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## Health and Smart Growth:

### Building Health, Promoting Active Communities

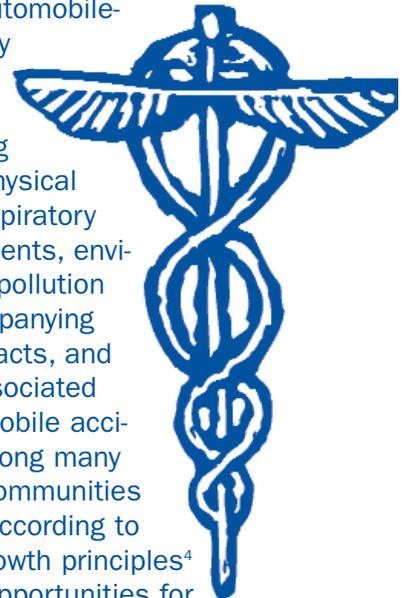
*The authors of this paper represent a collaboration of health and smart growth experts, including Dr. William L. Roper, MD, MPH, Dean, School of Public Health, University of North Carolina at Chapel Hill; M. Katherine Kraft, Ph.D., Senior Program Officer, Robert Wood Johnson Foundation; Richard E. Killingsworth, MPH, Director, Active Living by Design National Program Office; Phyllis Mofson, Ph.D., consultant to the Funders' Network; and Ben Starrett, Executive Director of the Funders' Network.<sup>1</sup> This is the eleventh in a series of translation papers published by the Funders' Network to translate the impact of suburban sprawl and urban disinvestment upon issues of importance to our communities and environment and to suggest opportunities for progress that would be created by smarter growth policies and practices.*

#### Abstract

In recent years, researchers, funders, and practitioners have become increasingly aware of close linkages between community design, land use patterns, and public health. Land development patterns characterized by fragmented and segregated land uses, low-density residential settlements, widespread strip commercial development along roadways, and lack of connectivity within and between neighborhoods – often referred to as "sprawl" – are drawing increasing scrutiny from researchers regarding their potential deleterious impacts on public health. Conversely, smarter growth development practices are gaining attention as an alternative solution that may improve public health.<sup>2</sup>

Public health is impacted by development practices in a variety of ways. Physical activity, air quality, water

quality, ecological balance, and social networks are all impacted by the built environment.<sup>3</sup> A prominent characteristic of sprawl development is resident dependency on the automobile. Automobile-dependency plays a role in determining levels of physical activity, respiratory health ailments, environmental pollution and accompanying health impacts, and trauma associated with automobile accidents. Among many benefits, communities designed according to smarter growth principles<sup>4</sup> can offer opportunities for



*The Funders' Network works to strengthen funders' individual and collective abilities to support organizations working to build more livable communities through smarter growth policies and practices. For more information, visit [www.fundersnetwork.org](http://www.fundersnetwork.org).*

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increasing physical activity, reducing pollution, improving access to jobs and greenspaces, and enhancing transportation choices.

A growing number of public health practitioners and researchers are becoming aware of these connections and the importance of incorporating community design into public health strategies. This work must now encompass all professional and community sectors engaged in creating and promoting healthy communities. The interdisciplinary nature of this endeavor provides great opportunity for the mobilization and coordination of large constituencies; health funders are particularly well situated to encourage cooperation between sec-

tors and leverage greater effectiveness of their efforts.

This paper explores the relationships among growth patterns, community design and public health, and the growing body of literature documenting them. It then examines the ways that smarter growth patterns can contribute to improvements in public health and discusses opportunities for funders. The paper gives examples of promising practices by funders and practitioners to positively impact health through promoting smarter growth and more livable communities. It provides numerous references for those wishing to dig deeper into the topic, and points out areas where more research is needed.

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## Introduction

On a daily basis, those on the front lines of health care delivery confront diseases and conditions associated with physical inactivity, poor air and water quality, automobile accidents, and social and emotional alienation. Often these conditions are taken as given, and the job of the health care professional is focused on responding to their results, which include obesity, heart disease, diabetes, asthma, cancer, trauma, and depression. A growing number of health care professionals, however, are taking proactive rather than reactive approaches and collaborating with the public health community to change the underlying conditions that give rise to these conditions.

The causes of human sedentary behavior, environmental pollution, traffic accidents, and social dysfunction are, of course, numerous and com-

plex. One area that is linked to all of these public health concerns is community design. Development practices directly impact transportation choices that, in turn, directly impact environmental quality, physical activity levels, and personal safety. Development that segregates land uses, income and age groups can result in social and physical isolation for groups of people – in particular, the elderly and those with low incomes. These connections are causing a small but growing number of health and health care professionals and funders to turn to the field of community planning and design for its potential contributions to improving the state of public health.

There is still a relative dearth of scientific research and data documenting these causes and effects. Nonetheless, some studies have been done, and researchers are beginning to build

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a body of evidence for otherwise largely anecdotal and intuitive linkages. In the sections that follow, this paper reviews some of the growing body of evidence, and also identifies areas where additional research is needed.

The modern medical and public health professions are not accustomed to collaborating with city planners, engineers, developers, and architects, and vice versa.<sup>6</sup> As the connections between these fields become more established, however, these sectors will find in each other natural and useful allies, increasing the respective effectiveness of each in their efforts to pursue common goals.

