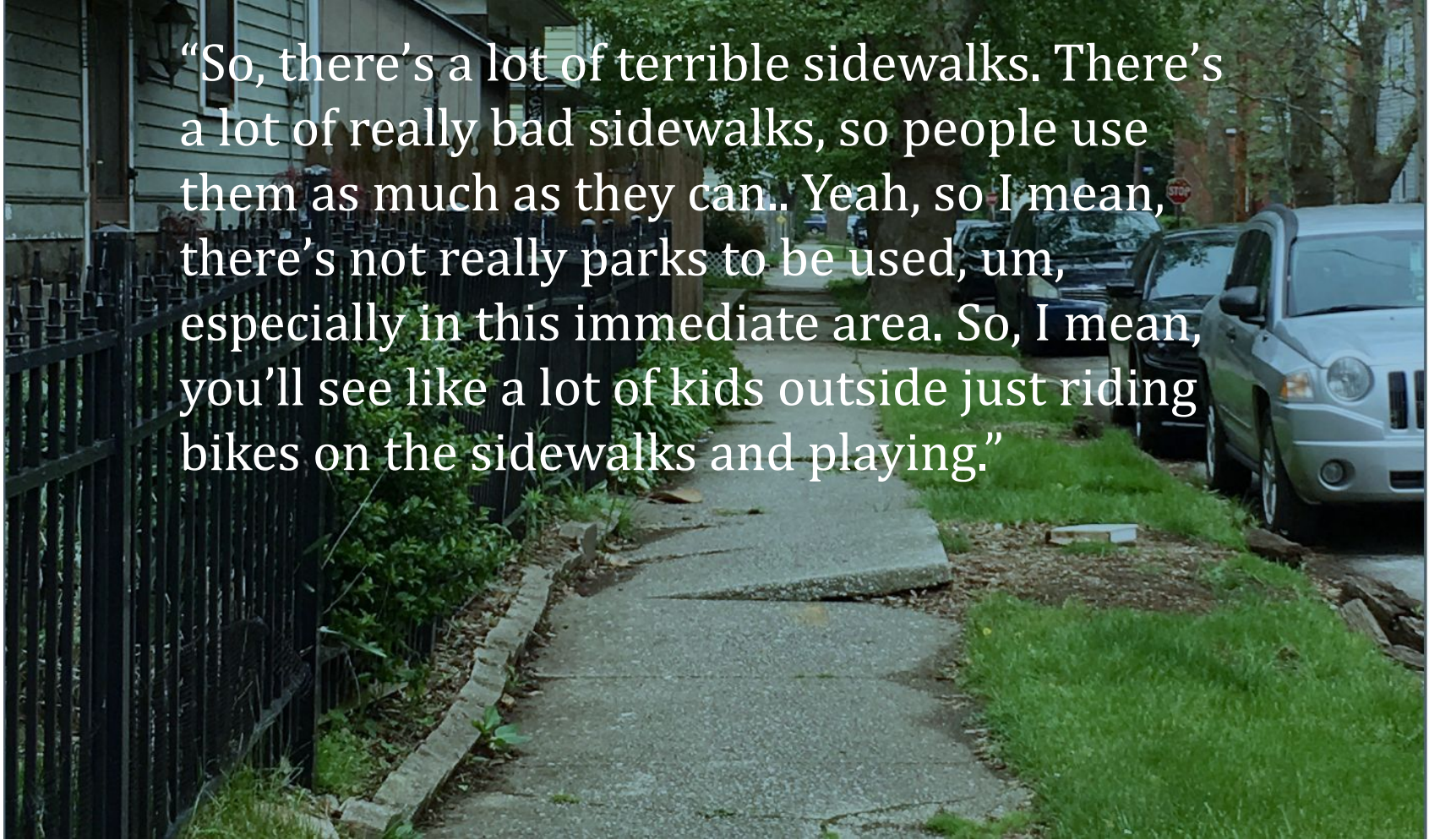


“Go-Along” Interviews

- Community-based recruitment with collaboration from:
 - **Metro West Community Development Corporation**
 - **The Family Ministry Center**
 - **Scranton Road Ministries**
- 19 interviews conducted: 15 in English and 4 in Spanish
- Average length was about 30 minutes
- Unique route for each participant
 - Some began at MetroHealth, some began at home
 - Older participants did not walk as far
- If it rains, interview in a car or reschedule



“So, there’s a lot of terrible sidewalks. There’s a lot of really bad sidewalks, so people use them as much as they can.. Yeah, so I mean, there’s not really parks to be used, um, especially in this immediate area. So, I mean, you’ll see like a lot of kids outside just riding bikes on the sidewalks and playing.”



What is important to you about the neighborhood?

“The potential that it has ... I can see it like changing in the upcoming years.”

There’s definitely potential here and there are people here who care. So those people are going to make sure that it happens. That things change positively.”



