Segregation, Assimilation, and Health: Inside and Outside the Ethnic Neighborhood

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Abstract

Is living in ethnically-dense neighborhoods good or bad for the health of Asian and Latino Americans? This study uses data from the National Latino and Asian American Study to examine individual and neighborhood characteristics that may protect or harm health in ethnic and non-ethnic neighborhoods among Asian and Latino adults. Multilevel analyses are conducted to examine rival theories regarding the potential impact of racial segregation on health – place stratification theory and the ethnic density hypothesis. Results demonstrate that Asian and Latino adults live in different types of ethnic neighborhoods, and that the individual and neighborhood characteristics associated with health vary for Asian and Latino respondents in these neighborhoods. Results underscore the need for more nuanced theory linking residential segregation to health among diverse racial/ethnic groups.

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Most racial and ethnic minority groups experience high levels of segregation from whites in cities across the United States (Iceland 2004), and the segregated communities can exert powerful influence over their lives. An emerging literature examines the underlying mechanisms through which residential communities influence health, finding that neighborhood residence both determines exposure to health-damaging factors and access to health-promoting resources. This literature commonly rests within the *place stratification* framework, which explains that disadvantaged neighborhood conditions are responsible for poorer health outcomes among racial and ethnic minorities living in segregated neighborhoods (Macintyre et al. 2002; Schulz et al. 2002; Williams and Collins 2001). However, given the differing historical foundations underlying segregation among America's racial and ethnic minority groups, it is not clear that all segregated neighborhoods act to compound social ills. Another strand of research on the *ethnic density hypothesis* proposes that there may also be positive social features associated with living in segregated neighborhoods, namely protection from discrimination and increased social support (Halpern and Nazroo 1999; Smaje 1995). Asian and Latino Americans may have unique residential experiences related to the substantial proportions of recent immigrants in these ethnic communities, suggesting that conventional segregation theories may not fully explain how living in ethnic neighborhoods is associated with health status among members of these racial and ethnic minority groups (Zhou and Logan 1991; Zhou 1992).

The overarching goal of this study is to gain a better understanding of the complexities of linking race and place to health status. As the racial and ethnic minority population in the United States continues to be shaped by immigration from parts of Asia and Latin America in the 21st century, it is critical that empirical tests of residential segregation as a fundamental cause of health and disease outcomes account for the ways in which this new diversity affects the residential experiences of individuals in different racial and ethnic groups. The current study makes two important contributions to this endeavor. We first

use an innovative spatial analysis technique to provide a quantitative, generalizable definition of ethnic neighborhoods that is particularly applicable to racial and ethnic groups with relatively small populations. Next, we investigate the ways in which community- and individual-level social factors (emphasizing education, poverty, discrimination, and social support) work differently to affect the health status of Asian and Latino individuals living inside ethnic neighborhoods compared to Asian and Latino individuals living outside of ethnic neighborhoods. We situate the findings within the two main existing theoretical frameworks for explaining the effects of residential segregation on health, place stratification theory and the ethnic density hypothesis.

Background

Residential segregation as a fundamental cause of poor health

Classic spatial assimilation theory implies that Asian and Latino ethnic neighborhoods are similar to the urban enclaves settled by European immigrants in the United States at the turn of the 20th century. These early immigrants were perceived to voluntarily isolate within residential areas that provided a familiar place to live and work (Lieberson 1980). In this view, segregated immigrant enclaves were launching pads for upwardly mobile immigrants and their children; with time they would acculturate and assimilate into the social and economic mainstream (Alba and Nee 2003; Park 1926). This model of segregated neighborhoods as immigrant enclaves does not explain the residential experiences of African Americans, whose coerced immigration for slavery in the United States dating back to the 1600s set the stage for long-term structural inequality and residential segregation (Massey and Denton 1993).

Researchers use the term *place stratification* to explain the residential segregation of African Americans, because the deprived neighborhoods in which members of this group are concentrated emerged and are maintained by individual and institutional discriminatory actions (Charles 2003). As a consequence of these two very different ways of conceptualizing ethnically segregated communities, theories relating racial residential segregation to health outcomes do not document and explain the

association among diverse ethnic minority groups. Instead, most work focuses on the residential experiences of African Americans at the cost of overlooking processes among other important groups of racial and ethnic minorities. As a fundamental cause of health disparities, residential segregation is theorized to operate through pathways at multiple levels (Macintyre et al. 2002; Schulz et al. 2002; Williams and Collins 2001).

At the level of metropolitan area, residential segregation structures access to educational and employment opportunities (Orfield and Eaton 1996; Wilson 1987). At the neighborhood level, place stratification theory suggests that racial and ethnic minorities live in uniquely disadvantaged physical, social, and infrastructure environments. Minority residents of segregated neighborhoods are exposed to higher levels of air pollution, traffic noise, and industrial contaminants (Brown 1994). Poor neighborhoods often do not have quality parks and recreational facilities, have few attractive neighborhood destinations, lack the presence of traversable sidewalks, and have poor street connectivity, characteristics which collectively discourage physical activity and ultimately affect health status (Diez Roux et al. 2007; Papas et al. 2007). At the individual level, lack of infrastructure and general disadvantage in segregated neighborhoods create stressful conditions that may be expressed in terms of poor health behaviors and unsupportive social relationships (Massey and Denton 1993; McEwen 1998).

In agreement with the predictions of place stratification theory, a number of recent studies have found that residential segregation is associated with worse individual health outcomes among African Americans (Bell et al. 2006; Chang 2006; Ellen 2000; Guest et al. 1998; LaVeist 1993; Subramanian et al. 2005). Research on the health effects of segregation among Asians and Latinos in the United States is only beginning to emerge and the findings appear somewhat contradictory. For example, among Latinos, segregation is related to both worse and better health outcomes (Acevedo-Garcia 2001; Eschbach et al. 2004; LeClere et al. 1997; Patel et al. 2003). Some evidence points to differentiation in health effects by generational status (e.g., 1st-generation neighborhoods differ from 2nd-generation neighborhoods) and ethnic sub-group (e.g., Puerto Rican neighborhoods differ from Mexican American neighborhoods) (Lee

and Ferraro 2007). Contemporary theoretical predictions about the association of segregation with health do not capture the inherent complexity among these ethnic neighborhoods.