## Characteristics of Typical Conventional Development Patterns

Conventional development patterns – which include most suburban development over the past three decades – are characterized by fragmented and segregated land uses, low-density residential settlements, strip commercial development along roadways, and lack of connectivity within and between neighborhoods. Also called suburban sprawl, this type of development is drawing increasing scrutiny from researchers regarding their potential deleterious impacts on public health. Three features of conventional sprawl development are especially significant to this discussion: limited transportation choices, loss of neighborhood schools, and lack of recreation opportunities.

### Limited Transportation Choices

Perhaps the most dominant of the defining characteristics of what is often termed "sprawl development" is the dependence on the automobile for transportation between highly segre-

In the context of the philanthropic community, these linkages provide opportunities for health and health care funders to expand the scope of their activities, and to collaborate with funders engaged in the smart growth and livable communities movement. Funders in the arenas of community development, community design, and environmental conservation can begin to view their grantmaking in the context of its health impacts, while health funders can begin to incorporate new considerations into their own grantmaking as it impacts these other areas. Such collaboration will bring additional resources and leverage, and increase the effectiveness, of the efforts of individual funders.

gated and low density land uses. In such developments, opportunities to use other modes of transportation – such as walking, bicycling, and public transit – are rare.

Residential developments are typically not connected to other residential neighborhoods, commercial districts, offices, places of worship, or recreational facilities except by high-traffic roadways. Walking to the store for a gallon of milk is hazardous at best, if not impossible. Even within residential neighborhoods, roads tend to be wide and without sidewalks, making parents think twice about the advisability of allowing their children to walk or bicycle down the street to a friend's house. Many residential developments feature cul-de-sacs, which reduce connectivity, increase distance to destinations, and contribute to heavier traffic on main roads. Schools are often miles away, requiring a bus or automobile ride.

*Active Living* is a way of life that integrates physical activity into daily routines. The Surgeon General recommends that Americans accumulate at least 30 minutes of moderate physical activity each day and that children engage in at least 60 minutes each day.<sup>5</sup> Individuals may do this in a variety of ways, such as walking or bicycling for transportation, exercise or pleasure; playing in the park; working in the yard; taking the stairs; and using recreational facilities.

Data from the public health, urban design/planning, and transportation planning disciplines suggest that other community characteristics such as proximity of housing to facilities and businesses, street connectivity and design, and density play a significant role in promoting or discouraging physical activity.<sup>7</sup> When it is possible to walk comfortably from housing to businesses, offices, or other destinations within a short time, more people may choose to do so.<sup>8</sup> In typical automobile-dependent developments, this is rarely, if ever, the case.

Designing streets to create seductive pedestrian environments – or walkability – by addressing features such as proper lighting, narrow street widths, short blocks, pedestrian-scale signage, public art and other aesthetic enhancements, well maintained sidewalks, shelter from elements, benches, trees, and right angle intersections helps reduce the likelihood of traffic accidents and increase the likelihood that people will choose walking as a mode of transportation.<sup>9</sup> In many developments, however, street design rarely includes even one of these elements.

Density, mixed land uses, and building design that includes front windows and porches also improve walkability by providing "eyes on the street," natural surveillance contributing to actual and perceived safety from crime.<sup>10</sup> But again, these features are often lacking in lower density single-use residential developments, which instead feature houses on larger lots set back from the street, with garages rather than windows or porches prominently facing the street.



### Loss of Neighborhood Schools

Another characteristic of sprawling patterns of development is a trend toward larger schools on the edge of communities and away from small neighborhood schools.<sup>11</sup> This trend has been called "school giantism."<sup>12</sup> In addition to a variety of educational and community development implications that are beyond the scope of this paper, this trend also has several urban design and public health implications.

The most obvious of these relates to the effects of land use and community design on physical activity levels, as discussed above. Adults are not the only segment of the population that is getting heavier; childhood obesity is also reaching epidemic proportions. In 1999, 13 percent of children in the United States aged six to 11 years old and 14 percent of adolescents aged 12 to 19 years old were overweight. This prevalence has nearly tripled for adolescents in the past two decades.<sup>13</sup> The causes of overweight children, like those for adults, are complex and varied. But one cause undoubtedly is lack of physical activity.<sup>14</sup>

The near impossibility for many children of getting to school on foot or bicycle clearly contributes to a lack of physical activity. Only one in ten children now walks or bikes to school; this figure becomes 28 percent when considering those living within a reasonable distance of one mile or less from school. This is "in part because huge acreage standards dictate that schools be built in outlying areas where land is plentiful," according to the National Trust for Historic Preservation.<sup>15</sup>

As schools get bigger and more isolated, and the demand for new school

construction grows, budgets for existing schools and programs are increasingly squeezed. Besides transportation to and from school, other school-related opportunities for physical activity are becoming scarcer. Physical education curricula, extracurricular and intramural activities, and even recess time are being cut back in schools throughout the country. As bus transportation accounts for a larger and larger percentage of school district budgets, playground construction and maintenance, acquisition of sports equipment and facilities, and availability of after-school sports and recreational activities become lower priorities.

Issues related to school budgets, siting, construction and maintenance are complex, as are parental decisions regarding school transportation. Development patterns and community design clearly are not the only factors influencing policy and personal choices in these matters. But there is a growing consensus that current development patterns are contributing to the rising trends of childhood inactivity and obesity. More research is needed in this area – as in other aspects of the community design-public health discussion – to better understand the relationship and craft workable solutions.

