THE UNIVERSITY OF CHICAGO

SOCIAL CAPITAL AND COMMUNITY:
HOW NEW TECHNOLOGY PROVIDES INSIGHT INTO THE LIVES OF URBAN-DWELLING OLDER ADULTS

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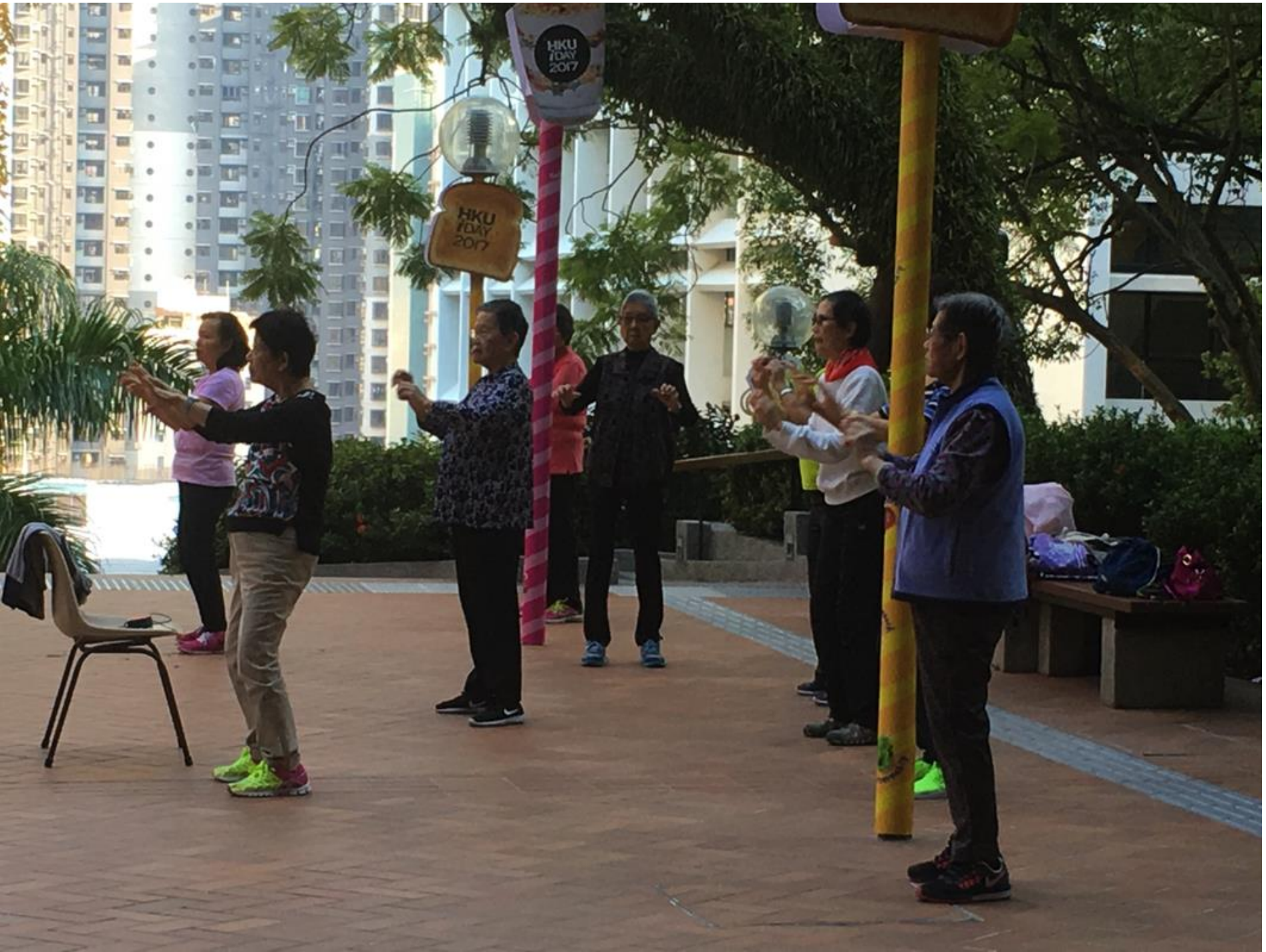
SEPTEMBER 2019

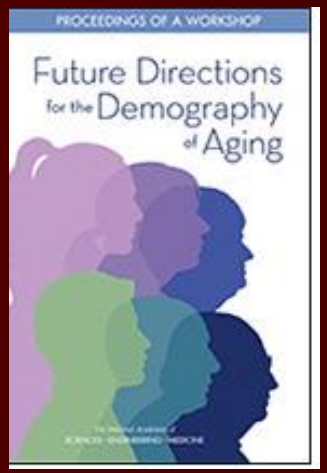

HKU
FDAY
2017

Overview

- What is place?
  - *What might it mean to take a place-informed approach to research in aging, health and the population sciences?*
- Why is place important?
- How do demographic characteristics shape interactions in place?
- How might place affect well-being?

Overview

Whether older adults reside in their long-term communities or move to other locations, the characteristics of the places within which they experience the aging process likely have profound consequences for their abilities to adapt to changes such as bereavement, retirement, the development of chronic health conditions or functional impairments, as well as to recover from illness and maintain independent community residence (Cagney & York Cornwell, 2018)



Mark Hayward & Malay Majmundar, eds

Why is Age Important?

- Demography
  - Aging population
  - Policy, health consequences
- Inequality
  - Long arm of childhood (Hayward & Gorman, 2004)
  - Narrative of the life course
    - Timing and sequencing of live events
    - Accumulation of exposures
    - Manifestation of disparate experience

What is Place?

- A physical space
  - Municipal (e.g., city, county, state)
  - Categorical (e.g., urban, suburban, rural)
  - Residential
- A social space
  - Public/private
  - Indoor/outdoor
  - Institutional context
- Nested and overlapping environments

Why is Place Important?

- Resource allocation
  - Health services
  - Social safety net
- Resource availability
  - Formal
  - Informal
- Opportunity structure
    - Employment
    - Social engagement
- Sense of belonging/connectedness
- Exposure space

Place & Aging

- Individual level
  - Aging in place
  - Embeddedness
- Contextual level
  - Age structure
  - Built and social environment
  - Segregation by place (e.g., race, class, age)

Social Capital & Community

- Social capital refers to features – networks, norms, and social trust – that facilitate coordination/cooperation for mutual benefit
- Refers to stock of “civic virtues” and networks of civic engagement, involvement, reciprocity, trust, volunteerism, and sharing essential to democratic communities
  - Social capital as a structural property of relationships – strong ties shape social norms, expectations, informal social control (Coleman)
    - Illustrates importance of social capital by linking it to development of human capital

Chicago as a case

Sampson, *Great American City*

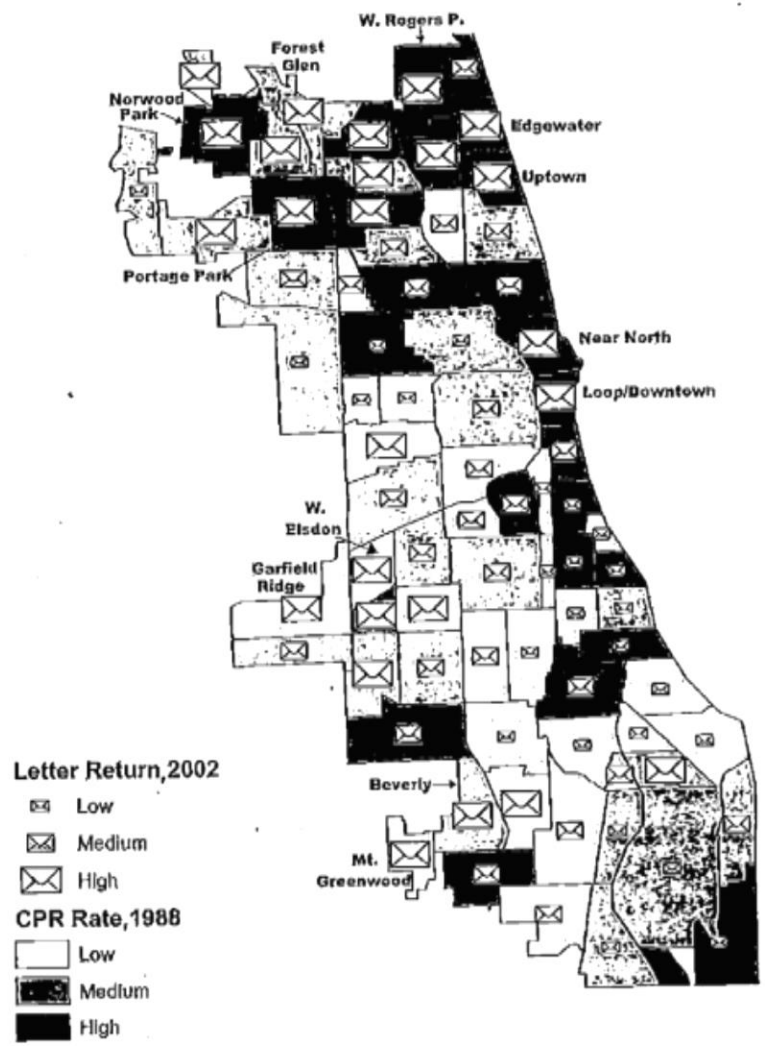
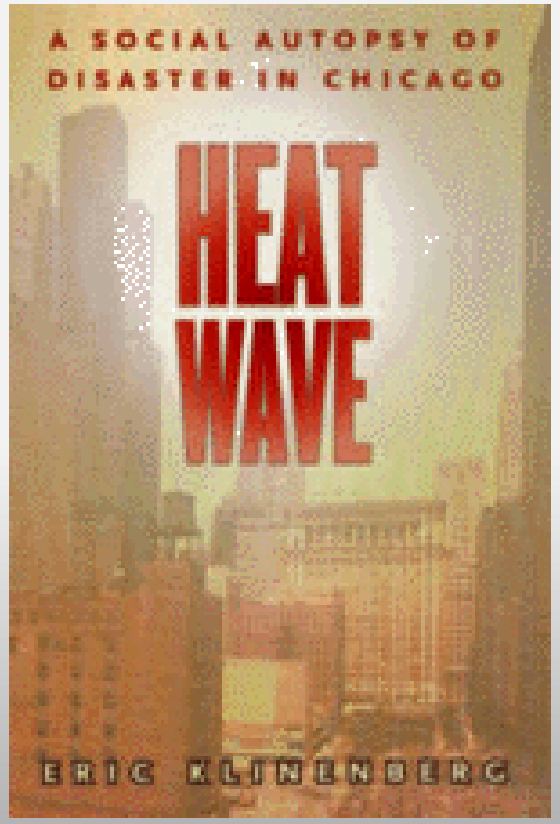


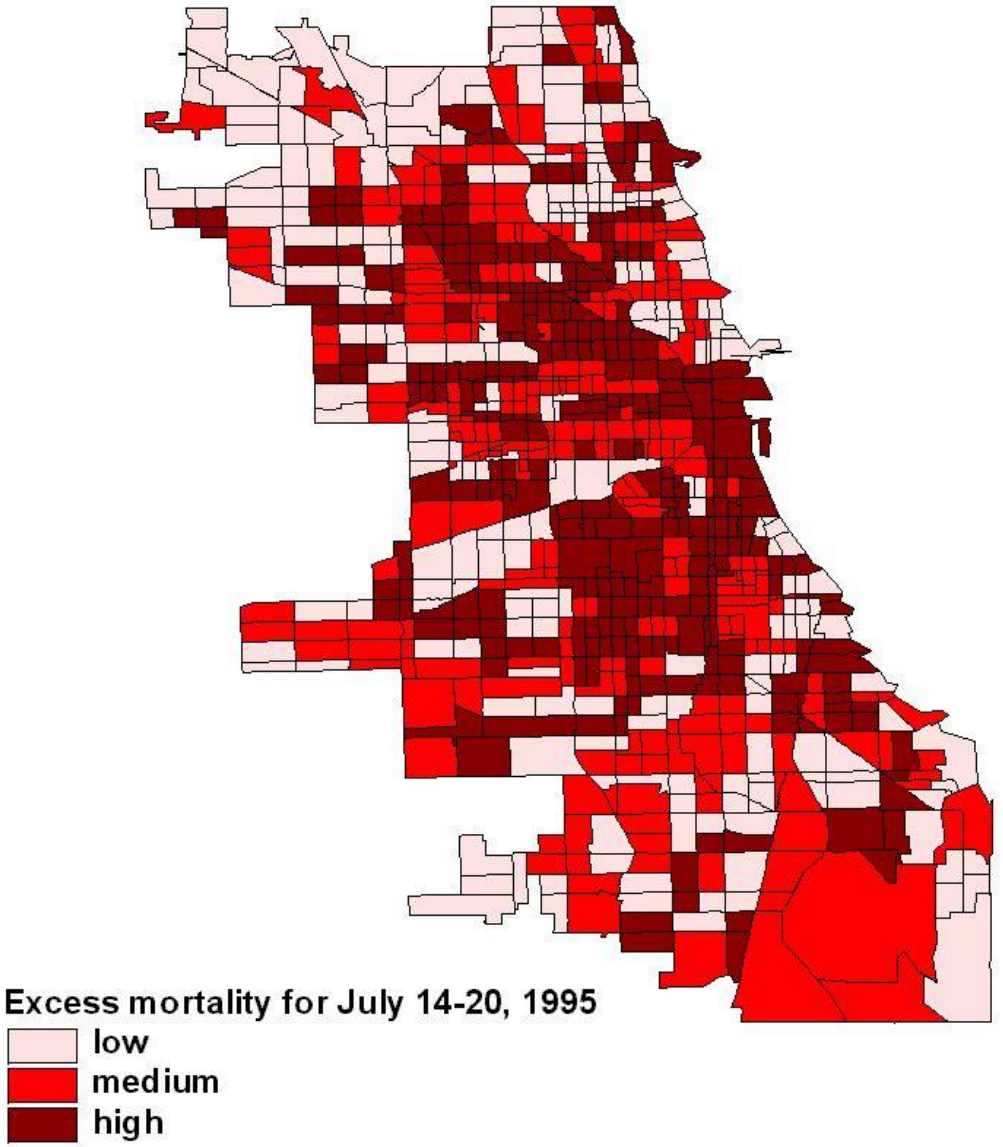
FIGURE 9.1. It matters where you have a heart attack or lose something: spatial inequality in CPR after a cardiac arrest and returning lost letters

The Chicago Heat Wave

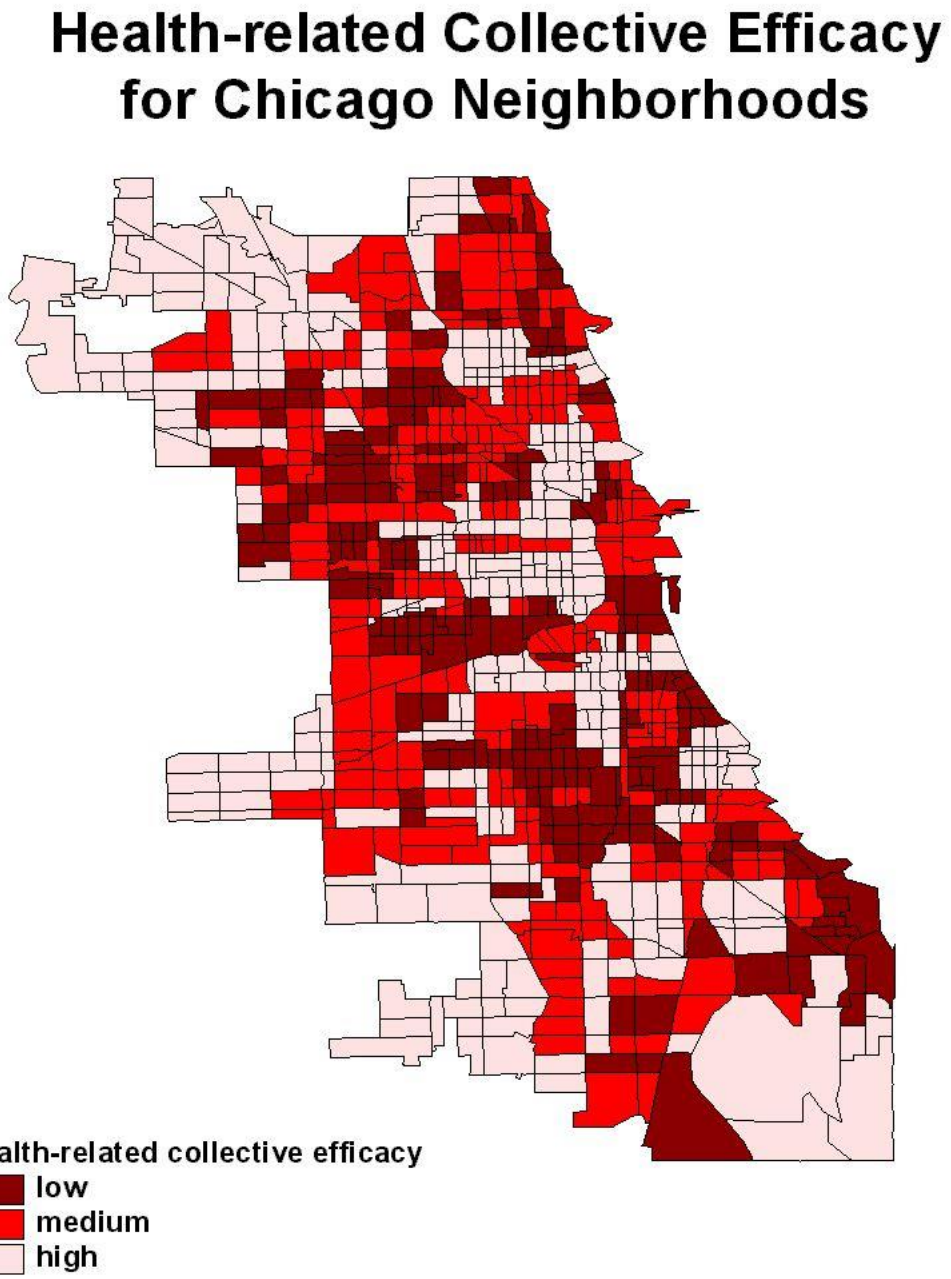


- Klinenberg's (2002) ethnographic account
- Approx 739 heat-related deaths in Chicago in July 1995 heat wave—mostly elders (73%)
- July average death count/day: 72
- Saturday, July 15 death count: 365

Excess Mortality for Chicago Neighborhoods: July 14-20, 1995



Correlation between health-related collective efficacy and 1995 excess death: -.24***



* $p < .05$ ** $p < .01$ *** $p < .001$

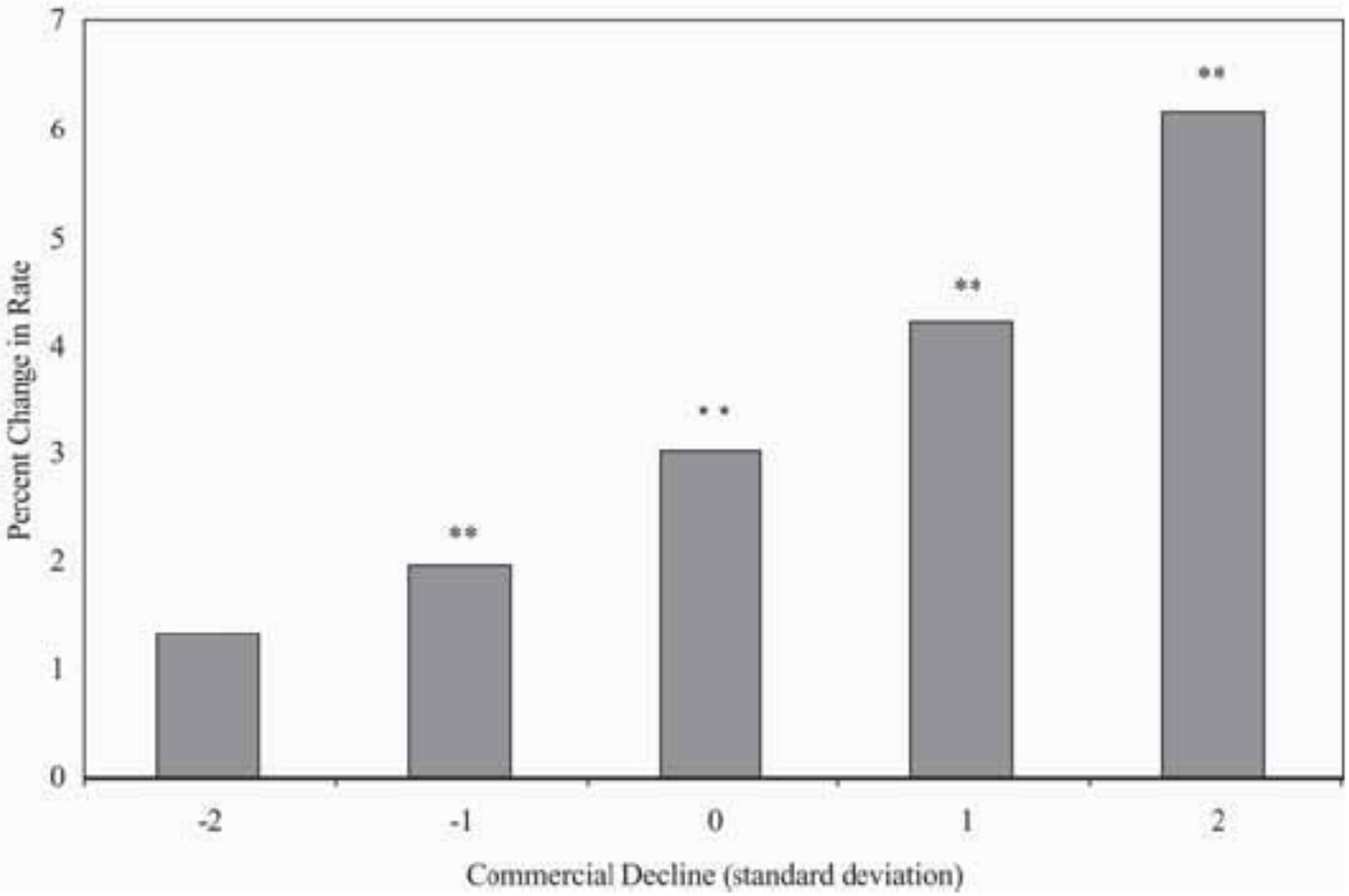


Figure 1. Adjusted Proportionate Change in Mortality Rate for July 14–20, 1995 by Level of Commercial Decline

Relevant Disciplines to Inform Study of Place

- Psychology – place attachment (Lawton, Berman)
- Economics – evolution of the city (Glaeser)
- Anthropology – experience of aging in place (Penny)
- Architecture – social architecture (Boyd)
- Urban planning – age-accommodating urban places (Burkart et al.)
- Geography – “spatial” gerontology (Andrews)
- Sociology – place and social cohesion (Longino, Sampson)

Ex: A Sociological Approach to Understanding the Impact of Place

- People in and across place, in real time
- Limitations in characterization of space
  - Circumference of turf
  - Micro-environment
- *Can new methods provide insight into what place is, how it is perceived, how it matters for health and, potentially, how it might be modified for an aging population?*

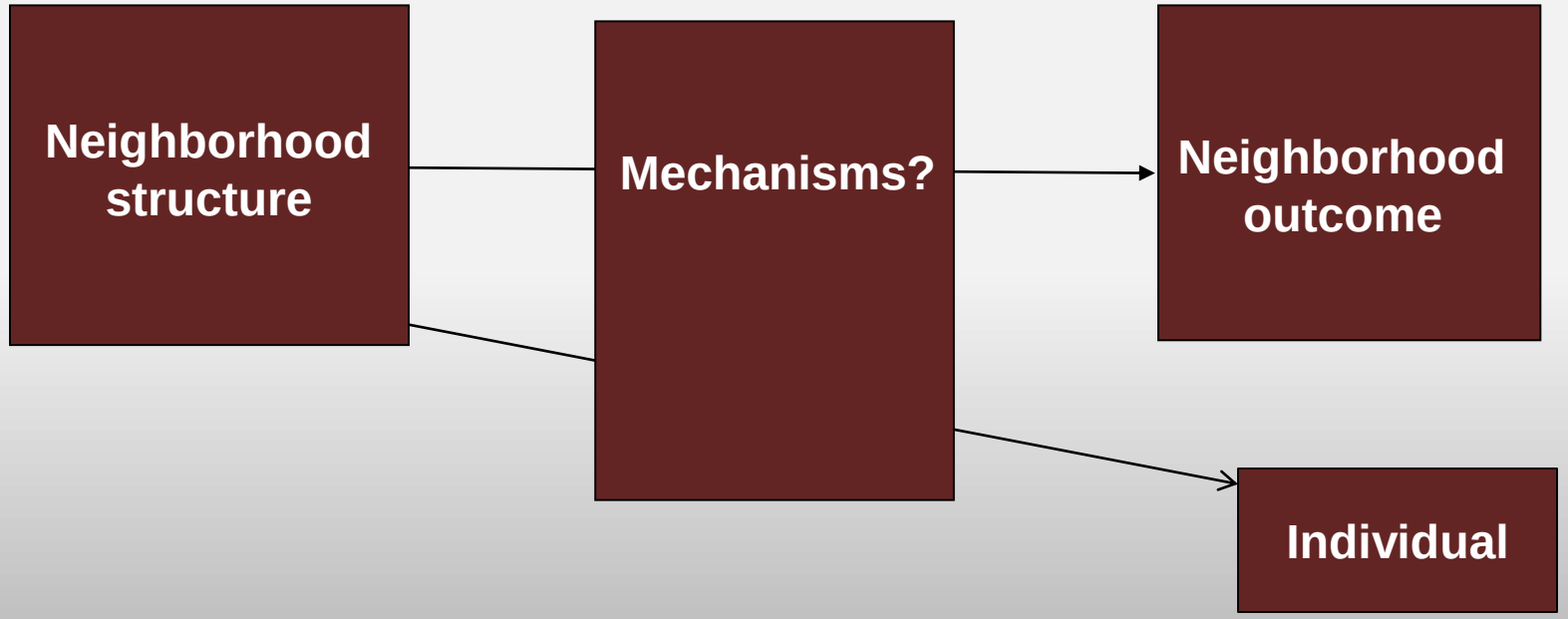
Beyond the Residential Neighborhood

- Current approaches may not effectively assess exposure, access to resources
- Residential neighborhood a small part of daily experience?
  - Arbitrary census-based units may obscure more complicated geographic exposures
  - Where/how people spend time may prove more valuable for health, well-being, access to care

