

Racial Disparities in Self-Rated Health at Older Ages: What Difference Does the Neighborhood Make?

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Objectives. Racial differences in self-rated health at older ages are well documented. African Americans consistently report poorer health, even when education, income, and other health status indicators are controlled. The extent to which neighborhood-level characteristics mediate this association remains largely unexplored. We ask whether neighborhood social and economic resources help to explain the self-reported health differential between African Americans and Whites.

Methods. Using the 1990 Decennial Census, the 1994–1995 Project on Human Development in Chicago Neighborhoods–Community Survey, and selected years of the 1991–2000 Metropolitan Chicago Information Center–Metro Survey, we examine the impact of neighborhood structure and social organization on self-rated health for a sample of Chicago residents aged 55 and older ($N = 636$). We use multilevel modeling techniques to examine both individual and neighborhood-level covariates.

Results. Findings indicate that affluence, a neighborhood structural resource, contributes positively to self-rated health and attenuates the association between race and self-rated health. When the level of affluence in a community is low, residential stability is negatively related to health. Collective efficacy, a measure of neighborhood social resources, is not associated with health for this older population.

Discussion. Analyses incorporating individual and neighborhood-level contextual indicators may further our understanding of the complex association between sociodemographic factors and health.

“HOW WOULD you rate your health? Would you consider your health excellent, good, fair, or poor?” This query, now standard in social surveys of health and well-being, has revealed a curious pattern in the responses of older African American and White individuals: African Americans consistently report poorer health, even when age, chronic health conditions, and a host of additional individual-level covariates are considered (Clark & Maddox, 1992; Mutchler & Burr, 1991). In 1995, the age-adjusted percentage of African American persons who reported fair or poor health was 15.4% as compared with 8.7% for their White counterparts (National Center for Health Statistics, 1998). Although the gap between Blacks and Whites has narrowed slightly in recent years, it is still most pronounced among those at older ages: Over 44% of African Americans aged 75 and older reported fair or poor health as compared with 31% of Whites (Kington & Nickens, 2001). Whereas some research does suggest that Blacks and Whites may evaluate their health differently (Ferraro & Kelley-Moore, 2001; Johnson & Wolinsky, 1994), evidence from Andersen, Mullner, and Cornelius (1987) and other psychometric investigations of the validity of self-reports of health have led researchers to believe that, in general, differences detected between groups are real rather than an artifact of the measurement method (Cunningham, Hays, Burton, & Kington, 2000; Gibson, 1991). In short, extant research offers strong evidence of a substantive race differential in self-reports of health but, as yet, has not yielded a convincing explanation for this discrepancy.

Because Black race is associated with lower socioeconomic status (SES) and lower SES with poor health, research has focused on the study of individual-level SES as a mediating variable between race and self-rated health (Mutchler & Burr, 1991). In general, this work hypothesizes that education, income, and wealth account for racial differences in self-rated health; that is, once these factors are incorporated into the analysis, any difference by race should disappear. Results are mixed, with most research continuing to report an unexplained health differential between African Americans and Whites (Kington & Nickens, 2001). In the case of self-reported functional status, Clark and Maddox (1992) note that Blacks report poorer functional status than non-Blacks even when income and education are controlled.

Absent from these analyses is the social context in which evaluations of health are reported. Although individual-level social and economic indicators clearly affect health (Williams & Collins, 1995), there is a growing body of literature linking the social environment in which people reside with their health (Browning & Cagney, 2002; Diez Roux, Nieto, & Muntaner, 1997; Kawachi & Berkman, 2003; Robert & Lee, 2002). Research on the relationship between place and health varies by geographic unit (e.g., state, county, community area), but evidence points to the neighborhood in which people live as a meaningful entity; the proximal social and economic environment may contribute to health via, for instance, noxious conditions, stress, or limited access to care (Krause, 1996). In this article, we extend previous research by

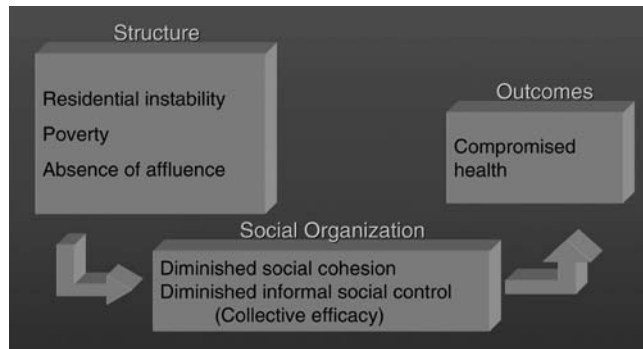


Figure 1. Social organization and collective efficacy theories.

turning our attention to these characteristics of community. In doing so, we aim to explore whether neighborhood social context is reflected in self-assessments of health and whether it has any explanatory power in an examination of racial differences in self-assessed health. To guide our investigation, we employ collective efficacy theory (Sampson, Raudenbush, & Earls, 1997). This theoretical perspective emphasizes the role of neighborhood-based economic and social resources in enhancing individual health. We hypothesize that some part of the racial disparity in older persons' self-assessed health can be attributed to variation in these neighborhood-level factors. We focus this investigation on older persons both because the race differential in self-reported health is greater at older ages and because we expect the role of neighborhood to be more important for older than younger adults (Robert & Li, 2001).

