Northwest Public Health
Spring/Summer 2005 • Volume 22 Number 1

Health and the Built Environment

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The Importance of Building for Health

This issue of *Northwest Public Health* addresses the important role that public health plays in decision making about the built environment. We are increasingly aware that the structures and infrastructure of our communities—the places where we live, work, and play and how we travel among them—have a profound effect on our health.

We need look no further than the well-documented obesity epidemic to see how the built environment can affect the health of the public. Although a lack of healthy, affordable food is an obvious factor, a shortage of safe, accessible venues for physical activity in many communities also contributes to this epidemic. Obesity has become one of the chronic diseases of the twenty-first century and a major risk factor for heart disease and diabetes. Adequate exercise is among the most effective strategies for treating those diseases, but it requires a physical environment conducive to walking, jogging, and bicycling.

Asthma, too, is increasing in this country. We have long known that air quality is degraded by our reliance on the automobile and a highway system that necessitated the wholesale removal of trees. Dense, low-income housing also contributes to asthma, especially in children, when allergens and irritants such as dust mites, mold, cockroaches, rodents, and toxic chemicals may be present in the home.

Our architects and builders need to practice prevention by design to create healthier spaces, but public health professionals and our allies in other fields also must seize opportunities for intervention in existing unhealthy environments. Our first step, already well under way, is to broaden our concept of the environment. A too-narrow definition, although it includes air and water quality, leaves out considerations such as sidewalks and safe places to walk, bike paths and green space, natural lighting in buildings, and the availability of healthy food.

The cross-cutting nature of the many factors comprising the built environment points to the partnerships needed to improve health outcomes in our society. As members of an inherently interdisciplinary field concerned with preventing disease and injury and promoting health, public health professionals have much to offer city planners, architects, builders, transportation designers, and policy makers when environmental decisions are made. Members of our School's faculty are involved on many fronts. Examples include:

- Research in the Department of Environmental and Occupational Health Sciences on air and noise pollution, asthma, asbestos, and housing and health
- Collaboration between our Center for Public Health Nutrition, government agencies, and communities to improve physical activity and promote environmental change, such as the Center's involvement in the Moses Lake Healthy Communities Project
- Efforts by our Center for Health Promotion, through the Healthy Aging Network, to encourage wider sidewalks and more convenient public transportation for elders

In April the School co-sponsored (with the UW College of Architecture and Urban Planning) a second visit to campus and lecture by Dr. Richard Jackson. Jackson is state public health officer for the California Department of Health Services and former director of CDC's National Center for Environmental Health. He and Dr. Howard Frumkin, who is interviewed in this issue of *Northwest Public Health,* are leaders in research on the relationship between the built environment and health.

Although we live in a region of exceptional natural beauty and recreational opportunities, our scenery does not guarantee healthy living conditions, especially for our most at-risk populations. Public health can encourage healthy behaviors and reduce health disparities by playing a central role in designing healthy communities and altering unhealthful environments.

Patricia W. Wahl, Dean
UW School of Public Health
and Community Medicine

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Page 17: UW BetterBricks Daylighting Lab

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From the Editor

I have one of those "good ole days" stories as I think about this issue of *Northwest Public Health*, but first something about the here and now. My wife and I are just completing a total transformation of our yard in Seattle. We have a fairly typical house for our in-city neighborhood, built in 1908 on a postage-stamp lot. It looks pretty much the same as the photo from the 1930s we got from the county land use office. There was nothing particularly wrong with our yard, although the grass had long since morphed into weeds, and the steep front slope continued to get steeper with erosion. Yet, as each Seattle summer came, with its evenings warmed by a sun that seems reluctant to set even at 10:00 p.m., we felt we were missing some wholesome experience by not having a place to enjoy that twilight. Now we do, with a Montana slate patio strategically placed to capture every last solar ray.

Why would we go to this expense (dirt and rocks aren't cheap!), even as we lament the state of our retirement accounts and debate whether we should sell our home of 18 years to beat a feared drop in the real estate market? For me the answer is simple: My yard is where I recharge from the hassles and drains of professional life, where I fuss over the first flowers of pepper plants and admire the miracle of my brewing compost. The more time I spend there, the more grounded, energized, and healthy I feel.

Now for the good old days. I did a lot of walking and bike riding where I grew up in a neighborhood north of Milwaukee that was prototypical of the 1950 suburban ideal—ranch-style houses and large, fertilized lawns set on wide streets. There were no sidewalks, but not much traffic either. I walked or rode to the schools I attended or to the store to buy my baseball cards, and played football, basketball, and baseball on playgrounds and fields all within a few blocks of my home. Television wasn't much of a distraction yet (we didn't have one until I was six), and no computer screen beckoned with flashing, fast-moving adventure games or real-time messaging with my buddies. My family ate a lot of fresh food…heck, there was still a farm with cornfields behind our house (now, of course, condos).

How many of us can claim a similar situation today? Parents schlep carloads of kids to schools and recreation facilities miles from home, lack of sidewalks means danger in our car-obsessed society, and good food is hard to find or expensive. The whole family is drawn to the computer—to access the incredible wealth of information on the Internet or just to manage the piles of e-mail—and to the TV for "reality" shows and on-demand movies. We sit a lot more now.

For the first public health advocate in my life, my mother, promoting healthy behavior was as easy as saying, "Go out and play!" Today, the challenges are much greater and larger than the capacity of most families to overcome themselves, so community-wide approaches are necessary. And, that's the focus of this issue of the journal. From our interview with Howard Frumkin (p. 6) to the stories of health-promoting community planning in Oregon (Duckart, p. 8), Washington (Abad, p. 12), and Montana (Burk, p. 14), from a call for more "daylighting" in building design (Loveland, p. 16) to a case for the therapeutic nature of landscapes (Winterbottom, p. 18), you will find well-supported articles that outline how we can and must do more to improve the built environments that promote health.

Aaron Katz, Editor-in-Chief
Director, UW Post-Program Initiatives

Public Health and the Precautionary Principle

Steven G. Gilbert

Ensuring public health, and most importantly children's health, is not only a matter of knowledge or resources but also of policy. In his 1968 paper on the commons, Garrett Hardin pointed out that many of the problems that we face have no technical solutions but must be managed. Management often requires regulations, from which we need not shy away. Basic research in the biological and toxicological sciences, combined with experience, gives us the knowledge to make decisions that protect public health and the environment. Before discussing the precautionary principle as one approach to decision making, I will define bioethics and then consider our ethical and social responsibilities.

Van Rensselaer Potter was the first to use the term *bioethics* in his 1971 book, but Aldo Leopold probably provided the best definition in his 1949 book, *A Sand County Almanac*. Bioethics, as Leopold and Potter define it, is a broad concept that is inclusive of public health and environment. When we distribute lead, mercury, or PCBs into the environment, we not only expose our children to compounds that rob them of their potential, we also harm the much broader biotic community. While protecting our children, we must also acknowledge a responsibility to the fish and other wildlife that accumulate mercury and PCBs. Thus defined, bioethics provides us with a foundation upon which to consider our ethical and social responsibilities combined with our knowledge.

Bioethics

"A thing is right when it tends to preserve the integrity, stability, and beauty of the biotic community. It is wrong when it tends otherwise."
Aldo Leopold, A Sand County Almanac, *1949*

We know from research that fetal or childhood exposure to even low levels of chemicals, such as alcohol, or environmental contaminates, such as lead, adversely affect the developing nervous system. This knowledge implies that we have a duty to protect those who cannot protect themselves, such as children, who have a right to develop in an environment that allows them to reach and maintain their full potential. Protecting our children is also a good investment. Environmentally related childhood diseases cost approximately $55 billion per year. Preventing harm to public health and the environment will require society, including the public, businesses, and government, to make fundamental changes in their approach to regulatory policy and decision making.

One approach to preventing harm is to more broadly incorporate the precautionary principle (PP) into our decision-making process. The PP promotes a broader ethical perspective as well as taking action to protect public health even in the face of uncertainty. This is in contrast to a risk assessment approach, which asks, "How much harm can we tolerate?" Instead the PP asks, "What actions can we take to prevent harm?" A key provision is that the proponent of an activity has the responsibility to demonstrate safety. For example, the Food and Drug Administration takes a precautionary approach by requiring the manufacturer of a new drug to submit data demonstrating both efficacy and safety prior to marketing the product. In contrast, thousands of new chemicals are introduced into commerce each year with only minimal knowledge of their potential effects on human health or environmental consequences, which puts society in the position of proving harm after exposure. Our knowledge and technical capabilities have progressed to the point where not everything that could make money is necessarily good for society.

Precautionary Principle

"When an activity raises threats of harm to human health or the environment, precautionary measures should be taken even if some cause and effect relationships are not fully established scientifically."
Wingspread Statement, 1998

The precautionary principle consists of four basic concepts:

- Taking preventive action in the face of uncertainty
- Shifting the burden of responsibility (proof) of demonstrating safety to the proponents of an activity
- Exploring a wide range of alternatives to possibly harmful actions
- Increasing public participation in decision making

Emphasizing human health and a precautionary approach provides a common framework for decision making. Many of our cities, counties, and states are required to develop comprehensive plans addressing issues of growth, transportation, land use, and the environment. These plans should address human health issues by setting targets for specific indictors, such as reducing incidence of asthma, obesity, low infant birth weight, learning disabilities, and cancer. Health indicators, combined with a precautionary approach, would integrate decision making across the plan promoting both sustainable growth and public health.

We have the knowledge and resources to make appropriate decisions to protect public health and the environment. The precautionary principle supports an approach to policy making that emphasizes our responsibility to future generations as we work together to manage the Commons.

