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# Obesity, Poverty, and the Built Environment: Challenges and Opportunities

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# Obesity, Poverty, and the Built Environment: Challenges and Opportunities

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Obesity and its associated chronic diseases have become a major health concern in the United States.[1] Data collected from 2003 to 2004 indicates that approximately two thirds of adults in the United States are either overweight or obese,[2] and the condition is linked to diabetes, high blood pressure and other chronic conditions requiring ongoing medical supervision.[3] Obesity is a particular health concern for the poor. Not only are obesity rates generally higher among those with lower socioeconomic status,[4] but the chronic conditions caused by obesity may present a particular challenge for the poor who often lack access to necessary ongoing medical supervision.

Obesity is linked to behaviors related to food consumption and physical activity.[5] Although the factors affecting behaviors in these areas are complex,[6] there is growing evidence that the physical characteristics of many of our communities, and particularly poorer communities, encourage obesity-generating behaviors including a sedentary lifestyle and unhealthy eating habits.[7]

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1. S. Paeratakul et al., *The Relation of Gender, Race and Socioeconomic Status of Obesity and Obesity Comorbidities in a Sample of US Adults*, 26 INT'L J. OF OBESITY 1205 (2002).

2. Youfa Wang & May A. Beydoun, *The Obesity Epidemic in the United States—Gender, Age, Socioeconomic, Racial/Ethnic, and Geographic Characteristics; A Systematic Review and Meta-Regression Analysis*, 29 EPIDEMIOLOGIC REVIEWS 6, 8 (2007).

3. Paeratakul et al., *supra* note 1, at 1205.

4. *See* Steven Cummins & Sally Macintyre, *Food Environments and Obesity—Neighbourhood or Nation?*, 35 INT'L J. EPIDEMIOLOGY 100 (2006); May C. Wang et al., *Socioeconomic and Food-Related Physical Characteristics of the Neighborhood Environment Are Associated with Body Mass Index*, 61 J. EPIDEMIOLOGY & COMM. HEALTH 491, 496 (2006); Richard A. Miech et al., *Trends in the Association of Poverty With Overweight Among US Adolescents, 1971-2004*, 295 J. AM. MED. ASS'N 2385 (2006); Paeratakul et al., *supra* note 1, at 1205.

5. Robert W. Jeffery & Jennifer Utter, *The Changing Environment and Population Obesity in the United States*, 11 OBESITY RES. 12S (Supp. Oct. 2003); Youfa Wang & May A. Beydoun, *supra* note 2, at 24; Eric A. Finkelstein, et al., *Economic Causes and Consequences of Obesity*, 26 ANN. REV. PUB. HEALTH 239 (2005).

6. *See* James O. Hill, Holly R. Wyatt & John C. Peters, *Modifying the Environment to Reverse Obesity*, 118 ENVTL. HEALTH PERSP. 108 (2005), *available at* http://www.ehponline.org/docs/2005/7812/7812.html.

7. Mia A. Papas et al., *The Built Environment and Obesity*, 29 EPIDEMIOLOGIC REVIEWS 1 (2007); Amelia Lake & Tim Townshend, *Obesogenic Environments: Exploring the Built and Food Environments*, 126 J. ROYAL SOC'Y FOR PROMOTION HEALTH 262 (2006). *See generally* Katie M. Booth et al., *Obesity and the Built Environment*, 105 J. AM. DIETETIC ASS'N. S110 (May Supp., 2005).

This paper explores the relationship between obesity causing behavior and the physical characteristics of communities and highlights some of the challenges and opportunities associated with changing those physical characteristics.

## OBESITY AND THE BUILT ENVIRONMENT

Even before researchers began to focus on obesity, the connection between human behavior and physical surroundings was observed and documented. Jane Jacobs' pioneering work on public spaces observed that some parks and public spaces feel welcoming and safe and draw people in, while other spaces, because of their design, have the opposite effect.[8] Likewise, architects and planners have observed that crime within particular neighborhoods is affected by design characteristics[9] such as lighting, sight lines, and the presence of "eyes on the street."[10] Except for people inhabiting highly rural and undeveloped areas, the primary features of people's physical environment are man-made, and encompass everything from land use patterns and urban planning, to the design, location, uses and interrelations among buildings, to transportation systems. All of these man-made physical features are known collectively as the "built environment." Increasingly, evidence suggests that the features of the built environment affect behaviors related to obesity.[11]

Obesity occurs when "energy consumption exceeds energy expenditure."[12] There are thus two sides to the obesity equation—food consumption and exercise —and both sides are connected to the built environment. With respect to the food side of the equation, healthy eating requires reasonably convenient and affordable access to healthy food including fresh fruits and vegetables, low-fat foods

8. JANE JACOBS, THE DEATH AND LIFE OF GREAT AMERICAN CITIES 35-42 (Random House 1961).

9. *See, e.g.*, C. RAY JEFFERY, CRIME PREVENTION THROUGH ENVIRONMENTAL Design (1971); OSCAR NEWMAN, DEFENSIBLE SPACES: CRIME PREVENTION THROUGH URBAN DESIGN (The MacMillan Co.1972); Neal Katyal, *Architecture as Crime Control*, 111 YALE L. J. 1039 (2002); Samia Mair & Michael Mair, *Violence Prevention and Control Through Environmental Modifications*, 24 ANN. REV. PUB. HEALTH 209, 215 (2003); TIM HOPE, SCHOOL DESIGN AND BURGLARY, IN SITUATIONAL CRIME PREVENTION: FROM THEORY INTO PRACTICE (Kevin Heal & Gloria Laycock eds., 1986).