Similar to the ethnic neighborhoods described by place stratification theory, in the early 1900s Asian Americans lived together in "Chinatowns" and "Little Tokyos", ethnic neighborhoods perceived to be characterized by degradation, disease, and social disorganization (Takaki 1989). These communities arose from discriminatory actions which inhibited the formation of permanent settlements. For example, restrictive immigration policies limited the number of Asians allowed into the country; particularly, women and children stayed in their countries of origin as men sojourned in the United States (Vo and Bonus 2002). Further, Asians were prohibited from obtaining citizenship and purchasing property, and later were forced to live in certain areas because of restrictive covenants on housing (Saito 1998).

However, many of these original Asian ethnic communities were economically rejuvenated after 1965 with the influx of new immigrants from Asia and investment of domestic and foreign capital accompanying immigration reform (Horton 1995; Li 2009). Years of chain migration, which permits the reunification of immigrants with family members already living in the United States, have built up established ethnic communities as sites of social support and occupational resources. Today, many resource-rich, suburban Asian ethnic communities are home to individuals with high levels of education and good English proficiency (Logan et al. 2002; Wen et al. 2009). These communities are generally lauded for their positive educational and occupational contributions to both ethnic minority residents and society as a whole (Zhou 1992). Given the salience of recent immigration to the formation of new Asian American ethnic communities, spatial concentrations of Asians are studied as ethnic enclaves with overwhelmingly positive attributes.

Historically, Latinos migrated to the United States for the purposes of employment and this tradition continues today with the establishment of a strong migrant network (Massey et al. 2002). The U.S. federal government played a key role in creating this strong migration stream by sponsoring a contract labor agreement that brought primarily Mexican workers into the U.S. between 1942 and 1964 to

fulfill the demand for low wage agricultural, manufacturing and railroad labor (García y Griego 1996). The post-1965 wave of Latino immigration has overwhelmingly encountered limited employment opportunities in the secondary labor market, being confined to low-skill, low-wage jobs with little chance of occupational mobility (Ortiz 2001). Latinos in general are highly segregated from whites, and this segregation has increased over the past two decades (Iceland and Scopilliti 2008). While many segregated "barrios" serve the purpose of giving immigrants a foothold in the U.S., many Latino ethnic neighborhoods are also home to second and third generation Latinos who continue to live apart from the mainstream and have limited opportunities to earn a living wage (Martin 2007; Portes and Rumbaut 1996). This is particularly true for Puerto Ricans in the Northeast and Mexican Americans living in Los Angeles and Chicago, who are experiencing long-term segregation in traditional central-city barrios and equally poor suburban areas (Martin 2007). These trends suggest that the place stratification perspective on residential segregation may be applicable to the experiences of Latinos living in ethnic neighborhoods.

Beyond place stratification

Contrary to the negative health effects of residential segregation purported by place stratification theory, the *ethnic density hypothesis* proposes that segregation can be accompanied by *protective* social resources among racial and ethnic minorities (Halpern and Nazroo 1999; Smaje 1995). A number of recent studies demonstrate that there are beneficial effects of living among others of similar ethnicity. Latinos and African Americans living in more ethnically-homogeneous areas lose fewer years of life to heart disease (Franzini and Spears 2003) and perceive fewer barriers to receiving healthcare (Haas et al. 2004) compared to peers living in less homogeneous areas. Similarly, Lee and Ferraro (2007) report that second and later generation Mexican Americans living in highly-isolated neighborhoods have fewer acute physical pain/weakness symptoms and report less disability compared to those living in less isolated neighborhoods. To explain these health advantages, the ethnic density hypothesis specifically proposes

that a higher concentration of similar racial and ethnic neighbors protects health and mental health by reducing exposure to racial discrimination and increasing social support (Halpern 1993).

Living primarily among similar co-ethnic minority neighbors reduces the opportunities for encounters with whites, consequently limiting exposure to everyday discrimination and diminishing the social stress felt by residents of these neighborhoods (Halpern and Nazroo 1999; Hunt et al. 2007). Experiences of racism and everyday discrimination have repeatedly been shown to relate to poorer health and emotional well-being (Forman et al. 1997; Gee et al. 2007; Karlsen and Nazroo 2002). Increasing ethnic density essentially can act as a buffer by weakening the association between racism and poor health outcomes (Becares et al. 2009).

Segregation may also increase the opportunities for social engagement among racial and ethnic minority individuals who share a similar culture and language. Connectedness and solidarity with family and friends may promote healthy behaviors and increase information about and ability to access health-related services (Kawachi and Berkman 2000). The influence of social engagement on health may be particularly strong within the clearly-defined boundaries of an ethnic neighborhood, where shared norms and values increase the incentive for community members to behave appropriately (Fukuyama 2000). A high degree of social integration with family and friends may also promote the diffusion of health information, as individuals who are more connected to their communities have better recall of health messages (Viswanath et al. 2006).

Research Questions

Asian and Latino Americans comprise groups with substantial numbers of recent immigrants, which naturally affects the types of communities in which they reside. While many individuals integrate into racially-mixed neighborhoods, the fact of increasing levels of segregation among these groups over the past two decades (Logan et al. 2004; Iceland 2004) requires that we fully understand the individual health effects of living in segregated ethnic neighborhoods. Given that the segregated neighborhoods in

which Asian and Latino Americans live are not always disadvantaged, it is unclear whether living in an ethnically-dense neighborhood will be detrimental or beneficial to health status. This study specifically asks whether and how the place stratification perspective and ethnic density hypothesis apply to the experiences of Asian and Latino Americans. The place stratification perspective theorizes that segregation will be harmful to health of racial and ethnic minorities because features of disadvantage are concentrated in segregated residential areas. The ethnic density hypothesis proposes that living among others of a similar ethnicity increases social support and protects residents of segregated neighborhoods from the detrimental effects of racial discrimination. Thus, two basic research questions guide the analysis.

