Note to readers:

In the next revision of this piece, I intend to concentrate more fully on residential stability, and also develop more fully the links between theory and analysis and then results and theory.

THE BUILT ENVIRONMENT, RESIDENTIAL STABILITY, AND SOCIAL RELATIONS

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Physical features of urban neighborhoods including housing and walkable urban form, along with social composition and residential stability, predict perceived neighborhood social relations (cohesion, control, intergenerational closure, and reciprocal exchange) previously linked with downstream health, social, and behavioral risks. Housing building types, especially detached houses and high-rise apartments, significantly predict social relations, both independently and through their association with residential stability. Housing and urban form also have differential associations with social relations outcomes according to the neighborhood socioeconomic status. A gradual pace of redevelopment resulting in historical diversity of housing significantly predicts social relations. Walkable urban form (residential density, mixed land use, and street connectivity) appears less important but shows promise in explainpredicting reciprocal exchange. The finding that physical conditions like housing and urban form have implications for social relations should encourage efforts to develop urban planning policies designed to foster neighborly social relations along with other related beneficial outcomes.

A large literature in social science and public health documents the importance of social relations in residential communities for physical health (Franzini, Caughy, Spears, and Esquer 2005; Kawachi, Kennedy, and Glass 1999), mental health (Mair, Diez Roux, Shen, Shea, Seeman, Echeverria, and O'Meara 2009), mortality (Lee 2010), physical activity (Brownson,

Hoehner, Day, Forsyth, and Sallis 2009; Franzini, Taylor, Elliott, Cuccaro, R.Tortolero, Gilliland, Grunbaum, and Schuster 2009; Saelens and Handy 2008; Wen and Zhang 2009), obesity (Cohen, Finch, Bower, and Sastry 2006), crime (Browning, Feinburg, and Dietz 2004; Hawdon and Ryan 2009), education and cognition (Sampson, Sharkey, and Raudenbush 2008; Sastry and Pebley 2010), the collective management of resources (Pretty 2003), democratic governance (Putnam 2002; Putnam, Leonardi, and Nanetti 1994), and other outcomes. Some of this work is motivated by a claim that community social networks may be weakening (Putnam 1995) within and across all social groups, and concern that changes in community social networks will hurt members of the poorest urban communities (Klinenberg 2002) who may lose networks they previously relied on without gaining access to emergent social relational formats.

Less well understood, though hardly understudied, are the more distal and/or exogenous factors that shape social relations in residential communities. Two approaches to this issue are the best developed at this time, yet have rarely intersected, one focusing on the impacts of social composition on neighborly social relations, the other on the import of the urban built environment.

The concentrated poverty perspective, promoted most prominently by Wilson (1987), argues that urban disadvantage, and more particularly the absence of middle class residents and businesses (Logan and Molotch 1987), creates a social context that fosters crime and physical and social disorder, dispelling hope and compelling a withdrawal from community life and concomitant increase in antisocial behaviors. This idea suggests that if poor people were distributed more evenly among non-poor and middle-class neighbors, their frames of reference would change, inspiring them to aspire to middle class norms, while less-stressed institutions such as local schools would be better able to provide assistance when fewer students were

experiencing poverty. The concentrated poverty perspective has been particularly influential in public health as well as in urban sociology, and is widely referenced in policy circles, notably by President Obama during the 2008 election. Critics argue that policy agendas aimed at reducing the concentration of poverty both draw attention away from efforts to reduce the overall poverty rate through more dispersed means such as reducing unemployment, and also justify large-scale redevelopment projects which would break up and disperse functioning communities, disrupting social support systems and institutional investments (Gans 2010).

In describing the process of poverty concentration as triggering disinvestment in neighborhood commercial and institutional environments and declining job opportunities, the theory does implicitly recognize some connection with the built environment. But while Wilson describes the factors pushing middle-class and affluent households from central neighborhoods, he pays relatively little attention to the housing market factors pulling households to their destination homes. Here, the literature on the social implications of the concentration of poverty could benefit from recent work re-emphasizing how housing development patterns and urban planning drive continuing race/ethnic and income segregation (Brown and Chung 2008; Hirsch 1983; Massey, Domina, and Rothwell 2009; Taub, Taylor, and Dunham 1984). Zoning ordinances prescribing low density and separation of residences from other land uses tend to result in highly affluent and typically white compositions (Rothwell and Massey 2009; Rothwell and Massey 2010). In recent decades, buyers of new homes have been increasingly affluent; relatively little housing has been designed for lower income households. Affluent households that abandon older homes to lower-status groups may form even tighter affluent enclaves (Dwyer 2007) in their destinations, while leaving vacant homes in their origin neighborhoods. On a more hopeful note, Brown and Chung (2008) also describe how market-led development strategy

focusing on mixed land use and diversity of housing choices can aim for socially diverse communities, detailing a successful case study in Ohio.

This recent work demonstrating the importance of housing markets and local government interventions in housing supply emphasizes a shift in the causes of racial/ethnic segregation over time from deliberate discrimination to more subtle market positioning. Given this evidence on the increasing relevance of housing and other urban planning features for the resulting social composition of neighborhoods, it is time to expand this focus on linkages between the built environment and social composition to other areas of neighborhood research.

There is good reason to believe that the built environment may have important implications for neighborly social relations. Research in a variety of literatures, including urban planning, criminology, environmental psychology, landscape architecture, and early work from the Chicago School describe implications of urban design for person-environment interaction by influencing opportunities for surveillance and casual encounters. Widely discussed theories such as New Urbanism and defensible space, along with research on the health effects of housing, transportation, and commercial development, have implications for research on neighborly social relations. One reason these findings have not achieved prominent attention in urban sociology may be that each literature tends to be fairly self-contained, with limited and non-standard sets of predictors and outcomes and diverse research settings and methods.

This paper investigates: (1) whether features of the built environment are significantly associated with neighborly social relations, (2) how built environment features and neighborhood disadvantage and affluence may interactively predict neighborly social relations, and (3) how housing and residential stability may relate when predicting neighborly social relations. Linking a representative survey of Chicago in 2001-3 with multiple innovative data sources, the analysis

examines how four measures of perceptions of neighborhood social relations (cohesion, control, intergenerational closure, and reciprocal exchange), which have been previously linked with downstream health and social risks, may relate to features of neighborhood housing and urban form. Included in this analysis is a new urban design measure of the historical diversity of housing stock which operationalizes Jacobs' ideas about the benefits of gradual evolutionary redevelopment. Housing building types, especially detached houses and high-rise apartment buildings, significantly predict social relations, both independently and perhaps even more through their association with residential stability. Housing building types and urban form also have differential associations with social relations by outcome and according to the socioeconomic status of the area's residents.

Neighborhood Composition and Neighborly Social Relations

Given the importance of community social capital, considerable research has been devoted to understanding the social forces at work in generating neighborly social relations. Like Putnam today (2002), several earlier sociological theorists were concerned with implications of changes in modes of living for social relations, and how differential physical conditions might result in spatial variation; this theme has recently been rediscovered. Simmel (1903 (1950)) theorized that the size, heterogeneity, and density of cities leads to impersonalized social interactions and a disconnect with social norms, echoed by Wirth (1938). Park and colleagues (1925) drew on the new science of ecology, proposing that just as animals are dependent on the natural resources in their habitats, human populations also take root and communities evolve in ways shaped by their surroundings. They also recognized that these social interactions can vary spatially within a city: community social disorganization (Shaw and

McKay 1942), a condition characterized by lack of trust, empathy, or adherence to social norms, was especially common in the urban core near areas of mixed commercial and residential land uses according to Park (1936), but also affected by social homogeneity, residential stability, and community age (McKenzie 1925).

Neighborhood population density remains negatively associated today with social relations measures such as informal neighboring (Swaroop and Morenoff 2006) and intergenerational closure, reciprocal exchange, and child-centered social control (Sampson, Morenoff, and Earls 1999). However, density is not itself significantly associated with the kinds of social participation and civic engagement outcomes Putnam had in mind in Bowling Alone (Glaeser and Gottlieb 2006), and Kasarda and Janowitz (Kasarda and Janowitz 1974) demonstrated that a related concept, residential stability, appears more relevant. Density can also be considered as a proxy variable for other neighborhood (probably built) features, which are often not specified.

Since the 1980's, sociology has focused on the social composition of the neighborhood when considering neighborhood social relations. The concentrated poverty perspective would suggest that heavily black and low-income neighborhoods might have low levels of social relations, but neighborhood proportion black did not significantly predict social interaction, organizational development, or knowing the names of neighbors in Seattle when individual and neighborhood predictors were controlled for (Guest, Cover, Matsueda, and Kubrin 2006). Hispanic and immigrant neighborhoods historically were seen as tight-knit (Park 1925; Park, Burgess, and McKenzie 1967), but more recent studies suggest negative or no relationships between immigrant concentration or Hispanic population and social relations (Almeida, Kawachi,

Molnar, and Subramanian 2009; Guest, Cover, Matsueda, and Kubrin 2006; Sampson, Morenoff, and Earls 1999).

Recent studies have tended to approach neighborhood social composition by using factor analysis of census social composition data to compose scales, most often disadvantage and affluence, but also including Hispanic/foreign born composition, family structure, and older age composition (Sampson and Morenoff 1997). Disadvantage (characterized by large positive loadings on measures such as low income, public assistance, unemployment, female-headed households, low education, and young age structure), and affluence (characterized by large positive loadings on measures such as high education, professional/managerial occupation, and middle age composition) are not merely opposites: although almost no neighborhoods are both affluent and disadvantaged, a substantial proportion of neighborhoods have low levels of both (see Figure 2.1). While the concentration of poverty perspective understandably focuses on poverty, incorporating the affluence dimension captures important variation in neighborhood socioeconomic composition; affluence is a powerful predictor of health and health behavior and racial disparities therein. Neighborhood affluence appears to have strong positive associations with intergenerational closure, reciprocal exchange, and social control (Sampson, Morenoff, and Earls 1999), and social interaction (Guest, Cover, Matsueda, and Kubrin 2006), while control is lower in disadvantaged areas (Sampson, Morenoff, and Earls 1999).

Along with the concentrated poverty perspective and the Wirthian emphasis on the negative externalities of urban living itself, three other sociological approaches are often mentioned (Swaroop and Morenoff 2006). The "systemic" or "social disorganization perspective" emphasizes the role of residential stability in supporting social relations (Kasarda and Janowitz 1974; Shaw and McKay 1942), particularly for informal exchanges (Sampson 1988;

Sampson and Groves 1989). The "social needs" perspective suggests that challenged communities may actually interact more in the attempt to resolve problems or seek protection (Kasarda and Janowitz 1974), although this view has had mixed empirical support (Woldoff 2002). The "limited liability" approach suggests that instrumental participation and tie formation can be seen as a strategy to protect household personal and property safety and well-being and solve collective problems (Greer 1972; Guest, Cover, Matsueda, and Kubrin 2006).

As predicted by social disorganization theory, residential stability is significantly positively related to intergenerational closure, reciprocal exchange, and social control (Sampson, Morenoff, and Earls 1999) and informal neighboring (Swaroop and Morenoff 2006) in Chicago, as well as local social ties in Great Britain (Sampson 1991). Return on investment in social ties is higher when one expects to stay in place longer and when mobility of others is low as well (David, Janiak, and Wasmer 2010). Neighborhoods with strong social capital may be difficult to leave, whether because they are pleasant or because ties with others pull one back. Residential stability is often measured as a composite of population turnover and home ownership. Residents are more likely to know names of neighbors in more stable neighborhoods in Seattle, but social interaction and organizational development are not associated with stability (Guest, Cover, Matsueda, and Kubrin 2006).

Social integration patterns by living arrangements, which are likely closely connected with both housing units and neighborhood choice, have been studied with respect to social integration but rarely for neighborhood social relations. Persons living alone, who are often never-married, divorced, or widowed, may compensate for fewer social contacts at home by engaging in more social interaction outside (Alwin, Converse, and Martin 1985; Hughes and Gove 1981). Young children form most of their friendships with neighboring children, and these

friendships result in contacts between adults as well; Grannis (2009, p. 137) found that 85% of neighbor ties were between households with children.

Homeownership is positively associated with neighborhood satisfaction, although this may be less true when homeowners are less common in the neighborhood (Parkes, Kearns, and Atkinson 2002). The limited liability perspective suggests that homeowners, after tending to choose low density areas where they can have more privacy and control over their living spaces, may establish neighborhood social ties as an instrumental investment in protecting their assets rather than simply from an expressive desire for social connection (Greer 1972; Guest, Cover, Matsueda, and Kubrin 2006). This view is supported by the finding that homeowners have more total social capital resources and more neighborhood social capital resources than do renters (Manturuk, Lindblad, and Quercia 2010).

Broken windows theory links physical and social context with individual social behavior by suggesting that physical disorder such as physical damage, litter, and graffiti is not only a consequence of neglect but also provides cues that behavioral norms of orderly conduct have been relaxed and further transgressions would not prompt reprisal. This linkage is supported by several experimental studies demonstrating that violations of norms (such as anti-littering norms) becomes more common in the presence of signs of previous violations (Cialdini, Reno, and Kallgren 1990; Keizer, Lindenberg, and Steg 2008) and that when a car appears to be abandoned, vandalism is likely, even in low-poverty areas (Zimbardo 2004).

The associations between the physical surroundings of homes and area social composition as they jointly predict social relations is a common thread lying just below the surface of many of these studies, a thread which has rarely been pulled into the focus. Given that neighborhood variation in social relations cannot be fully explained by social composition

(Subramanian, Lochner, and Kawachi 2003), it makes sense to look elsewhere for complementary alternative explanation. Much of the sociological literature has considered the physical environment primarily through a limited set of independent variables, such as physical disorder, or by employing proxy variables such as population density (Sampson, Morenoff, and Earls 1999). The next section reviews relevant literature from fields outside urban sociology which have offered theoretical or empirical explanations for linkages between the built environment and social relations among neighbors.