Author

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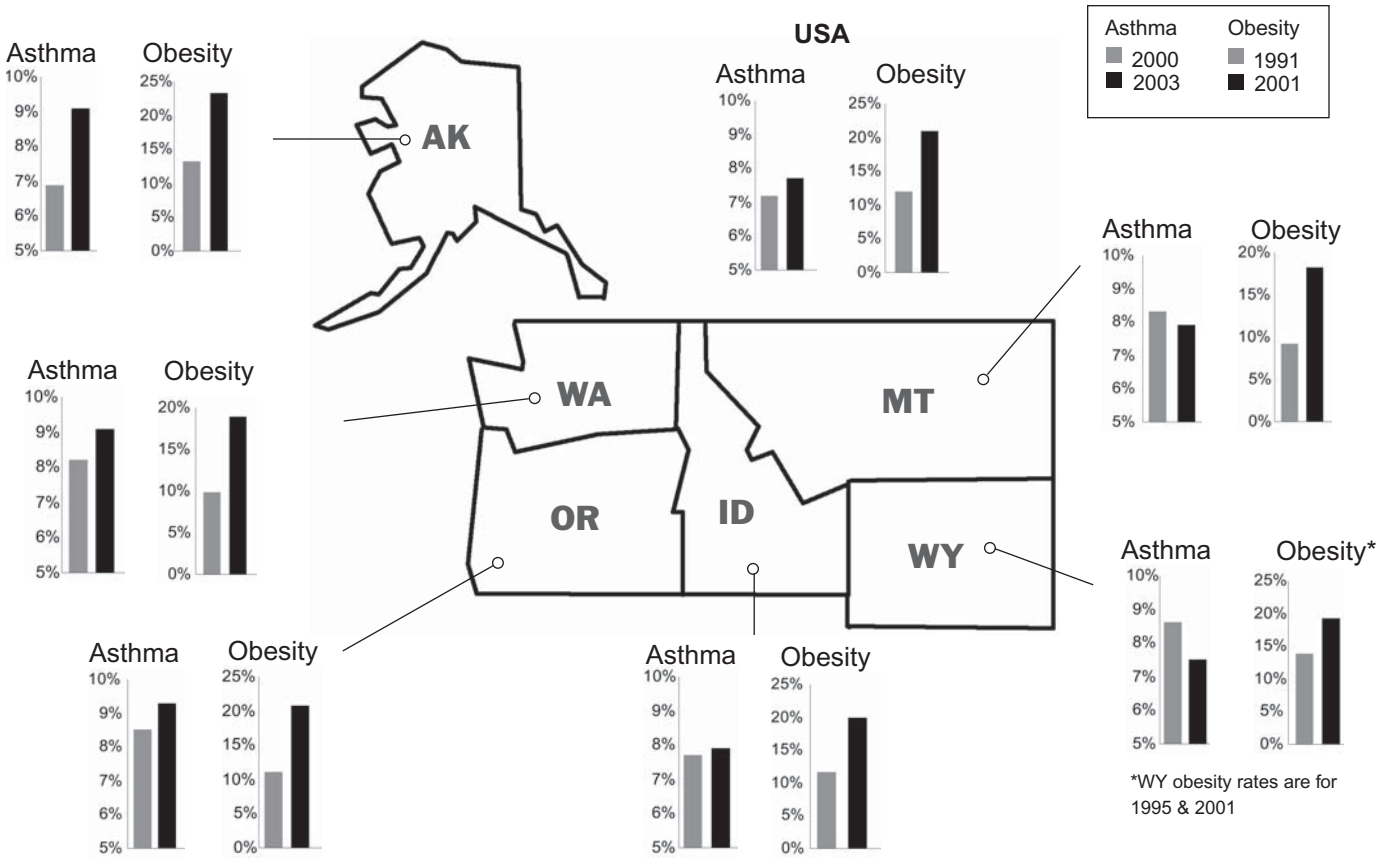
Northwest Region at a Glance

Changes in Asthma, Obesity, and Transportation



Note: *Overweight* and *obese* are defined as having a body mass index equal to 25.0 kg/m^2; percentages are weighted to reflect population characteristics. Asthma data refer to adults who report having been diagnosed with asthma and who still have asthma.
Asthma: Adult self-reported current asthma prevalence rate (percent) by state. BRFSS 2001 and 2003. Air Pollution and Respiratory Health Branch. National Center for Environmental Health. CDC. www.cdc.gov/asthma/brfss/default.htm. **Obesity:** 1991–2001 prevalence of obesity among U.S. adults by state. Behavioral Risk Factor Surveillance System (1991–2001), self-reported data. National Center for Chronic Disease Prevention and Health Promotion. Centers for Disease Control and Prevention (CDC). www.cdc.gov/nccdphp/dnpa/obesity/trend/prev_reg.htm.

Transportation to Work

	Alaska		Idaho		Montana		Oregon		Washington		Wyoming		USA	
	1990	2000	1990	2000	1990	2000	1990	2000	1990	2000	1990	2000	1990	2000
Drove alone (%)[1,2]	62.5	66.5	74.8	77.0	71.7	73.9	73.3	73.2	73.9	73.3	73.8	75.4	73.2	75.7
Public transportation (%)[1,2]	2.4	1.8	1.9	1.1	0.6	0.7	3.4	4.2	4.5	4.9	1.4	1.4	5.3	4.7
Walked or other means (%)[1,2]	19.7	16.2	11.3	9.6	15.8	13.6	10.6	10.5	9.3	8.9	11.4	10.0	8.2	7.4
Carpooled (%)[1,2]	15.3	15.5	12.0	12.3	11.9	11.9	12.8	12.2	12.3	12.8	13.5	13.2	13.4	12.2
Mean travel time to work (minutes)[2,3]	16.7	19.6	17.3	20.0	14.8	17.7	19.6	22.2	22.0	25.5	15.4	17.8	22.4	25.5

[1]Clara Reschovsky, "Journey-to-Work 2000" Census 2000 Brief, US Bureau of the Census, March 2004, www.census.gov/prod/2004pubs/c2kbr-33.pdf. [2]Travel to Work Characteristics by State: 1990 Census, STF3c, Journey-to-Work and Migration Statistics Branch, Population Division, US Bureau of the Census, www.census.gov/population/socdemo/journey/state.txt. [3]US Census Bureau: State and County Quick Facts. Data derived from Population Estimates, 2000 Census of Population and Housing, http://quickfacts.census.gov.

Data researched and compiled by Jennifer H. Lee

Ways Community Design Can Contribute to Health

Dr. Howard Frumkin believes our current car-focused design strategies, with their resulting urban sprawl, have serious health penalties. Northwest Public Health *interviewed Dr. Frumkin about the health effects of community design. And what public health workers can do to promote a healthy built environment.*

Dr. Howard Frumkin is chair of the Department of Environment and Occupational Health at the Rollins School of Public Health, Emory University. He is a co-author of the book *Urban Sprawl and Public Health: Designing, Planning, and Building for Healthy Communities*.

NPH: How does good or bad design of the built environment affect different groups of people?

Let's take transportation as one example. In a very car-dependent world, people who don't drive cars are disenfranchised. And that includes kids up to the age of 16 or 18 depending on the state, elderly people who can no longer drive, people with disabilities who can't drive, and people who can't afford cars. That's something like 30 percent of the population according to the last census, maybe a bit more. If they don't have good transportation available, they can't get to the things they need to get to. If you don't drive and need to get to a job, you're at a real disadvantage. It puts you at a high risk of poverty, and poverty's very bad for health.

Or, if you do try to get to a job that's far away using an inadequate transportation system and you end up traveling for two hours at a time, then you don't have time left in your day for doing things like being with your kids. Poor public transportation is also bad for kids because kids need increasing independent mobility to explore their environments as they grow from being toddlers to being fifth or sixth graders to being teenagers.

It's also very different in a lot of the European cities where you have higher levels of pedestrian activity, but you have much lower pedestrian fatality rates. So, it is very possible to build the infrastructures and inculcate attitudes in which cars and pedestrians coexist. But we haven't done that. We've developed such a car-oriented mentality here and our infrastructure has followed suit that it is often dangerous for pedestrians to be out. That's a design feature that we need to change.

One more thought on the elderly. Another land use issue is the concept of aging in place. This emerging concept holds that there's a benefit to being able to stay in one's community after one becomes an empty nester and then becomes elderly, because of the social links already established with resources like library, church, doctor's office, and so on. Those are all very helpful to preserve a part of the quality of life of aging. However, as you age, if you've been living in a residential suburban subdivision, that option doesn't exist. When you're ready to downsize, you need to uproot and move to another part of the metro area with townhouses, condos, or smaller homes. That means that aging in place is engineered out of the equation and that interrupts the continuity across the lifespan of where people live. It's not to say that everybody has to stay in the same place. But for those people who would like to, it's a practical impossibility. Their contribution to society is removed, and their quality of life that may stem from staying in the same place is diminished.

NPH: How are residents of rural areas affected by problems of the built environment?

It's a question that's relatively understudied. A lot of the recent attention to the health implications of the built environment has focused on urban and suburban areas. What we do know is that physical activity is low in rural areas. People have to go long distances in rural areas, typically by car. For people who are actually living on the land, the ranchers in Wyoming or in Montana, for example, who really need to be out in the middle of nowhere, a lot of this built environment thinking isn't that germane. But for people who are buying a second home, for example, in a rural area (as I understand it, that's a fairly rapidly growing population in the WWAMI region), there are some ways we might encourage more physical activity. One approach is cluster development—creating hamlets within rural areas where homes and stores and schools are a little closer together. Hamlets can still offer people a lot of the benefits of rural living, that is, plenty of open land nearby, but put facilities closer together so that people are able to build walking into their daily routine. Or you might find old rural towns, many of which are in decline, and rebuild those towns. This is the "fix it first" principle. Make them attractive places to live but incorporate some of the principles that we know are healthy: walkability, alternatives to car travel, and so on.

NPH: How does the tension between public good and private rights affect public health efforts to use the built environment to improve people's health?

My own feeling, and I have the bias of a public health person, is that we need to strengthen

the concept of the common good in this country. The common good has to do with things like having public places such as parks and sidewalks near where we live, work, and play. It has to do with creating a social context where people work together to solve common problems and achieve common goals. It has to do with mixing across racial and ethnic lines and across social class lines so we build a more cohesive society. And it has to do with jointly addressing issues like environmental scarcity, which will become big problems in coming years, so that we can solve them in equitable and inclusive ways. That's how we strengthen our democracy.

If you start with this assumption, then you approach the question of land use and transportation by asking a pretty broad question: What land use practices would be best for most of us? I think you would get an answer that involves balancing relatively dense development in some places with preservation of green spaces in other places so that everybody has access to green space. Green space is good for health, directly and indirectly. What kind of transportation would be good for all of us? I think we'd get to a mix of transportation options, so that those who want to drive can drive, those who want to walk or bike can do so, and those who want to use transit can do so as well. And that extends way beyond individual, private interests to a notion that the overall shape of the built environment and the design strategies that we use can serve the common good, not only maximizing health but maximizing other social goals.

These are not easy questions to answer; they're very complicated. We need to encourage a lot of non-adversarial, nonpartisan public discussion about what kind of land use and transportation decisions are best for the most of us in the long run, not best for a few of us in the short term.

One of the great opportunities here is we all want good places in which to live and work and raise our kids. If we sit down together across the political spectrum and talk about what makes a good place, I think there's a lot more consensus and common ground than the belligerent political discourse of today would lead you to believe.

NPH: What are some practical things public health practitioners can do to achieve safe, healthy, attractive, sustainable, economically sound places, whether in cities, suburbs, or in rural places?

You can think through the answers based on the core functions of public health. For one thing, public health has a traditional convening function to get dialogue going, using health as a catalyst. They can bring together those who work on zoning and land use decisions, those who do property development, transportation planning and engineering, and school boards.

Provide epidemiologic data to point out the public health implications of these decisions. If you go to a school board meeting, as a public health person, in which a decision is being made about where to site a new school and you show data on the rising prevalence of obesity in children and point out that it's very helpful to put schools in places to which kids can walk or bike, that can be compelling. Data really are an important driver, and public health people not only have the moral high ground of talking about health, but they have the special propensity to back up what they say with data.

