Robert Wood Johnson Foundation

ISSUE BRIEF #8

EXPLORING THE SOCIAL DETERMINANTS OF HEALTH SERIES

This issue brief, published in May 2011, is one in a series of 12 issue briefs on the social determinants of health. The series began as a product of the Robert Wood Johnson Foundation Commission to Build a Healthier America.

Neighborhoods and Health

1. Introduction

Just as conditions within our homes have important implications for our health, conditions in the neighborhoods surrounding our homes also can have major health effects. Social and economic features of neighborhoods have been linked with mortality, general health status, disability, birth outcomes, chronic conditions, health behaviors and other risk factors for chronic disease, as well as with mental health, injuries, violence and other important health indicators.[1, 2-4]

The neighborhoods we live in shape our behaviors and influence our health in other important ways as well.

Physical and social environments in neighborhoods can be overtly hazardous—for example, polluted or crime-infested. They also can severely limit the choices and resources available to individuals. For example, an individual's ability—and motivation—to exercise and avoid smoking and excessive drinking can be constrained by living in a neighborhood that lacks safe areas for exercise, where intensive tobacco and alcohol advertising targets poorer and minority youth and liquor stores are plentiful, and where healthy role models are scarce. Studies have shown that a neighborhood's socioeconomic conditions can affect whether its residents smoke,[3,5] have healthy diets,[6,7] and practice safe reproductive behaviors.[8] By the same token, aspects of neighborhood environments—such as the presence of sidewalks and playgrounds, after-school physical activity programs for children and youth, and availability of affordable nutritious food—can promote health by encouraging healthy behaviors and making it easier to adopt and maintain them. Similarly, people are more likely to receive recommended medical care when facilities are accessible from where

they live, either because they are located nearby or because safe, convenient transportation is available.

Social and economic conditions in neighborhoods can also influence health by affecting access to employment opportunities and public resources including efficient transportation, an effective police force and good schools. Strong ties and trust among people within neighborhoods have been associated with better health. Not all neighborhoods enjoy these opportunities and resources equally, however; access to neighborhoods with health-promoting conditions varies with household economic and social resources, and housing discrimination has limited the ability of many blacks and Hispanics to live in health-promoting neighborhoods. The concentration of substandard housing in less-advantaged neighborhoods further compounds racial and ethnic as well as socioeconomic disparities in health.

This issue brief examines the current state of knowledge about neighborhoods and their links with health, exploring the following questions:

- How could neighborhoods affect health?
- Are features of places really that important for health—or should we focus primarily on the individuals who live in them?
- Do all Americans have the opportunity to live in a healthy neighborhood?
- Could public and private policies improve neighborhoods in ways likely to improve America's health?

The brief also includes several examples of public, private and joint public-private initiatives intended to make neighborhoods healthier places to live, learn and play.

*The **physical environment** includes the "built environment"—the environment resulting from structures built by humans—as well as the natural environment.*

*The **social environment** includes the quality of relationships—such as trust, connectedness and cooperation—among neighborhood residents.*

EXAMPLE INITIATIVES

Activate Omaha (Omaha, NE). A public-private partnership that launched an awareness campaign about the benefits of active living, Activate Omaha is an example of a large-scale social marketing and intervention effort. The collaborative has implemented a "walking schoolbus" program in two Omaha schools, and has also worked with an Omaha planning firm and the city to develop an east to west network of bicycle routes to connect with existing greenways which run north to south. The project was one of 25 demonstration projects selected by Active Living by Design, a national program of The Robert Wood Johnson Foundation. http://activateomaha.org/

NYC Playgrounds Program (New York, NY). Through this private-public collaboration between the Trust for Public Land (TPL) and the City of New York's PlaNYC 2030 initiative, elementary schoolyards are being transformed from barren asphalt lots into playgrounds and community parks. At each site, TPL facilitates a participatory design process involving students, school staff and community members; many sites will integrate the design process with classroom learning and afterschool programs. http://www.tpl.org