Urban Planning, Place Attachment and Social Behavior

By contrast to research focusing on neighborhood social composition, a number of literatures describe implications of urban form for person-environment interaction by influencing opportunities for surveillance and casual encounters. Urban form refers to "the spatial pattern of the large, inert, permanent physical objects in a city" (Lynch 1981, p. 47) such as land use patterns, transportation system, and urban design. Urban planners and environmental psychologists/landscape architects have given a good deal of consideration to conceptual descriptions of how features of urban morphology predict human behavior, and researchers on active living have established linkages that are to some extent causal between urban form and active transportation choices such as walking. However, much of the research and ideology linking the physical environment and community sociality has focused on abstract notions most frequently operationalized as "sense of community," often without careful discussion (Talen 1999) distinguishing the precise nature of the types of neighboring behaviors (Swaroop and Morenoff 2006) and attitudes, social capital (Portes 1999; Putnam 1995), environmental perception and cognition, and other components of neighborly social relations.

Urbanism and Theories of Neighborhood Change

Jacobs' work The Death and Life of Great American Cities (1961) described the importance of "eyes on the street," emphasizing the importance of sidewalks for casual chance encounters ("an intricate sidewalk ballet") leading to community ties, and how these outdoor community ties were different from friendships. Large-scale low-rise and high-rise apartment projects were particularly problematic in that they faced inward and were far from the pedestrian routes around shops and transit. Proprietors of storefront businesses, she noted, played a crucial role in crime prevention, child socialization, and as repositories of local information. A mix of workplaces and homes on the same streets provided an even distribution of pedestrian traffic through the day, facilitating public safety and allowing small businesses to thrive from the foot traffic all day, according to Jacobs and the Urbanists. In the absence of shared public pedestrian spaces facilitating casual social control, communities may create exclusionary strategies to protect public safety, including gang warfare and gated communities.

Jacobs' narrative describing the benefits of gradual evolutionary redevelopment is testable, yet has received little attention. Jacobs argued that grand planning schemes intending to redevelop large swaths of a city according to a central theoretical framework fail because planners do not understand that healthy cities are organic, spontaneous, messy complex systems which result from evolutionary processes. This suggests that neighborhoods which have experienced gradual redevelopment of land uses rather than construction concentrated at only a few time points due to government or private planning would experience better allocation of land uses, and that this better allocation would result in lower transaction costs, perhaps including increased walking. The idea of the possibility of stable evolution goes against other existing

theories of neighborhood change which emphasize how neighborhoods may naturally decay as their housing units age and returns to capital reinvestment decline (Hoover and Vernon 1959; Hoyt 1933) (Park 1936) In the 1970's, an era of declining population across many urban areas, the U.S. Department of Housing and Urban Development attempted to speed the process of getting to urban renewal by encouraging a decline in land values in declining neighborhoods and encouraging out-migration to make way for large-scale redevelopment (Metzger 2000).

Jacobs argued that grand planning schemes intending to redevelop large swaths of a city according to a central theoretical framework fail because planners do not understand that healthy cities are organic, spontaneous, messy complex systems which result from evolutionary processes. This suggests that neighborhoods which have experienced gradual redevelopment of land uses rather than construction concentrated at only a few time points due to government or private planning would experience better allocation of land uses, and that this better allocation would result in lower transaction costs, perhaps resulting in increased walking, less vacant area, and greater diversity of uses. Encouraging disinvestment rather than fostering small-scale reallocation of buildings and land uses would also break up existing social relationships. Other more recent urban policy researchers, including Galster (1987), have also emphasized the importance of neighborhood reinvestment.

Jacobs' narrative describing the benefits of gradual evolutionary redevelopment is testable, yet has received little attention. It remains to be seen whether the diversity of forms created by gradual development in fact predicts better neighborly social relations. Some recent work has described a possible change in the worth of older housing not reflected in the earlier neighborhood change models. While affluent households still choose newer housing, and moderately older housing still portends a neighborhood economic decline, older housing is

becoming more attractive for gentrification (Rosenthal 2008), even as demand for access to the consumption benefits (including certain types of social relations) provided in denser cities increases (Glaeser and Gottlieb 2006), Aside from a considerable body of descriptive analysis of specific redevelopment projects, especially public housing, little work has considered implications of housing age and development trajectories at larger spatial scales for social relations. In one study, older age of local housing was positively related to social interaction and organizational participation (Guest, Cover, Matsueda, and Kubrin 2006).

New Urbanism

Urbanist ideas have received a fresh frame in New Urbanism (Duany, Plater-Zyberk, and Speck 2001; Leinberger 2009), which promotes the creation of pedestrian- and public transport-friendly neighborhoods characterized by mixed residential, business, and retail developments, individualized design featuring porches and windows facing narrow streets to integrate residential space with surrounding accessible and appealing public spaces along with clearly demarcated neighborhood or town boundaries. New Urbanist theory predicts that walkable urban form promotes neighborly social relations by promoting walking, thus facilitating impromptu conversations between residents or general awareness of and attachment to the neighborhood (Sander 2002). In one study (Boer, Zheng, Overton, Ridgeway, and Cohen 2007), some but not all features of New Urbanist design were associated with greater levels of walking.

While some studies (Plas and Lewis 1996) have shown that residents of New Urbanist communities reported a stronger sense of community, this may be because residents moved to planned New Urbanist towns such as Seaside, Florida seeking neighboring relationships. More direct tests of New Urbanist principles have had mixed results: the few studies linking walkability

and social relations either tend to be quite limited with respect to predictors and outcomes, creating a fragmented picture, or to use problematic research design, including comparing only two or more sites. Leyden (2003) showed that respondents in walkable (compared to car-oriented) neighborhoods in Ireland were more likely to report that they "knew their neighbors," although neighborhood characteristics were subject to reporting bias. Freeman (2001) found car-reliance, but not residential density, was associated with neighborhood social ties in Atlanta, Boston, and Los Angeles. Lund (2002) found higher sense of community in a pedestrian-friendly than in a car-oriented neighborhood, and that perception of desirability of walking and walking behavior were also related to sense of community, but that eight neighborhoods with varying walkability did not differ notably in unplanned encounters, local social ties, and supportive acts of neighboring (Lund 2003). In more a methodologically sophisticated study, Wood, Frank, and Giles-Corti (2010) found sense of community was positively associated with leisurely walking (days/week), home ownership, seeing neighbors when walking and the presence of interesting sites. Urban form features such as setback of retail from the street, the amount of surface parking, mixed land use, and perceived steep hills were also related to sense of community, but street connectivity and residential density were not.

Urban Form, Walking, and Casual Meetings

Walking behavior is positively associated with place attachment, including neighborhood satisfaction (Patterson and Chapman 2004; Wood, Frank, and Giles-Corti 2010) and sense of community (du Toit, Cerin, Leslie, and Owen 2007). The pace of walking matters – leisurely walking, but not brisk walking, was strongly associated with sense of community in Atlanta (Wood, Frank, and Giles-Corti 2010). In network censuses of neighborhoods in Los Angeles

and in a college town, most of the neighbors with whom Grannis' respondents formed instrumental ties originated as passive contacts, the relationship having evolved over repeated chance encounters. Walking dogs was the most common way neighbors met who did not meet through their children in a network census in Los Angeles and a college town (Grannis 2009).

While the evidence directly evaluating associations of urban form with actual social ties among neighbors is not strong, the literature linking specific features of urban form with physical activity and obesity is much stronger (Gordon-Larsen, Nelson, Page, and Popkin 2006). The extent to which streets are connected by intersections (rather than dead ends, cul-de-sacs, and T-intersections), is associated with higher levels of walking (Frank, Sallis, Conway, Chapman, Saelens, and Bachman 2006; Lee and Moudon 2006; Lee and Moudon 2008; Saelens and Handy 2008). Access to recreational spaces (Kaczynski and Henderson 2008; Smiley, Diez Roux, Brines, Brown, Evenson, and Rodriguez 2010; Tilt, Unfried, and Roca 2007; Witten, Hiscock, Pearce, and Blakely 2008), proximity to or density of nearby commercial destinations and public spaces (Cummins and Macintyre 2006; Inagami, Cohen, Finch, and Asch 2006; Moudon, Lee, Cheadle, Garvin, Johnson, and Schmid 2007), an overall mixture of land uses, and other pedestrian draws inspire walking trips. The ratio of commercial building floor area to total lot size (Frank, Sallis, Saelens, Leary, Cain, Conway, and Hess 2009) and the presence of sidewalks have also been demonstrated to indicate pedestrian-friendly design. These variations in urban form have important health consequences: Fan and Song's (2009) national study of urban–suburban mortality gaps found that in sprawling metropolitan areas, urban residents have significant higher mortality rates than suburban residents, while urban-rural differences are non-significant in compact metropolitan areas. This large body of promising research has inspired behavioral medicine researchers and community activists to give "[s]imple interventions such as

street lighting, pavements/ sidewalks, street trees, benches, bike lanes or trails, bike racks, and traffic-calming devices" (Lee and Moudon 2008) a prominent place on the public health policy agenda.

Housing and Social Behavior

A few studies have examined how housing building types predict NSR. Compared to residents of detached houses, respondents in townhouses/villas reported higher and, those living in duplexes and apartments/flats, lower, levels of social capital in Australia (Wood, Shannon, Bulsara, Pikora, McCormack, and Giles-Corti 2008). Glaeser and Sacerdote (2000) found more social connections among residents of large apartment buildings, but that apartment residents are less involved in local politics, while that areas around apartment buildings were subject to more robberies and auto thefts. Public housing developments may have stronger social interaction when low-rise buildings are close together, compared to high rise buildings set far apart (Amick and Kviz 1975). Positioning of doors, paths, and common spaces have been shown to predict social contacts (Festinger, Schachter, and Back 1950; Gans 1962; Michelson 1977; Michelson 1970; Talen 1999).

Integrating the Social and the Physical

Ironically, these multiple literatures tend to develop in isolation, barricaded by disciplinary walls. Not surprisingly, researchers focusing on social behavior have developed careful discussions and survey instruments to capture specific dimensions of neighboring behaviors and perceptions and descriptions of their social antecedents. Although much of the best progress in systematic measurement of variation in physical conditions has also come from

urban sociology and public health, non-sociologists have begun taking seriously the potential role of physical context in social processes while the built environment has been almost forgotten in sociology (Hillier 2008).

In distinguishing between built and social environments, this analysis makes a departure from conventional approaches in considering occupancy features as combined effects of neighborhood built and social environments (as well as broader processes within the city) which also moderate the effects of built and social environments on NSR. Residential stability and population density have often been considered either as social or built features of neighborhoods when in actuality they are functions of the way people sort into built environments. Just as households of different sizes may move into identical housing units, neighborhood population size, density, and stability are constrained but not fully determined by the housing stock available. More than a quarter of the nation's housing stock was at least 50 years old in 1999 (U.S. Department of Housing and Urban Development and the Bureau of the Census). Changes in population occur much more rapidly than changes in housing stock, and increases in supply of housing in response to rising demand occur far faster than decreases in response to drops in demand (Glaeser, Gyourko, and Saks 2006).

We should explore density levels as they differ from the levels expected given housing stock rather than using density as a proxy for unexplored variation in the built environment. Higher than expected density, for instance, could indicate aspirational locational attainment in which residents trade off living space for better physical and social conditions. Lower than expected density could result from "empty nest" households, a desire for privacy manifest in large yards, high levels of vacancies due to neighborhood decline, or other meaningful explanations. Residential stability also results from both built and social environments: areas

composed of stand-alone single-household units (houses) offered for sale are almost always going to be highly stable, as are areas with large proportions of older adults, while small apartments close in dense areas are likely to turn over quickly. Neighborhoods near universities or military installations or designed for roommates or late-life adults are also likely to be less stable. While residential stability is generally supportive of good social relations in well-functioning neighborhoods, variation in stability which results from characteristics of housing and social composition is not what is interesting. Rather, what we should seek to understand is levels of stability which are greater or less than expected given built and social compositional characteristics of places, along with how stability moderates these features.

Linking a representative survey of Chicago in 2001-3 with multiple innovative data sources, this paper examines four measures of perceptions of neighborhood social relations (cohesion, control, intergenerational closure, and reciprocal exchange) previously linked with downstream health and social risks to investigate whether variation in the built environment is significantly associated with neighborhood social relations (NSR). Two domains of the built environment are considered: housing (building type, public ownership, and historical diversity of housing) and urban form (residential density, mixed land use and street connectivity). Finally, the analysis considers how estimates of associations of social composition and built environment features with neighborly social relations change with both are considered in the same model, as well as how the potential contribution of residential stability.

DATA AND METHODS

The theoretical framework presented above calls for consideration of multiple commonly used measures of perceived neighborhood social relations, linked to objective measures of key aspects of neighborhood built environment and social composition.

Survey Data

The Chicago Community Adult Health Study (CCAHS) is a multi-level probability sample of 3,105 adults age 18 and older living in the city of Chicago, with a response rate of 71.8% for face-to-face interviews. Content includes the impact of individual socioeconomic, psychosocial, and behavioral factors on health, social and physical characteristics of neighborhoods, and their combined contributions to explanations of health disparities. The CCAHS built on the clustered sampling framework of the Project on Human Development in Chicago Neighborhoods (PHDCN), drawing an average of 9 respondents from each of the 343 neighborhood clusters (NCs) covering the entire city; these NCs are groups of contiguous census tracts grouped to reflect physical barriers, local cultural knowledge, and cluster analyses of census data so that the NCs are relatively homogeneous (Sampson, Morenoff, and Earls 1999). An important component was the community survey, a portion of the questionnaire which covers perceptions of the respondents' neighborhoods.

Observational and Archival Data

Further ecological data for the NCs come from multiple sources. A systematic social observation (SSO) (Sampson and Raudenbush 1999) was performed between May 2001 and March 2003 in which at least one trained observer rated each of the 1,662 blocks on which at least one sampled respondent lived (Sampson, Morenoff, Raudenbush, and Swaroop 2007).