A third arena for public health people to get involved in is advocacy and policy making. It may mean getting onto bodies like zoning boards or going to public forums like the county commission or the city council or writing pieces in the local newspapers, all to emphasize the notion that we ought to be building healthy places and to provide concrete solutions for local authorities and members of the public on how to do that.

Another function is training and educating others. So going to groups of planners and traffic engineers and other professional groups and educating them on the health perspective. I tell them they are public health officials just like my more direct colleagues are. What they're doing is an upstream determinant of health.

And finally, mobilizing the community, arousing interest in constituencies, especially by looking at inequities. Use these issues to empower communities and include them in public decision making. Help them engage in the issues and advocate for what would be best for their health.

A century ago, public health officials were all about the built environment. A lot of the early built environment governance came out of public health people; parks, for example, were built out of health considerations. Obviously, water treatment facilities and the protection of source water were driven by public health. Well, for the last 30 or 40 years, we've separated the environmental side from the health side, and the design and the urban planning side is entirely different still. It's not second nature for most of us in public health to engage issues of planning, land use, and transportation. But there's a lot of good evidence now that it really has an impact on public health. So despite our lack of training, we need to jump right in, feel brave enough to get outside our comfort zone. It turns out that it's not hard to do it, especially on a local level. If a public health person reaches out to a counterpart on the planning commission or a designer or school system facilities manager or a park manager, they love talking with us. It's a natural linkage. And if you sit together and take the time to get to know each other, talk about the ways that your efforts can be synergistic, great things can happen, and it's a lot of fun.

It's not second nature for most of us in public health to engage issues of planning, land use, and transportation. But there's a lot of good evidence now that it really has an impact on public health.

Resources

Community Revitalization and Public Health: Issues, Roles, and Relationships for Local Public Health Agencies. www.naccho.org/pubs/detail.cfm?id=89

Frumkin H et al. *Urban Sprawl and Public Health: Designing, Planning, and Building for Healthy Communities.* Island Press. 2004.

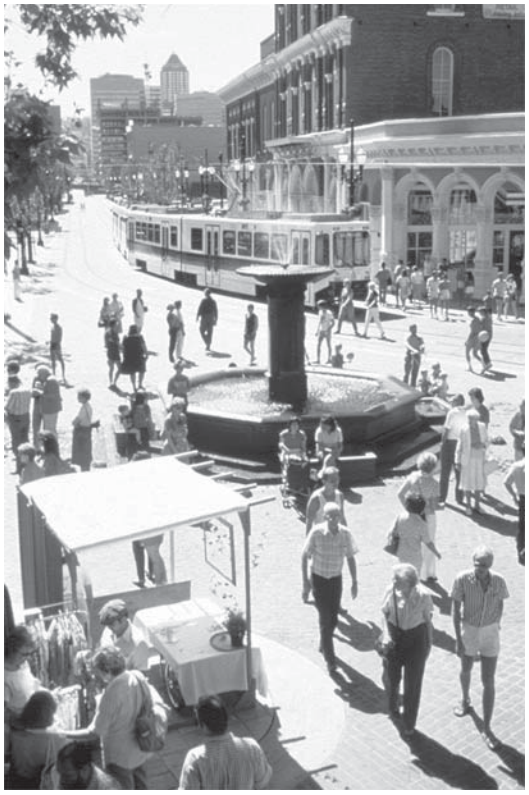
NACCHO Exchange. http://archive.naccho.org/Documents/naccho-exchange-spring-2003.pdf. Land use issue of NACCHO's newsletter.

Portland's Smart Growth Approach May Offer Health Benefits

Jon Duckart

Wendy Rankin lives in a Smart Growth city, and she's working to make it smarter. As evidence mounts that community design—and more specifically, urban sprawl—affects health, public health professionals such as Rankin are taking a top-down approach, working with land use and transportation planners to address the most pressing health problems today. "I think concerns around rising obesity rates and subsequent chronic diseases have really brought the public health community to the urban planning table to ensure that communities are being designed with the public's health in mind," says Rankin, a chronic disease prevention manager for the Multnomah County Health Department in Portland, Oregon. "And urban planners are glad to have us. They recognize that these health problems are exacerbated by urban sprawl, and they appreciate the health perspective we bring in making good urban design decisions."

Urban sprawl, that well-recognized description for land-gobbling, auto-dependent living, is now being linked to a decline in physical activity, rising rates of obesity, increased traffic accidents, and worsening environmental quality. As the public health community becomes more involved in urban planning, many are looking to Portland's Smart Growth approach as a model for how to build a healthy city.



GB Arrington

Skidmore Fountain in the heart of Portland's Old Town.

Urban sprawl

Most people know urban sprawl when they see it, but a formal definition will clarify the problem. Sprawl has three major features. First, sprawl is characterized by low density land use: Fewer people live on a square mile of land in a suburb like Palmdale, California (1,100 people per square mile) than in higher density cities such as New York (26,000). Few sidewalks and abundant cul-de-sacs combine to make walking difficult and unsafe. The second feature of sprawl is segregated land use, in which residential areas are separated and many miles from stores, workplaces, and other destinations. These features naturally lead to the third quality of sprawl: auto dependence. In communities where residential areas are dominated by wide roads and few sidewalks, with long distances separating destinations, cars become the only safe and practical means for getting places.

Researchers at Smart Growth America, a national coalition of city design advocacy groups, examined the main features of sprawl and calculated a sprawl value for each of the major metropolitan regions in the nation. Riverside, California, was found to be the most sprawling city, and New York City, the least. Among the least sprawling cities, Portland ranked a respectable eighth. This ranking may be the result of farsighted land use planning laws enacted more than 30 years ago in Oregon to reduce sprawl.

Portland and Smart Growth

If press accounts and Google searches are any measure, Portland has won the reputation as the quintessential Smart Growth city. Briefly, Smart Growth is a planning approach that concentrates population growth into a definable urban area, resulting in high-density, mixed-use development, with extensive public transit links and options. If all goes as planned, the approach preserves forests and farmlands, generates investment in already built-up areas, and creates a safe, convenient, pedestrian-friendly city with a strong sense of community and a thriving downtown core.

In many ways, Portland meets expectations as Queen of Smart Growth, but this wasn't always the case. Sprawling development patterns in the 1960s and 1970s led visionary state

leaders in 1973, mindful of Oregon's beautiful natural resources, to require that all cities in Oregon limit land growth of a city by defining a boundary where development must end. Termed *Urban Growth Boundaries*, any land inside the boundary is considered fair game for zoning and development, and land beyond is considered a natural resource, off limits to building. In 1979, Portland went a step further and created the nation's first and only regional government, Metro, which has the task of managing growth in the Portland metropolitan area's growth boundary. In addition, Portland area planners have embraced an extensive public transit system, including a new streetcar system downtown, to encourage commutes by foot, bus, and train. All this has had the intended effect of concentrating the region's increasing population inside the boundary, instead of sprawling growth ever outward. Moreover, new evidence suggests that Smart Growth may also be improving the health of Portland residents.

Health effects of sprawl

Awareness of the health consequences of city design date back hundreds of years. Concerted efforts between planners and public health practitioners reached a peak in the twentieth century when infectious diseases were brought under control, largely through clean water and improved sanitation. Over the years, however, many city functions have become specialized, and have become separated from public health concerns. Recently, health researchers have renewed their interest in community design and health. The *American Journal of Public Health*, for example, devoted an entire issue to the topic in 2003, and the message was clear: Thoughtful regional planning is needed to build healthy and livable cities.

Health researchers have identified three major categories of health and environmental effects from sprawl. First, sprawl leads to increased reliance on automobiles, which increases pedestrian and car crash injuries and fatalities, and reduces air quality. Second, the separation of land uses creates communities dominated by roads and cars, with features unfriendly to pedestrians, which in turn reduces physical activity and increases obesity. Sprawling land use patterns can also lead to water contamination, mostly because rainwater runs over ubiquitous paved surfaces, picking up oil and other contaminants on its way to rivers and streams. The third category relates to the social effects of urban sprawl. Reductions in civic engagement and mutual trust in communities—referred to as social capital—have been documented for many years, and sprawl may be contributing to this by isolating us from our neighbors.

All this sounds plausible in theory, but the challenge comes in measuring these health factors and isolating urban design as the cause. Health researchers have only recently tackled this complex interaction, and have found intriguing evidence linking urban sprawl with many health problems. A national analysis by Barbara McCann and Reid Ewing, released in 2003, is one of the first studies to measure the health effects of sprawl. McCann and Ewing combined their sprawl index of counties with health risk factor data from the Centers for Disease Control and Prevention and found that sprawl was directly related to declines in physical activity and increases in both obesity and hypertension. A recent study by Sturm and Cohen in the journal *Public Health* found that, in addition to obesity, sprawl is linked to increases in diabetes, arthritis, and even severe

Continued on next page.

Smart Growth Communities Defined

Smart Growth America, a nationwide coalition, has published the following list to describe what a Smart Growth community would look like. To achieve Smart Growth, communities should:

1. Mix land uses. New, clustered development works best if it includes a mix of stores, jobs, and homes. Single-use districts make life less convenient and require more driving.
2. Take advantage of existing community assets. From local parks to neighborhood schools, public investments should focus on getting the most out of what we've already built.
3. Create a range of housing opportunities and choices: houses, condominiums, affordable homes for low-income families, and "granny flats" for empty nesters.
4. Foster "walkable," close-knit neighborhoods. These places offer not just the opportunity to walk, but something to walk to, whether it's the corner store, the transit stop, or a school.
5. Promote distinctive, attractive communities with a strong sense of place, including the rehabilitation and use of historic buildings.
6. Preserve open space, farmland, natural beauty, and critical environmental areas.
7. Strengthen and encourage growth in existing communities. We should look for opportunities to grow in already built-up areas, such as downtown business districts, Main Streets, and places with good public transit access.
8. Provide a variety of transportation choices. More communities need safe, reliable public transportation, sidewalks, and bike paths.
9. Make development decisions predictable, fair, and cost-effective. Builders wishing to implement Smart Growth should face no more obstacles than those contributing to sprawl.
10. Encourage citizen and stakeholder participation in development decisions. When people feel left out of important decisions, they won't be there to help out when tough choices have to be made.

—Smart Growth America (www.smartgrowthamerica.org)

headaches. Another study by Reid Ewing and colleagues, reported in the *American Journal of Public Health*, found that urban sprawl was directly related to traffic fatalities and pedestrian fatalities. Several other recent studies in major public health and urban planning journals have supported these findings.