1. Are there advantages/disadvantages for Asian and Latino Americans living in ethnic neighborhoods?
2. Are the social characteristics of Asian and Latino ethnic neighborhoods associated with health status above and beyond individual characteristics? Do these relationships with health status systematically differ from those found in non-ethnic neighborhoods in which Asian and Latino Americans live?

Methods

Data

Data for this study come from sources at two levels of analysis and are merged based on each individual respondent's census tract of residence. Individual-level data come from the National Latino and Asian American Study (NLAAS) (Alegría et al. 2004) and census tract-level data come from the 2000 Census.

The individual data from the NLAAS comprise nationally representative samples of Latino and Asian American adults. Participants in the NLAAS core sample were identified using a multistage stratified area probability sampling design. Primary sampling units, defined as metropolitan statistical areas or county units, and secondary sampling units, formed from contiguous groupings of Census blocks,

were selected using probability proportionate to size. From these, households were sampled. The core sampling procedure of the NLAAS resulted in a nationally representative, household sample of Latino and Asian Americans. The NLAAS sampling procedures required the construction of weighting corrections to take into account joint probabilities of selection under the three components of the sampling design (Heeringa 2004). Trained interviewers administered the NLAAS questionnaire in the participant's preferred language in a face-to-face interview, unless the respondent specifically requested a telephone interview. All non-institutionalized individuals living in households who met self-identified racial/ethnic group criteria, were 18 years of age or older, and who resided in any of the 50 states and Washington D.C., were eligible to participate. Interviews were completed with 4,864 adults, composed of 2,095 Asians, 2,554 Latinos, and 215 non-Hispanic whites. Detailed descriptions of the methods used in NLAAS appear elsewhere (Heeringa et al. 2004; Pennell et al. 2004). The samples included in the current study are limited to the respondents of Asian and Latino descent living in counties containing Census-defined metropolitan areas (Asian N=2095 and Latino N=2500). A metropolitan area "contains a core urban area of 50,000 or more population [and] consists of one or more counties and includes the counties containing the core urban area, as well as any adjacent counties that have a high degree of social and economic integration (as measured by commuting to work) with the urban core" (U.S. Census Bureau, Population Division 2009).

We use data from the Census 2000 in two ways. From Summary File 3 (SF3), we gleaned socioeconomic data at the census-tract level for use as contextual variables in the hierarchical linear models. We also downloaded Census 2000 TIGER/Line® Shapefiles and demographic data from Summary File 1 (SF1) to identify ethnic neighborhood boundaries in 105 nationally-representative counties. Counties were explicitly chosen to match those in the NLAAS.

Criteria for quantitatively determining ethnic neighborhood boundaries revolve around two distinct dimensions; ethnic neighborhoods must demonstrate both high ethnic concentration and spatial clustering. Using these criteria, Alba and colleagues (1997) define an ethnic neighborhood as a set of

geographically-contiguous census tracts in which ethnic group concentration must be 40% or more of the total residents in at least one tract and no lower than 35% in other tracts. For ethnic groups with high relative group concentration, this definition is adequate; however, identifying ethnic neighborhoods for groups with low relative representation, such as Asian Americans who represented only 4.2% of the total US population in 2000 (Barnes and Bennett 2002), requiring such high group concentrations might be problematic. Indeed, there are examples of well-known Asian ethnic neighborhoods where ethnic group concentration is between 10-25% (Bobo et al.2000; Horton 1995; Zhou 1992). For the purposes of the current study, we utilize an alternative method developed by Logan, Alba, and Zhang (2002) to identify census tracts belonging to ethnic neighborhoods. Using a combination of mapping and spatial analysis software, we identify geographic "hot spots" consisting of clusters of census tracts with high Asian or Latino ethnic density that exhibit spatial autocorrelation with contiguous census tracts, indicated by significant values of the local Moran statistic (Anselin 1995). Measured this way, an ethnic neighborhood is composed of a focal census tract with high ethnic concentration compared to the mean concentration in the county and all similarly high contiguous tracts.

For each county, we used the following procedures to determine whether census tracts were part of ethnic neighborhoods. First, we uploaded shapefiles corresponding to census tract, county, and water boundaries, as well as a datafile with SF1 demographic information, into ArcMap (ArcGIS® 9.3). We then joined the census tract shapefile with the demographic data and exported the map into GeoDa 0.9.5-i, a software program designed to perform descriptive spatial analysis. In GeoDa, we created spatial weights using a first-order queen definition of contiguity, which counts any census tract with a shared side as a neighbor. The spatial weights are required to impose a structure which constrains the number of census tract neighbors considered in the analyses. We constrained the weight structure such that only contiguous census tracts are considered to influence the spatial autocorrelation and all other census tracts are not considered. We then calculated the univariate local Moran statistic for each census tract based on the

proportion of Asians or Latinos in each tract, and evaluated the statistical significance. The local Moran statistic (*I*) for each census tract *i* is defined as:

$$I_i = z_i \sum_j w_{ij} z_j$$

where observations z_i and z_j are deviations of the variable of interest (proportion Asian or Latino) from the mean and w_{ij} is the matrix of spatial weights. One result of this calculation is a "cluster map" which plots the significance of the local spatial autocorrelation, categorizing tracts by type of correlation (none, high-high, low-low, high-low, and low-high). From this map, we determined that all tracts with high-high correlation were part of an ethnic neighborhood cluster. In this way, each census tract in all counties was assigned a designation of "in an ethnic neighborhood" or "in a non-ethnic neighborhood". These data were then merged by census tract with the NLAAS individual-level data. The final number of census tracts included in the analysis of Asian Americans is N=259 (79 tracts are in ethnic neighborhoods and 180 tracts are in non-ethnic neighborhoods) and the analysis of Latino Americans includes N=311 census tracts (77 tracts are in ethnic neighborhoods and 234 tracts are in non-ethnic neighborhoods).

