

Class 10 - Neighborhoods - social environment



Agenda

- Lingering thoughts/questions
- Neighborhoods and health research
- Social environment characteristics
- Just Cause for Eviction hearing
- Logistics of site visits

Interpreting neighborhood differences in health

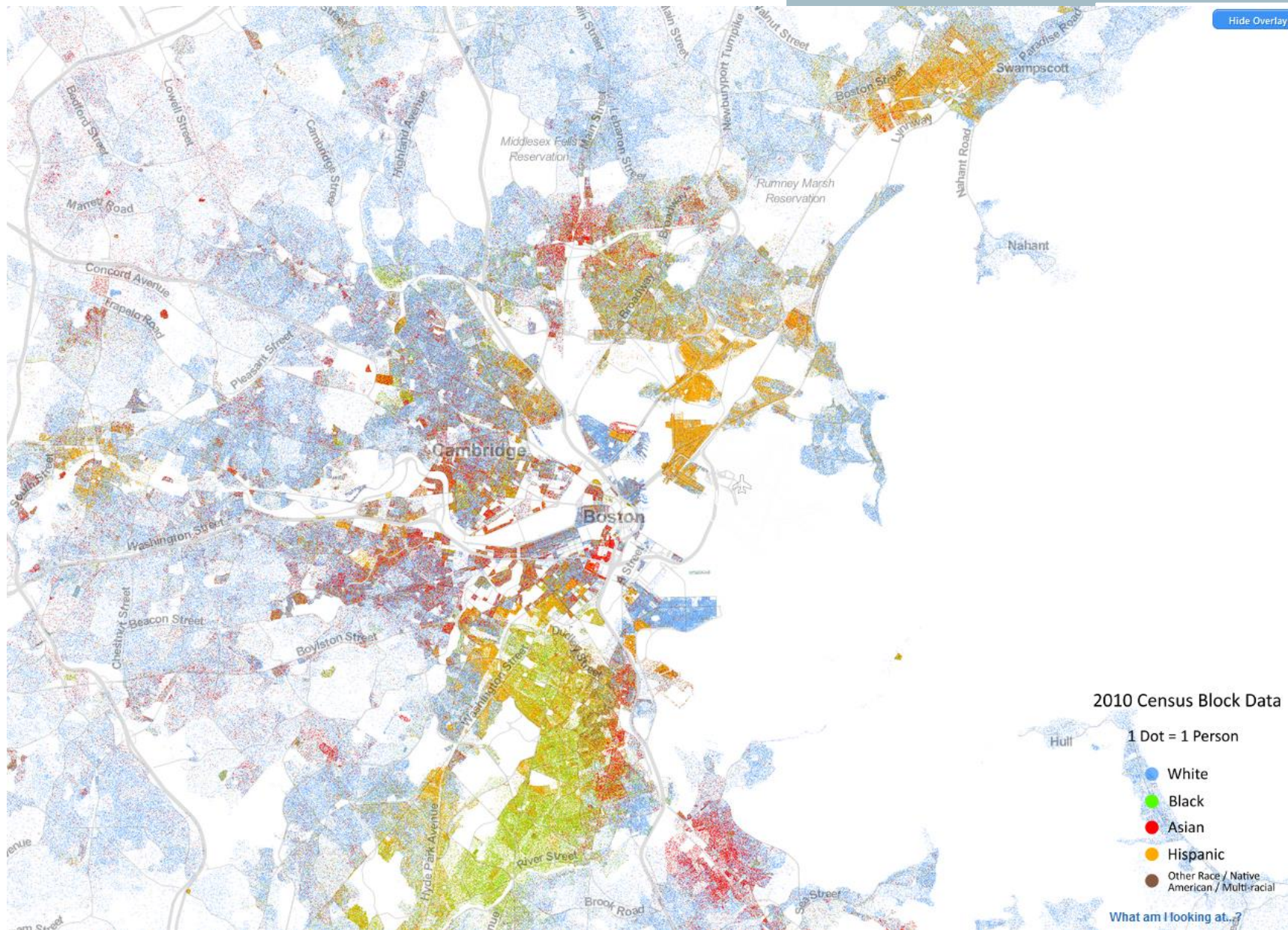
- Social environment factors predict health
- Associated with heart disease, respiratory disease, cancer, all-cause mortality, low birth weight, infant mortality, victimization, smoking, mental health
- Composition? Context? Reverse causation?