Block ratings included assessments of the physical condition of the buildings, street, amenities, and perceived physical and social conditions, as well as housing, commercial, and overall land use typologies (Bader, Ailshire, Morenoff, and House 2010; Sampson and Raudenbush 1999). The street connectivity measure is calculated from RAND Corporation's Center for Population Health and Health Disparities' dataset (Escarce, Lurie, and Jewell 2011). Information on public ownership of housing units comes from the U.S. Department of Housing and Urban Development (HUD 2000).

Multiple Dimensions of Neighboring

Social cohesion assesses closeness and shared values among neighbors, a form of bonding capital which emphasizes the social networks among individuals who agree to a shared system of norms, at times to the exclusion of individuals on outer rings of a concentric network of trust (Fukuyama 2000). *Informal social control* taps into the shared beliefs and expectations of a community that they can and will intervene for the collective good. When social cohesion and control are combined, they are considered a shared willingness to take action to enforce collective norms is called "collective efficacy" (Sampson, Raudenbush, and Earls 1997). *Intergenerational closure* assesses the extent to which adults and parents in the neighborhood are aware of and looking out for local children. *Reciprocal exchange* focuses on the exchange of favors, advice, material goods and information which make up a social support network within the community; the exchange is reciprocal because of the tacit expectation that this care may be repaid in the future, although possibly in a different mode and by unspecified neighbors (Portes 1999).

The four continuous neighborhood social relations outcomes each come from principal components factor analysis of five items measured on Likert scales, with missing data imputed. Scale component item descriptions and summary statistics are given in Table 1, and scale summary statistics are reported in Table 2. Scale items display acceptable levels of internal reliability (Cronbach's alpha, 0.79-0.83). Scales have acceptable levels of reliability of OLS estimates across neighborhoods based on the random effects of level 1 intercepts (0.47-0.60). The intraclass correlations of 0.09 (exchange) to 0.14 (control) indicate considerable agreement about social relations within neighborhoods.

<Tables 1 and 2 about here>

Individual Sociodemographic and Household Controls

Individual-level controls are included to account for factors which may affect reports of neighborly social relations: race/ethnicity (non-Hispanic black, Hispanic, non-Hispanic other, with non-Hispanic white as the reference category), variables indicating whether the respondent is female and is an immigrant, and dummy variables for age (30-39, 40-49, 50-59, 60-69, and 70 years and over, with 18-29 as the reference group), education (12-15 years or 16+ years, with 0-11 years as the reference category) and annual income (of respondent and their spouse if applicable) (less than $5,000, $15,000-$39,999, and $40,000 and over, with $5,000-$15,000 as the reference category).

Individual-level measures consider features of the respondent's household which may influence the respondent's awareness of or quality of experience with social relations in the neighborhood. Household assets and residential tenure are important pathways between individual sociodemographics and neighborhood choice and experiences which are

conventionally included as controls. Binary dummy variables indicate respondents whose households own assets which may need protection (homes or cars). Residential tenure is measured in years, and model-based imputation was performed for 16 respondents with missing data on tenure. A dummy variable is included for respondents who live alone, because the respondent may gather information or meet neighbors through other members of the household. The presence of minor children may inspire investment in child-centered social ties, so the presence of one or more children in the respondents' household is represented by a dummy variable.

Neighborhood Social Composition

To understand how social composition and built environment differentially predict neighboring, four measures of socioeconomic composition are included which use 2000 Census NC-level measures and are informed by prior exploratory factor analysis (Morenoff, House, Hansen, Williams, Kaplan, and Hunte 2008). The scales used here were constructed by calculating the average value of a set of standardized variables for each NC. Of these, disadvantage and affluence are the primary neighborhood variables of interest in that they are central to discussion of concentration of poverty, while residential stability is included because of its close connection with both housing type and NSR. The socioeconomic disadvantage scale (Cronbach's alpha=0.96) loads positively on low family incomes, high levels of poverty, public assistance, unemployment, and vacant housing, and negatively on high family incomes. The affluence scale (Cronbach's alpha=0.94) consists of three components: the proportions of the population with professional/managerial occupation, with less than 12 (reverse coded), and with

more than 16 years of education. Residential stability, or the proportion of residents in place for 5 or more years, is obtained from the 2000 Census via NCDB.

Neighborhood Built Environment

Housing. The census housing building type categories include buildings with 50 or more units (also called high-rises), with 3-4 units, duplexes/townhouses, detached single unit homes, and non-standard types (units attached to non-residential buildings, mobile homes, boats and motor vehicles, and other types of housing), with buildings with 5-49 units (also called low-rises) as the reference group. The spatial distributions of three housing types (houses, buildings with 3-4 units, and buildings with 50 or more units) are shown in Figure 1, based on data from the 2000 Census (Neighborhood Change Database: Geolytics Inc. 2004). The maps show a clear concentric ring pattern, with high rises concentrated along Lake Michigan (and a slight spoke-and-hub pattern around highways), 3-4 unit buildings in a smooth ring distant from The Loop, and a gradual transition to single family houses toward the city outskirts.

Walkable Urban Form. The three urban form measures (residential density, mixed land use, and street connectivity) capture elements of the physical layout and content of the built features of the neighborhood and are commonly used in measuring urban design and are considered key features of walkability (Frank et al. 2009). Rather than measuring *population* density (in which the land area in the denominator is composed of all land within the designated neighborhood boundaries), this study measures *residential* density (the density of residents within only residential areas.) Residential density is the ratio of population size to residential

land area within an NC, measured using land use data from the Chicago Metropolitan Authority for Planning (2006).

Numerous studies have shown linkages between the number and variety of potential walking destinations in a neighborhood and walking (Cerin, Leslie, du Toit, Owen, and Frank 2007; Duncan, Winkler, Sugiyama, Cerin, duToit, Leslie, and Owen 2010; Lee and Moudon 2006; Rodríguez, Evenson, Roux, and Brines 2009). One conventional measure of land use mix is an entropy measure which captures the evenness of allocation among five categories (residential, commercial, institutional, open, and other), calculated by $-[\Sigma_k (P_k \ln P_k)] / \ln N$, where N is the number of land use categories and P_k is the proportion of land in each category k. The measure used is based on data from remote sensing (Chicago Metropolitan Agency for Planning 2006), although an alternate measure based on the SSO was investigated in supplemental analyses and gave similar results.

Street connectivity measures the extent to which it is possible to travel directly and along a variety of routes. More connected street grids make a city more permeable to walking by reducing the time necessary to reach any potential destination. The gamma index is a ratio of the number of street segments to the maximum possible number of segments between intersections, which is 3 * (# intersections – 2), so that values for the gamma index range from 0 to 1 (Dill 2004). The gamma street connectivity measure used here is highly correlated ($r>.98$) with other alternate measures such as street length or link to node ratio.

Redevelopment Pace/Historical Diversity. Next, I propose and implement a measure which captures an element of urban design suggested by Jacobs as important to neighborhood social relations but rarely subjected to empirical analysis, the historical diversity of housing stock. Jacobs argued that diversity of physical form, especially the gradual repurposing, reconstruction,

and infilling of newly developing properties, is essential to maintaining a dynamic flexibility necessary to keep an urban neighborhood thriving. The gradual redevelopment of housing properties is captured by applying a common measure of ecological diversity (Talen 2010), the Simpson diversity index (Simpson 1949). The Simpson index is calculated by $S = \Sigma k\ [(nk/N)^2]$, where nk is the number of units in a category and N is the total number of units, and measures the diversity of a distribution among categories. Here the categories represent the number of housing units in each NC constructed (1) during the 1930's and before, (2-6) in the 1940's, 1950's, 1960's, 1970's, and 1980's, and (7) from 1990 to 2000, using aggregated data from the 2000 Census via NCDB.

The spatial distributions of construction of housing units by decades are shown in Appendix A. Housing remaining from before 1940 is more common in the north side of Chicago, Uptown and curving along the river, as well as in Hyde Park and Beverly. Housing from the 1940's is more spatially dispersed, but located away from The Loop. Fifties' era construction occurred at a fairly even level across the city, but with concentrations on the outskirts of the city. The 1960's and 1970's saw considerable investment in the waterfront and The Loop and redevelopment in the South Side and outskirts, especially both around Lake Calhoun and near Ashburn and Belmont. Waterfront redevelopment continued in the 1980's and in the 1990's spread to the west away from the waterfront.

Analytical Plan

Linking a representative survey of Chicago in 2001-3 with multiple innovative data sources, this paper examines four measures of perceptions of neighborhood social relations (cohesion, control, intergenerational closure, and reciprocal exchange) previously linked with

downstream health, social, and behavioral risks to investigate whether variation in housing and urban form is significantly associated with neighborhood social relations (NSR). Next, the analysis continues by examining how estimates of associations of either housing and urban form or social composition with NSR may change when both are considered in the same models, and then investigates what effects residential stability may have beyond built features and social composition. The specification of housing includes a new measure inspired by the writings of Jacobs on the benefits of gradual rather than large-scale development for neighborhood social vitality. Finally, further analysis considers how social composition may moderate the associations of built features with NSR.

Results

Descriptive Analyses of Independent Variables

Summary statistics on individual sociodemographics controls for the total study sample (n=3,105) are given in Table 3. Because the sample is representative of Chicago's adult population in terms of age, race/ethnicity, and sex (Morenoff et al. 2008), there are substantial proportions of blacks (32.1%), Hispanics (25.8%), first-generation immigrants (26.7%), and persons with annual income less than $15,000 (20.1%), and slightly more than half are female (52.6%). Car ownership (58.0%) is more prevalent than home ownership (41.1%). Only half of respondents had lived in their homes for 5 years or more, and one quarter of respondents had lived in their homes for less than 2 years. After the imputation, the mean tenure was 9.7 years (SD 12.0), and the longest tenure was 83 years. Respondents living alone comprised 26.9% of households, while 35.7% of respondents lived with one or more minors.

<Table 3 about here>

Summary statistics for neighborhood-level variables are given in Table 4, and correlations among neighborhood-level variables are reported in Figure 2. On average within NCs, buildings of 5 units or more were the most common building type (31%), while 16% of units were in buildings containing 3-4 units, 22% were in groups of duplexes, and stand-alone single-household houses (28%) and 4% more were in less standard building types (mobile units, housing attached to non-residential properties, and other units). Public housing is present in 27% of NCs. Street connectivity and mixed land use measures and the Simpson diversity index theoretically range from zero to one. In this urban sample, street connectivity fell near the middle of the possible range (0.38-0.60) and land use mix showed a wide range (0.20-0.97). The modal housing unit was built in the 1930's or earlier (39%), with on average more than 10% of units built in each of the 1940's, 1950's, and 1960's, and little construction thereafter. However, some NCs were substantially redeveloped in any of the post-war decades, ranging as high as one NC in which 64% of units were constructed in the 1960's. This results in an average of 0.38 for the historical diversity index (the Simpson diversity index for housing construction decades) and a range of 0.13 to 0.54. The measures of disadvantage and affluence are similar to those used in prior studies but have not been rotated to achieve orthogonality and so have a correlation of -0.49. Residential stability is measured as the proportion of respondents in place for 5 or more years. On average, 56% of respondents had been in their homes for at least 5 years, but some neighborhoods had as many as 83% or as few as 20% of their residents staying in a home that long.

<Table 4 about here>

Housing and Urban Form, Social Composition, Residential Stability, and Neighborly Social Relations

Table 5 shows associations of NC-level variable blocks describing (1) housing and urban form, (2) socioeconomic composition, (3) both the built and social measures from the previous two models, and (4) those variables with residential stability added. All models are population-weighted population-average random-effects models with robust standard errors which control for individual sociodemographic and household measures, but the individual-level coefficients are not shown. NC-level predictors and outcomes are standardized, except for building types. The first models in Table 5 for each outcome show associations of built environment features (housing stock and urban form) with NSR, omitting the proportion of buildings with 5-49 units (low-rises) and controlling for individual sociodemographics and household characteristics. For each outcome, detached houses have a significant positive association with NSR ($p<0.05$ except exchange $p<0.10$). High-rise buildings positively predict cohesion, control and exchange ($p<0.05$ except cohesion $p<0.10$), while 3-4 unit buildings (which may tend to be houses converted into apartments) are positively associated with cohesion and closure. The presence of public housing in an NC has a negative relationship with all outcomes ($p<0.05$ except closure $p<0.10$). Historical diversity of housing stock is significantly associated with all outcomes (ranging from closure: 0.05 SD, $p<0.05$; exchange: 0.11 SD, $p<0.001$). Of the measures of walkable urban form, only residential density is significantly (negatively) associated with all outcomes, while both mixed land use (0.06 SD) and connectivity (-0.06 SD) are associated with exchange and mixed land use has a marginal positive relationship with closure.

<Table 5 about here>

The second models for each outcome show associations of social composition with NSR, controlling again for individual sociodemographics and household characteristics. Cohesion, control, and closure have large negative associations with disadvantage; a one SD increase in disadvantage significantly predicts a 0.29 SD drop in cohesion, and 0.31 SD drop in control, but a 0.17 SD drop in closure (all $p<0.001$). Affluence is also negatively associated with closure (-0.09 SD, $p<0.01$) and marginally negatively with cohesion (-0.05, $p<0.01$).