Measures

Dependent Variable. The health status outcome used in this study is *self-rated health*. Specifically, the NLAAS interview asked, "How would you rate your overall physical health – excellent, very good, good, fair or poor?" The variable is reverse coded in the analyses so that 5=excellent and 1=poor, in order to interpret positive coefficients as being beneficial to health status. This measure is a robust indicator of general health status that predicts morbidity, mortality, subsequent disability and health care utilization (Ferraro and Yu 1995; Gomez et al. 2004; Idler and Benyamini 1997; Mutchler and Burr 1991). Some research has shown self-rated health to be a stronger predictor of mortality than physician-assessed health (Mossey and Shapiro 1982). A recent study finds that there are no systematic differences between foreign- and US-born Asian Americans in the way they report self-rated health (Erosheva et al. 2007). Additionally, the meaning of self-rated health has been validated among different

ethnic groups and the robustness of the concept appears to overcome translation into different languages (Chandola and Jenkinson 2000).

Neighborhood-level Explanatory Variables. All analyses are stratified by *ethnic neighborhood residence*. Census tracts are designated to be in an ethnic neighborhood if they meet previously established criteria for significant high-high spatial autocorrelation (described in the Data section above). If they do not meet these criteria, the census tracts are considered to be in a non-ethnic neighborhood. Additionally, we test the direct effects of four continuous census tract-level variables: percentage of the population educated with at least a *high school degree*, *median household income* (in thousands of dollars), percentage of households receiving *public assistance* (cash assistance, food stamps, and Medicaid), and percentage of individuals in *poverty*.

Individual-level Explanatory Variables. *Everyday discrimination* is a scale measuring the frequency of routine experiences of unfair treatment. Respondents indicate how often they experience situations such as being treated with less respect than other people, having people act afraid of them, and being called names or insulted. The scale has been used extensively in the mental health field (Boardman et al. 2001; Mays and Cochran 2001; Schulz et al. 2000). The scale ranges from 9 to 54 with higher scores representing more incidences of everyday discrimination. In the present sample, the scale has strong internal consistency (α=.91). *Family and friend support* is a scale constructed from six questions, such as: "How often do you talk on the phone or get together with family/relatives/friends?", "How much can you rely on your family/relatives/friends for help if you have a serious problem?", and "How much can you open up to your family/relatives/friends if you need to talk about your worries?". Responses range from (1) a lot to (4) not at all, yielding minimum and maximum scores of 6 and 24 respectively. The scale is reverse coded so that higher scores indicate a higher degree of positive social interaction than lower scores. In the present sample, the scale has adequate internal consistency (α=.77).

Individual-level Control Variables. We control for a number of individual factors that may be related to health status. *Asian American Ethnicity* is categorized as a series of dummy variables

representing Vietnamese, Filipino, Chinese (reference), and Other Asian (Asian Indian, Japanese, Korean or Other Asian). *Latino American Ethnicity* is categorized as a series of dummy variables representing Mexican (reference), Puerto Rican, Cuban, and Other Latino (Central American, South American, or Other Latino). *Family size* is measured as the number of individuals living in the household. *Marital status* is operationalized as a dummy variable representing currently married or cohabiting (1) versus not currently married or cohabiting (0). The respondent's *gender* is coded female (1) and male (0). *Age* is a continuous variable measured in years. *Subjective social status* is measured by a symbolic ladder with ten rungs, where the first and tenth rung represent the lowest and highest social status, respectively (Cantril 1965; Adler et al. 2000). *Nativity* is operationalized as immigrant (1) and US-born (0). *Education* is analyzed as a continuous variable measured in years. *Household income* is the sum of the midpoints of the following income measures: personal, spouse, other family members, social security, government assistance, and other sources. Because of a large number of missing values (270 missing), the variable used in these analyses was imputed using hot deck methods based on the variables of ethnicity, sex, age, education, household composition, and employment status. Household income is operationalized in thousands of dollars in order to make incremental changes more meaningful.

Analyses

In Table 2 (Asian Americans) and Table 3 (Latino Americans) we use hierarchical linear models (HLM) to assess the impact of neighborhood and individual factors on self-rated health. A hierarchical model explicitly incorporates variables at the individual- and contextual-levels and accounts for the clustering of individuals in the larger unit (Raudenbush and Bryk 2002; Snijders and Bosker 1999). A primary interest is in how neighborhood socioeconomic and individual social variables explain variability in individual self-rated health and how these relationships vary by residence in an ethnic neighborhood. Significant variation at the census tract level was found for self-rated health, justifying incorporating neighborhood-level variables into the models. The analyses are weighted at the individual level to account

for the complex sampling design in the NLAAS. We stratify the analyses by Ethnic Neighborhood (Models 1 and 2) and Non-Ethnic Neighborhood (Models 3 and 4).