Research on “Neighborhoods Effects” and Health

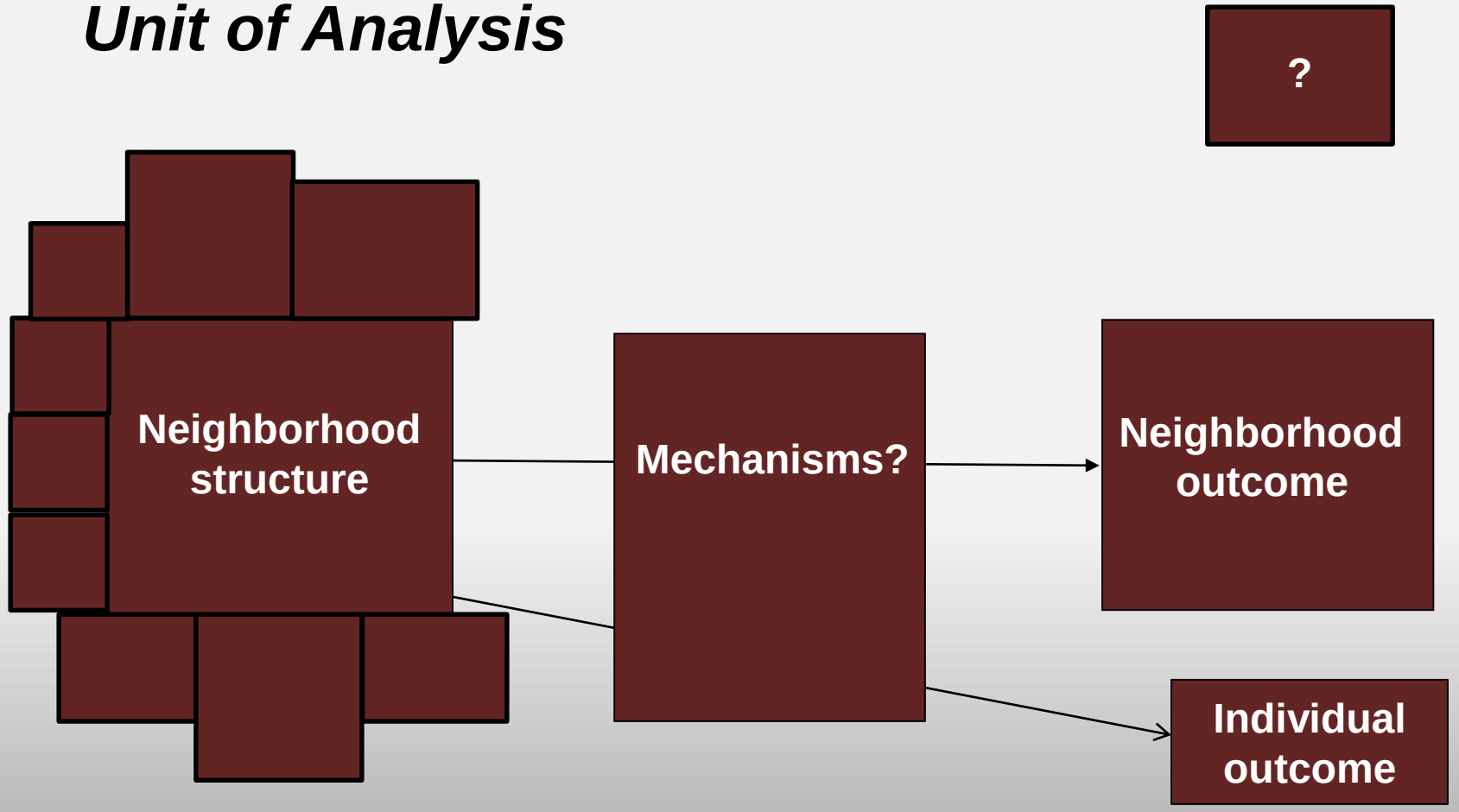
- Theoretical approaches largely neglect actual spatial exposure patterns beyond residential address
- Integrate
  - Social disorganization theory
  - Social ecological approach (Jane Jacobs)
- Incorporate conceptualization of individual level exposures (“activity space”)
- Emphasize age and aging
  - Circumference of turf may shrink but little know about these patterns
  - Neighborhoods—and networks within—may be more consequential

Neighborhood Research: *Theory*



Theory: What processes link e.g., poverty to outcomes?
Kasarda (social networks); Sampson (collective efficacy); Skogan (disorder); Wilson (institutions); Anderson (culture); Entwisle (population processes)

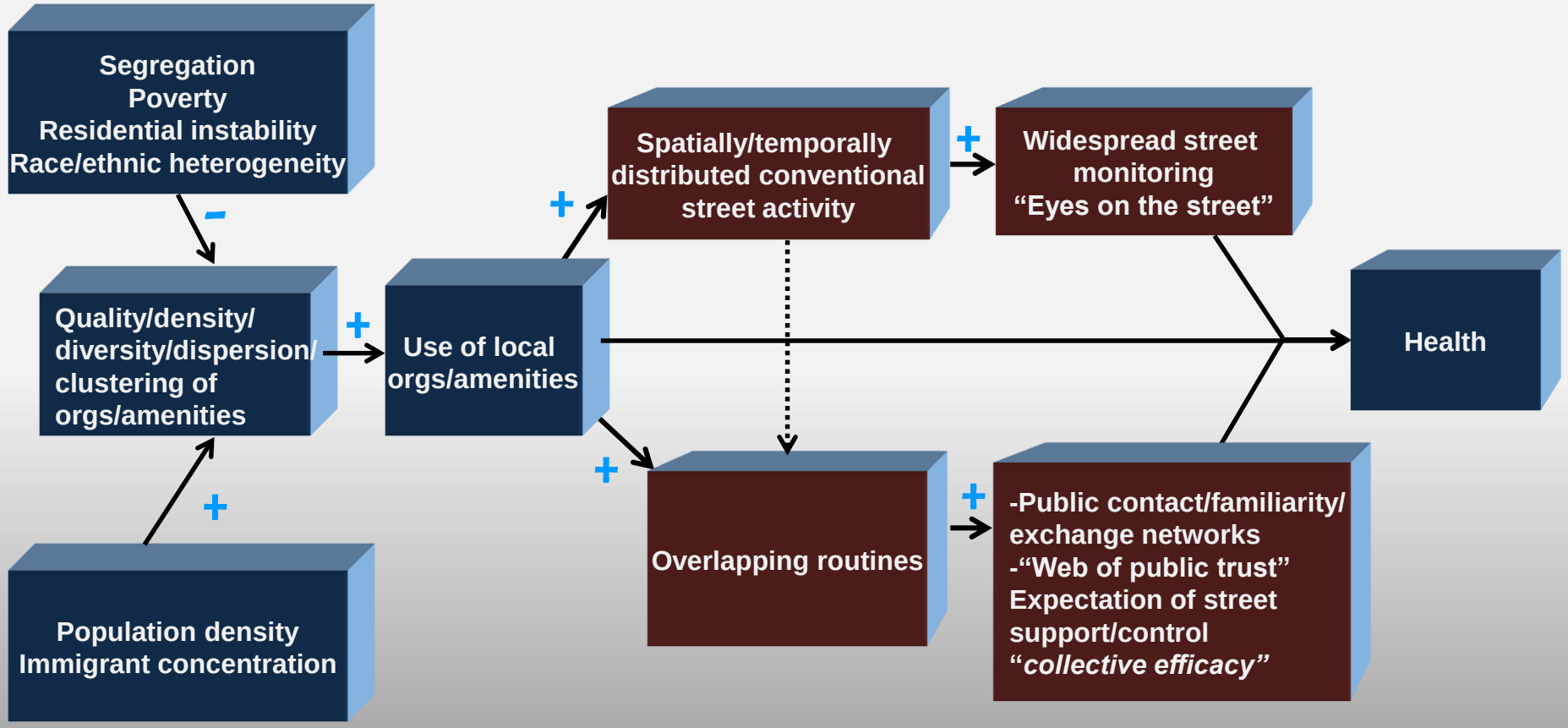
Neighborhood Research:
Unit of Analysis



Neighborhood unit: What boundary is most appropriate? Assumption of independence (residents may be exposed to other nearby units)

Jane Jacobs

Neighborhood Influences on Health



The Structure of Sociospatial Exposure

Activity space:

The set of places individuals come into contact with as a result of their routine activities

Kwan, 2013

Activity Space, Social Interaction and Health Trajectories in Later Life

NIA R01AG050605 (Cagney, PI)
Project Period: 09/01/2016 – 05/30/2021

Research Team

Kevin Brown (NORC)
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Kate Cagney (Chicago)
Robert Gibbons (Chicago)
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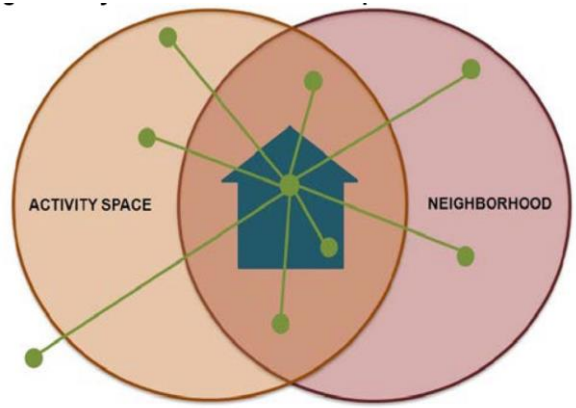
Rob Sampson (Harvard)
Teresa Seeman (UCLA)



In-Person Questionnaire
Neighborhood Context Neighborhood social ties and interaction Perceptions of neighborhood physical/social environment Norms and collective efficacy Transportation access
Household Context Household roster Perceptions of household physical and social environment Household order/disorder
Social Context Social network roster Social support Social involvement and activities
Physical Health Self-rated health and Morbidity Functional health and disablement (including mobility and assistive devices) Health-related behaviors Health care utilization
Well-being: Depression (CES-D), Loneliness. Anxiety
Transit: Driving ability and transportation practices
Sociodemographic Characteristics: Age, Gender, Race/Ethnicity, Foreign-born status, Education, Income

Biomeasures (In Home)

Health Questions (In Home)

Social Environment Questions (In Home)

Behavioral Questions (In Home)

Wave 1: Baseline (All In-Home)

Wave 2: Follow-Up (All In-Home)

Wave 3: Follow-Up (All In-Home)

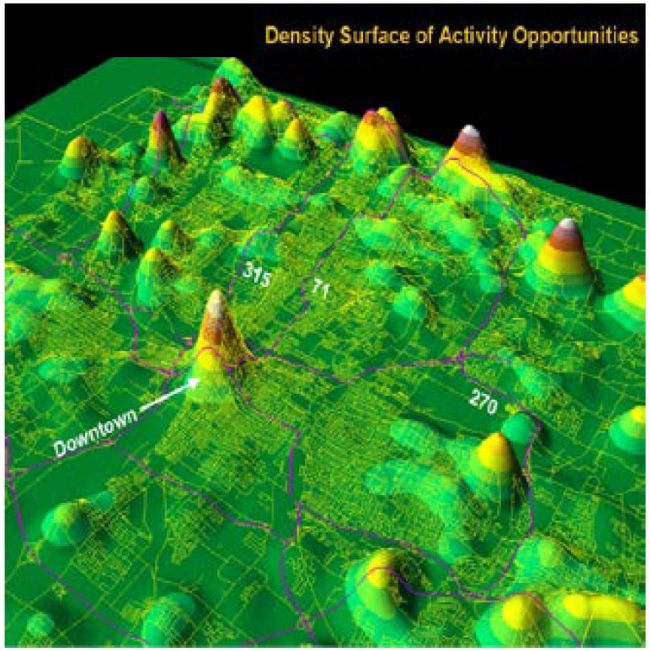
ECOLOGICAL MOMENTARY ASSESSMENT (EMA 1-5)
7-day Real-Time Data Capture of Variation (△)

e.g., △ Pain

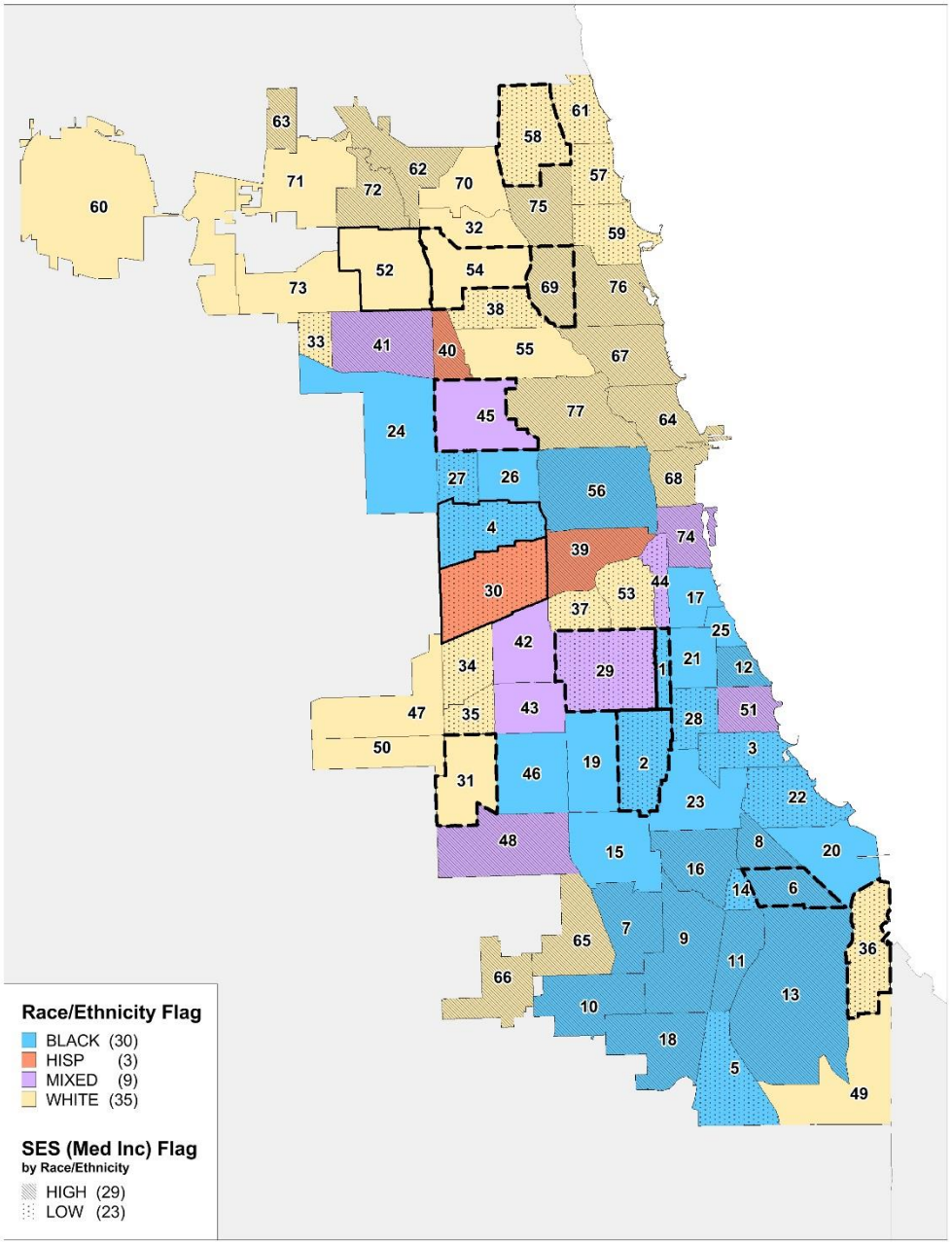
e.g., △ Positive Affect

e.g., △ Social Engagement

e.g., Activity Space (Geographic Location)



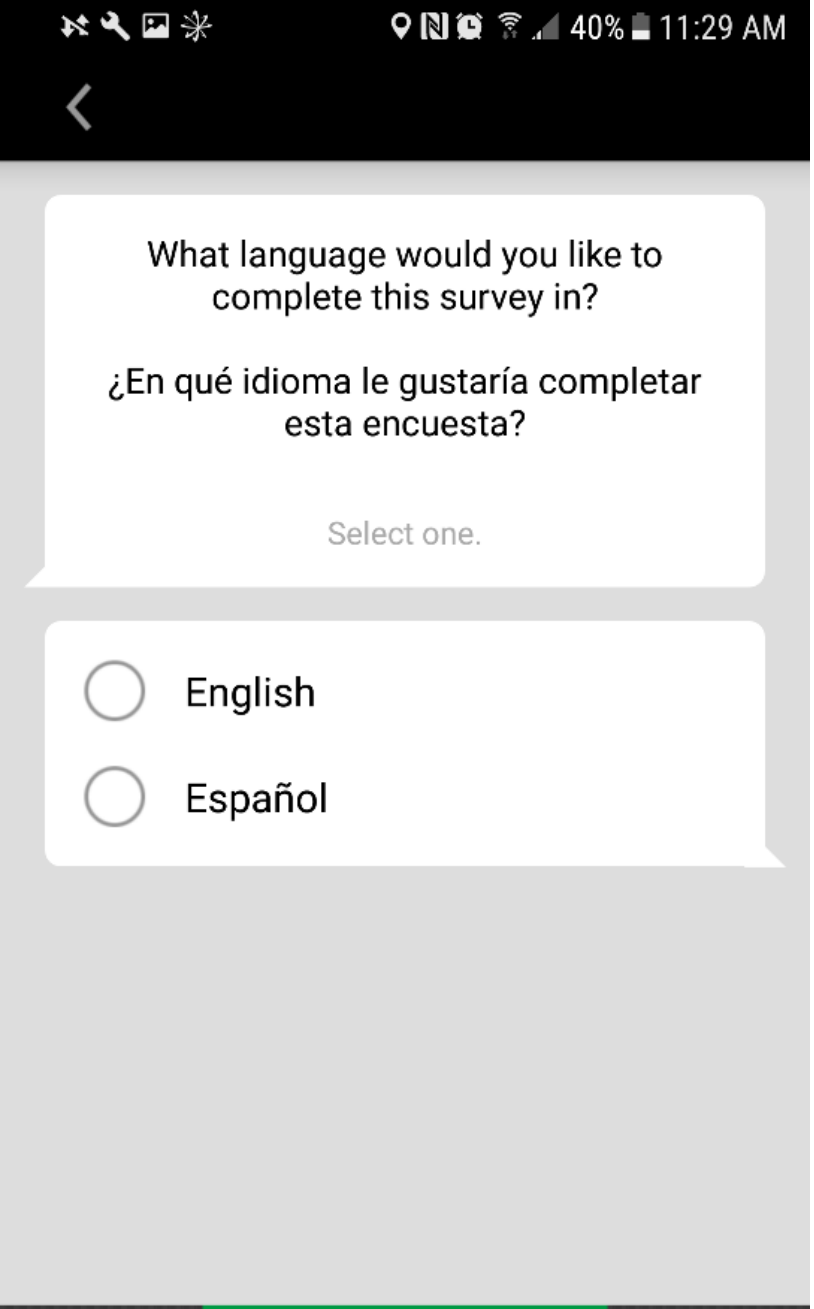
Chicago Neighborhoods Selected for CHART

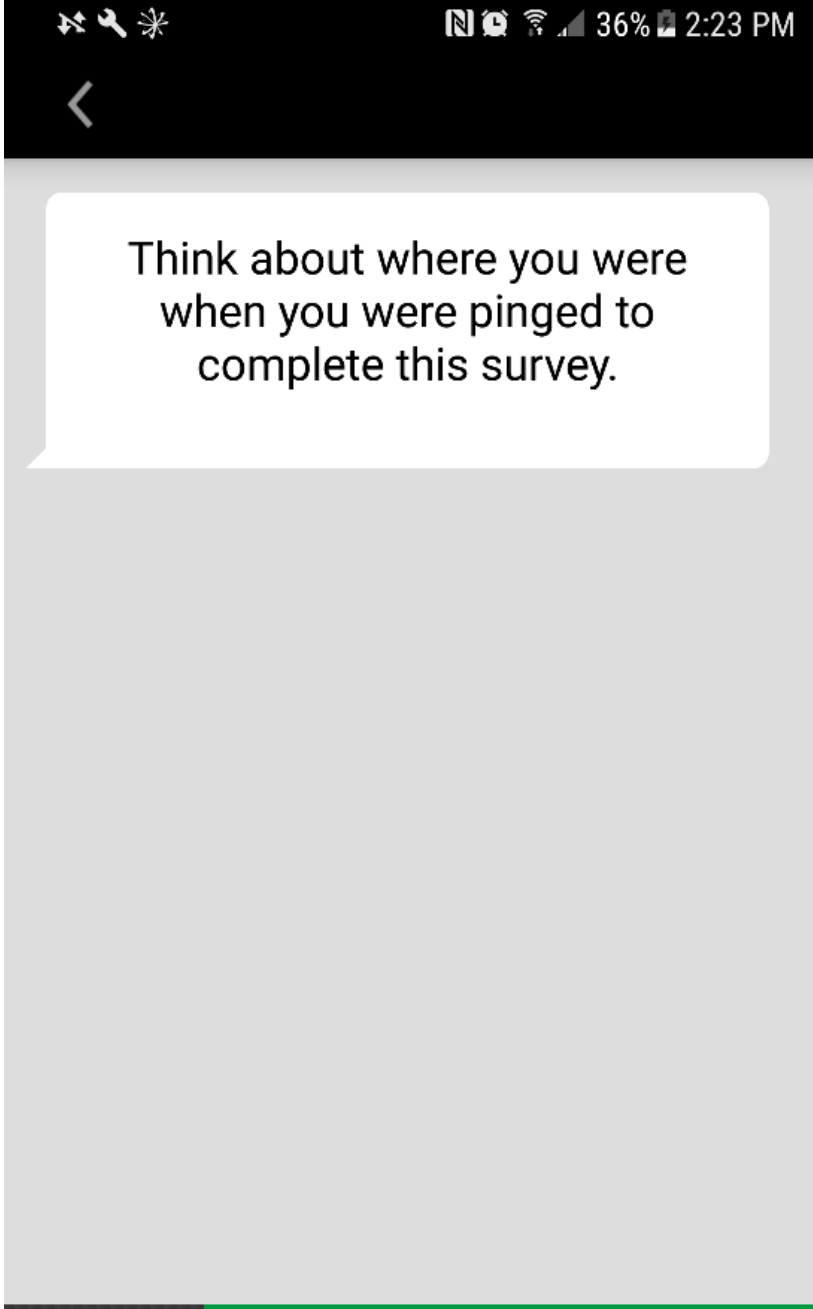


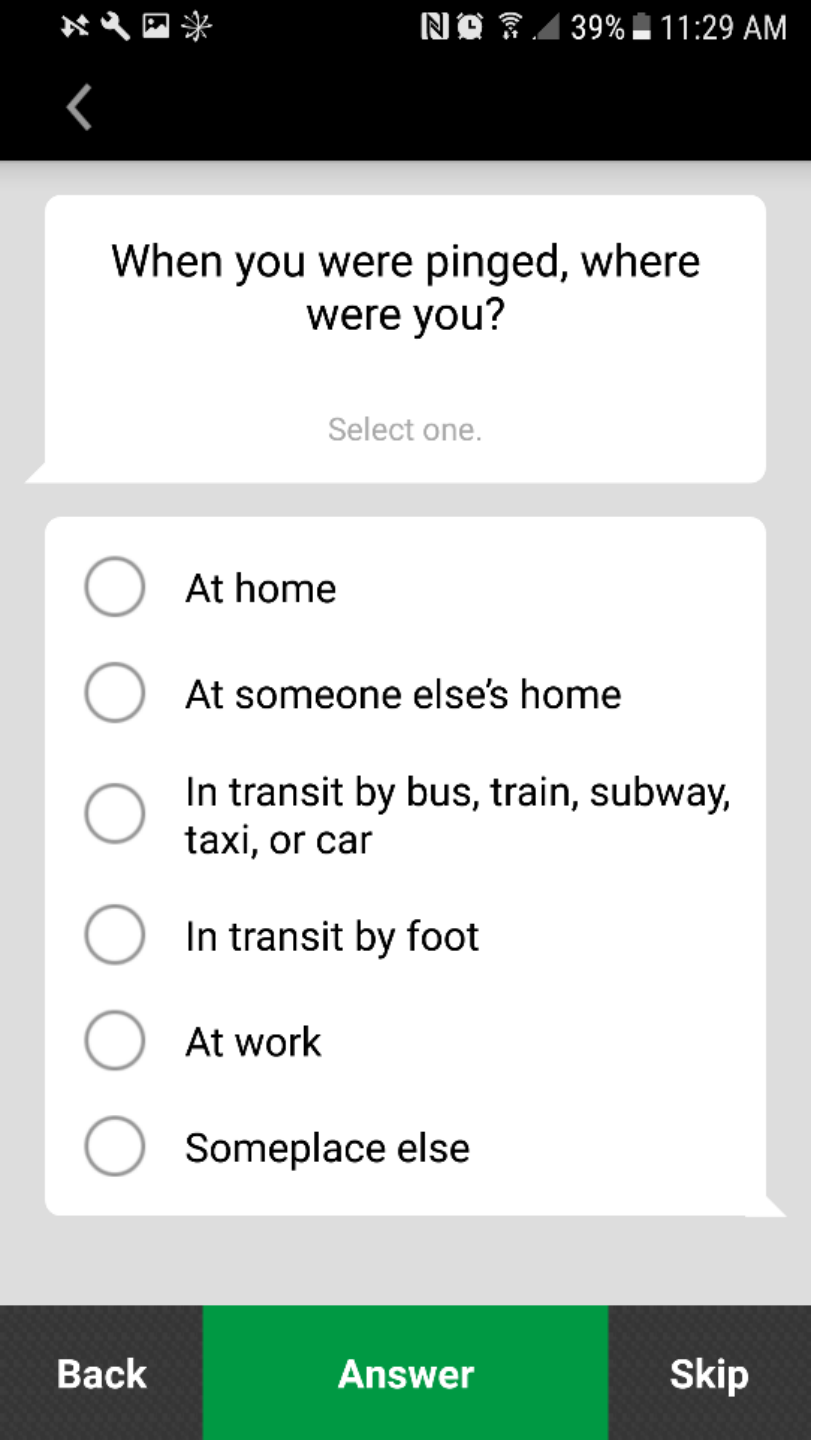
KEY: 1 = FULLER PARK; 2 = ENGLEWOOD; 6 = CALUMET HEIGHTS; 29 = NEW CITY; 36 = EAST SIDE; 39 = LOWER WEST SIDE; 45 = HUMBOLDT PARK; 54 = IRVING PARK; 58 = WEST RIDGE; 69 = NORTH CENTER

