Original Report

Political Economies of Acute Childhood Illnesses: Measuring Structural Racism as Mesolevel Mortgage Market Risks

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Objectives: Health studies of structural racism/discrimination have been animated through the deployment of neighborhood effects frameworks that engage institutionalist concerns about sociopolitical resources and mobility structures. This study highlights the acute illness risks of place-based inequalities and neighborhood-varying race-based inequalities by focusing on access to and the regulation of mortgage markets.

Design: By merging neighborhood data on lending processes from the Home Mortgage Disclosure Act with individual health from the Project on Human Development in Chicago Neighborhoods, this article evaluates the acute childhood illness risks of four mutually inclusive, political economies using multilevel generalized linear models.

Setting: Chicago, IL, USA

Participants: Youth aged 0 to 17 years

Methods: Multilevel logistic regression

Main Outcome Measures: The prevalence of 11 acute illnesses (cold/flu, sinus trouble, sore throat/tonsils, headache, upset stomach, bronchitis, skin infection, pneumonia, urinary tract infections, fungal disease, mononucleosis) and the past-year frequencies of 6 acute illnesses (cold/flu, sinus trouble, sore throat/tonsils, headache, upset stomach, bronchitis) are evaluated.

Results: The most theoretically consistent predictor of illness is a measure identifying neighborhoods with above-city-median levels of racial disparities in the regulation of loans – a mesolevel measure of structural racism. In areas with high levels of minority-White differences in less-regulated credit, youth are more likely to have a range of acute illnesses and experience them at more frequent intervals in the past year.

Conclusions: This article highlights the substantive and methodological importance of focusing on multidimensional representations of institutionalized political economic inequalities circumscribed and traversed by the power relations established by institutions and the state. *Ethn Dis.*2021;31(Suppl 1):319-332; doi:10.18865/ed.31.S1.319

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Introduction

By focusing on the actions and inactions of institutional gatekeepers of wealth-accumulating assets, a consideration of mortgage markets as a neighborhood "effect" has animated the study of racial bias operating supraindividually (ie, above the individual).[1-4] Such studies place a deliberate focus on explicit indicators of ongoing, normative transactions among gatekeepers of the mortgage market – specifically, financial institutions, bankers, and landowners. Embedded within the political and economic logics of White supremacy and anti-Blackness, these systematized transactions, in effect, give rise to racial inequities in racial residential segregation and the limited benefits of homeownership for ethnoracially marginalized people and communities.[5-8] An ethnoracially inequitable mortgage market raises the illness cost of property within a neighborhood because Black and Latinx populations pay more to access less – less physical space owned, less wealth, and lesser quality structures per every dollar spent of personal assets.[6,8-13]

Structural racism is a key determinant of ethnoracial inequities in health[2,5,8]; yet, research generates mixed estimates of its illness risks.[3,14-18] A political economic approach integrating institutional, relational, and environmental notions

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of supraindividual racism offers a unifying framework: Some systematized transactions are linked to advantage, while others are not.[5,19-21] Using a unique multilevel dataset for Chicago, this article evaluates the inequitable political economic determinants of acute childhood illness. Some of the variation in health between minorities and Whites are functions of socioeconomic factors.[1,2,6,22-24] Racial inequities in exposure to poverty coupled with limited exposure to affluence, indicate that legacies of disadvantage feed into each other to influence the determinants of, and responses to, illness.[5,15,16,21,25] Such legacies root themselves in ethnoracially marginalized communities because there are less investments in maintaining the built neighborhood infrastructure in the context of chronic exposure to stressful social life events, disintegrative social organizations, and concentrated forms of multiple types of socioeconomic disadvantage.[17,26]

This article offers a unifying perspective to risks estimates of supraindividual racism via political economic data for Chicago.

Institutionalized processes fortify social disadvantage in ethnoracially marginalized communities and poor health among ethnoracially marginalized populations. For instance, racial disparities in a range of institutionalized resources related to housing, the carceral statute, and work are linked to cardiovascular problems for Blacks and contribute to racial disparities in cardiovascular disease.[16] Moreover, Internet searches of a racially derogatory term is linked to higher mortality for Blacks and contributes to racial disparities in birth outcomes and disease-specific/all-cause mortality.[22,23]

Structural racism/discrimination can occur as features of status inequality within a circumscribed organization (place-varying social inequalities) and features of a circumscribed organization within a larger areal unit (place-specific inequalities). This study treats these two forms of inequality as the sedimentation of racial marginalization and racist ideologies, respectively, into a neighborhood.

Structural theories of race, place, and health suggest that racial mortgage discrimination worsens health because it is linked to poverty. Yet, studies link racial lending inequalities to better health – an institutional racism paradox, so to speak. Gee finds that institutional racism is linked to less physical and functional health problems using data on Asians living in California,[3] while Mendez and colleagues find a similar relationship in Philadelphia using birth outcomes and pregnancy and stress data for Black women.[17,18] Because Chinese/White redlining made neighborhoods more attractive to Whites with higher incomes, Asians in these neighborhoods may benefit from living in more affluent neighborhoods. This theory may not hold, however, if redlining is a place-based risk, whereby an entire area is deemed credit risky for both minorities and Whites, deterring investors from the neighborhood. Healthful associations are independent and are not related to the Black-White segregation.[4,20] Place-based redlining may be at work (rather than race-based redlining). For instance, Black women in Milwaukee were found to be at a higher risk of cancer mortality if they lived in neighborhoods that were spatially near neighborhoods where loans were disproportionately denied to mortgage applicants.[27]

Moreover, recent foreclosure and predatory lending settlements reveal that subprime lenders have targeted minorities, such that they are more likely to hold both federally regulated and overpriced loans.[7,9,10,12] However, a study of structural racism/discrimination that identifies linkages of inequalities between institutions highlights the benefits of a multidimensional conceptualization of supraindividual racism.[20] The structural factors referred to include the regulation of the loans originated by the government. The government takes on a share of the risks of default that both the applicant and private financial institutions avoid. These represent loans such as VA loans, FHA loans, or loans purchased by Fannie Mae, Freddie Mae, and Ginnie Mae.

