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# Neighborhood Contexts and Health

An Examination of Neighborhood Social  
Cohesion, Health and Well-being



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## Executive Summary

An extensive body of research on the environmental and structural characteristics of communities documents the important influence of neighborhood contexts on the health and well-being of residents. The study of such “place characteristics” has revealed important associations between multiple health-related outcomes and the socioeconomic characteristics of neighborhoods and local communities (Sampson, 2003). However, research in this area has also tended to focus on neighborhood economic and social disadvantage. Models of community health that account for neighborhood risk factors alone are not likely to explain what accounts for communities that thrive. The current study focuses on the protective role of social resources within neighborhoods and among neighbors, and proposes that social cohesiveness among neighbors may prove to be an important social resource that promotes health and well-being among residents.

Many studies addressing social cohesion, health and well-being have concluded that a highly contextualized approach to understanding social cohesion and its impact on health is necessary. There are few studies that have considered which neighborhood characteristics predict neighborhood social cohesion. The present study had two aims. First, we examined how residents’ perceptions of neighborhood social cohesion are related to health and well-being. Second, we turned to an examination of neighborhood contexts and social cohesion to examine which neighborhood contexts are associated with higher and lower perceptions of social cohesion among residents of different neighborhoods.

The sample consisted of 3,139 adult residents of Maricopa County, Arizona, who participated in the 2008 Arizona Health Survey (AHS). U.S. Census Bureau data at the census tract level was used to derive indices to characterize neighborhoods across Maricopa County. Among the present sample of Maricopa County residents, those who rated their neighborhoods as more socially cohesive were more likely to be non-Hispanics, married, older, and of higher socioeconomic position. We found support for our hypothesis that neighborhood social cohesion would have a positive impact on self-rated health and well-being. These effects were found to operate differently across socioeconomic and ethnic groups.

The final part of the analysis was an inquiry into what kinds of neighborhood contexts were associated with residents’ social cohesion. Ethnic homogeneity and the percentage of residents with a bachelor’s degree or higher were significant predictors of aggregated social cohesion in neighborhoods. Residential stability was unrelated to neighborhood levels of social cohesion. There may have been a small relation between median household income and homeownership with aggregated social cohesion.

The present analysis sheds light on the potential for neighborhood social cohesion as an important aspect of community resilience that contributes to residents’ health and well-being. Implications of the study included a need to investigate the cultural and psychometric differences in measuring social cohesion among Hispanics versus non-Hispanics. The analysis of neighborhood contexts suggested that educational and cultural contexts were predominant over material and economic resources in their association with neighborhood social cohesion. Overall, the present study suggests that neighborhood social cohesion may begin to explain why some economically disadvantaged communities deteriorate while others thrive.

## Background

Modern life is replete with social and economic inequalities. Americans largely accept that there are “the have’s and the have-not’s.” But when it comes to health and well-being, we expect a higher degree of equality. Recent years have seen growing attention to the issue of inequalities in health, as disparities have been increasingly documented for ethnic minorities and the economically disadvantaged (Adler & Ostrove, 1999; Angel & Angel, 2006; Markides, Kyriakos, Rudkin, Angel, & Espino, 1992; Markides & Eschbach, 2005; Marmot, 2004). Studies comparing differences in global self-rated health between Hispanics and Whites have consistently revealed a Hispanic disadvantage (Angel & Angel, 2005; Markides & Eschbach, 2005).

But not all economically disadvantaged people experience poor health, and many experience satisfying emotional lives. In fact, despite relative economic and health disadvantage compared to Whites, rates of mental health problems among Hispanics and African Americans do not tend to reflect the expected mental health disadvantage based on socioeconomic group differences (Snowden, 2000). However, findings have been mixed (Hao & Johnson, 2000). While some studies have found no ethnic differences in emotional well-being between Latinos and non-Hispanics Whites (Ryff, Keyes, & Hughes, 2004), others have found a mental health advantage for Hispanics and African Americans for certain aspects of psychological well-being (Ryff et al., 2004).

An extensive body of research on the environmental and structural characteristics of communities documents the important influence of neighborhood contexts on the health and well-being of residents. The study of such “place characteristics” has revealed important associations between multiple health-related outcomes and the socioeconomic characteristics of neighborhoods and local communities (Sampson, 2003). However, research in this area has also tended to focus on neighborhood economic and social disadvantage. Models of community health that account for neighborhood risk factors alone are not likely to explain what accounts for communities that thrive (Sampson, 2003). The current study seeks focuses on the protective role of social resources within neighborhoods and among neighbors, and proposes that social cohesiveness among neighbors may prove to be an important social resource that promotes health and well-being among residents.

## Social Cohesion: Theoretical Development

Several similar concepts have been developed in order to describe the social resources among neighborhoods and groups. Myriad and overlapping constructs have been developed, such as social cohesion, social capital, and collective efficacy. These constructs have in common a focus on social resources that arise out of shared norms, interpersonal ties, and trust that confers upon individuals or collectives an important social resource (Berger-Schmitt, 2002). A better understanding of social cohesion within neighborhoods has been suggested as the key in coming to understanding how neighborhood mechanisms contribute to ethnic/racial and socioeconomic disparities (Snowden, 2004; Sampson & Raudenbush, 1997).

The construct of social cohesion was developed by sociologists and used by people from diverse disciplines to describe social bonds between people in groups and neighborhoods (Berger-Schmitt, 2002). Concepts relating to social cohesion have received increasing attention in the context of regional health and health disparities, particularly social capital (e.g., Kawachi, Kennedy, Lochner, & Prothrow-Stith, 1997), and collective efficacy (Sampson & colleagues, 1997). Lynch and Kaplan (1997) describe social capital as the “stock” of social resources and networks that produces social cohesion and trust. Collective efficacy stems from Bandura’s (1977) concept of self-efficacy. Sampson and colleagues (1997) define collective efficacy as the “linkage of mutual trust and the willingness to intervene for the common good” (p. 919). These constructs have been applied most frequently to explain the ability of communities to solve problems associated with social disorder and crime. Although social cohesion is the focus of the present study, social capital and collective efficacy are closely related and have contributed important insights into the study of health in recent years. These constructs either implicitly or explicitly involve social cohesion. A review of theoretical approaches to social cohesion found that there is general agreement on key aspects across conceptualizations of social cohesion, including the strength of social relations, a sense of belonging to a community, shared values, a common identity and trust, equal opportunities and the extent of disparities, but also social exclusion in a society (Berger-Schmitt, 2002).