10. *See* JACOBS, *supra* note 8, at 35-42 (1961); NEWMAN, *supra* note 9; Katyal, *supra* note 9, at 1097; Sherry Plaster Carter, et al., *Zoning Out Crime and Improving Community Health in Sarasota, Florida: "Crime Prevention Through Environmental Design,"* 93 AM. J. PUBLIC HEALTH,1442 (2003).

11. *See, e.g.*, LAWRENCE D. FRANK, ET AL., HEALTH AND COMMUNITY DESIGN: THE IMPACT OF THE BUILT ENVIRONMENT ON PHYSICAL ACTIVITY (Island Press 2003); HOWARD FRUMKIN, ET AL., URBAN SPRAWL AND PUBLIC HEALTH: DESIGNING, PLANNING, AND BUILDING HEALTHY COMMUNITIES (Island Press 2004); *See generally* Lawrence D. Frank & Peter O. Engelke, *How Land Use and Transportation Systems Impact Public Health: A Literature Review of the Relationship Between Physical Activity and Built* Form, Active Community Environments Working Paper #1, *available at:* www.cdc.gov/nccdphp/dnpa/pdf/aces-workingpaper1.pdf.

12. Papas, *supra* note 7, at 1; *See* Wang & Beydoun, *supra* note 4, at 22; James O. Hill, *Understanding and Addressing the Epidemic of Obesity: An Energy Balance Perspective*, 27 ENDOCRINE REV. 750 (2006).

and less energy dense options.[13] Empirical studies suggest that proximity to stores stocking healthier food choices has measurable effects on health.[14] Unfortunately access to healthy food can be particularly problematic for the poor. Indeed, some researchers have concluded that the differences in obesity rates among population groups may be largely explained by different "barriers to achieving a healthy diet."[15]

In the United States, small grocery stores and convenience stores tend not to stock much selection of healthier foods[16] and supermarkets are the primary source of "heart smart" foods. However, as supermarkets have moved to larger size store formats[17] the total number of grocery stores in the U.S.has actually declined and is down by about 15% since 1967.[18] Fewer stores that are larger and further apart may not be a problem for affluent residents with cars, but it can be a challenge for poorer residents.[19] Moreover, studies confirm that there are significantly fewer supermarkets in poor neighborhoods than in wealthy ones.[20] For example, one study found that "there are over 3 times as many supermarkets in the wealthier neighborhoods compared to the lowest-wealth areas."[21]

While healthy food may be relatively hard to find in poorer neighborhoods, less healthy food may be more plentiful. Studies have found that the concentration of fast food restaurants is substantially greater in poorer neighborhoods than wealthier ones—sometimes 2 to 3 times the density.[22] Meals eaten away from home tend to have larger portion sizes and larger energy density than meals at home.[23] Meals from fast food restaurants in particular tend to be high in calories, high in fat, and include sweetened soft drinks; people who eat at such restaurants

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13. Kimberly Morland et al., *The Contextual Effect of the Local Food Environment on Residents' Diets: The Atherosclerosis Risk in Communities Study*, 92 AM. J. PUB. HEALTH 1761 (2002).

14. Sandra D. Lane et al., *Structural Violence, Urban Retail Food Markets, and Low Birth Weight*, 14 HEALTH & PLACE 415 (2007); Kimberly Morland et al., *Neighborhood Characteristics Associated with the Location of Food Stores and Food Service Places*, 22 AM. J. PREVENTATIVE MED. 23 (2002); Allen Cheatle, et al., *Community Level Comparisons Between the Grocery Store Environment and Individual Dietary Practice*, 20 PREVENTIVE MED. 250 (1991).

15. Lisa M. Powell et al., *Food Store Availability and Neighborhood Characteristics in the United States*, 44 PREVENTIVE MED. 189, 194 (2006); see Papas, *supra* note 7.

16. Morland et al., *supra* note 13; Lane et al., *supra* note 14.

17. *See* Barbara McCann, ROBERT WOOD JOHNSON FOUNDATION, COMMUNITY DESIGN FOR HEALTHY EATING (2006), http://www.rwjf.org/pdf/CommunityDesignHealthyEating.