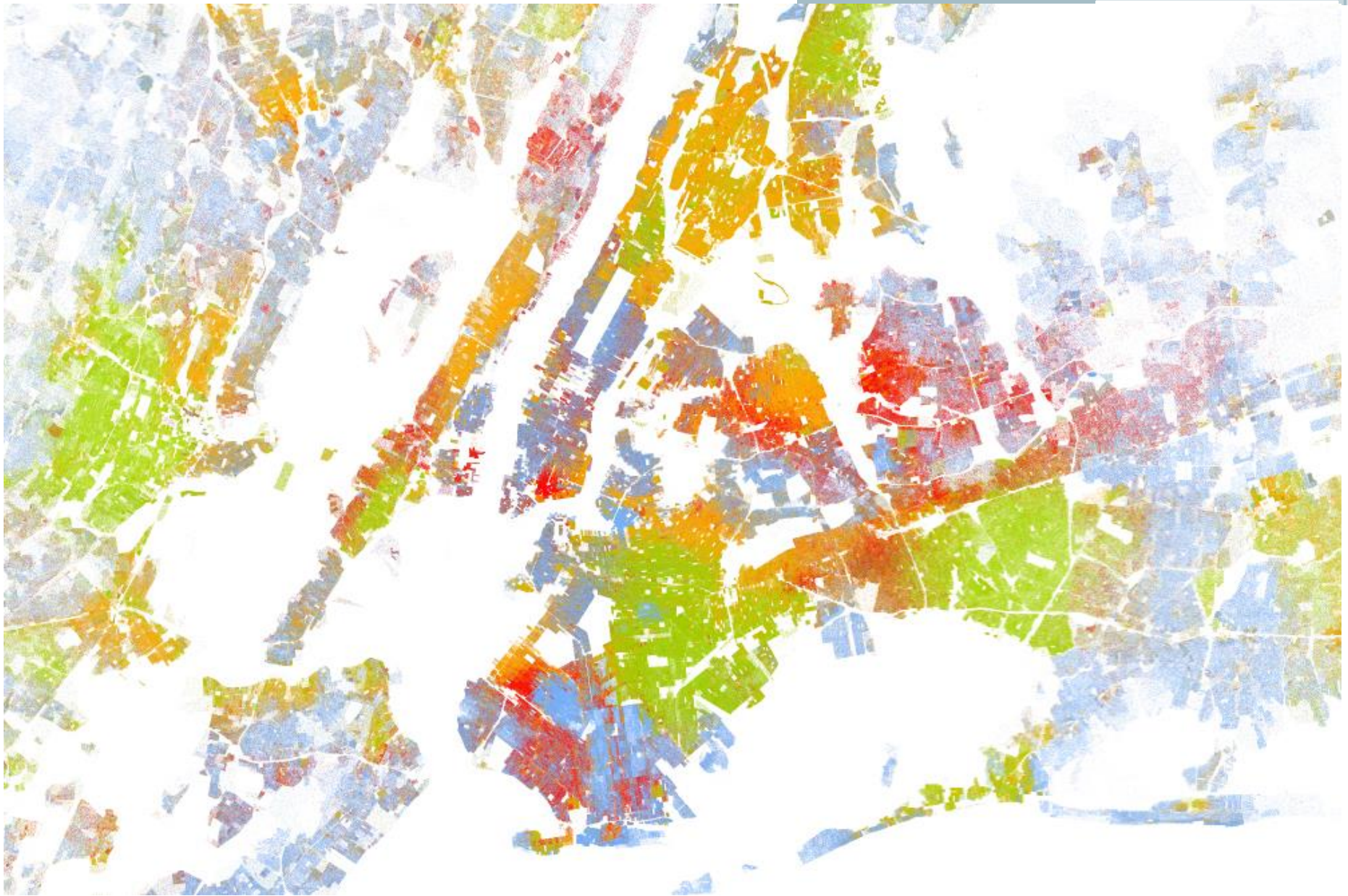
Neighborhood Effects on Health

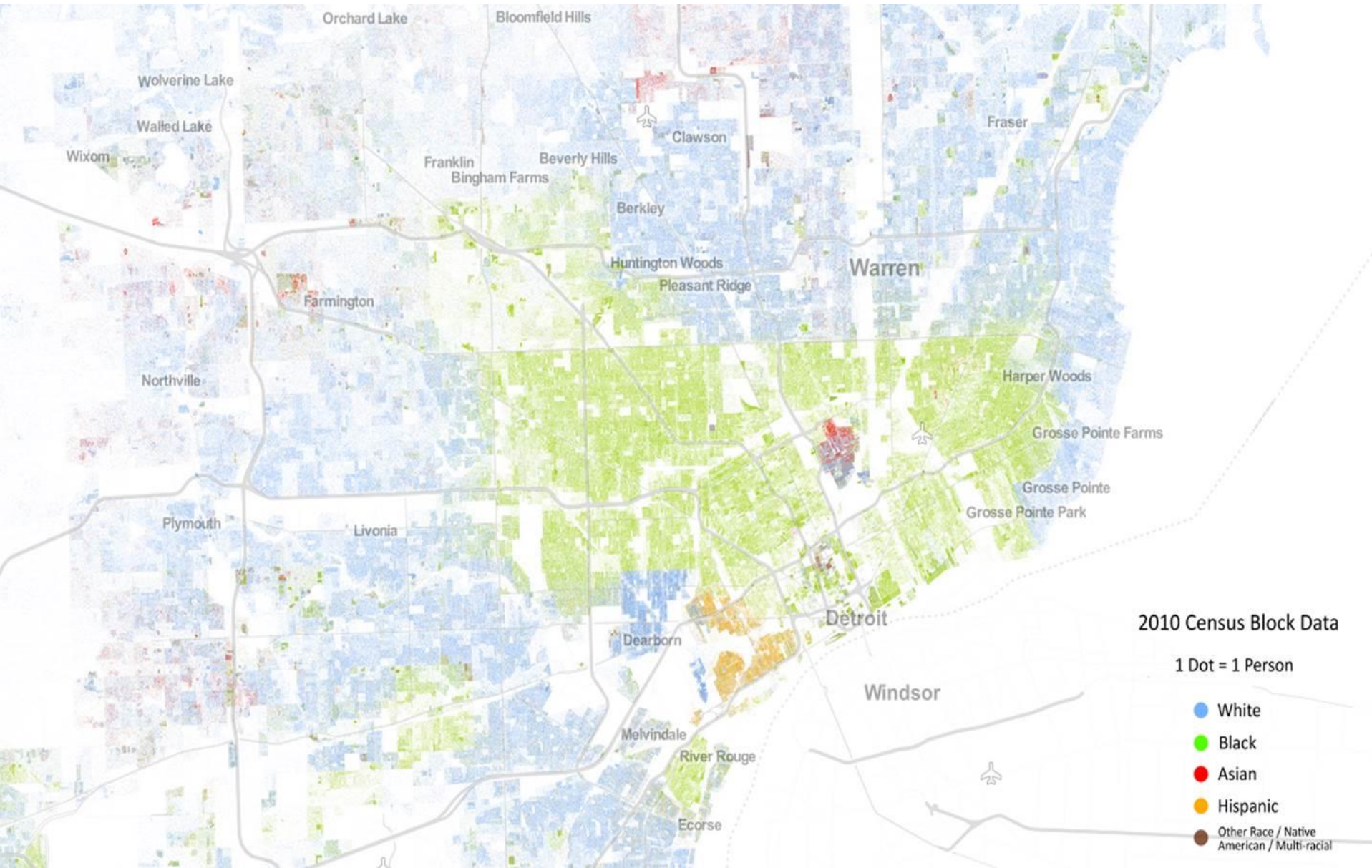
- Institutions and resources
- Environmental and physical risks
- Social risks
- Social networks

Primary social exposures

- Segregation
- Violence
- Poverty
- Social capital

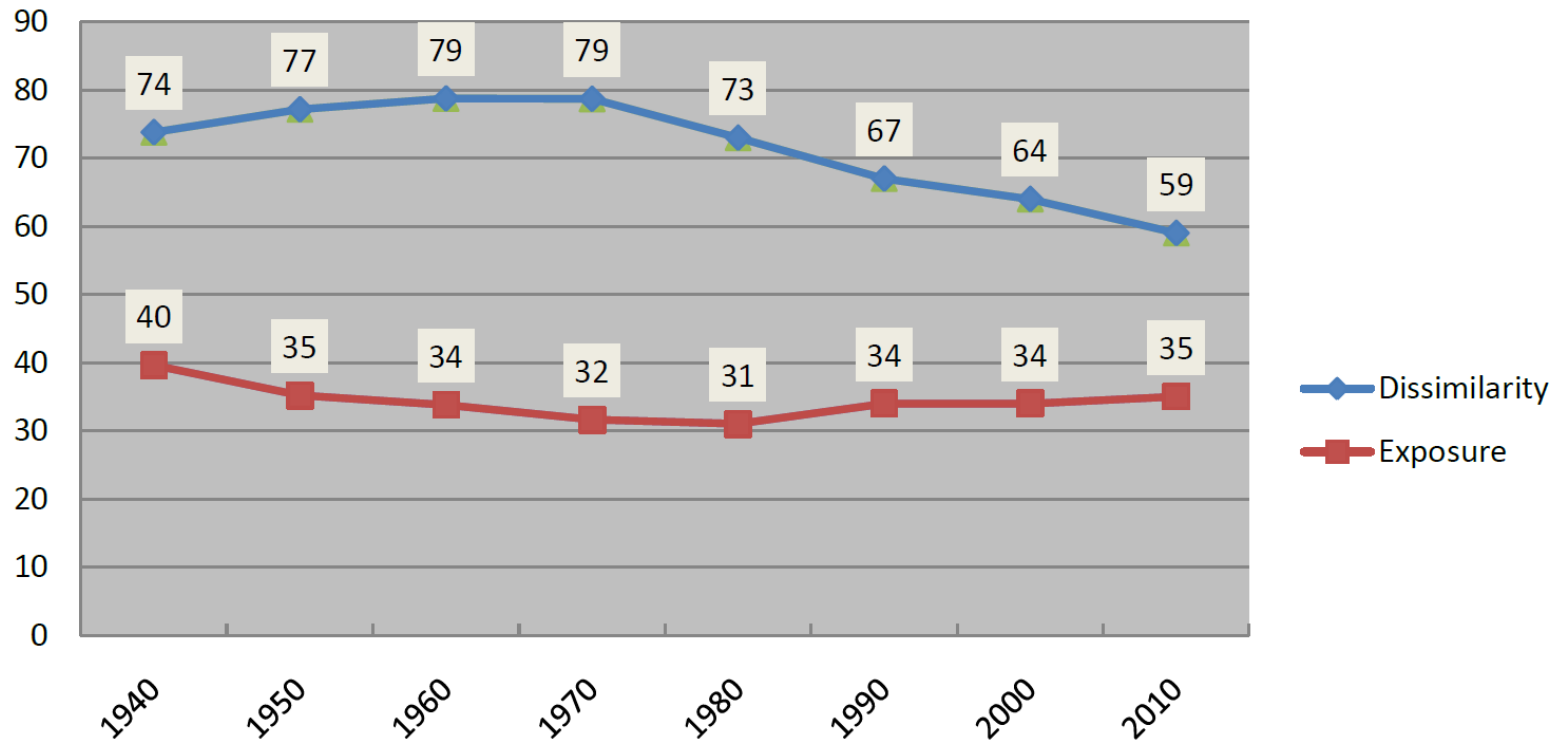






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Figure 2. Black-white segregation trends, 1940-2010