Our hypothesis is grounded in theoretical and empirical propositions that point to the salience of neighborhood context for older adults. Many adults age in place; fully one-third of older adults have lived in their communities for 30 years or longer (Bryan & Morrison, 2004). Length of residence implies a commitment to the community, and, indeed, this is borne out by the data. Putnam's research (2000) indicates that a community with a disproportionate number of elderly residents is likely to have a more active neighborhood watch, better social services, and, in general, greater engagement in civic affairs. Although older adults may have more time, and a greater tendency, to engage in community life, they are, practically speaking, also much more dependent on the context that their community provides. Neighborhood context may in large part determine whether it is feasible to take a walk, go food shopping, or remain engaged in community-based activities such as church (Robert & Li, 2001; Ross, 2000). The circumference of social space may constrict as one ages, making the immediate community environment all the more important. Indeed, Balfour and Kaplan (2002) found that older adults who live in neighborhoods with poorer-quality environments (e.g., high crime, heavy traffic, excessive noise, poor lighting) experience a greater risk of functional deterioration. Krause (1996) also found that deteriorating neighborhood conditions exerted an independent effect on health. In general, the antecedent literature examining the link between individual well-being and the level of neighborhood criminal activity indicates that higher crime rates are associated with stress, community withdrawal, and fear of

leaving one's home (Ferraro, 1995). For older persons, this exposure may exacerbate an already compromised health state, and there may be few mechanisms in place to buffer these negative effects (Thompson & Krause, 1998).

We investigate the health effects of neighborhood context using a multilevel approach. This provides the opportunity to disentangle individual and neighborhood-level effects (Raudenbush & Bryk, 2002). The analyses employ data from the 1990 Census, the 1994–1995 Project on Human Development in Chicago Neighborhoods–Community Survey, and the 1995, 1997, and 1999 Metropolitan Chicago Information Center–Metro Survey. This combination of data sources offers a unique opportunity to explore the role of neighborhood context in the association between race and self-reported health status.

THEORETICAL FRAMEWORK

Collective efficacy theory emphasizes neighborhood social resources in the form of mutual trust and solidarity (social cohesion) and expectations for action (informal social control) in explaining the impact of neighborhood structural factors on residents' well-being (see Sampson et al. [1997] and Sampson, Morenoff, & Earls [1999] for an extended discussion of the collective efficacy framework and its specific operationalization). The collective efficacy framework and the social disorganization perspective on which it is based (Shaw & McKay, 1969) point to two key structural conditions thought to attenuate neighborhood social cohesion and informal social control: the prevalence of poverty, or, more generally, economic disadvantage, and the aggregate stability of neighborhood residents. Extending this basic model, recent contributions to collective efficacy theory have stressed the critical role of neighborhood affluence in generating the social conditions that support a cohesive and trusting environment (Morenoff, Sampson, & Raudenbush, 2001; Sampson et al., 1999). This work builds, in part, on Wilson's theoretical framework (1987), which emphasizes the benefits of economic heterogeneity and the presence of affluent residents (i.e., middle and upper-middle class). Relatively little attention, however, has been paid to the role of affluence in the literature on neighborhood and health (Browning & Cagney, 2003; Robert, 1999; Wen, Browning, & Cagney, 2003); socioeconomically advantaged residents may have the resources to mobilize on behalf of a health-enhancing environment. The prevalence of economic resources and associated higher levels of collective efficacy may contribute to the provision of health services, the maintenance of safe recreational space, and the management of neighborhood physical hazards—all critical for community-dwelling older adults. Specific mechanisms through which collective efficacy, in particular, may contribute to health include the social control of health-related behaviors and conditions and the positive psychosocial processes that generate a protective effect for health (House, Landis, & Umberson, 1988). Figure 1 illustrates the connections between neighborhood structure, social organization, and health.

Self-assessments of health may reflect the impact of collective efficacy more readily than other measures of health status due to the nature and scope of the self-rated health question. Recent research indicates that self-assessments of health tap energy,

active functioning, and perceptions about social support (Benyamini, Idler, Leventhal, & Leventhal, 2000). These domains may be particularly responsive to environmental change; functional well-being and energy, for instance, could be considerably lessened in a community context where one is afraid to walk outside. In addition, the relationship between collective efficacy and self-rated health may be heightened for the very young and the very old—vulnerable population groups may depend more readily on the community to facilitate daily interactions and transitions (e.g., walking to school, grocery shopping, attending church).

METHODS

Data

Three data sources are used to explore the mediating effect of neighborhood on the relationship between race and self-rated health at older ages. They are the 1990 Decennial Census; the 1994–1995 Project on Human Development in Chicago Neighborhoods–Community Survey (PHDCN-CS); and the 1995, 1997, and 1999 Metropolitan Chicago Information Center–Metro Survey (MCIC-MS). The outcome of interest, self-rated health, and thus the sample *N* come from the MCIC-MS. Neighborhood-level characteristics are constructed from the other two data sets and are merged into the individual-level MCIC-MS. MCIC-MS respondents were geocoded using census tract identifiers and were merged with the PHDCN-CS on that basis. The sample was restricted to individuals 55 years of age or older (*N* = 636). Table 1 illustrates the data sets and sample years used in this study.