18. Jeffery & Utter, *supra* note 5, at 14S.

19. Morland et al., *supra* note 14; Powell et al., *supra* note 15.

20. Cummins, *supra* note 4; Morland et al., *supra* note 14; Powell et al., *supra* note 19; David C. Sloane, *Bad Meat and Brown Bananas: Building a Legacy of Health by Confronting Health Disparities Around Food*, PROGRESSIVE PLAN. 158, Winter 2004, at 7; Shannon N. Zenk, et al., *Neighborhood Racial Composition, Neighborhood Poverty, and the Spatial Accessibility of Supermarkets in Metropolitan Detroit*, 95 AM. J. PUB. HEALTH 660 (2005).

21. Morland et al., *supra* note 14.

22. Morland et al., *supra* note 14; LaVonna Blair Lewis, *African Americans' Access to Healthy Food Options in South Los Angeles Restaurants*, 95 AM. J. PUB. HEALTH 668 (2005); Shannon N. Zenk & Lisa Powell, *US Secondary Schools and Food Outlets*, 14 HEALTH & PLACE 336, 344 (2008).

23. *See* Cummins & Mcintyre, *supra* note 4, at 101; Samara J. Nielsen & Barry M. Popkin, *Patterns and Trends in Food Portion Sizes, 1977-1998*, 289 J. AM. MED. ASS'N 450 (2003).

tend to weigh more than those who do not.[24] Empirical evidence shows a correlation between higher calorie consumption and obesity rates on the one hand and, on the other hand, proximity to fast food restaurants.[25] Thus, whatever the merits of individual moderation as a response to weight gain,[26] many poorer communities have limited access to healthy foods and abundant access to unhealthy foods.[27]

In addition to impacting food consumption, characteristics of the built environment may impact levels of physical activity.[28] Studies show that less dense, automobile-dependant patterns of development correlate with lower levels of physical activity and an increased risk of being overweight.[29] This research has significant implications in light of changing demographic patterns—notably the "suburbanization of poverty."[30] As one study notes, "by 2005, the suburban poor out-numbered their central-city counterparts by at least 1 million."[31] Thus, the poor are increasingly located in communities that are spread out and unwalkable. The poor located in urban communities also confront neighborhood charateristics that discourage physical activity. Crime and perceptions of crime are affected by features such as abandoned buildings, vacant lots and poor lighting[32] and may be significant deterrents to outdoor activity such as walking or using parks or playgrounds.[33] Moreover, physical activity may be further deterred by poorly maintained infrastructure such as broken sidewalks and a lack of street trees.[34] For example, one study of Manhattan playgrounds found that play areas in low income neighborhoods had significantly more hazards than those in high income areas.[35]

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24. *See* Cummins & Mcintyre, *supra* note 4, at 101.

25. *See* Mark Jekanowski, James Binkley & James Eales, *Convenience, Accessibility and the Demand for Fast Food*, 26 J. AGRIC. RESOURCES. ECON. 58 (2003). *But see* Russ Lopez, *Neighborhood Risk Factors for Obesity*, 15 OBESITY 2111 (2007).

26. *See* Richard Epstein, *What (Not) To Do About Obesity: A Moderate Aristotelian Answer*, 93 GEO. L.J. 1361 (2005).

27. *See* Cummins & Mcintyre, *supra* note 4; Lewis, *supra* note 22.

28. *See generally* W. Wendel-Vos et al., *Potential Environmental Determinants of Physical Activity in Adults: A Systematic Review*, 8 OBESITY REV. 425 (2007).

29. Brian F. Saelens, et al., *Environmental Correlates of Walking and Cycling: Findings From the Transportation, Urban Design, and Planning Literature*, 25 ANNALS BEHAV. MED. 80 (2003); HOWARD FRUMKIN ET AL., URBAN SPRAWL AND PUBLIC HEALTH: DESIGNING, PLANNING, AND BUILDING FOR HEALTHY COMMUNITIES (Islands Press 2004).

30. Alan Berube & Elizabeth Kneebone, Two Steps Back: City and Suburban Poverty Trend 1999-2005, at 12 (The Brookings Institution, December 2006), *available at*: http://www.brookings.edu//media/Files/rc/reports/2006/12poverty_berube/20061205_citysuburban.pdf

31. *Id.* at 21.

32. Russell P. Lopez & H. Patricia Hynes, *Obesity, Physical Activity, and the Urban Environment: Public Health Research Needs*, 5 ENVTL. HEALTH 25 (2006).

33. Papas et al., *supra* note 7, at 12; Dawn K. Wilson, et al., *Socioeconomic Status and Perceptions of Access and Safety for Physical Activity*, 28 ANNALS BEHAV. MED. 20 (2004); Julie C. Lumeng, *Neighborhood Safety and Overweight Status in Children*, 160 ARCH. PEDIATRICS & ADOLESCENT MED. 25 (2006).