Health benefits for Portland

All this is probably good news for residents living in Smart Growth Portland. But it's difficult to say at this point what effect Smart Growth has had on public health here. Looking at the available data, the jury is still out. Some indicators show promising results, but other measures are more troublesome. Looking at negative results first, traffic congestion in Portland is increasing; fewer than 10 percent of Portlanders use public transit, and physical inactivity and obesity rates are still a major concern. But on the positive side, air quality in the Portland region today is not a problem; car crash deaths declined 38 percent between 1990 and 2001; and pedestrian death rates have declined 35 percent between 1994 and 2000. Both pedestrian and car crash death rates are far below the national average. Research by Arthur Nelson at the Georgia Institute of Technology in Atlanta also shows promising results. Nelson compared Atlanta, which had a sprawling population growth spurt, to Portland's roughly equivalent population growth, between the mid-1980s and mid-1990s. He found that Portland's air quality improved, commute time declined, and neighborhood quality improved. In Atlanta, the results were the opposite.

Reconnecting community design and public health

Despite the challenges in measuring the health effects of Smart Growth in Portland, one thing is clear: Public health professionals and city planners here are working together again to design healthier cities, and people like Rankin are leading the way. Rankin's work with land use and transportation planners to create pedestrian-friendly routes to school and her efforts to develop bike paths and promote public transit could go a long way to creating a healthier city. "Building relationships with land use and transportation planners is an important first step," Rankin said. "The potential to improve the community's health is huge. We have a lot to learn together." She believes it's worth the effort because, by working together, her community will not only be smarter, but also healthier.

Author

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Resources

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Oregon Land Management Under Attack

Land use planning has been a hot topic in Oregon since the passage in the early 1970s of land use laws restricting the growth of cities inside Urban Growth Boundaries. Land use issues remained a hot topic in Oregon during the 2004 election season, culminating in the passage of Ballot Measure 37 by 60 percent of Oregon voters. Many are interpreting this measure as a clear threat to Oregon's land use planning system.

Briefly, Measure 37 is a statute that allows property owners to file a claim for compensation when they feel that a county, state, or city land use rule has reduced the fair market value of their property. Assuming owners can show that a land use rule has lowered the value of their property, governments are then faced with a choice: They can either compensate property owners for the lost market value or they can waive the land use restriction, opening up the possibility that land that was previously off limits to development can now be developed. One important aspect of this statute is that it is retroactive to 30 years, so property owners can submit a claim if they believe their property's value was reduced by any land use regulation enacted after 1974. As times are tough fiscally for many governments throughout the state, it appears that the most likely scenario for claimants will be a waiving of the land use restriction.

As of early February, state, county, and city agencies had received about 220 claims since the law took effect on December 2, 2004. One pro-planning group has estimated that as of mid-January, 106 claims have demanded the development of 4,200 acres of land. Nine claims have been filed in Portland, and four claims have been filed in Multnomah County. County and city governments have 180 days from the time a claim is submitted to decide on actions to be taken for a claim. The first decisions are expected in May 2005.

What effect will Measure 37 have on land use planning and Smart Growth in the Portland area? "It's too early to tell at this point," said Derrick Tokos, a land use planner with Multnomah County. "We'll just have to wait and see the kinds of claims people file, and we just don't have enough at this point to know." Stay tuned. ■

Fat Neighborhoods: Spatial Epidemiology Meets Urban Form

Anne Vernez Moudon
Adam Drewnowski

The rates of obesity and diabetes are on the rise. Existing intervention programs have mostly failed, and the growing obesity epidemic represents the next public health crisis. Ceasing to view rising obesity rates as a failure of biology, some researchers are turning their attention to the physical and food environments. A spatial analysis of obesity rates in Seattle shows that obesity rates follow predictable geographic patterns. Obesity rates in well-off neighborhoods are low, but residents of the more disadvantaged areas are far more likely to be diabetic or obese. One hypothesis is that the link between poverty and obesity involves physical and financial access to healthy foods.

A number of foundations and agencies, from Robert Wood Johnson to the Centers of Disease Control and Prevention and the National Institutes of Health, have begun to explore the potential links among the built environment, active living, and healthy diet. We expend less energy than we used to, because there is less need for physical labor and the opportunities for exercise have diminished. At the same time, the very low cost of refined grains and added sugars and fats has provided us with easy access to low-cost, energy-dense diets. Healthier foods not only cost more, they are harder to find in low-income and deprived neighborhoods. Social scientists have used geographic mapping techniques to delineate "food deserts," areas where healthier foods are scarce.

Studying walking and food

Several groups at the University of Washington are involved in probing possible relationships between the built environment, activity, and nutrition. One project carried out at the Urban Form Lab in the College of Architecture and Urban Planning and the UW Health Promotion Research Center found that health-enhancing levels of walking (the most popular form of exercise) were associated with proximity to food sources. Called the Walk and Bike Communities Project (WBC), the study, funded by the Centers for Disease Control and Prevention, examined physical activity in relation to individual residential environments within the King County Urban Growth Boundary. It was based on a telephone survey of 600+ randomly selected respondents that assessed health behaviors, likely walking and biking destinations, and potential neighborhood barriers to active living. Researchers then analyzed ndividual behaviors in relation to more than 200 objectively measured GIS-based environmental variables thought to influence physical activity levels. Health-supportive levels of walking in the neighborhood were positively associated with the presence of nearby groceries and markets, restaurants (other than fast food), bars and taverns, and retail stores. They were negatively associated with the presence of office buildings and schools.

In other words, when people walk, they often walk to a restaurant or to get food. The strong and consistent predictive power of land use patterns on walking habits may have to do with the evolution of eating habits. Shopping and eating patterns may reflect changing life styles, smaller households, time constraints that lead to frequent eating out, changing eating habits that favor deli over frozen foods, increased cultural diversity, and changing product lines found in contemporary grocery stores/markets. The provision of food and other daily necessities near homes could effectively promote walking and help make neighborhoods more active.

Access to healthy food

However, physical access to food is only a part of the story. The lack of financial access may be another barrier to healthier diets. There is little information, within King County or elsewhere, as to what types of foods are available within walking distance of homes. The quality and cost of available foods tend to vary by location, neighborhood socioeconomic status, and spending power. Environmental links between incomes, physical activity, and diet quality may involve food prices and diet costs.

In a collaboration between the Center for Public Health Nutrition and the Urban Form Lab, UW researchers studying nutrition, physical activity, and the built environment, together with Public Health - Seattle & King County and local health departments, propose to analyze the relationships between eating behavior and the built environment, using some of the methods developed for the WBC project. Growing evidence suggests that the national obesity epidemic is a socioeconomic phenomenon. Disparities in physical and financial access to healthy diets

Continued on page 20.

Authors

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Making Healthy Choices, Easy Choices: Linking Health and Environment

Ruth Abad

Creating healthy communities across the state will not only slow the increase in the proportion of adults who are obese and reduce rates of chronic disease, but also improve the quality of life for Washington residents.

The Healthy Communities Project was designed as a model for local communities to work together with policy makers to build and support environments that make it easier for people to be physically active and choose healthy foods. It is based on the Social-Ecological Model, which describes the five spheres that influence health behaviors: individual, interpersonal, institutional, community, and public policy. The multilevel approach is essential to sustaining healthy choices in the population over time. Individually focused models alone have not been sufficient to change nutrition and physical activity patterns. Environmental and policy approaches, on the other hand, have a long history of success in improving health and well-being in areas such as food safety and traffic fatalities.

In 2001, the Washington State Department of Health was awarded funding from the Centers for Disease Control and Prevention to develop a Healthy Communities Project aimed at the promotion of nutrition and physical activity for the prevention of chronic disease and obesity (*see box for costs of physical activity in Washington*). In 2003 the department selected Moses Lake, located in the Columbia Basin region of eastern Washington, as a pilot city in the project, and in 2004 it added Mount Vernon, located in northwest Washington along the I-5 corridor between Seattle and Vancouver, as the state's second pilot city.

Cost of Physical Inactivity Is Staggering

A recent study, conducted by Health Management Associates for the Washington State Department of Health and the Washington Coalition for Promoting Physical Activity, concluded that physical inactivity contributes to chronic diseases and loss of work productivity. Direct costs were estimated to be $118 million in cardiovascular disease, $44.6 million in mental health due to depression and anxiety, $17.3 million in muscle and bone injuries, $9 million in diabetes and other metabolic disorders, $7.4 million from breast and colon cancer, and $1.3 million from carpal tunnel syndrome and other repetitive injuries. Indirect costs identified as lost work productivity, total $4.6 billion.

Overall, the report illustrates that physical inactivity has a profound effect on the present and future health, productivity, economic status, and longevity of Washington residents.

The executive summary of the report, *The Economic Cost of Physical Inactivity Among Washington State Adults,* is available online at www.doh.wa.gov/cfh/NutritionPa/publications/the_cost_of_inactivity.pdf. The complete report is available on request by calling 360-236-3623. ■

Moses Lake and Mount Vernon take action

Moses Lake and Mount Vernon are both small, rural communities. Moses Lake has 15,442 residents, and Mount Vernon has 26,670. Both cities' populations are about 25 percent Hispanic.

In developing their Healthy Communities plans, both cities used a community development model to involve residents in assessing the environmental barriers to physical activity. The first task was to bring together community advisory groups charged with the task of creating an action plan. Each city's group included the mayor, administrators from the county public health department, the director of the city parks and recreation department, and community physical activity and nutrition advocates.

The goals that guided the Healthy Communities Project planning process included:

- Building partnerships and opportunities for collaboration across a large, diverse group of community partners
- Identifying factors that affect nutrition and physical activity choices, using a comprehensive assessment process
- Supporting community efforts for improving nutrition and physical activity through environmental and policy change

The assessment processes involved conducting a number of focus groups of both English- and Spanish-speaking residents to identify their perception of changes in the environment that would make it easier for them to be physically active and choose healthy foods. Community volunteers conducted nutritious food and walkability assessments of each neighborhood.

With this information and the strategies and best practices described in the *Washington State Nutrition and Physical Activity Plan: Policy and Environmental Approaches* (*see box on page 13 for more information about the plan*), each advisory committee then chose specific priority strategies that became the Moses Lake Healthy Communities Action Plan and the Mount Vernon Healthy Communities Action Plan.

Selecting strategies

To meet their vision of a community where residents can enjoy an active, healthy lifestyle

that includes nutritious foods, recreation, and positive interactions, the Moses Lake advisory committee selected three strategies:

- Develop a network of linked paths throughout the city for exercise, recreation, transportation, and tourism to promote healthier lifestyles for the community
- Promote, protect, and support breastfeeding in the community, so good nutrition at birth is the basic part of nutrition throughout life
- Create a community garden for all city residents to grow healthy food, enjoy healthy leisure activity, learn about gardening, nutrition, and preparing food, and eat more fruits and vegetables

The Mount Vernon plan has one nutrition and two physical activity priority objectives, one of which is to increase the number of active community environments. The specific recommendations selected from the state plan are:

- Ensure schools provide healthful foods and beverages
- Use urban planning approaches such as zoning and land use that promote physical activity
- Increase the number of physical activity opportunities available to children

Developing new partners for public health

The leadership in both cities recognized the advantage and necessity of linking up with organizations that are not traditional partners with public health. The Washington Chapter, the American Society of Landscape Architects, and the Rivers, Trails and Conservation Assistance (RTCA) Program of the National Park Service contributed expertise in community building as part of the action-planning process in Moses Lake. Along with the Washington State Department of Health, they signed a partnership agreement to organize and facilitate a community-based design workshop (*charrette*) to develop a pathways and trail system for the Moses Lake area. Local landscape designers, architects, and city residents participated in the three-day charrette.