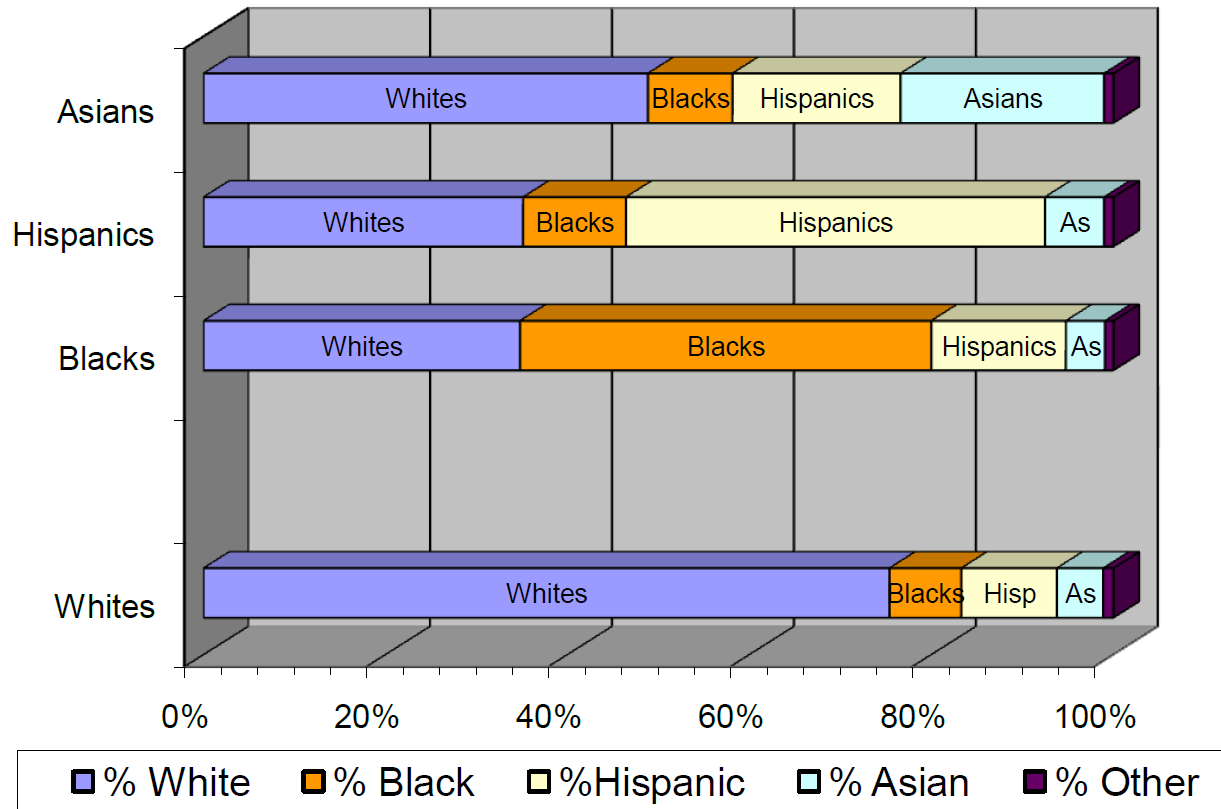


Source: American Communities Project, Brown University

Courtesy of US2010 Census Project. This data is in the public domain.

Logan, J. R., & Stults, B. J. (2011). The persistence of segregation in the metropolis: New findings from the 2010 census. *Census Brief prepared for Project US2010*.

Figure 1. Diversity Experienced in Each Group's Typical Neighborhood - National Metropolitan Average, 2010 Census

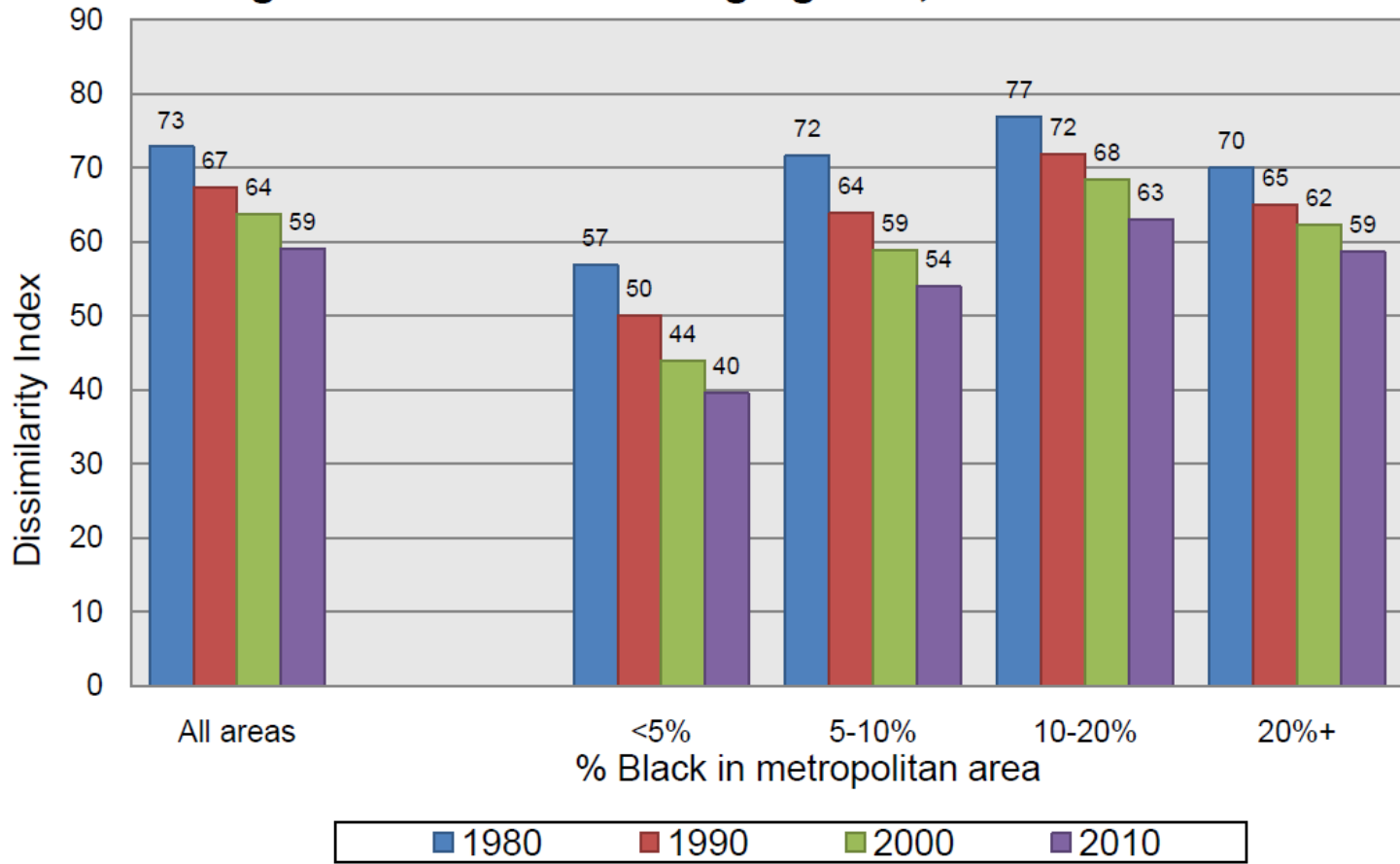


Source: American Communities Project, Brown University

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Logan, J. R., & Stults, B. J. (2011). The persistence of segregation in the metropolis: New findings from the 2010 census. *Census Brief prepared for Project US2010.*