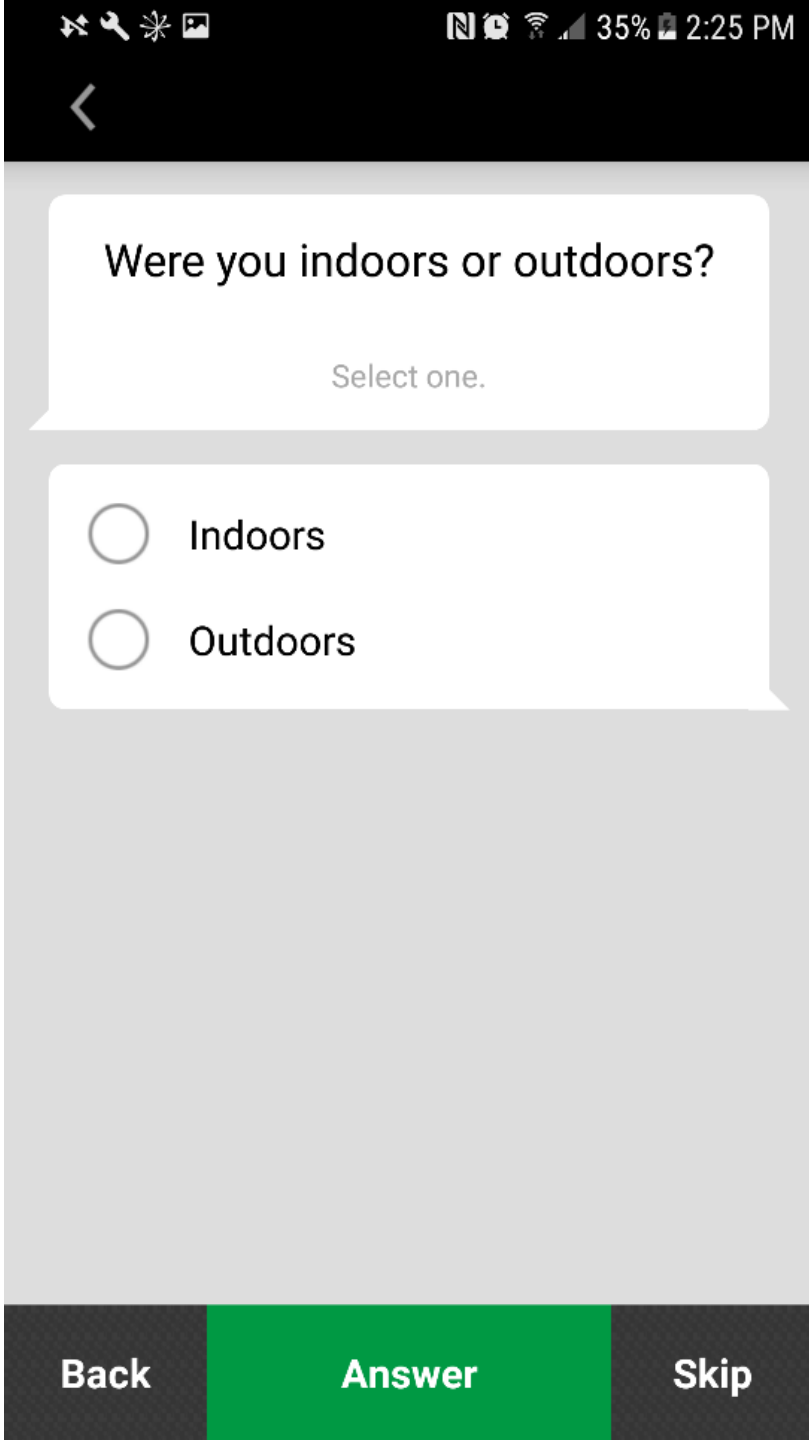
Older Adult Focus Groups

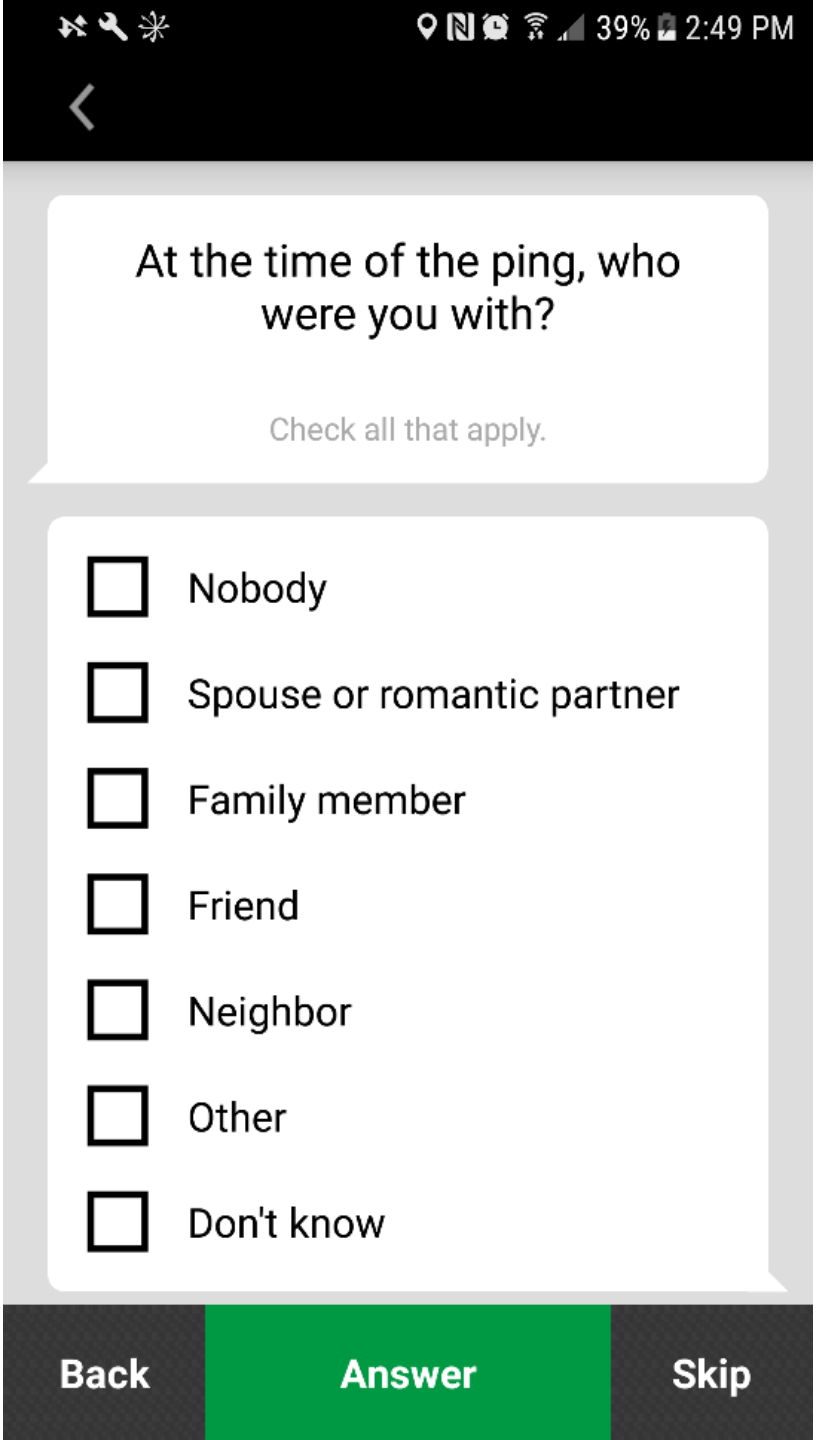
- Respondent: *One of the funniest things is that I was at church when it pinged but I had accidentally left it at home. So, I got home and it had rung and I thought, "I was not home, I was at church," and I had been at home a lot when it rang. So, I got back in my car and I drove back to church*.

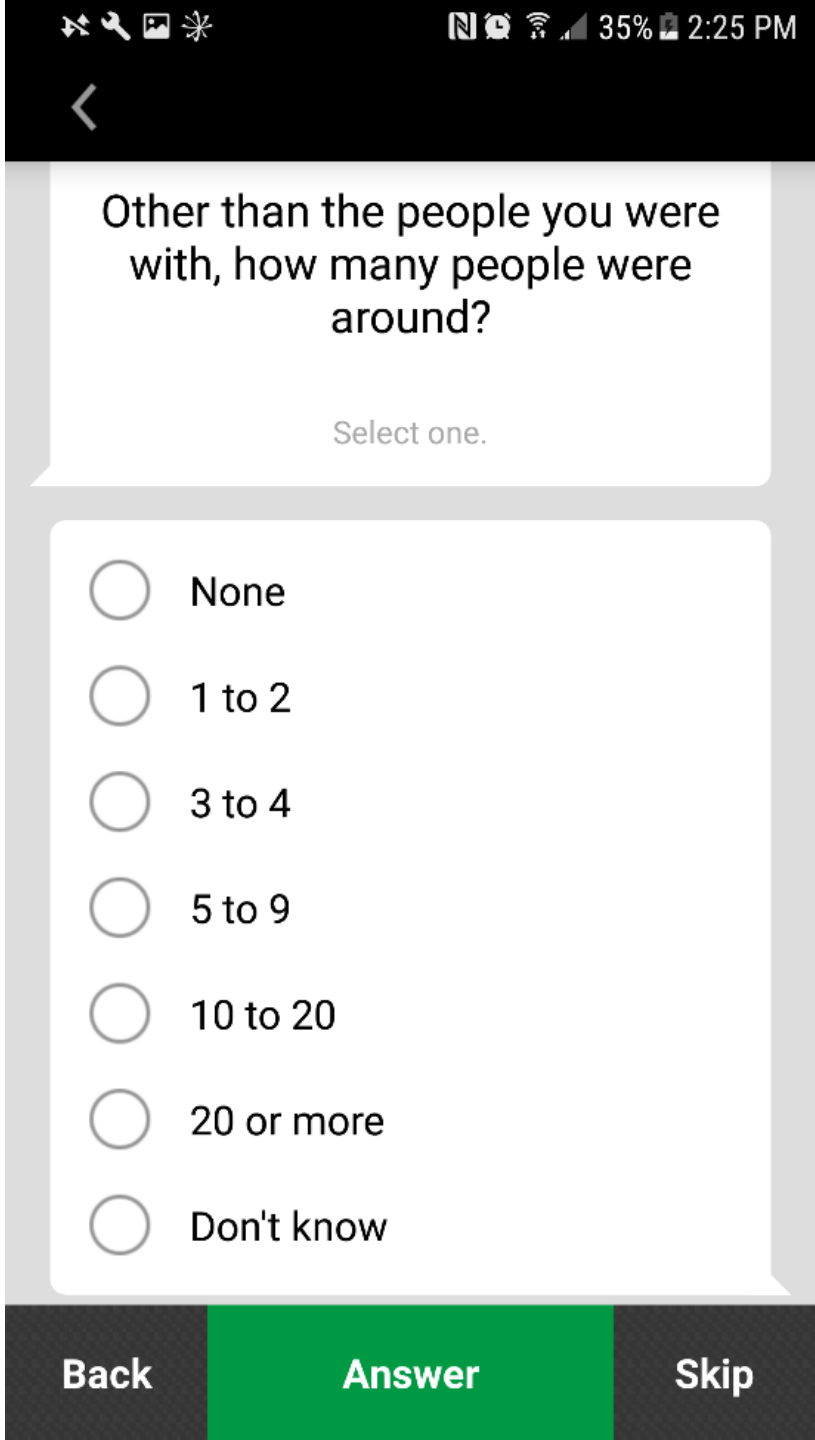

40% 11:29 AM
What language would you like to complete this survey in?
¿En qué idioma le gustaría completar esta encuesta?
Select one.
English
Español
Back
Answer
Skip

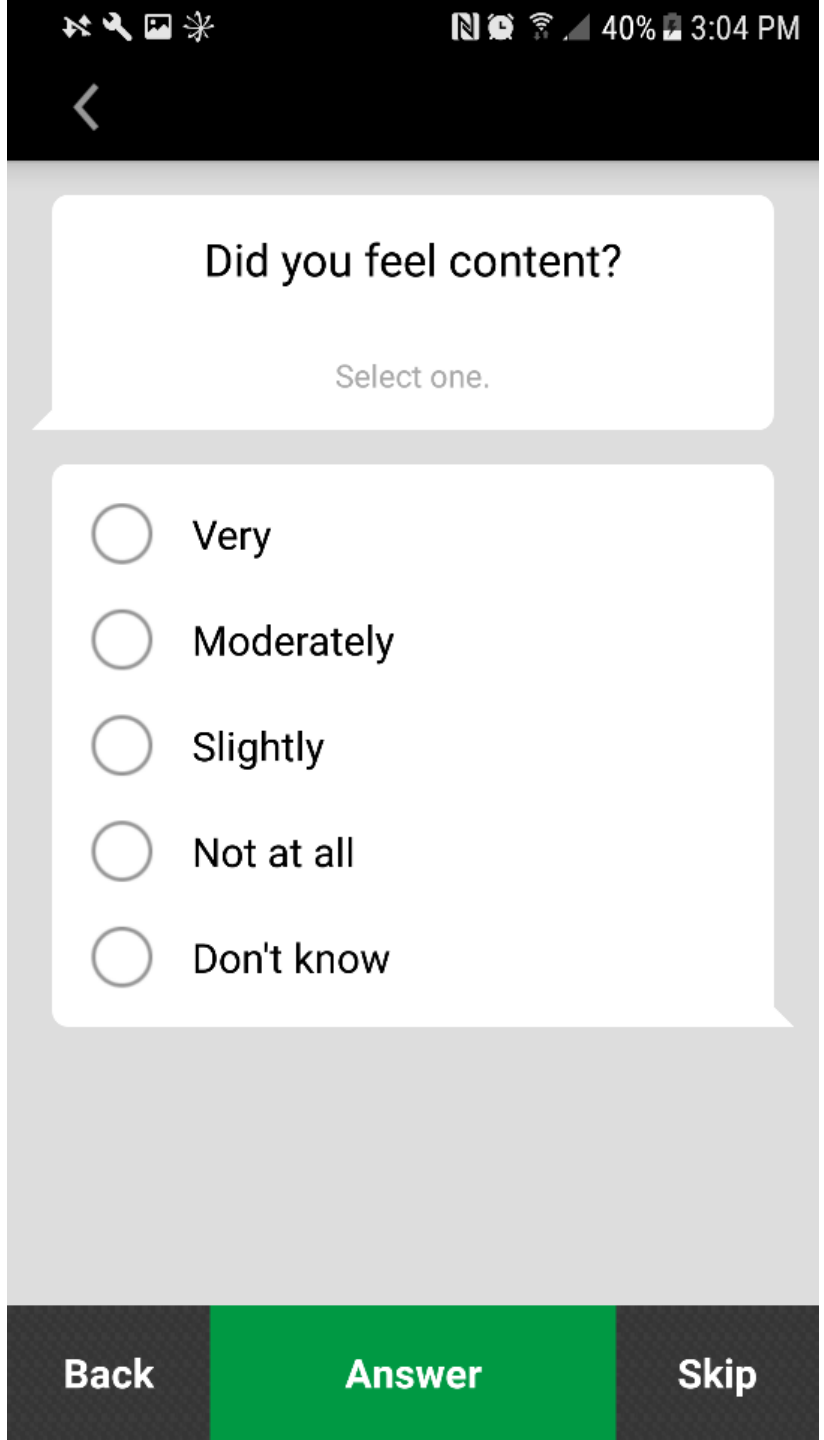

36% 2:23 PM
Think about where you were when you were pinged to complete this survey.
Back
Okay

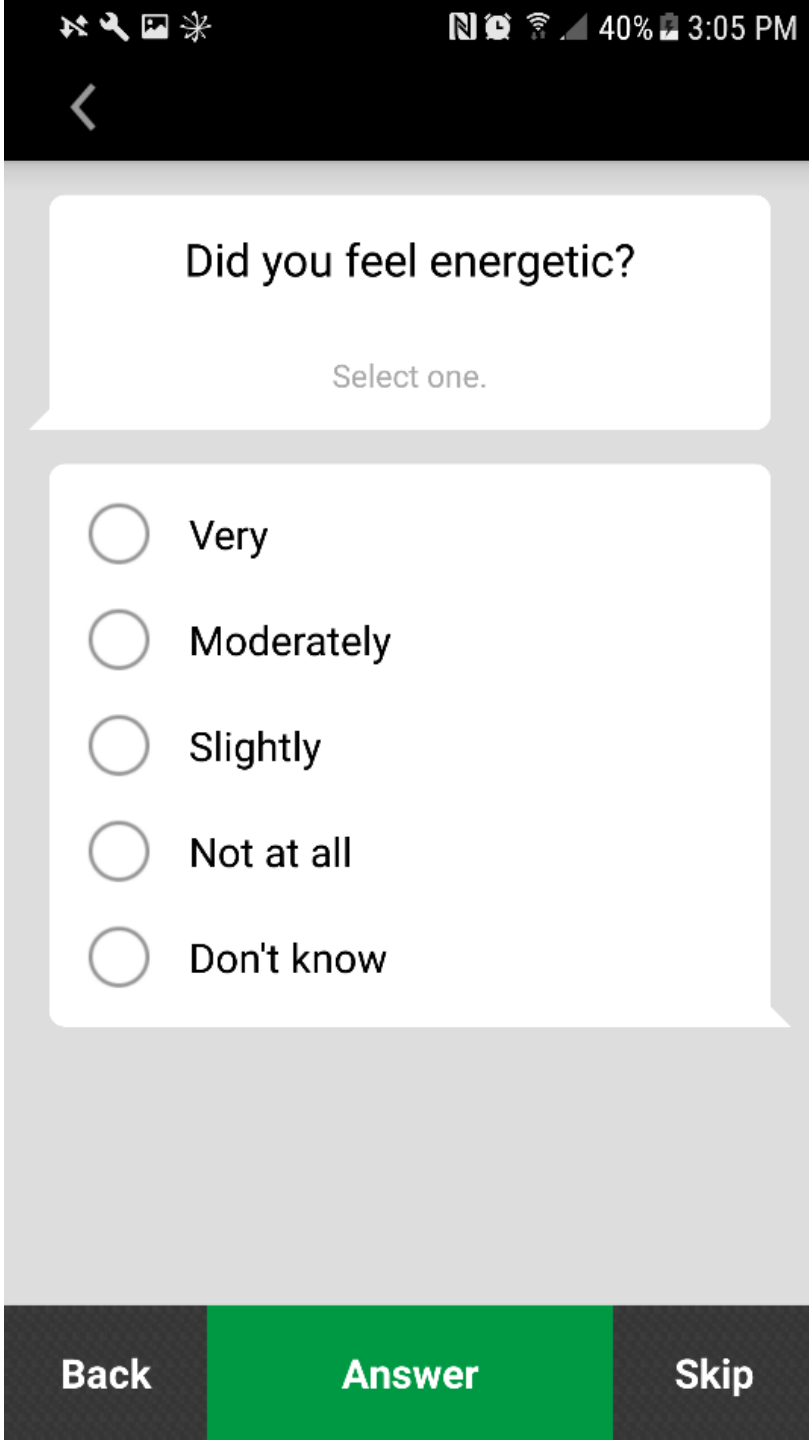

39% 11:29 AM
When you were pinged, where were you?
Select one.
At home
At someone else's home
In transit by bus, train, subway, taxi, or car
In transit by foot
At work
Someplace else
Back
Answer
Skip


35% 2:25 PM
Were you indoors or outdoors?
Select one.
Indoors
Outdoors
Back
Answer
Skip


39% 2:49 PM
At the time of the ping, who were you with?
Check all that apply.
Nobody
Spouse or romantic partner
Family member
Friend
Neighbor
Other
Don't know
Back
Answer
Skip


35% 2:25 PM
Other than the people you were with, how many people were around?
Select one.
None
1 to 2
3 to 4
5 to 9
10 to 20
20 or more
Don't know
Back
Answer
Skip


40% 3:04 PM
Did you feel content?
Select one.
Very
Moderately
Slightly
Not at all
Don't know
Back
Answer
Skip


40% 3:05 PM
Did you feel energetic?
Select one.
Very
Moderately
Slightly
Not at all
Don't know
Back
Answer
Skip

How would you describe your home when you were pinged?

Cramped--------Spacious

Touch the bar below to select.
Touch again or drag to change your choice.

(1) Cramped (5) Spacious

Back Answer Skip

Indicate how much you agree or disagree with the following statement about the inside of your home when you were pinged.

This home feels close-knit.

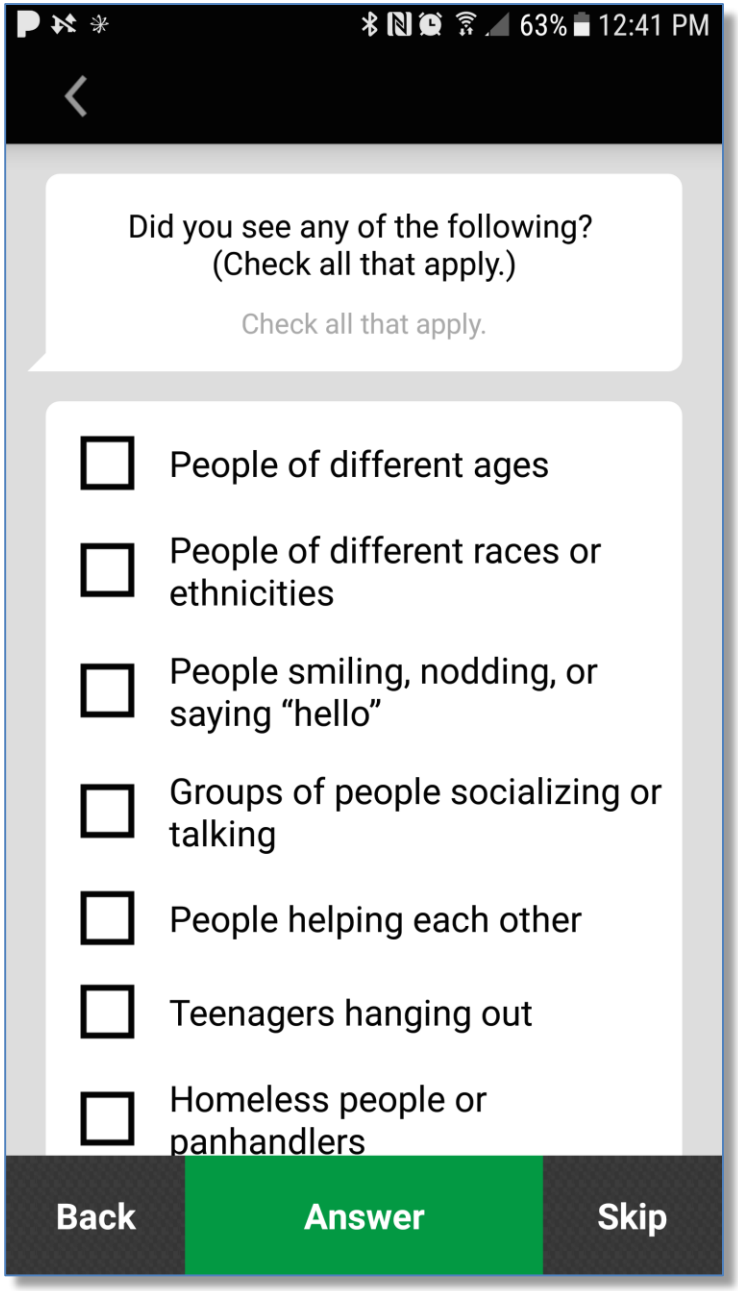
Select one.