For the purposes of this study, social cohesion is conceived of as a valid characteristic of both individuals and neighborhoods where they live. The study employs a broad conceptualization of social cohesion that is focused on norms and sentiments among neighbors, including norms governing action for the communal good, mutual trust among residents, and sense of connection to one's neighborhood. This definition is not dependent upon its function toward some communal action.

## Social Cohesion, Health, and Well-being

Studies investigating the health benefits of social cohesion are beginning to reveal interesting patterns. Wen and colleagues (2003) found that a composite of social processes, which included measures of social cohesion, social control, and respondents' neighborhood-based friendship networks, had a significant impact on individual self-rated health. Another study showed that collective efficacy had a significant positive effect on self-rated health over and above individual demographic characteristics and health background, as well as other neighborhood variables (Browning & Cagney, 2002). Franzini and colleagues (2005) found that the detrimental effect of neighborhood impoverishment on self-rated health among low- to middle-income residents was mediated by social capital, but not collective efficacy.

In another study among older individuals with serious medical diagnoses, collective efficacy was protective against mortality (Wen, Cagney, & Christakis, 2005). A Canadian study of adolescent self-rated physical and mental health found that adolescents who perceived their neighborhoods as socially cohesive also reported better global self-rated health (Abada, Hou, & Ram, 2007). An international study on social capital focused on general trust and subjective well-being across 49 countries. The study demonstrated that measures of social capital had direct effects on well-being (Helliwell & Putnam, 2004).

Many of the studies addressing social cohesion, health and well-being have concluded that a highly contextualized approach to understanding social cohesion and its impact on health is necessary. There is a strong need to study the ethnic as well as the socioeconomic characteristics of communities in investigating neighborhood effects on health and well-being, particularly in the study of Latino health (Patel, Eschbach, Rudkin, Peek, & Markides, 2003), yet few studies have incorporated ethnic or cultural contexts.

## Contextual Influences on Social Cohesion

Several studies have investigated the contribution of social cohesiveness on health after other neighborhood characteristics (residential stability, immigrant concentration, neighborhood disadvantage) are accounted for, but there are few studies that have considered which neighborhood characteristics predict neighborhood social cohesion. Dupere & Perkins (2007) investigated community types, informal social ties, and formal citizen participation. They found that in neighborhoods with average levels of environmental stressors such as delinquency and disorder, higher levels of formal citizen participation were associated with better mental health outcomes. Sampson and colleagues (1997) found impressive support for their thesis that residential instability leads to disadvantage and violent crime through its depletion of collective efficacy. Residential stability is thought to be an important characteristic of resilient neighborhoods.

Racial and economic exclusion in communities may degrade collective efficacy (Sampson et al., 1997; Sampson, 2003), and result in selective exclusion from social and economic resources through racial/ethnic and economic segregation (Gee & Payne-Sturges, 2004). There is some evidence that the presence of high degrees of protective social resources in highly concentrated Mexican American and Hispanic neighborhoods may account for positive emotional health (Eschbach, Ostur, Patel, Markides, & Goodwin, 2004; Patel et al., 2003). There is also some evidence that links ethnic diversity to decreased social capital (McColloch, 2003; Putnam, 2007). However, research on ethnic heterogeneity, social cohesion, and health has been mixed. Duncan and colleagues (2003) did a multilevel analysis of the influence of ethnic heterogeneity and different crime variables on collective efficacy and found no evidence for the influence of ethnic heterogeneity on collective efficacy. A Canadian study on adolescent self-rated physical and mental health found that adolescents who perceived their neighborhoods as socially cohesive also reported better global self-rated health. However, the effect was much greater for youth in neighborhoods with high minority concentration (Abada, Hou, & Ram, 2007). In areas of low ethnic minority concentration social cohesion did not influence health ratings.

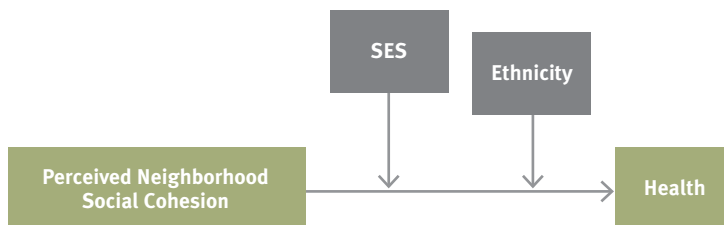
## Study Aims

Many studies of neighborhood social cohesion have focused on dimensions of neighborhood deprivation and disorder. Phoenix is a compelling contemporary backdrop in which to study ethnic differences in health and emotional well-being and social cohesion. Vibrant patterns of immigration and a strong presence of Latino ethnic enclaves shape the cultural landscape of Arizona. The population of Maricopa County is marked by mobility and an influx of residents in recent years (Harlan, 2003). Some of its neighborhoods are still in early formation, others have seen great change over decades, and others are relatively stable. A recent Phoenix area social survey found great variation across Maricopa County neighborhoods in social ties and social cohesion across neighborhoods with disparate economic and geographic profiles (Harlan, 2003). More affluent communities tended to report higher levels of social capital, however there were great differences in social cohesion and social ties among low income communities. In addition, neighborhoods varied tremendously in other aspects of their social and environmental contexts.