Figure 3. Black-White Segregation, 1980 to 2010

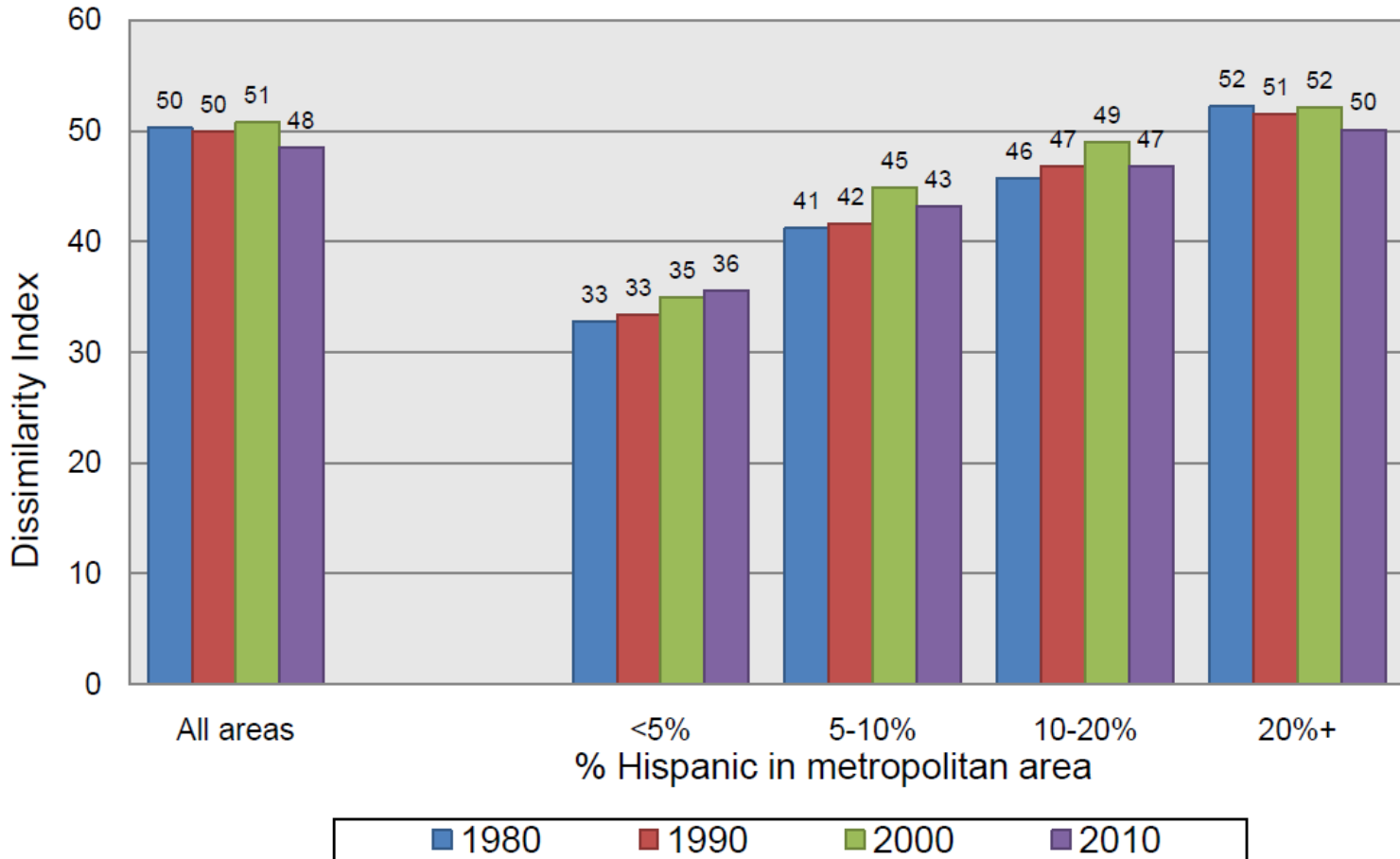


Source: American Communities Project, Brown University

Courtesy of US2010 Census Project. This data is in the public domain.

Logan, J. R., & Stults, B. J. (2011). The persistence of segregation in the metropolis: New findings from the 2010 census. *Census Brief prepared for Project US2010.*

Figure 4. Hispanic-White Segregation, 1980 to 2010

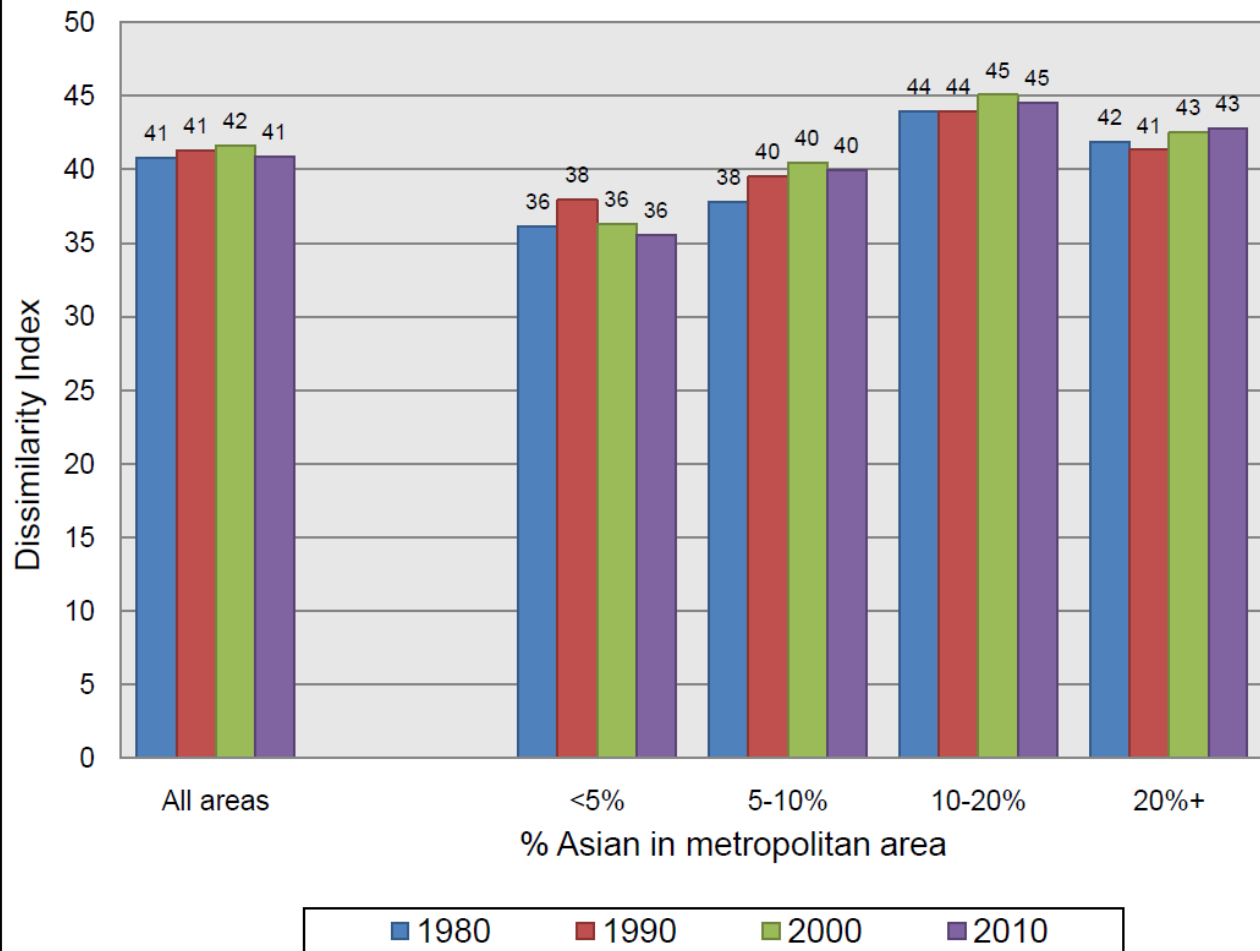


Source: American Communities Project, Brown University

Courtesy of US2010 Census Project. This data is in the public domain.

Logan, J. R., & Stults, B. J. (2011). The persistence of segregation in the metropolis: New findings from the 2010 census. *Census Brief prepared for Project US2010.*

Figure 5. Asian-White Segregation, 1980 to 2010



Source: American Communities Project, Brown University

Courtesy of US2010 Census Project. This data is in the public domain.

Logan, J. R., & Stults, B. J. (2011). The persistence of segregation in the metropolis: New findings from the 2010 census. *Census Brief prepared for Project US2010.*

Causal mechanisms

- Institutions and resources
- Environmental and physical risks
- Social risks
- Social networks

Institutions and resources

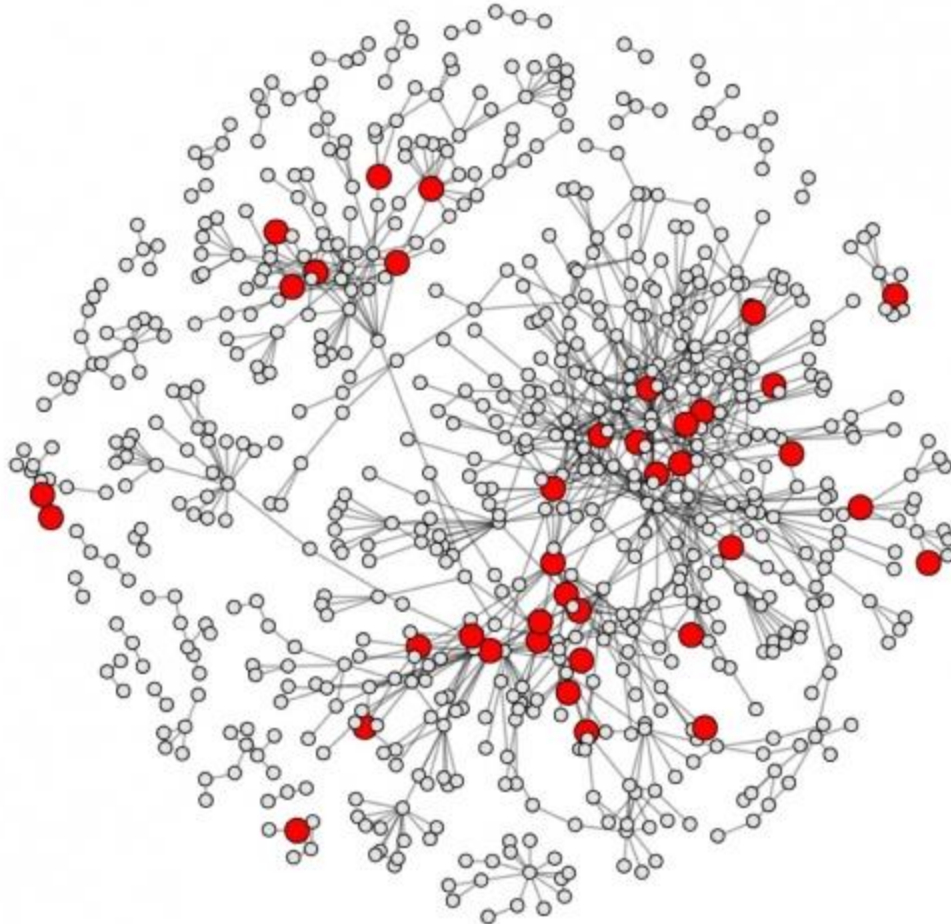
High neighborhood socioeconomic status results in shorter system response intervals and transport intervals for patients with chest pain.