### **Lack of Recreational Opportunities**

Schools that are built on large and remote sites and serve large populations are less likely to function as community centers than are small neighborhood schools. Just as sprawl patterns of development remove the physical public space and multiple public functions of the school to the periphery of the community, they de-emphasize accessible public and

recreational spaces and opportunities for all sectors of the community. Some community sectors are more adversely affected by insufficient, poorly maintained or poorly programmed parks than others. This is a major issue for many low-income communities and low-income youth. Affluent communities frequently have superior access to quality neighborhood and regional parks. Sprawl communities are dominated by private land ownership and uses, and often what parks, greenways, playgrounds, and other recreational resources do exist are accessible only by lengthy car ride. This adversely affects even minimal access for those without a car (some very low-income people and children) and for those who do not drive (including the elderly and disabled).

The lack of safe and accessible recreational opportunities impacts public health not only by limiting physical activity, but also by diminishing social interaction and a sense of community. Harvard University Public Policy Professor Robert Putnam finds that social capital (or those stocks of social trust, norms and networks that people can draw upon to solve common problems<sup>16</sup>) decreases by ten percent for every ten minutes of commuting time.<sup>17</sup> Dr. Putnam further finds that decreasing social capital contributes to declining health; joining just one group cuts one's chances of dying in the next year in half.<sup>18</sup> Diminishing social capital and interaction is not only a public loss; it reflects the growing social isolation of individuals, and this can contribute to depression and other emotional and mental health problems.

The elderly, the disabled and those with a low income, in particular, are impacted by the social isolation

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caused by sprawl development patterns. Low density, automobile dependent suburban development favors healthy, upper middle class residents, and limits the mobility and independence of people as they age and their physical vigor and incomes begin to decline.<sup>19</sup> People living in communities divested by sprawl also are severely impacted, as low-income households find themselves isolated in areas of concentrated poverty suffering from minimal investment in community facilities, loss of services,

job flight, crime, and a poor, unhealthy environment. Sprawl limits physical activity opportunities for everyone, but it can be even more difficult for seniors to be active and to get from place to place. The death rate for senior pedestrians is twice that of the general population.<sup>20</sup> Some senior citizens are also at increased risk for depression because of life cycle events and declining mental or physical capacity; social isolation and limited physical activity can add to stress and depression levels among the elderly.<sup>21</sup>

## Impacts of Community Design and Growth Patterns on Public Health

Sprawl patterns of development continue to dominate new growth and construction activity throughout the country. Although some established metropolitan areas – particularly in the Western U.S. – are beginning to consume land in a more efficient manner that is in closer proportion to population growth, the percentage increase in land development in most regions continues to significantly outpace population growth, especially in the Northeast and Midwest.<sup>22</sup> Even in densifying metropolitan areas, much existing and new development continues to be single use and automobile dependent. This means that the characteristics of low density sprawl development discussed above continue to shape people's lives and behavior patterns throughout much of the country. These characteristics of sprawl have direct impacts not only on behavior, attitudes, and lifestyle, but also on public health.

### Activity Levels, Obesity, and Health

A strong body of literature documents linkages between lifestyle, physical activity levels, and obesity. According

to the U.S. Surgeon General, sedentary behavior and unhealthy dietary habits account for approximately 300,000 deaths each year in the U.S.<sup>23</sup> Overweight and obesity are risk factors in heart disease, type 2 diabetes, some types of cancer, high blood pressure, gallbladder disease, stroke, osteoarthritis, sleep apnea and other breathing problems, high cholesterol, and other chronic ailments.<sup>24</sup> In 2000, total costs attributable to obesity – including direct medical costs and indirect costs due to losses in productivity and wages – were approximately \$117 billion.<sup>25</sup>

Physical inactivity is one cause of overweight and obesity, and increased activity has been shown to play an important role in overweight prevention and weight loss.<sup>26</sup> Separate from its links to obesity, a sedentary lifestyle is also associated with higher risk for several diseases and ailments, including cardiovascular disease, stroke, and all-cause mortality.<sup>27</sup>

Most Americans do not meet the minimum federal physical activity recom-

mentations,<sup>28</sup> and this sedentary behavior may be linked to more and more time spent in automobiles.<sup>29</sup> The number of trips the average American adult takes on foot each year dropped by 42 percent from 1975 to 1995. Meanwhile, the time spent in traffic has increased 236 percent since 1982.<sup>30</sup>

In one of the first population-based, comprehensive studies to address a variety of environmental and policy determinants of physical activity, neighborhood characteristics including density, perceived safety levels, presence of sidewalks, and enjoyable scenery were cited by survey respondents as impacting their physical activity levels.<sup>32</sup> According to the Centers for Disease Control and Prevention, despite the need for more research into the effects of urban form on travel behavior, on balance the existing literature "supports the hypothesis that urban form variables influence levels of walking and bicycling," and supports the development of a series of "interventions within the public health arena that would be targeted at retrofitting existing communities and shaping emerging communities in a manner that enables, and even promotes, physical activity."<sup>33</sup>

### Automobiles and Physical Safety

Increased driving causes increased automobile accidents of all types: those involving a single vehicle, multiple vehicles, pedestrians, and bicyclists. Despite trauma from car accidents accounting for a higher percentage of deaths among all age groups from one through 34 in the U.S. than any other single cause (it is also the second leading single cause of death among the 35-44 age group and the third leading cause of death among those 45-54),<sup>34</sup> rarely is driving itself

considered a public health issue.