Measures of neighborhood structural characteristics are taken from the 1990 Census. These include measures of affluence, poverty, and residential stability. Measures of neighborhood social processes are constructed from the PHDCN-CS (the text to follow explains how these variables were constructed, but the individual-level sample size is not directly relevant to this analysis because we use only summary covariates constructed from this data set). The PHDCN-CS asks questions about the community in which respondents live. It is a probability sample of 8,782 residents of Chicago, aged 18 and older. The study combined 847 census tracts into 343 larger, ecologically meaningful “neighborhood clusters” (NCs)—aggregations of two to three census tracts designed to more accurately represent the practical and ecological boundaries of Chicago neighborhoods. NCs were designed to maintain relative population homogeneity with respect to racial/ethnic, socioeconomic, housing, and family structure characteristics (NCs average roughly 8,000 people) (Earls & Buka, 1997; PHDCN, 2004; Sampson et al., 1997). The sampling strategy of the PHDCN-CS was intended to capture a within-NC sample size sufficient to estimate neighborhood characteristics based on aggregated individual-level data. The purpose of this strategy was to ensure the reliability of neighborhood-level measures of social processes. The response rate was 75%. Our analysis includes residents from 246 Chicago neighborhoods. Neighborhoods not included in this analysis were those that did not have an adequate population base 55 years or over. The dependent variable and individual-level predictors are drawn from the MCIC-MS. The MCIC-MS is a serial cross-section of adults

Table 1. Data Sources by Year Represented

	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999
Decennial Census	*									
PHDCN-CS					*	*				
MCIC-MS						*		*		*

Notes: PHDCN-CS = Project on Human Development in Chicago Neighborhoods–Community Survey; MCIC-MS = Metropolitan Chicago Information Center–Metro Survey.

ages 18 and older who reside in the city of Chicago (Taylor, 2001). The response rate for the MCIC-MS was approximately 55% across the 10 cross-sectional samples. Because the MCIC-MS did not achieve as high a response rate as the PHDCN-CS, we conducted a validity assessment by comparing the PHDCN-CS with selected years from the MCIC-MS. The distributions across demographic characteristics such as gender, age, and race in these MCIC-MS waves were similar, indicating that the MCIC-MS adequately represents the Chicago population.

Dependent measure.—Our dependent variable is a measure of self-rated health (Goldstein, Siegel, & Boyer, 1984; Wilson & Kaplan, 1995). The psychometric and health status assessment literatures document that self-rated health measures are reliable and exhibit construct and criterion validity (George, 2001; Patrick & Erickson, 1993). For instance, self-rated health has been shown to predict mortality (Idler & Benyamini, 1997; Kaplan, Salonen, Cohen, Brand, Syme, & Puska, 1988), morbidity (Ferraro, Farmer, & Wybraniec, 1997), subsequent disability (Idler & Kasl, 1995), and health care utilization (Malmstrom, Sundquist, & Johansson, 1999). In addition, it has been used in prior studies examining the link between neighborhood context and health (Browning & Cagney, 2002; Krause, 1996). Although validity assessments of the self-rated health measure across dimensions such as gender, race, and ethnicity still merit further exploration (Idler & Benyamini, 1997), initial investigations indicate that its predictive capacity is comparable for Latinos, African Americans, and Whites (Finch, Hummer, Reindl, & Vega, 2002; Gibson, 1991; Johnson & Wolinsky, 1994). The MCIC-MS asks, “In general, would you say your health is: excellent, good, fair, or poor?” We treat self-rated health as an ordered categorical variable.

Independent measures.—To capture the economic profile of the community, we focus on the prevalence of poor and upper/middle-class residents as defined by income from the 1990 Census. Neighborhood poverty is operationalized as the proportion of residents with incomes below the 1990 federal poverty threshold (\$13,359 for a household of four). Neighborhood affluence is operationalized as the percentage of households with incomes \$50,000 or over. A residential stability scale was constructed based on scores from a factor analysis of measures of housing tenure (percentage living in the same house since at least 1985) and the percentage of housing occupied by owners (factor loadings exceeded .75). (The analysis employed alpha-scoring factor analysis with an oblique rotation. Scores from principal components analyses yielded the same pattern of effects in multivariate analyses of health. Analyses are available from the first author upon request.)