In Models 1 and 3, self-rated health is regressed on neighborhood socioeconomic variables, along with individual control variables representing the known correlates of self-rated health and other sociodemographic indicators. All continuous variables (Level-1: family size, age, subjective social status (sss), education, and household income; Level-2: education, median household income, public assistance, and poverty) are centered around their respective grand means. See the equations below:

Level-1 Individual Model (Models 1 and 3)

$$Yij = \beta_{0j} + \beta_1(\textit{ethnicity}) + \beta_2(\textit{family size}) + \beta_3(\textit{marital status}) + \beta_4(\textit{female}) + \beta_5(\textit{age}) + \beta_6(\textit{ethnic identification}) + \beta_7(\textit{sss}) + \beta_8(\textit{immigrant}) + \beta_9(\textit{education}) + \beta_{10}(\textit{household income}) + r_{ij}$$

Level-2 Neighborhood Model (Same for all Models)

$$\beta_{0j} = \gamma_{00} + \gamma_{01}(\textit{\% education} \geq \textit{12 years}) + \gamma_{02}(\textit{median household income}) + \gamma_{03}(\textit{\% households public assistance}) + \gamma_{04}(\textit{\% poverty}) + u_{0j}$$

In Models 2 and 4, individual-level social variables (discrimination and family/friend support, centered around their grand means because they are continuous) are added to Models 1 or 3 to test whether the effects of neighborhood variables on self-rated health are mediated by these factors. The Level-2 neighborhood model remains unchanged. The new Level-1 individual model is represented by the following equation:

Level-1 Individual Model (Models 2 and 4)

$$Yij = \beta_{0j} + \beta_1(\textit{ethnicity}) + \beta_2(\textit{family size}) + \beta_3(\textit{marital status}) + \beta_4(\textit{female}) + \beta_5(\textit{age}) + \beta_6(\textit{sss}) + \beta_7(\textit{immigrant}) + \beta_{10}(\textit{education}) + \beta_{11}(\textit{household income}) + \beta_{12}(\textit{discrimination}) + \beta_{13}(\textit{family/friend support}) + r_{ij}$$

We used t-tests to determine if the neighborhood and individual coefficients differed significantly between ethnic and non-ethnic neighborhoods in Models 2 and 4.

$$t = \left(b_1 - b_2\right) / \sqrt{\left(se_1^2 + se_2^2\right)}$$

In the equation above, 1 and 2 represent the neighborhood groups being compared (ethnic neighborhood vs. non-ethnic neighborhood), *b* is the coefficient of interest, and *se* is the standard error of the point estimate.

Results

Sample Description

Table 1 summarizes the descriptive characteristics of all the variables used in the analyses, stratified by Asian and Latino ethnicity and by residence in an ethnic neighborhood. Perhaps the most salient aspect of Table 1 is that levels of self-rated health do not significantly differ at the bivariate level by ethnic neighborhood residence for either Asian or Latino Americans. In other words, without consideration of other neighborhood or individual-level characteristics, it appears that living among others of similar ethnicity is neither protective nor harmful for health status among individuals of both racial/ethnic groups. Given that differences in self-rated health do not exist at the bivariate level, the multivariate analyses focus on the ways in which features of neighborhoods and individuals *work differently* to affect health status inside and outside of ethnic neighborhoods.

Table 1: Descriptive Statistics [about here]

Regarding contextual characteristics, compared to non-ethnic neighborhoods, Asian ethnic neighborhoods have higher percentages of community members with at least a high school degree, higher median household income, and greater percentages of households receiving public assistance, despite similar percentages of individuals in poverty across neighborhood types. A pattern emerges, then, of Asian American ethnic neighborhoods being better-off socioeconomically than non-ethnic neighborhoods where Asian individuals live. Among Latino American neighborhoods, we can observe generally the opposite trend, with non-ethnic neighborhoods faring better socioeconomically. Compared to non-ethnic neighborhoods included in this study, Latino ethnic neighborhoods are characterized by lower community

levels of education, lower median household income, higher public assistance, but also higher percentages of individuals at or below the poverty line.

At the individual-level, to account for clustering of individuals within census tracts we used multilevel bivariate assessments for all significance tests of differences between ethnic and non-ethnic neighborhoods. Everyday discrimination and family/friend support act in similar ways for both Asian and Latino Americans. As expected, individuals experience more everyday discrimination when they do not live in an ethnic neighborhood. On the other hand, levels of family and friend support do not differ between neighborhood types. This could be because ethnic neighborhoods concentrate more foreign-born individuals who have fewer family and friend ties in the United States than native born individuals living in non-ethnic neighborhoods.

Turning to the individual-level control variables, we can see that among both Asian and Latino Americans, most ethnic subgroups are not distributed evenly across neighborhood types. Vietnamese and Chinese Americans are over-represented in ethnic neighborhoods, Other Asian Americans (includes Indian, Korean, Japanese, and other Asian ethnic groups) are under-represented in ethnic neighborhoods, and Filipino Americans do not differ in their distribution across neighborhood types. Cuban and Other Latino Americans (includes Central American, South American, and other Latino ethnic groups) are over-represented in ethnic neighborhoods, Mexican Americans are under-represented in ethnic neighborhoods, and Puerto Ricans do not differ in their distribution across neighborhood types. While there are many significant differences in other individual demographic and socioeconomic attributes among Latino Americans by neighborhood type, Asian Americans do not exhibit any differences aside from ethnic group distribution. Latino Americans residing in ethnic neighborhoods are older, have lower subjective social status, are overwhelmingly immigrants, attain lower levels of education, and have lower household incomes.

Asian Americans

Table 2 reports the results of multilevel analyses among Asian Americans that regress self-related health on neighborhood and individual characteristics, stratified by ethnic neighborhood residence. In Models 1 and 3 neighborhood-level effects and individual-level control variables are shown in the table. Models 2 and 4 add the two individual-level explanatory variables of interest, discrimination and family/friend support, to the analyses.

Table 2: HLM among Asian Americans [about here]

Model 1 presents the associations of neighborhood socioeconomic characteristics with health status within ethnic neighborhoods. In Asian American ethnic neighborhoods, having a larger proportion of the neighborhood population with at least a high school degree is associated with individuals reporting more positive health on average. On the other hand, Model 3, which shows the same analyses among Asian individuals residing in non-ethnic neighborhoods, demonstrates that having a greater percentage of residents with higher levels of education in the community is not associated with individual health status. In a similar vein, community poverty is not related to individual health status in Asian American ethnic communities (Model 1), whereas with greater community poverty in non-ethnic communities individuals report poorer self-rated health (Model 3). A higher level of public assistance use at the neighborhood level is related to better individual health status in both types of neighborhoods (but only reaches significance in non-ethnic neighborhoods). In sum, positive community attributes, such as higher educational levels, are positively related to health status in Asian American ethnic neighborhoods, whereas non-ethnic neighborhoods do not appear to hold the same health advantages.