Supporting active community environments

To assist Mount Vernon in implementing its Healthy Communities Action Plan, the RTCA is working with the city and Skagit County around a potentially contentious issue: opening the river levees on the Skagit River for public access. For a number of years many residents recognized the physical infrastructure and placement of the dikes as an ideal site for walking, biking, and other recreation. Many of the levees, however, are on private property, so public access has raised concerns with a number of the property owners. RTCA will conduct a community process to bring together diverse stakeholders to discuss the use of the Skagit River levees for public use. The result will determine whether to develop a strategic plan for creating a nine-mile Skagit River trail in Mount Vernon.

Members of the Mount Vernon Healthy Communities Project are actively involved in a Non-Motorized Citizen's Advisory Group that advises the Regional Transportation Planning Organization (RTPO) and Metropolitan Planning Organization (MPO). The committee provides guidance to the RTPO/MPO on policy change and allocation of funds for sidewalks, trails, bike lanes, and other non-motorized facilities. Without this grassroots input, funding to build non-motorized transportation may not occur or be sustained over time. This effort ensures the necessary infrastructure is in place to support active community environments.

Lessons learned

The most important lesson both Mount Vernon and Moses Lake learned is the importance of listening to the people in the community. Another lesson is the challenge of nurturing and developing leadership in the community so if current leaders move on, the efforts continue. The goal of leadership development in both communities is to empower a variety of community members with the skills and confidence to facilitate a planning process, seek out new and unique partners, empower other community volunteers, and work with the community to create and carry out the vision of a healthy community.

Community leaders in both Moses Lake and Mount Vernon agree that the planning process takes time and patience, which is often frustrating to community advocates who are action focused. The tradeoff, however, is an action plan with strategies a community can embrace as its own.

Author

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Guidelines for Action

The *Washington State Nutrition and Physical Activity Plan: Policy and Environmental Approaches,* created by the Washington State Department of Health and its partners, is a guideline for action that targets changes in the environment and policies to make the healthy choice the easy choice. It includes recommendations to support land use planning, non-motorized transportation, safe routes to school, worksite policies, state and local recreation facilities, and physical education in schools. Without a supportive environment, individuals cannot make the choice to be physically active. ■

Resources

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Moses Lake Healthy Communities Project. depts.washington.edu/dohuwnps/MosesLake/.

Mount Vernon Healthy Communities Project. depts.washington.edu/dohuwnps/MountVernon/.

National Charrette Institute. www.charretteinstitute.org.

Creating a Walkable Community

Julie Burk

The way we design our communities plays a big role in how much physical activity we get. And our physical activity helps determine our weight. Existing patterns of development have led to an increased dependence on automobiles, more congestion and air pollution, loss of open space, and ultimately, less physical activity. The U.S. Department of Health and Human Services' Healthy People 2010 report (2000) talks about urban development in its environmental health section, and numerous studies have shown the link between suburban sprawl and obesity. These studies show, for example, that people who live in low-density suburban areas are more overweight, walk and bike less, use cars more often, and have higher rates of obesity-related illnesses.

Far-flung suburbs in large cities and outlying subdivisions in small towns, with their low population densities, cannot support cost-effective and comprehensive public transportation. Instead, people who live outside the city center must rely on automobiles to get from place to place. According to CDC, one-fourth of all trips people make are one mile or less, but three-fourths of these short trips are made by car.

Independent Record

Walk Our Children to School Day 2002. Walking to Smith School, a school area with few sidewalks, are then-Governor Judy Martz (center), Mike Spence, state medical officer at Montana Department of Public Health and Human Services (left), and State Rep. Dave Gallik (right).

In *Urban Sprawl and Public Health*, Howard Frumkin, Lawrence Frank, and Richard Jackson say, "Heavy reliance on the automobile for transportation results in more air pollution, which contributes to respiratory and cardiovascular disease. More driving also means less physical activity, contributing to a national epidemic of overweight and associated diseases."

As a result of a decrease in activity, obesity is now considered to be one of the top 10 leading health indicators by CDC, which estimates that almost 15 percent of children aged 6–19 years are overweight, and 64 percent of U.S. adults aged 20 years and older are either overweight or obese. Overweight and obese individuals are at an increased risk for physical ailments such as high blood pressure, high blood cholesterol, type 2 (non-insulin dependent) diabetes, heart disease, and stroke.

In Montana, an estimated 18.8 percent of adults are obese, and 8.1 percent of high school students are overweight, according to the nonprofit organization Trust for America's Health. Concerned about the connection among land use patterns, transportation, and obesity, the Lewis and Clark City-County Health Department in Helena, Montana, wanted to become involved in helping to make Helena a less motorized community.

The department is focusing on three specific strategies: promoting more walking by children; increasing safe and inviting walking and biking opportunities for people of all ages; and creating guidelines that require non-motorized transportation facilities in new developments.

Promoting children's walking

In response to the death of an 18-year-old boy who was killed in an unlit crosswalk in front of Four Georgians School in 1998, the city-county health department joined the Montana Department of Public Health and Human Services (DPHHS), the Montana Department of Transportation, the Helena Police Department, the Helena Fire Department, BlueCross BlueShield of Montana, and the nonprofit Alternative Energy Resources Organization to sponsor Walk Our Children to School Day (an international event that promotes walking and biking to school).

Helena's efforts to increase the amount children walk to school have been generally quite successful. Organizers have succeeded in increasing school participation in the walk from two Helena elementary schools in 2000 to ten last year, with approximately 1,200 students participating in 2004. The city-county health department's role in the event consists of handling the publicity. The department's public information specialist writes and distributes news releases, makes appearances on local talk radio shows, and works with the public information officer from DPHHS to promote the event statewide.

Another goal of the walk-to-school event is to promote children's walking and biking safety. Children are some of the most vulnerable pedestrians and bicycle riders. According to the AAA Foundation for Traffic Safety, children don't see traffic the way adults do. Younger children, in particular, don't have the ability to deal with moving vehicles; they have poor directional hearing, narrow peripheral vision, and they can't judge speed and distance the way older children and adults can.

Increasing safe walking and biking opportunities

The physical environment affects how much residents can and will walk. In communities with suburban sprawl, with few sidewalks, and inacces-

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See resources for this article online at www.nwcphp.org/nph/.

sible pedestrian destinations such as large malls and big box stores surrounded by large parking lots, it can be difficult to find safe, interesting places to walk. According to CDC, most communities today were designed to favor one mode of travel—the automobile—and usually don't have many sidewalks or bicycle facilities. Building roads, schools, and shopping centers that are accessible only by car often prevents people from safely walking around town, riding bicycles, or playing outdoors.

In 2001, three schools in Helena—Four Georgians, Smith, and C.R. Anderson—used Walk Our Children to School Day as a way to call citizens' attention specifically to the lack of sidewalks in their neighborhoods and to community walkability in general. As a result of the attention the walk garners every year, the city has installed thermo-plastic crosswalks (long-lasting crosswalks that are embedded in the pavement) and green neon signs in front of elementary schools, and the school district has conducted workshops on safe biking. Several off-street bike trails have also been built connecting subdivisions and neighborhoods to two schools in the Helena Valley.

Creating transportation guidelines

To prevent sidewalks and bike paths from being built haphazardly, city and county officials are working to determine what kinds of non-motorized facilities will be built in the future. Currently, the city and county are revising the Greater Helena Area Transportation Plan, which contains a chapter on non-motorized transportation focused on building a bicycle network for commuters, recreational users, and children.

The non-motorized transportation plan was developed over the past few years through many hours of citizen and agency involvement. The city-county health department's involvement in the non-motorized plan grew out of its participation with the walk-to-school event and is seen as a continuation of its obesity-prevention efforts.

To increase non-motorized transportation, the plan emphasizes the three Es: engineering, enforcement, and education. Engineering refers to installing pedestrian and bicycle facilities whenever construction is slated to occur if those facilities make sense in a particular location. Enforcement involves ensuring that drivers, pedestrians, and cyclists obey traffic laws, including yielding to pedestrians in crosswalks and shoveling snow from driveways and sidewalks in a timely manner. Education refers to increasing public awareness about the benefits of non-motorized transportation, including health, fitness, and air quality. The city and county are expected to incorporate the non-motorized chapter into the greater transportation plan sometime in 2005.

As Helena's experience suggests, when public health professionals participate in land use and transportation planning, their input can help create non-motorized transportation options that get people out of their cars and into their walking shoes.

The Helena area is no different than many towns and cities across the country. Traditional neighborhoods with boulevard sidewalks exist in the city's core, but the farther one goes beyond that point, the more one encounters subdivisions and commercial development that require the use of a private vehicle. And, like many small towns, there is no meaningful public transit system. It's no wonder that the United States has become a nation of drivers, as Frumkin has written. It remains to be seen how effective the health department's efforts will be in helping Helena become a more walkable community, but one thing is certain: The human health implications of sprawl are many.

Effects of Land Use and Transportation on Health

Less Physical Activity. Children between the ages of 5 and 15 do not walk or ride their bicycles as much as they used to (40 percent less from 1977 to 1995). One-fourth of all trips people make are one mile or less, but three-fourths of these short trips are made by car. Source: *Nationwide Personal Transportation Survey.* US Dept. of Transportation, Federal Highway Administration, Research and Technical Support Center. 1997.

Air Pollution. Not only are there more cars on the road, but sprawl forces people to drive each car farther, increasing congestion and emissions of greenhouse gases and the precursors to ground level ozone (smog). Source: U.S. Environmental Protection Agency (EPA), www.epa.gov/region5/sue/whyconcern.htm.

Nationwide, "mobile sources" (mostly cars and trucks) account for approximately 30 percent of emissions of oxides of nitrogen and 30 percent of hydrocarbon emissions. Source: EPA. National Emission Inventory. Air pollutant emission trends. Current emissions trend summaries (cited 2002 July 30). www.epa.gov/ttn/chief/trends/index.html, cited in "Urban Sprawl and Public Health." Howard Frumkin, MD, DrPH. *Public Health Reports*. May–June 2002. Vol. 117.

Ozone is an airways irritant. Higher ozone levels are associated with higher incidence and severity of respiratory symptoms, worse lung function, more emergency room visits and hospitalizations, more medication use, and more absenteeism from school and work. Source: Committee of the Environmental and Occupational Health Assembly, American Thoracic Society. Health effects of outdoor air pollution. *Am J Respir Crit Care Med* 1996; 153:3-50, 477-98, cited in "Urban Sprawl and Public Health." Howard Frumkin.