- Strongly agree
- Agree
- Neither agree nor disagree
- Disagree
- Strongly disagree
- Don't know

Back Answer Skip

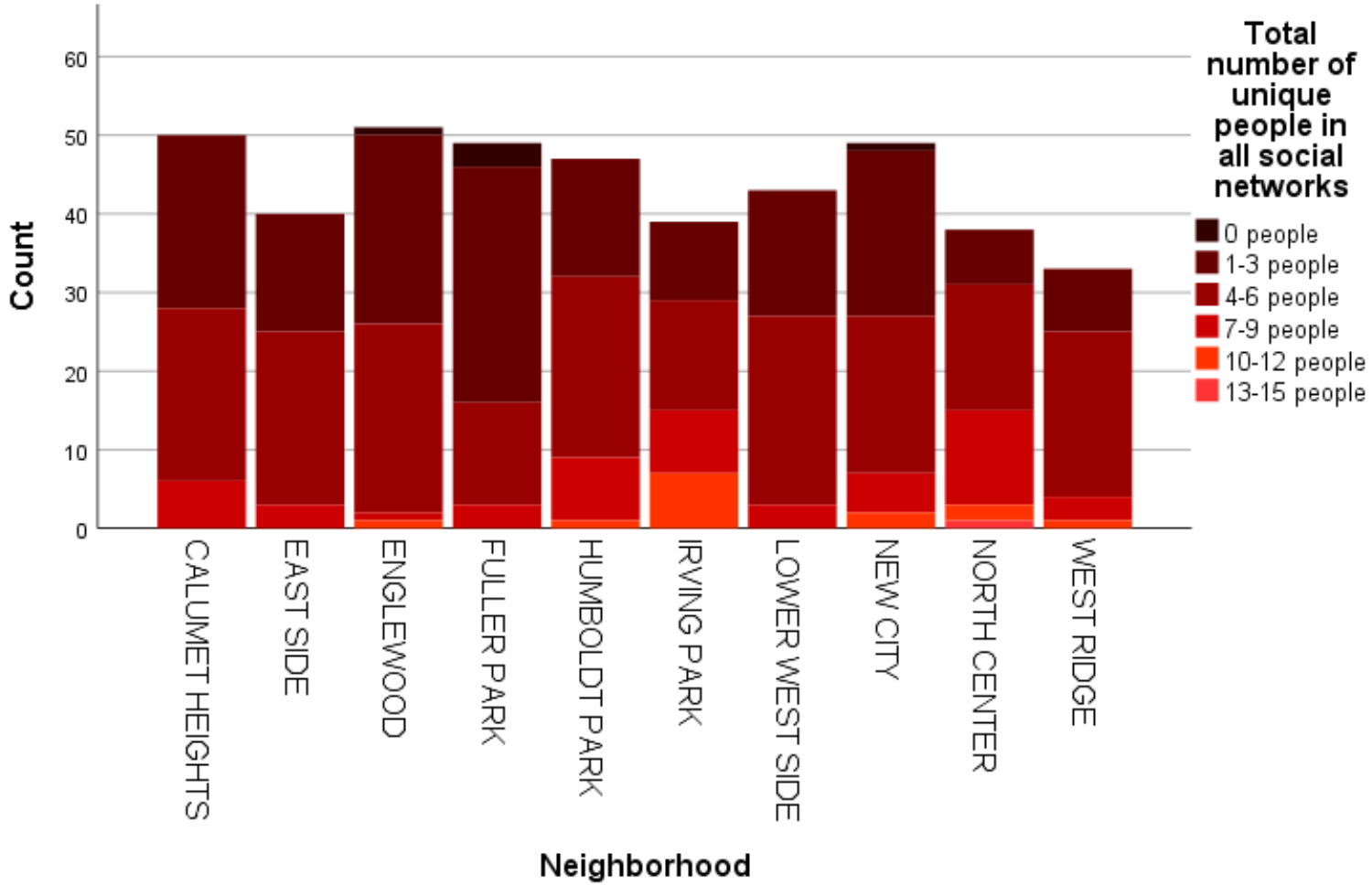
EMA ITEMS

- Where are you? With whom? Doing what?
- Symptoms of stress, mood, perceived safety, health
- Social and physical characteristics of current location
  - Disorder
  - Street-level integration by age and race/ethnicity
  - Perceived collective efficacy, e.g.,:
    "This place feels close-knit"
    "If I needed help in this place, someone would come to my aid"
  - Positive and negative forms of local interaction

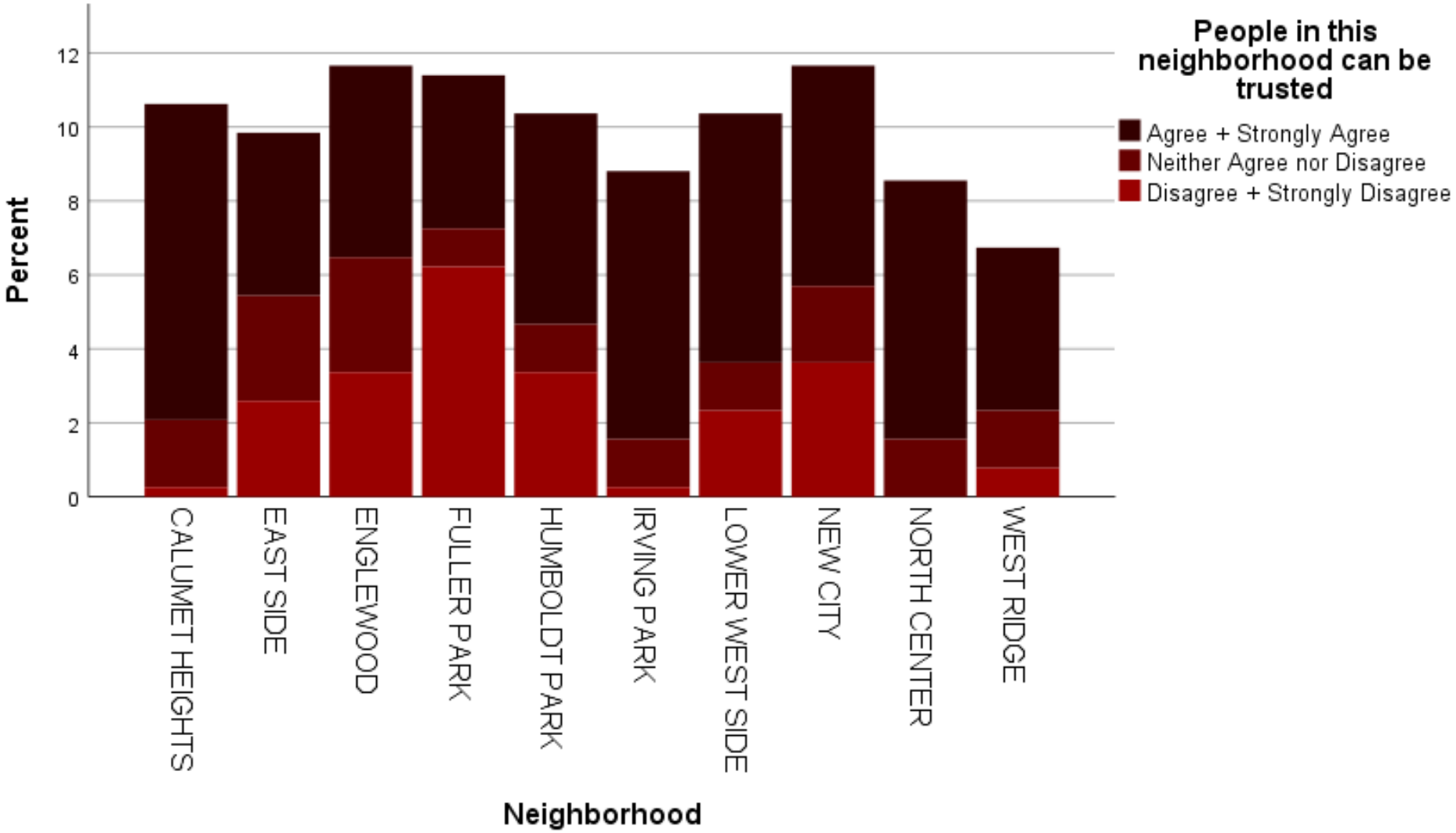


The application of collective efficacy theory to places one passes through, observations of prosocial activity

Neighborhoods & Networks

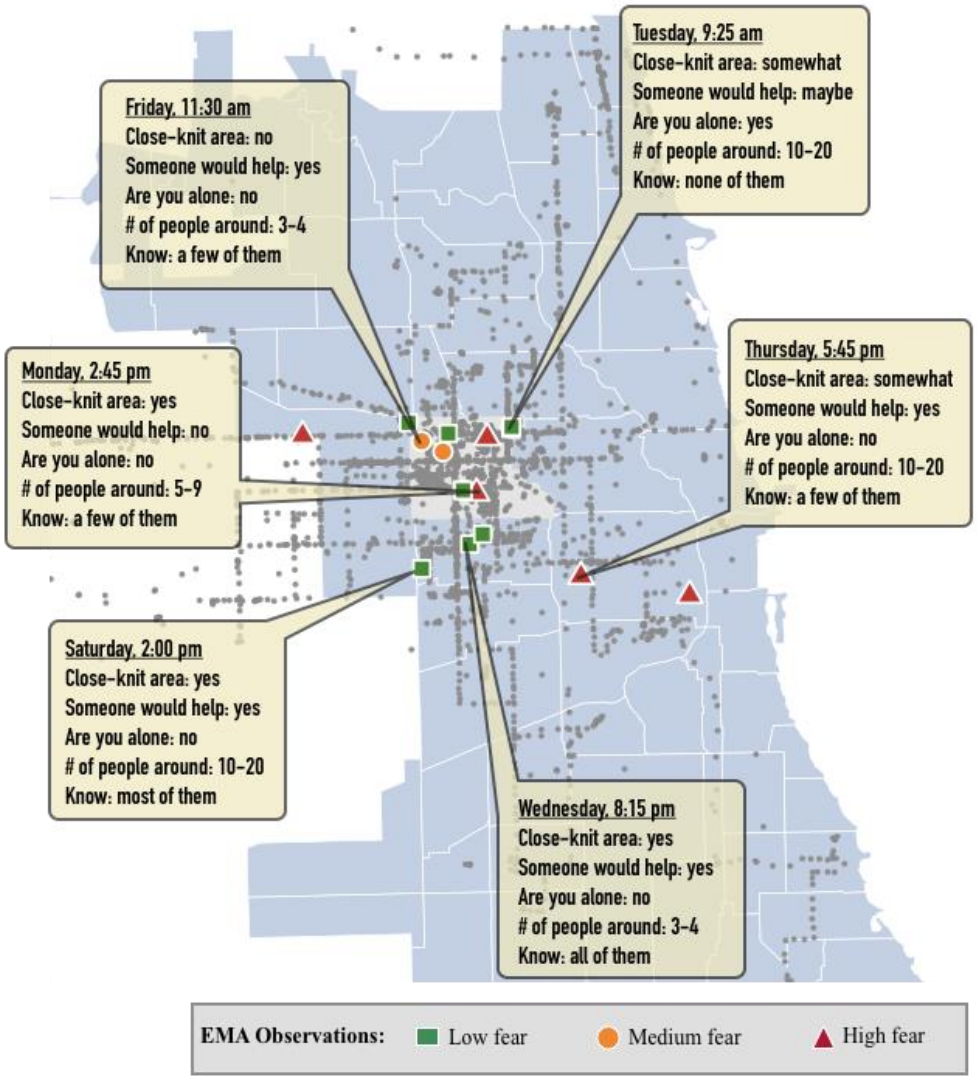


Neighborhoods & Trust



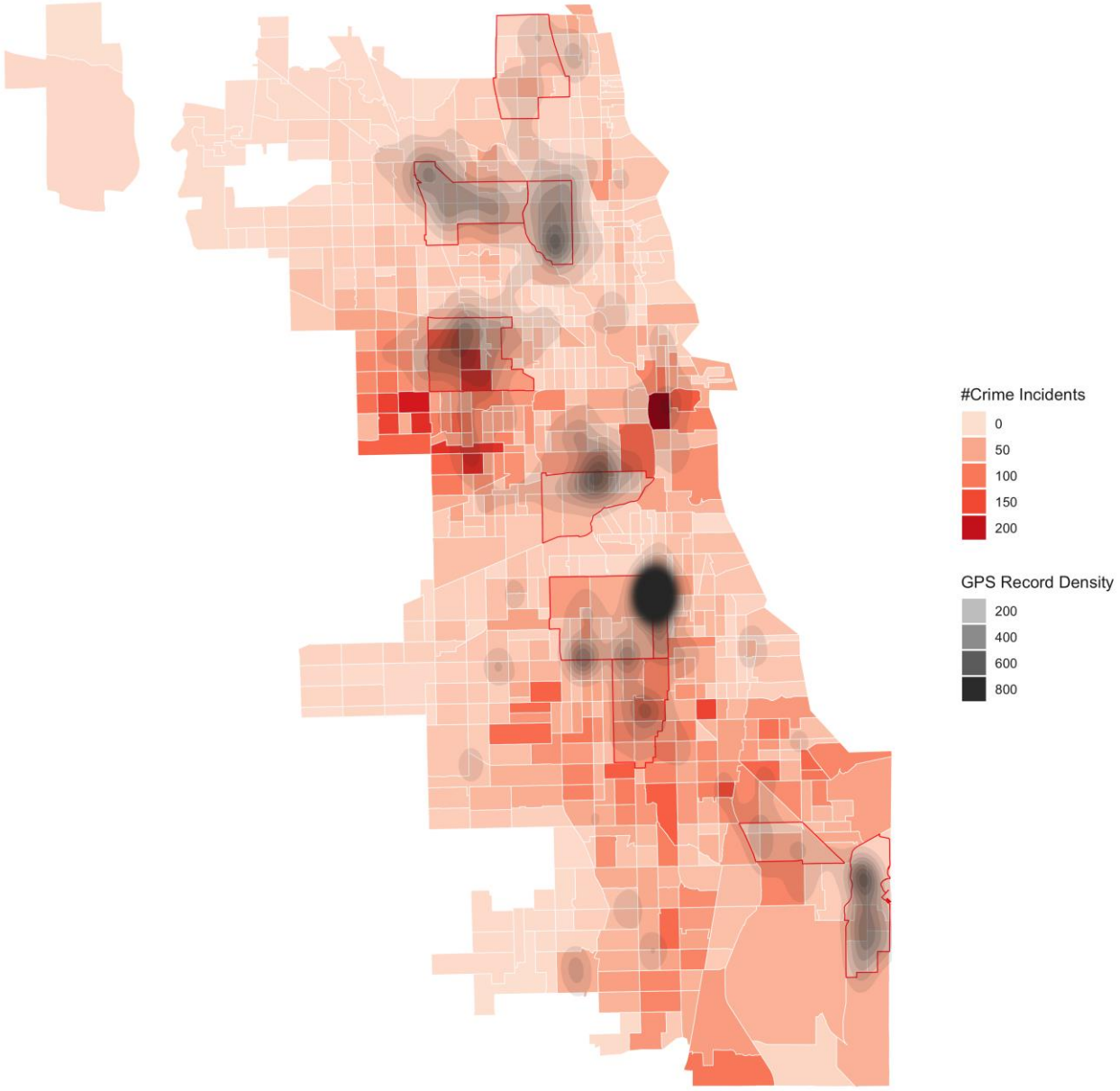
Note: Data obtained from CHART Wave 1 (2018)

Example Data from EMA Observations Completed in Public Spaces by Residents of Humboldt Park, Chicago



Distribution of Violent Crime in Chicago

Time: 24 hrs;
2018 all GPS influences 2018 all Crime

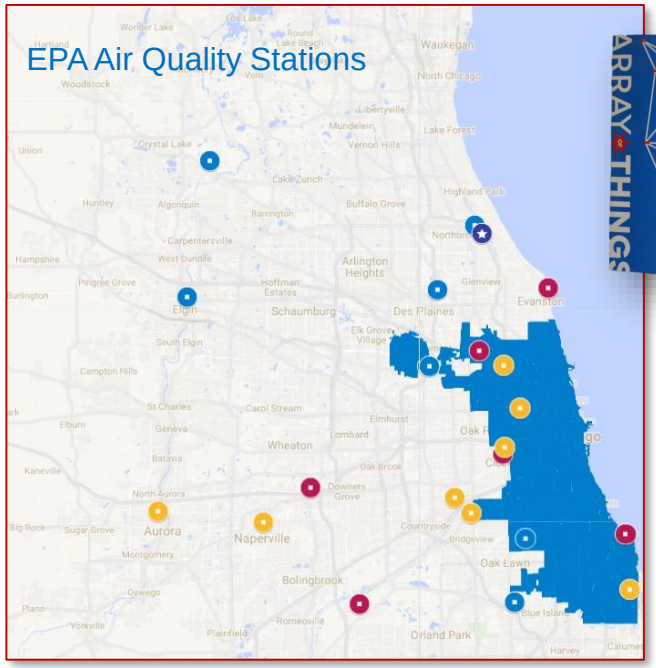


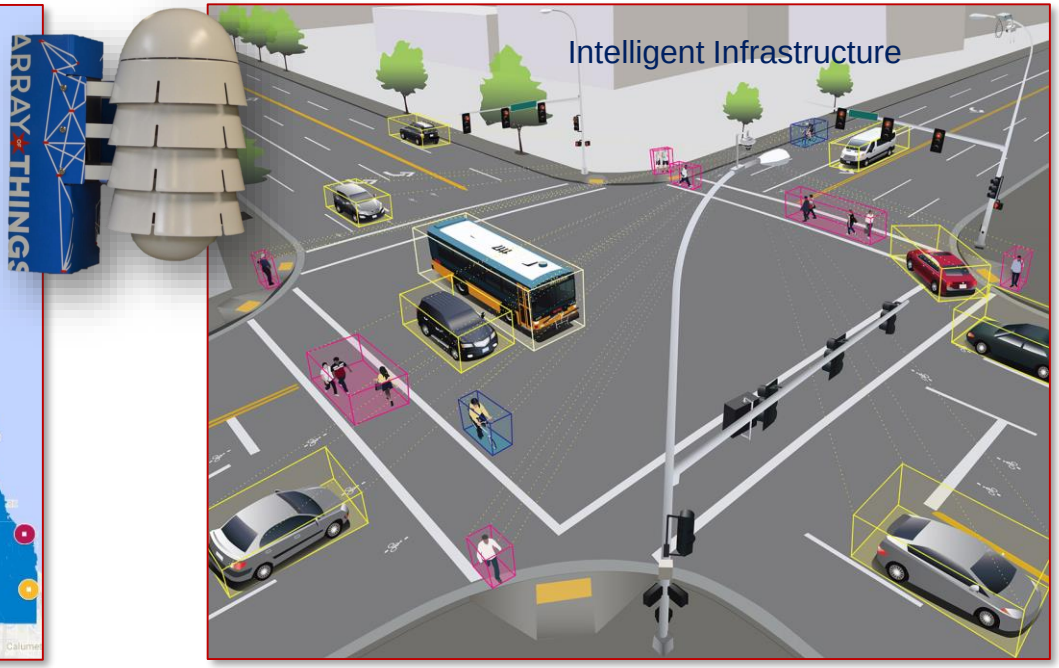
369 Respondents; Range of #Crime: 0 ~ 235

9/18/2019

Understanding Cities through Data and Computation

UrbanCCD (Computation Institute of the University of Chicago and Argonne National Lab)

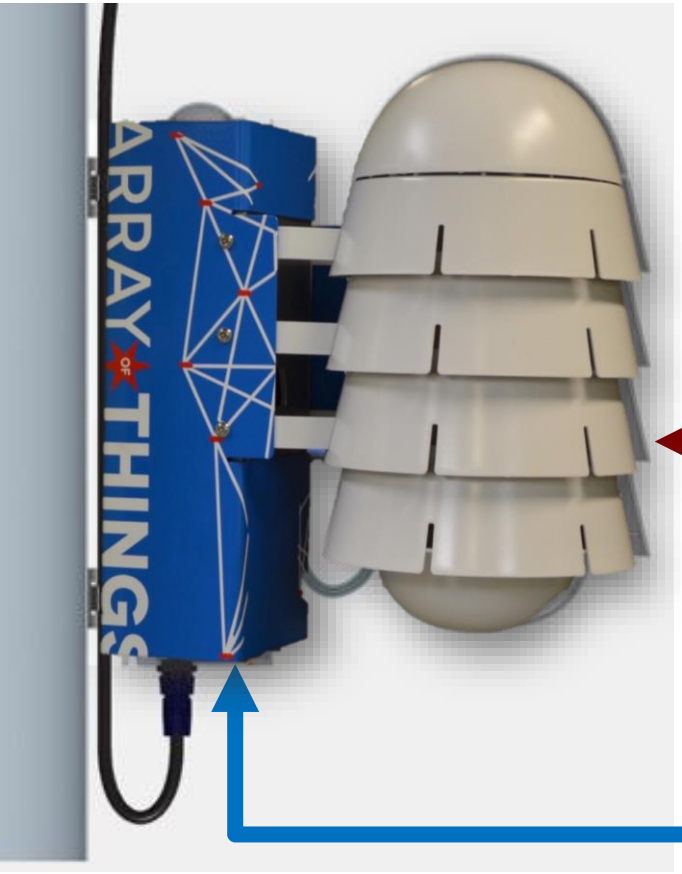




The “Array of Things” (AoT) is an NSF-funded Major Research Instrumentation project to create an urban cyberinfrastructure ”instrument” comprising hundreds of devices in partnership with the City of Chicago, led by the University of Chicago and Argonne National Laboratory.

catlett@anl.gov

AoT Current Configuration



Environment

- Ambient, UV, IR light
- Visibility
- Magnetic Field
- Vibration
- Sound pressure
- Temperature
- Relative humidity
- Barometric pressure

Air Quality

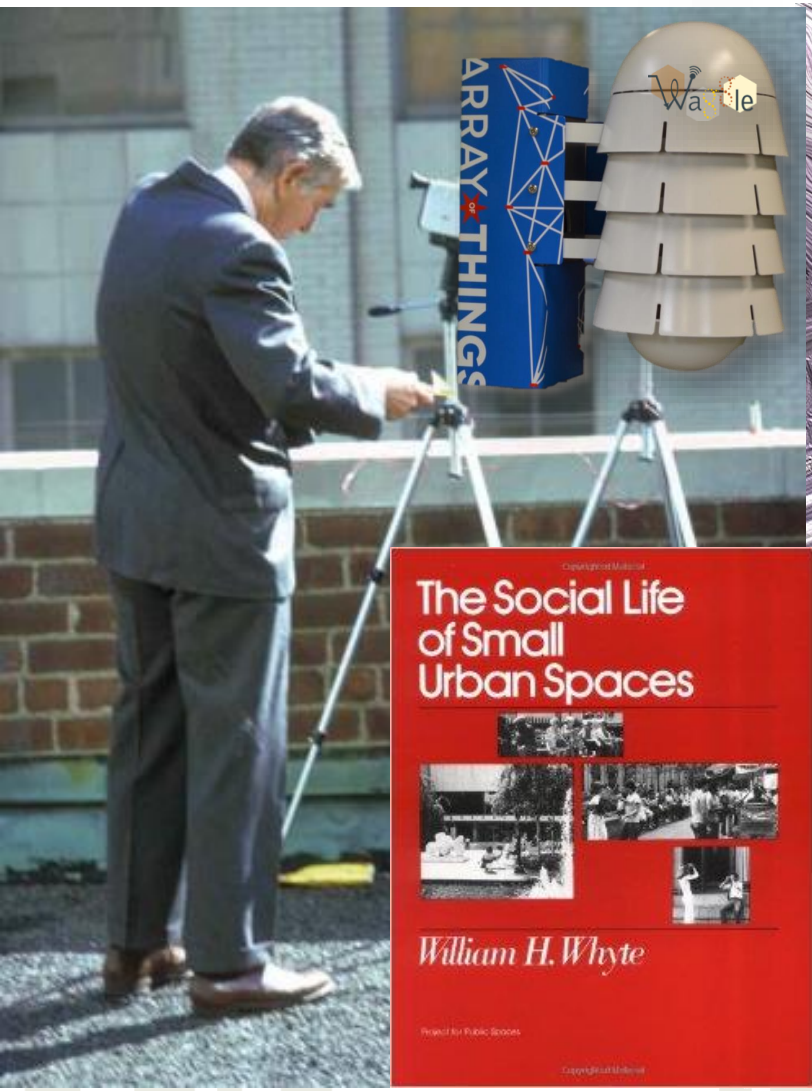
- PM 1, 2.5, 10, 40
- Carbon monoxide
- Ozone
- Sulfur dioxide
- Nitrogen dioxide
- Hydrogen sulfide
- Total reducing gases
- Total oxidizing gases

Edge Computing: AI@Edge

Computer Vision: Flooding, traffic flow, safety (bike helmet use, pedestrian patterns…), use patterns of public spaces, cloud cover

Computer Audio: Noise components, sound events

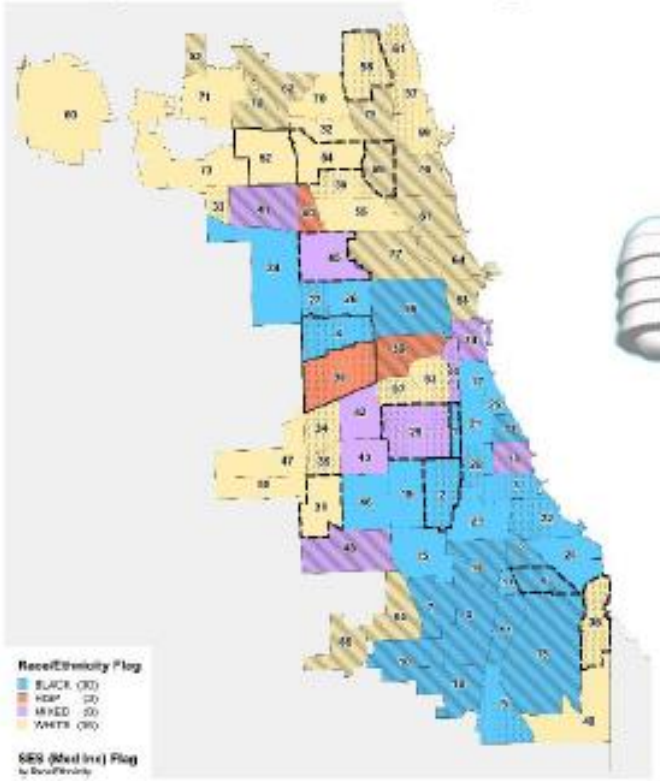
Pete Beckman, Rajesh Sankaran, Charlie Catlett (ANL)
Douglas Pancoast (SAIC), Dave Carhart (Astronics)
Bob Ramos, Michael Buchanan (Chicago Department of Transportation)


ARRAY of THINGS
Waggle

The Social Life of Small Urban Spaces
William H. Whyte

Responses to surveys may depend on neighborhood environmental conditions (climate, pollution, traffic, noise)

CHART (n=450 in 10 neighborhoods)