There are some interesting differences by neighborhood type for the individual-level control variables. For example, belonging to particular ethnic subgroups matters for health in ethnic neighborhoods. On average, compared to Chinese Americans, Vietnamese, Filipino, and Other Asian Americans have better health when living in an ethnic neighborhood. This difference is significant across neighborhood types for Vietnamese Americans, who do not experience health benefits in non-ethnic neighborhoods. Across both neighborhood types, health was lower with increasing age and was better

with higher subjective social status. Gender matters in non-ethnic neighborhoods only, where women have worse health than men. Education and household income were not associated with individual health ratings in either neighborhood type, except for a very small effect in ethnic neighborhoods which disappeared after controlling for discrimination and social support in Model 2.

Models 2 and 4 additionally include the individual-level explanatory variables of everyday discrimination and family and friend support to assess how these effects differ by ethnic neighborhood residence. Individual-level experiences of discrimination and family/friend support are not associated with self-rated health in this population of Asian Americans. Additionally, discrimination and family/friend support do not have different associations with health inside and outside of Asian ethnic neighborhoods.

Latino Americans

Table 3 provides results from the same sequence of analyses as reported in Table 2, but for the Latino American sample. Remarkably, among Latino Americans the socioeconomic effects of living in ethnic neighborhoods on individual health status are the exact opposite of the effects observed among Asian Americans, demonstrating that neighborhood effects may not be easily generalized based on ethnic minority group status or the presence of large proportions of immigrants.

Table 3: HLM among Latino Americans [about here]

Model 1 presents the effects of neighborhood socioeconomic characteristics on health status within a Latino ethnic neighborhood. Similar to the effects observed in *non*-ethnic neighborhoods among Asian Americans, Latino American individual self-rated health status is not associated with higher levels of education in *ethnic* neighborhoods, having a higher percentages of households receiving public assistance is protective against poor health, and greater community poverty is detrimental to health. In Model 3, we can observe that community educational attainment in the non-ethnic neighborhood is

beneficial to health, while community poverty is not related to health status. These neighborhood-level socioeconomic effects are all above and beyond the individual socioeconomic effects.

Both in ethnic and non-ethnic neighborhoods, individuals from Puerto Rican and Mexican American subgroups are disadvantaged in health status compared to Cuban and Other Latino Americans. Family size appears to be protective of health, where larger family sizes are associated with better individual health status. This positive association between family size and health remains even after the inclusion of family and friend support in Models 2 and 4. Women report worse health than men across both neighborhood types. As expected, health status declines with age and the effect is similar in ethnic and non-ethnic neighborhoods. Interestingly, subjective social status is only protective of health in non-ethnic neighborhoods. Increasing individual levels of education are associated with improved health for Latinos in both ethnic and non-ethnic neighborhoods, unlike for Asian Americans where higher levels of personal education was not associated with better health status. Generally, the individual-level explanatory variables of discrimination and family/friend support are not significant and do little to change the neighborhood effects in Models 2 and 4. There is a marginal positive effect of greater family and friend support on health for Latinos living in ethnic neighborhoods.

Discussion

In the current study, we examined the effects of neighborhood social conditions on self-rated health among Asian and Latino Americans, with special consideration paid to the costs and benefits of living in ethnically concentrated and clustered communities. On the whole, compared to the non-ethnic communities in which Asian Americans live, segregated ethnic communities concentrate social advantages, while protecting individuals from the detrimental health effects of community poverty and their own individual socioeconomic circumstances. Conversely, Latino American ethnic neighborhoods are more disadvantaged compared to non-ethnic neighborhoods, and these poor neighborhood conditions negatively affect individual health status while positive community attributes are not health promoting. In

sum, place stratification theory accounts for some of the neighborhood health effects among Latinos but does not explain the effects of ethnic neighborhood residence on the health of Asian Americans. There is only very weak support for the ethnic density hypothesis among Latinos and no support among Asians. The failure of conventional residential segregation theories to explain health status in these two large minority ethnic populations points to the need for more expansive theory when considering ethnic groups with large proportions of immigrants.

Asian American ethnic neighborhoods concentrate health-promoting resources compared to non-ethnic neighborhoods. These ethnic communities afford advantages in the form of larger proportions of individuals with higher levels of education, higher incomes, and reduced exposure to everyday discrimination. While classic spatial assimilation theory predicts that recent immigrants will reside in immigrant enclaves in central city settings and then move to non-ethnic neighborhoods, evidence from this study and others indicates that this may not be the normative residential trajectory among Asian Americans. Previous research has shown that the effects of very recent immigration and linguistic assimilation on suburban residence have weakened over time among Asian groups (Alba et al. 1999). Similarly, the current picture of Asians living in resource-rich ethnic communities is consistent with work finding that Asian American suburban enclaves provide a relatively high-status setting in which to live, even when spatial assimilation is otherwise possible (Logan et al. 2002; Wen et al. 2009).

The distribution of social features of Latino ethnic neighborhoods tells a quite different story. On the whole, Latino ethnic neighborhoods are more disadvantaged than non-ethnic neighborhoods in which Latinos live, evidenced by lower levels of education in the community, lower median incomes, and higher poverty rates. Unlike the pattern observed among Asian Americans in this study, Latino Americans living in non-ethnic neighborhoods exhibit some level of socioeconomic mobility associated with a classic spatial assimilation trajectory (Alba and Nee 2003). This is consistent with recent work that finds broad support for spatial assimilation theory in that the residential patterns of Latinos in ethnic neighborhoods are explained by lower levels of income, English language ability, and home ownership, and that

immigrants who have been in the U.S. for longer periods are generally less segregated than new arrivals (Iceland and Scopilliti 2008).