This political economic perspective, the racism-race reification process (R^3p), discerns four dimensions/concepts by which supraindividual inequality gets under the skin: neighborhood access discrimination; racialized access discrimination; neighborhood regulation discrimination; and racialized regulation discrimination. Each concept is theoretically linked to distinct sociopolitical mechanisms; these are disinvestment, affluence hoarding, deterioration, and predatory capital, respectively. Examples of political economic illness risk of the mortgage market include: Youth living in Chicago neighborhoods characterized by deterioration (less neighborhood regulation discrimination) have almost triple the risk of being diagnosed with lead poisoning as youth in neighborhoods with more regulated loans; whereas, youth living in neighborhoods characterized by affluence hoarding (more racialized access discrimination) have poor/fair health as a consequence of local area socioeconomic features.[20] Research also indicates that youth face a higher risk of asthma when they live in neighborhoods where Black and Latino mortgage applicants receive less federally regulated loans than their White counterparts.[28]

This article offers a unifying perspective to risks estimates of supraindividual racism via political economic data for Chicago. Policies such as Title VIII of the Civil Rights Act of 1968, the Community Reinvestment Act, and the Home Mortgage Disclosure Act (HMDA) were designed to provide relief from the poor living conditions of Chicago's Black, ghetto slums. However, the unequal provision of institutional goods can also lead to foreclosures through higher exposures to predatory lending, which occurred at a higher rate and an earlier moment in predominately Black middle-class neighborhoods.[9-11]

This research offers a four-dimensional characterization of the dual mortgage market. Neighbor-

Table 1. Descriptive statistics for childhood illness experience indicators

Outcome of Interest	Mean	Min	Max	N
Ever experience in past year among those non-missing on diagnosis indicators[a]				
Cold/flu	.8837	0	1	3327
Sinus trouble	.1847	0	1	3325
Sore throat/tonsils	.5005	0	1	3327
Headache	.4873	0	1	3316
Upset stomach	.4982	0	1	3324
Bronchitis	.2229	0	1	3329
Skin infection	.1058	0	1	3327
Pneumonia	.0454	0	1	3328
UTI	.0505	0	1	3330
Fungal disease	.0907	0	1	3328
Mononucleosis	.0412	0	1	3328
Frequently experienced in past year among those who experienced diagnosis type[a]				
Cold/flu	.0891	0	1	2940
Sinus trouble	.2068	0	1	614
Sore throat/tonsils	.0619	0	1	1665
Headache	.1052	0	1	1616
Upset stomach	.0495	0	1	1656
Bronchitis	.0916	0	1	742

UTI, urinary tract infection.
a. 3,333 children with data on microlevel covariates.

hood credit refusals are theorized to be linked to processes of disinvestment as mortgage credit represents a palpable source of external resources flowing into the neighborhood. Racialized credit refusals, as indicated by earlier studies, are theorized to be linked to processes of affluence hoarding, where Whites have an economic advantage when competing for resources against minorities. Neighborhood credit privateness is theorized to be linked to processes of wealth accumulation, which allow for such areas to guard against deterioration of the home infrastructure and ecological environment. Racialized credit privateness, meanwhile, is theorized to be linked to processes of predatory lending, as capital flows into the neighborhood for minorities but that credit is unsustainable being linked to high rates of default and overpriced credit. Thus, we must operationalize not only race-based refusals to the goods and services of institutions, but also the quality of loans and place-/race-based inequalities in both the refusal and quality of goods and services. This study inquires as to the validity of these hypotheses for the study of acute childhood illness risks. Specifically, the study addresses: What are the sociopolitical arrangements of the mortgage market that underlie health disparities across neighborhoods?

Methods

A uniquely compiled dataset nests youth aged 0 to 17 years in 273 neighborhood clusters (ie, geographically contiguous census tracts of similar race, ethnicity, and socioeconomic status) of the city of Chicago (Cook County),[29] a hyper-segregated city with well-defined neighborhoods.[30] Meso-level data, based on 2000 Census boundaries, are merged from three sources: 1) the Project on Human Development in Chicago Neighborhoods (PHDCN)[31,32]; 2) the 1994 Home Mortgage Disclosure Act (HMDA)[33]; and 3) the 1990 and 2000 components of the Neighborhood Change Database (NCDB).[34]

Outcomes of Interest

Illness (Table 1) is analyzed with individual health reports of youth participating in Wave 2 of the PHDCN Longitudinal Cohort Study (LCS), an interdisciplinary, sequential cohort design survey of youth and their caregivers with three points of data collection. Eleven illness are evaluated: cold/flu, sinus trouble, sore throat/tonsils, headache, upset stomach, bronchitis, skin infections, pneumonia, UTIs, fungal disease, mono-

	Discrimination	*Racism*	
Institutional	Neighborhood credit refusal ***Disinvestment***	Racialized credit refusal ***Affluence hoarding***	***INCLUSIONARY*** *Within financial institution*
Structural	Neighborhood credit privateness ***Deterioration***	Racialized credit privateness ***Predatory lending***	***EXCLUSIONARY*** *Between financial institution and government*
	BETWEEN AREAS *Risk attributed to all applications to a housing unit in a neighborhood*	***WITHIN AREAS*** *Risk attributed to ethnoracially marginalized applicants relative to risk attributed to ethnoracially privileged applicants*	

Figure 1. Conceptual diagram of supraindividual racism

nucleosis. Past year prevalence and frequency is ascertained through the question, "In the past year, how often has [YOUTH] had: [ILLNESS]?" Responses to the question are dichotomized to indicate past year acute problems. All other responses are coded as missing. "Frequently" is compared with "a couple of times" for illnesses for which there are at least two people affirming the presence of an outcome per Wave 2 neighborhood clusters. These are: cold/flu, sinus trouble, sore throat/tonsils, headache, upset stomach, and bronchitis.