Patients with chest pain originating from the highest income neighborhoods have system response intervals and transport intervals that are 5% and 12% shorter, respectively, than those experienced by patients from other neighborhoods.

The reasons for these differences are unclear but might include a number of system factors, including the distribution of ambulances in the city, neighborhood structure (including road design and traffic patterns), and proximity of high socioeconomic status neighborhoods to hospitals.

Figures 2, 3, and Table 1 from Friedman, Michael S., Kenneth E. Powell, Lori Hutwagner, LeRoy M. Graham, and W. Gerald Teague. "[Impact of Changes in Transportation and Commuting Behaviors During the 1996 Summer Olympic Games in Atlanta on Air Quality and Childhood Asthma.](#)" *Jama* 285, no. 7 (2001): 897-905 removed due to copyright restrictions.

Networks



Co-Offending network of high-risk individuals in a Boston community, 2008. Each of the nodes represents a unique individual (N = 763). Each of the ties represents an observation of the individuals engaging in criminal behavior. Red nodes represent the victims of fatal or non-fatal gunshot injuries, and these are clustered within the network.

- Gun violence is severely concentrated within social networks.
- Boston, MA, Papachristos et al. (2012) found that 85% of all fatal and non-fatal gunshot injuries occurred in a social network of N = 763 individuals, that is, in **less than 6% of the community's** population (see figure on left).
- Likewise, in a study of one high-crime Chicago community, Papachristos and Wildeman (2014) found that 41% of all gun homicides occurred in a single network containing **less than 4% of the community's population.**

¥ 'H\Y'BYk 'Mcf_ '5WJXYa mcZA YX]WbY'' 5'' f][\hg'fYgYfj YX''H\Jg' WtbhYbh'jg'YI Wl XYX'Zfca 'ci f'7fYUhj' Y'7ca a cbg''WbgY'' : cf' a cfY']bZcfa Uh]cbz'gYY '\htdg. ##cVk "a]h'YXi #\Y'd#ZJe! ZJ]f'i gY#'

Moving to Opportunity

- Experimental mobility program in five cities
- Tenant-based rental assistance with housing counseling
- Randomly assigned participants to one of three study groups
 - control
 - traditional Section 8 housing voucher
 - low-poverty neighborhood

Moving to Opportunity and Health

“moving from a high-poverty to lower-poverty neighborhood leads to long-term (10- to 15-year) improvements in adult physical and mental health and subjective well-being, despite not affecting economic self-sufficiency.”

- lower prevalence of diabetes, lower prevalence of extreme obesity (BMI >35), depression and psychological distress
- improved mental health for girls (mood disorders, panic attacks, serious emotional/behavioral difficulties)

Courtesy of the New York Academy of Medicine. Used with permission.

Ludwig J, Duncan GJ, Gennetian LA, Katz LF, Kessler RC, Kling JR, Sanbonmatsu L. Neighborhood effects on the long-term well-being of low-income adults. *Science*. 2012 Sep 21;337(6101):1505-10.

Urban penalty or urban sprawl model

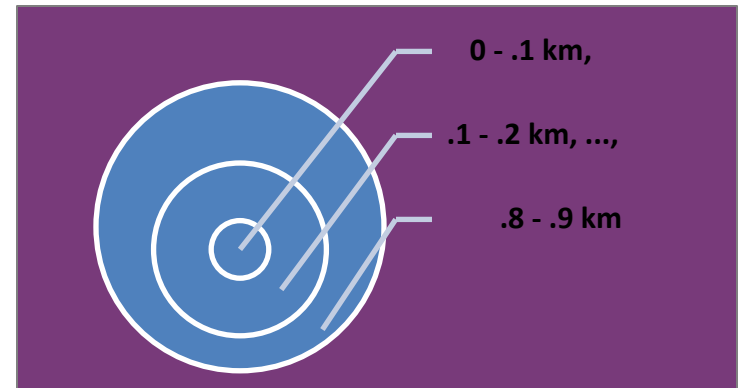
- Thoughts?

Housing instability/displacement

- What does Desmond find?
- Why?

Explore the effects of residential context on health

- Assessing the effect of localized foreclosure activity on health
 - Dated and geocoded foreclosure deeds across MA, 1987-2008 – Federal Reserve Bank of Boston
 - Dated and geocoded physical examination data on a cohort of residents – Framingham Heart Study



- Outcomes included reported alcohol consumption, measured BMI and blood pressure

Proximate foreclosure and blood pressure

Table 3 from Arcaya, Mariana, M. Maria Glymour, Prabal Chakrabarti, Nicholas A. Christakis, Ichiro Kawachi, and S. V. Subramanian. "[Effects of proximate foreclosed properties on individuals' systolic blood pressure in Massachusetts, 1987-2008.](#)" *Circulation* (2014): CIRCULATIONAHA-113 removed due to copyright restrictions.

Foreclosure

- What did McLaughlin find?
- Why?

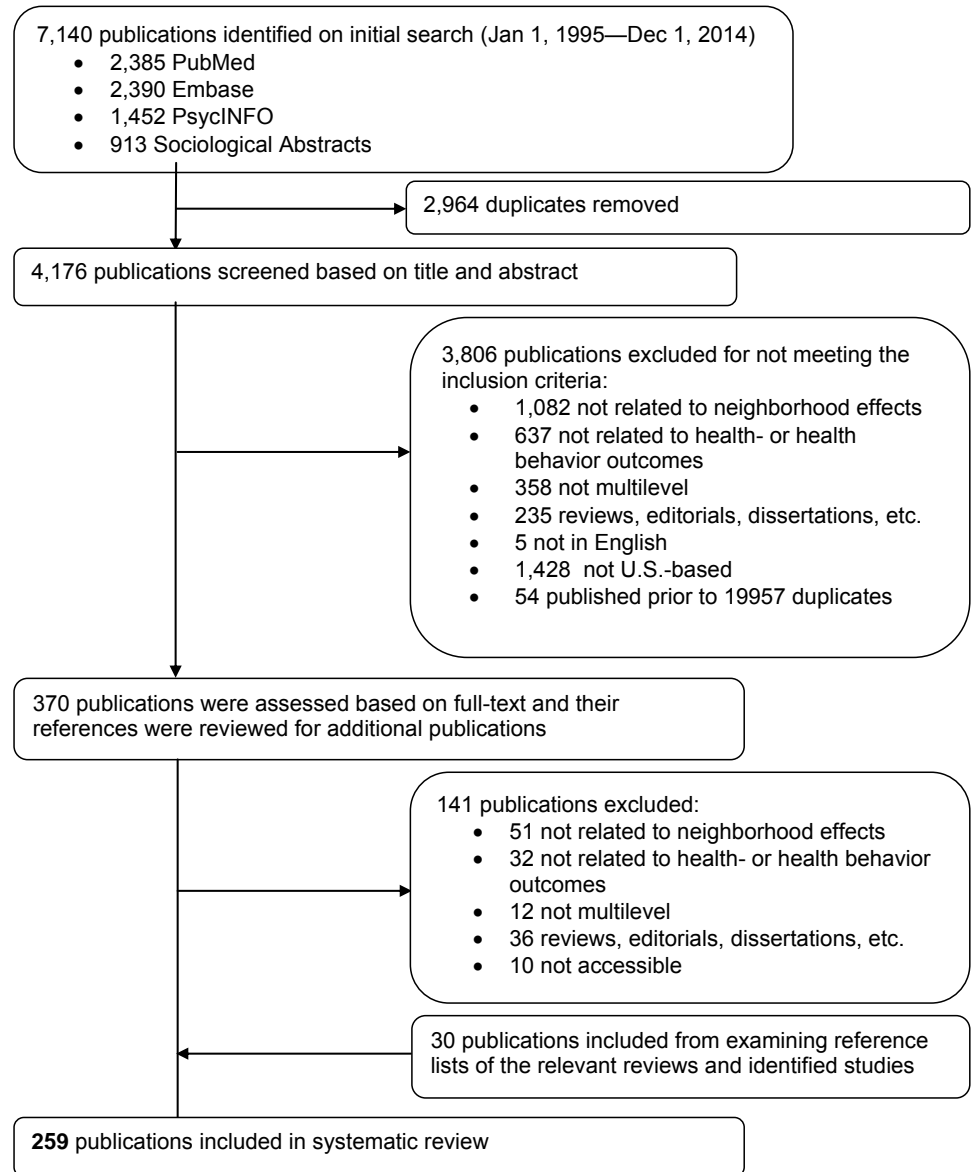
Other measures of social fabric

- Social capital - neighborhood
- Social cohesion – neighborhood
- Collective efficacy - neighborhood
- Social support – individual
- Civic engagement – individual