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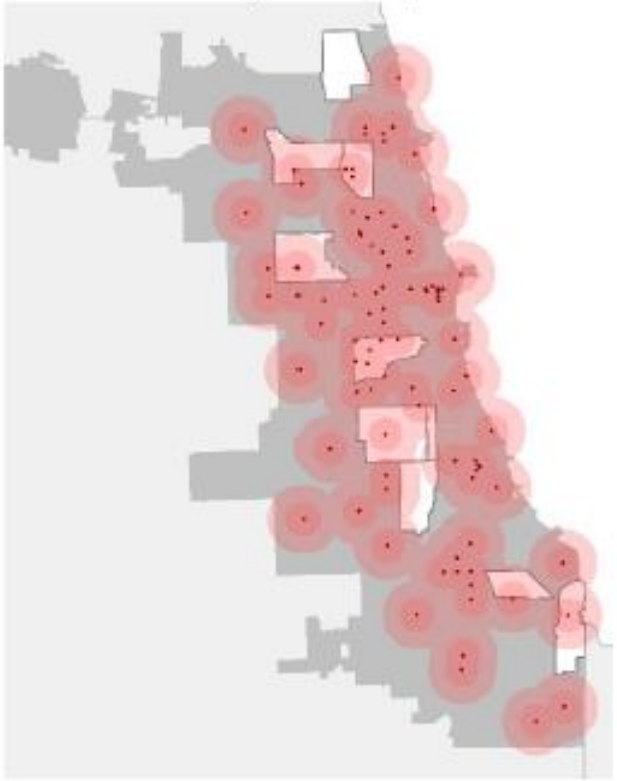
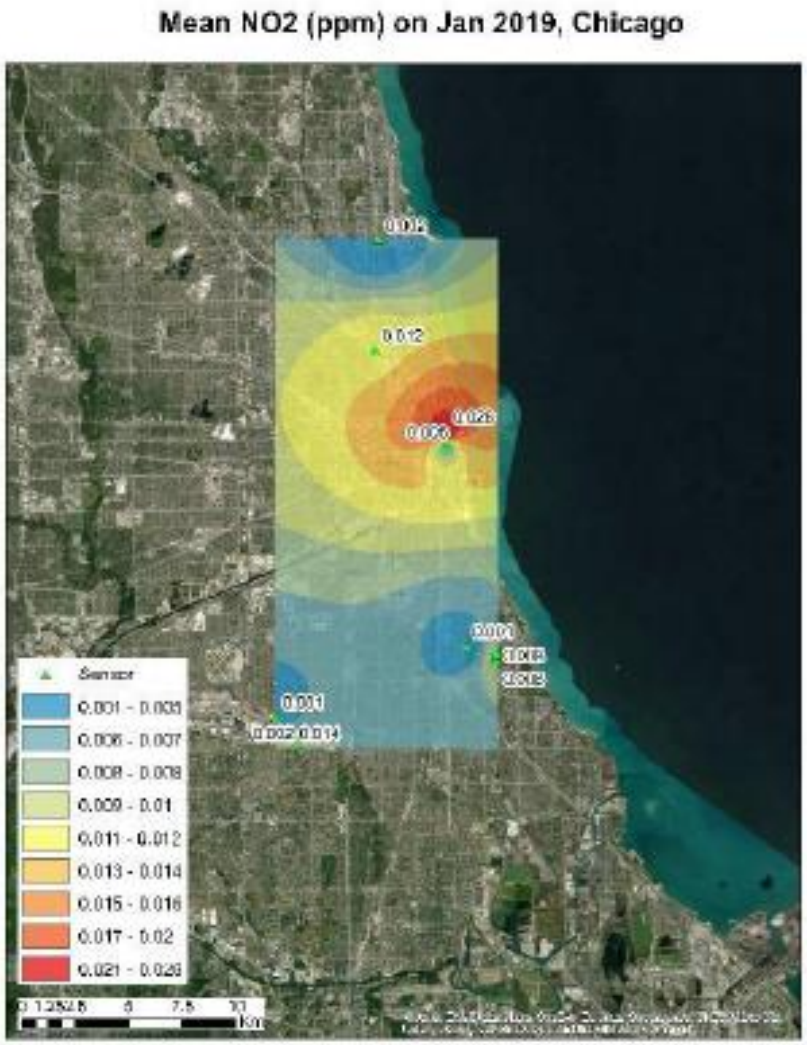
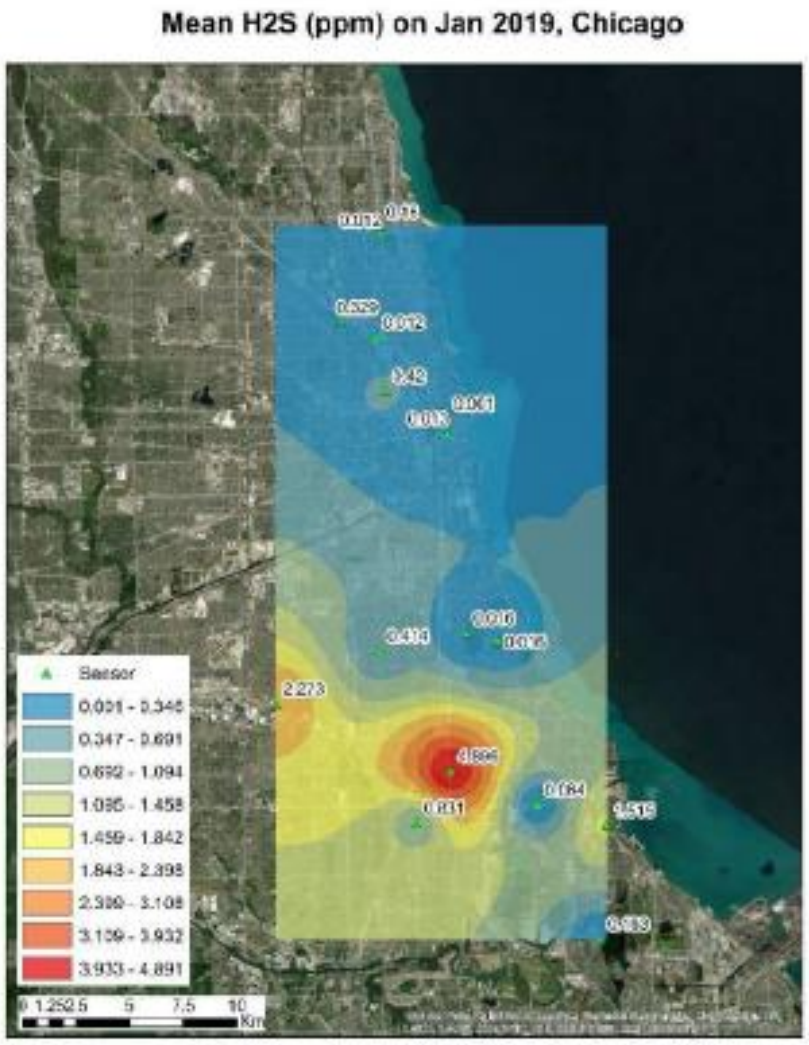
AoT (n=111)



Air Quality Surfaces: NO_2 and H_2S

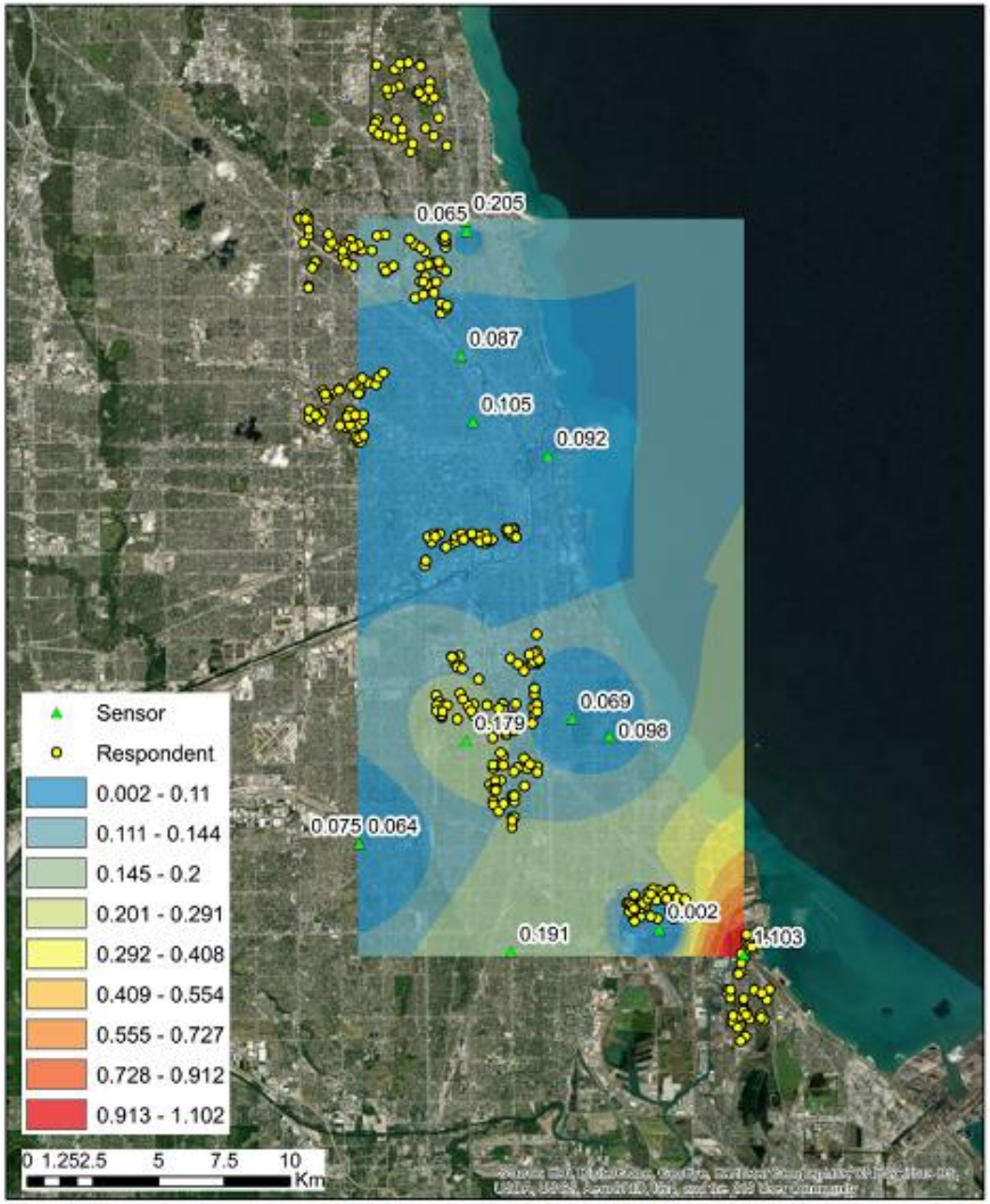


Nitrogen dioxide



Hydrogen sulfide

Mean CO (ppm) on Jan 2019, Chicago



New Directions

- Explore found/big data, with implications for social surveys
- Incorporate rural areas into activity space approach
- Engage in comparative research
- Examine virtual places– substitute?
- Assess how communities form, and barriers and inducements to residential sorting

  → Role of propinquity, nature and extent of intergenerational exchange

Contact Information

1. Chicago Health and Activity Space in Real Time (CHART)

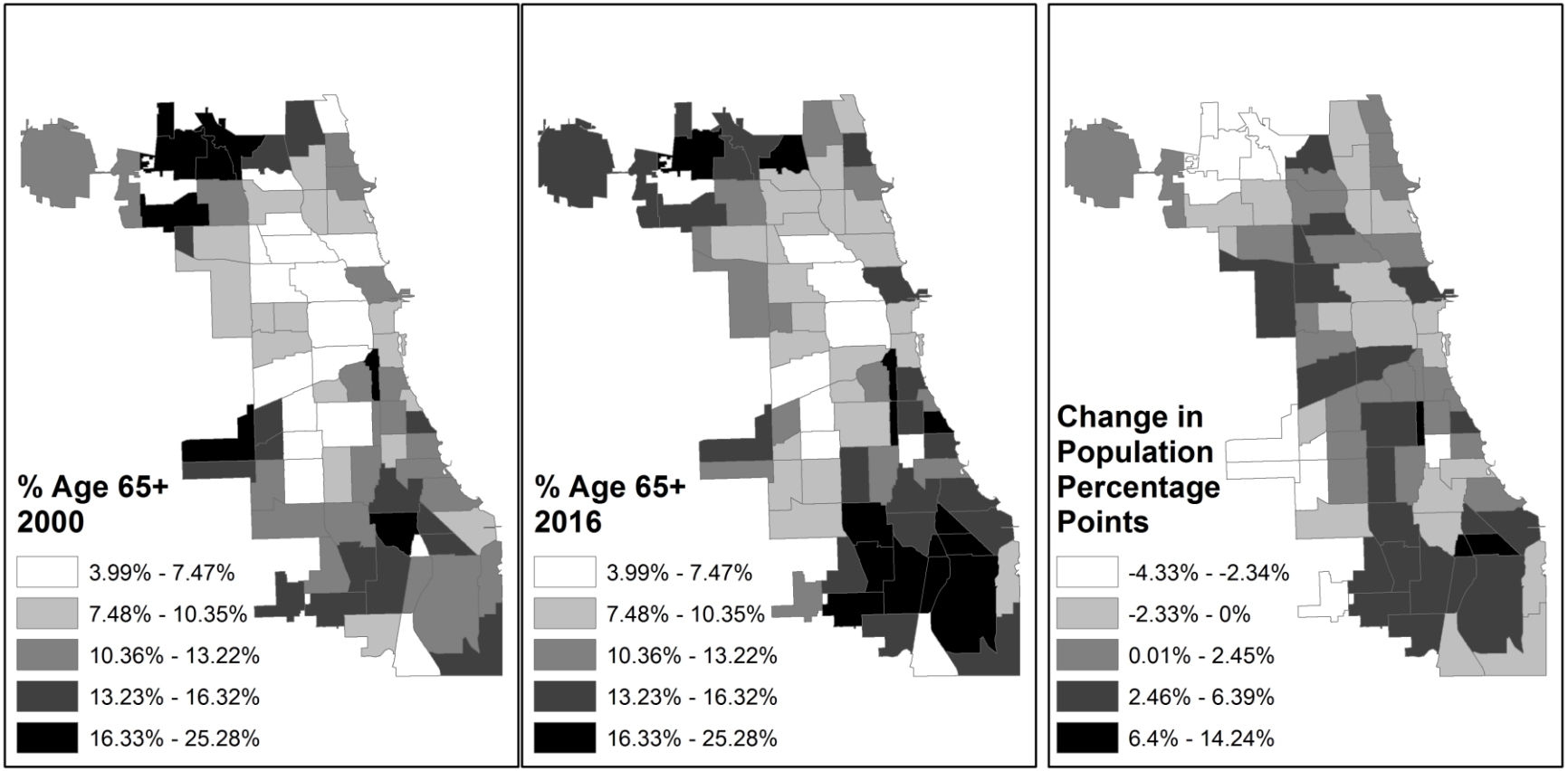
2. Array of Things (AoT)

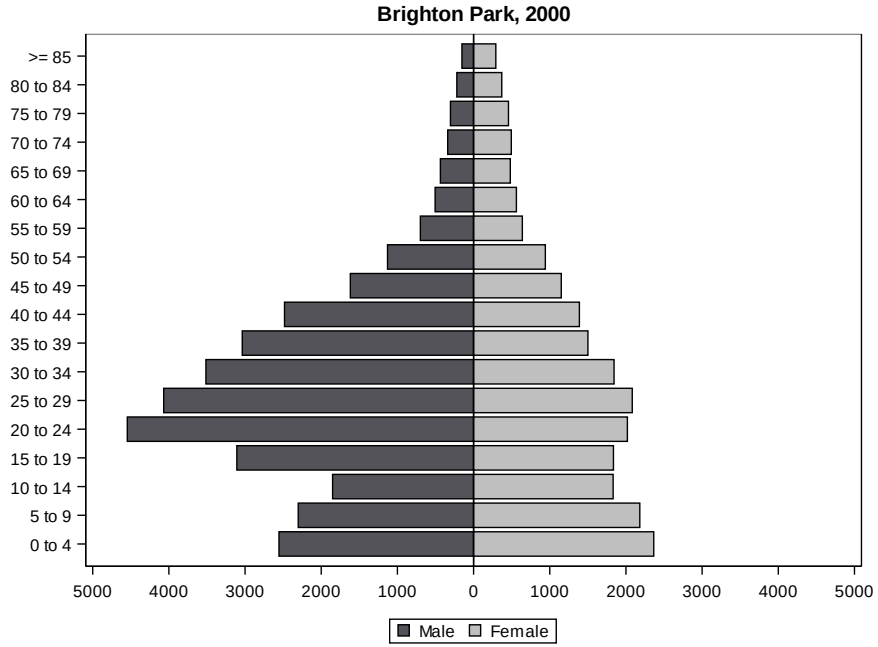
kacagney@uchicago.edu

Thank you to Yuen Visiting Scholar Program & UChicago Global

- END

Chicago and its 77 Community Areas
Population Composition for those 65+




Brighton Park, 2000
>= 85
80 to 84
75 to 79
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65 to 69
60 to 64
55 to 59
50 to 54
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40 to 44
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15 to 19
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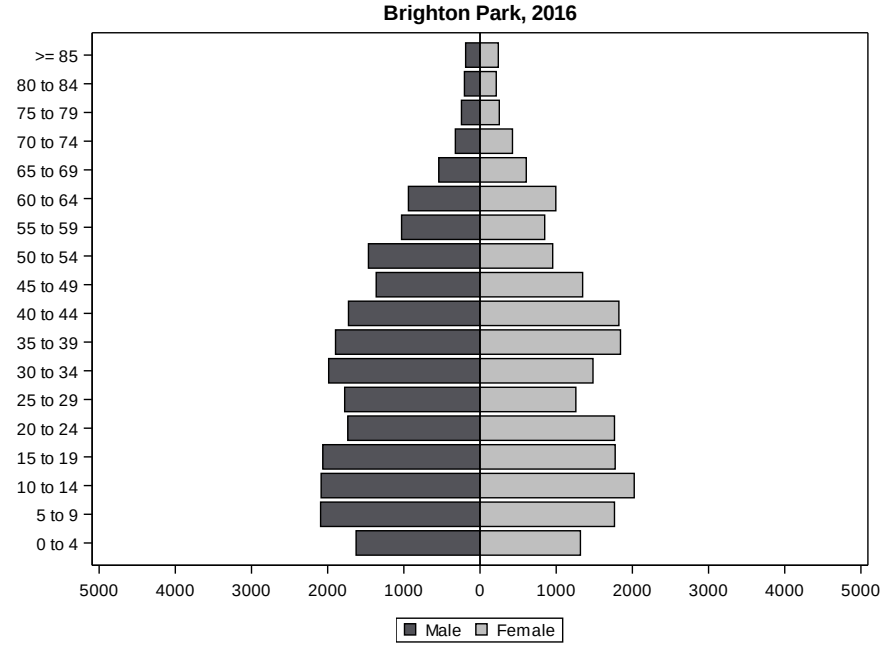
Male Female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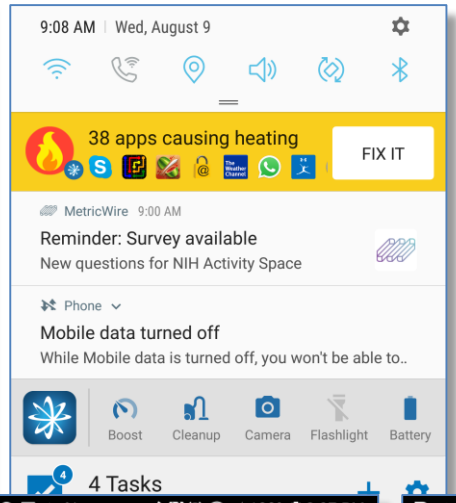
25 to 29
20 to 24
15 to 19
10 to 14
5 to 9
0 to 4
5000 4000 3000 2000 1000 0 1000 2000 3000 4000 5000
Male Female

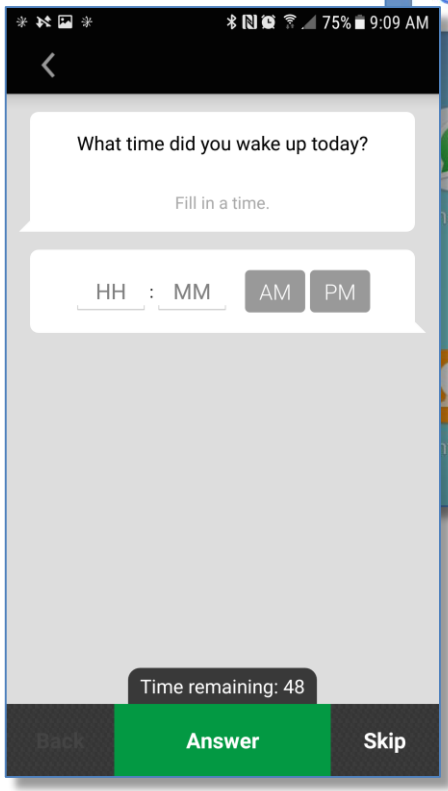
- APPROACHES TAKEN TO ENSURE ROBUST AND UNBIASED RESULTS include (1) incorporating additional EMA surveys to increase data from outside the home; (2) restructuring of EMA incentives to ensure higher response rates; (3) revising training protocols for Field Interviewers to facilitate recruitment; (4) including multiple survey items from major neighborhood studies to ensure instrument validity and comparability of findings; (5) working with the EMA vendor to confirm essential functionality and ease of use for both respondents and project staff; and (6) reviewing plans for sampling and data collection with the project Advisory Board.

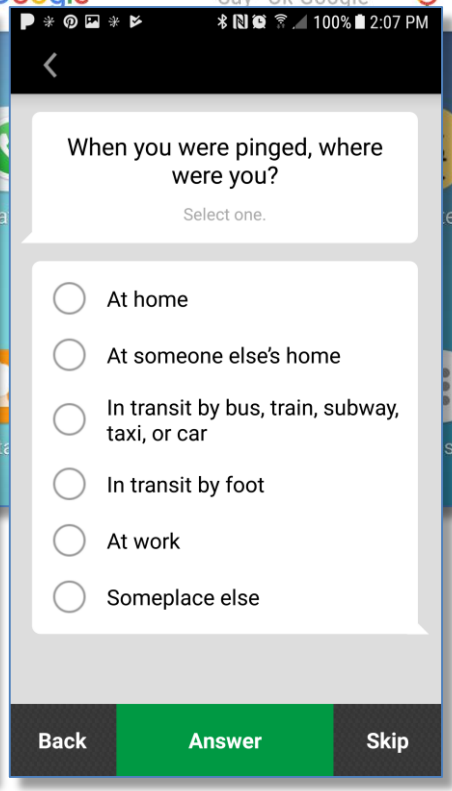
Nov 2017 Pilot

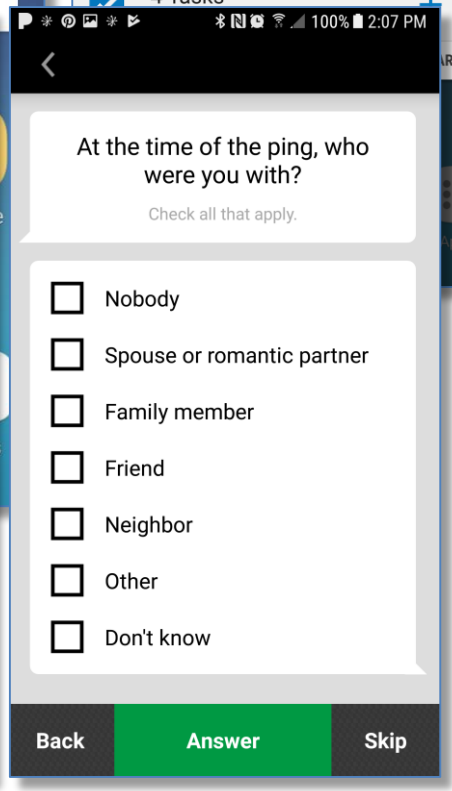
50 cases
Respondents 65+
4 EMAs/day

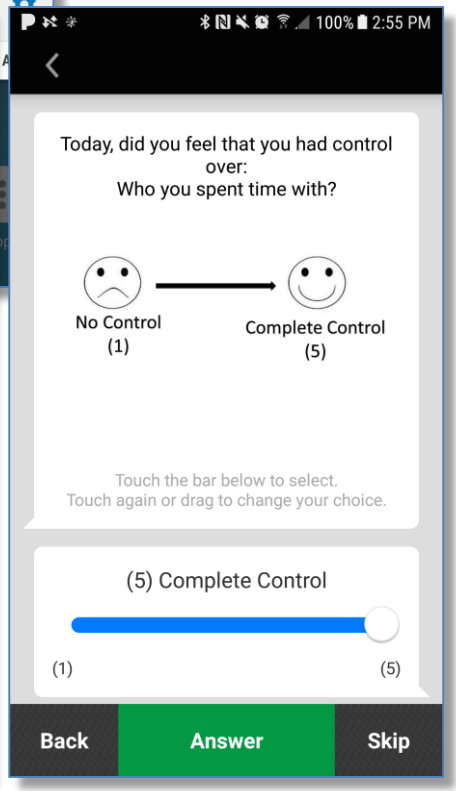
Portage Park
North Lawndale
South Lawndale











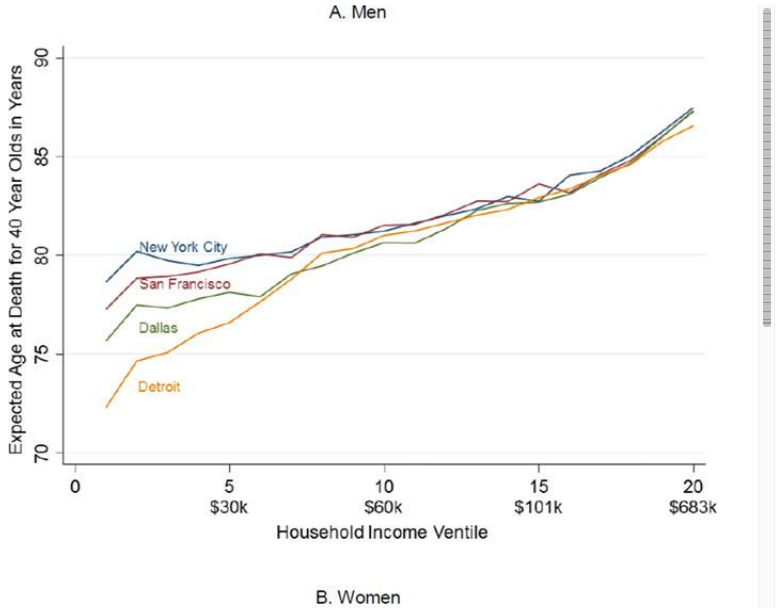
Overview

- How do data of form you hope to analyze come to be?
  - Ex: combining social surveys with GPS tracking and Array of Things (AoT)
- How do we make certain that we are measuring what we intend to measure?
    - Validity?
    - Theoretical motivation?
      - Situate in early Chicago School perspectives on role of “place”
      - Envision place and its intersection with age

The CAT-MH (anxiety and depression)

- **Item response theory (IRT):** modern psychometric theory based on mathematical models that do not assume that items are of equal difficulty and possibly not equally good at discriminating high and low levels of latent trait of interest. Multidimensional IRT extends these ideas to joint measurement of multiple latent variables. IRT is capable of separating characteristics of items from characteristics of subject
- **Computerized adaptive testing (CAT):** an approach based on IRT in which an optimal set of items is selected for each individual until a previously determined level of precision of the estimate of ability or severity is obtained
- **Decision tree:** a decision support tool that produces a tree-like model and associated graph. The branches of a tree are defined by answers to each question. The next question asked depends on sequence of answers that occurred prior to it

Figure 4



Race- and Ethnicity-Adjusted Life Expectancy by Income Ventile in Selected Commuting Zones, 2001–2014

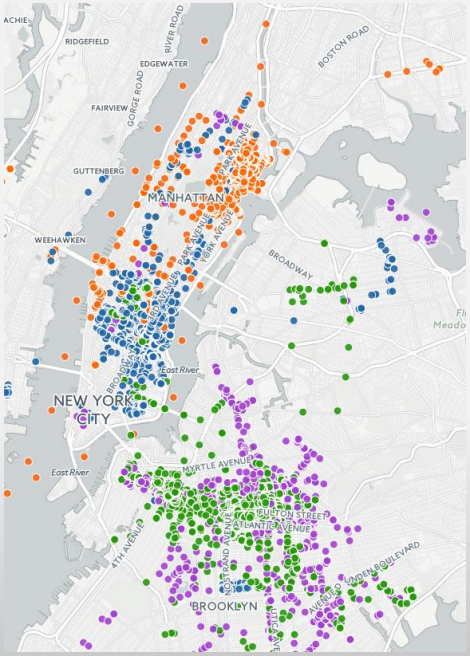
Estimates of race- and ethnicity-adjusted expected age at death for 40-year-olds computed by income ventile (5 percentile point bins).