Neighborhood-Level Mechanisms

This study evaluates four indicators of mesolevel local political economies using the dichotomization of explicit indicators of transactions that are underwritten in 1994. These transactions capture governing the evaluation of mortgages whose risks of default is carried exclusively by a financial institution reflects forms of institutional forms of supraindividual bias, while evaluations that reflect shared risk between the financial institution and the government reflect forms of structural bias. Discrepancies are conceptualized at the neighborhood-level, according to rate at which risk is undertaken. Discrepancies attributed to all loans in an area reference mesolevel discrimination, as all mortgage applicants in a neighborhood take on that rate of risks. Discrepancies attributed to loans according to the ethnoracial status of a mortgage applicants in an area reference mesolevel racism, as rate of risks for ethnoracially marginalized applicants (Blacks and Latinx) are captured as relative to the rate of risks for ethnoracially privileged applicants (Whites) for mortgages in the neighborhood (Blacks and Latinos) compared with ethnoracially privileged White applicants.

Figure 1 displays the two-dimensional cross-sections that are operationalized. Intra-institutional bias reflects inclusionary internal processes of the financial institution to identify the risks of default that a financial organization can sustain. These risks govern a mortgage applicant's ability to benefit from the goods and services of the financial institution (access) and reflect inclusionary processes that shift default responsibility to the applicant. Intra-institutional bias is also governed by financial rules, norms, and processes that are determined externally (regulation). Exclusionary risks, for instance, govern the federal government willingness to assume the risk of default, which shifts responsibility away from the applicant and the underwriting financial institution.

Specific characteristics of the loan can identify at least four types of lending inequality.[20] Access discrimination captures disinvestment, or the likelihood of access to the mortgage market (neighborhood credit refusal, where higher values indicate less access to the mortgage market). Access racism reflects affluence hoarding or the degree of racial disparities in access to the mortgage market across areas (racialized credit refusal, where higher values indicate greater denial of the benefits of the mortgage market). Structural discrimination captures the capacity for deterioration of the neighborhood, or the likelihood that mortgage markets opt for less federal oversight, commonly referred to as private loans. Structural racism captures susceptibility for predatory lending, or the degree to which Black and Latino applicants commit to taking on a larger share of the responsibility for default on private loans than do their White counterparts. Neighborhoods are dichotomized according to the comparison to medians of each of these indicators for the entire city of Chicago (ref). City means are indicated in Table 2. Seventeen (17) percent of all applicants for mortgages in Chicago are denied or refused loans (neighborhood credit refusal). Ethnoracially marginalized applicants are 8% more likely to be denied loans than the ethnoracially privileged White counterparts (racialized credit refusal). Meanwhile, on average 54% of all applicants in Chicago whose mortgages are originated by a financial institution are not regulated by the government (neighborhood private credit). Ethnoracially marginalized applicants are 8% less likely to have private loans that are not regulated by the government than Whites (racialized private credit).

Neighborhood-Level Covariates

Other community characteristics (Table 2) are indirect pathways that link political economic determinants to illness risks. Prior (1990) socioeconomic characteristics include: density of affluent families, homeowners, households

Table 2. Descriptive statistics for neighborhood-level measures (n=273), individual covariates (N=3,333), and household/ street block characteristics (n=2,682).

	Mean	Standard deviation	Min	Max
Neighborhood-level mechanisms[a]				
Neighborhood credit refusal	.15	.09	.03	.46
Racialized credit refusal	1.01	.55	.00	5.48
Neighborhood private credit	.54	.13	.25	.93
Racialized private credit	.95	.14	.31	1.43
Neighborhood-level covariates				
Black concentration (unstandardized)	.42	.42	.00	1.00
Ethnic concentration (unstandardized)	1.86	2.47	0.00	10.92
Ethnoracial diversity (unstandardized)	.60	.39	.02	1.36
Concentrated disadvantage	.00	1.00	-3.11	2.17
Broken windows	.00	1.00	-3.10	2.72
Low collective efficacy	.00	1.00	-2.93	2.87
Family affluence rate, 1990 (unstandardized)	.21	.13	.02	.72
Homeownership rate, 1990 (unstandardized)	.39	.23	.01	.92
Median home values (in $10k), 1990 (unstandardized)	9.25	64.22	.00	396.95
Residential mobility, 1990 (unstandardized)	.44	.12	.18	.73
Population density, 1990 (unstandardized)	7.12	4.13	1.01	3.23
Individual-level covariates				
Age at time of interview (uncentered)	8.98	4.97	.59	18
Female	.51	.5	0	1
Loss of insurance coverage	.20	.4	0	1
Household-Level Covariates				
Household education				
W1 Less than high school (reference)	.15	.36	0	1
W1 High school without completion	.21	.41	0	1
W1 High school degree (or equivalent)	.17	.37	0	1
W1 Some more than high school	.34	.47	0	1
W1 Bachelor's degree or more	.13	.34	0	1
W1 Family income (midpoint recode, $10k)	35.08	29.93	2.5	135
W1 Lives in owned home	.40	.49	0	1
Residential mobility since W1	.33	.47	0	1
Neighborhood mobility	.23		0	1
Household (HH) family structure				
Biological 2-parent HH (reference)	.50	.5	0	1
Non-biological two-parent HH	.19	.39	0	1
Single-parent HH	.22	.42	0	1
Three generation HH	.08	.28	0	1
W1 Primary caregiver (PC) perceived racism	-.02	1	-1.17	2.94
Biological mom PC	.87	.33	0	1
Same PC in W1 and W2	.95	.23	0	1
Multi-subject HH	.41	.49	0	1
Street-level characteristics				
Traffic hazards	.04	.98	-2.16	2.81
Ambient hazards scale	.05	1	-1.33	3.81

a. Medians shown for local political economies.
W1, Wave 1 of the Project on Human Development in Chicago Neighborhoods (PHDCN); W2, Wave 2 of the PHDCN.

that had moved within the past five years, population density, and median home values. Current (2000) ethnoracial composition characteristics of communities are measured as: the proportion of Blacks (Black Concentration), a *z*-score capturing the shared relationship between the proportion of Latinos and immigrants in a neighborhood cluster (Ethnic Concentration), and the Simpson's Diversity Index capturing the local presence of Whites, Blacks, Latinos, and other racial groups compared with that of the city of Chicago (Ethnoracial Diversity).