2. How could neighborhoods affect health?

THE LINKS BETWEEN NEIGHBORHOOD PHYSICAL ENVIRONMENTS AND HEALTH

Neighborhoods can influence health in many ways. First—and perhaps most obvious—is through the physical characteristics of neighborhoods. Health can be adversely affected by poor air and water quality or proximity to facilities that produce or store hazardous substances;[9] by substandard housing conditions exposing residents to lead paint, mold, dust or pest infestation; by lack of access to nutritious foods and safe places to exercise combined with concentrated exposure and ready access to fast food

*The **service environment** includes neighborhood resources for education, employment, transportation, health care, grocery shopping, recreation and other services directly or indirectly tied to health.*

outlets and liquor stores; and by adverse traffic conditions. Research has examined how the physical characteristics of the buildings, streets and other constructed features of neighborhoods—also referred to as the "built environment"—affect smoking, exercise and obesity.[10-12] For example, proximity to supermarkets (which typically sell fresh produce) has been linked with less obesity, while proximity to small convenience stores (which generally do not sell fresh produce) has been linked with more obesity[13] and smoking.[5] People are more likely to be physically active when they live in neighborhoods with better resources for exercise, such as parks and walking or jogging trails; with less litter, vandalism and graffiti; and with street patterns that present fewer pedestrian obstacles.[14,15] Many characteristics of the physical environment—supermarkets and parks, for example—can also be thought of as characteristics of the service environment.

Features of physical, social, and service environments often overlap (for example, neighborhood access to grocery stores reflects both the physical and service environments), but together they can create vastly different opportunities to be healthy.

THE LINKS BETWEEN NEIGHBORHOOD SOCIAL ENVIRONMENTS AND HEALTH

Health can also be shaped by the social environments of neighborhoods—that is, by characteristics of the social relationships among their residents, including the degree of mutual trust and feelings of connectedness among neighbors. Residents of "close-knit" neighborhoods may be more likely to work together to achieve common goals such as cleaner and safer public spaces, healthy behaviors and good schools; to exchange information regarding childcare, jobs and other resources that affect health; and to maintain informal social controls discouraging crime or other undesirable behaviors such as smoking or alcohol use among youths, drunkenness, littering and graffiti[1,16]—all of which can directly or indirectly influence health. Children in more closely-knit neighborhoods are more likely to receive guidance from multiple adults and less likely to engage in health-damaging behaviors like smoking, drinking, drug use or gang involvement. Neighborhoods in which residents express mutual trust and share a willingness to intervene for the public good have been linked with lower homicide rates.[17, 18] Conversely, less closely-knit neighborhoods and greater degrees of social disorder have been related to anxiety and depression.[19-22]

EXAMPLE INITIATIVES

Feet First (Seattle, WA). This Seattle-area nonprofit organization used its Active Living by Design grant from the Robert Wood Johnson Foundation to help neighborhood residents become involved in improving their neighborhoods and in more physical activity. Feet First staff organized neighborhoods through monthly walking audits, during which they trained groups of up to 40 neighbors to see their streets as a resource with potential for physical activity. At the end of the inspections, participants received notes with photos and maps documenting assets, possible improvements and needed policy changes. The organization assists citizens in working with city agencies and departments to address neighborhood concerns. http://feetfirst.info/

The Edible Schoolyard (Berkeley, CA). A private initiative with public school collaboration, the Edible Schoolyard is an organic teaching garden that engages public middle school students in growing, harvesting and preparing nutritious, seasonal produce. Goals include cultivating ecoliteracy among students and promoting the environmental and social well-being of the middle school community. http://www.edibleschoolyard.org/

THE LINKS BETWEEN NEIGHBORHOOD SERVICE ENVIRONMENTS AND HEALTH

The availability of services and opportunities in neighborhoods is another general pathway through which neighborhoods can influence health. Where we live is highly correlated with the quality of schools, transportation and other municipal services, health care services and employment opportunities to which we have access. Health care can influence health in relatively direct ways. Education, employment opportunities and other services influence health more indirectly, such as by providing the means to achieve an adequate standard of living now and in the future. Differences across neighborhoods in education and employment opportunities can create and reinforce social disadvantage that translates into worse health, creating health disparities along both socioeconomic and racial or ethnic lines.[23-25]

Children in more closely-knit neighborhoods are more likely to receive guidance from multiple adults and less likely to engage in health-damaging behaviors like smoking, drinking, drug use or gang involvement.