Cars pose an even greater danger to pedestrians and cyclists than to drivers and passengers. Pedestrians are 36 times more likely to die in a collision than drivers<sup>35</sup> and 11 percent of all traffic fatalities are on foot.<sup>36</sup> Studies show that places that have "been built-up since the 1950s and are dominated by subdivisions, office parks, and high-speed roads that are designed for fast automobile travel" – in short, places characterized by the features of sprawl development discussed above – are the most dangerous for pedestrians.<sup>37</sup> In 2000, bicyclists made up two percent of traffic accident fatalities and two percent of traffic accident injuries, a figure much higher than the proportion of cyclists to automobile drivers and passengers. Approximately one third of cyclists killed in traffic accidents were children from five to 15 years old.<sup>38</sup>

Unsafe roads impact health in two ways: they cause injuries and deaths due to traffic accidents and they discourage people from attempting to use walking or cycling as alternative modes of transportation – hence becoming a disincentive to physical activity and contributing to more people in cars more often.

While many factors – including seat belt use, excessive speed, alcohol use, and vehicle type and condition – serve to contribute to or mitigate the likelihood and severity of traffic accidents, it is clear that street and community design play important roles in transportation choices and behavior. On the one hand, wide streets with little interconnectivity and few traffic calming measures<sup>39</sup> create the conditions for excessive speed and danger for pedestrians. On the other hand, a

### *Health Benefits of Daily Physical Activity*

According to the American Heart Association, daily physical activity<sup>31</sup>:

- Reduces risk of heart disease by improving blood circulation throughout the body.
- Keeps weight under control.
- Improves blood cholesterol levels.
- Prevents and manages high blood pressure.
- Prevents bone loss.
- Boosts energy level.
- Helps manage stress and relieve tension.
- Improves the ability to fall asleep quickly and sleep well.
- Improves self-image.
- Counters anxiety and depression and increases enthusiasm and optimism.
- Increases muscle strength, increasing the ability to do other physical activities
- Provides a way to share an activity with family and friends.
- Establishes healthy habits in children and counters conditions such as obesity and high blood pressure that lead to heart attack and stroke later in life.
- Helps delay or prevent chronic illnesses and diseases associated with aging.
- Helps to maintain a person's quality of life and independence.

neighborhood street grid designed as an element of a walkable community – one of the hallmarks of smart growth – creates safer conditions for pedestrians, cyclists, and automobile drivers and passengers alike.

### Air Quality and Respiratory Health

As sprawl causes Americans to drive more and more, the output of air polluting emissions from their vehicles increases. The impact on metropolitan air quality from mobile sources – mostly cars and trucks – is well documented.<sup>40</sup> Emissions from cars and trucks include carbon monoxide (CO), oxides of nitrogen (NOx), volatile organic compounds (VOC), sulfur dioxide (SO<sub>2</sub>), lead, and particulate matter. NOx and VOC compounds are precursor pollutants, which form ground level ozone (O<sub>3</sub>) when they react in the presence of heat and sunlight. Some of these pollutants – carbon monoxide in particular – are emitted not only through the fuel combustion process, but also through the refining and processing of fuel for use primarily in privately owned automobiles and trucks.<sup>41</sup>

If not for an array of technological and regulatory interventions over the past 30 years, current emission levels of these substances would be much higher; nonetheless, the sheer numbers of vehicles on the road and total vehicle miles traveled have offset and, in some cases, overtaken, these strides.<sup>42</sup> Travel emissions now account for 61 percent of all CO emissions, with motor vehicles accounting for 94 percent of travel emissions.<sup>43</sup> Seventy-five percent of Americans who reside in areas with ozone monitors (or over 142 million people) are breathing in unhealthy amounts of ozone pollution, with 58 percent of monitored counties receiving an "F" rating for ozone levels from the American

Lung Association in the 1998-2000 period.<sup>44</sup> Motor vehicles also account for approximately 30 percent of NO<sub>2</sub> and VOC emissions, and about nine percent of particulate matter, or soot.<sup>45</sup>

The health effects of mobile-source related air pollutants include respiratory and cardiopulmonary problems, headaches, reduced learning ability, and premature mortality.<sup>46</sup> Ambient air pollutants including O<sub>3</sub>, SO<sub>2</sub>, NO<sub>2</sub>, acid aerosols, and particulate matter are associated with aggravation of asthma and decreases in lung function.<sup>47</sup>

Exposure to these substances and the incidence of asthma, especially among children, are both rising; from 1980 to 1994 the number of people with asthma in the U.S. increased by 102 percent,<sup>48</sup> with asthma accounting for approximately 500,000 hospitalizations, 5,000 deaths, and 134 million days of restricted activity each year.<sup>49</sup> According to the American Lung Association, "particulate matter air pollution is especially harmful to people with lung disease such as asthma and chronic obstructive pulmonary disease (COPD), which includes chronic bronchitis and emphysema, as well as to people with heart disease. Exposure to particulate air pollution can shorten human life by months or years, as well as trigger asthma attacks and cause wheezing, coughing, and respiratory irritation in individuals with sensitive airways."<sup>50</sup>

Reducing dependence on the automobile as the primary source of transportation would substantially alleviate the presence of all these substances in the air, in turn limiting the incidence and severity of these diseases and ailments. Designing smarter and healthier communities that include a range of transportation choices is a primary

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strategy in reducing this automobile dependence.

### Land Use, Water Quality, and Health Effects

Land use and transportation patterns can impact water quality in a variety of ways. A 1999 U.S. Environmental Protection Agency study describes some of these: "1) the creation of impervious surfaces can adversely affect water quality due to faster rates of runoff, lower groundwater recharge rates, and increased erosion; 2) pollutants such as vehicle exhaust, oil, and dirt, and de-icing chemicals, are deposited to roadways and other impervious surfaces; 3) leaking underground storage tanks release petroleum to groundwater; and 4) in the maritime sector, oil spills affect the water quality of inland waterways and coastal areas."<sup>51</sup> The first three of these four transportation impacts on water quality relate directly

to land transportation patterns and the fuel needed to sustain levels of driving currently required by sprawling development patterns. All of these impacts have both environmental and public health consequences, especially if they contaminate drinking water supplies.