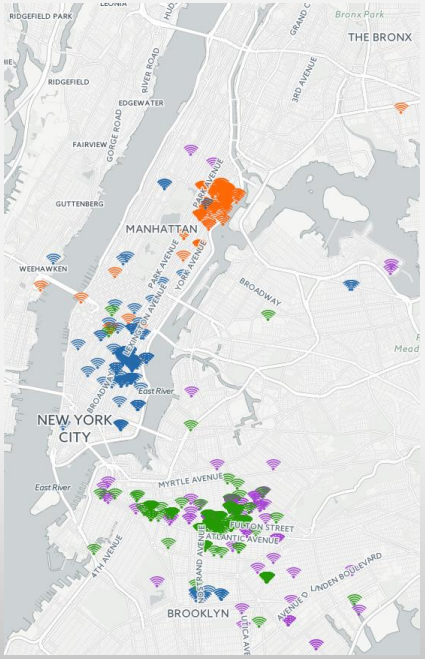
How to Begin?

- Focus on interrelated places –
  - household environment
  - neighborhood context
  - social networks
  - activity space
- Investigate range of data collection methods
- Draw on Advisory Board
- Develop feasibility/pilot studies
  - New York
  - Chicago

Older Adult GPS/EMA Week

- GPS approx every 5 min
- EMA
  - 15 questions
    - Where are you?
    - Who are you with?
    - How do you feel? (e.g., health, pain, stress, loneliness)
  - Four times daily, 9AM-9PM
  - Randomly chosen times
  - Two hour completion window





	Respondent		
	A	B	C
Observations outside of residential tract	36.3%	11.4%	65.0%
Area of standard deviation ellipse	1.00 mi^2	.74 mi^2	8.60 mi^2
Total tracts visited	13	21	86
Tracts visited for 10+ minutes	9	4	13
Poverty rate in residential tract	31.5%	33.5%	34.5%
Average poverty rate in non-residential tracts	30.8%	13.6%	23.8%

Note: Dots represent respondents' locations captured during the study; residential tracts are shaded in dark gray.

Table 5. Poverty in Residential and Nonresidential Tracts, by Respondent Characteristics

	Mean poverty level in residential tract (*SD*)[a]	Exposure-weighted poverty level in nonresidential tracts (*SD*)[b]	Within-group difference between nonresidential and residential poverty[c]
Overall	23.31 (9.12)	19.96 (7.30)	–3.35**
Age			
55–64	*28.01 (9.31)*	*22.29 (6.11)*	*–5.72†*
65–74	22.21† (8.53)	19.71 (7.70)	–2.50
75 and over	21.52† (8.38)	18.46 (7.30)	–3.06
Gender			
Male	*21.52 (8.38)*	*19.79 (7.58)*	*–1.73*
Female	24.13 (9.42)	20.03 (7.26)	–4.10**
Racial/Ethnic Background			
Black, non-Hispanic	22.59† (6.80)	20.14** (6.98)	–2.45
Hispanic	29.37** (8.97)	23.75*** (7.74)	–5.62*
White, non-Hispanic	*17.13 (10.46)*	*14.41 (3.41)*	*–2.72*
Education			
Less than college degree	*23.65 (8.07)*	*21.87 (7.42)*	*–1.78*
College degree or more	22.67 (11.59)	15.45*** (4.75)	–7.22*
Income			
Less than $20,000	25.69* (8.47)	22.69* (6.84)	–3.00†
$20,000 and higher	*20.31 (9.05)*	*17.63 (6.90)*	*–2.68*
Car ownership			
No	*22.85 (9.93)*	*20.50 (7.70)*	*–2.35*
Yes	24.67 (6.16)	18.32 (5.84)	–6.35***
Senior Center Site			
East Harlem	*32.47 (2.07)*	*24.31 (6.37)*	*–8.16****
Gramercy Park	15.28*** (11.34)	14.69** (8.53)	–0.59
North Bedford-Stuyvesant	23.50*** (2.41)	25.02 (3.45)	1.52
South Bedford-Stuyvesant	21.60*** (8.76)	15.04*** (2.61)	–6.56**

Note: [a]Symbols denote statistically significant differences compared to the italicized group, from bivariate OLS regressions of poverty rates in residential tracts. [b]Symbols denote statistically significant differences compared to the italicized group, from bivariate OLS regressions of poverty rates in *nonresidential* tracts. [c]Symbols denote statistically significant differences in residential and nonresidential poverty levels *within the same group,* based on paired-sample t-tests with df = n-1. †$p < .10$. *$p < .05$. **$p < .01$. ***$p < .001$ (two-tailed tests).

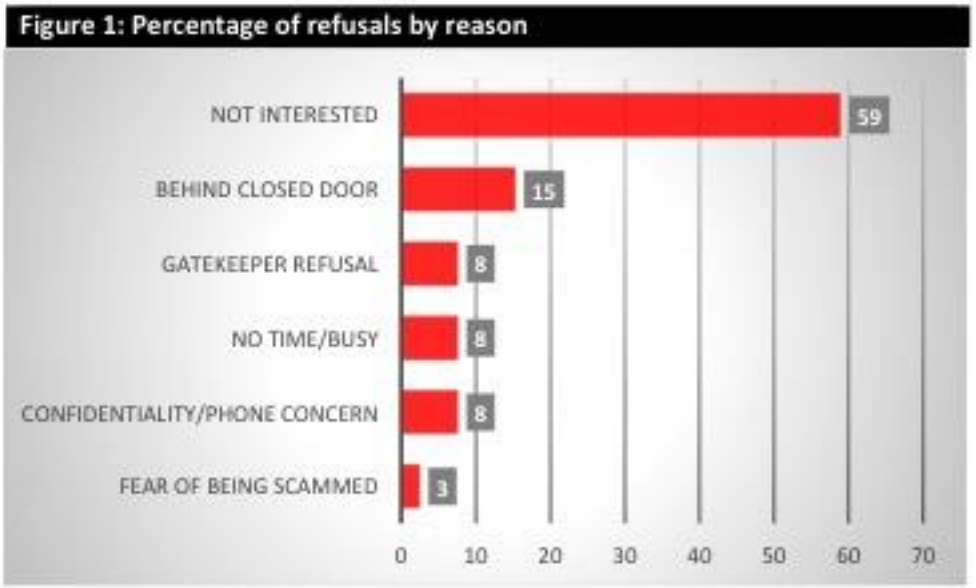
NYC Feasibility Study Findings

- Activity spaces extend beyond census tracts
- Activity spaces – including non-residential areas – may be consequential for health
- Poverty rates in nonresidential tracts tend to be lower than in residential tracts
- Substantial variation across groups in extent of difference between residential and nonresidential poverty exposure
  - Hispanic older adults, those with college degrees, and those who own cars spend time in nonresidential areas that are low poverty compared to their residential tracts
- Disorder in immediate environment associated with increase in symptoms of distress
- Smartphone-based methods offer opportunity to examine real-time exposures and shorter-term fluctuations in health

The Main Study Pilot – Chicago Health and Activity in Real-time (CHART)

- Pilot Nov 08 2017-Jan 06 2018
  - 22 respondents
  - Neighborhoods
    - North Lawndale
    - South Lawndale
    - Portage Park
- Questions to consider:
  - Reliability and validity of questions
  - Instrument length
  - Need for geofencing
  - Use of CAT-MH
  - Field challenges
  - Interface with app developer (MetricWire)

A Key Field Challenge…

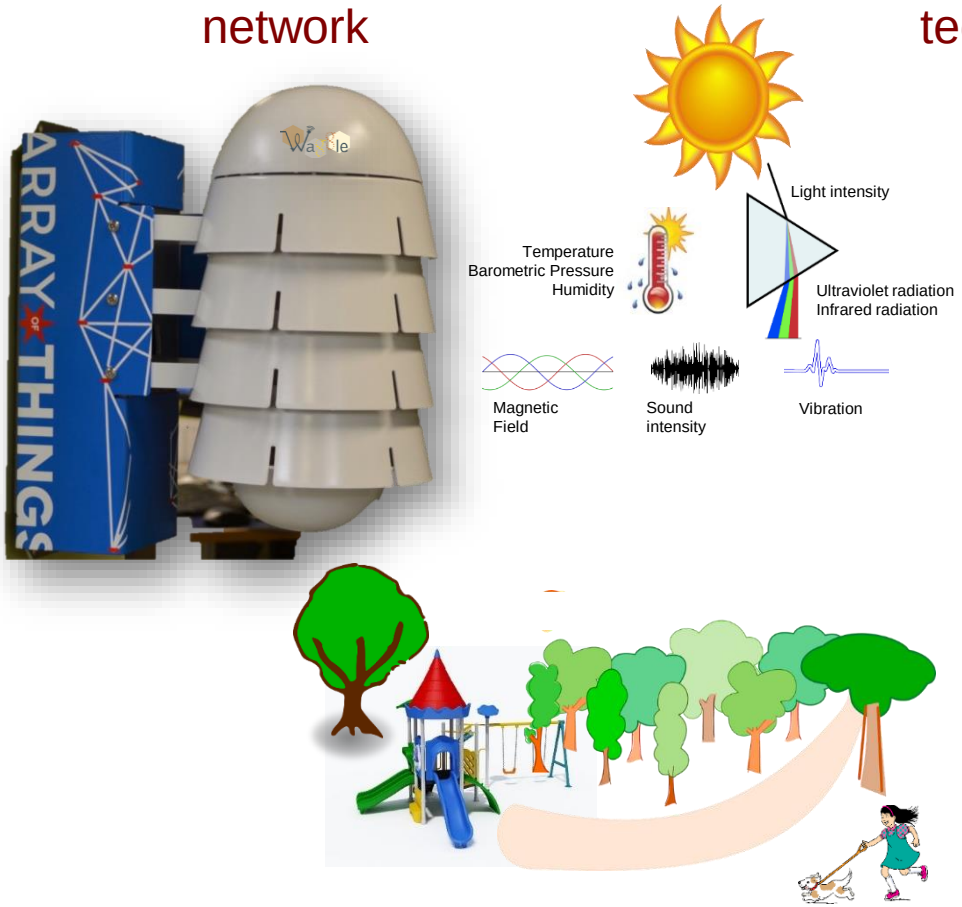


What we Learned from the Pilot

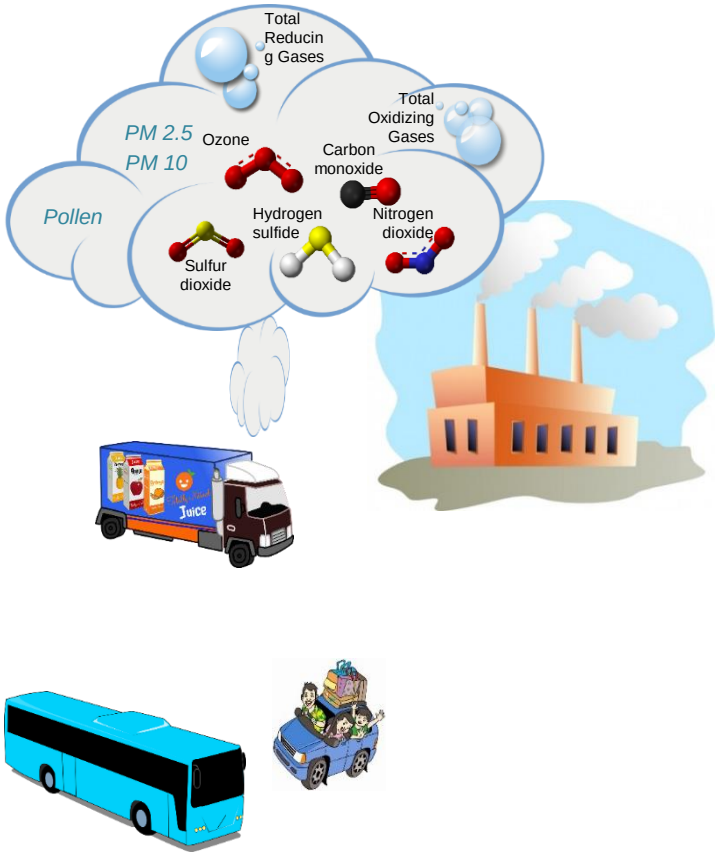
- Innovations/Decisions
  - Addition of a 5th daily EMA survey
  - Experiment on $
    - Modifying incentive structure of EMA surveys to include two options ($1 per survey vs $5 per day when 3+ surveys completed) – will use more effective of two in future waves
  - Blood spots instead of saliva (earlier)
  - In-home baseline revisions
    - Minor fixes applied to programming of name-generator items and questions about victimization modified to reflect study timelines
    - CAT-MH adaptive assessments used considerably more items than expected (22 for Anxiety and Depression combined; A+D score related to # items at $p<.001$), but total time was <5 minutes and did not generate complaints from respondents or FIs
  - EMA revisions
    - Eliminating items that showed virtually no variability, adding more “positive” choices for neighborhood characteristics and emotional states, as well as option to be with a “pet” rather than being “alone”
    - 41% of completed surveys indicated that respondent was either in someone else’s home or in a public space (so decided not to use geofencing)
- FI Training Considerations
  - Respondent interaction
    - Fear that FIs were selling something (e.g., private health insurance)
    - Talkative respondents
    - Gatekeepers – compliance from adult children and caretakers (FI emphasize credential and academic goals)
    - How to describe GPS tracking?
  - Smartphone challenges
    - Lack of familiarity
    - Did not like being responsible for phone
    - Hard to hear ping

The Array of Things

1. A Standard Sensor network



2. A *Platform* to Evaluate new sensor technologies



3. A *Platform* with embedded (“edge”) computing to develop and evaluate new computer perception capabilities
4. https://arrayofthings.github.io/node-locations.html

Argonne NATIONAL LABORATORY

When you visit a HH in person and gain cooperation:

1st **Complete the Screener. The Screener identifies the R, when multiple eligible Rs are available.**

2nd **Complete Main 1 interview with the selected R including biomeasures.**

3rd **Complete CAT-MH interview.**

4th **Complete Main 2 interview.**

5th **Pay $40 incentive and collect electronic receipt.**

6th **Record phone ID information as a comment in NS-Mobile.**

7th **Log in to MetricWire on the phone and demo EMA survey. Record login information for R on user guide. Make sure volume is set to highest setting.**

8th **Make appointment to collect phone at least 8 days later.**

9th **After Leaving R Home, complete Interviewer survey.**

10th **Update phone inventory file with phone status.**

11th **Check phone inventory file after 8 days to determine incentive amount**

12th **Pick up phone and charger. Log respondent out of MetricWire.**

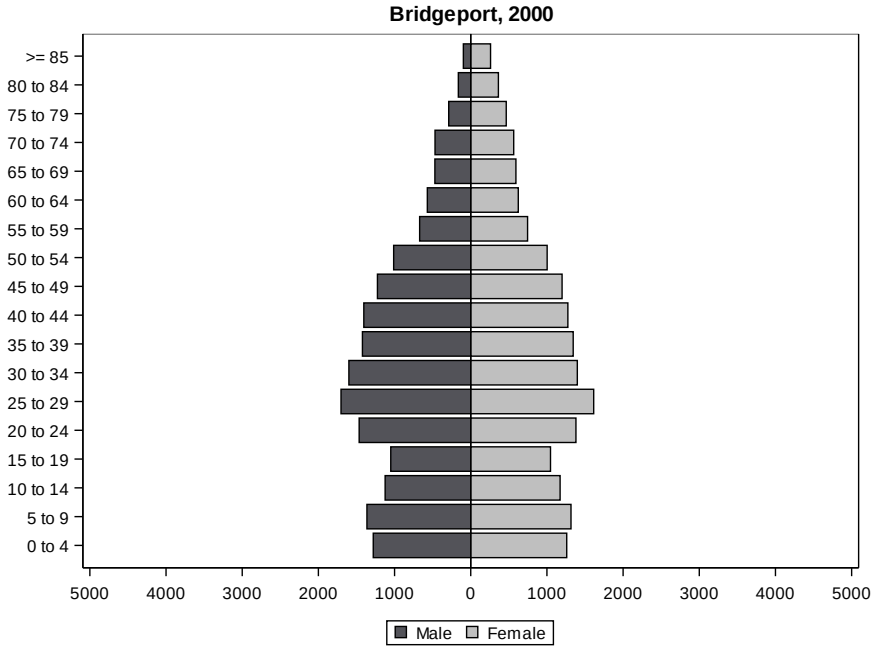
13th **Pay EMA incentive and collect e-receipt.**

14th **Update phone inventory file with phone status.**

Results So Far

In field since April 16:

- 228 cases
  - Sex: 158 F
  - Age: mean 73, median 7, range 65-97
  - Race/ethnicity [not mutually exclusive]:
    - African American (139), white (95), Asian (12), Native American (5)
    - Latino (62)
  - Income: mean $42,803.04, median $29,000 (180 cases)
  - Roster:
    - SN1 (important people) mean 2.24, median 3
    - SN2 (people you spend your time with, not listed above) mean 1.25, median 1
    - SN3 (people you live with, not listed above) mean 0.46, median 0
    - All 3 SNs combined mean 4.07, median 3.5


Bridgeport, 2000
>= 85
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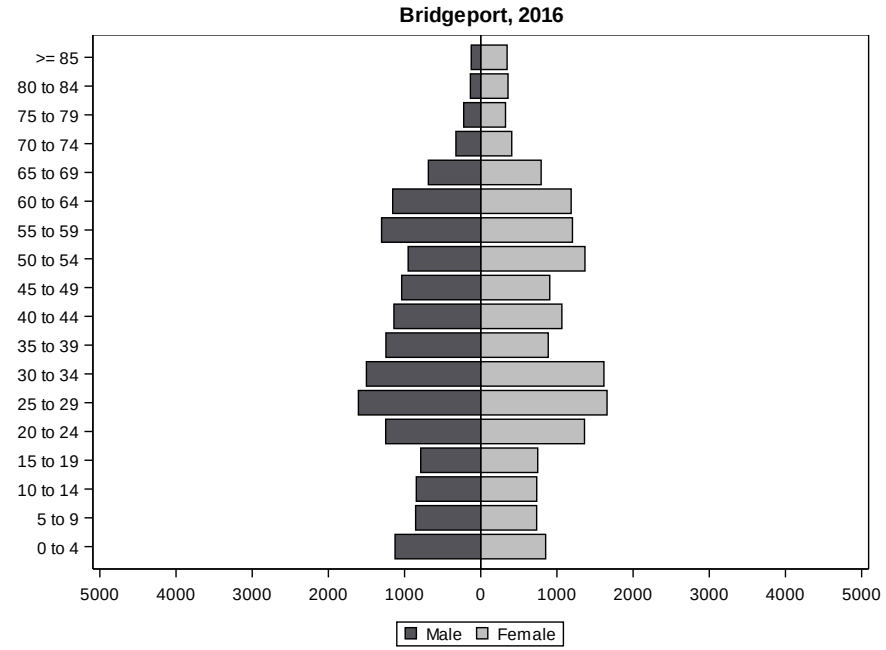
Male
Female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3000
2000
1000
0
1000
2000
3000
4000
5000
Male
Female

A Note on Mobility

- Residential mobility more prevalent:
  - Retired
  - Younger
  - Higher levels of income/wealth
  - Poorer health
  - Urban
- Mobility for all age groups fell over last two decades – two-earner HHs and long-term population shift to south/west have reduced later life incentive to move (Fernald, 2014)
  - Mobility drops after age 50; continues to decline through the 60s with sharp uptick at ≈85
- Older adults who do move disproportionately do so within their county or state; 14% move to another state
  - In context of disadvantage, African American older adults moved to worse neighborhood, White counterparts to better one (Riley, Hawkley & Cagney, 2016)
- Voluntary – weather, children
- Involuntary– eviction, foreclosure