3. Are features of places really that important for health – or should we focus primarily on the individuals who live in them?

Many researchers have questioned whether links between neighborhood conditions and health might be largely a function of the characteristics of individuals living in neighborhoods, rather than of the features of neighborhoods themselves. It is reasonable to question whether neighborhood conditions really matter once individual characteristics are taken into account. For example: Are people who live in poor neighborhoods less healthy only because they themselves are poor as individuals, or do features of the neighborhoods they live in add something extra to the mix?

Many (but not all) studies have found relationships between neighborhood disadvantage and health even after considering individual characteristics—that is, the links do not appear to be due only to characteristics of the individuals themselves. For example, one study that compared heart disease among people living in different neighborhoods found that individuals who lived in the most socioeconomically disadvantaged neighborhoods were more likely to develop heart disease than socioeconomically similar individuals who lived in the most advantaged neighborhoods.[26]

Living in a poor neighborhood can be bad for your health, even if you are not poor.

EXAMPLE INITIATIVES

Rio Grade Riverpark, El Paso County Parks and Recreation (El Paso, TX). This public-sector project, currently under development, will be a multi-use trail and open space network along the Rio Grande River in the El Paso del Norte region of Texas. The 32-mile linear park and trail network will support wetland conservation, neighborhood revitalization, cultural heritage and environmental education, and economic development. The project has catalyzed a collaborative effort among local residents, health care professionals and city, county and federal governments to create a healthier community with more opportunities for active living. http://www.co.el-paso.tx.us/parksandrec/riverpark/

Safe Routes to School (CA). An international movement that has taken hold in communities throughout the United States, Safe Routes to School aims to improve health by increasing the number of children who walk or bicycle to school. In California, state and federal funds are distributed through a competitive grants process to local projects within a collaborative community framework. Projects bring together parents, schools, and professionals in transportation, engineering, health and law enforcement to reduce barriers by improving safety and through education/encouragement programs. http://www.dot.ca.gov/hq/LocalPrograms/saferoutes/saferoutes.htm

Some groups of people may be more affected by neighborhood conditions than others. Children may be particularly vulnerable to unhealthy conditions in neighborhoods, with consequences for health both in childhood and later in life. Findings from one study suggest that low-income women are more likely than higher-income women to benefit

when resources for physical activity become more available.[27] On the other hand, other research has concluded that lower-income individuals who live in more advantaged neighborhoods may actually fare worse than their individually similar counterparts living in worse neighborhoods, speculating that this may be due to negative psychological effects of feeling inferior to better-off neighbors.[4,28-30]

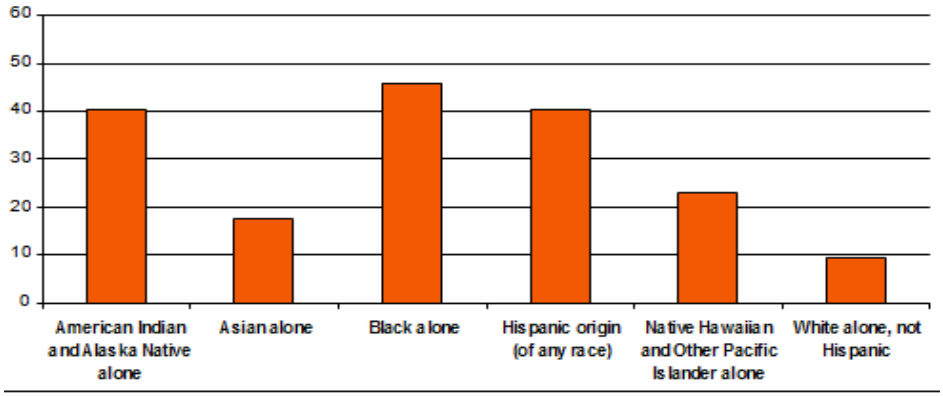
Although research on how neighborhoods affect health has come a long way over the past decade, there are still important scientific challenges in the field and some argue that the scientific evidence is inconclusive.[31,32] Most experts on the health effects of social factors agree, however, that where you live can shape your health in many important ways. The physical features, social relationships, services and opportunities available in neighborhoods can either enhance or constrain an individual's choices benefiting health and well-being. Although the links between neighborhoods and health are not simple, the overwhelming weight of evidence indicates that both features of neighborhoods and characteristics of individual residents influence health. Both places and people matter.