The present study has two aims. First, we examined how residents' perceptions of neighborhood social cohesion are related to health and well-being. The conceptual model depicting predicted relations among variables for the first aim is depicted in Figure 1. First we examined the ways in which socio-demographic characteristics are related to perceived neighborhood social cohesion. In other words, what kinds of people tend to rate their neighborhoods as more socially cohesive? Less socially cohesive? A central hypothesis will be that perceived neighborhood social cohesion is associated with more positive self-rated health and well-being. We test additionally whether the relation between social cohesion and health differs with socioeconomic status or ethnicity. As shown in Figure 1, the protective benefits of neighborhood social cohesion were expected to be more beneficial for those participants who are of lower social standing and who are ethnic minorities (i.e., Hispanics).

Second, we turned to an examination of neighborhood contexts and social cohesion. We address the question "What neighborhood contexts are associated with higher and lower perceptions of social cohesion among residents of different neighborhoods?" For these analyses, we will look at averaged ratings of social cohesion averaged among residents of Phoenix neighborhoods. Census tract data measuring neighborhoods' educational level, median household income, ethnic homogeneity, residential stability, and home ownership will be used to examine neighborhood contexts that promote or deplete social cohesion.

Figure 1. Proposed Conceptual Model



## Methods

### Participants and Neighborhoods

The sample consisted of 3,139 adult residents of Maricopa County, Arizona who participated in the 2008 Arizona Health Survey (AHS), funded by St. Luke's Health Initiatives (SLHI). Maricopa County covers the entire Phoenix metropolitan area and is one of the largest counties in the country. Data for this study will be limited to the adult portion of the sample that resides in Maricopa County (which comprised 3,139 out of the 4,196 statewide respondents).

Of the resulting adult sample, 265 (8.4%) reported that they considered Spanish their first language. 198 of the Maricopa County respondents were administered the survey in Spanish. The following table depicts demographic characteristics of the adult sample. Of the 663 census tracts in Maricopa County, the survey respondents represent residents of 554 tracts. In each tract, there were between 1 and 42 survey respondents.

Neighborhood level variables to characterize respondents' neighborhood contexts will be examined using U.S. Bureau census tract data from the 2000 Decennial Census. (US Census Bureau, 2000). Census tracts represent small, relatively permanent subdivisions of a county delineated by local committees of census data users. Census tract boundaries normally follow visible features and are designed to be relatively homogeneous units with respect to population characteristics, economic status, and living conditions. Census tracts average about 4,000 inhabitants. Some studies prefer block groups over census tracts, but estimates of contextual effects have been found to be generally similar for census tract and block group areas (Abada et al., 2007; Borrell, Diez-Roux, Rose, Catellier, & Clark, 2004). Addresses of each respondent were geo-coded and matched to census tracts. Each of the survey's 554 census tracts represented will be matched to the community types.

## Procedure

The AHS consisted of a telephone random-digit-dialing (RDD) sample drawn using a list assisted RDD approach. Sampling procedures were used to select households and residents within households. The AHS sample was selected to be representative of the adult residential population of Arizona. Although adolescents and children were also selected within selected households and interviewed for the survey, the data utilized for this study will be limited to the adult sample. Households sampled for the survey excluded group households of more than 9 unrelated persons (e.g., communes, convents or dormitories), institutional facilities (e.g., prisons, nursing homes, residential treatment facilities), the homeless, and those living in military barracks. People living in residences without landlines were not included in the sample.<sup>1</sup>

A total of 129,250 telephone numbers (103,853 in Maricopa County) were selected using list-assisted RDD sampling, the current standard method of choice for telephone surveys (Tucker, Lepkowski, and Piekarski, 2002). The sample was stratified into regions of Maricopa County and the remainder of the state in order to ensure target sample sizes of 4,000 statewide respondents, with 3,000 of the respondents in Maricopa County. The large number of telephone numbers was selected in order to account for participant losses due to a wide variety of causes such as nonresidential and nonworking numbers, non-response, and refusal. In list assisted sampling, the random sample of telephone numbers is drawn from sets of telephone numbers composed of 100 banks that cover the geographical region, each containing the 100 telephone numbers with the same first eight digits.

Before releasing phone numbers for interviewing, procedures to purge out-of-scope telephone numbers, such as nonresidential and nonworking numbers were followed. Just over 60 percent were removed before numbers were entered into the RDD program. For the remaining 47,392 telephone numbers, mailing addresses were matched when possible. Addresses were obtained for about 58 percent.

An advance letter was sent in English and Spanish. The survey questionnaire was administered by phone interview in English or Spanish. The adult questionnaire took approximately 25 minutes to administer, and included items assessing demographics, physical and mental health, health insurance coverage, health care utilization, employment, income, homeownership, and perceptions of one's neighborhood. Spanish translations of survey items were adopted from a previously administered health survey from California, when available. The remaining survey items were translated by an outside service arranged by Westat. Bilingual data collectors were available to conduct Spanish language survey interviews. 97 trained data collectors administered phone surveys between March 24 and June 9, 2008.

Upon making contact at a telephone number, screening interviewers identified an adult of 18 years of older to serve as household informant, determined whether the phone number was associated with a residence, and determined how many adults resided in the household. If more than one adult resided in the household, a sample selection algorithm (Rizzo, Brick, & Park, 2004) was used based on the number of adults reported that was designed to ensure an equal probability of being selected for each adult.

In Maricopa County, 5,760 numbers (6.0%) were successfully screened, 66,739 (69.2%) were out of scope (for example, because of business or non-working numbers), 6,793 (7.0%) were noncontact, 10,217 (10.6%) were refusals (including when the maximum call limit was reached), and 783 (0.8%) were other reasons for nonresponse.

1 By 2007, about 15 percent of households nationally were predicted to have only cellular telephones (Blumberg et al., 2006). To reduce potential biases that result from the exclusion of households with no landline telephones, special weighting procedures were used in AHS with the use of socioeconomic variables such as household tenure in addition to age and race-ethnicity that are correlated to cell phone use.

## Individual-Level Measures

All individual-level variables are drawn from AHS survey responses assessed by trained interviewers via telephone.