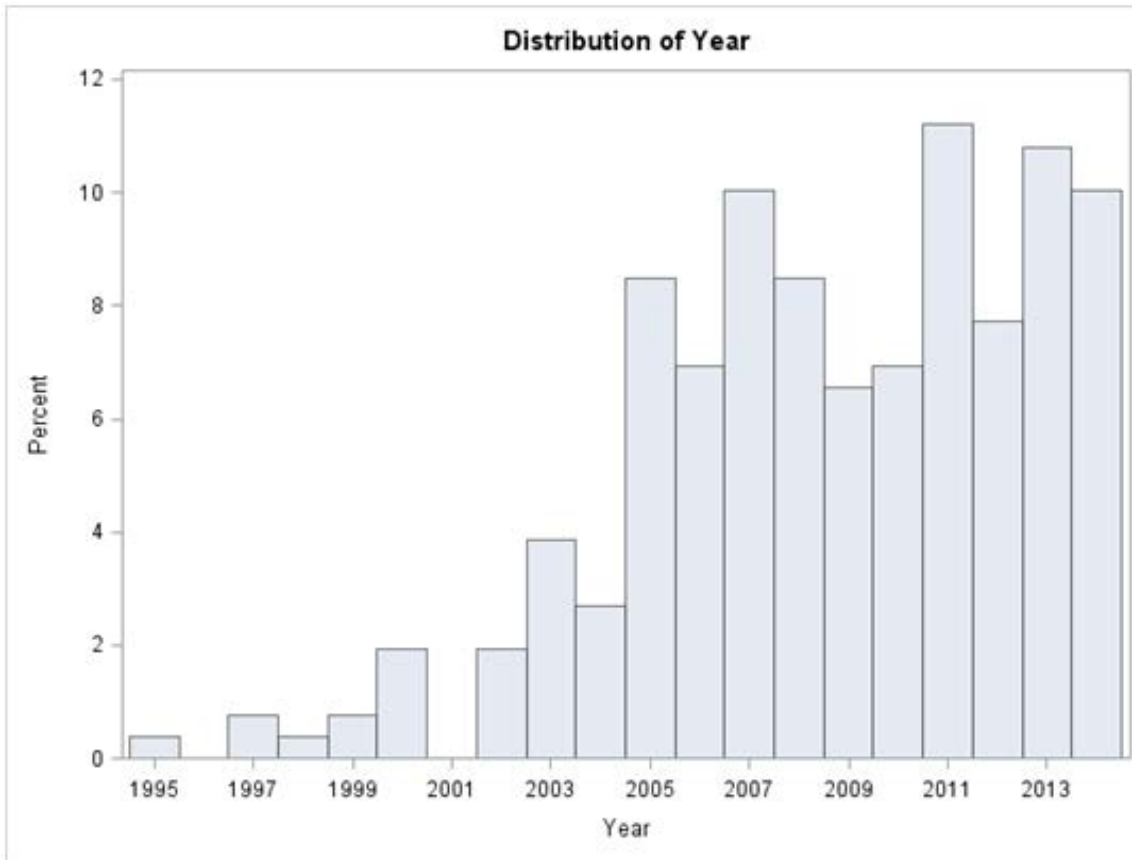
HIA example - Small Business Technical Assistance program funding

- Small businesses enhance economic growth, more likely to reinvest profits locally, create informal social networks, attract foot-traffic ->
- Social capital: social control, collective efficacy, diffusion of social norms ->
- Improves self-rated health, associated with lower all-cause mortality, infant mortality, violent injuries, mental health problems

Figure 1. Flowchart for Study Selection



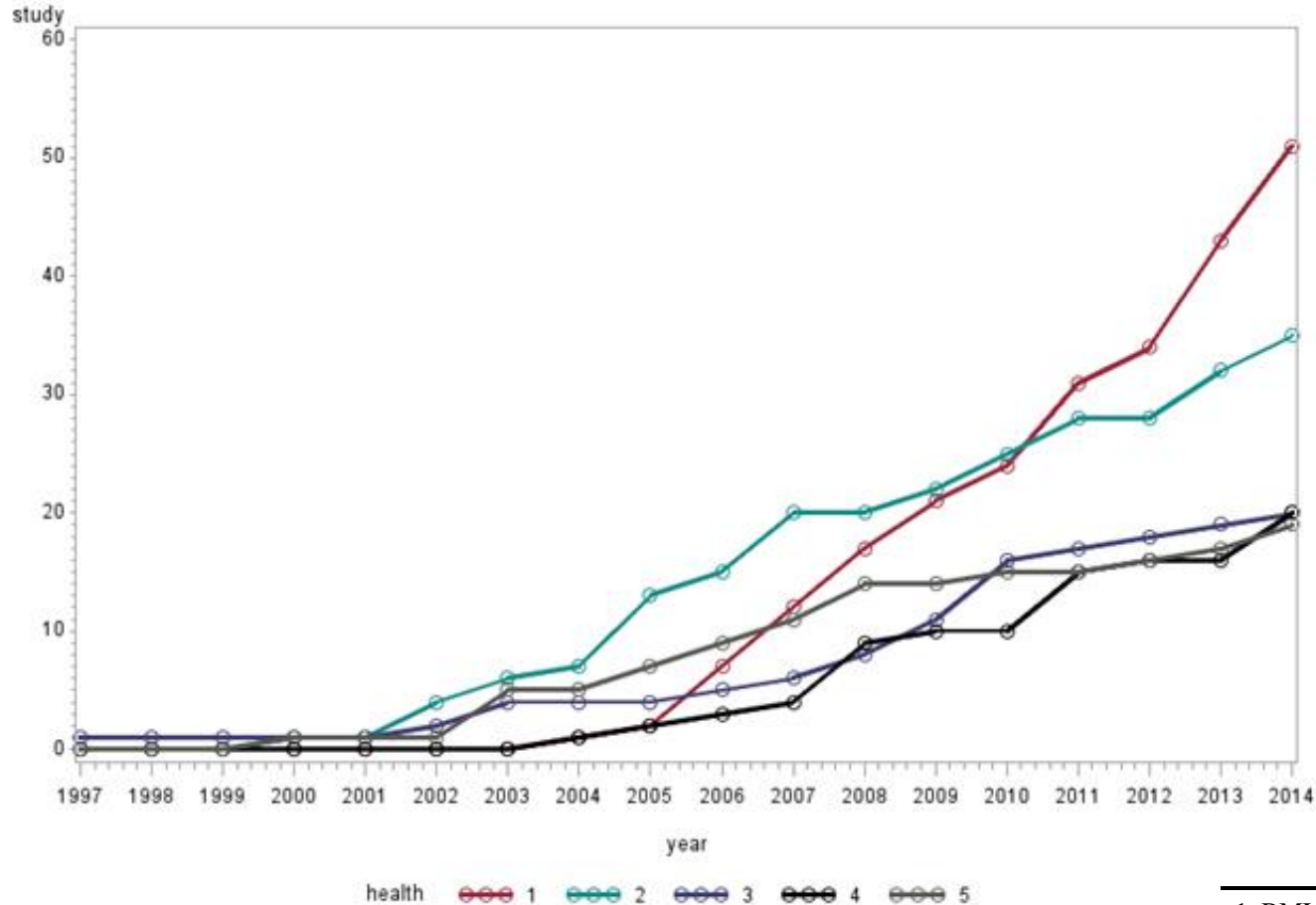
Arcaya, M. C., Tucker-Seeley, R. D., Kim, R., Schnake-Mahl, A., So, M., & Subramanian, S. V. (2016). Research on neighborhood effects on health in the United States: A systematic review of study characteristics. *Social Science & Medicine*, 168, 16-29.