Both places and the people in them matter for health.

4. Do all Americans have the opportunity to live in a healthy neighborhood?

Nearly one fifth of all Americans—about 52 million people—live in poor neighborhoods (i.e., neighborhoods in which at least 20 percent of residents are poor). The percentage of individuals living in poor neighborhoods varies considerably across states, from a low of 2 percent in New Hampshire to a high of 42 percent in Louisiana, Mississippi and Washington, D.C.[33] Some groups of people are more likely to live in poor neighborhoods than others, however. Between 1970 and 2000, poor families became more likely to live in neighborhoods with concentrated poverty and rich families became more likely to live in neighborhoods with concentrated wealth.[34] Individuals in minority racial or ethnic groups also are more likely to live in poor neighborhoods: nearly half of all blacks live in poor neighborhoods, compared with only one in ten whites (Figure 1).[33] The uneven pattern of neighborhood disadvantage across racial or ethnic groups is not fully explained by differences in family income. Among families with similar incomes, blacks[35] and Hispanics live in neighborhoods with higher concentrations of poverty than whites.[36]

Children may be particularly vulnerable to unhealthy conditions in neighborhoods, with consequences for health both in childhood and later in life.



*A poor neighborhood is one in which at least 20% of residents have incomes at or below the federal poverty level.
Adapted from Bishaw A. *Areas with concentrated poverty: 1999*. Washington, D.C.: U.S. Department of Commerce, Economics and Statistics Administration, U.S. Census Bureau; 2005.

Figure 1. **Percent of people in different racial or ethnic groups living in poor* neighborhoods.**

Socioeconomic and racial or ethnic segregation can influence neighborhood conditions—and thus health—in a variety of ways, including the funding and quality of public schools, employment opportunities,[24] housing quality, municipal services, and hazards such as pollution, noise and crime. Historically, poor neighborhoods have been more vulnerable than affluent areas to effects of reduced public spending.[24] These neighborhood differences can contribute to health disparities, given disproportionate access to resources and exposures to harmful conditions. Living near toxic waste dumps, freeways and other sources of exposures that are harmful to health is highly correlated with race as well as socioeconomic status.[24,37] Racial segregation also has meant that blacks and Hispanics are more likely than whites to live in poor-quality housing,[38] posing a greater risk of exposure to conditions that can contribute to poor health, such as indoor allergens that can lead to and exacerbate asthma[39,40] (see the "Housing and Health" issue brief in this series). Escaping health-damaging physical and social environments is challenging, because these neighborhoods typically lack employment opportunities and services— including good schools—that can lead to upward social and economic mobility. There may also be fewer positive role models and fewer community members with sufficient resources themselves to provide a "leg up" to those who are most in need.

At any income level, blacks and Hispanics are more likely to live in poor neighborhoods than whites of similar income.