**Age.** Participants were asked to state their age. The age of participants ranged from 18 to 96.

**Gender.** Participants were asked “Are you male or female?” Male respondents were assigned a code of 0 and females were assigned a code of 1.

**Annual Household Income.** Respondents were asked to estimate their household’s total annual income from all sources before taxes. For respondents who refused or did not know, follow-up items estimating household annual income in \$5,000 ranges from less than \$5,000 to greater than \$135,000. Eight incremental categories are utilized in the present analyses to measure annual household income.

**Educational Attainment.** Respondents were asked “What is the highest grade of education you have completed and received credit for?” Responses were assigned one of 30 codes characterizing each grade through high school, and sets of codes for graduate or professional school, junior or community college, and vocation, business or trade school. The measure was then re-coded into 11 categories presented in Table 1.

**Homeownership.** Participants were asked “Do you own your home?” Responses were coded one for those who reported they were homeowners and 0 for those who were not.

**Race and Ethnicity.** The AHS survey items concerning Hispanic ethnicity and race were consistent with those in the 2000 Decennial Census. First, Hispanic ethnicity was assessed by asking respondents to report whether or not they were “Latino or Hispanic.” A second item asked respondents to choose one or more racial categories consisting of 1) White, 2) Black or African American, 3) Asian, 4) American Indian, Alaska Native or Native American, 5) Other Pacific Islander, or 6) Native Hawaiian. Respondents were also allowed to select an “other” and asked to specify. Following Census procedures, responses in the “other” category were re-classified where possible. For the purposes of the current study, non-Hispanics were coded zero and Hispanics were coded one.

**Self-Rated Health.** A single item measuring self-rated global from the SF-36 (Ware & Sherbourne, 1992) will be used. The question asks, “In general, would you say that your health is...” with responses on a 5-point scale from poor to excellent. The validity of using a single-item measure of self-rated health has been well-established (Bowling, 2005; Desalvo, Bloser, Reynolds, & Muntner, 2006). Self-rated health has been shown to be related to physical health problems and their functional consequences (Manderbacka, Lundberg, & Martikainen, 1999). The measure has been validated among all major ethnic groups in the U.S. (McGee, Liao, Cao, & Cooper, 1999), including Hispanics (Finch, Hammer, Reindl, & Vega, 2002).

**Well-Being.** Well-being was measured using the 5-item World Health Organization’s WHO-5 Well-Being Index (WHO-5; Bech, 2004). All items include the past 30 days as the frame of reference. The global item asks, “Would you say in general that your quality of life and sense of well-being is excellent, very good, good, fair, or poor?” Items include how often participants feel cheerful, vigorous, and calm. Responses are measured on a 5-point Likert scale.

**Neighborhood Social Cohesion.** The 5 items measuring the social cohesion dimension of the Collective Efficacy Scale (Sampson & Raudenbush, 1997) assessed neighborhood social cohesion. The items ask respondents to rate on a 4-point scale how much they agree with statements regarding their neighborhood and neighbors such as “people in this neighborhood can be trusted,” “people in this neighborhood do NOT share the same values,” and “there are people I can count on in this neighborhood.”

**Community Safety.** Respondents were asked to rate how much of the time they felt their community was safe during the past month. Responses were measured on a 4-point scale from “none of the time” to “all of the time.”

**Table 1. Demographic Characteristics of Survey Respondents**

	<b>N</b>	<b>Mean (SD)</b>	<b>%</b>
<b>Gender</b>	<b>3098</b>		
Male	1154		37.2
Female	1944		62.8
<b>Age</b>	<b>3098</b>	<b>56.0 (17.6)</b>	
<b>Ethnicity/Race</b>	<b>3098</b>		
Hispanic/Latino	405		13.1
White	2476		79.9
African American	103		3.3
Native American, Native Hawaiian, or Alaska Native	47		1.6
Asian	36		1.2
Other	31		1.0
<b>Education</b>	<b>3086</b>		
No formal education	3		.1
8th grade or less	118		3.8
Some high school	125		4.1
High school degree	706		22.9
Some trade school	129		4.2
Some college	878		28.5
College degree	631		20.4
Some graduate school	40		1.3
Masters' degree	310		10.0
Some doctoral work	40		1.3
Doctoral or professional degree	106		3.4
<b>Household Annual Income Range</b>	<b>2619</b>		
Under \$10,000	127		4.8
\$10,001 to \$20,000	333		12.7
\$20,001 to \$40,000	566		21.6
\$40,001 to \$60,000	475		18.1
\$60,001 to \$80,000	371		14.2
\$80,001 to \$100,000	273		10.4
\$100,001 to \$135,000	175		6.7
More than \$135,000	299		11.4
<b>Marital status</b>	<b>3089</b>		
Married or living w/partner	1799		57.2
Widowed, divorced, or separated	982		31.7
Never married	341		11.0
<b>Work status</b>	<b>3090</b>		
Working	1626		52.6
Not working	1464		47.4
<b>Homeownership</b>	<b>3076</b>		
Own	2489		79.3
Rent	525		16.7
Other	101		3.2

## Neighborhood-Level Measures

Neighborhood level measures were drawn from the 2000 Decennial Census for all census tracts making up Maricopa County. Data was accessed from the American FactFinder website (<http://factfinder.census.gov>).

**Neighborhood Educational Attainment Level.** The percent of the population age 25 or above who have completed at least a bachelor's degree will be used as a measure of neighborhood education level. Several SES indicators representing census tracts will be combined to create this variable.

**Neighborhood Median Household Income.** Median household income for each census tract was used. The measure was rescaled by dividing each value by 1000.

**Ethnic Homogeneity.** The proportion of Hispanic and non-Hispanic White residents was computed for each census tract. Then, the difference between Hispanic and White proportions in each tract was computed to represent a measure of ethnic composition, where smaller differences between Hispanic and White proportions represent more diverse, and larger differences represent more homogeneous neighborhoods. The absolute value of this difference variable was used to measure ethnic homogeneity. This measure of ethnic homogeneity ranges between 0 and 1. A score of 1 would indicate a completely homogeneous neighborhood (residents are exclusively Hispanic or exclusively White), and lower homogeneity scores indicate a more ethnically diverse neighborhood.