Table 2. Descriptive Statistics for Individual-Level Variables

	All		Black (<i>n</i> = 295)		White (<i>n</i> = 298)	
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>
Self-rated health						
Excellent	.188	.391	.126	.333	.253	.435
Good	.450	.450	.423	.495	.482	.501
Fair	.259	.259	.331	.471	.189	.392
Poor	.103	.103	.120	.325	.077	.268
Demographic background						
Male	.354	.479	.324	.469	.380	.486
Age	66.29	8.32	65.31	7.89	67.73	8.52
Race						
White	.469	.499				
Black	.463	.499				
Latino	.068	.252				
Income						
≤ \$10,000	.139	.346	.201	.402	.077	.268
> \$10,000–\$15,000	.120	.325	.096	.294	.114	.319
> \$15,000–\$20,000	.104	.306	.113	.317	.091	.288
> \$20,000–\$25,000	.100	.300	.096	.294	.111	.315
> \$25,000–\$30,000	.104	.306	.116	.321	.094	.293
> \$30,000–\$40,000	.147	.354	.113	.340	.165	.372
> \$40,000–\$50,000	.100	.300	.061	.241	.141	.349
> \$50,000–\$70,000	.074	.262	.085	.280	.067	.251
> \$70,000–\$90,000	.062	.241	.061	.241	.071	.257
> \$90,000	.051	.219	.038	.190	.067	.251
Education						
≤ 8th grade	.109	.312	.130	.337	.034	.181
9th–12th grade, no diploma	.153	.361	.215	.412	.108	.311
High school graduate	.213	.410	.177	.383	.263	.441
Some college	.341	.474	.348	.477	.350	.478
College graduate	.066	.249	.038	.190	.094	.293
Graduate study or degree	.117	.322	.092	.290	.152	.359
Married	.373	.484	.352	.478	.394	.489
Health background						
Exercise at least once a week	.615	.487	.618	.487	.626	.485
Weight problem	.305	.461	.365	.482	.249	.433
Insurance						
Medicaid	.093	.291	.133	.340	.040	.197
Medicare	.243	.429	.174	.380	.323	.469
Private	.539	.499	.532	.500	.566	.497
No insurance	.094	.293	.125	.332	.047	.211

Note: For the table, *N* = 636. Statistics are taken from the Metropolitan Chicago Information Center–Metro Survey for 1995, 1997, and 1999.

Collective efficacy is operationalized through combining the PHDCN-CS measures of social cohesion and informal social control. Social cohesion was constructed from a cluster of conceptually related items measuring the respondent's level of agreement (on a 5-point scale) with the following statements: (a) "People around here are willing to help their neighbors." (b) "This is a close-knit neighborhood." (c) "People in this neighborhood can be trusted." (d) "People in this neighborhood generally don't get along with each other" (reverse coded). Health-related informal social control was tapped through respondent agreement with the following: (a) "If I were sick, I could count on my neighbors to shop for groceries for me." (b) "You can count on adults in this neighborhood to watch out that children are safe and don't get in trouble." An additional informal social control item asked respondents how likely it was

that people in their neighborhood would intervene if a fight broke out in front of their house. The informal social control items tap expectations for action with respect to health-related social support as well as neighborhood supervision of potentially hazardous conditions or violent situations. The seven items were combined to form a single scale of health-related collective efficacy. The reliability of the collective efficacy scale is .73.

Individual-level variables are taken from the 1995, 1997, and 1999 waves of the MCIC-MS. Self-rated health and relevant health background controls were simultaneously assessed in these three waves of the MCIC-MS only. We chose to pool these 3 years to increase our ability to examine differences in self-rated health; we include a variable for interview year to capture any time trends in this dependent variable. Table 2 reports descriptive statistics on the outcome, self-rated health, and key demographic background and health-related items. These include measures of gender, age, race/ethnicity (Black, Latino versus White/other), income, education level, and marital status (married versus single or cohabiting). Health background measures include insurance coverage (Medicaid, Medicare, or private insurance versus no insurance coverage) and indicator variables measuring health-risk behavior (exercise, physician-indicated weight problem). In all, the combination of these three datasets provides a uniquely rich source of individual and neighborhood-level predictors of health.

Analytic Strategy

The clustering of respondents within Chicago's neighborhoods renders standard ordinary least squares (OLS) techniques inappropriate owing to the likely underestimation of standard errors. We use generalized linear latent and mixed models (GLLAMM; Skrondal & Rabe-Hesketh, 2004) to estimate two-level ordinal logit models. GLLAMM uses adaptive quadrature to perform maximum likelihood estimation of multilevel models. It adjusts standard errors for the effects of the clustering of cases within neighborhoods. Our sample of neighborhoods contained, on average, 2.6 respondents. Although the within-neighborhood *n* is small, this does not pose an estimation problem in the case of random intercept (as opposed to random slope) models (Raudenbush & Bryk, 2002). Hierarchical techniques are used not only in our overall analysis but also in the construction of selected covariates. For instance, to correct independent neighborhood-level measures of collective efficacy for missing data, we use empirical Bayes residuals from a three-level item-response model of the component items of the collective efficacy scale.

In baseline models, we examine the association between demographic and background characteristics and self-rated health. These individual-level characteristics are considered exogenous in the models and partially determinative of neighborhood of residence. We then enter structural (e.g., poverty, affluence) and social process (e.g., collective efficacy) measures. The analyses reported are two-level hierarchical ordinal logit models of self-rated health with positive coefficients associated with poorer self-rated health.

