Do Neighborhood Effects Depend on the Definition of the Neighborhood?

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ABSTRACT
Definitions used in studies of neighborhood effects tend to be data driven and although more theoretically-driven definitions have been proposed, little empirical work uses alternative conceptualizations of neighborhood boundaries. This paper examines the effects of neighborhood sociodemographic composition and signs of disorder on residents' reports of fear using different neighborhood definitions. We compare more commonly used definitions, those based on census boundaries, with distance-based definitions and vary the size of the boundary. We find stronger effects of sociodemographic composition when neighborhoods include larger areas, suggesting that resdients' fear is more strongly influenced by sociodemographic characteristics of the macroenvironment. In contrast, we find weaker effects of disorder with increasing neighborhood size, indicating that localized disorder is more consequential for fear. Although the relationships between neighborhood characteristics and fear are essentially unchanged across neighborhood definitions, the strength of the relationship varies with neighborhood size and the direction depends on the neighborhood process.

INTRODUCTION

Researchers have used different definitions of "neighborhood" to study the influence of neighborhood factors on a number of individual outcomes. Neighborhood definitions used in previous research have often been data driven. For instance, census boundaries determine how neighborhood boundaries are defined in studies that rely on census data for measures of the neighborhood environment. Although more theoretically-based definitions of neighborhoods have been proposed, little empirical work exists that uses alternative conceptualizations of neighborhood boundaries. This is partly due to data limitations, but is also the result of a lack of knowledge of whether and how neighborhood effects differ according to different conceptualizations of neighborhood boundaries.

In this paper we use a community survey and data on the neighborhood environment to examine the effect of neighborhood sociodemographic composition and signs of physical and social disorder on individual reports of fear under different neighborhood definitions. We compare more commonly used neighborhood definitions, such as those based on existing administrative boundaries, neighborhood definitions based on distance, and more conceptually derived definitions of neighborhood boundaries. We also discuss alternative conceptualizations of the neighborhood space.

THEORY AND MEASUREMENT OF NEIGHBORHOOD ENVIRONMENT

Neighborhoods have long been thought to play a fundamental role in social life and, accordingly, have been a centerpiece of sociological analysis (Park et al. 1925; Suttles 1972; Zorbaugh 1929). Conceptualized as the smallest form of social organization outside of the

family, neighborhoods represent an important location for understanding the role of modern society and its influence on individuals. The influence of neighborhoods on residents is highlighted by Wilson's (1996; 1987) work exploring the consequences of structural disinvestment on low-skilled, predominantly African American residents of inner city neighborhoods. Wilson countered the dominant analytic lens that tended to explain the causes and consequences of poverty in terms of individual experiences or cultural deficiencies, arguing instead that socioeconomic opportunities are shaped by the local resources one can access (e.g. jobs, education, housing, etc.). Economically disadvantaged neighborhoods tend to have fewer resources than more privileged neighborhoods, thereby constraining the ability of residents from socially disadvantaged neighborhoods to succeed in the modern economy.

A great deal of research followed and expanded Wilson's original theoretical formulation of the role of neighborhoods on individual well-being. Research expanded established links between neighborhoods and various social and behavioral outcomes including educational attainment, crime, substance use, sexual activity, childbearing, income, labor force participation (for reviews, see Ellen, Mijanovich, and Dillman 2001; Leventhal and Brooks-Gunn 2000; Riva, Gauvin, and Barnett 2007; Sampson, Morenoff, and Gannon-Rowley 2002). A growing body of research has demonstrated associations between individual health outcomes and the individual's neighborhood of residence (Diez Roux 2000; Robert 1999; Sampson, Morenoff, and Gannon-Rowley 2002). Although studies have reported consistent findings documenting higher levels of negative health outcomes for residents living in more socioeconomically disadvantaged neighborhoods net of individual-level health risks, the sources of these disparities are less well-known, prompting researchers to examine the intermediary mechanisms that link neighborhood context to residents' health.