### Emotional/Mental Health

Both physical activity and social interaction play a role in preventing depression and laying a foundation for emotional and mental health.<sup>52</sup> Sprawling development patterns and automobile dependency severely limit both, as has been discussed. Existing research points to the considerable impacts of such physical factors as air pollution, noise, traffic, crime, and presence or lack of support networks on mental and emotional health status.<sup>53</sup> Additional research is needed to better understand these connections between the built environment and mental health.

## Promising Practices – How Smarter Growth Can Improve Public Health

Smarter growth policies and practices present numerous opportunities for improving quality of life for individuals and communities. Among these, five are especially significant for the potential to improve activity levels and public health. These include providing better transportation choices, creating great public spaces, mixing land uses, improving green infrastructure, and creating safe routes to school.

### Better Transportation Choices

Many of the health threats posed by current development patterns (physical inactivity, declining air and water quality, declining opportunities for social

involvement, and mental and emotional health problems) can in fact be associated with excessive automobile use. Designing communities that offer viable transportation choices, including public transit, walking, and cycling, for daily transportation needs can counter these threats.

By helping communities to move toward transit-oriented development (TOD) and to provide safe, practical, and accessible opportunities for walking and cycling, funders and advocates can help Americans reduce their reliance on the automobile. There are many constituencies with a variety of motivations already advocating for transit friendly



### *Promising Practices - How Smarter Growth Can Improve Public Health*

- Better Transportation Choices
- Great Public Spaces
- Mix Land Uses
- Safe Routes to School

and walkable communities.<sup>54</sup> The medical and public health communities would be well advised to view these constituencies ("environmentalists, social equity activists, bicycling advocates, transit supporters, architects, planners, community development groups, the elderly ... and labor activists"<sup>55</sup>) as potential allies and partners in its efforts to create environments that are supportive of healthy and active lifestyles.

Many policy and organizing tools are available for advancing TOD and walkable communities. Increasing research and spending on the factors that contribute to pedestrian and bicycle safety will contribute to the creation of more walkable communities.<sup>56</sup> Use of traffic calming measures, traditional neighborhood design, divided and interconnected roadways, and building and maintaining sidewalks, bike paths, and trails are other known ways to contribute to the building of more walkable – and health promoting – communities.<sup>57</sup>

Other crucial issues related to better transportation include assuring access to health care and quality food supplies. This is a particularly vital concern in low-income communities, which frequently lack quality medical facilities and the grocery stores common in other neighborhoods. When hospitals close in older communities, the issue of access to health care can become a crisis situation without adequate transit connections.<sup>58</sup> Similarly, access to healthy and plentiful food supplies, a situation taken for granted by many Americans, is a challenging issue for many low-income households who cannot or choose not to drive.

#### **Great Public Spaces**

Public spaces, activities, and events can contribute to both the social and

physical health of the community and its residents. Building and supporting parks, plazas and civic squares, waterfronts, greenways and trails, public markets, culturally significant public buildings and architecture, and public art and amenities all encourage people to get out, be active, and come together.<sup>59</sup>

But it is not enough to design public spaces that are merely attractive; these spaces should be accessible, connected to other desirable destinations, and – perhaps most importantly – designed with input from community residents. Community-based planning both enhances a sense of belonging and increases the likelihood that the resulting public spaces and events will be perceived as safe and enjoyable, and will be desired and utilized. Health funders have the opportunity to be aware of the behavioral components and health ramifications of these projects and activities, and should see funders in the areas of the arts, historic preservation, and community development as their partners in promoting them. These funders also should be viewing health funders – especially those that embrace prevention in their programs – in this light.

#### **Mix Land Uses**

Higher density and mixed use development are known to reduce vehicle miles traveled, provide the ridership threshold needed to make public transit effective, and to provide opportunities for walking from home to work or school and to shopping, entertainment, and recreational activities.<sup>60</sup> When multiple uses and destinations are provided in proximity to one another, walking becomes more feasible, practical and interesting. When combined with development codes that allow or encourage wider sidewalks,

discourage large expanses of surface parking lots, and promote ground floor retail and other amenities that make the pedestrian environment more seductive, mixed use districts can spur high levels of pedestrian activity.

Mixing land uses, especially allowing different types of housing in the same neighborhood, also helps to create friendly communities for all age groups. When housing is allowed that is affordable at each of the major stages in the life cycle, it increases opportunities for persons to age in place. A mix of housing tenures and prices also increases opportunities for people of lower incomes to take advantage of better schools, parks, services, social connections, and safer, healthier environments that may be friendlier to physical activity. Economically integrated neighborhoods can also decrease pressure for urban fringe development and better distribute tax burdens. Finally, when coupled with efforts to take the transportation, health care, and service delivery needs of the elderly into account in making urban plan-

ning decisions, communities can improve the physical and emotional health of their senior citizens.<sup>61</sup>

### Safe Routes to School

Creating walkable, neighborhood schools is one avenue for creating whole, healthy communities. When children walk to school, it positively affects their academic performance, improves their self-image and independence, provides healthier social and emotional development, and increases the likelihood that they will grow into active adults.<sup>62</sup>

The Safe Routes to School Initiative of the California Department of Health Services is a good example of this effort.<sup>63</sup> Safe Routes to School efforts can showcase and constructively leverage connections between children's health, school siting and construction, community design, and transportation policy. This strategy can not only improve safe routes to school for children but also provide benefits to entire communities.