EXAMPLE INITIATIVES

Pennsylvania Fresh Food Financing Initiative (PA). Supported by a private-public partnership including the Pennsylvania Food Trust, the Greater Philadelphia Urban Affairs Coalition, The Reinvestment Fund and the Commonwealth of Pennsylvania, FFFI works to increase the number of supermarkets in under-served communities across Pennsylvania. The initiative helps meet the financing needs of supermarket operators where infrastructure costs and credit needs cannot be met solely by conventional financial institutions. To date, FFFI has helped fund 52 supermarket projects in Philadelphia and other Pennsylvania cities and towns. http://www.thefoodtrust.org/php/programs/super.market.campaign.php

Growing Gardens (Boulder, CO). In addition to supporting eight community gardens and a neighborhood composting program, Growing Gardens partners with low-income families to help them meet their food needs and runs two programs targeted to youth. Cultiva! involves at-risk teens in community service while teaching them about business practices and healthy eating; participants tend gardens together, donating most of their produce to those in need while selling the rest at the Boulder Farmers Market. The Children's Peace Garden educates younger children about gardening and the environment. Growing Gardens also runs programs for disabled and elderly citizens. http://www.growinggardens.org/

5. Could public and private policies improve neighborhoods in ways likely to improve America's health?

A wide range of public and private-sector policies have been proposed to make neighborhoods healthier places to live for everyone, and particularly for those who experience the most health-damaging environments and face the greatest obstacles to changing their environments. Because children may be particularly vulnerable to unhealthy conditions in neighborhoods, with consequences for health both in childhood and later in life, proposals focusing on healthier neighborhoods for families with children deserve special priority. It is beyond the scope of this brief to assess which policies appear most promising, particularly because rigorous research on the effectiveness of different interventions is very limited.

In addition to the specific examples highlighted throughout this brief, the box below describes a range—not intended to be exhaustive—of diverse and sometimes overlapping strategies that have received serious consideration by experts.

The overwhelming weight of evidence indicates that physical, social and service characteristics of neighborhoods influence health in important ways, including by shaping choices and behaviors.

Unfortunately, few of these strategies have been rigorously evaluated. Given current gaps in knowledge, high priority should be given to research focused on the health impacts of these and other knowledge-based approaches to improving neighborhoods—for all Americans, but particularly for those who now live in conditions presenting the greatest threats to health. Although the current evidence is limited, we know enough now based on existing research to design–and carefully evaluate—promising experiments to help us learn how to ensure that all Americans live in neighborhoods that safeguard and promote their health. Many promising smaller-scale approaches could be tested on a scale large enough to guide both public- and private-sector policies.

We know enough, based on existing knowledge, to design and carefully evaluate a range of promising experiments that can show us how to ensure that all Americans live in healthy neighborhoods.

IMPROVING HEALTH BY MAKING NEIGHBORHOODS HEALTHIER: A RANGE OF STRATEGIES

We know that, when it comes to health impact, characteristics of both people and places matter. Listed below are several examples of general strategies targeting action at the neighborhood level. In addition to strategies directly targeting improvement at the neighborhood level, however, it should be noted that many interventions targeting individuals also can be expected to contribute to improving the quality of neighborhoods from a health perspective. For example, *housing mobility programs*, such as Moving to Opportunity, which provide recipients of public housing assistance more choice in where they live, can enable people to move into healthier neighborhoods with lower exposure to crime and social disorder.[41] Studies show the Earned Income Tax Credit, a *poverty reduction* policy directly benefiting low-income households, significantly concentrates financial resources in poor neighborhoods.[42] Similarly, *homeownership assistance* to families could contribute to neighborhood stability and development, as individual assets become investments in neighborhoods.[43]

The following non-exhaustive list includes several examples of neighborhood-level interventions that have received considerable attention:

- **Bringing retail food markets into disadvantaged communities** would increase the availability of affordable healthful food choices in neighborhoods that now have the most limited choices.[44-48]
- **Smart growth**, a model of planning and zoning by The American Planning Association, includes encouraging the clustering of homes near shopping areas, public transportation and employment possibilities.[49] The type of community design proposed by the principles of smart growth could encourage healthy behaviors and positive social relationships among neighbors.
- A range of **community revitalization initiatives** designed to promote neighborhood economic development and improve physical, social and service environments in neighborhoods have been considered as important approaches to improving community health. The U.S. Public Health Service Task Force on Community Preventive Services and a team of experts have recognized the large potential health impact of such initiatives.[50]
- An important aspect of revitalization and other relevant neighborhood improvement initiatives is **community organizing** to motivate action, bringing people together to work collectively to improve neighborhoods.
- **"Environmental justice" interventions** seek to reduce toxic exposures in the physical environment in communities with large concentrations of low-income residents, particularly low-income black and Hispanic residents. It is important to eliminate health hazards in all communities, but it is well documented that hazardous wastes, pollution and other toxic substances are differentially concentrated in such communities[24,37]—hence the widely used term "environmental justice."
- Other promising approaches with potential health implications include strategies to **reduce residential segregation** along socioeconomic lines, for example through: zoning measures; expanding the supply of affordable housing in neighborhoods that offer opportunities for employment and quality schools; enforcement of fair housing laws, including the Federal Fair Housing Act; and a range of other initiatives.[51]

ABOUT THE ROBERT WOOD JOHNSON FOUNDATION

The Robert Wood Johnson Foundation focuses on the pressing health and health care issues facing our country. As the nation's largest philanthropy devoted exclusively to improving the health and health care of all Americans, the Foundation works with a diverse group of organizations and individuals to identify solutions and achieve comprehensive, meaningful and timely change. For 40 years, the Foundation has brought experience, commitment, and a rigorous, balanced approach to the problems that affect the health and health care of those it serves. When it comes to helping Americans lead healthier lives and get the care they need, the Foundation expects to make a difference in your lifetime.

ABOUT THE COMMISSION TO BUILD A HEALTHIER AMERICA

The Robert Wood Johnson Foundation Commission to Build a Healthier America was a national, independent, non-partisan group of leaders that released 10 recommendations to dramatically improve the health for all Americans. www.commissiononhealth.org

ABOUT THIS ISSUE BRIEF SERIES

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CREDITS: LEAD AUTHORS

University of California, San Francisco
Center on Social Disparities in Health
Paula Braveman, M.D., M.P.H.
Catherine Cubbin, Ph.D.
Susan Egerter, Ph.D.
Veronica Pedregon, MPH