Building from a long tradition in community and urban sociology, sociologists and criminologists examining the relationship between neighborhood physical environments and residents' perceptions of their neighborhoods have found a link between residents' fear and the level of physical disorder in their neighborhood environment. Using these studies, sociologists have begun exploring how the social psychological effects of fear induced by the neighborhood physical environments can influence the health of neighborhood residents. The level of fear perceived by residents has been hypothesized to have both direct and indirect effects on their health. The body's reaction to the chronic stress of fearing one's surroundings, for example, can have a direct biological effect on health by raising blood pressure which could increase the risk of cardiovascular disease. Additionally, residents' perceptions of fear can also have indirect effects on their health through reducing their levels of physical activity in their neighborhoods (Suminski et al., 2005), reducing the breadth of the social support network that they are able to draw upon in a health emergency (Klinenberg, 2002), and increasing the level of isolation that could lead to higher levels of mental health disorders.

NEIGHBORHOOD DEFINITIONS

Another important aspect of understanding how neighborhoods affect the well-being of residents is determining what, exactly, a neighborhood is. Although this is a question that has vexed social scientists for decades (Galster 2001; Park et al. 1925; Suttles 1972), advances in geographic information systems (GIS) have increased the ability of social scientists to empirically examine both the scale and definition of neighborhood boundaries that influence individual behavior (Downey 2006; Mohai and Saha 2006).

Common boundaries, socially defined entities that may change over time but are essentially stable, still serve as the predominant practical definitions of neighborhoods. Examples of common boundaries include Census tracts or other administrative boundaries. However, a small segment of the extant research has also utilized more innovative neighborhood definitions. These include ego-centric neighborhoods, which are formed by drawing a buffer around an individual's residence (Chaix et al. 2005; Wendel-Vos and Schuit 2004), "t-communities" that are bounded by major ecological barriers and major streets (Grannis 1998; 2005), and network-based communities. Neighborhoods may also be defined using historical boundaries, particularly in cities where social and demographic processes combined in an historical context to produce striking geographic separation of the population. However, not all researchers interested in community effects on individuals have used physical boundaries to define communities. Some studies have looked into social networks formed through colleagues or friends, the role of institutions on defining communities, or communities defined by virtual or electronic relationships.

CURRENT ANALYSIS

The current study uses a community survey of Chicago residents, census data on the socioeconomic characteristics of Chicago neighborhoods, and observations of signs of disorder on residents' blocks to examine the robustness of the relationship between neighborhood characteristics and individual reports of fear across different definitions of neighborhoods. Our aim is to determine if the relationships we observe between neighborhood characteristics and individual outcomes are dependent on the way in which we define neighborhoods for analytic

purposes. Although we plan to examine this question using a variety of neighborhood definitions, this initial analysis is limited to neighborhoods defined using census boundaries and radial buffers

DATA AND METHODS

DATA

Respondent Data. The data used in this analysis come from the Chicago Community and Adult Health Study (CCAHS). The CCAHS is a multi-stage area probability sample of 3,105 adults living in the city of Chicago, IL interviewed between May, 2001 and March, 2003. The sample was stratified into 343 neighborhood clusters (NCs) defined in the Project on Human Development in Chicago Neighborhoods (PHDCN) as one or more geographically contiguous census tracts which were joined based on the demographic characteristics of the population, local knowledge of the city's neighborhoods and major ecological boundaries (Sampson, Raudenbush, and Earls 1997). One adult aged eighteen years or older was interviewed from each sampled household with an overall response rate of 71.82%. Residents were also over-sampled from the 80 focal neighborhoods defined in the PHCDN. The sample contains an average of 9.1 subjects per NC.

Individual-level descriptive statistics are presented in Table 1. The outcome used in the analysis is *fear of walking*. Fear of walking is measured with the question, "How safe is it to walk around alone in your neighborhood after dark?" and response categories included completely safe (1), fairly safe (2), somewhat dangerous (3), and extremely dangerous (4). All models include individual covariates representing respondent's sex, age, race/ethnicity, immigrant status, education, and income. *Sex* is treated as a dummy variable where the reference

is males. *Age* is categorized into 6 groups (18-29, 30-39, 40-49, 50-59, 60-69, 70 and over) with the youngest age group used as the omitted category. *Race/ethnicity* is dummy coded such that the reference, Non-Hispanic whites, is compared to Non-Hispanic blacks, Hispanics, and Non-Hispanic Others. *Immigrant status* is a 3 category distinction between first generation, second generation, and third generation and higher, with the last category treated as the reference. *Education* is measured using dummy variables representing less than 12 years of education, 12-15 years of education, and 16+ years of education, with the highest education category used as the omitted category. Finally, a measure of *income* is included that breaks income into 5 categories representing less than $10,000, $10,000-29,999, $30,000-49,999, and $50,000+ with the highest income category used as the reference. Because there was significant missing data on income we include an additional category for missing on income to retain those individuals in the analysis.