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*...many of the individual health impacts of the built environment discussed above – threats to safety, air and water pollution, and low levels of physical activity – disproportionately affect people of color and low-income communities.*

## Other Connections

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There are other links among growth, development and investment patterns and public health. One important area that connects these fields is social equity and environmental justice. As noted earlier in this paper, many of the individual health impacts of the built environment discussed above – threats to safety, air and water pollution, and low levels of physical activity – disproportionately affect people of color and low-income communities.<sup>64</sup>

The concentrated poverty and racial composition of many urban core areas is related to trends of suburban sprawl and urban disinvestment. This relationship is described as follows by Angela Glover Blackwell of the national nonprofit organization PolicyLink:

Sprawl – the continuous spread of businesses and housing beyond the boundaries of the central city and inner suburbs into more and more distant, once rural, areas – has led to class and racial inequity. First sprawl

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*Common interests between the environmental justice and smart growth movements include increasing investment in urban centers and promoting regional and community based transportation and land use planning efforts.*

creates regional inequity, then it exacerbates an unequal distribution of resources and opportunities throughout metropolitan regions. This imbalance breeds poverty and hardship within urban centers and affluence and growth on the fringe.<sup>65</sup>

This racial and economic imbalance has been further linked to the disproportionate siting of sources of environmental pollution and contamination in the inner city in ways that have adversely impacted the health of urban residents.<sup>66</sup> Those working on brownfields (i.e. contaminated sites) redevelopment are actively engaged in these linkages, and are also involved in efforts to combat racial and economic factors in the distribution of resources for remediation of these toxic environments and their public health impacts.<sup>67</sup>

The Funders' Network for Smart Growth and Livable Communities, through its Regional and Neighborhood Equity Project, is working to articulate and build a constituency for the convergence of interests between the environmental justice and smart growth movements. These common interests include increasing investment in urban centers and promoting regional and community based transportation and land use planning efforts. Many of the Network's member foundations are actively engaged in funding activities that simultaneously promote urban reinvestment, social equity, brownfields reclamation, and improved public health, providing potential partners and resources for public health funders interested in these linkages.

Another area of linkage is that of infectious disease. The field of disease ecology is identifying links between patterns of development, the fragmentation of ecosystems and natural habitats, and the exposure of humans to organisms that cause and spread "new" and "emerging" infectious diseases. While this is a global phenomenon, in the U.S. some examples of these diseases include West Nile Virus and Lyme Disease.<sup>68</sup> Dr. Paul Epstein of the Harvard Medical School's Center for Health and the Global Environment identifies several features of global change that alter the ecological balance of disease causing organisms, including: "fragmentation and loss of habitat, dominance of monocultures in agriculture and aquaculture, excessive use of toxic chemicals, increased ultraviolet radiation, and climate change and weather instability."<sup>69</sup> Fragmentation and loss of habitat is directly linked to human land use and development patterns; policies and practices to limit such fragmentation should produce a positive public health effect.

There is also a growing field of conservation medicine that is interested in the connections among urban form, ecological balance, and environmental and human health. The Consortium for Conservation Medicine, established in 1997 as an environmental health collaborative of Wildlife Trust, Tufts University School of Veterinary Medicine, and Harvard Medical School's Center for Health and the Global Environment is one forum for exploring these linkages and devising holistic solutions to public health challenges from the built environment.

## Promising Practices and Strategies

Several philanthropic funders are beginning to take these linkages to the next level, creating funding initiatives that encourage communities to think about and use design choices to promote public health.

### **Robert Wood Johnson Foundation.**<sup>70</sup>

The Robert Wood Johnson Foundation – a foundation devoted to improving the health and health care of Americans – is increasingly using its funding programs to build knowledge of and incorporate linkages among land use planning, the ability to obtain recommended levels of physical exercise via daily activities such as walking for errands, and impacts on individual health.

The foundation's objective in this area – which it calls "Active Living" – is to increase the number of communities with programs, policies and environments that promote active lifestyles. Building on community design initiatives and models, the foundation is promoting the (re)design of communities to support incidental daily physical activities such as walking and biking for transportation and leisure. It is supporting community initiatives that include: environmental and policy interventions, communication and education campaigns, increased opportunities for individual physical activity, leveraging resources from transportation and recreation sources to make needed infrastructure changes, supporting policy-related research, engaging relevant professions, and developing consumer demand for communities that support routine daily physical activity.

The Foundation's national Active Living programs include the following:

- Active Living Policy and Environmental Studies - a national program locat-

ed at San Diego State University to support investigator-initiated research to identify and assess structural, environmental, and policy changes with the potential to increase active living.

- Active Living by Design - a national program located at The University of North Carolina at Chapel Hill that seeks to infuse physical activity-promoting goals and processes into ongoing community planning efforts and would support the development and testing of 25 local community active living projects, with special efforts to reach low-income Americans.

- Active Living Technical Assistance Center – an emerging resource center that will disseminate information, tools, and training to those communities that are interested in promoting health through physical activity, yet are unsure how to proceed.

- Leadership for Active Living – a national project located at San Diego State University that supports government leaders as they create and promote policies, programs and places that enable active living. Leadership projects are being supported in California, Colorado, Kentucky, Michigan, and Washington.

- Active Living Network – a national coalition of leaders - from professions such as urban planning, architecture, transportation, environment and public health - to promote activity-friendly places that reintegrate physical activity into daily life.