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Arcaya, M. C., Tucker-Seeley, R. D., Kim, R., Schnake-Mahl, A., So, M., & Subramanian, S. V. (2016). Research on neighborhood effects on health in the United States: A systematic review of study characteristics. *Social Science & Medicine*, 168, 16-29.

Cumulative trend of neighborhood effects publications for the top five most common health outcomes over time (1997-2014)



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1. BMI/obesity
 2. Mental health
 3. Pregnancy and birth outcomes
 4. Cancer screening, diagnosis, and survival
 5. Self-rated health
-

Arcaya, M. C., Tucker-Seeley, R. D., Kim, R., Schnake-Mahl, A., So, M., & Subramanian, S. V. (2016). Research on neighborhood effects on health in the United States: A systematic review of study characteristics. *Social Science & Medicine*, 168, 16-29.

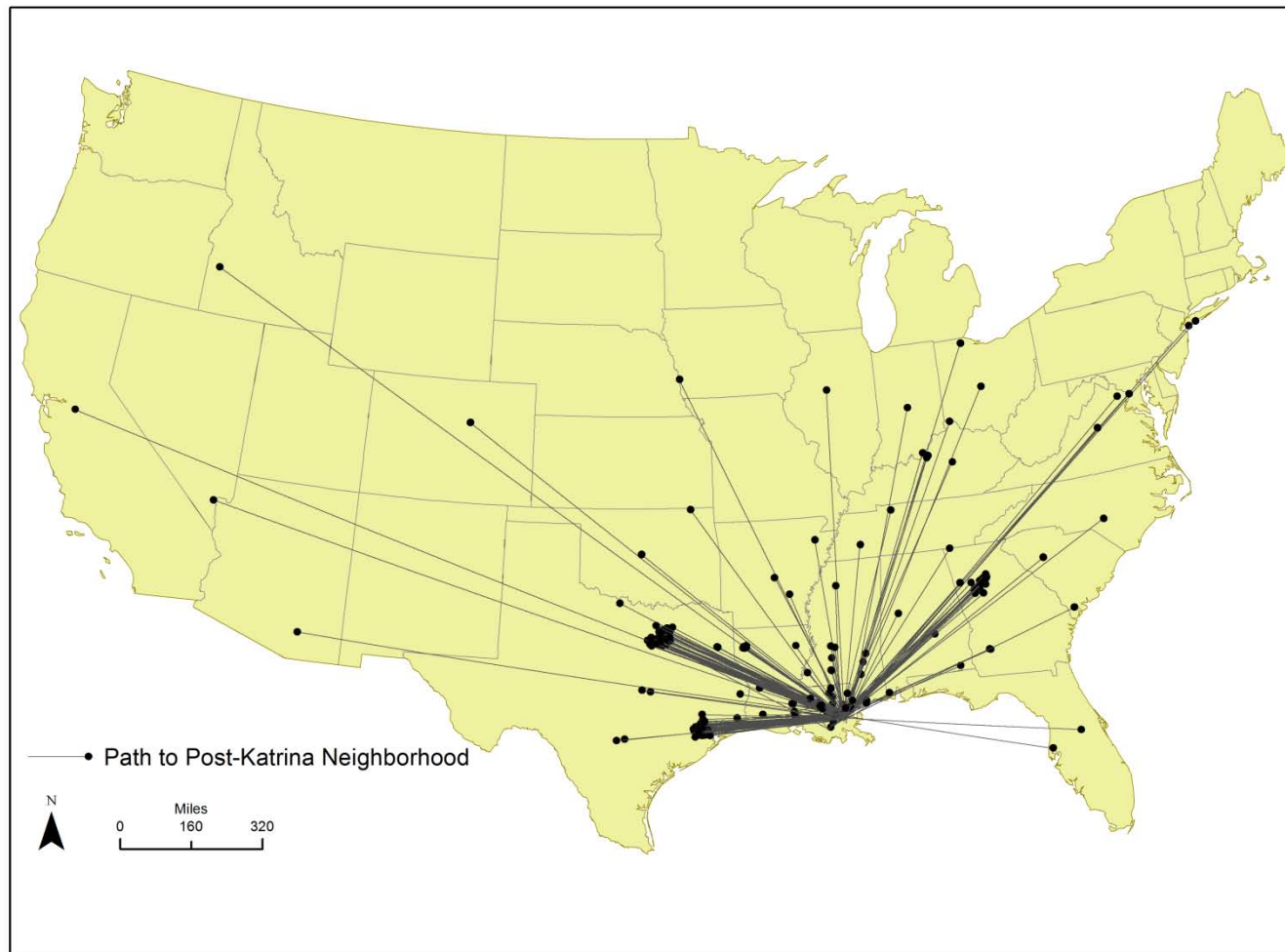
Figure 5 from Arcaya, M. C., Tucker-Seeley, R. D., Kim, R., Schnake-Mahl, A., So, M., & Subramanian, S. V. (2016). "Research on neighborhood effects on health in the United States: A systematic review of study characteristics." *Social Science & Medicine*, 168, 16-29 removed due to copyright restrictions.

Author	Review / Meta	Exposure definition	Outcome definition	Country	Participants	# of studies	Conclusion
Ding et al, 2011 ³	Review	Environmental attributes	Physical activity	Global	Youth (3-18 years)	103	- The strongest correlates for children were walkability, traffic speed/volume, access/proximity to recreation facilities, land-use mix, and residential density. The most supported correlates for adolescents were land-use mix and residential density.
Foster & Giles-Corti, 2008 ⁴	Review	Real and perceived neighborhood safety	Physical activity	Global	Adults	41	- Results are inconsistent because much of the research relies on inadequate conceptualization and operationalization of safety.
Koohsari, et al 2015 ⁵	Review	Neighborhood environmental attributes: walkability-related, urban/regional, social/crime, aesthetics, destination-related, route-related	Sedentary behaviors	Global	Adults	17	- There is modest, but mixed evidence: 28% of the analyses found significant associations between environmental attributes with sedentary behaviors. The most consistent association was for lower levels of sedentary behavior among residents of urban compared to regional areas.
Bancroft et al 2015 ⁶	Review	Parks or trails	Objectively measured physical activity	USA	No restriction	20	- There is inconsistency even among studies with objectively measured physical activity: 5 out of 20 articles reported a significant positive association between parks and physical activity; 9 found no association; and 6 had mixed findings.
Owen et al 2004 ⁷	Review	Objectively assessed and perceived environmental attributes	Walking	Global	No restriction	18	- Aesthetic attributes, convenience of facilities for walking (sidewalks, trails); accessibility of destinations (stores, park, beach); and perceptions about traffic and busy roads were found to be associated with walking for particular purposes.
Feng et al, 2010 ⁸	Review	Built environment; land use/transportation environment; food environment	Obesity	Global	No restriction	63	- Of 80 relations, 38 relations did not achieve statistical significance. Of the 15 buffer papers that have evaluated 40 relations, 24 relations did not achieve statistical significance.
Corral et al, 2015 ⁹	Review	Residential segregation	Overweight/obesity	USA	African American adults	11	- Only 4 of the 11 studies used valid measures of both; those 4 studies suggested that segregation contributes to overweight and obesity among African American adults.
Black & Macinko 2006 ¹⁰	Review	Neighborhood level factors	Obesity	Global	No restriction	37	- In 15 studies, neighborhood-level measures of economic resources were associated with obesity. features that discourage physical activity were associated with increased BMI. Inconsistent results for neighborhood income inequality, racial composition, and availability of healthy food.