34. Lopez & Hynes, *supra* note 33; Harold A. Perkins et al., *Inequitable Access to Urban Reforestation: The Impact of Urban Political Economy on Housing Tenure and Urban Forests*, 21 CITIES 291 (2004).

35. Stacey A. Suecoff, et al., *A Comparison of New York City Playground Hazards in High- and Low-Income Areas*, 153 ARCH. PEDIATRICS &ADOLESCENT MED. 363 (1999).

Another factor which may impact levels of physical activity is access to recreation facilities. Although the empirical studies do not show consistent results among all populations in all locations,[36] some studies show a clear association between greater proximity to recreation facilities and frequency of exercise[37] or lower weight.[38] Some literature also suggests that proximity to trees and green space increases walking at least among some populations[39] and increase overall wellbeing.[40] Poor communities may be underserved both with respect to recreation facilities and green space.[41] One study of over 20,000 adolescents found that not only were private facilities more plentiful in wealthier communities, public and quasi-public facilities including schools, parks, YMCAs and youth organizations were as well.[42]

This brief summary highlights that the behaviors associated with obesity do not occur in a vacuum. The choices that people make concerning food and physical activity are significantly influenced by the environment in which those choices are made. Access to healthy food, sidewalks and land use patterns that facilitate walking, and ample recreation facilities are all environmental characteristics that impact obesity-causing behaviors.

## CHALLENGES TO CHANGING THE BUILT ENVIRONMENT

In light of the studies on food and physical activity, a growing chorus of researchers has begun to argue that changing our built environment may be an important component of our public health strategy.[43] While I share this view,[44] I also believe that there are some practical, political, and empirical challenges to

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36. *See* Papas et al., *supra* note 7, at 5; Carolyn C. Voorhees & Deborah Rohm Young, *Personal, Social, and Physical Environmental Correlates of Physical Activity Levels in Urban Latinas*, 25 AM. J. PREV. MED. 61 (2003).

37. Lisa M. Powell et al., *Availability of Physical Activity—Related Facilities and Neighborhood Demographic and Socioeconomic Characteristics: A National Study*, 96 AM. J. PUB. HEALTH 1676 (2006); Wendy C. King et al., Objective Measures of Neighborhood Environment and Physical Activity in Older Women, 28 AM. J. PREV. MED. 461, 462 (2005).

38. *See* Penny Gordon-Larsen et al., *Inequality in the Built Environment Underlies Key Health Disparities in Physical Activity and Obesity*, 117 PEDIATRICS 417 (2006); Wilson et al., *supra* note 34; Dawn K. Wilson et al., *Body Mass Index and Environmental Supports for Physical Activity Among Active and Inactive Residents of a U.S. Southeastern County*, 26 HEALTH PSYCHOL. 710 (2007).

39. T. Takano et al., *Urban Residential Environments and Senior Citizens' Longevity in Megacity Areas: The Importance of Walkable Green Spaces*, 56 J. EPIDEMIOL. & COMMUNITY HEALTH 913 (2002).

40. *See* Joland Maas et al., *Green Space, Urbanity, and Health: How Strong Is the Relation?* 60 J. EPIDEMIOL. & COMMUNITY HEALTH 587 (2006).

41. Susan Clark, *No Place to Play*, 53 PARKS & RECREATION, April 2007.

42. *See* Gordon-Larsen et al, *supra* note 39; *see also* Powell et al., *supra* note 38.

43. *See, e.g.*, Booth, *supra* note 7; Lake & Townshend, *supra* note 7; Papas et al., *supra* note 7.

44. *See* Wendy C. Perdue, Lesley A. Stone & Lawrence O. Gostin, *The Built Environment and Its Relationship to the Public's Health: The Legal Framework*, 93 Am. J. Pub. Health 1390 (2003) [hereinafter *Legal Framework*]; Wendy C. Perdue, Lawrence O. Gostin & Lesley A. Stone, *Public Health and the Built Environment: Historical, Empirical, and Theoretical Foundations for an Expanded Role*, 31 J. Law, Med. & Ethics 557 (2003) [hereinafter *Theoretical Foundations*].

such a strategy. This section will briefly highlight some of those challenges.

First, the empirical data on the correlations between health, healthy behavior, and particular aspects of the built environment are sometimes inconsistent and, among some populations in some locations, these correlations are weak.[45] Even where there is reasonably strong correlation evidence, we lack data that would allow one to draw general conclusions concerning priorities with respect to changes in the built environment.[46] There is no data, for example, on whether bringing a supermarket to a neighborhood would have a bigger impact than improving recreation or pedestrian facilities.[47] As one study observes, the data on diet and exercise are "disappointingly ambiguous about the contribution of eating vs. that of a lack of physical activity to the obesity epidemic, much less the contribution of specific behaviors."[48] Moreover, solutions tailored to some places such as urban areas may not be appropriate elsewhere such as in suburban communities.[49]