Neighborhood quality, including concentrated disadvantage, ambient hazards, and low collective efficacy, are derived from a principal components analysis of the proportion of occupied homes built before 1940, all housing units that are abandoned, and the population aged ≤5 years; ecometric scales for violence exposure, neighborhood decline, social cohesion, and activism;[32] and crowding (the average number of persons per occupied homes in a neighborhood).

Individual-Level Covariates

The primary level-1 unit (Table 2) is the youth of Wave 2 of the PHDCN Longitudinal Cohort Study (PHDCN LCS) with data on microlevel covariates (*ni*=3,333). Ethnoraciality is measured using a measure of ethnoracial group status. Dummy indicators distinguishing Blacks and Latinos from Whites (ref) are included, as well as individual characteristics of the youth as reported by the primary caregiver: age at time of interview (centered), female sex (0=male), and uninsured spells between Waves 1 and 2 (0=none).

Household-Level Covariates

Secondary level-1 units (Table 2) are the household of the youth as reported by the primary caregiver. Specifically, the following measures are included: Wave 1 household education (5-category indicator of highest degree in household), Wave 1 logged family income, Wave 1 homeownership status, residential mobility status since Wave 1, Wave 2 family structure, and primary caregiver perceptions of race-related stress at Wave 1). Covariates indicating the biological mother status of primary caregiver at Wave 2, the presence of a consistent primary caregiver between Wave 1 and Wave 2, and a multisubject household are included also.

Street-Level Covariates

A tertiary level-1 unit (Table 2) is the street, for which interviewers provide information based on the street block of the household in Wave 2. To capture ambient stressors, standardized measures of traffic hazards and an ambient hazards scale (noise and air pollution; the presence of garbage and litter; poor quality condition of the streets and/or houses; and interviewer discomfort) are included. To capture disintegrative social processes, a 4-category indicator of building security marks the siting of security features on the building units of the face-block. Two indicators of lack of social control are measured by the siting of children playing in the streets and the siting of adults and teens on the street.

Statistics

This study draws on data from a sample of 4,825 youth with participating primary caregivers who were included in Wave 2 of the Longitudinal Cohort Study (LCS) of PHDCN, a sequential cohort design. Of those 4,007 (80%) were Black, Latinx, or White youth, aged <18 years, living in the city of Chicago. About 9% (n = 369) were missing caregiver-provided data from at least one adult, and about 7% of households (n = 276) were missing data because interviewers conducted interviews over the phone (n = 148) or did not complete all of the systematic-observer questionnaires taken after visiting the home (n = 128). The final size of the analytical youth sample is 3,333 (83.2% of Black, Latino, and White youth aged <18 years living in Chicago at Wave 2). The final size of the analytical household and street-block sample was 2,682 households with complete caregiver evaluation of the youth and interviewer evaluations of the housing unit and its street block.

The final size of the analytical neighborhood cluster sample is 273, which represents the neighborhoods of youth followed in Wave 2 with valid information on all individual-level variables. The study was conducted for 80 neighborhood clusters in the city of Chicago. The sample was selected randomly for representative inclusion of Chicago neighborhoods as defined by the census tract of Chicago

according to the racial, ethnic, and socioeconomic status as defined by the principal investigators for the PHDCN. Neighborhood clusters included a collection of zip codes, identified at the start of Wave 2, which follows youth and caregivers who remain in Chicago. Youth are represented across 273 of the 303 possible neighborhood clusters in Chicago. Geographic identification of the census tracts of the neighborhood clusters were deidentified to the study's author for the benefit of attaching information about the mortgage market characteristics of each neighborhood cluster.

Black youth, youth in younger cohorts, and youth who do not live in an owned home were less likely to have primary caregivers interviewed at Wave 2. These known sources of attrition are mostly due to difficulties following up with caregivers. Estimates of racial health differences in this study are conservative, since the most vulnerable groups were less likely to be present at Wave 2.

Using multilevel generalized linear models for binary outcomes with a random intercept for neighborhood-varying likelihoods of the outcomes of interest, the analyses examine whether political economic illness risks are a function of the household/street and/or community components of R^3p. The statistical approach is rooted in econometric models that specify mixed effects (fixed and random effects) due to a nested multi-stage sampling strategy, where the distribution of respondents is systematically distributed across higher units of analysis and higher units of analysis are randomly selected prior to lower units of analysis. All regressions models include controls for individual characteristics. Model 1 adjusts for variation in outcomes within the neighborhood according to household and street-block characteristics while Model 2 adjusts for neighborhood-level covariates, or variation in outcomes between neighborhoods according to sociodemographic and environmental features of the community. Specific to the type of household or street block characteristic, the inclusion of Level-1 covariates captures the assumption that illness risks reflect compositional factors. Level-2 covariates capture the theoretical assumption that illness risks reflect contextual factors. Only models that include all Level-1 and Level-2 covariates are shown; supplemental models that indicate the relative contribution of specific household, street block, and community-characteristics are discussed in text.

Among youth with non-missing data on covariates, the analysis compares never responses to pooled frequent/occasional responses. The political economic determinants of the prevalence of 11 illness within the past year are evaluated – cold/flu, sinus trouble, sore throat/tonsils, headache, upset stomach, bronchitis, skin infections, pneumonia, UTIs, fungal disease, and mononucleosis. Among youth experiencing an illness in the past year, frequent responses of six illnesses are identified to occasional responses – cold/flu, sinus trouble, sore throat/tonsils, headache, upset stomach, bronchitis.

Results

We found evidence that mortgage markets have diverse effects on the presence of acute childhood illnesses and examined each as related to the four types of local political economies (ie, neighborhood credit refusal, racialized credit refusal, neighborhood credit privateness and racialized credit privateness). The odds of experiencing at least one episode of 11 common problems that children face in four specific types of neighborhoods are considered. We then examined the odds of experiencing more frequent episodes of six of the most common problems (ie, at least 15% of children report an episode within the past year). The time reference is the preceding 12 months of the study.