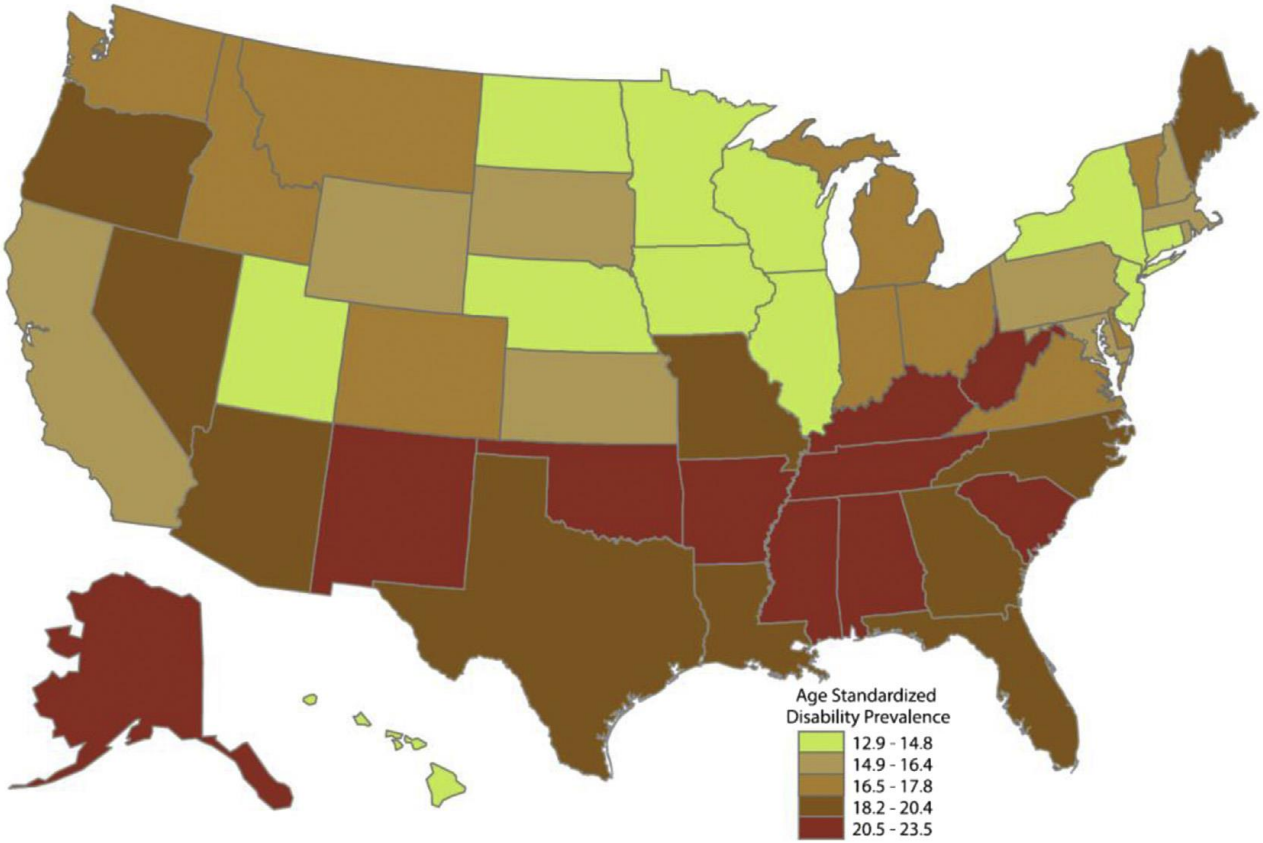
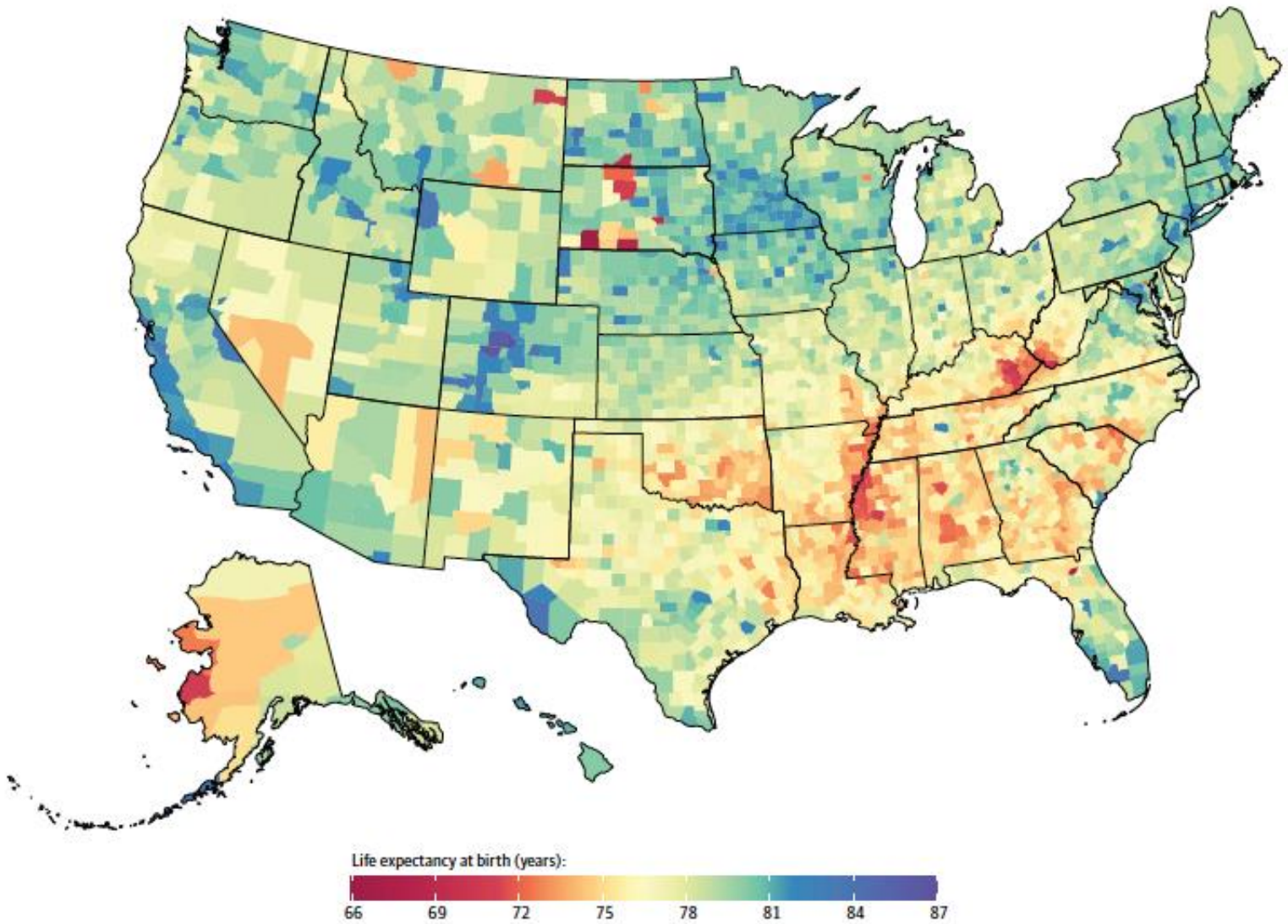


Fig. 1. Age-Standardized Disability Prevalence for Adults Aged 24–94 Years and Born in Their State of Residence.
Notes: Data from the 2010–2014 American Community Survey. Age standardized to the 2010 U.S. Population.

The prevalence of adult disability varies markedly across states, partly reflecting differences in states' policies and strategies. In particular, states with strong economic output and a population that shares more equally in those fortunes seem to be salubrious (Montez, Hayward and Wolf, 2017)

Figure 1. Life Expectancy at Birth by County, 2014



Inequalities in Life Expectancy Among US Counties, 1980 to 2014

Dwyer-Lindgren et al., 2017

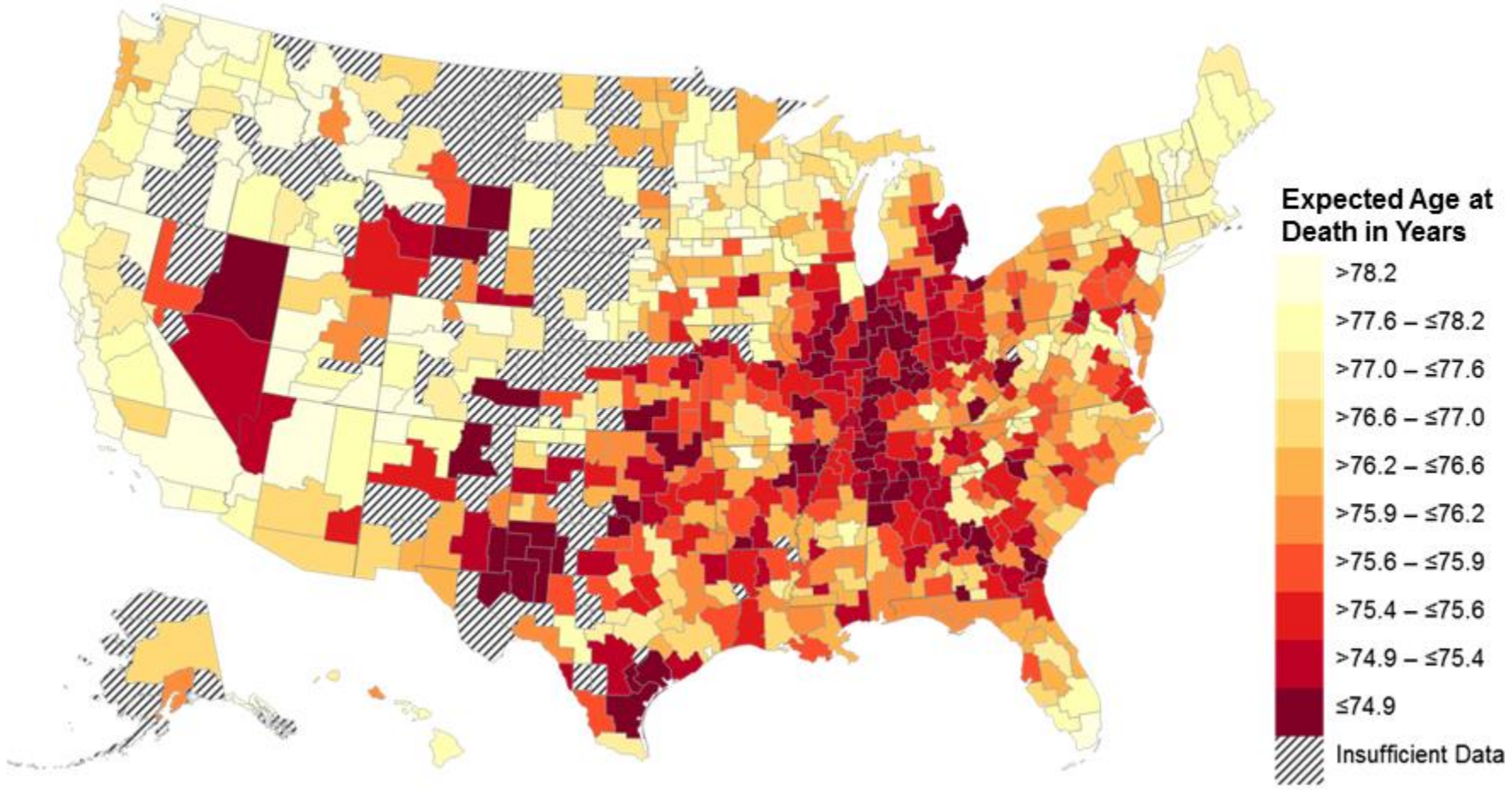
To Consider

- How might we conceive of such work in a rural area?
- What theory do we need for an understanding of place
- How might the use of formal long-term care inform our conception of place?
- Activate aspects of place that might be health-enhancing
- Interplay between the person and his or her environmental context
- Inequality
- Segregation
- that inequalities in place play an important role in generating and maintaining socioeconomic inequalities in later life morbidity and mortality
- Exposure to green space
- Housing and its role in age segregation
- Disparities – poluuiton and lead
- Which mechanisms

Study of Place & Aging

- Environmental gerontology
- Geographical gerontology
- Social science perspectives on micro-environment (“neighborhood effects”)

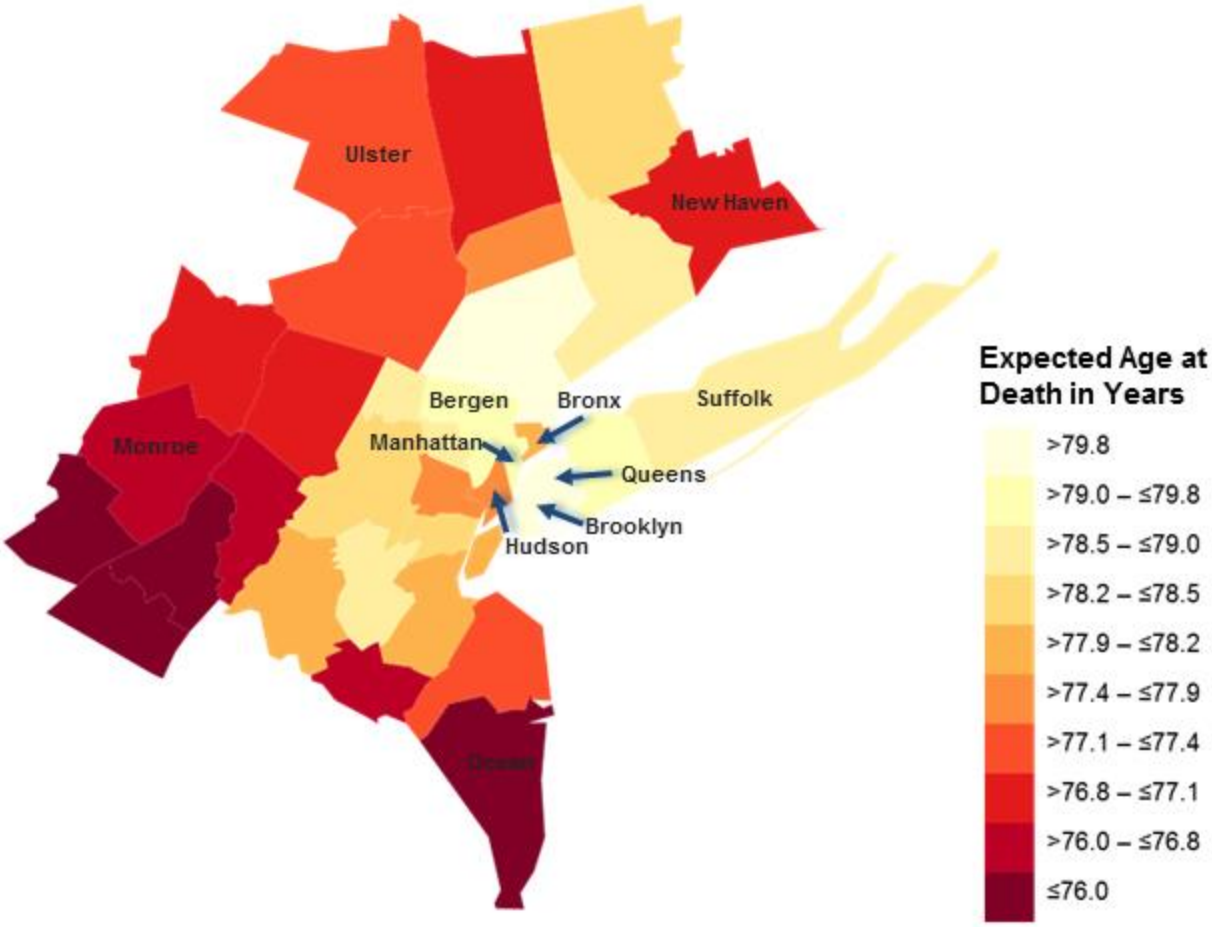
Race-Adjusted Expected Age at Death for 40 Year Old Men
Bottom Quartile of U.S. Income Distribution



Chetty, et al., 2016

Note: Lighter Colors Represent Areas with Higher Life Expectancy

Race-Adjusted Expected Age at Death for 40 Year Old Men in Bottom Quartile By County in the New York Area



Chetty, et al., 2016

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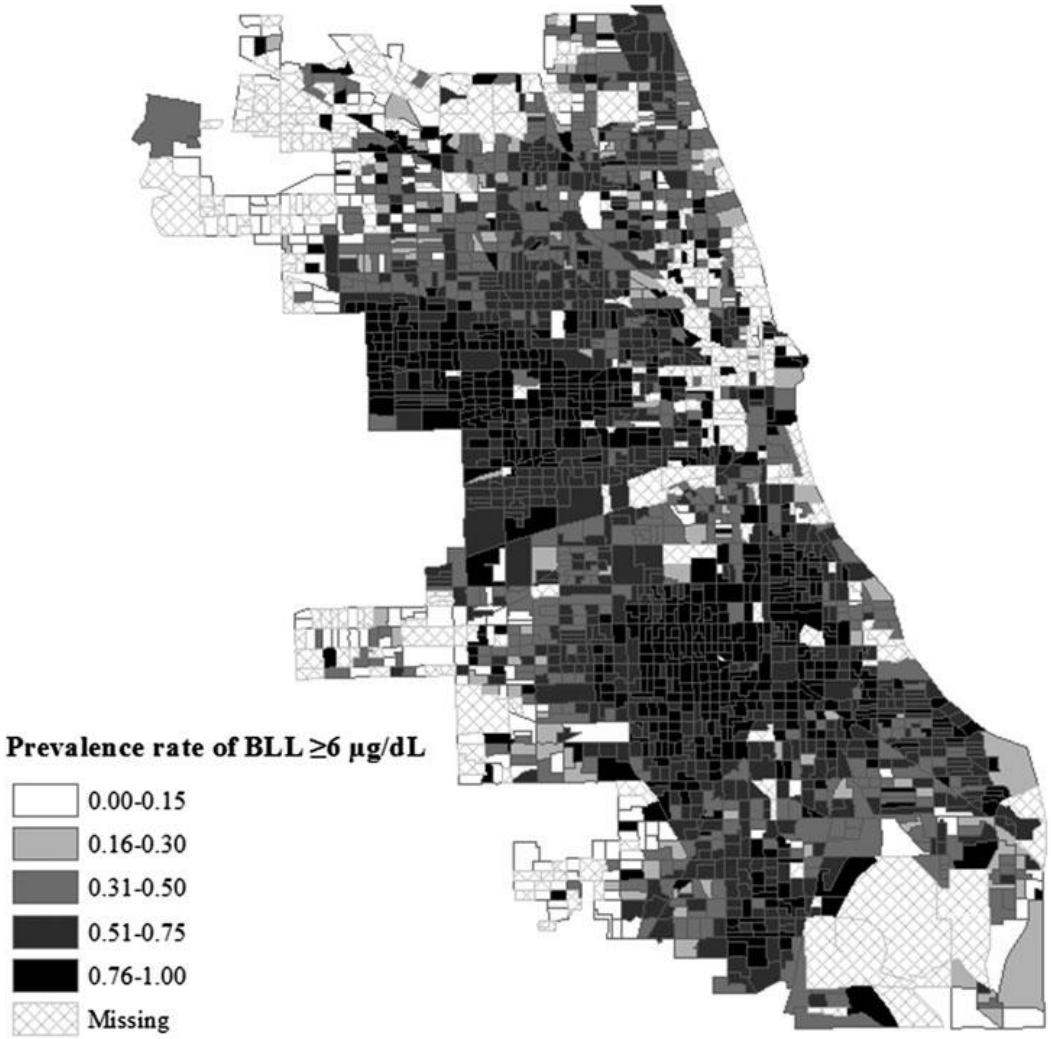
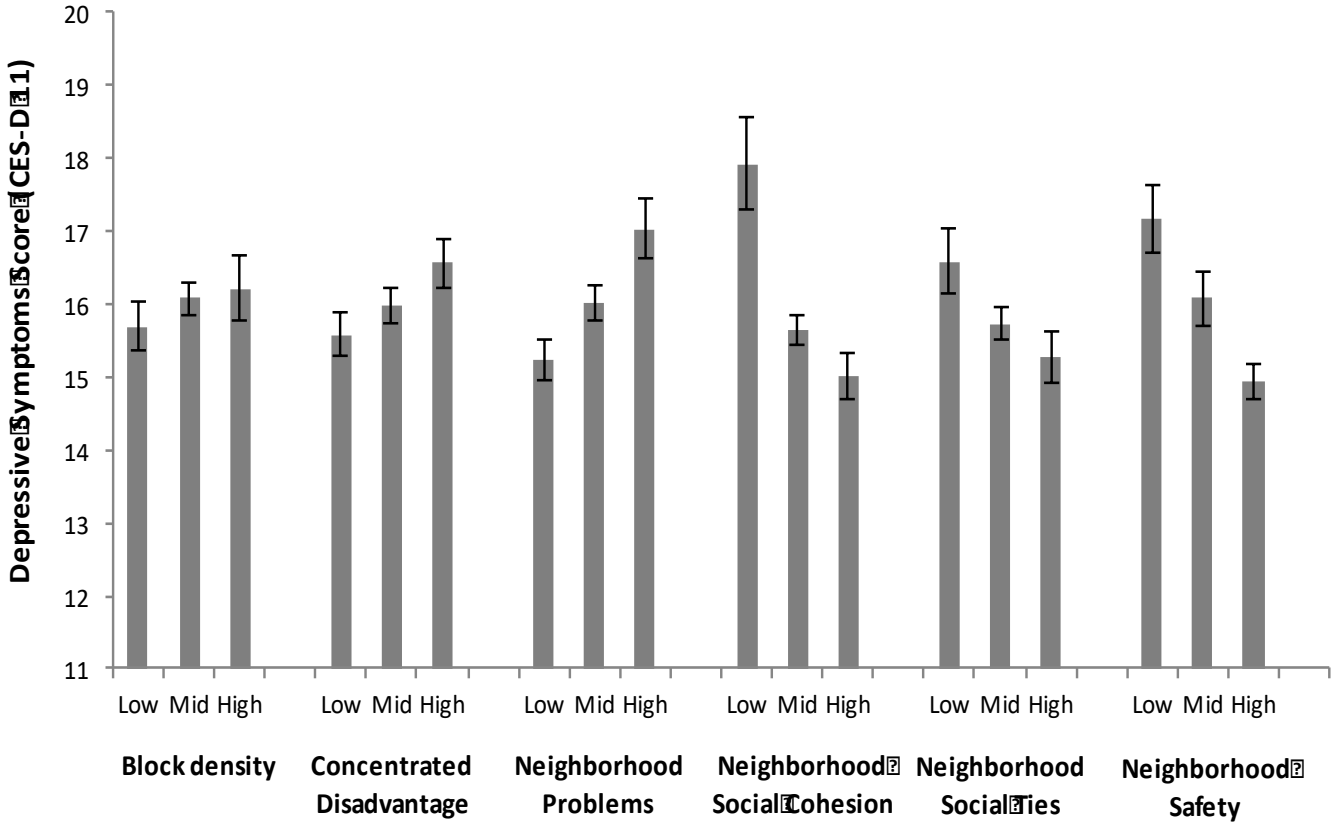


Fig. 1. Prevalence Rates of Elevated BLL for Chicago Block Groups, 1995.

Overall, our theoretical framework posits lead toxicity as a major environmental pathway through which racial segregation has contributed to the legacy of Black disadvantage in the United States (Sampson & Winter, 2016)

Neighborhood Context Measures Taken to "Areas"



BLACK: Lowest class. Vicious, semi-criminal.

DARK BLUE: Very poor, casual. Chronic want.

LIGHT BLUE: Poor. 18s. to 21s. a week for a moderate family

PURPLE: Mixed. Some comfortable others poor

PINK: Fairly comfortable. Good ordinary earnings.

RED: Middle class. Well-to-do.

YELLOW: Upper-middle and Upper classes. Wealthy.

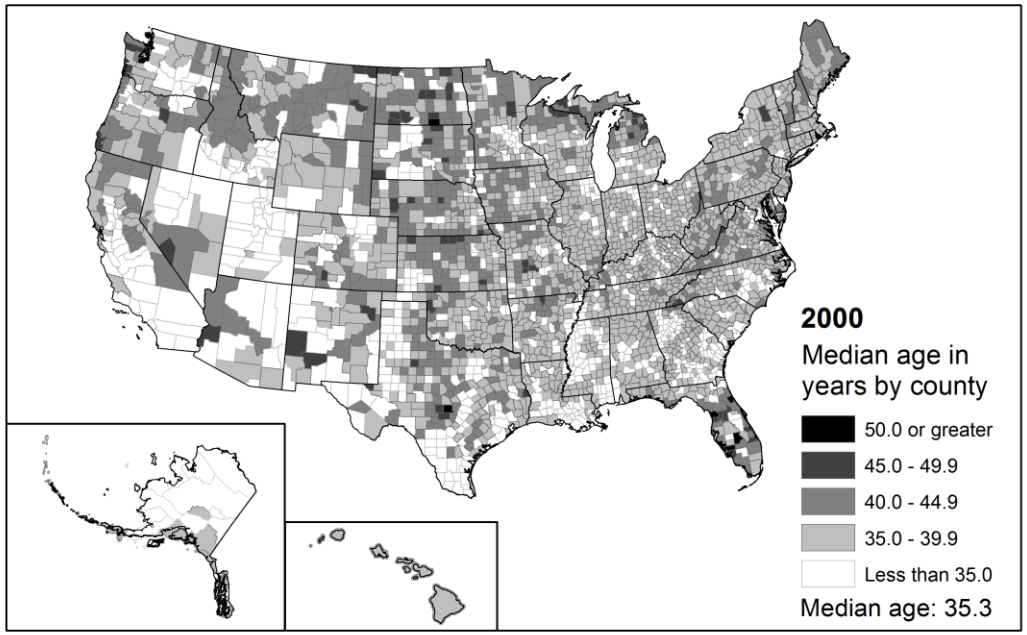
A combination of colours - as dark blue or black, or pink and red - indicates that the street contains a fair proportion of each of the classes represented by the respective colours.