**Neighborhood Residential Stability.** Percent who lived in residents for previous 5 years or more was computed from census data and utilized as a measure of residential stability.

**Neighborhood Homeownership Rate.** The percentage of housing units that were owner-occupied in each census tract was computed as a measure of neighborhood homeownership.

## Statistical Analysis

Descriptive statistics were computed for AHS respondents. Using survey data, an analysis of individual characteristics associated with neighborhood social cohesion was presented. Next, multiple regression analyses were used to test whether perceived neighborhood social cohesion was statistically associated with individuals' self-reported health and well-being, and whether this relation differed between individuals according to ethnicity and socioeconomic status. For the next set of analyses, census tract variables and a measure of neighborhood social cohesion aggregated to the census tract level were derived for an examination of how neighborhood contexts are related to residents' ratings of neighborhood social cohesion. Correlations among neighborhood level variables were presented, as well as multiple regression results of the regression of aggregated neighborhood social cohesion on each neighborhood contextual variable. For all inferential analyses, predictor variables were sample-mean centered for ease of interpretation of regression coefficients (Aiken & West, 1991).

# Results

## Descriptive Analyses

Descriptive statistics for key AHS and neighborhood variables are presented in Table 2. All variables were within an acceptable range on measures of skew and kurtosis. Table 3 presents bivariate correlations among key AHS variables. The two outcome variables, self-rated health and well-being, were highly correlated, overlapping by 40 percent. Correlations with the Hispanic ethnicity variable suggested that being Hispanic was significantly associated with younger age ( $r = -.26$ ), less educational attainment ( $r = -.28$ ), lower income ( $r = -.19$ ), and lower likelihood of homeownership ( $r = -.15$ ). Interestingly, Hispanic ethnicity was also associated with lower perceived neighborhood social cohesion ( $r = -.18$ ). Hispanics as a group rated themselves as having lower overall health ( $r = -.10$ ), but higher well-being ( $r = .07$ ). Residents' perceptions of social cohesion were also associated with being relatively older ( $r = .16$ ), more educated ( $r = .20$ ), having higher income ( $r = .25$ ), and owning a home ( $r = .23$ ). As expected, social cohesion was also highly related to ratings of community safety ( $r = .31$ ), and social cohesion was positively related to self-rated health ( $r = .19$ ) and well-being ( $r = .18$ ).

**Table 2. Descriptive Statistics for Key Study Variables**

	N	M(SD)
<b>AHS Variable</b>		
Perceived Social Cohesion	2997	3.08 (.48)
Self-rated Health	3097	3.48 (1.10)
WHO Well-Being Scale	3094	3.67 (.79)
Safe Community	3081	3.55 (.61)
<b>Census Tract Variable</b>		
Neighborhood Educational Attainment Level	595	25.6 (15.8)
Neighborhood Median Household Income	597	50.1 (21.2)
Neighborhood Ethnic Homogeneity	597	.61 (.27)
Neighborhood Residential Stability	597	42.4 (14.6)
Neighborhood Homeownership Rate	597	64.6 (21.7)
Neighborhood Averaged Social Cohesion	596	3.02 (.33)

**Table 3. Correlations between Arizona Health Survey Variables**

	Age	Gender	Ethnicity	Educational Attainment	Household Income	Own House	Social Cohesion	Community Safety	Self-rated Health
1. Age	1								
2. Gender <sup>a</sup>	.042*	1							
3. Ethnicity <sup>b</sup>	-.26***	.00	1						
4. Educational Attainment	.022	-.10***	-.28***	1					
5. Household Income	-.16***	-.14***	-.19***	.45***	1				
6. Own House <sup>c</sup>	.18***	-.03	-.15***	.21***	.37***	1			
7. Social Cohesion	.16***	.03	-.18***	.20***	.25***	.23***	1		
8. Community Safety	.08***	-.08***	-.05**	.09***	.18***	.12***	.31***	1	
9. Self-rated Health	-.11***	-.02	-.10***	.27***	.34***	.20***	.19***	.17***	1
10. Well-Being	.11***	-.05**	.07***	.07***	.10***	-.04*	.18***	.20***	.40***

Notes. <sup>a</sup> 1=female, 0=male; <sup>b</sup> 1=Hispanic, 0=non-Hispanic; <sup>c</sup> 1=own home; 0=does not own home. \*\*\* $p < .001$ , \*\* $p < .01$ , \* $p < .05$

Further descriptive analyses were performed in order to examine whether there were mean group differences in levels of perceived neighborhood social cohesion across pertinent socio-demographic groups. Selected results from these analyses are presented in Table 4. T-tests of group means differences and one-way ANOVAs were computed. There were no significant differences in social cohesion according to gender ( $F_{(1,2995)}=2.29, p=.13$ ), but there were significant differences across marital status ( $F_{(1,2987)}=19.3, p<.001$ ), ethnicity ( $F_{(1,2995)}=95.1, p<.001$ ), and age groups ( $F_{(1,2994)}=49.9, p<.001$ ). Respondents who were married or living with a partner ( $M=3.11, SD=.46$ ) reported significantly higher perceived neighborhood social cohesion than those who were not partnered ( $M=3.03, SD=.49$ ). Hispanics as a group rated their neighborhoods as less socially cohesive ( $M=2.86, SD=.46$ ) than their non-Hispanic counterparts ( $M=3.11, SD=.47$ ). Of note, perceived social cohesion had a number of missing data compared to other scales in the AHS. Among Hispanics, approximately 5 percent were missing scores on social cohesion, compared to 3 percent among non-Hispanics. Tukey HSD post-hoc tests revealed incremental mean differences in social cohesion across age groups. Respondents between 18 and 35 years old ( $N=431$ ) reported the least neighborhood social cohesion ( $M=2.88$ ), those between 36 and 64 years old ( $N=1523$ ) reported greater neighborhood social cohesion than their younger counterparts ( $M=3.09$ ), and those 65 and older ( $N=1043$ ) reported the greatest neighborhood social cohesion ( $M=3.15$ ). All groups significantly differed from one another at the .05 level.