Neighborhood Demographic Data. Measures characterizing the sociodemographic structure of Chicago neighborhoods are derived from variables available in Summary File 3 of the 2000 Census of Population and Housing. A *neighborhood socioeconomic disadvantage* scale was created using the following variables from the 2000 Census: proportion of individuals with income less than $10,000, proportion of individuals with income greater than $50,000, proportion of unemployed individuals, proportion of families living below the poverty threshold, and proportion of vacant homes. A *neighborhood affluence* scale was created from the proportion of individuals with college education, proportion of individuals in professional occupations, and the median housing value. In addition, a *residential stability* scale was created that includes the proportion of individuals who have lived in the neighborhood for the past 5

years and proportion of owner occupied housing. Analyses also include the proportion of *Hispanic/foreign born* and the proportion *non-Hispanic black*. Finally, because the density of people in an area may be an important confounder in the relationship between neighborhood socioeconomic environment and individual reports of fear of walking, we include *population density*, a measure of the number of persons per square kilometer (logged). Neighborhood-level descriptive statistics are presented in Table 2 for each definition of neighborhood: neighborhood cluster, tract, and block group.

Physical Environment Data. The CCAHS also developed an SSO instrument based on a similar instrument used in the PHDCN. Trained raters walked around the perimeter of blocks where a respondent was sampled. The raters observed particular items listed on the instrument and rated the condition of those items on both sides of the streets enclosing the block. In total, 1,663 blocks were observed containing 13,251 block faces. Because respondents were over-sampled in the 80 focal neighborhoods and the SSO ratings were conducted on blocks containing sampled respondents, naturally there is also an over-sample of SSO ratings in the 80 focal neighborhoods. From the observations conducted on each of these 1,663 blocks, we created a scale of physical disorder based on the presence of gang and other graffiti, graffiti that has been painted over, garbage on the street or sidewalks, cigarette butts on sidewalks or gutters, empty beer or liquor bottles, abandoned cars, condoms, and drug-related paraphernalia. The scales were constructed as a three-level item response model of items within block-faces within census blocks following Raudenbush and Sampson's (1999) method. The block-level reliability of the scale is 0.928.

Following the construction of the scale on each of our sampled blocks, we then used the geostatistical technique of kriging (Isakks and Srivastasa, 1989) to develop a measure of physical

disorder for the approximately 24,000 remaining Census blocks in the city of Chicago that were not sampled. Kriging allows researchers to use the spatial dependence between measurements sampled observations to estimate the level of measurement that would be obtained based on the spatial proximity and spatial clustering of sampled locations around the unsampled location being estimated (Auchincloss et al., 2007). After estimating a value for every block in the city, values of physical disorder within each of our neighborhood boundaries can be calculated by simply summing across the blocks present in each of the neighborhood definitions.

Radial Buffer Measures

In addition to simply aggregating the neighborhood measures according to census boundaries, we also created radial buffer measures. We used radial buffers of differing distance as the unit of aggregation. We defined the distance as the Euclidean distance from the geographic point representing the individual's residence. Thus, the 250 meter radial buffer measure of socioeconomic disadvantage can be interpreted as the mean of disadvantage within in 250 meter radius of the individual. Thus, the radial buffer measures are individual measures.

ANALYTIC STRATEGY

We use multilevel regression to estimate models of neighborhood effects on fear of walking using the census boundary definitions. We use ordinary linear regression to estimate models using the radial buffers. We examine the effects of neighborhood demographic and socioeconomic characteristics on fear of walking. We then include neighborhood disorder to determine if the relationship between neighborhood social context is explained by disorder, a physical attribute of the neighborhood. Statistical analyses are conducted using the HLM

software (Version 6, Scientific Software International, Raudenbush et al. 2004). Data in all analyses are weighted to account for the differential probability of selection and non-response rates, and to adjust the sample representativeness to the 2000 age/race/sex/ specific Census population estimates for the city of Chicago. The sample weight also adjusts for the over-sampling of individuals in the focal areas.