Cancer and Mortality. The effects of long-term exposure to combustion-related fine particulates in air pollution were studied in 500,000 U.S. adults, as part of a study conducted by the American Cancer Society. Fine particulate pollution was associated with both lung cancer and cardiopulmonary mortality. Source: Pope CA, Burnett R, Thurston GD, Thun MJ, Calle EE, Krewski D, Godleski J. Cardiovascular Mortality and Long-Term Exposure to Particulate Air Pollution: Epidemiological Evidence of General Pathophysiological Pathways of Disease. Circulation 109(1):71-77.

Diabetes, Obesity, and Hypertension. It is estimated that obesity and its concomitant health problems, such as hypertension, diabetes, heart disease, and osteoarthritis, rival tobacco in their effect on health. It has been suggested that the trend of living in sprawling suburbs with design features that discourage walking and biking and encourage residents to drive more, may be a contributing factor to the epidemic of obesity. Source: *Report on Public Health and Urban Sprawl in Ontario: A Review of the Pertinent Literature*. Environmental Health Committee, Ontario College of Family Physicians. Authors: Riina Bray BASc, MSc, MD, CCFP; Catherine Vakil MD, CCFP; David Elliott, PhD. January 2005. ■

More Daylight Means Healthier Environments

In the last 50 years we have industrialized many landscapes to maximize production with the lowest investment of time, resources, and labor. The educational landscape is much the same. In many modern schools, we have turned classrooms into windowless sweatshops.

Joel Loveland

Mies van der Rohe's classic call to action, "Less is more," has meant less fresh air, less natural light, and less building in many dimensions. Our children spend nearly 20 percent of their lives between the ages of 5 and 18 in school buildings that have been cost-engineered within an inch of their lives. Gone are high ceilings and great daylight, exchanged for generic shoebox classrooms with an 8' ceiling and, if students are lucky, a single small window. Especially in the average large high school today, it's not at all unusual to find "land-locked" classrooms without a window, buried deep within the core of the school. Who needs a window, say "value" engineers, when we have electric light, forced air, and fire-rated exiting pathways? These modern buildings are supposed to offer more efficiency and lower capital cost with a better building value. But what values are we accepting in the value equation? And most importantly, how do these designs affect the education, health, and well-being of our children and the teachers who spend their workdays in these buildings?

In the late 1990s, a massive change began in our understanding of what makes for a good learning environment. (*See sidebar for a brief history of classroom design.*) Lisa Heschong, with the initial support of the Pacific Gas and Electric Company of San Francisco, started to look at what physical characteristics of the classroom had the greatest influence on learning. Up until this time, laboratory research on such concerns as visibility and glare were the driving force behind the setting of building design standards.

Heschong, an architect, researcher, author, and teacher, used epidemiological techniques to study the effects of daylight on children's learning. She used standardized test scores for children in specific school populations, correlated to the demographics of the kids, their teachers, and the physical characteristics of their classrooms.

The Heschong Mahone Group (HMG) looked at 21,000 kids in 1,000 classrooms in three school districts in the western United States: San Juan Capistrano, California, Seattle, Washington, and Fort Collins, Colorado. (Reports of their work and the follow-up peer-group re-analysis by the State of California PIER Project are available at www.H-M-G.com.) Well daylighted classrooms in the 1999 study population correlated to a 20 percent increase in student math scores and a

School Design History in Brief

In the United States, our first public, or "common," schools were created in the late eighteenth century. These schools were sometimes in new buildings, but often were placed in storerooms just off the shop floor. By the late nineteenth century, public education had taken a firm hold across the US. One of Seattle's first public school buildings, BF Day Elementary School, constructed in 1896 and still in use today, best represents the nineteenth century design. It has small classrooms of 700–900 sq. ft. with tall ceilings, upwards of 13' high, and windows to match. The classrooms are shallow, no more than 26' deep from the window wall and wide across the building façade so as to gather the most light and fresh air.

With the post-World War II baby boom, design and construction of schools also boomed. The new schools were mostly suburban and one-story, since they had more room to sprawl. Because they were one-story, they tended to have much lower ceilings with daylight coming from one side or through skylights or clerestories. Daylight and natural ventilation were still the first items for consideration in these designs, but the late 1950s began to see the broad application of more efficient fluorescent lighting, fan-forced ventilation, and air conditioning. With the first highly engineered and detailed lighting and indoor air quality standards set in the late 1950s and 1960s, daylight and natural ventilation were deemed too uncontrollable and unreliable. The window was seen as of no value to the classroom. The last nail in the coffin of the window was the energy crisis of the early 1970s. Those schools that hadn't adopted the open classroom of the 1960s and eliminated most, if not all, windows now boarded up their windows to reduce their use of energy for heating.

By the late 1970s the typical classroom had gone from 24' deep and 32' feet wide across the window wall to 32' deep and 30' wide. The exterior wall was mainly solid, with only 5 percent of its surface glazed with an inoperable window, in contrast to the classroom of 1900, where as much as 50 percent of the wall in the shallow and wide classrooms windowed! ■

26 percent increase in reading scores over non-daylighted classrooms. This epidemiological correlation was built with 99.8 percent certainty. A 2002 re-analysis of this work by the California PIER project confirmed the 1999 results. Since 2002, the HMG has reported other similar work in other school districts that correlates about half of this increase in test scores to access to daylight and half to the access to views of nature.

The difficulty in such epidemiological work is the detection of the mechanism for the difference in observed behavior. What actually caused the increase in test scores? The idiosyncratic nature of the activities in buildings complicates an understanding of the effects of the complex variables of the built environment on our behavior or performance.

UW BetterBricks Daylighting Lab

Riverview Elementary School, in Lebanon, Oregon, is an example of the new direction school building design is taking. Large, operable windows allow both daylight and fresh air into all parts of the classroom.

Bringing daylight back into schools

In many districts, such as in Spokane, Washington, the building process has started with community input on the priorities for building values. Fresh air and daylight rise consistently to the top of the list. In California, schools must be certified as meeting the Collaborative for High-Performance Schools (CHPS) criteria (see www.chps.org). In Washington, the state has invested in an elective set of high-performance criteria titled the Washington Sustainable Schools Protocol.

With Heschong's ongoing epidemiological research in human performance as related to building design, these new research efforts have been the major stimulus to the setting of new "high-performance" building and school design standards in the Pacific Northwest. This advanced work in building performance can be seen in the integrated high-performance designs of such completed schools as Ashcreek Middle School in Independence, Dalles Middle School in The Dalles, and Riverview Elementary School in Lebanon, Oregon. The three Oregon schools, designed by Heinz Rudolf, a partner at BOORA Architects of Portland, were completed in 2002 and 2003 for standard construction budgets for Oregon public elementary and middle schools.

The high-performance classrooms of the twenty-first century are illuminated with diffuse and well-balanced daylight and need no electric light for more than half of the school year. Many of these schools use their daylighting windows for natural ventilation, thus eliminating the requirement for refrigerated air conditioning.

School building design has arrived at a moment in time where less does equal more. Less electricity used for lighting and air conditioning means students of the Pacific Northwest will feel healthier and learn more, while districts use less electricity.

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Lighting Commercial Buildings

Research efforts in commercial settings have linked large increases in retail sales to daylight from skylights. Major retailers such as Wal-Mart and Albertsons have designed their national prototype stores to consider daylight as their primary source of ambient illumination during daylight operating hours. By extension of this research, designers of other buildings, such as hospitals, senior housing, health care, and offices, are adjusting their designs to reflect the importance of daylight and views to the outdoors.

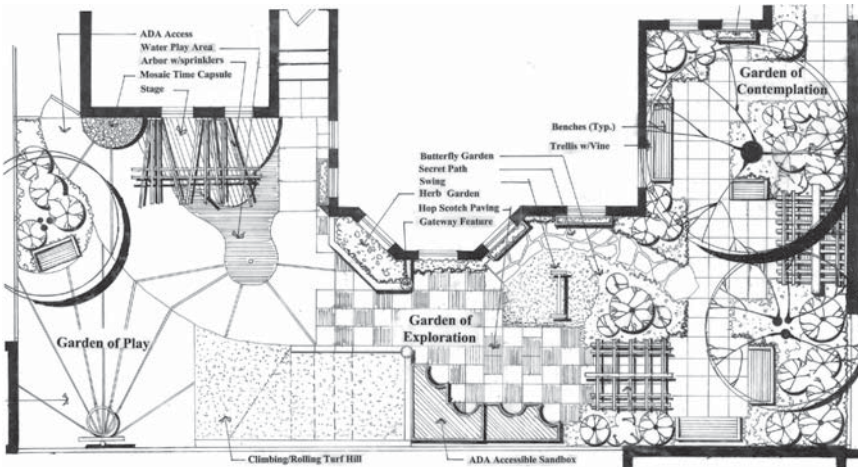
The non-vision effects of light and daylight, in particular, are drawing increasing attention. It has long been known that the window-side patient in a two-patient hospital room tends to improve more quickly. More recently the *New York Times* reported that the neonatal intensive care unit at Duke University had experimented with brighter illumination during the day, when the babies' mothers would have been exposed to higher daylight illumination. This circadian simulation was found to be associated with quicker growth and earlier release than non-circadian-stimulated babies. Dr. Roger Ulrich, director of the Center for Health Systems and Design at Texas A&M University, has linked patient recovery rates from surgery to daylight and views from hospital recovery room windows. Similar associations have been discovered in Alzheimer's patient care facilities. Again, getting patients exposed to daylight (or illumination using daylight spectrum) during critical daytime periods was found to better orient the patients and allow for less wake-interrupted sleep at night. In the last year an elderly housing facility was built in the Portland area with careful consideration of these daylighting and circadian rhythm concerns. Dayrooms where residents can be exposed to serotonin-stimulating "showers" of daylight illumination in the winter months were built as an integrated part of the facility.

The BetterBricks program of the Northwest Energy Efficiency Alliance, a nonprofit agency funded by Pacific Northwest region electrical utilities and public and private agencies, is at the forefront of supporting these new integrated building design concepts, since they also conserve energy. The Alliance's BetterBricks Design Labs in Seattle, Portland, Eugene, Spokane, Boise, and Bozeman are tasked with supporting the implementation of these integrated design concepts in commercial and institutional buildings throughout the Pacific Northwest. ■

The Healing Nature of Landscapes

Daniel Winterbottom

Incarnation Children's Center (ICC), housed in a former convent in New York City, appears indistinguishable, on the outside, from the nineteenth century apartment buildings surrounding it. Inside, its uniqueness is quickly apparent as children, many undersized and frail, using walkers or wheelchairs, surround a visitor, bubbling over with questions or shyly avoiding eye contact. All are curious about newcomers, and soon seek both a hug and a story. ICC is a refuge for 21 children, from 18 months to 15 years of age, who live there at the advanced stage of their illness.