When aspects of the built and social environments are jointly considered in Models 3, associations of building types with NSR change in different ways with respect to the omitted category of proportion of units which are in buildings of 5-49 units (generally low-rise apartment housing). The association of detached houses with cohesion drops from 0.71 to 0.52 SD, with control drops from 0.42 to a non-significant 0.10 SD, with closure remains steady at 0.75 SD, and with exchange grows stronger grows stronger and more significant from 0.25 to 0.41 SD. The associations of 3-4 unit housing with cohesion, closure, and exchange remain fairly constant across models. For buildings of 50 units or more, inclusion of social composition increases the estimate of the effect on control, but the marginally significant association with cohesion remains steady and the association with exchange drops to marginal significance. Associations with public housing presence drop for cohesion and control, and slightly increase for exchange. Historical diversity coefficients drop slightly for cohesion, control, and closure. The associations of disadvantage drop for cohesion and control while remaining highly significant, but the social composition associations with closure are completely eliminated by the incorporation of built environment measures. Adjustment for built features reduces the initial highly significant disadvantage coefficients by 38% for cohesion, and 16% for control, and completely eliminates the association of disadvantage with closure.

Adding residential stability in Models 4 further attenuates housing building type coefficients, so that only the high-rise (50+ units) association with control is significant, and the proportions of units in buildings of 3-4 units are marginally significant for cohesion and closure. Presence of publicly owned units also weakens for all outcomes. Historical diversity remains steady for cohesion, control, and exchange, but not closure. Residential stability itself (defined as the percent of residents who lived in the same housing units 5 years previously) is significantly associated with all outcomes, ranging from 0.10 SD for control and exchange to 0.18 SD for closure.

Table 6 shows the interactive effects of affluence and disadvantage with built environment features. Affluence significantly interacts with detached housing such that the detached housing is beneficial for cohesion, control, and closure only in affluent neighborhoods. Likewise, high-rise buildings in NCs exert most of their significance in disadvantaged neighborhoods for all outcomes, although the main effect is also highly significant and positive for control. Urban form measures density and mixed land use interact positively with disadvantage for control, while the typically negative effect of street connectivity for exchange is neutralized when interacted with disadvantage. Including the interaction terms weakens the effects of historical diversity for cohesion and control but not exchange.

<Table 6 about here>

Several other aspects of the variation of the housing environment within neighborhoods were investigated, but not included in the models finally reported. The diversity of building types was measured using Census building type measures and the Simpson diversity index, and was significantly negatively related to control (-0.54 SD, $p<0.05$) when social composition was

not included in the model. It may be that residents are less likely to intervene in parts of the city in which housing types do not match their own; for instance, homeowners may not consider nearby apartment-dwellers to be their neighbors. Second, the diversity of the number of bedrooms in units was considered as a possible indicator of variation in household types, but found not to significantly relate to the outcome measure. Third, housing age was examined aside from the diversity measure. NCs with higher proportions of housing built in the 1950's were found to have the highest levels of NSR for all outcomes, while NCs with more housing from the 1960's and 1980's were least amenable to NSR. When housing construction decades were factor-analyzed, one factor seemed to indicate the recentness of construction, with another capturing construction during the 1950's-1970's and loading most strongly on the urban renewal decade of the 1960's (Appendix B). When these factors were included in models controlling for housing features (Census or SSO) and urban form along with individual sociodemographics but not considering housing historical diversity, the urban renewal factor was significantly negatively related to social control, although this effect became non-significant when the presence of public housing was considered. Newer housing was significantly associated with lower levels of exchange. When housing historical diversity was considered, these factors became non-significant for all models. It appears that while there may be effects of housing eras in themselves, it is the diversity of the timing of construction rather than either the age of housing itself or unknown features of housing associated with planning paradigms from particular decades which most strongly predicts NSR.

Discussion

Residential stability has strong positive associations with NSR which above and beyond the associations of building types with NSR, and the generally non-significant associations of building types with NSR when controlling for stability seems to suggest that housing is unimportant. However, over half of the variation (adjusted $R^2 = 0.515$) in residential stability is explained by housing building types, another 8.4% (adjusted $R^2 = 0.596$) by housing age factors (Appendix B), and a further 8.1% by a factor of the number of bedrooms (adjusted $R^2 = 0.680$), but only another 10.8% (adjusted $R^2 = 0.788$) by the inclusion of five social "structural" features (disadvantage, affluence, % 65 or older, % younger than 18, and a Hispanic/foreign born factor), results shown in Appendix C. Moreover, combining the two sets of features attenuates the social compositional effect sizes while increasing the coefficients for housing variables.

The strong and substantial predictive ability of housing features for residential stability and of residential stability for NSR suggests that while housing features, especially detached houses and high-rises, public housing, and the diversity of ages, are significantly associated with NSR, much of this is through residential stability rather than direct effects. In considering the social and built environments, there is no "chicken or egg" conundrum. Before residents move into their homes, the homes are first constructed. Certainly, homes are constructed with particular market segments in mind, and neighborhoods do have historical social meanings. With around 40% of housing units in Chicago constructed in the 1930's and before, and many of even those older units built within an existing framework of streets and fixed land uses, the built environment has to be considered as the setting into which populations sort. Neighborhood social composition certainly has important implications for individual and community well-being, and may be growing in importance as differences between milieus increasingly dominates within-place inequality as a driving force behind overall inequality. Just as segregation sorts

households into neighborhoods of differing social composition, it also sorts people into built environments, and these built environments have a strong and potentially causal linkage to health-related social capital, but much of these effects are indirect through their associations with neighborhood composition and mobility patterns. But recent research suggests that the sources of continuing segregation (and increasing plurality) are transitioning from overtly race-specific agendas to more subtle market-driven mechanisms which indirectly structure neighborhood social composition through the actions of developers, lenders, and local governments to control the structure of housing markets (Brown and Chung 2008; Massey, Domina, and Rothwell 2009). More research is necessary using longitudinal data at a smaller spatial scale to capture the pathways between built features and neighborhood mobility patterns.

An additional goal was to assess the potential contribution of a concept from Jacobs' The Death and Life of Great American Cities, the importance of gradual rather than large-scale redevelopment (resulting in historical diversity). Consideration of the historical construction trajectory of NCs was quite promising. Historical diversity of housing units was strongly significantly associated with exchange, cohesion, and control in the full models, and in supplemental models not shown this was independent of the proportions of housing built in each decade. It may be that gradual redevelopment preserves community ties, which may take decades to form and which new residents may "inherit" from previous neighbors. Alternatively, the significant association of historical diversity may not be due to Jacobs' explanation and instead have other interpretations. Historical diversity may (1) result in attractive neighborhoods which are pleasant to walk in, (2) result from the continued vibrancy of neighborhoods across previous decades (a reciprocal effect of social relations). Historical diversity may (3) arise in smaller neighborhoods which contain more be local physical or social barriers to large-scale

redevelopment. The finding should be repeated in other contexts and for other outcomes to better understand whether this finding should be interpreted as evidence that Jacobs' narrative was correct.

Walkable urban form features (mixed land use and street connectivity) appear comparatively less important than housing, but this may be due to the limited variation in walkable urban form provided by this large and dense urban setting. Reciprocal exchange behaviors have been very difficult to explain at the neighborhood level by socioeconomic composition or housing features despite showing a sizeable neighborhood component (ICC=0.09), and urban form turns out to be a very promising direction for future investigation. Among the four outcome measures, reciprocal exchange may be most closely conceptually linked to the kinds of community behaviors New Urbanists hope to foster through urban form. It may well be appropriate to consider, however, whether urban form does indeed have effects on other important neighboring behaviors and attitudes urban planners hope to foster as well.

The finding that physical conditions like housing and urban form have implications for social relations should actually be seen as a ray of hope. When poverty and stigma are seen as the sole source of disparities, the problem looks irremediable; features of the legal and social superstructure resulting in rising inequality are not likely to change soon. But when material conditions can be specified under which social outcomes might be different, and these conditions are under the purview of local governments and developers and federal public housing authorities who care to at least some extent about producing viable communities, this is a valuable finding. In fact, as it happens, it may be that some of the same built features which would be supportive of thriving community social life would also support environmental sustainability, reduced costs of local infrastructure provision, active living and reduced health-

care expenses, and other agendas which might receive more attention in national and local policy circles. This said, while changes in urban form might have benefits across multiple outcomes, we also should not expect too much from the built environment. Effect sizes in existing studies have not typically been large.

In the previous pages, I evaluated some ideas of Jacobs and others about how physical features of places predict local social relations, but in evaluating the results, I hope to avoid what Glaeser (2011) calls the "edifice complex," the idea that built features are sufficient in themselves to bring about desired outcomes. The analyses presented here do not establish any kind of causality, and it would be dangerous to attempt to dictate precise policy prescriptions based on descriptive analysis. Rather, in evaluating current conditions with a view to informing urban planning, health, and social policy, to goal is to work with natural patterns of human-environment interaction rather than against them, and to this end, to seek to better understand those patterns.

Social science is an interesting field of knowledge in that lay theories and ideas generated by previous generations of researchers and theorists, sometimes without evidence, can take on a life of their own; as social theories become common "knowledge," they may become self-fulfilling (Thornton 2001). The popular ideals of the "white picket fence" suburb as the ideal place to rear children, for instance, likely results in migration of family- and community-oriented households to locations which look like they fit the picture, and those residents then may themselves create the child-friendly community life promised by the call of the cul-de-sac. In studying intra-urban migration patterns, sociologists have focused on neighborhood social composition rather than prior decisions such as building type and proximity to key locations. With cross-sectional data, and with little understanding of residential sorting, we are ill-equipped

to distinguish among direct causal effects of the built environment, causal effects of social composition, selective migration in pursuit of built-environment-induced social support or privacy, and other reasons for statistical associations. Pursuing causality is not impossible, however, as built environment research also lends itself comparatively well to intervention and quasi-experimental research designs.

This study contributes theoretically to a growing literature on the role of residential neighborhoods in explaining race/ethnic disparities in health outcomes (Do 2008; King, Morenoff, and House 2011; Morenoff et al. 2008), which has often focused on social composition and social relations and rarely on aspects of the physical environment aside from physical disorder. It also supplements a substantial environmental justice literature documenting race/ethnic and socioeconomic differences in potentially hazardous or beneficial neighborhood physical conditions (Frumkin 2005; Gordon-Larsen, Nelson, Page, and Popkin 2006; Hood 2005; Mohai, Lantz, Morenoff, House, and Mero 2009; Morello-Frosch and Lopez 2006; Neckerman, Lovasi, Davies, Purciel, Quinn, Feder, Raghunath, Wasserman, and Rundle 2009; Rauh, Landrigan, and Claudio 2008; Romley, Cohen, Ringel, and Sturm 2007; Schweitzer and Valenzuela Jr. 2004), with these environmental problems especially prevalent in the most disadvantaged communities. Within these literatures on racial/ethnic disparities in health and well-being, the role of housing has rarely been considered, while urban form has sometimes been considered, but typically with respect to physical activity or by comparing a limited number of settings. Yet an emphasis on housing both resonates with and builds on previous experiences in Chicago both with public housing projects which failed because of poor design and with problematic neighborhood redevelopments, each of which should lead us to look to housing,

urban planning, and development processes in seeking to explain neighborhood social processes relevant to health and well-being.

There are several limitations to this research. First, while urban planning and social policy can benefit greatly from research on the effects of the built environment on quality of life, evidence is needed at the "design level" – the level at which intervention in the built environment is possible. The present analysis may cover larger neighborhood sizes which also may not match up well with what residents consider as their neighborhoods, although these larger spatial units may do a better job than building-level studies of capturing the neighborhood context into which buildings and block faces are set. This study has made no effort to consider the spatial context of the NCs, either by controlling for the context of surrounding NCs, or by specifying aspects of location such as distance to downtown or from Lake Michigan. In decontextualizing context, this study lines up beside the literature it seeks to inform. While there is much need for future research on the social capital implications of additional built environment features such as transportation, commercial, and institutional features of places, the focus here was on investigating how housing and walkable urban form explain disadvantage and affluence effects on NSR.

This study demonstrates strong associations between features of the built environment and neighborly social relations which appear to mediate what was previously argued to be the effects of neighborhood social composition on social capital. Based on multiple innovative data sources, a large sample, and state-of-the-art methods, this finding contributes most significantly to literatures in urban sociology, urban planning, and public health. Researchers should continue to dig into the built environment as a policy-relevant source of social behavioral explanation.

Further Conclusion

While conventional discussions of how neighbors interact to provide health- and well-being- relevant social support have often taken a "systemic" approach focused on the social environment in terms of local social composition and residential stability, the analysis here demonstrates that simple measures of housing and urban form have important linkages with neighboring perceptions and behaviors. In particular, housing building types are associated with neighborly social relations independently, in interaction with social composition, and through their role in shaping residential stability. Reciprocal exchange behaviors have been very difficult to explain at the neighborhood level despite showing a sizeable neighborhood component, and urban form turns out to be a very promising direction for future investigation. Finally, the finding that neighborhoods in which construction was more evenly distributed over time, rather than those which had experienced large redevelopments in particular decades, fared better, merits attention. For one thing, if it is really the gradual evolutionary pace of redevelopment which matters for NSR, massive interventions to redevelop troubled areas may not succeed as well as small projects, even evidence-based communities built along New Urbanist lines. Also, large-scale zoning frameworks which discourage transitions (such as the current trend to redevelop industrial spaces as loft apartments) may be even more problematic than previously thought, and infill development even more promising. However, further investigation is necessary in order to more fully understand the association between construction patterns and social outcomes before concrete policy recommendations can be made.

The results of the factor analyses in Appendix B and the associations of these factors with residential stability in Appendix C suggest the need for a new factorial ecological approach. As explained by Sampson and Morenoff (1997), sociologists of the early Chicago School promoted

theoretical approaches which took seriously the role of the physical environment in shaping social processes over time. Of course, these physical ecological dynamics are themselves molded by the local governments, institutions, social movements, developers, and others who influence policy and market structure to shape neighborhood trajectories (Brown and Chung 2008; Massey, Domina, and Rothwell 2009; Rothwell and Massey 2009; Rothwell and Massey 2010; Sampson and Morenoff 1997; Taub, Taylor, and Dunham 1984). These ecological approaches have not been lost, and indeed the ability to measure physical characteristics of neighborhoods has undergone a revolution due to advances in geoprocessing and neighborhood-based survey methodology (Diez Roux and Mair 2010).