Second, changing our physical environment can be slow and expensive. For example, bringing a supermarket to a community requires finding a site, securing financing and permit, and then designing and constructing the facility. It is a process that can easily take five years or more.[50] Efforts to improve public facilities can be similarly slow and, even with the best of intentions, small design defects can doom the effectiveness of the changes. An example that illustrates this is the efforts of a community just north of Washington, D.C. to improve pedestrian access to a nearby metro stop. Located less than a mile from the station, few residents walked to that station because they had to cross several very dangerous highway interchanges. After nearly a decade of lobbying by the local community, transportation officials agreed to construct a pedestrian walkway.[51] Even after the money was allocated, design and construction of the facility took

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45. *See, e.g.*, May C. Wang et al., *Socioeconomic and Food-Related Physical Characteristics of the Neighborhood Environment Are Associated with Body Mass Index*, 61 J. EPIDEMIOL. & COMMUNITY HEALTH 491 (2007).

46. *See* Jeffery & Utter, *supra* note 5.

47. Some researchers have attempted to do a cost-benefit analysis of pedestrian and bike trail development, comparing costs of a trail to estimated health cost savings. *See, e.g.*, Guijing Wang et al., *Cost Effectiveness of a Bicycle/Pedestrian Trail Development in Health Promotion*, 38 Preventive Med. 237 (2004); Guijing Wang et al., *Cost Analysis of the Built Environment: The Case of Bike and Pedestrian Trails in Lincoln, Neb*, 94 Am. J. Pub. Health 549 (2004). Such studies necessarily include significant assumptions about the expected use of such facilities, the impact of use on individual health, and the cost saving from that impact.

48. Jeffery & Utter, *supra* note 5 at 13S; *see also* Papas et al., *supra* 7, at 10-11.

49. Sara Wilcox et al., *Determinants of Leisure Time Physical Activity in Rural Compared with Urban Older and Ethnically Diverse Women in the United States*, 54 J. EPIDEMIOL. COMMUNITY HEALTH 667 (2000) (discussing different barriers to physical activity faced by urban and rural women).

50. *See* REBECCA FLOURNOY & SARAH TREUHAFT, HEALTHY FOOD, HEALTH COMMUNITIES: IMPROVING ACCESS AND OPPORTUNITIES THROUGH FOOD RETAILING 22 (2005), http://www.policylink.org/pdfs/HealthyFoodHealthyCommunities.pdf.

51. *See* Maryland National Capital Park and Planning Commission, North and West Silver Spring Master Plan at 73 (2000), http://www.mcparkandplanning.org/community/plan_areas/silver_spring_takoma_park/master_plans/nw_ss/neighbor.pdf.

another several years. Although a $7.7 million dollar facility opened to much fanfare, it remains little used because of concerns about crime, inadequate lighting, and the existence of places where a walker can be ambushed and trapped by a mugger.[52]

Third, the complex web of land use and other laws that impact the built environment may be far outside the expertise of public officials. At the same time, improvements in the built environment will require the collaboration of a variety of professionals for whom public health is outside their training, focus and core professional identity.[53] Most issues concerning land use, transportation and development are allocated to urban planners, architects, engineers and offices of economic development. Although there is a growing academic literature on the connection between public health and the built environment, this literature has not necessarily penetrated into the day-to-day focus of those who make land use decisions. I saw this first hand, as Vice Chair for nine years of a local planning board which oversaw a sophisticated planning agency that included experts in urban planning, landscape architecture, engineering, hydrology, geography, and demographics, as well as experts in the local flora and fauna. Yet, as far as I know, we did not have a single expert in public health. Moreover, although in our master plan process we frequently discussed issues such as the impact of future development on rare or endangered species and the health of the brown trout population in local streams, I cannot recall a single discussion about the health of the human population. Similarly, I cannot recall any occasion when public health officials appeared before the Board to discuss the public health implications of a pending plan or proposal.

Fourth, to the extent land use and transportation decisions turn on input from surrounding neighbors, poor communities may be at a disadvantage. Language barriers, lower education levels, lack of information, and the inability to get child care or time off from work to attend meetings negatively affects the ability of poorer communities to organize effectively. In addition, poorer citizen may have come to expect less and therefore demand less. For all these reasons, land use processes that are dependent on neighborhood-initiated requests or complaints may be less effective in addressing the needs of poorer communities. For example, some have advocated that fast food restaurants be subject to a special use permit process that would require a showing of need or a demonstration that there is not already an undue concentration.[54] Yet, if this process is structured as a quasi-adversarial proceeding that requires communities to come forward in opposition, such a process may not be particularly effective in slowing the

52. Miranda Spivak, *Designers of Bridge Predicted Safety Problems, Officials Say*, WASH. POST, Jan. 23, 2007, at B2.

53. *See* McCann, *supra* note 17, at 21; Daniel A. Rodriguez, Kelly R. Evenson & David Salvesen, *The Healthy Choice*, Planning 4, 7 (March 2007).