The play garden at Incarnation Children's Center.

Founded in 1988, ICC was the first foster home for children with pediatric HIV/AIDS. In 1988 HIV/AIDS was emerging as a major public health issue, but the particular issues of children with HIV/AIDS remained little understood for another decade. Due, in part, to the intense stigma associated with the illness, many children with HIV/AIDS feel uncomfortable in public parks, playgrounds, community centers, and schools. The building, converted into medical facilities, nurseries, offices, and residential accommodations, is often crowded, offering few quiet, private spaces for family visits or contemplation. Although less institutional than many care facilities, ICC feels more like a group home than a residence, and the children are often reluctant to invite friends or family to the facility. With strong support from ICC staff, the Diocese of New York, and Columbia Presbyterian Pediatric Hospital, the University of Washington's Department of Landscape Architecture Design/Build Program was invited by ICC to design and build a series of gardens where residents could explore, learn, and play. The gardens would create a "home" environment and provide a natural, nurturing refuge.

Gardens as therapy

Healing or therapeutic gardens occur in many cultures, including Islamic, Christian, and Buddhist. In Western culture they first appeared as monastery gardens. In the late nineteenth century, the "hospital in a park" became popular. McLean Hospital in Massachusetts and the Menniger Clinic in Kansas are surviving examples. In the "hospital in a park," patients, assisted by staff, were encouraged to explore picturesque grounds, planted with large trees, open swaths of lawn, and perennial borders. Later, at the turn of the century, as tuberculosis became rampant, patients were brought out onto rooftop patio spaces, based on the belief that fresh air would cure patients of the illness. With technological and pharmacological advances during the mid-twentieth century, medical care focused more on cure than care, and at this point, the corporate model of hospital design emerged. Efficiency was the goal, and buildings were stacked vertically, removing patients from any physical interaction with nature.

Research on the benefits of nature interactions for those affected by a serious illness is limited, but a growing body of work affirms these interactions can be beneficial. Research has shown that interactions with nature reduce stress, and lowering stress is known to help those facing a serious medical condition with long hospital stays. A 1984 study by Professor Roger Ulrick, "View Through a Window May Influence Recovery from Surgery," found that recovering surgery patients who have a view of nature required less pain medication and had shorter hospital stays than those without a view.

Designers in health care settings are creating gardens for physical rehabilitation. In this model, patients use stairs, walking paths, and specially designed railings and paving surfaces in a garden setting instead of, or as an adjunct to, the utilitarian gym room.

Design process used at ICC

Landscape architects understand that their gardens can humanize health care environments, which are usually dominated by medical equipment and artificial lighting and have few places for gathering in private. Although highly skilled at designing and constructing these gardens, most landscape professionals are not trained to understand the complexities of health care nor the needs of those suffering from serious illnesses. Given the range of treatments and care and the unpre-

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dictability with which patients might experience many illnesses, landscape architects need to use a participatory design process.

Many children at ICC have autism or cognitive disabilities that limit their verbal communication. Some are too young or lack the attention span to fully participate in the design process, so the engagement with residents was limited. Since the staff and medical personnel had years of experience working with the residents, they were the central resource. By engaging staff in the design process, the design team understood how the children were cognitively and physiologically challenged by AIDS. Staff psychologists explained how the separation from family affected the children, and the medical staff described some of the children's common health risks. Other staff offered particular garden elements, plants, or activities that should be avoided along with those determined to be beneficial. From this process several goals emerged.

• **Create spaces with diversity of character and function.** The children at ICC have a broad range of abilities. Their daily activities are dominated by a regimen of medical appointments, rehabilitation and counseling sessions, and medicine consumption. A variety of spaces would enable residents to choose activities compatible with their physical and cognitive abilities. The freedom to choose enhances their sense of empowerment and their accomplishments, strengthens their sense of self-esteem, and helps alleviate the feelings of powerlessness common among patients.

• **Create identifiable transitions.** The spaces designed for ICC vary in character and type of activity. To inform and remind users of these differences, transitions would be marked by gateways, sculptures, or other features. These markers help residents understand that their behaviors may also need to change as they move from space to space.

• **Create a "home" landscape for a diverse "family."** Because residents had for the most part been taken from their natural home, and, for many, ICC would become their home, the landscape should represent one of domesticity.

• **Provide places that nurture both social interactions and connections with nature.** At ICC such places might include quiet spaces for conversation, rest, and observation. Areas might offer opportunities for hands-on gardening, performance, water play, and nature interactions. Activities range from meditative to physically active, as children under medication need to burn off excess energy and calm themselves through bouts of anxiety or hyperactivity.

The design team also spent considerable time observing the ICC residents in their daily activities and engaging them to gain their trust. This direct input enhanced the designers' understanding of the residents' concerns, needs and aspirations. By observing the social dynamics daily, they gained deeper insight into effects of the disease. The design team then developed multiple design options and presented them to the residents and staff for feedback. To encourage resident participation, students worked with the children, explaining the designs and helping the children articulate their reactions. ICC reviewers chose various elements from several of the designs. The design team then integrated these elements and produced a final design.

Engagement with the users continued through the construction process. This flexibility is unique to the design-build model. The team periodically considered proportion, scale, and location of elements during construction and adjusted the design to best meet the users' needs. For example, residents tested a wheelchair-accessible sand play table and found it to be too high, so the legs were trimmed. Through the inclusion of staff, administration, and residents in the design and construction process, stronger connections are made between users and the garden, insuring long-term engagement and stewardship.

Using the gardens

The three gardens at ICC, the Garden of Contemplation, Garden of Exploration, and Garden of Recreation, succeeded in creating a home-like environment that offers diverse experiences. The vegetated spaces in the Garden of Contemplation allow residents to visit with friends and family with a degree of privacy that supports relaxed exchanges, storytelling, and the intimate expression of deeply held emotions. The Garden of Exploration, with its butterfly garden and mystery walk, entices residents to discover the wonders of the natural world and, in the process, strengthen their fragile bodies. Planting boxes and a sand play table develop

Continued on next page.

Public Health and Landscapes

Nature has played and continues to play a critical role in public health. Frederick Law Olmstead, the distinguished nineteenth century landscape architect and designer of New York's Central Park, believed that urban park systems were the "green lungs" of the city. The Emerald Necklace park system in Boston, also designed by Olmstead, provides recreational opportunities in a natural landscape, enabling urban dwellers to improve both health and spirit. Although revolutionary in Olmstead's day, these same principles are being applied to address current public health issues.

With rising levels of childhood obesity, the National Science Foundation is funding the community development of regional trail systems to encourage children to walk/bike to school and play outdoors in their free time. Urban greening is a strategy employed by public health officials and planners to address health problems common among impoverished urban populations. Research indicates that tree and shrub plantings can reduce some of the debilitating effects of poor air quality for those suffering from asthma, lung problems, and heart disease. The plantings filter out and screen particulates and also absorb carbon dioxide and release oxygen. Several studies also indicate that green environments have a calming effect on users, reduce stresses associated with urban environments, and provide beneficial consequences as chronic stress is lowered. Increased tree plantings in housing projects in Chicago, for example, have been shown to improve the sense of well-being, increase social interactions, and slightly reduce crime.

On a smaller scale, gardens are employed in an effort to increase the nutritional intake for urban populations living below the poverty level. The schoolyard garden initiative promotes plant cultivation as a part of the school curriculum. Science and nutrition teachers use the gardens as outdoor classrooms educating children on horticultural stewardship and advocating the nutritional and health benefits of gardening. Community gardens, community-supported agriculture programs, and green markets are other strategies commonly employed to improve community health and nutrition. ■

Continued from p. 19—Healing Nature

social skills as residents learn to work cooperatively. In the Garden of Recreation, many elements found in traditional play parks are brought into the backyard. Residents now invite friends to play basketball, perform karaoke on a stage, engage in water play, or roll down the grassy hill. Most importantly, the gardens enable the residents to be children, who despite their difficult situations, regimen of medicines and examinations, separation from family, and the anxiety of facing death, can laugh, play, hope, and for the moment, forget. The gardens at ICC won't cure any child of AIDS, and therefore the term healing garden may be misleading. They can, however, relieve some of the effects of the illness, in particular the emotional pain of being ostracized. Play activities in the gardens help to heal the pain of a childhood lost to illness.

Final thoughts

The garden, modest in cost when compared to the budgets of most buildings, offers users a transformative experience at a time of great need. Beyond programmed activities, the garden at ICC offers a counterpoint to the institutional environment inside the building. The effects of displacement, compounded by the illness, result in a high degree of alienation, anxiety, lack of self-esteem, and depression among the residents. Each illness has differing effects on patients, and the users of medical facilities include not only those who are affected by the illness but also the families, care providers, and staff. Consequently, the landscape should be considered a healing campus, with a great variety of gardens and diversity of spaces in which the differing constituents will find a garden that best meets their needs. As nurturing natural environments become more common in medical facilities, they will support and expand the essential care component of medical practice.

The use of environmental design to confront a broad range of public health issues from physical health (obesity and poor body development) to mental health issues (autism and lack of social development) are just beginning to be explored. The use of environmental design, especially nature, as a catalyst to engage children in meaningful and healthy ways is being considered by a wide spectrum of people involved in or concerned with public health. Some examples include schoolyard gardens, environmental learning centers, gardens in juvenile detention centers, mental health facilities and rehab clinics. With the growing concern over the declining condition of children's health, environmental design as a new strategy for health improvement should be further explored.

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Continued from p. 11—Fat Neighborhoods

may help explain why higher obesity rates are observed among food-insecure, lower-income, and some minority groups. Higher rates of obesity and type 2 diabetes are linked not only to individual measures of low socioeconomic position (SEP), but also to area-based indices of neighborhood deprivation and poverty. However, few studies have focused on the geographic distribution of obesity rates. Data are lacking on the geographic and economic disparities in retail food access or on the effect of SEP variables on diet quality, dietary energy density, and energy cost. Obesity researchers have yet to take full advantage of the new GIS-based approaches to the study of the food environment.

The UW researchers plan to inventory the geographic distribution of food environments at a very fine scale and to capture the range of quality and costs of the food supply available in King County. These environmental data will allow detailed analyses and modeling of eating behavior and obesity rates in relation to access to different types of foods. The use of parcel-level GIS data will help focus on lower-income populations with lower mobility rates (the old and the young, as well as those with fewer cars), who must rely on the food supply close to their homes.

This collaboration between nutritionists, public health scientists, and architects will identify those features of the built environment that are linked to heightened obesity risk. One goal is to develop new ways to audit or assess the neighborhood food environment. The inventory instrument would complement the two audit instruments for scoring neighborhood walkability already developed by the WBC project. One, the Survey Audit, is a simple tool that can be used by non-experts. The other, the GIS Inventory Audit, provides a more precise and unobtrusive approach to measuring walkability. Such instruments have the potential to serve as part of surveillance systems monitoring environmental support of physical activity and healthy diet availability.