**Liberty Hill Foundation.**<sup>71</sup> Based in Santa Monica, CA, the Liberty Hill Foundation supports grassroots community organizations in Los Angeles



County that empower people and challenge the policies, institutions and attitudes fostering inequality. The Foundation's Environmental Justice Fund makes linkages between growth and investment patterns, transportation, and impacts on public health by supporting grassroots organizations working in low-income communities of color that suffer disproportionately from environmental pollution and cancer-causing toxins. Grants of \$1,000 to \$35,000 are given for community organizing, applied research, policy advocacy, litigation and/or popular education projects and groups working to decrease exposure to toxic substances in neighborhoods and workplaces.

For example, the foundation supports the Bus Riders' Union, a Los Angeles group that advocates for the use of cleaner fuels in buses, as well as for environmental justice and equitable urban and transportation planning. Another grantee is linking brownfields redevelopment, school site selection, and affordable housing in the Los Angeles area. This organization – the Community Coalition for Substance Abuse Prevention and Treatment – is on the cutting edge of another kind of public health/smart growth connection; it sees land use as one way to impact poverty and substance abuse behavior, linked by the existence of abandoned urban buildings and vacant lots. Still another type of connection is being explored by grantees focusing on the public health implications of dilapidated inner city housing, such as exposure to lead paint and other toxins, proximity to industrial sites, and air and water quality issues. The smart growth strategy of providing clean, safe, and affordable housing choices in urban areas is seen as one way to address these public and environmental health problems.



**Jessie B. Cox Charitable Trust.**<sup>72</sup> The health program of the Boston-based Jessie B. Cox Charitable Trust focuses on improving public health and health access, especially for low and moderate-income people. Its environment program supports ecological health (with emphasis on sustainable forestry and fisheries), water and air quality protection, land use and transportation, environmental justice and toxics, and habitat and biodiversity protection. Under its education program, the Trust supports environmental education in the context of education reform and improved educational outcomes. Over the last ten years, the Trust has expanded its grantmaking in environmental health with an interest in improving health outcomes for human and non-human residents of the region.

The Trust supports a wide variety of public health efforts linked to smart growth strategies such as statewide obesity campaigns in Maine and Massachusetts, regional dirty power plant and mercury campaigns, regional transportation advocacy in Connecticut and Massachusetts, and initiatives building alliances among consumers, health providers, scientists, educators and advocates focused on public health, housing, community development, transportation, climate change and health disparities. Under its philanthropy grant program, the Trust is supporting an innovation working with community development finance institutions to expand capacity that will better link community development organizations to public health, smart growth, and other interdisciplinary fields of interest. The Trust is especially interested in health sector leveraging to take more effective action on environmental health and community design solutions in urban and rural development in New England and the Gulf of Maine ecosystem.

**Bauman Family Foundation.**<sup>73</sup> The Bauman Family Foundation, headquartered in Washington, D.C., has a central focus on the connections between environment and health that stem from toxic chemicals and air pollution. The foundation is forging a more explicit link between public health and the smart growth and livable communities agenda by supporting organizations that impact points of linkage between these agendas; for example, transportation, school site selection, and housing.

Like the Liberty Hill Foundation, the Bauman Family Foundation has long supported the Bus Riders Union in Los Angeles and its efforts to connect urban planning, transportation planning, environmental and public health. Another grantee, the Center for Health, Environment and Justice, focuses on schools and children's environmental health through its "Childproofing our Communities" campaign, as does the Healthy Schools Network. Although not specifically listed under the rubric of "smart growth," the foundation sees its major support

of the Health and Environment program of the Natural Resources Defense Council, especially its campaign to find alternatives to diesel buses, as a fundamental part of its linkage grantmaking.

**Other Funders.** Additional funders are also actively making the public health/smart growth connection. Some of these include the Mary Black Foundation's Healthy Community Initiative; the Paso Del Norte Health Foundation's programs of Ageless Health; Healthy Communities; Walk El Paso; The San Francisco Foundation's Environmental Health and Justice Initiative; the Field Foundation of Illinois' efforts to employ multi-disciplinary approaches to environmental grantmaking that recognize the connection between environmental health, public health, and economic health; the Community Foundation for Greater Atlanta's Health and Wellness Priority Area; the McKnight Foundation's work on Children, Families and Communities; and several initiatives of the California Endowment.

## Opportunities for Funders

There are many opportunities for funders to explore, promote, and leverage these public health and community design linkages. Each of the following funding areas – Making Connections and Framing the Issues; Community Based Processes and Demonstration Projects; Research and Science; Public Policy, and Education and Communications – complements the others. Together they provide a variety of entry points for the array of funder types, missions, and programmatic interests that will contribute to the building of this field and to bringing about change.

### Making Connections and Framing the Issues

Whether they realize it or not, funders concerned with nearly any aspect of public health have an interest in better designed and more livable communities. Likewise, funders interested in promoting smarter and more livable communities have a stake in better public health. The key is finding the areas of mutual interest and benefit, which may be unique to each partnership given the perspectives and interests of individual funders.

### *Opportunities for Funders*

- Making Connections and Framing the Issues
- Community Based Processes and Demonstration Projects
- Research and Science
- Education and Communications
- Public Policy

First steps in this area could include funding scans of interested funders, supporting convenings and dialogues that would explore possible partnerships, and providing opportunities for networking to interested individuals. Depending on geographic scope of interest, this work could be done locally, regionally, statewide or nationally. The Funders' Network for Smart Growth and Livable Communities will be undertaking work in this area to facilitate and support the formation of new relationships among health and smart growth funders in 2003-04.