**Table 4. Mean Differences in Social Cohesion across Marital Status, Hispanic Ethnicity, Age Group, and Education Level**

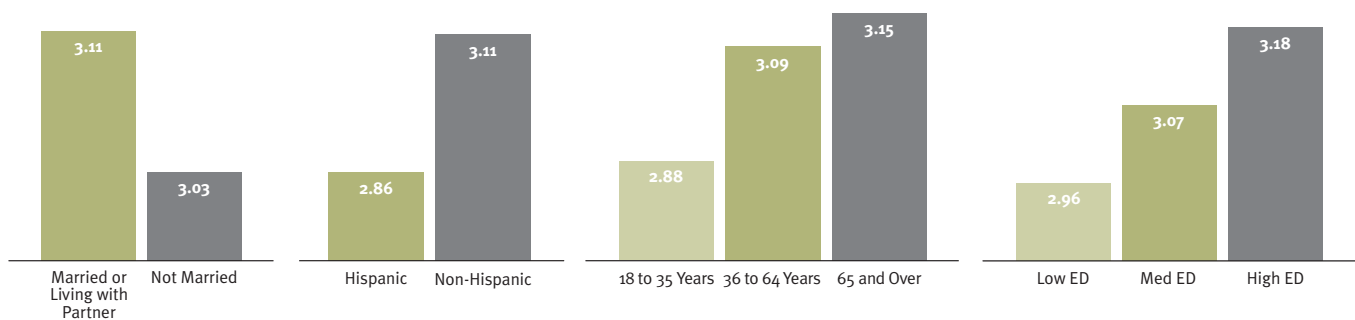


Table 5 presents correlations among neighborhood level variables. Five variables derived from Census 2000 data were examined for their relations to neighborhood social cohesion. To obtain a measure of social cohesion to characterize each neighborhood according to census tract, survey respondents' scores on perceived neighborhood social cohesion were averaged across census tracts to create a mean aggregate score for each tract. Average neighborhood social cohesion was significantly correlated with ethnic homogeneity ( $r=.43$ ), neighborhood education level (percent with a BA or higher;  $r=.39$ ), median household income ( $r=.34$ ), and percent of owner-occupied housing units ( $r=.25$ ). Ethnic homogeneity of neighborhoods proved to be highly correlated with several other neighborhood variables. However, because high scores reflect both homogenous Hispanic and White neighborhoods, the meaning of the correlations should be interpreted with caution. Neighborhood residential stability, measured by the percent of residents who had lived in the same residents for at least the 5 previous years, was not significantly correlated with any other neighborhood variables, including neighborhood social cohesion.

**Table 5. Correlations between Neighborhood Variables**

	Ethnic Homogeneity	Percent with BA or Higher	Median Household Income	Residential Stability	Percent Owner Occupied Housing
1. Ethnic Homogeneity	1				
2. Percent with BA or Higher	.68***	1			
3. Median Household Income	.60***	.78***	1		
4. Residential Stability	.07	-.07	.001	1	
5. Percent Owner Occupied Housing	.46***	.33***	.66***	.30***	1
6. Average Perceived Neighborhood Social Cohesion	.43***	.39***	.34***	-.001	.25***

Note. Correlations have N=594 to 596. \*\*\* $p<.001$

**Table 6. Effects on Social Cohesion on Self-Rated Health and Well-Being**

Predictors	Dependent Variables					
	Self-Rated Health			Well-Being		
Step 1	b	SE	$\beta$	b	SE	$\beta$
Age	-.011	.001	-.170***	.005	.001	.133***
Gender (Female=1)	.057	.039	.026	-.050	.025	-.036*
Educational Attainment	.113	.010	.212***	.023	.006	.068***
Hispanic Ethnicity (Hispanic=1)	-.185	.060	-.057*	.301	.039	.147***
Own House	.423	.049	.154***	.132	.032	.076***
Community Safety	.249	.031	.138***	.183	.020	.161***
Step 2						
Neighborhood Social Cohesion	.232	.043	.102***	.183	.028	.128***