de Vet et al 2011 ²⁴	Umbrella review	Environmental factors	Physical activity and dietary behaviors	Global	Children and adolescents	18 reviews (671 studies)	- Consistent evidence supporting the associations between school and neighborhood characteristics and physical activity, but not for dietary behaviors.
Safron et al 2011 ²⁵	Umbrella review	Social and physical micro-environmental (neighborhood, school) characteristics	Diet, physical activity , and body weight	Global	Children and adolescents	8 reviews (132 studies)	- Stronger support for several neighborhood and school characteristics (e.g., community opportunities to exercise, lower costs of physical activity facilities, physical activity built environment, low crime level) and adolescent physical activity.
Kramer and Hogue, 2009 ¹¹	Review	Black-white residential segregation	Health outcomes	USA	African Americans	39	- The health effects of segregation are relatively consistent: isolation segregation is associated with poor pregnancy outcomes and increased mortality, but clustered segregation (black neighborhoods) seemed to have health-protective effects.
Pickett and Pearl, 2001 ¹²	Review	Local area social characteristics	Health outcomes	Developed countries	No restriction	25 studies	- Consistent evidence modest neighborhood effects on health.
Casagrande et al. 2009 ¹³	Review	Built environment	Health behaviors	USA	African American adults	17	- Inconsistent relationships found between physical activity and light traffic, presence of sidewalks, and safety from crime. - Perceived barriers to physical activity were associated with obesity.
Yen et al 2009 ¹⁴	Review	Objective and perceived neighborhood environment	Health outcomes	Global	Older adults	33	- neighborhood level socioeconomic status was the strongest and most consistent predictor for elderly's mortality and morbidity, self-reported health or quality of life, mental health, cognition, disability, and physical activity/body mass index.
Kim, 2008 ¹⁵	Review	Neighborhood characteristics	Depression	Global	Adults	28	- In general, studies support for harmful effects of social disorder and, to a lesser extent, protective effects for neighborhood socioeconomic status.
Mair et al, 2008 ¹⁶	Review	Neighborhood characteristics	Depression/depressive symptoms	Global	No restriction	45	- 37 studies reported associations of at least one neighborhood characteristic with depression/depressive symptoms. - depressive symptoms/depression with structural features (socioeconomic and racial composition, stability and built environment) were less consistent, smaller in number of studies, than with social processes (disorder, social interactions, violence).

Truong & Ma 2006 ¹⁷	Review	Neighborhood characteristics	Mental health	Developed countries	Adults	29	- 27 studies found statistically significant associations between mental health and at least one measure of neighborhood characteristics (sociodemographic characteristics, physical environment). Though the effect estimates attenuated after adjusting for individual-level characteristics, they still remained significant.
Christian et al, 2015 ¹⁸	Review	Neighborhood built environment, green spaces, and the home outdoor area	Child health outcomes	Global	Children	32	- The presence of child relevant neighborhood destinations and services and parents' perceptions of neighborhood safety were positively associated with general health and social-emotional development during early developmental periods.
Sellstrom & Bremberg 2006 ¹⁹	Review	Neighborhood context	Child health outcomes	High-income countries	Children and adolescent	13 ML studies	- Neighborhood socioeconomic status and social climate were shown to have small to moderate effects on birth weight, injuries, behavioral problems, and child maltreatment. - On average, 10% of variation in health outcomes was explained by neighborhood determinants, after controlling for important individual and family variables.
Vos et al 2014 ²⁰	Review and meta-analysis	Neighborhood deprivation	Birth outcomes	Global	Birth outcomes	24 in review; 7 in meta-analysis	- Living in a deprived neighborhood was consistently associated with increased odds for preterm delivery (OR: 1.23, 95% CI: 1.18-1.28), small-for-gestational age (OR: 1.31, 95% CI: 1.28-1.34), and stillbirth (OR: 1.33, 95% CI: 1.21-1.45).
Meijer et al, 2012 ²¹	Review and meta-analysis	Area-level socioeconomic status	All-cause mortality	Global	No restriction	40 in review; 18 in meta-analysis	- No clear evidence to support the associations for area-level income inequality or social capital and all-cause mortality. - There was a significantly higher risk of mortality for individuals living in neighborhoods with low socioeconomic status.
Jackson et al, 2014 ²²	Review	Neighborhood environment	Alcohol use	Global	Adolescents	23	- The majority of studies found no associations with residential mobility, neighborhood disorder or crime, employment or job availability, neighborhood attitudes to drinking, social capital and collective efficacy. - There were mixed results in studies examining neighborhood-level socio-economic disadvantage and alcohol use.
Beyer et al, 2015 ²³	Review	Neighborhood environment	Intimate partner violence	Global	Adults	36	- 30 studies reported a positive association between one or more neighborhood characteristics and intimate partner violence. This was true for majority of the 17 studies that adequately adjusted for individual and neighborhood variables.

Displaced Hurricane Katrina Survivors



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Arcaya, M., James, P., Rhodes, J. E., Waters, M. C., & Subramanian, S. V. (2014). Urban sprawl and body mass index among displaced Hurricane

Katrina survivors. *Preventive medicine*, 65, 40-46.

Neighborhood Poverty Change by Baseline Health Status

Baseline health status measure	Reports problem	Does not report problem	T-test for difference in means with unequal variances, p-value
Baseline (2003-2004) neighborhood poverty rate, mean (SE)			
Any health problem	26.9 (1.0)	25.1 (0.7)	.15
Diagnosis of physical health problem	24.9 (1.1)	26.2 (0.7)	.31
Somatic health complaint	27.3 (1.3)	25.3 (0.6)	.16

Arcaya, M., Subramanian, S. V., Rhodes, J. E. & Waters, M. C. (2014). Role of health in predicting moves to poor neighborhoods among Hurricane Katrina survivors. *Proceedings of the National Academy of Sciences*, 111(46), 16246-16253. doi: 10.1073/pnas.1416950111.

Fully adjusted associations

	Any health problem		Diagnosed physical health problem only		Somatic health complaints only		Diagnosed physical health problem and somatic health complaints	
	β	95% CI	β	95% CI	β	95% CI	β	95% CI
Any baseline health problem	3.03**	0.83, 5.24						
Medical diagnosis of physical health problem			2.90*	0.39, 5.41			2.67*	0.15, 5.19
Somatic health complaint					2.47*	0.07, 4.86	2.21	-0.19, 4.61

*p<0.05, ** p<0.01, *** p<0.001
 Models additionally adjusted for baseline neighborhood poverty rate, race/ethnicity, sex, age, marital status, income, number of children, welfare assistance, and food stamp assistance; bereavement and flood depth as a result of Hurricane Katrina; K6 score, social support, health insurance, and residence in the New Orleans metropolitan area in 2006-2007.

- Baseline health problems associated with a 3 point higher neighborhood poverty rate after adjustment

Moving to Opportunity (MTO)

- Federally funded housing mobility experiment that randomly assigned some families to receive housing assistance in low poverty neighborhoods
- Provided evidence that low poverty neighborhoods were protective against diabetes, morbid obesity, mental health problems in girls
- <50% assigned to the experimental condition moved to a low poverty neighborhood with MTO

Baseline child health information in MTO

- Does this child have any physical, emotional, or mental problems that...
 - 1) require medicine/equipment
 - 2) make it hard to go to school
 - 3) make it hard to play games
- Is there anyone living with you who has a health problem or mental problem that keeps him/her from doing normal activities like walking, getting dressed, housework, or working?”

Neighborhood outcomes for households with and without child health problems at baseline

	All households	Did not report baseline child health problems	Reported baseline child health problems	Health problem versus no health problem groups	Test of difference
	Mean/proportion			Difference	p-value
Proportion that moved with the program	0.49	0.50	0.38	0.12**	.004
Poverty rate of neighborhood of take-up ^a	10.77	10.57	13.05	-2.48**	.004
Duration weighted poverty	0.32	0.32	0.35	-0.03*	.030
Proportion of time spent in neighborhoods <10% poverty	0.17	0.18	0.12	0.06*	.011
Number of moves during the study	2.76	2.79	2.5	0.28*	.010

Notes: Differences are unadjusted. Values are weighted to account for changes over time in treatment assignment likelihood and for the follow-up survey sampling design. wt-totcore used, svy frame used to llow for weight in comparing group means. Diff by smx_Ch_schplayD_norms , conditional on valid data among the experimental gr members. Unless otherwise noted, sample size is 1550, representing all experimental LPV households with valid data on child health problems. P values: * p<=.05, **p<=.01, *** p<.001

^a n=747 complier households in the LPV (experimental) group.

Adjusted associations between child health problems

Outcome	β /OR	P>t	95% CI
Moved with the program (odds ratio)	0.62*	.015	0.42, 0.91
Poverty rate of neighborhood of take-up ^a	2.49**	.002	0.94, 4.04
Proportion of time spent in neighborhoods <10% poverty during study	-0.05*	.023	-0.1, -0.01
Duration weighted poverty	0.03*	.021	0.01, 0.06
Number of moves during the study	-0.26*	.017	-0.47, -0.05

Notes: All models incorporate weights and rely on robust standard errors. All models control for the full set of covariates listed below. Unless otherwise noted, sample size is 1716, representing all households in the experimental group. P values: * $p \leq .05$, ** $p \leq .01$, *** $p < .001$

^a n=806 complier households in the LPV (experimental) group.

Control variables: age, site, race/ethnicity, sex, household size baseline government benefit support, education, employment and employment history, possession of a car, neighborhood satisfaction and perception measures, reasons for moving, previous Section 8 applications

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