But while measurement has improved, theory has not kept pace. It is true that neighborhood poverty, racial isolation, and disadvantage predict a stunning array of negative outcomes for individuals and places. But documenting this point over and over does not suggest a solution, or worse, suggests the same solutions (e.g. urban renewal) which have already been shown counterproductive. Aside from policy-centered problems with this approach, another drawback is that some aspects of neighborhood social composition effects (e.g. Hispanic concentration) remain underexplained despite extensive consideration, while the precise meaning of others (e.g. older age composition, affluence) has rarely been explored. Even as leading figures in neighborhood research call for more precise elaboration of the pathways and processes by which residential environments "get under the skin," and lists of variables under consideration proliferate, very basic explanation of what some of our most powerful predictors really mean on the ground is rare.

In the introduction I mentioned that income can never explain health effects. Income might proxy for social position leading to certain emotions and rights, or it might enable the

holder to exchange those funds for health-promoting (or unhealthy) goods and services. Likewise, neighborhood aggregate income is also not in itself a great place to look for causality. First, neighborhood socioeconomic status is not causal in that it itself results from social processes sorting individuals into households and households into housing units with certain addresses. Second, neighborhood socioeconomic status is difficult to remedy by feasible direct local policy. Third, communities with equal resources might spend those funds to produce wildly varying social and physical environments which would have quite different effects for quality of life outcomes. So it makes sense to focus on policy-modifiable attributes which influence social sorting into places and which can be hypothesized to have specific and measurable direct or indirect effects on precise outcomes.

We need to delineate more clearly the complex patterns of interrelated processes which generate the social from the physical and the physical from the social. An important aspect to this agenda would be to link research on the way individual households select housing units, regardless of their position in the market, with research on spatial stratification. Sociologists need to better understand residential selection in terms of the characteristics households use to evaluate potential homes. This does include conventionally studied measures such as the sensory environment and perceptions of social relations and safety, but should focus as well on factors basic and primary to residential selection such as housing unit features, transportation choices, and proximity to key destinations such as employment and schools. Much of this research has been left to real estate economists, interested in pricing public goods, but sociologists need to reapproach from a sociological perspective. These features, aside from being central to residential selection and neighborhood vitality, also are integrally linked to environmental and

economic outcomes – some of the most pressing issues facing the United States today. The quality of the places we stay in and move through is central to quality of life.

The housing factors presented in Appendix B and which are linked with residential stability in cross-sectional models in Appendix C are a good place to start. Features of the built environment, particularly housing, endure for decades or centuries and either attract or repel potential residents differently according to their social identities. While the social area analysis approach, which emphasizes purely social attributes of places has its appeal (for instance the large percent of variance "explained" by social factors alone in model 4 of Appendix C), the fact that a simple set of housing factors can be approximately equally predictive should give pause and inspire attempts to reconcile these two approaches.

Housing, along with the resulting transportation needs, forms the largest expense for many households, but social scientists and health researchers have provided little guidance about how best to spend income – or trade-off income – among housing features, transportation, work hours, school quality, and other possibilities in order to pursue quality of life throughout the lifecourse. And an evidence base centered on quality of life may also uncover other features of neighborhood quality which can easily be incorporated into community, local government, developer, and household plans. Like housing interventions to reduce asthma triggers which then reduce Medicaid-funded emergency room visits, any number of possible interventions may reduce the prevalence rather than the course of disease. Some of these may pay for themselves – a consideration which may become increasingly vital to implementation in today's fiscal climate.

Table 1. Item Content and Summary Statistics for Dependent Variables

Social Cohesion Scale (All items have been recoded such that 1=disagree strongly, 2=disagree somewhat, 3=agree somewhat, 4=agree strongly)	N	Mean	SD	Range
This is a close-knit neighborhood	2,983	2.26	0.80	[1,4]
People around here are willing to help their neighbors	2,978	2.03	0.63	[1,4]
People in this neighborhood generally get along with each other	3,025	1.96	0.58	[1,4]
People in this neighborhood can be trusted	2,939	2.24	0.73	[1,4]
People in this neighborhood share the same values	2,844	2.38	0.75	[1,4]
Social Control Scale (How likely is it your neighbors would do something about it? All items have been recoded such that 1=very unlikely, 2=unlikely, 3=likely, 4=very likely)	N	Mean	SD	Range
A group of neighborhood children were skipping school and hanging out on a street corner	2,961	2.29	1.05	[1,4]
Some children were spray-painting graffiti on a local building	3,026	1.73	0.90	[1,4]
A child was showing disrespect to an adult	2,965	2.33	0.95	[1,4]
A fight in front of your house and someone was being beaten or threatened	2,986	2.11	0.98	[1,4]
Neighborhood residents would organize to try to do something to keep the fire station or library closest to your house open if the city were going to close it for budget cuts	2,982	1.80	0.86	[1,4]
Intergenerational Closure Scale (All items have been recoded such that 1=disagree strongly, 2=disagree somewhat, 3=agree somewhat, 4=agree strongly)	N	Mean	SD	Range
Adults in this neighborhood know who the local children are	2,929	1.99	0.77	[1,4]
There are adults in this neighborhood that children can look up to	2,877	2.01	0.69	[1,4]
You can count on the adults in this neighborhood to watch out that children are safe and don't get in trouble	2,927	2.12	0.71	[1,4]
Parents in this neighborhood know their children's friends	2,663	2.11	0.63	[1,4]
Parents in this neighborhood generally know each other	2,835	2.08	0.61	[1,4]
Reciprocal Exchange Scale (All items have been recoded such that 1=never, 2=rarely, 3=sometimes, 4=often)	N	Mean	SD	Range
About how often do you and people in your neighborhood do favors for each other?	3,072	2.29	1.01	[1,4]
When a neighbor is not home or on vacation, how often do you and other neighbors watch over their property?	3,064	2.14	1.16	[1,4]
How often do you and other people in the neighborhood ask each other advice about personal things such as child rearing or job openings?	3,072	2.75	1.07	[1,4]
How often do you and people in this neighborhood have parties or other get-togethers where other people in the neighborhood are invited?	3,083	2.82	0.99	[1,4]
How often do you and other people in this neighborhood visit in each other's homes or on the street?	3,087	2.53	1.02	[1,4]

CCAHS 2001-03

Table 2. Summary Statistics for Outcome Measures at Individual Level

	Social Cohesion	Social Control	Intergenerational Closure	Reciprocal Exchange
Mean	3.04	3.20	2.98	2.86
S.D.	0.13	0.15	0.10	0.12
Minimum	2.70	2.68	2.62	2.55
Maximum	3.45	3.60	3.35	3.26
Cronbach's alpha	0.83	0.79	0.79	0.80
Individual-Level Variance	0.21	0.34	0.22	0.50
Neighborhood-Level Variance	0.03	0.05	0.03	0.05
Intraclass Correlation	0.14	0.13	0.14	0.09
Reliability	0.60	0.59	0.57	0.47

CCAHS 2001-03

Table 3. Individual-Level Sociodemographic and Household Summary Statistics

Variable	Categories	Frequency	Population-Weighted Percent of Sample
Race/Ethnicity	Non-Hisp. White	1,240	38.36
	Non-Hisp. Black	802	32.07
	Hispanic	983	25.81
	Non-Hisp. Other	80	3.76
Sex	Female	1,870	52.62
Immigrant Status	First Generation	773	26.89
Age	Age 18-29	800	27.51
	Age 30-39	748	22.69
	Age 40-49	608	18.74
	Age 50-59	402	12.90
	Age 60-69	286	8.98
	Age 70+	261	9.19
Education	<12 years	792	23.42
	12-15	1,576	48.68
	16+	737	27.90
Income	$0-4,999	185	5.17
	$5,000-14,999	501	14.94
	$15,000-39,998	894	26.44
	$40,000+	948	34.85
	Missing	577	18.60
Household Assets	Owns Home	1,190	41.13
	Owns Car	1,698	57.98
Residential Tenure	0-1 years	777	26.12
	2-4 years	758	23.66
	5-13 years	797	24.81
	14+ years	757	25.02
	Missing	16	0.39
Household Composition	Single, Living Alone	803	18.21
	Minor(s) Present	1,108	32.06

CCAHS 2001-03, n=3,105

Table 4. Neighborhood-Level Variable Summary Statistics

Variable	Mean	SD	Range
Housing			
Building Types (Census)			
% 5 Units or More	0.31	0.27	[0.01, 0.99]
% 3-4 Units	0.16	0.10	[0, 0.50]
% Duplexes	0.22	0.15	[0, 0.61]
% Detached Single-Household	0.28	0.26	[0, 0.94]
% Non-Standard	0.04	0.06	[0.00, 0.58]
Public Housing Present	0.27	0.44	[0,1]
Housing Historical Diversity	0.28	0.08	[0.13, 0.54]
Housing Construction Decade			
1930's and Earlier	0.39	0.16	[0.01,0.72]
1940's	0.16	0.06	[0.00, 0.46]
1950's	0.18	0.10	[0.03, 0.57]
1960's	0.13	0.08	[0.02, 0.64]
1970's	0.07	0.05	[0.01, 0.45]
1980's	0.03	0.03	[0, 0.27]
1990's and 2000	0.04	0.05	[0, 0.33]
Urban Form			
Residential Density (p/sq. mi)	13115.17	8436.83	[3121.95, 68976.95]
Street Connectivity	0.52	0.03	[0.38, 0.60]
Mixed Land Use	0.61	0.16	[0.20, 0.97]
Social Composition			
Disadvantage	0.00	0.92	[-1.45, 3.85]
Affluence	0.00	0.95	[-1.26,3.90]
% In Place 5 Years or More	0.56	0.12	[0.20, 0.83]

CCAHS 2001-03, n=343

Table 5. Associations of Housing/Urban Form, Social Composition, and Occupancy with Neighborly Social Relations

	Social Cohesion				Social Control				Intergenerational Closure				Reciprocal Exchange			
	Model 1 β	Model 2 β	Model 3 β	Model 4 β	Model 1 β	Model 2 β	Model 3 β	Model 4 β	Model 1 β	Model 2 β	Model 3 β	Model 4 β	Model 1 β	Model 2 β	Model 3 β	Model 4 β
Built Environment																
Housing																
Unit Building Types																
% Detached Houses	0.71 ***		0.52 **	0.10	0.42 **		0.10	-0.21	0.74 ***		0.75 ***	0.20	0.27 +		0.41 *	0.10
% Duplexes	-0.28		-0.07	-0.22	-0.41 +		-0.24	-0.35	0.13		0.22	0.02	0.23		0.21	0.10
% 3-4 Units	0.78 *		0.78 *	0.64 +	0.23		0.31	0.20	0.92 *		0.87 *	0.69 +	0.77 +		0.71 +	0.60
% 50+ Units	0.51 +		0.52 +	0.34	0.77 **		0.94 ***	0.81 **	0.46		0.37	0.14	0.73 *		0.61 +	0.48
% Non-Standard (% 5-49 Units Omitted)	0.45		0.54	0.24	-0.27		-0.09	-0.30	0.77		0.74	0.35	0.37		0.28	0.07
Public Housing Present	-0.14 **		-0.09 +	-0.05	-0.23 ***		-0.17 **	-0.14 *	-0.11 +		-0.10 +	-0.05	-0.15 **		-0.17 **	-0.14 *
Historical Diversity	0.08 ***		0.06 **	0.05 *	0.09 **		0.07 *	0.06 *	0.05 *		0.05 +	0.03	0.10 ***		0.10 ***	0.10 ***
Urban Form																
Residential Density	-0.07 *		-0.09 **	-0.07 *	-0.14 ***		-0.17 ***	-0.16 ***	-0.10 **		-0.10 **	-0.08 *	-0.09 **		-0.08 *	-0.07 +
Mixed Land Use	0.00		0.01	0.00	-0.01		0.00	0.00	0.05 +		0.05	0.04	0.06 *		0.06 +	0.06 +
Street Connectivity	-0.03		-0.03	-0.03	-0.02		-0.02	-0.02	-0.02		-0.03	-0.03	-0.06 *		-0.06 *	-0.06 *
Social Environment																
Disadvantage		-0.29 ***	-0.18 **	-0.21 ***		-0.31 ***	-0.26 ***	-0.28 ***		-0.17 ***	0.00	-0.05		0.04	0.10 +	0.07
Affluence		-0.05 +	0.01	0.05		-0.03	-0.04	-0.01		-0.09 **	0.03	0.08		0.01	0.03	0.06
Occupancy																
% In Place 5 Years or More				0.14 ***				0.10 *				0.18 ***				0.10 *

NC-Level Coefficients from Weighted HLM Regressions with Individual Sociodemographic and Household Controls Not Shown
+ $p < 0.10$; * $p < 0.05$; ** $p < 0.01$; *** $p < 0.001$
CCAHS 2001-03 and Census 2000

Table 6. Interactive Associations of Housing/Urban Form and Social Composition with Neighborly Social Relations