Note. Correlations have N=594 to 596. \*\*\*p<.001

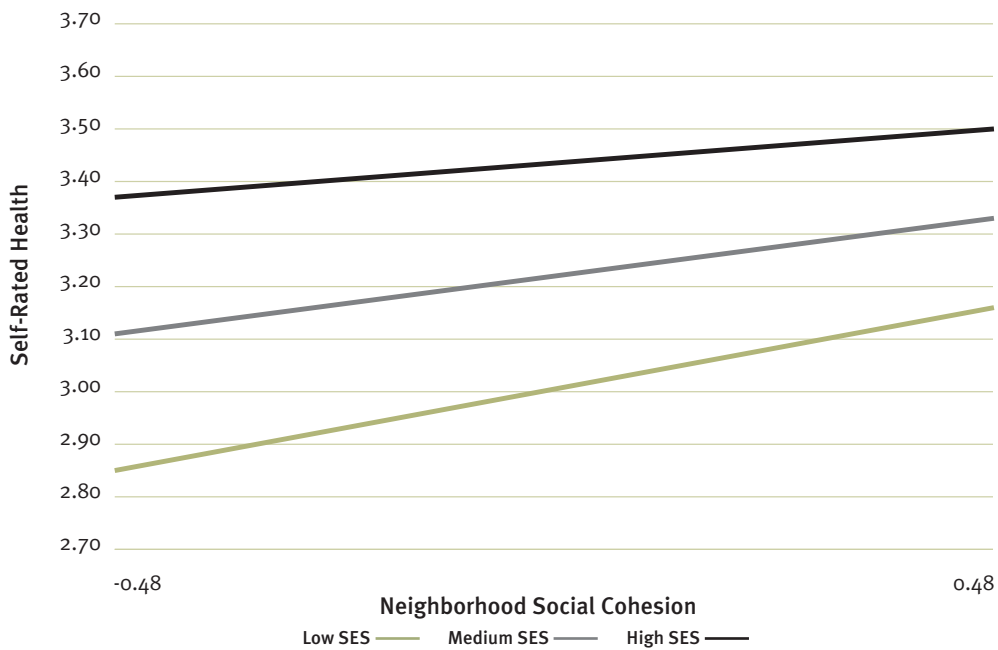
## Inferential Analyses

**Main effects on self-rated health and well-being.** In the first step of the hierarchical regression model, a set of control variables were entered. The control variables accounted for 13 percent of the variance in self-rated health ( $F(6,2791)=73.8, p<.001$ ) and 7.2% of the variance in well-being ( $F(6,2969)=38.2, p<.001$ ). Results of the regression model are depicted in Table 6. Age was negatively related to self-rated health ( $\beta = -.170, p<.001$ ) but positively related to well-being ( $\beta = .133, p<.001$ ). Gender was unrelated to self-rated health, but females rated their well-being lower than males ( $\beta = -.04, p<.05$ ). Greater educational attainment was positively related to both self-rated health and well-being, as was homeownership. Hispanics as a group rated themselves as having worse health, but greater well-being than their non-Hispanic counterparts. Those who viewed their communities as safer also rated their health and well-being more positively than those who rated their communities as less safe. After accounting for control variables, the effect of neighborhood social cohesion was significant on both self-rated health ( $\beta = .102, p<.001$ ) and well-being ( $\beta = .128, p<.001$ ).

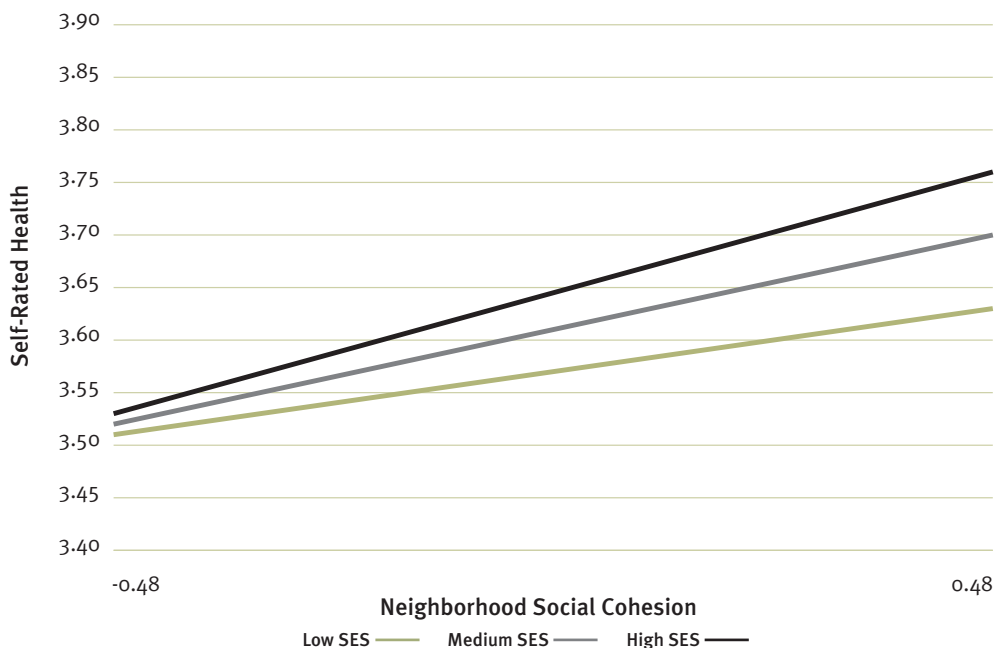
**Does the relation between social cohesion and health differ across socioeconomic levels and ethnic groups?** When differences between Hispanics and non-Hispanics were tested, we found no ethnic differences between groups in the association between social cohesion and self-rated health ( $\beta = -.022, t = -.184, p = .854$ ). Thus, greater social cohesion was associated with more positive self-rated health in the same way among Hispanics and non-Hispanics. However, there were ethnic differences in the relation between social cohesion and well-being ( $\beta = -.172, SE = .079, p = .03$ ). In order to further probe the difference in effects between the two groups, we tested the relation between social cohesion and well-being health among Hispanic and non-Hispanic sub-samples. The effect of social cohesion was significant among non-Hispanics ( $\beta = .195, SE = .029, p < .001$ ), but not among Hispanics ( $\beta = .095, SE = .089, p = .28$ ).

Similarly, sets of regression models were specified in order to investigate whether the social cohesion – health association was different for people of differing socioeconomic levels. The results indicated that both for self-rated health ( $\beta = -.046$ ,  $SE = .020$ ,  $p = .021$ ) and well-being ( $\beta = .028$ ,  $SD = .013$ ,  $p = .030$ ), the influence of social cohesion was conditioned by one’s socioeconomic level. As illustrated in Figure 2, although there is a substantial main effect of socioeconomic status on self-rated health, but at lower levels of SES, the effect of social cohesion is more pronounced than for those at higher levels. In contrast, the magnitude of the relation between social cohesion and well-being increased with higher levels of SES, as depicted in Figure 3.

**Figure 2. Plot of the Relation Between Neighborhood Social Cohesion and Self-Rated Health at Different Levels of SES**



**Figure 3. Plot of the Relation Between Neighborhood Social Cohesion and Well-Being at Different Levels of SES**



## Predictors of neighborhood social cohesion.

A final regression model was specified to examine neighborhood level characteristics associated with perceptions of neighborhood social cohesion among residents. Five neighborhood level variables derived from U.S. Census Bureau data at the census tract level were tested as predictors of neighborhood social cohesion. Social cohesion ratings of residents aggregated from AHS respondents were used to measure social cohesion at the neighborhood level. The results of the regression analysis are presented in Table 7. Both ethnic homogeneity and the percent of residents with a bachelor’s degree or higher had significant effects on aggregated neighborhood social cohesion. The influence of residential stability was not predictive of aggregated social cohesion; this was not unexpected as there was very little correlation between the two variables. However, more unexpected was that neither median household income nor the percentage of owner occupied housing units were predictive of aggregated social cohesion. However, when median household income was tested in a model as the sole predictor of aggregated social cohesion, the effect was significant ( $\beta = .005$ ,  $SE = .001$ ,  $p < .001$ ), as was the effect of percentage owner occupied housing ( $\beta = .004$ ,  $SE = .001$ ,  $p < .001$ ).