54. Marice Ashe et al., *Land Use Planning and the Control of Alcohol, Tobacco, Firearms, and Fast Food Restaurants*, 93 AM. J. PUB. HEALTH 1404, 1407 (2003).

expansion of fast food restaurants into poorer communities. Indeed, some observers have suggested that a reason why there are fewer fast food restaurants in wealthier areas is that those neighborhoods have effectively organized to keep the restaurants out.[55] The point is not that planning decisions should be disconnecting from the community,[56] but rather that attention must be paid to the procedures used to assure both that the community's voice can be effectively heard and that needed change is not *dependent* on communities becoming politically engaged.

Milwaukee's commendable effort to increase the urban tree canopy provides an illustration of the potential effects of reliance on the local community or landowners as a basis for improvements to the environment. The city, with the assistance of a non-profit organization, instituted an "Adopt-A-Tree" program which offered small trees free of charge to residents who requested them. A study of the participants in this program showed that nearly 90% of the trees went to owner-occupied properties,[57] although lower-income renter dominated neighborhoods have a lower tree density and greater need.[58] Given that the tree recipients were responsible for planting and caring for the new trees, the results are unsurprising and this study provides a useful reminder that reliance on the local community or landowners may not produce an even distribution of benefits.

Finally, it is important to appreciate that efforts to change the built environment may encounter some resistance from entrenched interests that have a stake in the status quo. The built environment as it currently exists has been structured by a complex web of laws, regulations, and incentives, and private property and investment decisions may have been made in reliance on these rules. Changes in these rules can create a complex "politics of 'place making.'"[59] For example, after the Centers for Disease Control's (CDC) National Center for Environmental Health issued a report that explored some of the ways in which sprawl impacts public health,[60] the Southern California Building Industry Association labeled the report "a ludicrous sham" and argued that the CDC should stick to "fighting

55. Naa Oyo A. Kwate, *Fried chicken and fresh apples: Racial segregation as a fundament cause of fast food density in black neighborhoods*, 14 HEALTH & PLACE 32, 40 (2008); Jamie Pearce, *Neighborhood Deprivation and Access to Fast-Food Retailing: A National Study*, 32 AM. J. PREVENTATIVE MED. 375, 380 (2007).

56. Jason Corburn, *Confronting the Challenges in Reconnecting Urban Planning and Public Health*, 94 Am. J. PUB. HEALTH 541, 543 (2004).

57. Harold A. Perkins & Nik Heynen, *Inequitable Access to Urban Reforestation: The Impact of Urban Political Economy on Housing Tenure and Urban Forests*, 21 CITIES 291 (2005).

58. Nik Heynen, Harold A. Perkins & Parama Roy, *The Political Ecology of Uneven Urban Green Space: The Impact of Political Economy on Race and Ethnicity in Producing Environmental Inequality in Milwaukee*, 42 URBAN AFF. REV. 3 (2006).

59. Corburn, *supra* note 56, at 543; *see* Terry Pristin, *2 Years Later, Harlem Still Waits for a Supermarket it Needs*, N. Y. TIMES, May 20, 2001; Epstein, *supra* note 27, at 1379.

60. *See* RICHARD J. JACKSON & CHRIS KOCHITZKY, CREATING A HEALTHY ENVIRONMENT: THE IMPACT OF THE BUILT ENVIRONMENT ON PUBLIC HEALTH (Sprawl Watch Clearinghouse Monograph Series 2001).

physical diseases, not defending political ones."[61] Moreover, efforts to alter the built environment are sometime understood as an inappropriate government intrusion into the private sphere. Thus, some public officials have questioned whether encouraging supermarket development in underserved communities is properly within their mission. One community development planner whose agency was involved in low-income housing but not grocery stores observed:

> We have not done anything in Milwaukee besides responding to operator's proposals for [grocery store] development. It is an issue the community raises from time to time, but it has seen little action from the city. Is it our role? Grocery store development? Shouldn't we let the private sector lead?[62]

## OPPORTUNITIES FOR CHANGING THE BUILT ENVIRONMENT

Notwithstanding these challenges, there are several reasons why attention to the built environment should continue as a component of our public health agenda. First, small changes in behavior may yield significant long-term benefits to obesity and other such chronic diseases and conditions. As explained earlier, weight gain is the result of an energy imbalance, but even small imbalances over time may cumulate and have a significant impact. Noting that a pound of body weight typically represents 3500 calories, one research study has estimated that "most of the weight gain seen in the population could be eliminated by some combination of increasing energy expenditure and reducing energy intake by 100 kcal/day."[63] One hundred calories is equivalent to walking a mile[64] or eating half a small serving of McDonald's French Fries or drinking a 12 ounce serving of Coca Cola.[65] Thus, environmental changes that cause people to be even a little more active or to eat a little more healthy diet can produce over-all public health benefits. Moreover, while environmental changes alone may not be a panacea, some interesting experimental data suggests that physical changes combined with other interventions such as education and support networks can have measurable effects.[66]

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61. *Theoretical Foundations*, *supra* note 45, at 557, (quoting *The Built Environment: Is There a Connection Between Sprawl & Health?*, STATE HEALTH NEWS, May 6, 2002, at 3); *see also* Virginia Postrel, *The Pleasantville Solution: The War on "Sprawl" Promises "Livability" But Delivers Repression, Intolerance— and More Traffic*, 30 REASON MAGAZINE, March 1, 1999, at 4.