	Social Cohesion			Social Control			Intergenerational Closure			Reciprocal Exchange		
	Model 1 β	Model 2 β	Model 3 β	Model 1 β	Model 2 β	Model 3 β	Model 1 β	Model 2 β	Model 3 β	Model 1 β	Model 2 β	Model 3 β
Built Environment												
Housing												
Unit Building Types												
% Detached Houses	0.22	0.01	0.08	-0.07	-0.33 +	-0.24	0.37	0.11	0.20	0.14	0.04	0.13
% Duplexes	-0.10	-0.04	0.61 +	-0.21	-0.13	0.14	0.18	0.21	0.68	0.15	0.22	0.60
% 3-4 Units	0.59 +	0.65 +	0.32	0.15	0.19	0.75 **	0.63	0.74 +	0.14	0.59	0.60	0.51
% 50+ Units	0.43	0.26	-0.12	0.90 ***	0.68 **	-0.17	0.26	0.09	0.12	0.51	0.42	0.14
% Non-Standard	0.44	0.43	0.36	-0.07	-0.11	-0.04	0.62	0.62	0.46	0.14	0.18	0.21
(% 5-49 Units Omitted)												
Public Housing Present	-0.05	-0.06	-0.06	-0.13 *	-0.15 **	-0.16 **	-0.04	-0.06	-0.06	-0.14 *	-0.14 **	-0.15 **
Historical Diversity	0.04 *	0.03	0.04 +	0.06 *	0.04	0.05 +	0.03	0.02	0.02	0.10 ***	0.09 **	0.10 ***
Urban Form												
Residential Density	-0.06 *	-0.04	-0.05	-0.15 ***	-0.11 ***	-0.11 ***	-0.07 +	-0.06	-0.06	-0.07 +	-0.05	-0.06
Mixed Land Use	0.00	0.00	0.01	0.00	0.00	0.02	0.04	0.04	0.05	0.06 +	0.06 +	0.06 +
Street Connectivity	-0.02	-0.03	-0.02	-0.01	-0.02	-0.01	-0.02	-0.03	-0.02	-0.06 *	-0.06 *	-0.06 *
Social Environment												
Disadvantage	-0.21 ***	-0.41 ***	-0.23 ***	-0.28 ***	-0.51 ***	-0.34 ***	-0.05	-0.28 **	-0.06	0.07	-0.05	0.08
Affluence	-0.01	0.07	0.05	-0.08 +	0.01	-0.01	0.00	0.10 +	0.09	0.04	0.08 +	0.07
Occupancy												
% In Place 5 Years or More	0.10 *	0.13 ***	0.14 ***	0.06	0.10 *	0.10 *	0.13 **	0.16 ***	0.18 ***	0.09 +	0.10 *	0.10 *
Interactions												
Detached*Affluence	0.34 *			0.40 ***			0.47 ***			0.11		
% 3-4 Units*Disadvantage		0.71 +			0.70 +			1.04 *			0.39	
% 50+ Units*Disadvantage		0.43 *			0.56 ***			0.43 *			0.29 *	
Density*Disadvantage			0.03			0.06 *			0.04			0.02
Mixed Land Use*Disadvantage			0.04			0.11 **			0.02			0.03
Connectivity*Disadvantage			0.02			0.06 +			0.01			0.06 *

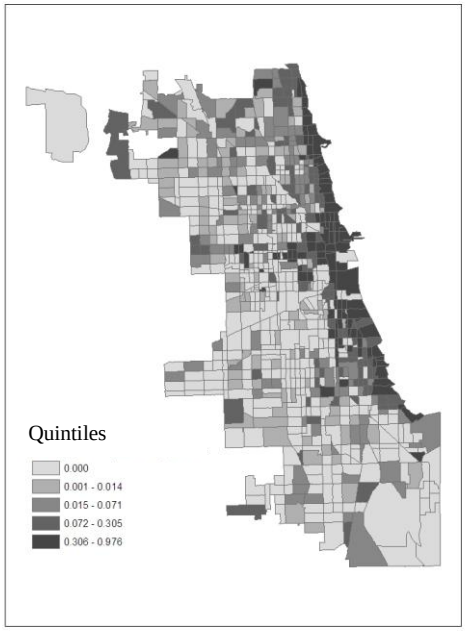
NC-Level Coefficients from Weighted HLM Regressions with Individual Sociodemographic and Household Controls Not Shown
+ $p < 0.10$; * $p < 0.05$; ** $p < 0.01$; *** $p < 0.001$
CCAHS 2001-03 and Census 2000

Table 7. Correlation Matrix for NC-level Measures

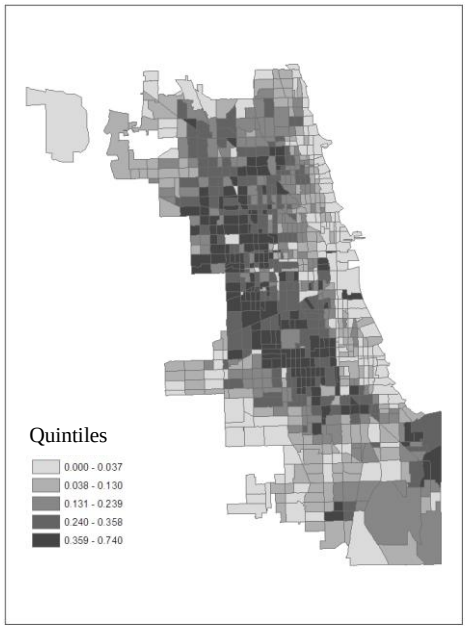
	% Detached Houses	% Duplexes	% 3-4 Units	% 5-49 Units	% 50+ Units	% Non-Standard	Public Housing Present	Historical Diversity	Residential Density	Mixed Land Use	Street Connectivity	Disadvantage	Affluence	% In Place 5 Years
% Detached Houses	1													
% Duplexes	-0.20	1												
% 3-4 Units	-0.45	0.59	1											
% 5-49 Units	-0.60	-0.33	0.05	1										
% 50+ Units	-0.43	-0.49	-0.40	0.21	1									
% Non-Standard	-0.02	-0.23	-0.13	-0.09	0.05	1								
Public Housing Present	-0.27	-0.21	-0.01	0.16	0.35	0.18	1							
Historical Diversity	-0.16	0.26	0.40	0.10	-0.26	-0.11	-0.10	1						
Residential Density	-0.61	-0.12	0.10	0.30	0.65	-0.11	0.24	0.04	1					
Mixed Land Use	-0.34	-0.08	-0.04	0.09	0.41	0.18	0.26	-0.02	0.29	1				
Street Connectivity	0.22	0.19	0.06	-0.11	-0.32	-0.21	-0.26	-0.03	-0.18	-0.48	1			
Disadvantage	-0.41	0.18	0.12	0.10	0.22	0.13	0.28	-0.21	0.08	0.30	-0.16	1		
Affluence	-0.21	-0.46	-0.19	0.33	0.48	0.01	0.06	0.11	0.34	0.12	-0.12	-0.49	1	
% In Place 5 Years	0.65	0.15	-0.18	-0.59	-0.42	0.10	-0.21	-0.14	-0.59	-0.14	0.11	0.16	-0.59	1

CCAHS 2001-03 and Census 2000, n=343

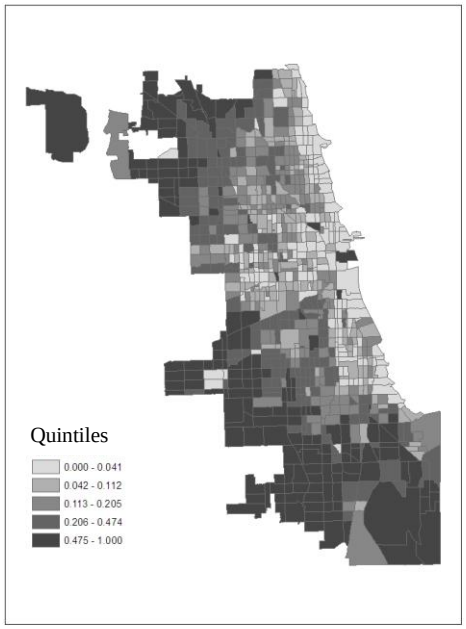
Figure 1. Spatial Distributions of Selected Housing Types in Chicago, Quintiles of Percent of Units in NC



Buildings with 50+ Units



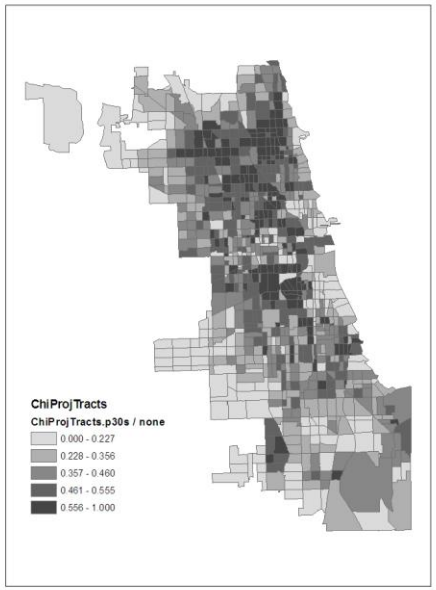
Buildings with 3-4 Units



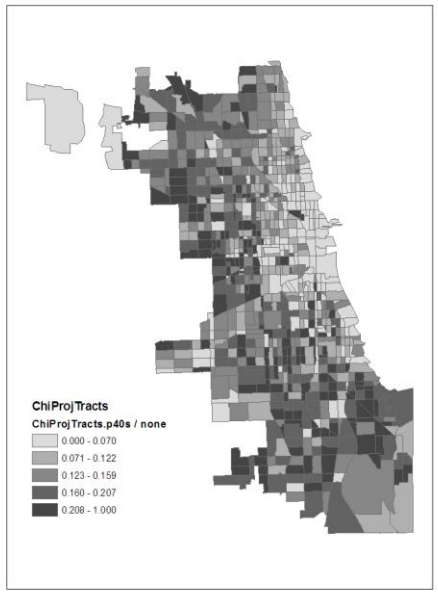
Single-Unit Houses

Census 2000 and CCAHS 2001-3

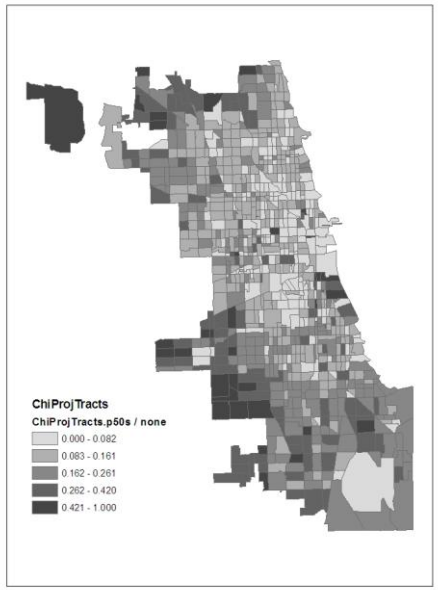
Appendix A. Spatial Distributions of Housing Construction Decades in Chicago, Quintiles of Percent of Units in NC



1930's and before



1940's

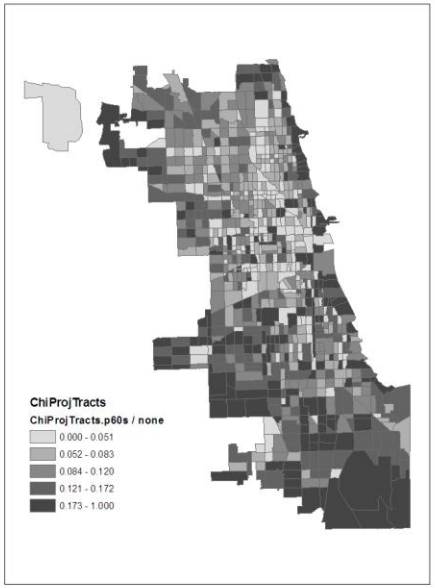


1950's

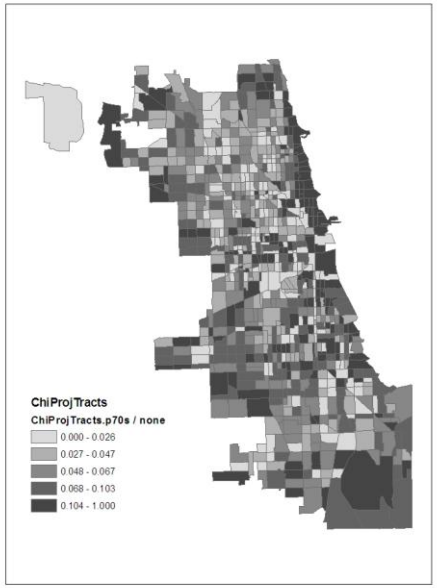
Census 2000

(page 1/3)

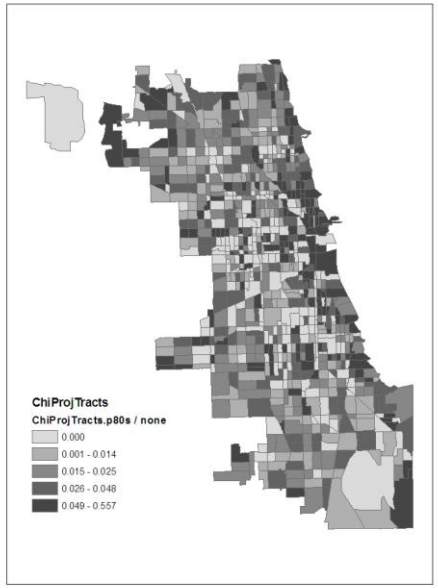
Appendix A, Continued. Spatial Distributions of Housing Construction Decades in Chicago, Quintiles of Percent of Units in NC



1960's



1970's

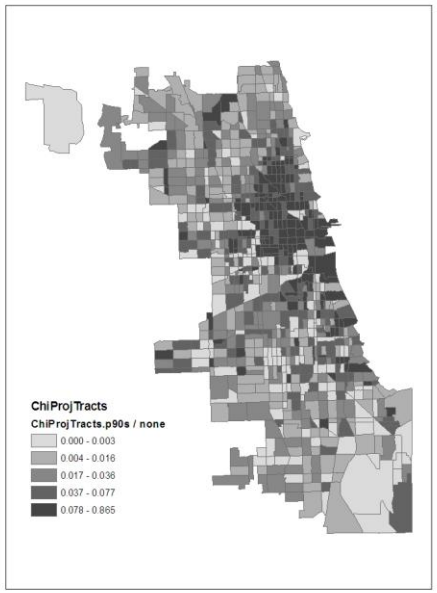


1980's

Census 2000

(page 2/3)

Appendix A, Continued. Spatial Distributions of Housing Construction Decades in Chicago, Quintiles of Percent of Units in NC