When the Robert Wood Johnson Foundation adopted its fourth major goal, "to increase healthy communities and life-styles," in August 2001, it based its decision in part on the fact that only four percent of national health expenditures were being directed to improve health behaviors. Meanwhile, the health behavior area, which includes but is not limited to sedentary lifestyles, comprised 50 percent of the influence on individual health status. Given this gap between the investment in health prevention and its potential to improve public health, the opportunity for health and other funders to find common ground seems strong.

### **Community Based Processes and Demonstration Projects**

Becoming involved in land use, transportation, regional planning, and community visioning and design efforts provides health funders with the opportunity to create environments that are supportive of routine daily activity. According to senior program staff at the Robert Wood Johnson Foundation, and because we now know so much about the importance of physical activity in preventing chronic disease and improving health, smart growth is an important tool for funders interested in engi-

neering daily activity back into our lives.

There is a need for support of local demonstration projects, including community processes involving various stakeholders and members of the public that increase awareness about barriers to physical activity and other threats to public health that are caused by the built environment and design of their own communities. Community planning and visioning processes that focus on transportation – infrastructure investments, commuting choices, construction of sidewalks, bikeways, trails, and other measures that improve bicycle and pedestrian safety – provide the opportunity to address a range of health impacts. These impacts may include physical inactivity, obesity, respiratory health, accident trauma prevention, water quality, and/or exposure to toxic substances. These types of community-based processes can be done in any community at any level of funding, and may provide an especially appropriate entry point for community foundations to become involved in this issue area.<sup>74</sup>

### **Research and Science**

The scientific and public health communities have built a considerable body of literature documenting the negative health impacts of physical inactivity, as well as a sizeable body of literature on the health effects of environmental pollutants. The urban planning and design field has compiled a body of research on the impacts of community design and investment choices on transportation options and general quality of life measures. The environmental protection community has built a robust sub-field around the environmental impacts of various urban design patterns. While intuitively logical, studies that connect the dots among all of these areas, and provide empirical and objective evidence for the linkages between



community design, physical activity levels, and health impacts – while emerging – are still relatively rare. This research area provides an opportunity for health funders interested in supporting interdisciplinary research to build the field.

Other areas into which more research is needed include:

- The influence of various physical factors on individual physical activity choices (for example, how might the location or type of walking or biking trail provided influence its use);
- The influence of cultural and social factors on physical activity choices (an example may be employer attitudes and workplace policy toward employee use of transit options);
- How to foster neighborhood and social support systems for daily physical activity;
- How to work with the insurance industry to quantify community characteristics as health benefits or risks;
- Linkages between the built environment and emotional health;
- Racial and ethnic disparities within the linkages here discussed; and
- How to adapt individual and community behavioral change strategies to the needs and situations of specific economic, racial and ethnic groups.

### Education and Communications

Although there is evidence of a large latent demand for making changes to the built environment, this demand should be built on and made more explicit simultaneously with efforts to bring about these changes. For example, foundations can support efforts to train the public on the importance of being engaged in local and regional transportation planning processes, and how to do so.

Funders should seek out opportunities that impact both social environments and individual motivation. There is a public health component to many community building activities; health funders can partner with others to think across disciplines to support community clubs, gardens, and forums that bring people together in public spaces, especially when they involve a physical activity – whether it be walking or biking, yoga or tai-chi.

### Public Policy

Last but not least, it is vital to improve many of the laws, rules and practices that guide the development decisions made every day. Many growth, development, infrastructure investment, and community design choices are made at the local level; funders and their grantees should work to develop tools, models, and policy agendas tailored to the respective towns, cities, regions and states in which they work.

There is, however, also a national policy agenda coming together around these issues, particularly as they involve federal transportation planning and funding. There is an important role for health funders in efforts – such as that being spearheaded by the Environmental Defense Fund and others – to include the health impacts of transportation choices in the transportation planning process, just as environmental impacts are currently considered.<sup>75</sup> The emerging agenda around healthy schools, neighborhood schools, and school site selection – led by the National Trust for Historic Preservation, Healthy Schools Network, and others – provides a similar opportunity.<sup>76</sup>

Funders also can support exploration of emerging issues that will likely drive many public policy and funding decisions in the near future and outlying

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*Many growth, development, infrastructure investment, and community design choices are made at the local level; funders and their grantees should work to develop tools, models, and policy agendas tailored to the respective towns, cities, regions and states in which they work.*

years while increasing awareness of linkages they have to the public health/smart growth arena. These include:

- Linkages among climate change, global warming, energy use, and economic development;

- Homeland security and the threat of bioterrorism;

- Health access and health education; and

- Issues surrounding housing safety, access, and affordability.<sup>77</sup>

## Conclusion

As many funders know, these types of changes take a long time. Building awareness among multiple sectors – the public sector, community residents, the academic/research community, the philanthropic community, and the medical profession – is the first step toward change. Funders entering into these areas and projects with a long-term outlook should soon find that they have a shared agenda with a diverse range of partners.

As the connections between smart growth and public health become better

established, these sectors will find in each other natural and useful allies, thereby increasing the respective effectiveness of each in their efforts to pursue common goals. Within the philanthropic sector these linkages may provide opportunities for health care funders to expand the scope of their activities and to collaborate with funders engaged in the smarter growth and livable communities agenda. Such collaborations hold significant potential to bring additional resources, leverage, and impact to the critical task of building healthier more active communities.

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*Working to strengthen funders'  
individual and collective abilities to  
support organizations promoting smart  
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