REFERENCES

1. Sampson R, Morenoff J, Gannon-Rowley T. Assessing "neighborhood effects": Social processes and new directions in research. *Annu Rev Sociol*. 2002;28:443-478.
2. Yen I, Syme SL. The social environment and health: A discussion of the epidemiologic literature. *Annu Rev Public Health*. 1999;20:287-308.
3. Pickett KE, Pearl M. Multilevel analyses of neighbourhood socioeconomic context and health outcomes: a critical review. *J Epidemiol Community Health*. 2001;55(2):111-122.
4. Robert SA. Socioeconomic position and health: The independent contribution of community socioeconomic context. *Annu Rev Sociol*. 1999;25:489-516.
5. Chuang Y, Cubbin C, Ahn D, Winkleby MA. Effects of neighbourhood socioeconomic status and convenience store concentration on individual level smoking. *Tob Control*. 2005;14(5):337.
6. Diez-Roux AV, Nieto FJ, Caulfield L, et al. Neighbourhood Differences in Diet: The Atherosclerosis Risk in Communities (Aric) Study. *J Epidemiol Community Health*, 53(1): 55-63, 1999.
7. Lee RE and Cubbin C. Neighborhood Context and Youth Cardiovascular Health Behaviors. *Am J Public Health*, 92(3): 428-36, 2002.
8. Averett SL, Rees DI and Argys LM. The Impact of Government Policies and Neighborhood Characteristics on Teenage Sexual Activity and Contraceptive Use. *Am J Public Health*, 92(11): 1773-8, 2002.
9. Macintyre S, Ellaway A. Neighborhoods and health: An overview. In: Kawachi I, Berkman LF, eds. *Neighborhoods and Health*. New York: Oxford University Press; 2003:20-42.
10. Sallis JF, Glanz K. The role of built environments in physical activity, eating, and obesity in childhood. *Future Child*. 2006;16(1):89-108.
11. Booth KM, Pinkston MM, Poston WSC. Obesity and the built environment. *J Am Diet Assoc*. 2005;105(5, Supplement 1):110-117.
12. Gordon-Larsen P, Nelson MC, Page P, Popkin BM. Inequality in the built environment underlies key health disparities in physical activity and obesity. *Pediatrics*. 2006;117(2):417-424.
13. Morland K, Diez Roux AV, Wing S. Supermarkets, other food stores, and obesity: The Atherosclerosis Risk in Communities Study. *Am J Prev Med*. 2006;30(4):333-339.
14. Heinrich K, Lee R, Suminski R, et al. Associations between the built environment and physical activity in public housing residents. *Int J Behav Nurt Phys Act*. 2007;4(1):56.
15. Giles-Corti B, Donovan RJ. The relative influence of individual, social and physical environment determinants of physical activity. *Soc Sci Med*. 2002;54(12):1793-1812.
16. Putnam RD. The prosperous community: Social capital and public life. *The American Prospect*. 1993;4(13):35.
17. Sampson RJ, Raudenbush SW, Earls F. Neighborhoods and violent crime: A multilevel study of collective efficacy. *Science*. 1997;277(5328):918-924.
18. Morenoff JD, Sampson RJ, Raudenbush SW. Neighborhood inequality, collective efficacy, and the spatial dynamics of urban violence. *Criminology*. 2001;39(3):517-558.
19. Cutrona CE, Russell DW, Hessling RM, Brown PA, Murry V. Direct and moderating effects of community context on the psychological well-being of African American women. *J Pers Soc Psychol*. 2000;79(6):1088–1101.
20. Ross CE. Neighborhood disadvantage and adult depression. *J Health Soc Behav*. 2000;41(2):177-187.
21. Elliott M. The stress process in neighborhood context. *Health Place*. 2000;6(4):287-299.
22. Aneshensel CS, Sucoff CA. The neighborhood context of adolescent mental health. *J Health Soc Behav*. 1996;37(4):293-310.

23. Fernandez RM, Su C. Space in the study of labor markets. *Annu Rev Sociol*. 2004;30:545-569.

24. Williams DR, Collins C. Racial residential segregation: a fundamental cause of racial disparities in health. *Public Health Rep*. 2001;116(5):404–416.

25. Pastor, Jr. M. Geography and opportunity. In: National Research Council, Smelser NJ, Wilson WJ, Mitchell F, eds. *America Becoming: Racial Trends and Their Consequences*.Vol 1. Washington, D.C.: National Academy Press; 2001:435-468.

26. Diez Roux AV, Merkin SS, Arnett D, et al. Neighborhood of residence and incidence of coronary heart disease. *N Engl J Med*. 2001;345(2):99-106.

27. Lee RE, Cubbin C, Winkleby M. Contribution of neighbourhood socioeconomic status and physical activity resources to physical activity among women. *J Epidemiol Community Health*. 2007;61(10):882-90.

28. Stafford M, Marmot M. Neighbourhood deprivation and health: does it affect us all equally? *Int J Epidemiol*. 2003;32(3):357-366.

29. Jencks C, Mayer SE. The social consequences of growing up in a poor neighborhood. In: Lynn, Jr LE, McGeary MG, eds. *Inner-City Poverty in the United States*. Washington, D.C.: National Academy Press; 1990:111-185.

30. Winkleby M, Cubbin C, Ahn D. Effect of cross-level interaction between individual and neighborhood socioeconomic status on adult mortality rates. *Am J Public Health*. 2006;96(12):2145-2153.

31. Diez Roux AV. The examination of neighborhood effects on health: Conceptual and methodological issues related to the presences of multiple levels of organization. In: Kawachi I, Berkman LF, eds. *Neighborhoods and Health*. New York: Oxford University Press; 2003:20-44.