Past-Year Episode

Neighborhood credit refusal, for instance, was not associated with the past year prevalence of acute childhood illnesses, holding individual characteristics constant (Table 3, Model 1). However, upon controlling for household, street, and community characteristics (Table 3, Model 2), fungal disease was less prevalent in areas with higher rates of loan denials (OR=.71; 95% CI: .52, .97). This suggests that neighborhood conditions confound the likelihood of presenting evidence of acute childhood illnesses. Neighborhood credit refusal reflects the socioecological processes by which patterns of disinvestment set-in within a neighborhood. Institutional discrimination, including lack of access to the goods and

Table 3. Random intercept logistic regression predicting the impact of racist relational structures on illness experiences within the past year, holding covariates constant

	Access Discrimination				Regulation Discrimination			
	Neighborhood credit refusal		Racialized credit refusal		Neighborhood credit privateness		Racialized credit privateness	
	Model 1	Model 2	Model 1	Model 2	Model 1	Model 2	Model 1	Model 2
Cold/flu	.84	.80	1.11	1.03	.83[a]	.92	1.18	1.12
	(-1.40)	(-1.61)	(.90)	(.25)	(-1.65)	(-.56)	(1.43)	(.91)
Sinus trouble	.91	.99	1.00	.90	.92	.97	1.28[c]	1.31[c]
	(-.85)	(-.09)	(.04)	(-.94)	(-.84)	(-.27)	(2.59)	(2.63)
Sore throat/ tonsils	.89	.88	.88	.84[b]	.92	.93	1.10	1.12
	(-1.32)	(-1.39)	(-1.57)	(-2.12)	(-1.07)	(-.81)	(1.19)	(1.44)
Headache	.95	.93	.88	.91	.85[b]	.82[a]	.87[a]	.88
	(-.63)	(-.72)	(-1.57)	(-1.03)	(-1.99)	(-1.96)	(-1.69)	(-1.52)
Upset stomach	1.02	1.06	.94	.92	1.05	.96	1.09	1.08
	(.23)	(.68)	(-.71)	(-.94)	(.50)	(-.46)	(1.03)	(.94)
Bronchitis	.99	.94	1.08	1.06	.84[b]	.85	1.09	1.05
	(-.09)	(-.51)	(.86)	(.64)	(-1.99)	(-1.45)	(.97)	(.51)
Skin infections	1.11	1.07	1.00	1.00	.81[a]	.83	1.11	1.09
	(.74)	(.45)	(-.01)	(-.01)	(-1.67)	(-1.30)	(.83)	(.70)
Pneumonia	.92	.94	1.29	1.22	.69[b]	.74	1.21	1.10
	(-.44)	(-.30)	(1.42)	(.99)	(-1.96)	(-1.34)	(1.07)	(.49)
Urinary tract infections	.86	.92	.88	.84	.89	.84	1.03	1.03
	(-.80)	(-.42)	(-.77)	(-.92)	(-.66)	(-.79)	(.15)	(.17)
Fungal disease	.77[a]	.71[b]	.87	.93	.87	.76[a]	1.00	1.00
	(-1.73)	(-2.16)	(-.98)	(-.49)	(-1.01)	(-1.73)	(.01)	(-.00)
Mononucleosis	.71	.75	.90	.96	.85	.66[a]	.97	.96
	(-1.59)	(-1.30)	(-.54)	(-.20)	(-.81)	(-1.70)	(-.14)	(-.18)

Odds ratios shown; z-statistics in parentheses. Model 1 includes adjustments for individual-level characteristics; Model 2 also includes adjustments for household, street block, and community characteristics.
a. P<.10; b. P<.05; c. P<.01 (two-tailed test).

resources of financial institutions, was linked to lower odds of reports of fungal disease for youth living in areas where financial institutions refused to provide access to housing-related wealth to any applicant, regardless of ethnoracial status.

Similarly, racialized credit refusal was not associated with the past year prevalence of acute childhood illnesses, holding individual characteristics constant (Table 3, Model 1). However, upon controlling for household, street, and community characteristics (Table 3, Model 2), sore throats/tonsils were less prevalent in areas with greater racial disparities in loan denials (OR=.84; 95% CI: .71, .99). This suggests that neighborhood conditions confound the likelihood of presenting evidence of acute childhood illnesses. Racialized credit refusal reflects the socioecological processes by which patterns of affluence hoarding set in within a neighborhood (ie, where White applicants face better odds of gaining access to a neighborhood than their ethnoracially marginalized, Black and Latinx counterparts). Racialized credit refusals appeared to dampen a caregiver's reporting that their youth has had a sore throat.

Neighborhood credit privateness was associated with acute child-

hood illness, holding individual characteristics constant (Table 3, Model 1). Specifically, headaches (OR=.85; 95% CI: .73, .99), bronchitis (OR=.84; 95% CI: .70, .99), and pneumonia (OR=.69; 95% CI: -.48, .99) were less prevalent in areas where mortgage credit was less regulated (ie, private). However, upon controlling for household, street, and community characteristics (Table 3, Model 2), there were no associations between acute childhood illnesses and living in an area where private mortgage credit was more prevalent. This suggests that the odds of reporting acute childhood illnesses in neighborhoods where the financial institution's loan profile was more regulated by the federal government was a function of conditions of the neighborhood, including but not limited to neighborhood socioeconomic status and the concentration of ethnoracially marginalized people. In areas where deterioration processes set in, headaches, bronchitis, and pneumonia were more likely to be reported in the past year because of contextual features of these neighborhoods or, neighborhood effects related to class, race, ethnicity, and the environment. Supplemental analysis indicated that compositional features drove the associations with headaches, bronchitis, and pneumonia and contextual features drove the associations with bronchitis and pneumonia.