RESULTS

Individual-level descriptive statistics are presented in Table 1 and neighborhood-level descriptive statistics are presented in Table 2. Table 3 shows the results from the regression analysis. The multilevel models of neighborhood effects on fear of walking are presented in Panel A. The results from Model 1 show that disadvantage, Hispanic/foreign born, non-Hispanic black, and population density are all positively related to fear of walking. However, looking across the models for different definitions of neighborhoods, we find stronger effects of disadvantage, affluence, Hispanic/foreign born, and non-Hispanic black at the NC level, which is the largest neighborhood boundary we examine. Results from Model 2 show that disorder is also positively related to fear of walking but that there are weaker effects of disorder at the NC level. In addition, though disorder does explain some of the association between neighborhood social context and fear, it does not fully account for the relationship. Finally, the percent of variance explained at the neighborhood level is greater at smaller levels of aggregation (i.e. smaller neighborhood sizes).

Results using radial buffers as neighborhood boundaries are shown in Panel B. As in the models using census boundary definitions of neighborhoods, disadvantage, Hispanic/foreign

born, non-Hispanic black, and population density are all positively related to fear of walking. Similar to the results in Panel A, the associations between disadvantage, non-Hispanic black, and population density are stronger at the largest buffer size. Using buffer definitions of neighborhoods, we find a positive effect of disorder on fear of walking and that the effect of disorder gets weaker as the neighborhood size increases. Again, disorder explains some, but not all, of the association between social context and fear. The R-squared values are similar across models, indicating that the amount of variance explained by these neighborhood factors does not vary across neighborhood definitions, as defined by radial buffers.

CONCLUSION

We find that the relationships between neighborhood characteristics and fear of walking are essentially unchanged regardless of which neighborhood definition is being used, though the strength of the relationship does vary with neighborhood size. The stronger effects of social context observed in models where neighborhood definitions include larger areas suggests that individual's fear of walking in their neighborhood is more strongly dependent on the broader social context in which they live. In contrast, the weaker affect of disorder with increasing neighborhood size suggests that it is localized disorder that is more consequential for fear, rather than disorder present in the broader environment.

These results suggest that neighborhood effects do not vary much across these two different ways of defining neighborhoods. However, it is important to note that any given neighborhood characteristic, in this case disorder, may show stronger effects at differing levels of aggregation. Thus, the particular neighborhood definition used for analytic purposes may

not be of consequence, but the scale at which the analysis is done may exert a large influence on the conclusions reached about the association between the neighborhood characteristic and the outcome of interest.

NEXT STEPS

This paper represents an initial step towards better understanding how neighborhood effects on individual outcomes may vary according to how the neighborhood is defined. In the next steps of the analysis we plan to incorporate additional neighborhood definitions. We will create these same neighborhood measures such that neighborhoods are defined using the T-communities concept and using historical definitions of Chicago neighborhoods. We will also determine if neighborhood boundaries that are defined with regard to ecological boundaries produce different results. The role of ecological boundaries has largely been ignored in prior empirical work.

We also plan to use additional individual outcomes to determine if neighborhood definitions matter differently for different outcomes. We will examine models using other outcomes we think may be sensitive to the size of the neighborhood and location of the neighborhood boundary. For instance, we suspect that the influence of neighborhood characteristics on the respondents' perceptions of their neighborhood (e.g. disorder, safety, cohesion) will differ across types of neighborhood boundaries and hypothesize that the local neighborhood context will have greater influence on neighborhood perceptions. Furthermore,

Finally, we plan to incorporate additional neighborhood predictors to see if the patterns we found hold for other neighborhood characteristics as well. For example, we suspect based on

the initial findings that characteristics of the physical environment exert greater influence at the micro-level neighborhood environment. Therefore, we plan to examine the effects of other characteristics of the physical environment such as neighborhood safety and aesthetics to determine if the pattern is consistent across a number of neighborhood characteristics.

REFERENCES

Auchincloss, Amy H., Diez Roux, Ana V., Daniel G. Brown, Trivellore E. Raghunathan and Christine A. Erdmann. 2007. "Filling the Gaps: Spatial Interpolation of Residential Survey Data in the Estimation of Neighborhood Characteristics." *Epidemiology* 18:469-78.