RESULTS

Our results consist of descriptive statistics, stratified by race, for our individual-level variables (Table 2), a correlation

Table 3. Correlations Among Neighborhood-Level Variables

Variable	1	2	3	4	5
Poverty	1				
Affluence	-0.7688	1			
Residential stability	-0.3044	0.3566	1		
Collective efficacy	-0.4304	0.5423	0.3347	1	
Population aged 55+	-0.4868	0.3984	0.3706	0.3977	1

Note: *N* = 246 neighborhoods.

matrix for our neighborhood-level variables (Table 3), and a series of hierarchical ordinal logit models predicting self-rated health (Table 4). We include a predicted probability plot to illustrate the interaction term included in the last model of Table 4 (Figure 2). These models introduce demographic and individual-level SES, health, and neighborhood-level variables sequentially. With this approach, we illustrate how each dimension contributes to our outcome, self-rated health, and how these dimensions alter the racial disparity observed.

The descriptive statistics in Table 2 include our demographic indicators, individual-level SES measures, and our health variables. Included are results for the entire sample and for the Black and White samples separately. Black respondents report fair/poor health at a much higher rate (.45 vs .27). The income distributions differ for Blacks and Whites, with far fewer Black respondents falling into the higher-income levels. A similar phenomenon is true for education: Approximately 25% of the White respondents hold a college diploma or higher as compared with 13% of Black respondents. In terms of health, African American respondents are much more likely to have a weight problem and to have asthma and high blood pressure. They also are more likely to

be Medicaid recipients, a result reflective of both economic status and, potentially, access to quality health care.

The correlations presented in Table 3 show the extent to which the neighborhood-level variables in our analyses are interrelated. As anticipated, poverty and affluence have a high negative correlation. Affluence and collective efficacy are the two variables with the highest positive association ($r = .54$), suggesting that affluence might aid the ability of neighbors to know one another and their social context. Age structure (population aged 55 and over) is associated with poverty ($r = -.49$), affluence ($r = .40$), and collective efficacy ($r = .37$), perhaps signaling that older persons have accrued more wealth and are more connected to/knowledgeable about the neighborhood. Overall, the correlations illustrate that these variables are tapping relatively unique components of the neighborhood social context.

Table 4 reports the results of hierarchical ordinal logit models predicting self-rated health. Model 1 shows the coefficients of a model predicting poorer self-rated health based on demographic background and individual-level SES. Black race is associated with lower self-rated health. African American older persons are 77% more likely to report fair or poor health than their White counterparts ($p < .001$), after adjusting for age, interview year, Latino ethnicity, gender, marital status, education, and income (note that age was associated with lower self-rated health in the bivariate case but is no longer significant in the full individual-level model). Consistent with expectations and previous research, education and income are protective against poor health, with the greatest impact coming from additional years of schooling (each level reduces the likelihood of poorer health by approximately 43%).

Table 4. Hierarchical Ordinal Logit Model of Self-Rated Health on Individual and Neighborhood Characteristics

Independent Variables	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6
Individual demographic background						
Age	0.009 (.010)	0.004 (.010)	0.004 (.011)	0.003 (.011)	0.004 (.011)	0.003 (.011)
Interview year	-0.088 (.097)	-0.11 (.099)	-0.11 (.099)	-0.12 (.099)	-0.12 (.100)	-0.110 (.099)
Black	0.569*** (.162)	0.499** (.167)	0.445* (.199)	0.228 (.190)	0.237 (.191)	0.233 (.191)
Latino	0.069 (.324)	-0.011 (.328)	0.049 (.337)	-0.06 (.339)	-0.08 (.339)	-0.010 (.339)
Male	-0.002 (.160)	0.003 (.161)	0.004 (.161)	-0.01 (.162)	-0.01 (.162)	-0.017 (.162)
Married	0.018 (.166)	0.053 (.169)	0.011 (.172)	0.018 (.172)	0.028 (.172)	0.015 (.172)
Education	-0.352*** (.062)	-0.33*** (.064)	-0.32*** (.065)	-0.29*** (.065)	-0.290*** (.065)	-0.294*** (.065)
Income	-0.117*** (.034)	-0.11** (.035)	-0.11** (.036)	-0.09** (.036)	-0.09** (.036)	-0.096** (.036)
Individual health background						
Exercise		-.228 (.156)	-0.22 (.156)	-0.24 (.157)	-0.25 (.157)	-0.258 (.157)
Weight problem		0.829*** (.167)	0.813*** (.167)	0.800*** (.168)	0.792*** (.168)	0.794*** (.168)
Medicaid		0.257 (.320)	0.280 (.321)	0.365 (.323)	0.369 (.323)	0.402 (.323)
Medicare		0.193 (.281)	0.220 (.282)	0.314 (.284)	0.318 (.283)	0.308 (.284)
Private insurance		-0.277 (.247)	-0.27 (.247)	-0.220 (.247)	-0.22 (.247)	-0.211 (.247)
Neighborhood-level factors						
Population aged 55+			0.001 (.011)	0.006 (.011)	0.008 (.011)	0.010 (.011)
Residential stability			0.120 (.083)	0.206** (.083)	0.223** (.085)	0.276** (.091)
Poverty			0.165 (.673)			
Affluence				-0.024** (.008)	-0.021** (.009)	-0.024** (.008)
Collective efficacy					-0.12 (.097)	
Affluence × Residential stability						-0.011 [†] (.006)
% change in Black coefficient ^a		12.30	21.79	59.93	58.35	59.03

Notes: For the Table, neighborhood level *N* = 246; individual level *N* = 636. The dependent variable is self-rated health (1 = excellent, 2 = good, 3 = fair, 4 = poor). Standard errors are presented parenthetically.