1990's

Census 2000

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Appendix B. Factor Structure of Additional Housing-Related Factors

	Construction Decade		Housing Building Type		Bedroom Count
	Recent	Urban Renewal Era	Medium Buildings	Large vs. Small Buildings	More Bedrooms
Rotated Factor Loadings					
Construction Decade					
(1930's and Earlier Omitted)					
1940's	-0.77	0.08			
1950's	-0.36	0.65			
1960's	0.24	0.84			
1970's	0.74	0.41			
1980's	0.77	-0.07			
1990's and 2000	0.52	-0.54			
Housing Building Type					
(5-49 Units Omitted)					
Single Unit			0.00	-0.86	
Duplex			0.69	0.20	
3-4 Units			0.70	0.47	
50 or More			-0.78	0.41	
Number of Bedrooms					
(2 Bedrooms Omitted)					
Studio					0.00
1 Bedroom					0.69
3+ Bedrooms					0.70
Eigenvalue	2.38	1.79	1.62	1.13	2.53
Weighted Correlations					
Cohesion	-0.07 ***	0.04 *	-0.07 ***	0.19 ***	-0.13 ***
Control	-0.08 ***	0.04 *	-0.09 ***	0.17 ***	-0.11 ***
Closure	-0.12 ***	0.05 **	-0.01	0.21 ***	-0.21 ***
Exchange	-0.03	0.00	-0.03	0.07 ***	-0.07 ***

CCAHS 2001-3, Census 2000; Orthogonal varimax rotations for construction decade and housing building type

Appendix C. Cross-sectional Associations of Residential Stability with Housing or/and Social Composition

	Model 1 β	Model 2 β	Model 3 β	Model 4 β	Model 5 β
Housing Building Type					
% Detached Houses	2.99 ***	2.62 ***	0.45		1.62 ***
% Duplexes	2.68 ***	2.53 ***	0.89 **		0.92 **
% 3-4 Units	-0.06	0.86	-0.64		1.32 **
% 50+ Units	0.49	0.84 *	1.05 **		1.45 ***
% Non-Standard	3.37 ***	3.11 ***	1.03 +		1.74 ***
(% 5-49 Units Omitted)					
Housing Age					
Recent Housing		0.17 ***	0.09 *		-0.08 *
Urban Renewal Era		-0.26 ***	-0.23 ***		-0.15 ***
Bedrooms					
More Bedrooms			-0.66 ***		-0.19 *
Social Composition					
Disadvantage				-0.59 ***	-0.10
Affluence				-0.46 ***	-0.29 ***
Std. % 65 and Over				0.35 ***	0.27 ***
Std. % Under 18				0.63 ***	0.25 **
Hispanic/Foreign Born				-0.45 ***	-0.26 ***
Constant	-1.57 ***	-1.60 ***	-0.35	-0.03	-1.09 ***
Adjusted R^2	0.52	0.60	0.68	0.71	0.79
Akaike Information Criterion	722.43	670.57	591.20	558.88	455.34

CCAHS 2001-3, Census 2000

REFERENCES

Almeida, Joanna, Ichiro Kawachi, Beth E. Molnar, and S. V. Subramanian. 2009. "A Multilevel Analysis of Social Ties and Social Cohesion among Latinos and Their Neighborhoods: Results from Chicago." *Journal of Urban Health* 86:745-759.

Alwin, Duane F., Philip E. Converse, and Steven S. Martin. 1985. "Living Arrangements and Social Integration." *Journal of Marriage and Family* 47:319-334.

Amick, D. J. and F. J. Kviz. 1975. "Social Alienation in Public Housing: The Effects of Density and Building Type." *Ekistics* 231:118-120.

Bader, Michael D.M. , Jennifer A. Ailshire, Jeffrey D. Morenoff, and James S. House. 2010. "Measurement of the Local Food Environment: A Comparison of Existing Data Sources." *American Journal of Epidemiology* 171:609-617.

Boer, Rob, Yuhui Zheng, Adrian Overton, Gregory K. Ridgeway, and Deborah A. Cohen. 2007. "Neighborhood Design and Walking Trips in Ten U.S. Metropolitan Areas." *American Journal of Preventive Medicine* 32:298–304.

Brown, Lawrence A. and Su-Yuel Chung. 2008. "Market-Led Pluralism: Rethinking Our Understanding of Racial/Ethnic Spatial Patterning in U.S. Cities " *Annals of the Association of American Geographers* 98:180-212.

Browning, Christopher R., Seth L. Feinburg, and Robert D. Dietz. 2004. "The Paradox of Social Organization: Networks, Collective Efficacy, and Violent Crime in Urban Neighborhoods." *Social Forces* 83:503-534.

Brownson, Ross C., Christine Hoehner, Kristen Day, Ann Forsyth, and James F. Sallis. 2009. "Measuring the Built Environment for Physical Activity: State of the Science." *American Journal of Preventive Medicine* 36:S99-S123.

Cerin, Ester, Eva Leslie, Lorinne du Toit, Neville Owen, and Lawrence D. Frank. 2007. "Destinations that Matter: Associations with Walking for Transport." *Health & Place* 13:713-724.

Chicago Metropolitan Agency for Planning. 2006. "Data Bulletin: 2001 Land-use Inventory for Northeastern Illinois."

Cialdini, R.B., R.R. Reno, and C.A. Kallgren. 1990. "A Focus Theory of Normative Conduct: Recycling the Concept of Norms to Reduce Littering in Public Places." *Journal of Personality and Social Psychology* 58:1015–1026.

Cohen, Deborah A., Brian K. Finch, Aimee Bower, and Narayan Sastry. 2006. "Collective Efficacy and Obesity: The Potential Influence of Social Factors on Health." *Social Science & Medicine* 62:769-778.

Cummins, S. and S. Macintyre. 2006. "Food Environments and Obesity - Neighbourhood or Nation?" *International Journal of Epidemiology* 35:100.

David, Quentin, Alexandre Janiak, and Etienne Wasmer. 2010. "Local Social Capital and Geographical Mobility." *Journal of Urban Economics* 68:191-204.

Diez Roux, Ana V. and Christina Mair. 2010. "Neighborhoods and Health." *Annals of the New York Academy of Sciences* 1186:125-145.

Dill, Jennifer. 2004. "Measuring Network Connectivity for Bicycling and Walking." School of Urban Studies and Planning, Portland State University.

Do, D. Phoenix, Brian Karl Finch, Ricardo Basurto-Davila, Chloe Bird, Jose Escarce, Nicole Lurie. 2008. "Does place explain racial health disparities? Quantifying the contribution of residential context to the Black/white health gap in the United States." *Social Science & Medicine* 67:1258-1268.

du Toit, Lorinne, Ester Cerin, Eva Leslie, and Neville Owen. 2007. "Does Walking in the Neighbourhood Enhance Local Sociability?" *Urban Studies* 44:1677-1695.

Duany, Andres, Elizabeth Plater-Zyberk, and Jeff Speck. 2001. *Suburban Nation: The Rise of Sprawl and the Decline of the American Dream*: North Point Press.

Duncan, Mitch J., Elisabeth Winkler, Takemi Sugiyama, Ester Cerin, Lorinne duToit, Eva Leslie, and Neville Owen. 2010. "Relationships of Land Use Mix with Walking for Transport: Do Land Uses and Geographical Scale Matter?" *Journal of Urban Health* 87:782-795.

Dwyer, Rachel E. . 2007. "Expanding Homes and Increasing Inequalities: US Housing Development and the Residential Segregation of the Affluent." *Social Problems* 54:23-46.

Escarce, Jose J., Nicole Lurie, and Adria Jewell. 2011. "RAND Center for Population Health and Health Disparities (CPHHD) Data Core Series: Neighborhood Socioeconomic Status (SES) Index, 1990-2000 [United States]." Ann Arbor, MI: Inter-university Consortium for Political and Social Research.

Fan, Yingling and Yan Song. 2009. "Is Sprawl Associated with a Widening Urban–Suburban Mortality Gap?" *Journal of Urban Health* 86:708-728.

Festinger, L., S. Schachter, and K. Back. 1950. "Social Processes in Formal Groups." New York: Holt Rinehart and Winston.

Frank, Lawrence D., J. F. Sallis, T. L. Conway, J. E. Chapman, B. E. Saelens, and W. Bachman. 2006. "Many Pathways from Land Use to Health - Associations Between Neighborhood Walkability and Active Transportation, Body Mass Index, and Air Quality." *Journal of the American Planning Association* 72:75-87.

Frank, Lawrence D., James F. Sallis, Brian E. Saelens, Lauren Leary, Kelli Cain, Terry L. Conway, and Paul M. Hess. 2009. "The Development of a Walkability Index:

Application To the Neighborhood Quality of Life Study." *British Journal of Sports Medicine*.

Franzini, Luisa, M. Caughy, W. Spears, and M. E. F. Esquer. 2005. "Neighborhood Economic Conditions, Social Processes, and Selfrated Health in Low-Income Neighborhoods in Texas: A Multilevel Latent Variables Model." *Social Science & Medicine* 61:1135-1150.

Franzini, Luisa, Wendell Taylor, Marc N. Elliott, Paula Cuccaro, Susan R.Tortolero, M. Janice Gilliland, JoAnne Grunbaum, and Mark Schuster. 2009. "Neighborhood Characteristics Favorable to Outdoor Physical Activity: Disparities by Socioeconomic and Racial/Ethnic Composition." *Health & Place* doi:10.1016/j.healthplace.2009.10.009.

Freeman, Lance 2001. "The Effects of Sprawl on Neighborhood Social Ties: An Explanatory Analysis." *Journal of the American Planning Association* 67:69-77.

Frumkin, H. 2005. "Health, Equity, and the Built Environment." *Environmental Health Perspectives* 113:A290-1.

Fukuyama, Francis. 2000. "Social Capital and Civil Society." IMF Working Paper.

Galster, George. 1987. *Homeowners and Neighborhood Reinvestment*. Durham, NC: Duke University Press.

Gans, Herbert. 1962. *The Urban Villagers: Group and Class in the Life of Italian Americans*. New York: The Free Press.

—. 2010. "Concentrated Poverty: A Critical Analysis." *Challenge* 53:82-96.

Glaeser, Edward and Joshua D. Gottlieb. 2006. "Urban Resurgence and the Consumer City." *Urban Studies* 43:1275-1299.

Glaeser, Edward L. 2011. *Triumph of the City: How Our Greatest Invention Makes Us Richer, Smarter, Greener, Healthier, and Happier*. New York, NY: The Penguin Press.

Glaeser, Edward L. and Bruce Sacerdote. 2000. "The Social Consequences Of Housing." *Journal of Housing Economics* 9:1-23.

Glaeser, Edward L., Joseph Gyourko, and Raven E. Saks. 2006. "Urban growth and housing supply." *Journal of Economic Geography* 6:71-89.

Gordon-Larsen, Penny, M. C. Nelson, P. Page, and Barry M. Popkin. 2006. "Inequality in the Built Environment Underlies Key Health Disparities in Physical Activity and Obesity." *Pediatrics* 117:417-424.

Grannis, Rick. 2009. *From the Ground Up: Translating Geography into Community through Neighbor Networks*: Princeton University Press.

Greer, S. 1972. *The Urbane View, Life and Politics in Metropolitan America*. New York: Oxford University Press.

Guest, Avery M. , Jane K. Cover, Ross L. Matsueda, and Charis E. Kubrin. 2006. "Neighborhood Context and Neighboring Ties." *City & Community* 5:363-385.

Hawdon, James and John Ryan. 2009. "Social Capital, Social Control, and Changes in Victimization Rates." *Crime & Delinquency* 55.

Hillier, Bill. 2008. "Space and Spatiality: What the Built Environment Needs from Social Theory." *Building Research & Information* 36:216-230.

Hirsch, A. 1983. *Making the Second Ghetto: Race and Housing in Chicago 1940-1960*. New York: Cambridge University Press.

Hood, E. 2005. "Dwelling Disparities. How Poor Housing Leads to Poor Health." *Environmental Health Perspectives* 113:A311-A317.

Hoover, Edgar M. and Raymond Vernon. 1959. *Anatomy of a Metropolis*. Cambridge, MA: Harvard University Press.

Hoyt, Homer. 1933. *One Hundred Years of Land Values in Chicago*. Chicago, IL: University of Chicago Press.

HUD, U.S. Department of Housing and Urban Development. 2000. "Assisted Housing: National and Local."

Hughes, M. and W. R. Gove. 1981. "Living Alone, Social Contact, and Psychological Well-being." *American Journal of Sociology* 87:48-74.

Inagami, S, Deborah A. Cohen, BK Finch, and SM. Asch. 2006. "You Are Where You Shop: Grocery Store Locations, Weight, and Neighborhoods." *American Journal of Preventive Medicine* 31:10-17.

Jacobs, Jane. 1961. *The Death and Life of Great American Cities* New York: Random House.

Kaczynski, Andrew T. and Karla A. Henderson. 2008. "Parks and Recreation Settings and Active Living: A Review of Associations with Physical Activity Function and Intensity." *Journal of Physical Activity and Health* 5:619-32.

Kasarda, John D. and Morris Janowitz. 1974. "Community Attachment in Mass Society." *American Sociological Review* 39:328-339.

Kawachi, Ichiro, Bruce P. Kennedy, and Roberta Glass. 1999. "Social Capital and Self-Rated Health: A Contextual Analysis." *American Journal of Public Health* 89:1187-93.

Keizer, Kees, Siegwart Lindenberg, and Linda Steg. 2008. "The Spreading of Disorder." *Science* 322:1681-1687.

King, Katherine E., Jeffrey D. Morenoff, and James S. House. 2011. "Cumulative Biological Risk Factors: Neighborhood Socioeconomic Characteristics and Race/Ethnic Disparities " *Psychosomatic Medicine: Journal of Biobehavioral Medicine*.