Chaix, Basile, Juan Merlo, S. V. Subramanian, John Lynch and Pierre Chauvin. 2005. "Comparison of a Spatial Perspective with the Multilevel Analytical Approach in Neighborhood Studies: The Case of Mental and Behavioral Disorders due to Psychoactive Substance use in Malmo, Sweden, 2001." *American Journal of Epidemiology* 162:171-82.

Diez-Roux, Ana V. 2000. "Multilevel Analysis in Public Health Research." *Annual Review of Public Health* 21:171-92.

Downey, Liam. 2006. "Using Geographic Information Systems to Reconceptualize Spatial Relationships and Ecological Context." *American Journal of Sociology* 112:567-612.

Ellen, Ingrid G., Tod Mijanovich and Keri-Nicole Dillman. 2001. "Neighborhood Effects on Health: Exploring the Links and Assessing the Evidence." *Journal of Urban Affairs* 23:391-408.

Galster, George. 2001. "On the Nature of Neighbourhood." *Urban Studies* 38:2111-24.

Grannis, Rick. 1998. "The Importance of Trivial Streets: Residential Streets and Residential Segregation." *American Journal of Sociology* 103:1530-64.

------.2005. "T-Communities: Pedestrian Street Networks and Residential Segregation in Chicago, Los Angeles, and New York." *City & Community* 4:295-321.

Isaaks, Edward H. and R. M. Srivastava. 1989. "Applied Geostatistics.":xix, 561.

Klinenberg, Eric. 2002. *Heat Wave: A Social Autopsy of Disaster in Chicago*. University of Chicago Press.

Leventhal, Tama and Jeanne Brooks-Gunn. 2000. "The Neighborhoods they Live in: The Effects of Neighborhood Residence on Child and Adolescent Outcomes." *Psychological Bulletin* 126:309-37.

Mohai, Paul and Robin Saha. 2006. "Reassessing Racial and Socioeconomic Disparities in Environmental Justice Research*." *Demography* 43:383.

Park, Robert E., Ernest W. Burgess, Roderick D. McKenzie and Louis Wirth. 1925. *The City.* Chicago, IL: University of Chicago Press.

Pikora, Terri, Billie Giles-Corti, Fiona Bull, Konrad Jamrozik and Rob Donovan. 2003. "Developing a Framework for Assessment of the Environmental Determinants of Walking and Cycling." *Social Science & Medicine* 56:1693-703.

Raudenbush, Stephen W. and Anthony S. Bryk. 2002. *Hierarchical Linear Models : Applications and Data Analysis Methods.* Thousand Oaks : Sage Publications.

Raudenbush, Stephen W., Anthony S. Bryk, Yuk F. Cheong, Richard Congdon and Mathilda du Tolt. 2004. *HLM 6 : Hierarchical Linear and Nonlinear Modeling.* Lincolnwood, Ill.: Scientific Software Int. Inc.

Raudenbush, Stephen W. and Robert J. Sampson. 1999. "Ecometrics: Toward a Science of Assessing Ecological Settings, with Application to the Systematic Social Observation of Neighborhoods." *Sociological Methodology* 29:1-41.

Riva, Mylene, Lise Gauvin and Tracie A. Barnett. 2007. "Toward the Next Generation of Research into Small Area Effects on Health: A Synthesis of Multilevel Investigations Published since July 1998." *Journal of Epidemiology and Community Health* 61:853-61.

Robert, Stephanie A. 1999. "Socioeconomic Position and Health: The Independent Contribution of Community Socioeconomic Context." *Annual Review of Sociology* 25:489-516.

Sampson, Robert J., Jeffery Morenoff and Thomas Gannon-Rowley. 2002. "Assessing 'Neighborhood Effects:' Social Processes and New Directions in Research." *Annual Review of Sociology* 28:443-78.

Sampson, Robert J. and Stephen W. Raudenbush. 1999. "Systematic Social Observation of Public Spaces: A New Look at Disorder in Urban Neighborhoods." *The American Journal of Sociology* 105:603-51.

------.2004. "Seeing Disorder: Neighborhood Stigma and the Social Construction of "Broken Windows"." *Social Psychology Quarterly* 67:319-42.

Sampson, Robert J., Stephen W. Raudenbush and Felton Earls. 1997. "Neighborhoods and Violent Crime: A Multilevel Study of Collective Efficacy." *Science* 277:918-24.