32. Tienda M. Poor people and poor places: Deciphering neighborhood effects on poverty outcomes. In: Huber J, ed. *Macro-Micro Linkages in Sociology*. Newbury Park: Sage; 1991:244-262.

33. Bishaw A. *Areas with concentrated poverty: 1999*. Washington, D.C.: U.S. Department of Commerce, Economics and Statistics Administration, U.S. Census Bureau; 2005. Available at: http://www.census.gov/prod/2005pubs/censr-16.pdf [Accessed August 19, 2008].

34. Booza JC, Cutsinger J, Galster G. *Where did they go? The decline of middle-income neighborhoods in metropolitan America*. Washington, D.C.: The Brookings Institution; 2006.

35. Pattillo M. Black Middle-Class Neighborhoods. *Annual Review of Sociology*, 31: 305-29, 2005.

36. Acevedo-Garcia D, McArdle N, Osypuk TL, et al. *Children Left Behind: How Metropolitan Areas Are Failing America's Children.* Harvard School of Public Health and Center for the Advancement of Health, 2007.

37. Brown P. Race, Class, and Environmental Health: A Review and Systematization of the Literature. *Environ Res*, 69(1): 15-30, 1995.

38. Charles CZ. The Dynamics of Racial Residential Segregation. *Annual Review of Sociology*, 29: 167-207, 2003.

39. Gold DR. Environmental Tobacco Smoke, Indoor Allergens, and Childhood Asthma. *Environ Health Perspect*, 108 Suppl 4: 643-51, 2000.

40. Institute of Medicine, Committee on the Assessment of Asthma and Indoor Air and Division of Health Promotion and Disease Prevention. *Clearing the Air: Asthma and Indoor Air Exposures*. Washington, D.C.: National Academy of Press, 2000.

41. Anderson LM, Charles JS, Fullilove MT, et al. Providing affordable family housing and reducing residential segregation by income. A systematic review. *Am J Prev Med*. 2003;24(3 Suppl):47-67.

42. Spencer JH. How to think about place and people approaches to poverty: The significance of the earned income tax credit as neighborhood investment. *Journal of Planning Education and Research*. 2005;24(3):292-303.

43. Katz B, Turner MA, Brown KD, et al. *Rethinking Local Affordable Housing Strategies: Lessons from 70 Years of Policy and Practice.* Washington, DC: The Brookings Institution Center on Urban and Metropolitan Policy and The Urban Institute, 2003.

44. PolicyLink. *Healthy food, healthy communities: Improving access and opportunities through food retailing*. Oakland, CA: PolicyLink; 2005.

45. California Center for Public Health Advocacy. *Searching for healthy food: The food landscape in California cities and counties*.; 2007. Available at: http://www.publichealthadvocacy.org/research.html [Accessed August 13, 2008].

46. California Center for Public Health Advocacy, PolicyLink, University of California, Los Angeles Center for Health Policy Research. *Designed for disease: The link between local food environments and obesity and diabetes*.; 2008. Available at: http://www.publichealthadvocacy.org/research.html [Accessed August 13, 2008].

47. Story M, Kaphingst KM, Robinson-O'Brien R, Glanz K. Creating healthy food and eating environments: policy and environmental approaches. *Annu Rev Public Health*. 2008;29:253-72.

48. Suarez-Balcazar Y, Hellwig M, Kouba J, et al. The making of an interdisciplinary partnership: the case of the Chicago Food System Collaborative. *Am J Community Psychol*. 2006;38(1-2):113-23.

49. American Planning Association. Policy guide on smart growth. Available at: http://www.planning.org/policyguides/smartgrowth.htm [Accessed August 13, 2008].

50. Anderson LM, Scrimshaw SC, Fullilove MT, Fielding JE. The Community Guide's model for linking the social environment to health. *Am J Prev Med*. 2003;24(3 Suppl):12-20.

51. Acevedo-Garcia D. Links between housing policy and health. 2004. Available at: http://www.centerforhealthyhousing.org/Links_Between_Housing_Policy_and_Health.ppt [Accessed August 13, 2008].