Socioeconomic features of neighborhoods work differently for both racial/ethnic groups based on the type of neighborhood in which they live. Among Asian Americans, self-rated health is significantly improved by increasing levels of education in the community only when they live in ethnic neighborhoods, and significantly adversely affected by poverty when individuals live in non-ethnic neighborhoods. In other words, for Asian Americans, living in an ethnic community makes education effective in promoting health and keeps individuals from experiencing the detrimental health effects of poverty. Individual measures of social resources do not differ between neighborhood types, suggesting that features of the structural environment may be more salient in affecting health than social features, a finding underscored in a recent study on neighborhoods (Freedman et al. 2008). Overall, these findings suggest that neighborhood socioeconomic status, as measured by education and poverty levels, either directly affects health status or works through some unmeasured mechanism for which socioeconomic status is a proxy (e.g., crime levels or features of the built environment). Education has repeatedly been shown to affect health directly – by conferring health promoting habits and skills – and indirectly by providing better work opportunities, economic outcomes, social psychological resources, and improving health behaviors (Elo and Preston 1996; Ross and Wu 1995). Ethnographic research on Asian ethnic communities has shown that living among others of similar ethnicity may allow for an ethnic system of supplemental education to take hold which offers both tangible educational support and reinforces cultural norms pushing children to succeed in school (Zhou 2007). Attendance at these types of educational institutions insulates children from contact with native minority youths, while reinforcing the authority of parental views and plans. Zhou (2003) concludes that remaining securely attached to the social networks of one's coethnic community may be the best strategy for capitalizing on otherwise-unavailable material and moral resources.

Among Latino Americans, self-rated health is improved by the level of education in the community only in non-ethnic neighborhoods and it is only in ethnic neighborhoods that community poverty detrimentally affects health. Hence, the pattern of effects is the exact opposite of that observed among Asian Americans. Latino ethnic neighborhoods appear to concentrate individuals with low education and low income, and individual health outcomes are better for Latinos when living in non-ethnic neighborhoods. It could be that residents of these ethnic communities are too poor, or simply do not have resources, to render assistance that would instrumentally protect health status. Importantly, this study does not support the hypothesis that Latino health is better in ethnic neighborhoods because of increased kinship support structures (Eschbach et al. 2004).

The findings offered in this study should be considered in light of some limitations. First, the cross-sectional design of the NLAAS makes it more difficult to infer the observed effects are causal in nature. This is especially problematic for studies of neighborhood health effects because individuals are not randomly selected into neighborhoods, rather individuals may select themselves into certain types of neighborhoods. Thus, processes of both social selection and social causation may be reflected in the conclusions. Second, like many other studies involving neighborhood effects, we use census-derived socioeconomic variables, rather than objectively measuring ecological characteristics of neighborhoods. Contextual resources are typically measured by aggregating individual socioeconomic characteristics which are taken as markers of neighborhood infrastructure and social conditions. Socioeconomic features of neighborhoods, such as poverty and educational attainment, may directly affect health or could be indicators of physical features of neighborhoods, such as healthcare infrastructure or the presence of parks, which themselves affect health. In the current study, we see socioeconomic variables measured at the census tract level as direct indicators of the social environment. They may also stand as proxies for other structural and physical features of neighborhoods that we cannot measure in a national-level analysis.

Despite these limitations, the current study provides convincing evidence that segregated ethnic minority neighborhoods are not monolithic, but that unique social features of these neighborhoods affect health in varying ways for different groups. Methodologically, this study pushes neighborhood research forward by using a spatial approach to defining ethnic neighborhoods, going beyond the standard use of census tract boundaries. Future research might use this spatial methodology to define ethnic neighborhoods combined with local data collection focused on measuring the social characteristics hypothesized to underlie the census-derived socioeconomic proxies, taking care to include an in-depth examination of different types of neighborhoods formed by segmented assimilation.

In the end, it is clear that place stratification theory, which hypothesizes that residential choices of racial and ethnic minorities are constrained by discrimination which results in ethnic neighborhoods bereft of social resources, does well to explain the effects of segregation on the health of Latino Americans. Among Asian Americans, social resources are more abundant in ethnic neighborhoods (with the exception of family/friend support), suggesting that place stratification is not a good explanation for the effects of segregation. The ethnic density hypothesis, which posited that ethnic neighborhoods are protective of health status because individuals experience less racial discrimination and more social support, did not hold up for either group considered in this study. Importantly, the composition and health effects of ethnic neighborhoods cannot be generalized across different groups of racial and ethnic minorities. Additionally, the differences observed in the current study between Asian and Latino ethnic neighborhoods demonstrate that new immigrant groups may also be dissimilar. These results reinforce the need to refine and add complexity to our theories linking residential segregation to health status among diverse groups of racial and ethnic minorities.

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Table 1. Descriptive statistics for neighborhood and individual attributes, stratified by ethnic neighborhood residence

	Asian Americans			Latino Americans		
	Ethnic Neighborhood	Non-ethnic Neighborhood	Sig	Ethnic Neighborhood	Non-ethnic Neighborhood	Sig
	Mean or %	Mean or %	Diff	Mean or %	Mean or %	Diff
Outcome						
Self-rated health (5=Ex)	3.45	3.45		3.27	3.29	
Neighborhood-level						
Education ≥ 12 years	78.09%	76.15%	**	56.25%	66.18%	***
Median income (thou.)	59.47	53.15	***	32.47	37.42	***
Public assistance	5.56%	5.04%	**	8.87%	7.47%	***
Poverty	11.55%	11.80%		22.83%	21.84%	*
Individual-level						
Everyday discrimination	15.52	16.27	†	14.31	16.69	***
Family/friend support	16.97	17.37		18.23	18.37	
Vietnamese	26.97%	23.12%	*			
Filipino	24.49%	24.06%				
Chinese	31.93%	26.03%	*			
Other Asian	16.61%	26.80%	***			
Mexican				22.66%	42.78%	***
Puerto Rican				20.24%	19.42%	
Cuban				30.88%	16.37%	***
Other Latino				26.21%	21.43%	**
Family size (persons)	2.89	2.86		2.75	2.81	
Married or cohabiting	71.78%	69.01%		60.95%	63.47%	
Female	51.46%	53.08%		56.14%	55.80%	
Age (years)	41.82	40.74		42.11	39.35	***
Subjective social status	5.71	5.83		5.29	5.63	***
Immigrant	79.05%	77.72%		75.00%	55.88%	***
Education (years)	13.47	13.76		11.05	11.47	**
Household income (thou.)	81.10	79.11		44.67	59.22	***