Suminski RR, Poston WS, Petosa RL, Stevens E, Katzenmoyer LM. 2005. “Features of the neighborhood environment and walking by US adults.” *American Journal of Preventive Medicine*. 28:149–155.

Suttles, Gerald D. 1972. *The Social Construction of Communities.* Chicago: University of Chicago Press.

Wendel-Vos, G. C. W. and A. J. Schuit. 2004. "Factors of the Physical Environment Associated with Walking and Bicycling." *Medicine and Science in Sports and Exercise* 36:725-30.

Wilson, William J. 1987. *The Truly Disadvantaged : The Inner City, the Underclass, and Public Policy.* Chicago: University of Chicago Press.

Wilson, William J.,. 1996. *When Work Disappears : The World of the New Urban Poor.* New York : Knopf : Distributed by Random House, Inc.

Zorbaugh, Harvey W. 1929. *The Gold Coast and the Slum; a Sociological Study of Chicago's Near North Side.* Chicago,: University of Chicago Press.

Tables

Table 1. Individual-Level Descriptive Statistics, Means and Proportions: CCAHS 2002 (N = 3,103)

Variable	Mean	(SD)
Fear of Walking	2.52	(0.74)
	Range: 1-4	
Female	0.53	(0.50)
Age		
Age 18-39	0.27	(0.45)
Age 30-39	0.23	(0.42)
Age 40-49	0.19	(0.39)
Age 50-59	0.13	(0.34)
Age 60-69	0.09	(0.29)
Age 70+	0.09	(0.29)
Race/Ethnicity		
Non-Hisp White	0.38	(0.49)
Non-Hisp Black	0.32	(0.47)
Hispanic	0.04	(0.19)
Non-Hisp Other	0.26	(0.44)
Immigrant Status		
1st Generation Immigrant	0.27	(0.44)
2nd Generation Immigrant	0.14	(0.34)
3rd Generation Immigrant	0.59	(0.49)
Education		
<12 years of education	0.23	(0.42)
12-15 years of education	0.49	(0.50)
16+ years of education	0.28	(0.45)
Income		
Income < $10,000	0.10	(0.30)
Income $10,000-$29,999	0.26	(0.44)
Income $30,000-$49,999	0.18	(0.39)
Income $50,000+	0.26	(0.44)
Missing data on Income	0.19	(0.39)

Table 2. Neighborhood-Level Descriptive Statistics: CCAHS 2002, Census 2000

Panel A. Census Boundaries

	Block Groups *n = 1,284*			Tracts *n = 676*			NCs *n = 343*		
	Mean	SD	Range	Mean	SD	Range	Mean	SD	Range
Disadvantage	0.07	(0.72)	[-1.2,3.6]	0.07	(0.68)	[-1.2,3.6]	0.07	(0.64)	[-1.0,2.5]
Affluence	-0.06	(0.84)	[-1.3,3.9]	-0.06	(0.81)	[-1.3,3.9]	-0.06	(0.78)	[-1.2,3.4]
Residential Stability	-0.11	(0.78)	[-2.3,1.9]	-0.11	(0.72)	[-2.3,1.8]	-0.11	(0.68)	[-1.9,1.5]
Hispanic/Foreign Born	0.16	(0.99)	[-0.9,2.7]	0.16	(0.97)	[-0.9,2.4]	0.16	(0.95)	[-0.9,2.4]
Percent non-Hispanic Black	0.40	(0.43)	[0,1]	0.41	(0.43)	[0,1]	0.41	(0.42)	[0,1]
Population Density (logged)	16.00	(0.69)	[11,18]	16.00	(0.60)	[13,18]	16.00	(0.52)	[14,17]
Disorder	-2.50	(1.20)	[-5.9,0.4]	-2.40	(1.20)	[-6.2,0.4]	-2.40	(1.20)	[-6.5,0.7]