^aFrom the baseline model (Model 1).

* $p \leq .05$; ** $p \leq .01$; *** $p \leq .001$; [†] $p \leq .10$ (two-tailed tests).

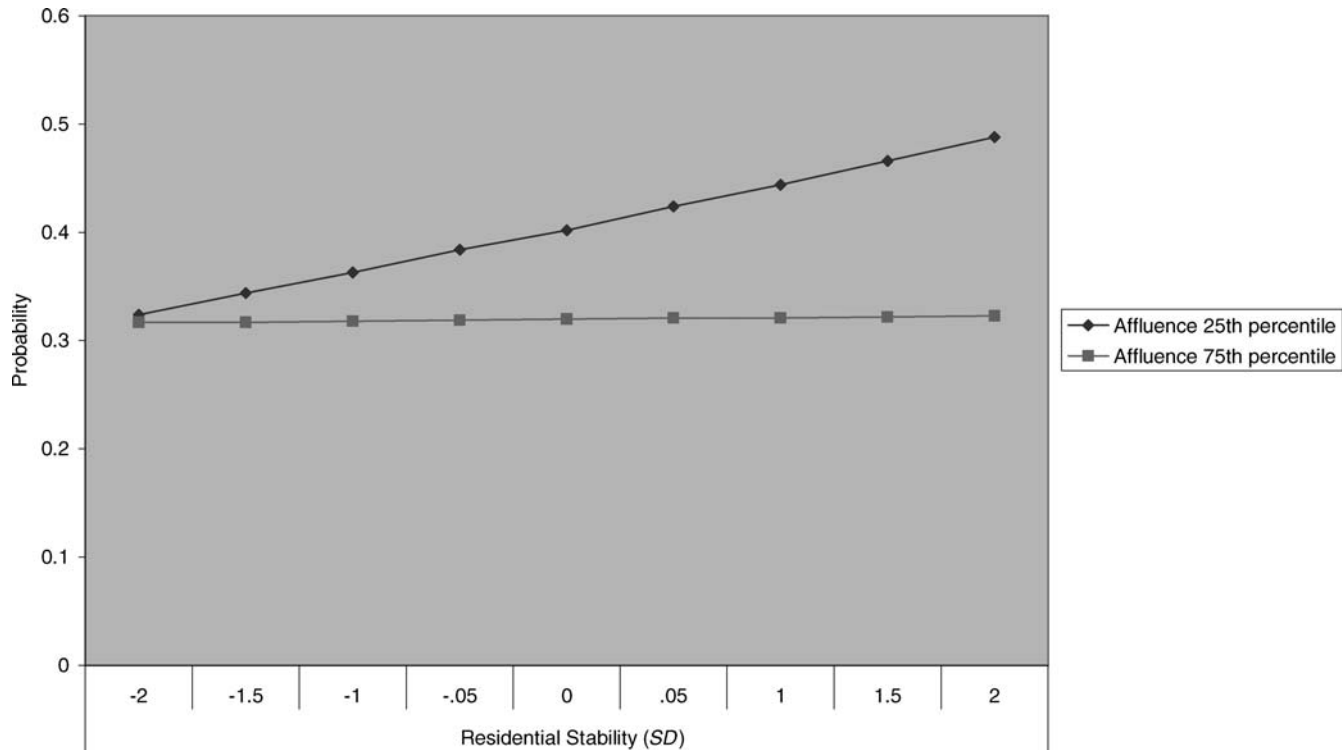


Figure 2. Predicted probability of fair or poor health by neighborhood residential stability and affluence.

Model 2 adds health background measures. Controlling for these indicators results in modest reductions in the coefficient for Black race as compared with Model 1: African Americans are now 65% more likely to report fair/poor health as compared with Whites ($p < .01$). Older persons who have a physician-diagnosed weight problem are 2.3 times more likely to report a poorer state of health ($p < .001$).

Model 3 adds neighborhood structural characteristics to this set of nested models: age structure (percentage of the population aged 55 or older), residential stability, and poverty. While none of these three variables is significant under this model specification, the coefficient for Black race decreased about 22%.

Model 4 substitutes percentage affluent for percentage impoverished but otherwise maintains the same model specification. Affluence, unlike poverty, significantly reduces the likelihood of reporting poorer self-rated health; a 1-unit increase in the percentage of neighborhood households with incomes equal to or greater than \$50,000 leads to a 2.5% reduction in the likelihood of reporting poorer health. In addition, residential stability has emerged as a significant predictor of self-rated health. A standard deviation increase in the residential stability scale ($SD = 1.03$) leads to a 24% increase in the likelihood of reporting poorer health. Important to this analysis, the race coefficient was rendered insignificant (percentage change approximately 60% as compared with 22% in Model 3).

Model 5 includes these neighborhood-level variables but now adds collective efficacy. Collective efficacy is not significant in this model specification (nor does the effect of collective efficacy vary with time [additional analyses available from the first author upon request]). This finding is inconsistent with the

expected beneficial effect on health based on collective efficacy theory. Residential stability maintains its importance, with its effect increasing slightly. Affluence is again protective against poorer self-rated health. Race, as in the prior model, is no longer a significant predictor of health status.