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

Lee, Chanam and Anne Vernez Moudon. 2006. "The 3Ds+R: Quantifying Land Use and Urban Form Correlates of Walking." *Transportation Research Part D-Transport and Environment* 11:204-215.

—. 2008. "Neighbourhood Design and Physical Activity." *Building Research and Information* 36:395-411.

Lee, Matthew R. . 2010. "The Protective Effects of Civic Communities Against All-Cause Mortality." *Social Science & Medicine* 70:1840-1846.

Leinberger, Christopher B. 2009. *The Option of Urbanism: Investing in a New American Dream*. Washington, DC: Island Press.

Leyden, K. M. 2003. "Social Capital and the Built Environment: The Importance of Walkable Neighborhoods." *American Journal of Public Health* 93:1546-1551.

Logan, John R. and Harvey L. Molotch. 1987. *Urban Fortunes: The Political Economy of Place*: University of California Press.

Lund, Hollie. 2002. "Pedestrian Environments and Sense of Community." *Journal of Planning Education and Research* 21:301-314.

—. 2003. "Testing the Claims of New Urbanism: Local Access, Pedestrian Travel, and Neighboring Behaviors." *Journal of the American Planning Association* 69:414-29.

Lynch, Kevin. 1981. *A Theory of Good City Form*. Cambridge, MA: MIT Press.

Mair, Christina, Ana V. Diez Roux, M. Shen, S. Shea, Teresa E. Seeman, S. Echeverria, and E. S. O'Meara. 2009. "Cross-Sectional and Longitudinal Associations of Neighborhood Cohesion and Stressors with Depressive Symptoms in the Multiethnic Study of Atherosclerosis." *Annals of Epidemiology* 19:49-57.

Manturuk, Kim, Mark Lindblad, and Roberto Quercia. 2010. "Friends and Neighbors: Homeownership and Social Capital among Low- to Moderate-Income Families." *Journal of Urban Affairs* 32:471–488.

Massey, Douglas S., Thurston Domina, and Jonathan Rothwell. 2009. "Changing Bases of Segregation in the United States." *Annals of the American Academy of Political and Social Science* 626:74-90.

McKenzie, R. D. . 1925. "The Ecological Approach to the Study of the Human Community." Pp. 63-79 in *The City*, edited by R. E. Park, E. W. Burgess, and R. D. McKenzie. Chicago: University of Chicago Press.

Metzger, John T. 2000. "Planned Abandonment: The Neighborhood Life-Cycle Theory and National Urban Policy." *Housing Policy Debate* 11:7-40.

Michelson, W. H. 1977. *Environmental Choice, Human Behavior, and Residential Satisfaction*. New York: Oxford University Press.

Michelson, William M. 1970. *Man and His Urban Environment: A Sociological Approach*. Reading, MA: Addison-Wesley.

Mohai, Paul, Paula M. Lantz, Jeffrey Morenoff, James S. House, and Richard P. Mero. 2009. "Racial and Socioeconomic Disparities in Residential Proximity to Polluting Industrial Facilities: Evidence From the Americans' Changing Lives Study." *American Journal of Public Health* 99:S649-S656.

Morello-Frosch, Rachel and R Lopez. 2006. "The Riskscape and the Colorline: Examining the Role of Segregation in Environmental Health Disparities." *Environmental Research* 102:181-196.

Morenoff, Jeffrey D., James S. House, Ben B. Hansen, David Williams, George Kaplan, and Haslyn Hunte. 2008. "Understanding Social Disparities in Hypertension Prevalence, Awareness, Treatment, and Control: The Role of Neighborhood Context." *Social Science & Medicine* 65:1853-1866.

Moudon, Anne Vernez , Chanam Lee, Allen D. Cheadle, Cheza Garvin, Donna B. Johnson, and Thomas L. Schmid. 2007. "Attributes of Environments Supporting Walking." *American Journal of Health Promotion* 21:448-459.

Neckerman, Kathryn M, Gina S Lovasi, Stephen Davies, Marnie Purciel, James Quinn, Eric Feder, Nakita Raghunath, Benjamin Wasserman, and Andrew Rundle. 2009. "Disparities in Urban Neighborhood Conditions: Evidence from GIS Measures and Field Observation in New York City " *Journal of Public Health Policy* 30:S264-S285.

Neighborhood Change Database: Geolytics Inc. 2004. "Neighborhood Change Database 1970-2000 Tract Data Long Form Release 1.1." Brunswick, NJ: Geolytics, Inc. .

Park, Robert Ezra. 1925. "The City, Suggestions for the Investigation of Human Behavior in the Urban Environment." in *The City*, edited by R. E. Park, E. W. Burgess, and R. D. McKenzie. Chicago: University of Chicago Press.

—. 1936. "Succession: An Ecological Concept." *American Sociological Review* 1:171-179.

Park, Robert Ezra, Ernest Watson Burgess, and Roderick Duncan McKenzie. 1967. *The City*. Chicago: University of Chicago Press.

Parkes, Alison, Ade Kearns, and Rowland Atkinson. 2002. "What Makes People Dissatisfied with their Neighbourhoods?" *Urban Studies* 39.

Patterson, P.K. and N.J. Chapman. 2004. "Urban Form and Older Residents' Service Use, Walking, Driving, Quality of Life, and Neighborhood Satisfaction." *American Journal of Health Promotion* 19:45-52.

PHDCN. *Project on Human Development in Chicago Neighborhoods*: http://www.icpsr.umich.edu/icpsrweb/PHDCN/about.jsp.

Plas, J. M. and S. E. Lewis. 1996. "Environmental Factors and Sense of Community in a Planned Town." *American Journal of Community Psychology* 24:109-143.

Portes, Alejandro. 1999. "Social Capital: Its Origins and Applications in Modern Sociology." *Annual Review of Sociology* 24:1-24.

Pretty, Jules. 2003. "Social Capital and the Collective Management of Resources." *Science* 302:1912-1916.

Putnam, Robert D. 2002. "Democracies in Flux: The Evolution of Social Capital in Contemporary Society ": Oxford University Press.

Putnam, Robert D. . 1995. "Bowling Alone: America's Declining Social Capital." *Journal of Democracy* 6:65-78.

Putnam, Robert D., With Robert Leonardi, and Raffaella Y. Nanetti. 1994. *Making Democracy Work: Civic Traditions in Modern Italy*. Princeton, NJ: Princeton University Press.

Rauh, VA, PJ Landrigan, and L. Claudio. 2008. "Housing and Health: Intersection of Poverty and Environmental Exposures." *Annals of the New York Academy of Sciences* 1136:276-288.

Rodríguez, Daniel A. , Kelly R. Evenson, Ana V. Diez Roux, and Shannon J. Brines. 2009. "Land Use, Residential Density, and Walking: The Multi-Ethnic Study of Atherosclerosis." *American Journal of Preventive Medicine* 37:397-404

Romley, John A., Deborah Cohen, Jeanne S. Ringel, and Roland Sturm. 2007. "Alcohol and Environmental Justice: The Density of Liquor Stores and Bars in Urban Neighborhoods in the United States." *Journal of Studies on Alcohol and Drugs* 68:48-55.

Rosenthal, Stuart S. 2008. "Old Homes, Externalities, and Poor Neighborhoods. A Model of Urban Decline and Renewal." *Journal of Urban Economics* 63:816-840.

Rothwell, Jonathan T. and Douglas S. Massey. 2009. "The Effect of Density Zoning on Racial Segregation in U.S. Urban Areas." *Urban Affairs Review* 44:799–806.

—. 2010. "Density Zoning and Class Segregation in U.S. Metropolitan Areas." *Social Science Quarterly* 91:1123–1143.

Saelens, B. E. and S. L. Handy. 2008. "Built Environment Correlates of Walking: A Review." *Medicine and Science in Sports and Exercise* 40:S550-S566.

Sampson, Robert and Jeffrey Morenoff. 1997. "Ecological Perspectives on the Neighborhood Context of Poverty and Social Organization: Past and Present." in *Neighborhood Poverty: Context and Consequences for Children* vol. 2: Conceptual, Methodological, and Policy Approaches to Studying Neighborhoods, edited by G. J. Duncan, J. Brooks-Gunn, and J. L. Aber. New York: Russell Sage Foundation Press.

Sampson, Robert J. 1988. "Local Friendship Ties and Community Attachment in Mass Society - a Multilevel Systemic Model." *American Sociological Review* 53:766-779.

—. 1991. "Linking the Micro- and Macrolevel Dimensions of Community Social Organization." *Social Forces* 70: 43-64

Sampson, Robert J. and Stephen W. Raudenbush. 1999. "Systematic Social Observation of Public Spaces: A New Look at Disorder in Urban Neighborhoods." *American Journal of Sociology* 105:603-651.

Sampson, Robert J. and W. Byron Groves. 1989. "Community Structure and Crime: Testing Social Disorganization Theory." *American Journal of Sociology* 94:774-802.

Sampson, Robert J., Jeffrey D. Morenoff, and Felton Earls. 1999. "Beyond Social Capital: Spatial Dynamics of Collective Efficacy for Children." *American Sociological Review* 64:633-660.

Sampson, Robert J., Jeffrey D. Morenoff, Stephen W. Raudenbush, and Sapna Swaroop. 2007. "Ecometrics: The Use of Surveys and Observational Methods to Study Social Settings." in *Social Contexts of Pathways in Crime: Methods and Analytic Techniques*, edited by P. O. Wikstrom. Cambridge, UK: Cambridge University Press.

Sampson, Robert J., Stephen W. Raudenbush, and Felton Earls. 1997. "Neighborhoods and Violent Crime: A Multilevel Study of Collective Efficacy." *Science* 277:918-924.

Sampson, Robert J., Patrick Sharkey, and Stephen W. Raudenbush. 2008. "Durable Effects of Concentrated Disadvantage on Verbal Ability among African-American Children." *Proceedings of the National Academy of Sciences* 105:845–852.

Sander, Thomas. 2002. "Social Capital and New Urbanism: Leading a Civic Horse to Water?" *National Civic Review* 91:213–234.

Sastry, Narayan and Anne R. Pebley. 2010. "Family and Neighborhood Sources of Socioeconomic Inequality in Children's Achievement." *Demography* 47:777-800.

Schweitzer, Lisa and Abel Valenzuela Jr. 2004. "Environmental Injustice and Transportation: The Claims and the Evidence." *Journal of Planning Literature* 18:383-398.

Shaw, Clifford and Henry McKay. 1942. *Juvenile Delinquency and Urban Areas*: University of Chicago Press.

Simmel, Georg. 1903 (1950). "The Metropolis and Mental Life." Pp. 409-424 in *The Sociology of Georg Simmel, adapted by D. Weinstein from Kurt Wolff (Trans.)*. New York: The Free Press.

Simpson, E.H. 1949. "Measurement of Diversity." *Nature* 163:688-688.

Smiley, Melissa J., Ana V. Diez Roux, Shannon J. Brines, Daniel G. Brown, Kelly R. Evenson, and Daniel A. Rodriguez. 2010. "A Spatial Analysis of Health-Related Resources in Three Diverse Metropolitan Areas." *Health & Place* 16:885-92.

Subramanian, S.V. , Kimberly A. Lochner, and Ichiro Kawachi. 2003. "Neighborhood Differences in Social Capital: A Compositional Artifact or a Contextual Construct?" *Health & Place* 9:33-44.

Swaroop, Sapna and Jeffrey D. Morenoff. 2006. "Building Community: The Neighborhood Context of Local Social Organization." *Social Forces* 84:1665-1695.

Talen, Emily. 1999. "Sense of Community and Neighbourhood Form: An Assessment of the Social Doctrine of New Urbanism." *Urban Studies* 36:1361-1379.

—. 2010. "The Context of Diversity: A Study of Six Chicago Neighborhoods." *Urban Studies* 47:486-513.

Taub, R., G. Taylor, and J. Dunham. 1984. *Paths of Neighborhood Change: Race and Crime in Urban America*. Chicago: University of Chicago Press.

Thornton, Arland. 2001. "The Developmental Paradigm, Reading History Sideways, and Family Change." *Demography* 38:449-65.

Tilt, J. H., T. M. Unfried, and B. Roca. 2007. "Using Objective and Subjective Measures of Neighborhood Greenness and Accessible Destinations for Understanding Walking Trips and BMI in Seattle, Washington." *American Journal of Health Promotion* 21:371.

U.S. Department of Housing and Urban Development and the Bureau of the Census. "American Housing Survey for the United States: 1999." Washington, DC.

Wen, Ming and XY Zhang. 2009. "The Contextual Effects of the Built and the Social Environment of Urban Neighborhoods on Physical Activity: A Multilevel Study in Chicago." *American Journal of Health Promotion* 23:247-254.

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

Wirth, Louis. 1938. "Urbanism as a Way of Life." *American Journal of Sociology* 44:1-24.

Witten, K., R. Hiscock, J. Pearce, and T. Blakely. 2008. "Neighbourhood Access to Open Spaces and the Physical Activity of Residents: A National Study." *Preventive Medicine* 47:299-303.

Woldoff, Rachael A. 2002. "The Effects of Local Stressors on Neighborhood Attachment." *Social Forces* 81:87-116.

Wood, L., T. Shannon, M. Bulsara, T. Pikora, G. McCormack, and B. Giles-Corti. 2008. "The Anatomy of the Safe and Social Suburb: An Exploratory Study of the Built Environment, Social Capital and Residents' Perceptions of Safety." *Health & Place* 14:15-31.

Wood, Lisa, Lawrence D. Frank, and Billie Giles-Corti. 2010. "Sense of Community and its Relationship with Walking and Neighborhood Design." *Social Science & Medicine* 70:1381–1390.

Zimbardo, Philip G. 2004. "A Situationist Perspective on the Psychology of Evil: Understanding How Good People Are Transformed into Perpetrators." in *The Social Psychology of Good and Evil: Understanding our Capacity for Kindness and Cruelty*, edited by A. Miller. New York: Guilford.