Panel B. Radial Buffers

	250m			500m			1km		
	Mean	SD	Range	Mean	SD	Range	Mean	SD	Range
Disadvantage	0	(0.88)	[-1.6,4.3]	0	(0.91)	[-1.7,4.1]	0	(0.93)	[-1.7,3.5]
Affluence	0	(0.94)	[-1.3,4.4]	0	(0.95)	[-1.1,4.5]	0	(0.97)	[-1.1,4.2]
Residential Stability	0	(0.89)	[-2.2,2.4]	0	(0.89)	[-2.1,2.5]	0	(0.90)	[-2,2.3]
Hispanic/Foreign Born	0	(0.94)	[-1,2.3]	0	(0.94)	[-1.1,2.3]	0	(0.94)	[-1.1,2.3]
Percent non-Hispanic Black	0.4	(0.42)	[0,1]	0.4	(0.41)	[0,1]	0.4	(0.40)	[0,0.99]
Population Density (logged)	8.9	(0.57)	[6.2,10]	8.8	(0.52)	[6.5,10]	8.8	(0.49)	[6.9,9.9]
Disorder	-2.4	(1.20)	[-6.5,0.88]	-2.4	(1.20)	[-6.4,0.53]	-2.4	(1.10)	[-6.2,0.14]

Table 3. HLM Models of the Relationship between Residents' Neighborhood Social and Physical Environment and Fear of Walking[a]

Panel A. Census Boundaries

	Block Group		Tract		NC	
	Model 1	Model 2	Model 1	Model 2	Model 1	Model 2
Disadvantage	0.188 ***	0.139 ***	0.18 ***	0.136 ***	0.223 ***	0.177 **
	(0.033)	(0.033)	(0.041)	(0.041)	(0.054)	(0.054)
Affluence	0.042	0.037	0.047	0.043	0.082 *	0.08 *
	(0.025)	(0.024)	(0.031)	(0.030)	(0.040)	(0.040)
Residential Stability	-0.017	0.012	-0.041	-0.001	-0.029	0.001
	(0.024)	(0.024)	(0.032)	(0.032)	(0.043)	(0.042)
Hispanic/Foreign Born	0.279 ***	0.677 ***	0.296 ***	0.224 ***	0.33 ***	0.272 ***
	(0.030)	(0.089)	(0.098)	(0.101)	(0.045)	(0.047)
non-Hispanic Black	0.829 ***	0.215 ***	0.851 ***	0.68 ***	0.939 ***	0.8 ***
	(0.087)	(0.031)	(0.036)	(0.038)	(0.113)	(0.116)
Population Density	0.061 *	0.045	0.026	0.021	0.012	0.001 ***
	(0.024)	(0.023)	(0.032)	(0.031)	(0.049)	(0.048)
Disorder		0.099 ***		0.099 ***		0.084
		(0.015)		(0.018)		(0.021)
Variance Components						
Level 1	0.393	0.391	0.392	0.392	0.395	0.395
Level 2	0.04	0.0367	0.0437	0.0387	0.0434	0.039
% Variance Explained at Level 2[b]	0.64	0.67	0.57	0.62	0.56	0.61

Panel B. Radial Buffers

	250m		500m		1km	
	Model 1	Model 2	Model 1	Model 2	Model 1	Model 2
Disadvantage	0.198 ***	0.174 ***	0.19 ***	0.169 ***	0.226 ***	0.205 ***
	(0.026)	(0.027)	(0.027)	(0.028)	(0.030)	(0.032)
Affluence	0.037	0.043	0.033	0.04	0.079	0.084
	(0.026)	(0.026)	(0.028)	(0.028)	(0.031)	(0.031)
Residential Stability	0.004	0.018	-0.006	0.006	0.042	0.05
	(0.024)	(0.024)	(0.026)	(0.027)	(0.032)	(0.032)
Hispanic/Foreign Born	0.325 ***	0.293 ***	0.32 ***	0.297 ***	0.33 ***	0.314 ***
	(0.035)	(0.036)	(0.037)	(0.038)	(0.039)	(0.040)
non-Hispanic Black	0.893 ***	0.818 ***	0.929 ***	0.874 ***	0.942 ***	0.903 ***
	(0.089)	(0.091)	(0.094)	(0.096)	(0.101)	(0.103)
Population Density	0.088 *	0.069 *	0.087 **	0.071 *	0.101 **	0.085 **
	(0.030)	(0.030)	0.011	(0.034)	(0.038)	(0.040)
Disorder		0.055 ***	(0.034)	0.044 **		0.035
		(0.015)		(0.017)		(0.020)
R-Squared	0.202	0.205	0.205	0.206	0.2	0.201

[a] These models are also adjusted for sex, age, race/ethnicity, immigrant status, education, and income.

[b] Based on the neighborhood variance in a model unadjusted for neighborhood factors.