Racialized credit privateness was associated with acute childhood illness, holding individual characteristics constant (Table 3, Model 1). Specifically, sinus troubles (OR=1.28; 95% CI: 1.06, 1.54) were more prevalent in areas where minorities were more likely than their White counterparts to receive less regulated mortgage credit. Moreover, upon controlling for household, street, and community characteristics (Table 3, Model 2), this association remained statistically significant (OR=1.31; 95% CI: 1.07, 1.60). In areas where predatory lending predominates, the odds of children reporting sinus troubles was greater; this risk was present among neighborhoods with similar features and conditions. Structural racism appears to increase the likelihood that youth will report sinus troubles in the 12 months preceding by 31%.

Past Year Frequency

Neighborhood credit refusal was associated with more frequent in-

Table 4. Random intercept logistic regression predicting the impact of local political economies on frequent illness experiences among youth within the past year, holding covariates constant

	Neighborhood credit refusal		Racialized credit refusal		Neighborhood credit privateness		Racialized credit privateness	
	Model 1	**Model 2**	**Model 1**	**Model 2**	**Model 1**	**Model 2**	**Model 1**	**Model 2**
Cold/flu	.93	.89	.85	.88	.90	1.10	1.37[b]	1.24
	(-.46)	(-.64)	(-1.07)	(-.81)	(-.67)	(.55)	(2.04)	(1.38)
Sinus trouble	1.38	1.36	1.23	1.42	1.28	1.01	.99	.94
	(1.30)	(1.06)	(.95)	(1.38)	(1.14)	(.05)	(-.02)	(-.24)
Sore throat/ tonsils	.78	.70	1.13	1.14	.88	.88	1.21	1.02
	(-1.03)	(-1.33)	(.55)	(.53)	(-.61)	(-.47)	(.92)	(.08)
Headache	.85	.94	1.34a	1.27	.93	1.00	1.13	1.13
	(-.83)	(-.30)	(1.69)	(1.23)	(-.38)	(-.01)	(.70)	(.68)
Upset stomach	.50[b]	.38[c]	.98	.92	1.37	1.71	2.15[c]	2.06[b]
	(-2.17)	(-2.85)	(-.08)	(-.27)	(1.11)	(1.61)	(2.59)	(2.40)
Bronchitis	1.10	.96	2.04[b]	2.44[c]	1.00	.79	.96	1.05
	(.30)	(-.10)	(2.45)	(2.68)	(-.02)	(-.66)	(-.15)	(.16)

Reference category is occasionally (or somewhat frequent) experience. Odds ratios shown; z-statistics in parentheses. Model 1 includes adjustments for individual-level characteristics; Model 2 also includes adjustments for household, street block, and community characteristics.
a. P<.10; b. P<.05; c. P<.01 (two-tailed test).

tervals of acute childhood illnesses (Table 4, Model 1). Specifically, upset stomach (OR=.50; 95% CI: 0.27, .93) was more frequent in areas where loans are more likely to be denied, an association that persists upon controlling for household, street, and community characteristics (Table 4, Model 2). For areas undergoing investment mechanisms, the odds of reporting upset stomachs was reduced by 62% (OR=.38; 95% CI: .19, .74). Institutional discrimination was linked to less frequent reports of upset stomach.

Similarly, racialized credit refusal was associated with the past year frequency of acute childhood illnesses, holding individual characteristics constant (Table 4, Model 1). Bronchitis (OR=2.04; 95% CI: 1.15, 3.63) was more frequent in areas where minorities are more likely than their White counterparts to have their loan applications denied. Moreover, upon controlling for household, street, and community characteristics (Table 4, Model 2), bronchitis was more frequent in areas with greater racial disparities in loan denials (OR=2.44; 95% CI: 1.27, 4.66). Areas where affluence hoarding takes root, the odds of reporting frequent bronchitis episodes (compared with only a few bronchitis episodes) increased by 144%. Thus, institutional racism can be associated with bronchitis.

Neighborhood credit privateness was not associated with the frequency of acute childhood illness (Table 4, Model 1). Upon controlling for neighborhood features (Table 4, Model 2), there remained no associations between loan regulation and the frequency of acute childhood illnesses. The frequency of acute childhood illnesses was not differentiated by processes of deterioration. In this study, structural discrimination was not a determinant of the frequency of acute illnesses among children.

Racialized credit privateness was associated with the frequency of acute childhood illness, holding household and street block characteristics constant (Table 4, Model 1). Specifically, both cold/flu (OR=1.37; 95% CI: 1.01, 1.84) and upset stomach (OR=2.15; 95% CI: 1.21, 3.82) are more frequent in areas where minorities are more likely than their White counterparts to receive private credit, or less regulated mortgage loans. Yet, upon controlling for neighborhood features (Table 4, Model 2), the association between frequent cold/flu and racial disparities in private credit was reduced to statistical insignificance. Meanwhile, the association between frequent upset stomach and racial disparities in the private mortgage credit remained statistically significant (OR=2.06; 95% CI: 1.14, 3.71). Supplemental analysis indicated that less socioeconomic status and the concentration of ethnoracially marginalized residents drive the associations with frequent cold/flu.

Discussion

This study asked whether sociopolitical arrangements of the mortgage market were determinants of acute childhood illness. The results indicate that, per prior research, the mortgage market is associated with health; however, the risks are wide-ranging in both effect and intensity. Neighborhood credit refusal, an indicator of institutional discrimination and disinvestment, was linked to less acute illnesses in the past year. Racialized credit refusal, an indicator of institutional racism and affluence hoarding, was linked to fewer episodes of acute health problems but more frequent episodes among those who display health problems. Neighborhood credit privateness, an indicator of structural discrimination, was linked to more acute illnesses. Racialized credit privateness, an indicator of structural racism and predatory lending, was linked to more episodes and

…the mortgage market provides an opportunity for understanding the implications of the nuance of how sustainable investments expose stigmatized people to exploitative funding schemes.

more frequent episodes of illness. Sociopolitical arrangements of the mortgage market can specify what type of risks accumulate due to the multiple forms that supraindividual bias takes on in the neighborhood.