Model 6 introduces an interaction between affluence and residential stability, acknowledging that the effect of residential stability may vary by the level of affluence in a community. The interaction term is significant ($p < .10$) and indicates that as affluence increases, the magnitude of the detrimental effect of residential stability on self-rated health decreases.

Figure 2 illustrates this relationship graphically. It shows the predicted probability of fair or poor health by residential stability and two levels of neighborhood affluence (the 25th and 75th percentiles). We observe that affluence is protective of health, regardless of stability. When affluence is low, the effect of residential stability is negatively related to health. The coefficient for race does not change appreciably.

A possible threat to the conclusion that neighborhood affluence exerts a unique effect on health status relates to the potential reliability mismatch between neighborhood and individual-level measures of income. Arguably, neighborhood affluence could be tapping individual income to the extent that the latter is measured with error (a notorious flaw of survey-based self-reports of income). To address this possibility, we used errors-in-variables regression (Fuller, 1987) to impose various levels of reliability on the individual-level income measure. The neighborhood affluence measure remained a significant predictor of health status, even when we assumed a conservative level of reliability for individual income (.64). These results suggest that

the effect of neighborhood affluence is real and not merely a function of inaccurately measured income at the individual level.

DISCUSSION

The aim of this work was to introduce a neighborhood-level analysis into the literature on race and self-rated health, thereby determining whether neighborhood-level factors might explain why older African Americans rate their health more poorly than Whites, all else being equal. We knew from previous work that individual-level SES was an important predictor of self-rated health (Williams & Collins, 1995) and that individual-level SES explained some, but not all, of the race differential in self-rated health (Mutchler & Burr, 1991). In addition, we knew that neighborhood factors such as dilapidated housing, noise, and traffic were associated with older persons poorer ratings of health (Krause, 1996). What we did not know was whether neighborhood-level SES and neighborhood social organization, measured by residential stability, poverty, affluence, and collective efficacy, had any explanatory power in the relationship between race and health status. Given the salience of neighborhood context to the lives of older persons, our expectation was that these neighborhood-level factors would explain, at least in part, the race differential in self-rated health.

Does the introduction of neighborhood-level factors close the gap between Blacks and Whites? We find some evidence that it does. Consistent with previous research, we found that older urban African Americans have a substantially higher likelihood of reporting low levels of health when compared with White respondents. Our analyses were intended to address a number of existing hypotheses offered to account for this consistent health differential by race. First, we considered SES as manifest in educational achievement and current income. Although SES was strongly predictive of current self-reports of health (reflected principally in education but also present in income), these factors accounted for only a proportion of the race effect. We then investigated the mediating effects of health background. The health behavior literature has suggested that African Americans are exposed to a higher risk of poor health due to health-compromising behavioral orientations including poor diet and lack of exercise. We also considered the contribution of health insurance coverage to the risk of poorer health. Only a weight problem was associated with lower self-reported health, and this did not account for a substantial proportion of the race effect. Marital status and insurance coverage—potentially important to self-rated health at younger ages—do not appear to be predictive in this case (Ferraro & Kelley-Moore, 2001). In this older cohort, marital status and insurance coverage may not differentiate groups in the same manner or for the same set of reasons (because of widowhood and Medicare coverage, respectively). Once again, the unique negative effect of Black race remained significant in this model.

Relying on collective efficacy theory to motivate our investigation, we then considered the role of neighborhood social context in mediating the effect of race on health. Drawing on collective efficacy theory's emphasis on the availability of economic and social resources at the neighborhood level, we examined the effects of the proportion of residents in both impoverished and affluent households and a latent indicator of residential stability as structural indicators of community SES.

Consistent with expectations, neighborhood affluence exerted a strong and substantial effect on health, even after controlling for individual-level SES and health background. Moreover, neighborhood affluence further reduced the negative coefficient for Black race and rendered it insignificant. The proportional reduction in the race coefficient was nontrivial: Older African American residents may benefit substantially from the presence of economically advantaged neighbors with the capacity to mobilize on behalf of a health-enhancing and health-protective environment.

At odds with theoretical expectations, however, we found that residential stability was positively associated with poorer health. Although inconsistent with collective efficacy theory, this result nevertheless parallels other recent findings that question the beneficial role of residential stability and the social processes with which it may be associated. Sampson and colleagues (1997), for instance, found that residential stability was positively associated with homicide rates in Chicago communities. Prior analyses (Browning & Cagney, 2003) also have offered evidence that the negative effect of residential stability on health holds for younger populations as well. The effect of residential stability may reflect processes described by Wilson (1987), who suggests that, for some communities, stability may not produce or reflect social organization but rather economic and social isolation and constrained mobility (Ross, Reynolds, & Geis, 2001).

Finally, our operationalization of the collective efficacy concept—tapping social cohesion and health-related informal social control—did not predict self-rated health for older adults. Previous analyses indicate that collective efficacy is protective for a younger adult population (Browning & Cagney, 2002). Thus, collective efficacy, in its current conceptualization, may not be tapping the precise elements most important to older persons. Future work will attempt to validate this measure across age strata.