62. Kameshwari Pothukuchi, *Attracting Supermarkets to Inner-City Neighborhoods: Economic Development Outside the Box*, 19 ECON. DEV. Q. 232, 238-9 (2005).

63. James O. Hill et al., *Obesity and the Environment: Where Do We Go from Here?* 299 SCI. 853, 854-55 (2003).

64. *See id.*

65. *See* McDonald's USA Nutrition Facts for Popular Menu Items, http://nutrition.mcdonalds.com/bagamcmeal/nutrition_facts.html (last visited September 12, 2008). According to this site, a small serving of French fries is 230 calories and a 12 ounce serving of Coca Cola is 110 calories.

66. *See, e.g.*, Laure DeMattia & Shannon Lee Denney, *Childhood Obesity Prevention: Successful Community-Based Efforts*, 615 ANNALS AM. ACAD. POL. & SOC. SCI. 83 (2008).

Second, while some changes to the built environment can be slow and expensive, changes are constantly occurring and will continue to occur, regardless of the engagement of the public health community in this issue. Roads are constructed or repaired, government facilities, private homes and business are all being sited and constructed. To the extent that these changes are happening anyway, there may be an opportunity to locate and build in ways that are more likely, rather than less likely, to be health promoting. Some improvements may not require new money but may be accomplished by spending old money more wisely. Many of Maryland's Smart Growth initiatives were based on this premise which channeled state infrastructure money to projects located in certain designated "priority funding areas."[67] Thus, although we may not know which potential change in the physical environment would yield the biggest health bang for the dollar, that may not always be the most relevant question. Where projects are likely to occur anyway, we can locate, design and construct them so thatthey are more likely to contribute to a healthy environment. Moreover, to the extent new, unprogrammed investment is needed, focusing on the potential health benefits of such investments may bring renewed urgency and funding priority to the infrastructure need of neglected communities. If parks, sidewalks, and recreation facilities are understood as an important part of a broader agenda to improve public health, maybe that can provide a justification for further necessary fiscal resources.[68] Finally, not all useful changes are necessarily large and expensive. Small improvements, such as adding lights to pathways, may increase safety and therefore increase usage.[69]

In addition to public projects, private owners are also constantly building and changing their properties. What and where owners build is influenced by a complex web of zoning, land use, and environmental laws, building codes, and tax laws.[70] Changes in the legal framework that shape these incentives can change what gets built. Indeed, some of our current zoning and land use laws may have the effect of discouraging a healthy environment. Parking and building set

67. James R. Cohen, *Maryland's "Smart Growth"; Using Incentives to Combat Sprawl, in* URBAN SPRAWL: CAUSES, CONSEQUENCES AND POLICY RESPONSES (Gregory D. Squires ed., Urban Inst. Press 2002).

68. *See* Michael Phillips, *Health Assessments: The Key to Unlocking Funds?* 39 PARKS & RECREATION 16 (2004). Of course, to the extent such facilities are justified on grounds of public health, "policy decision-makers will demand evidence that health status improvements resulting from increased access and opportunity to be active at parks sufficiently warrants increased public investment." Kathy J. Spangler & Linda L. Caldwell, *The Implications of Public Policy Related to Parks, Recreation, and Public Health: A Focus on Physical Activity*, 4 J. PHYS. ACT. & HEALTH S64, S67 (2007).

69. *See generally* Gary G. Bennett et al., *Safe to Walk? Neighborhood Safety and Physical Activity Among Public Housing Residents*, 4 PUB. LIB. SCI. MED. 1599 (2007) (explaining that perceptions of neighborhood safety affect levels of physical activity).