Financial institutions have many gatekeepers (eg, lenders, loan advisers, underwriters, appraisers, insurance agents, and title lawyers) who govern access to the goods and services of the mortgage market and the ability to finance the purchase with limited financial risks. While there are indeed complex rules by which agents of financial institutions determine institutional financial risk, the government is just one of these institutions. In exchange for assuming a larger share of the risks of default, the government requires less risky conditions of the financing agreement between the consumer and the financial institution

Health disparities emanating from policies and norms established within organizations (institutional bias) are different from those emanating from those same policies and norms as they are shaped through consensus between financial organizations with the government (structural bias). These extra-institutional policies indicate the rules that govern the loan conditions by which the executive branch will assume the risks of default. In the case of Veterans Administration (VA) loans, for example, the government assumes all of the risks, providing 100% of the responsibility of paying back a loan underwritten by a financial institution if a veteran defaults. Technically, veterans can qualify for any loan, and some do. However, the subsidiaries of the government, in this case, the VA, will not purchase a loan if it does not follow the underwriting rules of the VA. In this instance, the VA is operating as a security institution. Of particular importance to this study are loans that are purchased by government subsidiaries (eg, Fannie Mae, Freddie Mac) after the origination of the loan.

Mortgage brokers, by default of their inability to hold the risks of loan in their financial portfolio for a long time, almost invariably sell their loans within months of its origination. However, they do not sell them to the same institution. The dividing line here is whether a loan is purchased by an institution that is a subsidiary of the government or is one of thousands of private institutions. The government will not guarantee against default mortgages with large balloon payments, excessive originating fees, or without sufficient documentation to ensure proof of income to cover the loans. Yet, these are the ones most able to generate short-term profit during the hold period. The infiltration of subprime lenders into the mortgage market in the 1990s led to a proliferation of loans that needed to be offloaded to other institutions, a process that, in its effect, crippled the financial markets in the years preceding to the Great Recession.[9,10,12] The difference between institutional inequality and structural inequality is a point glossed over in research. However, the mortgage market provides an opportunity for understanding the implications of the nuance of how sustainable investments expose stigmatized people to exploitative funding schemes.

Study Limitations

This study demonstrates that some aspects of supraindividual racism, which have been etched out of legacies of the political economy's effect on housing and ownership disadvantage, are linked to worse health, as theoretically predicted.[2,6,8,21] However, there are limitations to the study. First, study measures may not fully capture why structural theories of racism suggest negative health consequences. Second, the study does not attend to other sources of intersecting inequalities, such as gender, class, and family. Third, this study does not account for the spatial structure of disadvantage, underestimating the effect of supraindividual racism.

Conclusions

Future research should attend to other vulnerable, hard-to-reach, and marginalized populations, such as immigrants, Black, Latino, and Asian ethnic groups, and persons experiencing multiple forms of oppression. A national study of redlining and its contemporary cousin, reverse redlining, is also needed. Last, the legacies of racial disadvantage that pervade the housing and mortgage industry through the inflection points offered by cycles of economic recessions should be evaluated.

This investigation offers methodological interventions to the study of structural racism/discrimination. We provide a roadmap for researchers interested in localized, mesolevel

evaluations of the illness risk of macrostructural policies and procedures that systematically disadvantage ethnoracially vulnerable populations (eg, Black and Latinx mortgage applicants). We also identify a form of structural racism/discrimination that is linked to a wide range of childhood illnesses. As highlighted in our findings, sociopolitical conditions have illness ramifications.