**Table 7. Aggregated Neighborhood Social Cohesion Regressed on Neighborhood**

Predictors	Dependent Variable		
	b	SE	$\beta$
Ethnic Homogeneity	.338	.064	.280***
Percent with BA or Higher	.005	.002	.218**
Median Household Income	-.001	.001	-.074
Residential Stability	-.001	.001	-.031
Percent Owner Occupied Housing	.002	.001	.112

Note. \* $p < .05$ , \*\* $p < .01$ , \*\*\* $p < .001$

## Discussion

The present study sought to evaluate neighborhood social cohesion as a protective factor contributing to the health and well-being of neighborhood residents. We further sought to examine neighborhood contexts that may contribute to social cohesion among neighbors. Among the present sample of Maricopa County residents, those who rated their neighborhoods as more socially cohesive were more likely to be non-Hispanics, married, older, and of higher socioeconomic position. We found support for our hypothesis that neighborhood social cohesion would have a positive impact on self-rated health and well-being. These effects were found to operate differently across socioeconomic and ethnic groups. Although the relation between social cohesion and self-rated health was consistent across Hispanic and non-Hispanic groups, the positive relation between social cohesion and well-being held only among non-Hispanics.

When differences between socioeconomic levels were examined, we found that the social cohesion – health relationship varied across socioeconomic groups in a different way for each health outcome. SES conditioned the influence of social cohesion on self-rated health in the predicted direction. The results suggested that the influence of social cohesion was positive across all socioeconomic levels, but had the greatest benefit among people of lower socioeconomic position. In contrast, socioeconomic level modified the association between social cohesion and well-being in the opposite direction. In other words, although the social cohesion was positively associated with greater well-being across all socioeconomic levels, it had the greatest impact on well-being for those with higher SES and the least benefit for those with lower SES.

Perhaps this unexpected finding may be akin to previous research which found that under more disordered neighborhood conditions, greater social cohesion may actually be detrimental for individuals whose neighborhood environments are characterized by frequent crime and delinquency. However, in the current study lower SES of individuals is certainly not synonymous with disordered neighborhood environments. We intend to further examine the person-by-environment interactions to investigate how the relation between social cohesion and health differs across neighborhood contexts in future investigations using multilevel cross-level interactions.

A very important consideration to the interpretation of these results was the number of missing neighborhood social cohesion scores, particularly among Hispanic respondents. Given that the central aims of this study were concerning perceptions of neighborhood social cohesion and Hispanic-White differences, further analysis into the comparability of psychometric properties of the scale across groups is necessary to determine the limitations of the present results. The construct of social cohesion itself may not hold equivalent meaning across ethnic groups. The ability to further probe cross-ethnic construct validity was limited, and poses an important limitation to the current study.

The final part of the analysis was an inquiry into what kinds of neighborhood contexts were associated with residents' social cohesion. Census data was used to characterize neighborhoods across Maricopa County along five social and economic dimensions. When aggregated to the neighborhood level, social cohesion was significantly correlated with each of the census derived neighborhood variables except for residential stability. The surprising finding that residential stability was not correlated with there could be a testament to the incredibly high mobility of people in neighborhoods across Maricopa County and across neighborhoods with a diversity of economic and social characteristics. Before 2000, when the last census data were collected, the Phoenix area was experiencing such rapid growth that it's possible that so many neighborhoods across the county were experiencing such growth and mobility that many neighborhood developments themselves had been scarcely been in existence for five years (this is the statistic that was used to measure residential stability in the present study).

Ethnic homogeneity was highly correlated with neighborhood socioeconomic characteristics, percentage of owner occupied housing, and with neighborhood social cohesion. As we predicted, ethnic homogeneity was also a significant predictor of social cohesion in neighborhoods. Whether they were more homogeneously White or Hispanic neighborhoods, people in more ethnically homogenous neighborhoods reported higher social cohesiveness than people in more ethnically diverse neighborhoods. These findings lend further evidence that ethnic diversity may diminish ties of social cohesion and mutual trust (Abada et al., 2007; Brown & Cagney, 2002). However, further analyses are important to investigate whether there are differences in the ways that diverse and homogenous neighborhoods influence social cohesion for residents of different socio-demographic backgrounds.

The effects of the neighborhood socioeconomic variables – educational attainment and median household income – yielded an interesting pattern. Although the two variables were very highly correlated ( $r = .78$ ), only the percentage of residents with a bachelor's degree or higher was predictive of neighborhood social cohesion in the regression analysis. Even when median household income was entered into a one-predictor model, the effect was significant but the effect size was small. This suggests that in terms of fostering social cohesion among neighbors, the proportion of residents that have achieved a higher education was a more important neighborhood resource than residents' income levels. Perhaps this data may be useful in promoting the value of higher education as an important social resource for communities as well as one that impacts individuals' well-being.

The present analysis sheds light on the potential for neighborhood social cohesion as an important aspect of community resilience that contributes to residents' health and well-being. The analysis of neighborhood contexts suggested that educational and cultural contexts were predominant over material and economic resources in their association with neighborhood social cohesion. Neighborhood social cohesion may begin to explain why some economically disadvantaged communities deteriorate while others thrive. The first author will be expanding the current findings for her dissertation research. She will conduct further analyses in order to characterize the nuances of the relationship between neighborhood social cohesion and health across neighborhood contexts and individual characteristics.

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