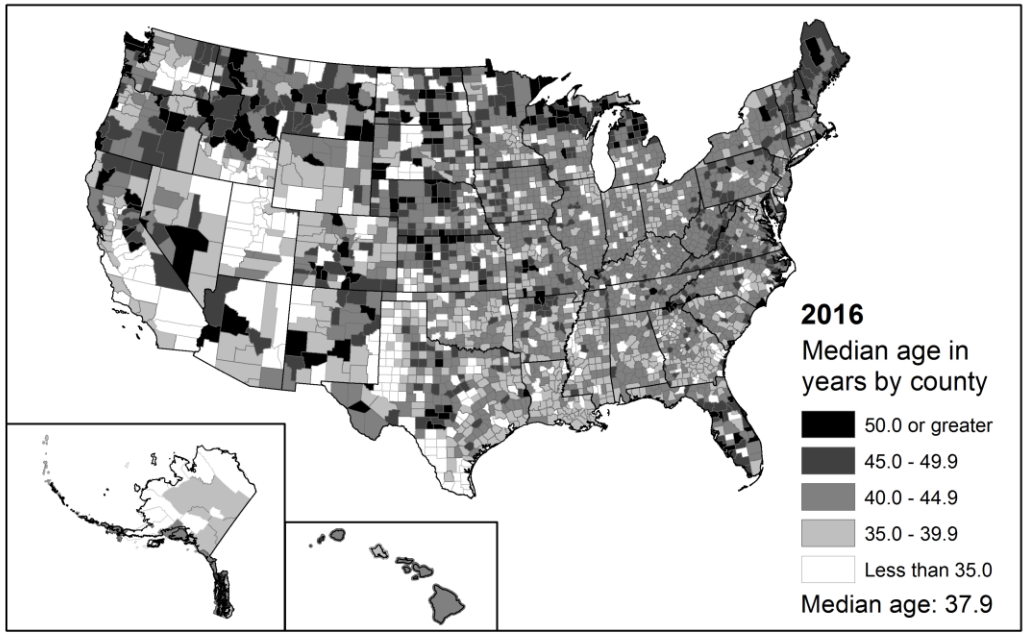
Charles Booth map of poverty, 1889, showing area around the East End of London

Overview

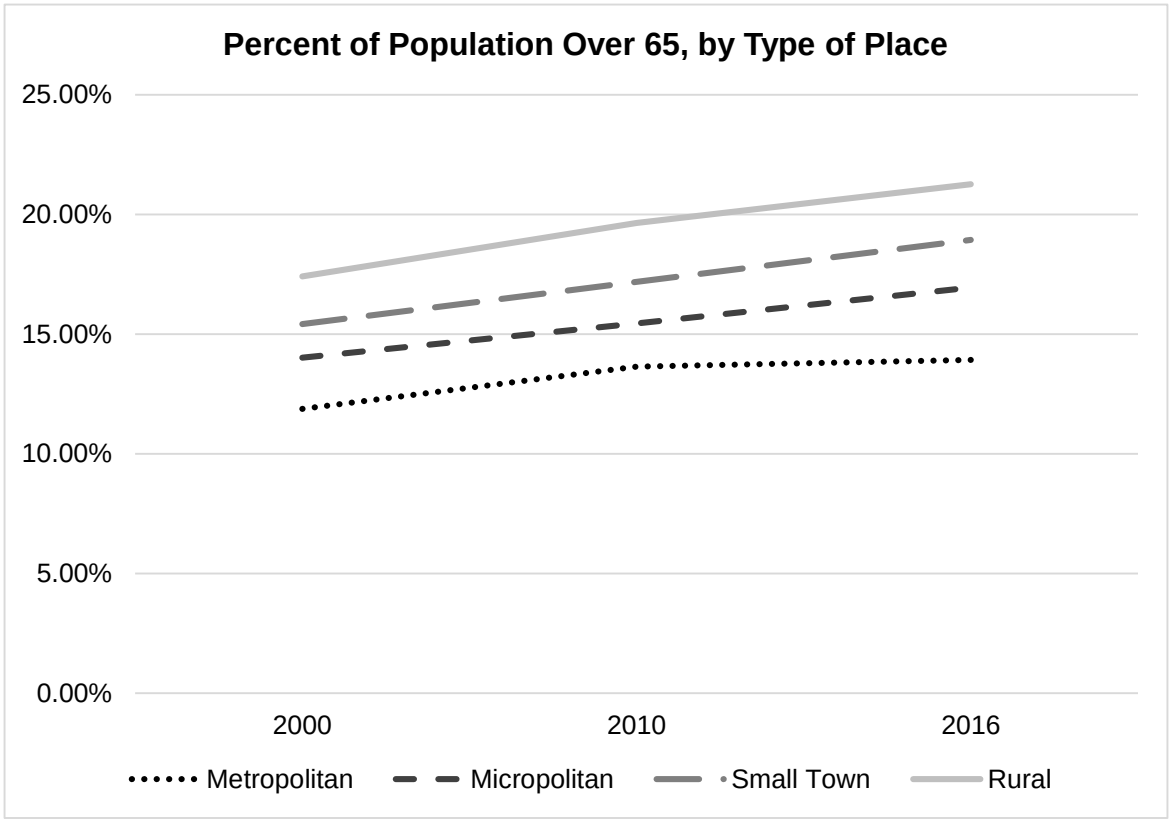
1. Review underpinnings of research on place
2. Make an argument for ”joy” of data collection and new ways of capturing place
   - Import of social surveys
   - Relevance of capturing what people think/feel
3. Note that capacity to understand influence of place has changed greatly
   - Opportunities
   - Challenges

Chicago as a case





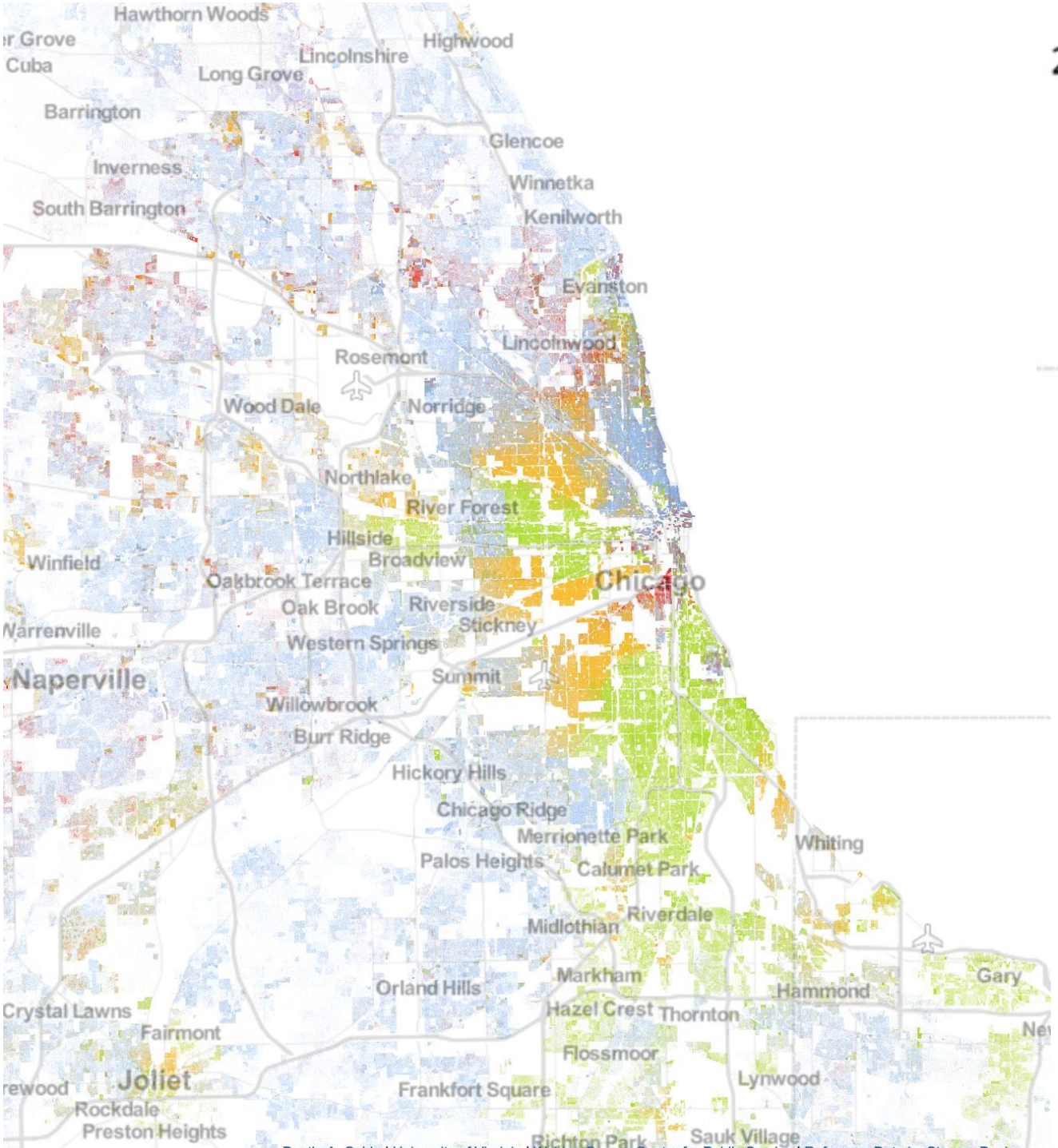
- Median age for adults in rural areas 51, as compared to 45 in urban
- By 2040, 25% of rural households will be 65 or older as compared to 20% of urban
- 2020-2030, rural population growth predicted 1%; urban population growth 8%



Note: Metropolitan (50,000 or more); Micropolitan (at least 10,000 but fewer than 50,000), Small Town (at least 2,500 but fewer than 10,000), Rural (all other).

Specific Aims:

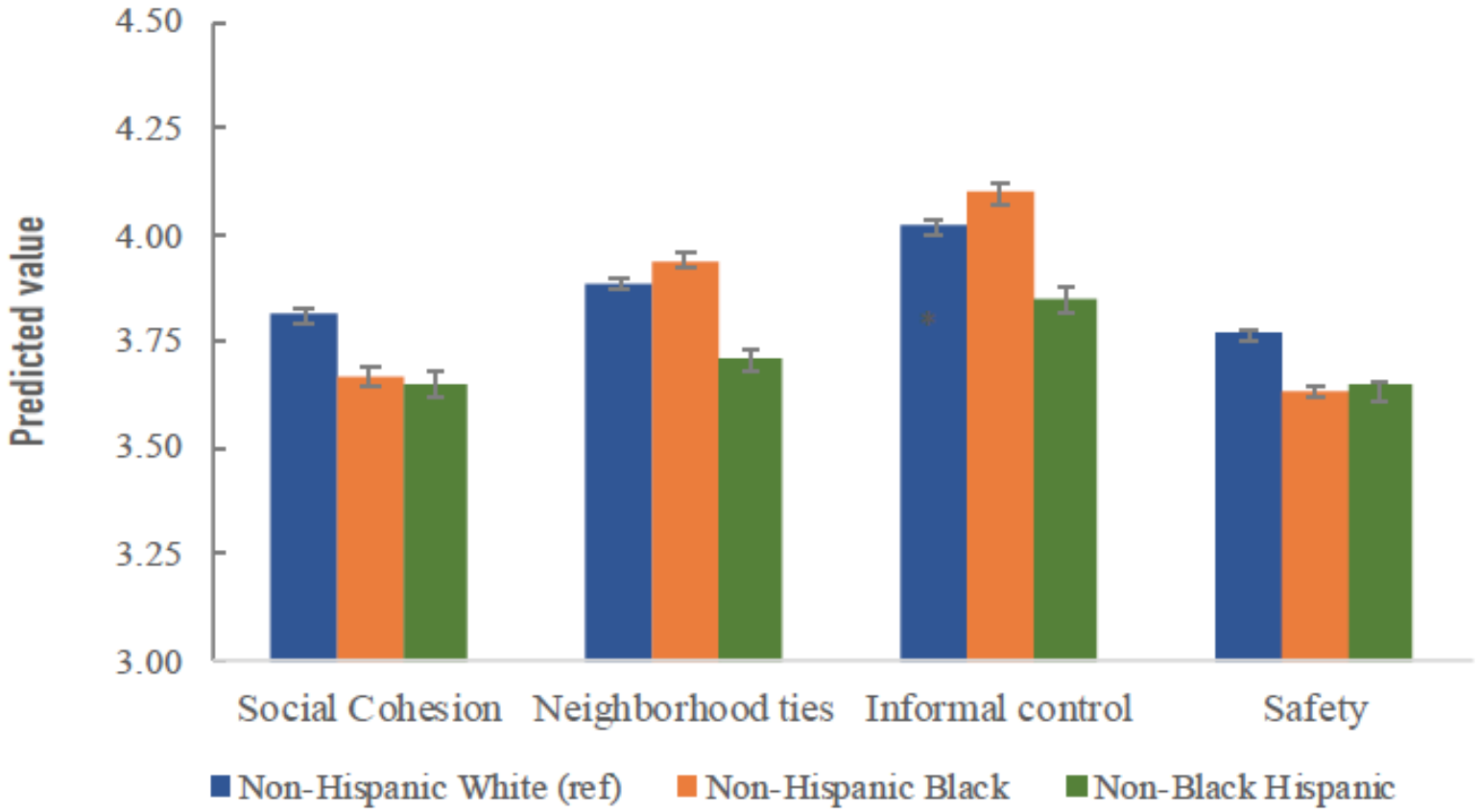
- The project aims to collect primary, multi-wave data from 450 Chicagoans aged 65 and older by:
  - conducting in-person interviews to obtain baseline measures of self-reported and objective indices of health, including BMI, physical mobility, and any changes in mental, emotional, and physical health status between each of the three waves of data collection;
  - using smartphone app over week-long periods to identify latitude, longitude, and distance traveled in order to describe respondents' physical activity spaces and to obtain real-time reports of social settings, health status, and well-being using EMA in order to identify day-to-day fluctuations in social environment and both emotional and physical health; and
  - leveraging extant information such as Census and Area Resource File data and sensor-type data on Chicago neighborhoods collected by NSF *Array of Things* project to identify neighborhood environmental and demographic determinants of both activity space and health status.



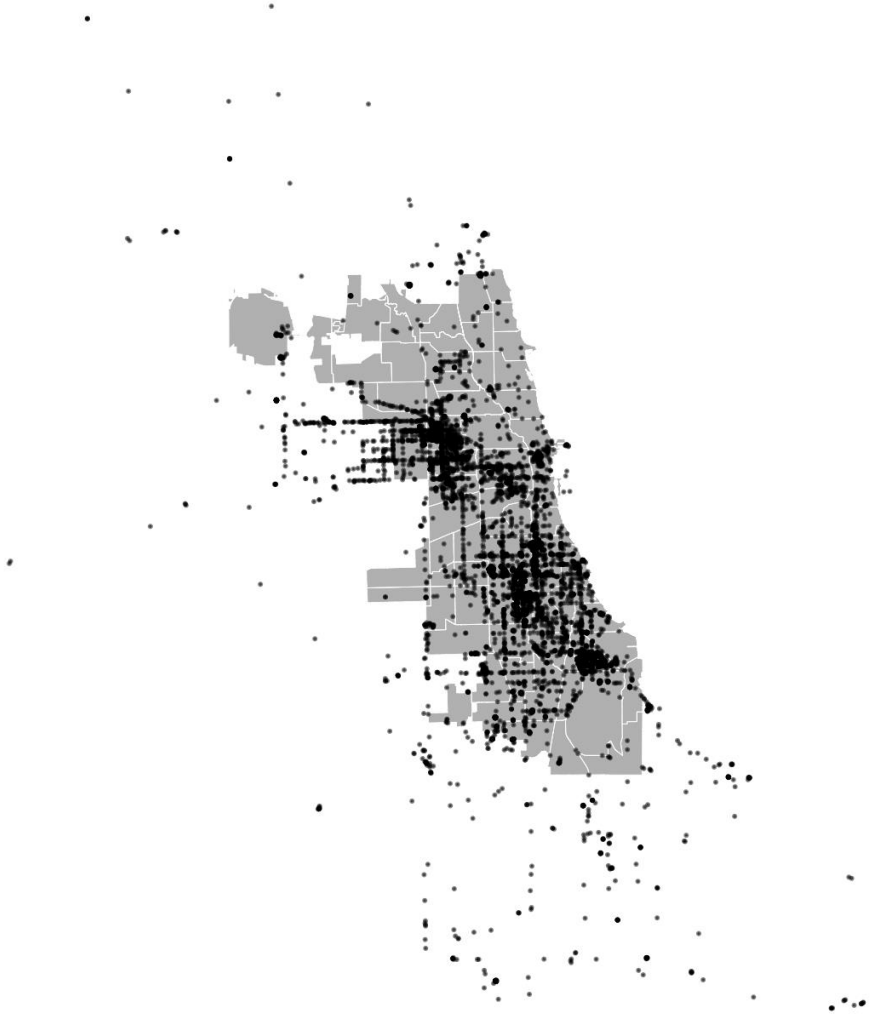
University of Virginia
Demographics Research Grou

EMA DATA: LOCAL CONTEXT, BY RACE/ETHNICITY

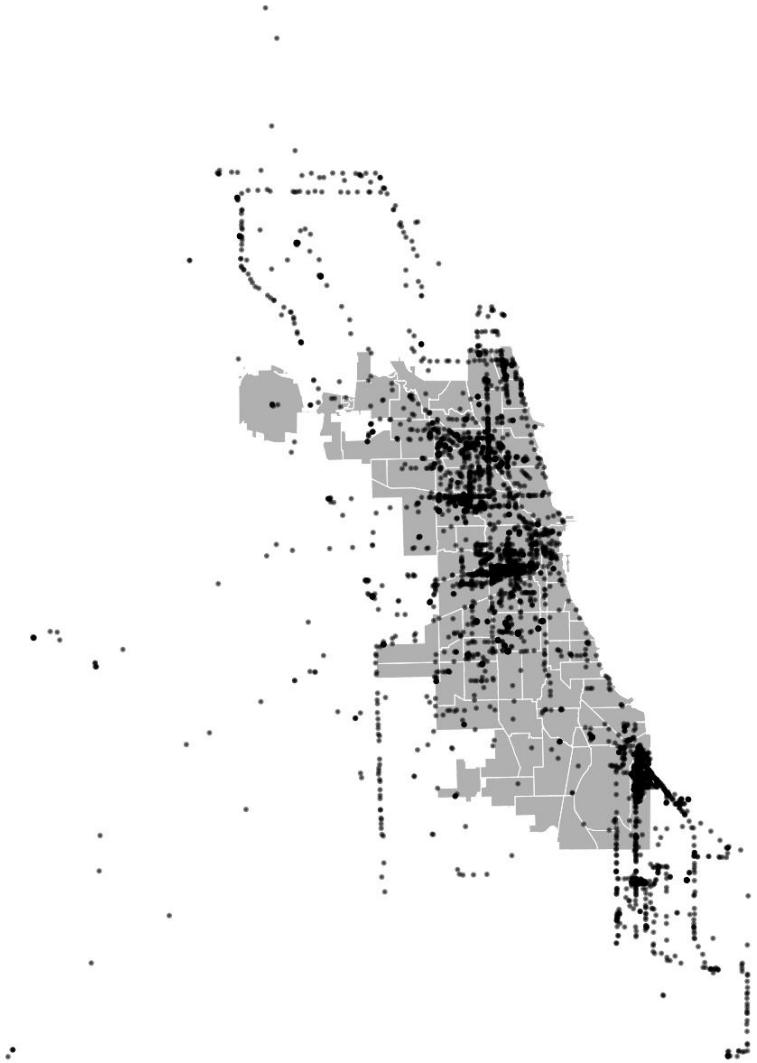
Based on 459 EMA observations in outdoor public places…



GPS Locations by Race – African American Respondents



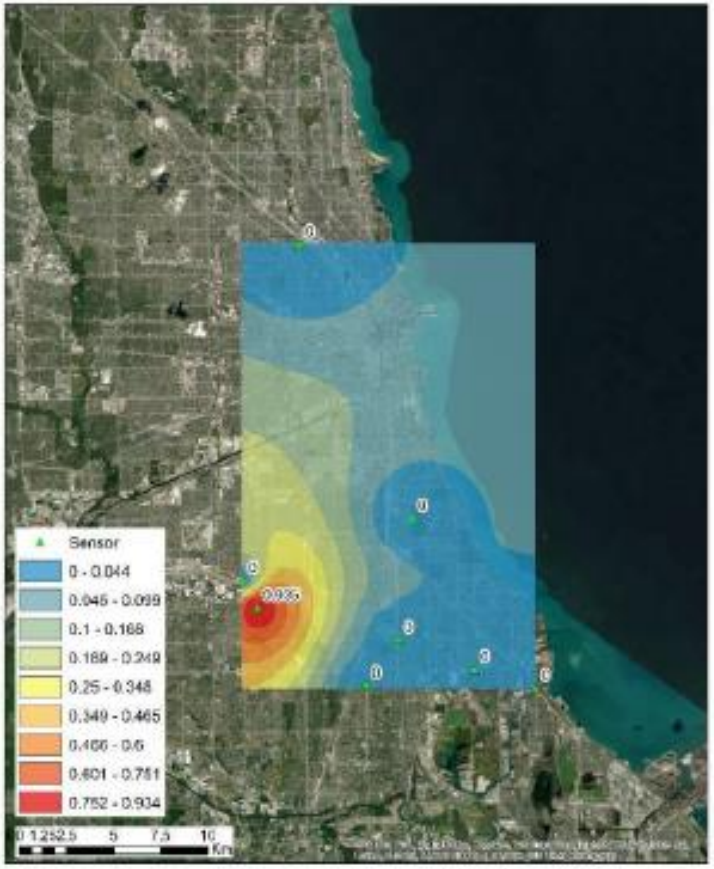
GPS Locations by Race – Latino Respondents



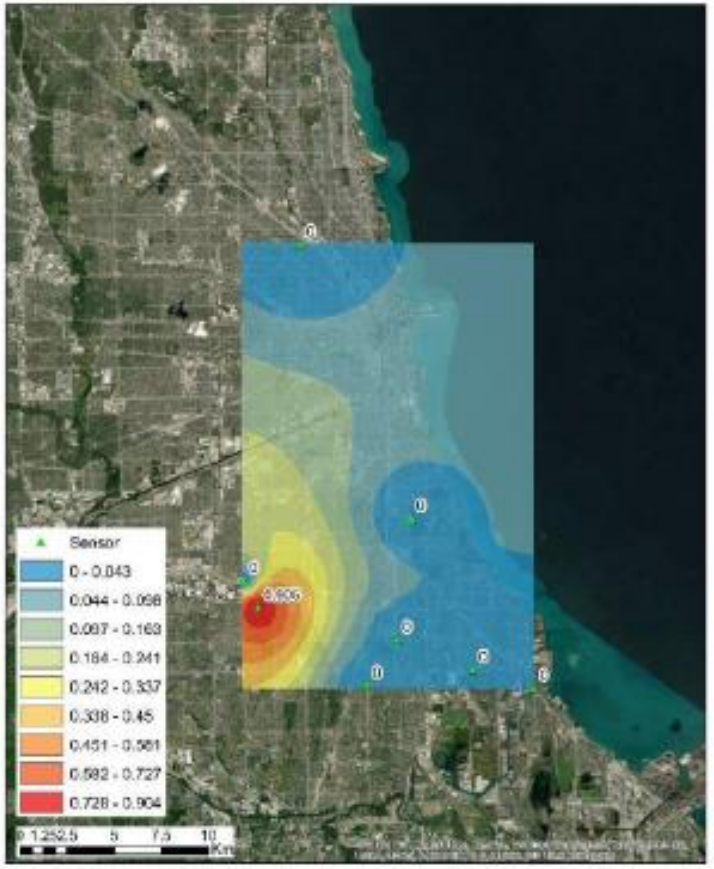
GPS Locations by Race – White Respondents

Air Quality Surfaces: Particulate Matter

Mean PM10 (µg/m3) on Jan 2019, Chicago



Mean PM2.5 (µg/m3) on Jan 2019, Chicago

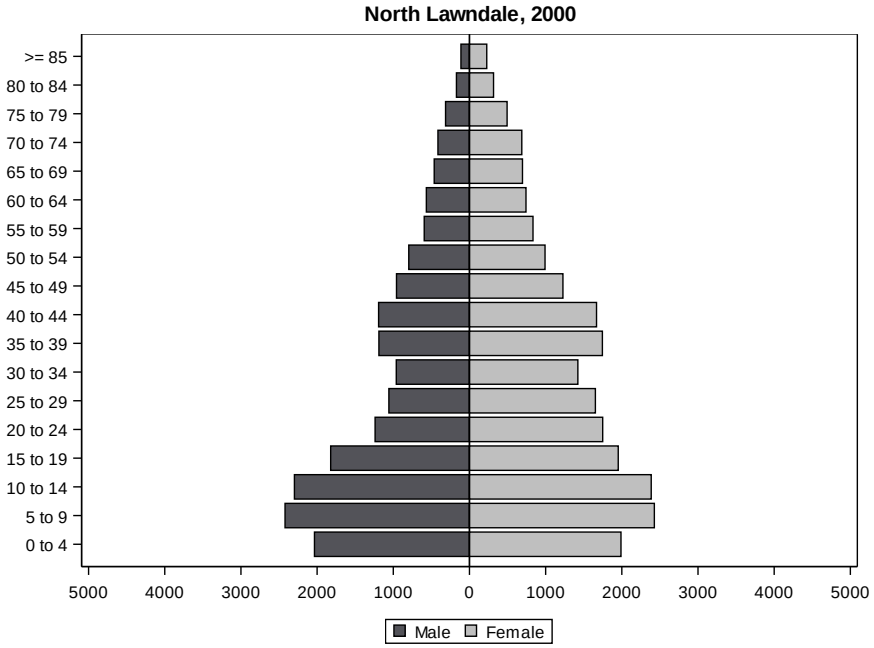


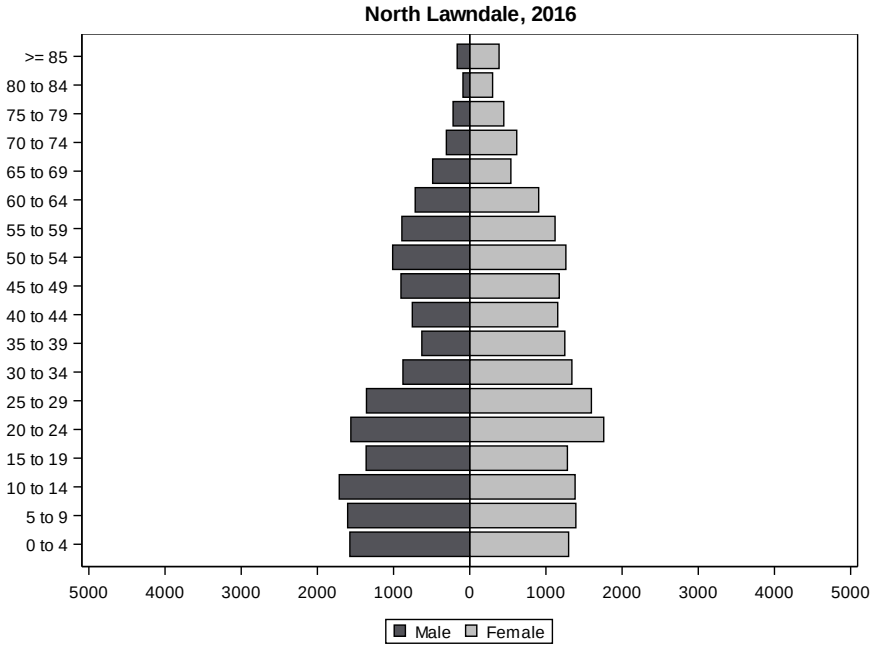
Social Capital and Community

- Social capital refers to features – networks, norms, and social trust – that facilitate coordination/cooperation for mutual benefit
- Refers to stock of "civic virtues" and networks of civic engagement, involvement, reciprocity norms, trust, volunteerism, and sharing essential to democratic communities
  - Coleman defines social capital as a structural property of relationships and describes how strong ties shape social norms, expectations, trust, informal social control
  - Illustrates importance of social capital by linking it to development of human capital

- *Social capital includes a social relationship element (e.g., concrete social network ties) and a resource or benefit component (e.g., trust) at either individual or collective level* (Cornwell and Eads, 2013)

Chicago as a case


North Lawndale, 2000
>= 85
80 to 84
75 to 79
70 to 74
65 to 69
60 to 64
55 to 59
50 to 54
45 to 49
40 to 44
35 to 39
30 to 34
25 to 29
20 to 24
15 to 19
10 to 14
5 to 9
0 to 4
5000
4000
3000
2000
1000
0
1000
2000
3000
4000
5000
Male
Female


North Lawndale, 2016
>= 85
80 to 84
75 to 79
70 to 74
65 to 69
60 to 64
55 to 59
50 to 54
45 to 49
40 to 44
35 to 39
30 to 34
25 to 29
20 to 24
15 to 19
10 to 14
5 to 9
0 to 4
5000
4000
3000
2000
1000
0
1000
2000
3000
4000
5000
Male
Female