References

1. Diez Roux AV. Investigating neighborhood and area effects on health. *Am J Public Health*. 2001;91(11):1783-1789. https://doi.org/10.2105/AJPH.91.11.1783 PMID:11684601
2. Diez Roux AV. Complex systems thinking and current impasses in health disparities research. *Am J Public Health*. 2011;101(9):1627-1634. https://doi.org/10.2105/AJPH.2011.300149 PMID:21778505
3. Gee GC. A multilevel analysis of the relationship between institutional and individual racial discrimination and health status. *Am J Public Health*. 2002;92(4):615-623. https://doi.org/10.2105/AJPH.92.4.615 PMID:11919062
4. Mendez DD, Hogan VK, Culhane J. Institutional racism and pregnancy health: using Home Mortgage Disclosure Act data to develop an index for mortgage discrimination at the community level. *Public Health Rep*. 2011;126(suppl 3):102-114. https://doi.org/10.1177/00333549111260S315 PMID:21836743
5. Bailey ZD, Krieger N, Agénor M, Graves J, Linos N, Bassett MT. Structural racism and health inequities in the USA: evidence and interventions. *Lancet*. 2017;389(10077):1453-1463. https://doi.org/10.1016/S0140-6736(17)30569-X PMID:28402827
6. Phelan JC, Link BG. Is racism a fundamental cause of inequalities in health? *Ann Rev Sociol.* 2015;41: 311-330. https://doi.org/10.1146/annurev-soc-073014-112305
7. Rugh JS, Massey DS. Racial segregation and the American foreclosure crisis. *Am Sociol Rev*. 2010;75(5):629-651. https://doi.org/10.1177/0003122410380868 PMID:25308973
8. Williams DR, Collins C. Racial residential segregation: a fundamental cause of racial disparities in health. *Public Health Rep*. 2001;116(5):404-416. https://doi.org/10.1016/S0033-3549(04)50068-7 PMID:12042604
9. Dymski G, Hernandez J, Mohanty L. Race, gender, power, and the US subprime mortgage and foreclosure crisis: A meso analysis. *Fem Econ*. 2013;19(3):124-151. https://doi.org/10.1080/13545701.2013.791401
10. Immergluck D. *Foreclosed: High-risk Lending, Deregulation, and the Undermining of America's Mortgage Market*. Ithaca, NY: Cornell University Press; 2011. https://doi.org/10.7591/9780801458828
11. Immergluck D, Smith G. Measuring the effect of subprime lending on neighborhood foreclosures. *Urban Aff Rev*. 2005;40(3):362-389. https://doi.org/10.1177/1078087404271444
12. Williams R, Nesiba R, McConnell ED. the changing face of inequality in home mortgage lending. *Soc Probl*. 2005;52(2):181-208. https://doi.org/10.1525/sp.2005.52.2.181
13. Saegert S, Fields D, Libman K. Mortgage foreclosure and health disparities: serial displacement as asset extraction in African American populations. *J Urban Health*. 2011;88(3):390-402. https://doi.org/10.1007/s11524-011-9584-3 PMID:21643884
14. Bell JF, Zimmerman FJ, Almgren GR, Mayer JD, Huebner CE. Birth outcomes among urban African-American women: a multilevel analysis of the role of racial residential segregation. *Soc Sci Med*. 2006;63(12):3030-3045. https://doi.org/10.1016/j.socscimed.2006.08.011 PMID:16997438
15. Bell CN, Owens-Young JL. Self-rated health and structural racism indicated by county-level racial inequalities in socioeconomic status: the role of urban-rural classification. *J Urban Health*. 2020;97(1):52-61. https://doi.org/10.1007/s11524-019-00389-7 PMID:31898201
16. Lukachko A, Hatzenbuehler ML, Keyes KM. Structural racism and myocardial infarction in the United States. *Soc Sci Med*. 2014;103:42-50. https://doi.org/10.1016/j.socscimed.2013.07.021 PMID:24507909
17. Mendez DD, Hogan VK, Culhane JF. Stress during pregnancy: the role of institutional racism. *Stress Health*. 2013;29(4):266-274. PMID:23055409
18. Mendez DD, Hogan VK, Culhane JF. Institutional racism, neighborhood factors, stress, and preterm birth. *Ethn Health*. 2014;19(5):479-499. https://doi.org/10.1080/13557858.2013.846300 PMID:24134165
19. Sewell AA. Opening the black box of segregation: real estate and racial health disparities. In: Brown A, Smith VB, eds. *Race and Real Estate*. New York: Oxford University Press; 2015:87-105. https://doi.org/10.1093/acprof:oso/9780199977260.003.0006
20. Sewell AA. The racism-race reification process a mesolevel political economic framework for understanding racial health disparities. *Sociol Race Ethn (Thousand Oaks)*. 2016;2(4):402-432. https://doi.org/10.1177/2332649215626936
21. Galster GC. The mechanism(s) of neighbourhood effects: theory, evidence, and policy implications. In: van Ham M, Manley D, Bailey N, Simpson L, Maclennan D, eds. *Neighbourhood Effects Research: New Perspectives*. Netherlands: Springer; 2012:23-56. https://doi.org/10.1007/978-94-007-2309-2_2
22. Chae DH, Clouston S, Hatzenbuehler ML, et al. Association between an internet-based measure of area racism and black mortality. *PLoS One*. 2015;10(4):e0122963. https://doi.org/10.1371/journal.pone.0122963 PMID:25909964
23. Chae DH, Clouston S, Martz CD, et al. Area racism and birth outcomes among Blacks in the United States. *Soc Sci Med*. 2018;199:49-55. https://doi.org/10.1016/j.socscimed.2017.04.019 PMID:28454665
24. Do DP, Finch BK, Basurto-Davila R, Bird C, Escarce J, Lurie N. Does place explain racial health disparities? Quantifying the contribution of residential context to the Black/White health gap in the United States. *Soc Sci Med*. 2008;67(8):1258-1268. https://doi.org/10.1016/j.socscimed.2008.06.018 PMID:18649984
25. Green TL, Darity WA Jr. Under the skin: using theories from biology and the social sciences to explore the mechanisms behind the black-white health gap. *Am J Public Health*. 2010;100(S1) (suppl 1):S36-S40. https://doi.org/10.2105/AJPH.2009.171140 PMID:20147678
26. Zenk SN, Schulz AJ, Israel BA, James SA, Bao S, Wilson ML. Neighborhood racial composition, neighborhood poverty, and the spatial accessibility of supermarkets in metropolitan Detroit. *Am J Public Health*. 2005;95(4):660-667. https://doi.org/10.2105/AJPH.2004.042150 PMID:15798127
27. Beyer KMM, Zhou Y, Matthews K, Bemanian A, Laud PW, Nattinger AB. New spatially continuous indices of redlining and racial bias in mortgage lending: links to survival after breast cancer diagnosis and implications for health disparities research. *Health Place*. 2016;40:34-43. https://doi.org/10.1016/j.healthplace.2016.04.014 PMID:27173381
28. Sewell AA. *Nested models for critical studies of race: Estimating the population risks of supraindividual racism*. Hubert M. Blalock Memorial Lecture Series, ICPSR Summer Program in Quantitative Methods for Social and Political Research. July 9, 2019.

29. Earls FJ, Brooks-Gunn J, Raudenbush SW, Sampson RJ. Project on Human Development in Chicago Neighborhoods (PHDCN): Health screen, wave 2, 1997-2000. Last accessed December 15, 2020 from https://www.icpsr.umich.edu/web/NACJD/studies/13715/versions/V1
30. Sampson RJ. *Great American City: Chicago and the Enduring Neighborhood Effect*. Chicago, IL: University of Chicago Press; 2012. https://doi.org/10.7208/chicago/9780226733883.001.0001
31. Earls FJ, Brooks-Gunn J, Raudenbush SW, Sampson RJ. Project on Human Development in Chicago Neighborhoods: Community Survey, 1994-1995. Last accessed December 15, 2020 from https://www.icpsr.umich.edu/web/NACJD/studies/2766
32. Raudenbush SW, Sampson RJ. Ecometrics: Toward a science of assessing ecological settings, with application to the systematic social observation of neighborhoods. *Sociol Methodol*. 1999;29(1):1-41. https://doi.org/10.1111/0081-1750.00059
33. Federal Reserve System. Home Mortgage Disclosure Data Files, 1981-2012. 2013. Last accessed December 15, 2020 from https://catalog.archives.gov/id/2456161?q=2456161.
34. GeoLytics. *Neighborhood Change Database*. Available at https://geolytics.com/products/normalized-data/neighborhood-change-database