These results must be interpreted in light of study limitations. First, our sample size may hamper the ability to make comparisons between race groups and limit us in our capacity to test interactions among the variables. Second, although self-rated health is a robust measure of general health status, it would be beneficial to include other metrics and to compare and contrast these findings with other evaluations of health. Health is a multidimensional construct, so additional measures would add credence to these findings. Although our existing data preclude this approach, additional health information, particularly in longitudinal form, would further elucidate the association between race and health. Third, our three data sources span a 9-year range; in some cases, the evaluations of health occurred appreciably later than the structural assessments of community. Although we are fortunate that our data structure is in keeping with the causal sequence indicated by our theoretical model—neighborhood structural measures from the PHDCN-CS second, and health measures from the MCIC-MS third—we recognize that neighborhood structure may have changed over time. To investigate this possibility, we explored cross-level interactions with time. None of the interactions was significant, apart from residential stability; in no case did cross-level interactions alter the effects of our key theoretical variables. Nonetheless, it would be preferable if the range of

years was tighter. Fourth, our analysis is limited to Chicago neighborhoods and thus cannot be easily generalized to other settings. We do believe, however, that this combination of data sources allowed us to gain insight into urban social processes. In this way, our results may be elucidating for other U.S. urban centers.

Finally, and perhaps most importantly, is the larger issue of causality and the causal order implied by our theoretical and empirical approach. We begin with the premise that a neighborhood's social context contributes to the health and well-being of the individuals who reside within it. This is a plausible assumption, and one made by governmental organizations such as the U.S. Department of Housing and Urban Development, whose landmark program Moving to Opportunity (MTO) is based on the notion that the context in which people reside affects not only their physical health but also their mental health, their academic achievement, and their success in the job market (Orr et al., 2003). Decisions to reside in one community over another, however, are complex; in the absence of initiatives such as the one described above, individuals may select into a particular community based on one or any number of characteristics that we are unable to identify via current data sources or conventional research mechanisms. For instance, if illness drives neighborhood location, then it is not the neighborhood itself that leaves an imprint on individual health, but rather individuals who collect in a neighborhood who confer a summary assessment of poor health. We are unable to determine when, or why, the individuals in our study moved into their current communities. We believe, however, that our theoretical and empirical approach lends credence to the notion that the social and physical environment matters, apart from duration of residence. We included three distinct data sets—the self-rated health measure and the neighborhood evaluation from two different sources, ameliorating concerns that illness would cause one to evaluate one's environment negatively—along with a rich set of controls and an advanced statistical approach. We did, to the extent that our data would allow, follow the general approach suggested by Diez Roux (2004) and Oakes (2004); we began with a theory, we approached it with data that had some temporal sequence, and we employed a modeling strategy that accounted for shared variance. By no means does our approach ensure that a causal process is at work, but it employs some of the best contemporary tools and strategies to explore it. We also conducted a reliability analysis, uncommon in neighborhood effects research. Our reliability analysis indicated that neighborhood affluence remained a significant predictor of health status, even when we assumed a conservative level of reliability for the individual income measure, suggesting that the effect of neighborhood affluence is real.

Increasingly, evidence in the literature indicates that neighborhood does influence health, providing additional evidence that an underlying causal process may be at work. For instance, a recent article by Johnson and Schoeni (2004) uses the Panel Study of Income Dynamics (PSID) to tease apart family from community effects (the initial 1968 sample of the PSID was clustered, with many PSID families living in the same neighborhood—this allowed for a comparison of siblings living together versus unrelated individuals living nearby). They find that although the childhood neighbor correlations are smaller than those of the siblings, neighborhood relationships remain; disparities in neighborhood background account for between

one third and one fourth of the variation in health status among men in midlife. Evidence from the MTO initiative—to our knowledge, the closest contemporary example of an experimental design in neighborhood location—indicates that neighborhood context contributes to the health of both children and adults (Kling, Liebman, Katz, & Sanbonmatsu, 2004; Leventhal & Brooks-Gunn, 2003).

Racial differences in self-rated health, along with research that investigates the antecedent conditions that might inform it (e.g., access to care, differential procedure rates) (Ayanian, Cleary, Weissman, & Epstein, 1999; Petersen, Wright, Peterson, & Daley, 2002), have occupied considerable attention in recent years. Discrepancies in individual-level factors such as education and income have indeed helped to explain a proportion of the differential; evidence suggests, however, that these alone do not fully account for the persistent disparities in health between Whites and African Americans. Our findings contribute to research on race and health by highlighting the importance of the presence of neighborhood resources—specifically, the proportion of residents with relatively high incomes—in accounting for the residual racial difference in health between African Americans and Whites. Our analyses demonstrate the specific importance of affluent residents in contributing to the health of older residents, as distinct from the hypothesized opposite effect of the presence of poor residents. In exploring this relationship for older persons in particular, we acknowledge that the neighborhood effect is likely cumulative. Future research efforts will be aimed at further unpacking the role of neighborhood context in the lives of older residents, including explorations of other health status measures (particularly physical function and activities of daily living limitations), additional community context variables, and analyses that examine the extent to which these variables differentially contribute to health and well-being across the life course.

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