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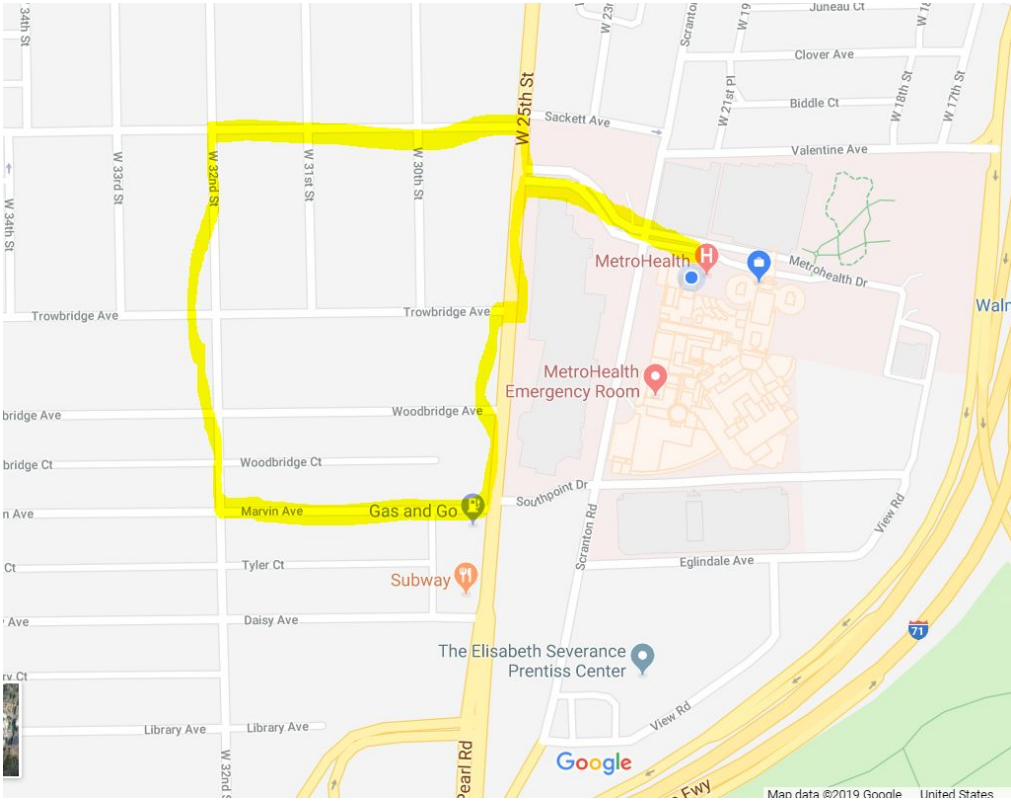




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Route from a “Go-Along” Interview