†p<.10, *p<.05, **p<.01, ***p<.001

Table 2. Hierarchical linear models of the effects of tract- and individual-level factors on self-rated health (1=Poor, 5=Excellent) among Asian Americans, stratified by ethnic neighborhood

	Ethnic Neighborhood		Non-ethnic Neighborhood		Sig Diff
	Model 1 *B(SE)*	Model 2 *B(SE)*	Model 3 *B(SE)*	Model 4 *B(SE)*	Model 2 vs. 4
Intercept	3.27*** (.14)	3.28*** (.14)	3.45*** (.13)	3.45*** (.13)	
Neighborhood-level variables					
Population with education ≥ 12 years	1.47* (.71)	1.45* (.70)	.47 (.54)	.57 (.55)	
Median household income	.00 (.00)	.00 (.00)	-.01 (.01)	-.01 (.01)	
Households receiving public assistance	2.93 (2.11)	2.88 (2.08)	3.93† (2.02)	4.50* (2.02)	
Individuals in poverty	-.54 .73)	-.56 (.72)	-3.11* (1.30)	-3.19* (1.32)	†
Individual-level variables					
Vietnamese	.29** (.10)	.29** (.10)	-.06 (.10)	-.06 (.10)	*
Filipino	.30* (.12)	.29* (.12)	.12 (.08)	.10 (.08)	
Other Asian	.36** (.13)	.34* (.14)	.21* (.09)	.21* (.09)	
Family size	.01 (.02)	.01 (.02)	.02 (.02)	.03 (.02)	
Married or cohabiting	.05 (.09)	.06 (.10)	-.05 (.09)	-.04 (.09)	
Female	-.16 (.08)	-.18 (.08)	-.15* (.06)	-.19** (.06)	
Age	-.01*** (.00)	-.01*** (.00)	-.01** (.00)	-.01** (.00)	
Subjective social status	.09** (.03)	.09** (.03)	.12*** (.02)	.11*** (.02)	
Immigrant	-.01 (.09)	-.01 (.09)	.10 (.10)	.11 (.10)	
Education	.01 (.01)	.01 (.01)	.00 (.01)	.00 (.01)	
Household income	.001* (.00)	.001 (.00)	-.001 (.00)	.00 (.00)	*
Everyday discrimination		-.01 (.01)		-.01 (.01)	
Family and friend support		.01 (.01)		.02 (.01)	
Sigma-squared	.85	.85	.78	.77	
Tau	.01	.01	.10	.10	
Deviance	2501.89	2511.91	3114.20	3114.73	

†p<.10, *p<.05, **p<.01, ***p<.001

Notes: Ethnic Neighborhood Individual-level N=927, Tract-level N=79; Non-ethnic Neighborhood Individual-level N=1168, Tract-level N=180.

Table 3. Hierarchical linear models of the effects of tract- and individual-level factors on self-rated health (1=Poor, 5=Excellent) among Latino Americans, stratified by ethnic neighborhood

	Ethnic Neighborhood		Non-ethnic Neighborhood		Sig Diff
	Model 1	Model 2	Model 3	Model 4	Model
	B(SE)	*B*	*B*	*B*	2 vs. 4
Intercept	3.20*** (.12)	3.18*** (.12)	3.23*** (.08)	3.22*** (.09)	
Neighborhood-level variables					
Population with education ≥ 12 years	-.47 (.38)	-.58 (.39)	.73* (.29)	.73* (.29)	**
Median household income	.00 (.00)	.00 (.00)	.00 (.00)	.00 (.00)	
Households receiving public assistance	2.30*** (.57)	2.23*** (.58)	1.08 (.88)	1.06 (.87)	
Individuals in poverty	-1.46* (.72)	-1.54* (.73)	.20 (.58)	.20 (.58)	†
Individual-level variables					
Puerto Rican	.08 (.12)	.10 (.12)	.12 (.11)	.12 (.11)	
Cuban	.33** (.11)	.31** (.11)	.32** (.11)	.31** (.11)	
Other Latino	.23* (.09)	.24* (.09)	.20* (.09)	.20* (.09)	
Family size	.06** (.02)	.06** (.02)	.03† (.02)	.03† (.02)	
Married or cohabiting	.02 (.11)	.03 (.11)	.05 (.08)	.06 (.08)	
Female	-.35*** (.09)	-.35*** (.09)	-.18* (.07)	-.19* (.08)	
Age	-.01*** (.00)	-.01*** (.00)	-.01*** (.00)	-.01*** (.00)	
Subjective social status	.04 (.03)	.04 (.03)	.07** (.02)	.06** (.02)	
Immigrant	.09 (.08)	.11 (.08)	.05 (.06)	.06 (.07)	
Education	.04*** (.01)	.04** (.01)	.04*** (.01)	.04*** (.01)	
Household income	.00 (.00)	.00 (.00)	.00 (.00)	.00 (.00)	
Everyday discrimination		.00 (.01)		-.001 (.01)	
Family and friend support		.02† (.01)		.01 (.01)	
Sigma-squared	1.07	1.07	1.05	1.05	
Tau	.03	.03	.01	.01	
Deviance	3395.96	3407.91	3896.52	3907.24	

†p<.10, *p<.05, **p<.01, ***p<.001

Notes: Ethnic Neighborhood Individual-level N=1156, Tract-level N=77; Non-ethnic Neighborhood Individual-level N=1344, Tract-level N=234.