70. *See* Wendy C. Perdue, *Building Healthy Cities: Legal Frameworks and Considerations, in* HANDBOOK OF URBAN HEALTH: POPULATIONS, METHODS, AND PRACTICES 503 (Sandro Galea & David Vladhod eds., 2005).

back rules may encourage streetscapes that are unpleasant for pedestrians.[71] Building codes written for new construction that are applied to existing buildings may have the effect of discouraging the rehabilitation of old properties and thereby contribute to neighborhood deterioration.[72] Thoughtful reexamination of these laws can encourage a redirection of private investment without necessarily requiring an infusion of public money.[73] Further, public-private partnerships can be used to create incentives for the private sector to build needed facilities. This model has been used successfully in some cities to bring supermarkets to underserved communities.[74]

Third, the challenge of gaining institutional expertise of other critical players is beginning to be addressed. In 2003, the American Planning Association (APA) collaborated with the National Association of County and City Health Officials (NACCHO) since then both groups have created a number of useful tools and sponsored numerous programs addressing issues of public health and the built environment.[75] City and state planning departments have begun to try systematically to integrate planning and public health. For example, San Francisco convened a multi-stakeholder process that brought together community representatives as well as professionals from multiple fields. The group developed the Healthy Development Measurement Tool which identifies a number of health related data such as neighborhood proximity to grocery stores and recreation facilities along with basic health data such as infant birth weight and causes of death. The Tool is not intended to be regulatory but nonetheless applies "a community health 'lens' to planning."[76] The San Francisco experience is noteworthy not only for the tool that was ultimately developed but also for the inclusive process that was used. The collaboration among different disciplines may strengthen the public health agenda. As one commentary by a public health official observed, "Public health, by definition, is a group activity."[77]

Finally, although most of the physical components of the built environment are privately owned, those components are profoundly affected by government

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71. See FRANK et al., *supra* note 11, at 173; Igor Vojnovic, *The renewed interest in urban form and public health: Promoting increased physical activity in Michigan*, 23 CITIES 1, 6-8 (2005).

72. Eric D. Kelly, *Fair Housing, Good Housing or Expensive Housing? Are Building Codes Part of the Problem or Part of the Solution?*, 29 JOHN MARSHALL L. REV. 349 (1996).

73. *See* Phillip Langdon, *Zoning Reform Advances Against Sprawl and Inertia*, 8 NEW URBAN NEWS 1 (2003).

74. *See* McCann, *supra* note 17, at 4; Kameshwari Pothukuchi, *Attracting Supermarkets to Inner-City Neighborhoods: Economic Development Outside the Box*, 19 ECON. DEV. Q. 232, 238-40 (2005).

75. *See, e.g.*, Land Use Planning Toolbox, National Association of County & City Health Officials, http://www.naccho.org/topics/hpdp/land_use_planning/LUP_Toolbox.cfm (last visited Mar. 10, 2008); Healthy Communities Through Collaboration: Public Health and Land Use Planning, American Planning Association, http://www.planning.org/healthycommunities/ (last visited Mar. 10, 2008).

76. Healthy Development Measurement Tool, http://www.thehdmt.org/background.php (last visited Mar. 4, 2008); see also Florida Planning Toolbox: Education and Health Tools, http://www.cuesfau.org/toolbox/subchapter.asp?SubchapterID=90&ChapterID=7 (last visited Mar. 10, 2008).

77. Kenneth E. Powell, *Land Use, the Built Environment, and Physical Activity: A Public Health Mixture; A Public Health Solution*, 28 AM. J. PREV. MED. 216, 216 (2005).

investments, incentives, and laws. Zoning and building codes, the home mortgage deduction and other tax provisions, how and where roads, highways and transportation systems have been built, environmental laws, and urban renewal projects all have changed the parameters of private decisions and private investments with respect to the built environment.[78] Government laws and policies help shape a world that encourages unhealthful behaviors. Those same laws and policies can be restructured to shape a different, more healthful physical environment.

## CONCLUSION

Obesity and its associated chronic diseases have become a major public health concern, particularly for the poor. The behaviors that contribute to obesity are significantly affected by the physical environment in which people live and work. For the poor, this environment can be particularly unhealthful with limited access to healthy food, abundant access to unhealthy food and surroundings that discourage physical activity. Thus efforts to address obesity should include attention to the built environment.

A hundred years ago, progressive reformers concerned about the health of the poor understood that they needed to focus considerable attention on the built environment.[79] In an age of infectious disease, frequent epidemics, and squalid tenements, it became apparent that improving health of the urban poor required improving the physical environment in which they lived and worked.[80] For the poor in the United States today, the health crisis is more likely to be chronic rather than infectious diseases, but attention to the physical environment should remain as an important public health tool.

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78. *See* Perdue, *supra* note 70, at 506-12.

79. The "built environment . . . comprises urban design, land use, and the transportation system, and encompasses patterns of human activity within the physical environment." Susan L. Handy et al, *How the Built Environment Affects Physical Activity: Views from Urban Planning,* 23 AM. J. PREV. MED. 64, 65 (2002).

80. *See generally* Jason Corburn, *Confronting the Challenges in Reconnecting Urban Planning and Public Health*, 94 AM. J. PUB. HEALTH 541, 541-42 (2004); DANIEL T. ROGERS, ATLANTIC CROSSINGS: SOCIAL POLITICS IN A PROGRESSIVE AGE 181-83 (1998) (discussing the Committee on Congestion of Population in New York's research, public communication campaign, and advocacy regarding bad living conditions among much of the city and its connection to public health).