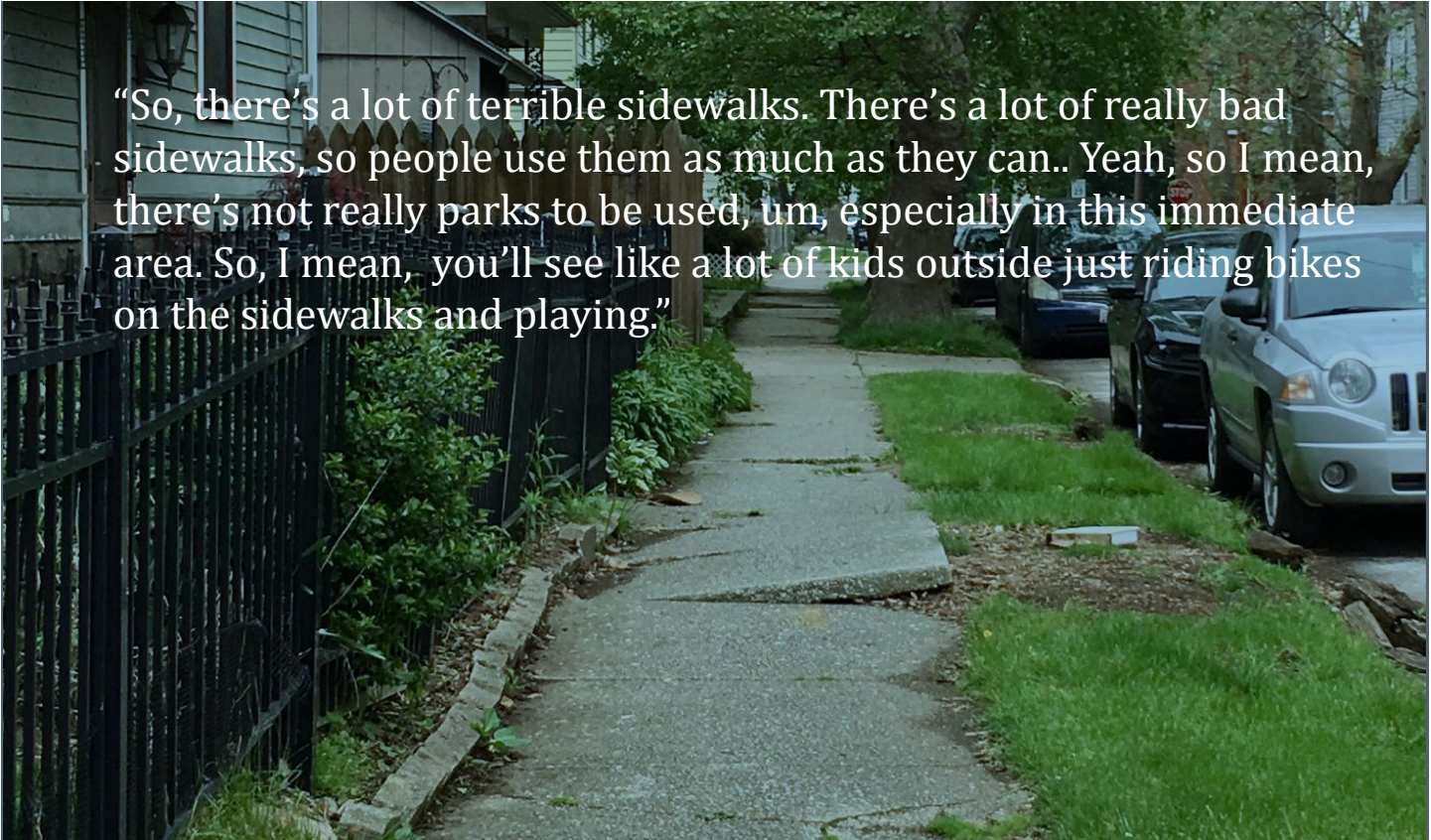


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Who decides what is important to measure about health in a neighborhood?

- **Community members should decide?**
- **Experts should decide?**
- **Bi-directional engagement between these two perspectives?**



Which features of neighborhood should we work hardest and most immediately to improve?



Asset-Based Perspective

- “It’s really cool being able to see such a diverse group of people, such a diverse community, both again socioeconomically and ethnically, kind of regularly interacting with each other.”

- “There’s things I love about this area, and that’s why the things I love are way more than the things I don’t like.”




“Cool living”

- “Living in the neighborhood as an adult is pretty cool, too, ‘cause it’s kind of like a hidden gem. I’m by every major highway. I can get in and out of downtown in ten minutes. I’m a \$5 Uber to all of the cool neighborhoods. There’s tons of food options, ethnic food options that you don’t really get anywhere else. So there are a lot of amenities that are in this neighborhood that are culturally-specific that you can’t really find anywhere else.”



Outsider Perspectives


- “Well they don’t think it’s safe, number one. They don’t live there, so they don’t know the people...Their perception of the whole neighborhood, you know Cleveland, and I try to tell them it’s not that bad. I go, ‘Well you go down to Tremont. I don’t live that far from Tremont,’ but they’re like ‘Oh no. We’re not coming over there. You can come over here.’ I have a couple of friends that will come over, but the majority of them won’t, and even the friends that do come over tell them, ‘It’s not that bad. She lives in a nice neighborhood.’”
- “You know they say ‘Oh Cleveland’s the worst,’ but it’s not the worst. If we clean it up and just help each other out, it would be a good place to live in.”



“People in the neighborhood know what’s going on. I don’t think you need to make tools to tell them.”

People watch out for one another

- “We have a neighborhood that’s half Latino and over 65% People of Color, and particularly in the Latino population, that’s a very common thing where you just kind of help your neighbor out, because that is just part of our culture. That is kind of how we operate. You treat your neighborhood like a family member, and I think that oftentimes you see that quite a bit of neighbors helping each other out.”



“People in the neighborhood know what’s going on. I don’t think you need to make tools to tell them.”

People don’t watch out for one another

- “I live in my area and I live in my paradise... “
- “Yeah, I just think like people not really being... It just comes back to involvement, but **nobody really trusts each other. They’re just kind of each to their own**, if that makes sense.”



“People in the neighborhood have a very different vocabulary for health than health researchers”

- “I think it is healthy, if you live in a good neighborhood, because you don’t have no one doing something to try to hurt you, or do other stuff dangerous and all that...What I’m thinking of is that neighborhood had no violence, no shooting people, no drugs, nobody going out there and trying to hit someone with a car and stuff like that.”

- “I think the main thing that makes the community healthy is that people know each other.”



Neighborhood conditions and outsider perceptions of those conditions are dehumanizing

“...if you grow up in a community where everyone you’ve ever met has told you that it’s a bad neighborhood to live in, or it’s a bad community, you’re going to inherently feel like you’re less of a person...”



DISCUSSION?





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