The use of GIS offers many exciting ways to map the health-enhancing dimensions of neighborhoods. Surface modeling functions can create continuous surfaces showing the spatial patterns of likelihood of walking or accessing healthy foods. The mapping process can also simulate the effects of "before and after" intervention scenarios on the probability of supporting healthy behaviors, for particular segments of or for the general population. These tools can assist Public Health - Seattle & King County and local health departments in identifying target neighborhoods for investment and intervention.

Annotated Resources on...

The Built Environment and Health

Laura Larsson and Yuki Durham

Built Environment, Activity, and Health

Critical Assessment of the Literature on the Relationships Among Transportation, Land Use, and Physical Activity. Susan Handy. TRB Special Report 282. trb.org/downloads/sr282papers/sr282Handy.pdf

This report provides a theoretical framework for discussion and to review and evaluate empirical evidence regarding the relationship between the built environment and physical activity behaviors. Handy describes the studies that have been done and makes recommendations regarding the problems she found in examining current research into the built environment and physical activity.

Creating a Healthy Environment: The Impact of the Built Environment on Public Health. Richard J. Jackson, MD, MPH, and Chris Kochtitzky, MSP. www.sprawlwatch.org/health.pdf

Jackson and Kochtitzky outline the importance of exercise on health and in the reduction of obesity. They describe the housing characteristics, land use patterns, transportation choices, or architectural or urban design decisions as potential health hazards and make recommendations for ways public health professionals can get involved in supporting research into the effect of changes in the built environment on health.

Special Report: Measuring the Health Effects of Sprawl. Barbara A. McCann and Reid Ewing. Smart Growth America. 2003. www.smartgrowthamerica.org/report/HealthSprawl8.03.pdf

In the first such national study, health researchers "found that people who live in counties marked by sprawl-style development tend to weigh more, are more likely to be obese, and are more likely to suffer from high blood pressure." The report provides an executive summary, an introduction to the problem, a methodology section, and an extensive findings section that discusses how sprawl relates to weight, physical activity, and chronic disease. It also discusses the need for further research and makes recommendations for developers to consider health when planning communities.

Does the Built Environment Influence Physical Activity: Examining the Evidence. Report Summary. Transportation Research Board, Institute of Medicine of the National Academies. January 2005. gulliver.trb.org/publications/sr/sr282summary.pdf

The report reviews the broad trends affecting the relationships among physical activity, health, transportation, and land use; summarizes what is known about these relationships, including the strength and magnitude of any causal connections; examines implications for policy; and recommends priorities for future research.

How Land Use and Transportation Systems Impact Public Health: A Literature Review of the Relationship Between Physical Activity and Built Form. Lawrence D. Frank, PhD, and Peter Engelke. ACES: Active Community Environments Initiative Working Paper #1. www.cdc.gov/nccdphp/dnpa/pdf/aces-workingpaper1.pdf

This lengthy document reviews the literature broadly and offers the reader conclusions drawn from this literature review. The document includes an executive summary.

Public Health and the Built Environment: Historical, Empirical, and Theoretical Foundations for an Expanded Role. Wendy C. Perdue, Lawrence O. Gostin, Lesley Stone. *Journal of Law, Medicine & Ethics,* Winter 2003 v.31(4) p.557 (8358 words). Special issue on Emerging Issues in Population Health: National and Global Perspectives. www.aslme.org/aslmesecure/shop/show_product.php?prod_id=178

This article argues that there is a demonstrable connection between public health and the built environment and as a result of this connection, government has and continues to intervene in the built environment. It concludes that such intervention is appropriate and supported by theory as well as historical practice and empirical evidence.

Healing Landscapes

Therapeutic Landscapes Database. www.healinglandscapes.org

The Therapeutic Landscapes Resource Center is a not-for-profit organization dedicated to providing information to the public about restorative landscapes, healing gardens, wellness gardens, and other research-based health care design. The database provides Web-based information and creates a forum for discussion.

Casitas: Gardens of Reclamation. Daniel Winterbottom. Environmental Design Research Association Conference Proceedings, April 1998. www.caup.washington.edu/larch/people/faculty/dan/publications.php

This article describes the community garden spaces that have been created by individuals and groups on city-owned land or on vacant private property. Combining a small structure, landscape such as garden plots, open space, and pathways, as well as art, the casitas form a social focus for the community.

Daylight

A Literature Review of the Effects of Natural Light on Building Occupants. L. Edwards and P. Torcellini, Golden, Colorado: National Renewable Energy Laboratory, July 2002. NREL/TP-550-30769 www.ornl.gov/sci/hybridlighting/pdfs/NREL_TP_550_30769.pdf

This technical report discusses the effects of light on the body and goes into detail about daylighting in offices, schools, retail establishments, health care facilities, and industrial environments. The conclusions state, "With properly installed and maintained daylighting systems, natural light has proved to be beneficial for the health, productivity, and safety of building occupants."

More Resources Online

See more annotated resources online at www.nwcphp.org/nph/f2004/.

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State Associations in the Region Reflect Public Health Today

Jennifer H. Lee

A small volunteer army is at work in the Northwest to promote and protect public health, but their work goes largely unnoticed. With more than 1,200 members combined in the six-state Northwest region, the state public health associations enable public health professionals to pool their resources, expertise, connections, and experience, to promote a unified voice for public health. The diversity among state associations reflects the diversity among the six states. But in the changing character of their memberships and organizations, as well as in the challenges they face, these associations also mirror the larger character of public health in America.

History

Although state associations are often known simply as affiliates of the national American Public Health Association (APHA), they have had a long, rich history. State associations were independently established by public health workers. Affiliation with APHA, which requires that at least half of the state association's members also be members of the national association, came later. By the 1920s, volunteers established associations in Montana and Wyoming. As early as 1992, a Wyoming State Board of Health report described the state's association as "doing more good health work than any other volunteer organization within the state." By 1944, all but Alaska were home to state associations. Six decades after the formation of the first state association in the region, in Montana, the Alaska Public Health Association (ALPHA) was finally created.

Current conditions

Much has changed in the field of public health in the 87 years since the formation of the first state association in the region. In past decades, public health associations were characterized by close ties to government—with funding and members coming predominantly from state and county health departments. In some states, the associations were the primary source of continuing education opportunities. Steady government support enabled a large proportion of public health workers to attend annual education conferences and other activities supported by the state associations.

More recently, the role of government in supporting association activities has diminished, largely due to state budget cuts. "The organization really suffered," said Lee Hannah, current president of the Idaho Public Health Association, about the effects on the state association of cuts in the state's health budget. However, the experience forced the organization to become less dependent on health department funding. "Now, we're feeling much better about the stability of the organization," Hannah said.

Like Idaho, the Montana and Oregon state associations have, or are in the process of, restructuring and reinventing themselves to stay relevant—and solvent—in the changing environment. This has included focusing on membership renewal and recruitment efforts and streamlining operations. For the Oregon Public Health Association, this has meant canceling its annual program and conference after several years of declining enrollment and interest. Other associations are turning to partnerships with related organizations—such as state environmental health associations—within their borders.

Collaborations across state borders have also become important. For example, in Wyoming, a joint conference held with the Colorado Public Health Association in 2004 was not only well accepted by participants (100 percent of the Wyoming respondents to the online conference evaluation liked the joint format) but also helped increase the Wyoming Public Health Association's membership. Similar joint activities between the two states are expected in the future.

Membership

The changes in the public health workforce are reflected in the increasing involvement in the state associations of private clinicians, environmental health professionals, and other groups that were not traditionally recognized as part of the public health workforce. For example, post-9/11 membership rosters boast many bioterrorism and other emergency preparedness and response workers.

Changes in membership characteristics are often the result of deliberate efforts by the state associations. "There is an increasing recognition that public health is greater than just government employees," said Betty Bekemeier, Region IV co-vice president for the Washington State Public Health Association. "We're trying to mirror that and are intentionally reaching out to other groups."

These efforts to broaden association memberships appear to be working. After a period of low association membership in the 1990s, member-

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ships are steadily increasing for several associations. For some state associations, the growth is due in large part to the increase in student members as a result of reduced membership fees and scholarships for student members. In Washington, a combination of renewed recruiting on campus by a student representative and a waiver of the membership fee contributed to the doubling of student members to more than 60 in the past year alone.

The state public health associations pride themselves in being "member-driven," with members helping define the priorities and direction of the organization. Association members "have such incredible expertise," said Marie Lavigne, executive director of the Alaska Public Health Association. "I think we're all a great untapped resource."

Activities

Central to the state associations' activities is an annual meeting or conference. These three-to-four-day meetings draw a majority of the association members for sessions on a variety of public health topics and to take action on association business. For Wyoming and Idaho, the topical sessions are also the primary continuing education activity provided by the associations. By drawing together public health professionals, these annual events have been successful in increasing both the visibility of the associations and the number of members.

Advocacy activities have also been a high priority for many state public health associations. These activities range from health promotion (giving the governor of Wyoming a pair of jogging shoes in order to promote healthy living) to policy promotion (direct lobbying of legislators). Resolutions approved by the associations have been used to educate the public, the press, and lawmakers on issues ranging from fluoridation of water to banning smoking in public places. Language from these resolutions has even become part of legislation passed by some state legislatures. APHA recognized the advocacy efforts of the Washington State Public Health Association when it recognized it as Affiliate of the Year in 2004.

Other state public health association activities include events for the annual national public health week and publication of newsletters for members.

Challenges

Although terrorism preparedness funding has increased the money available for more public health professionals to participate in the associations' activities, much of the funding available to the state associations is restricted. Little or no funding is available to pay salaries, rent, or the related costs of running an office.

"The more exciting our organization gets, the harder it is for us," said Bekemeier, referring to the executive board members of the state associations, who serve on a volunteer basis. "It's just hard," said Lavigne, "when you're asking everyone to do things for free."

For state associations, this arrangement has led to an "organization in a shoebox syndrome," in which the organization changes with each shift in leadership. As of 2005, three states—Alaska, Oregon, and Washington—had at least a part-time executive director on staff. However, none of the state associations in the Northwest region have full-time staff members. The one-year terms served by executive board presidents also make achieving continuity in the associations challenging.

Some of these difficulties have been acknowledged by APHA, which is undergoing its own structural changes and budget constraints. As affiliates of APHA, state associations receive some level of organizational support and small grants from the national organization. Alaska, Idaho, Oregon, and Washington hope to maximize APHA support in their effort to develop the nation's first regional APHA affiliate infrastructure.

Future outlook

Out of necessity, the region's state public health associations are turning to more creative strategies to continue and expand their activities to promote public health. Despite the budget and infrastructure constraints, they remain committed to educating their members and the public and advocating on behalf of the public's health. As the demand for public health increases, it is unlikely that the work of the state associations will remain unnoticed much longer.

Snapshot of the Regions' State Associations

Alaska
Members: 220
Priorities:
- Provide support for public health law reform bills introduced in Alaska
- Build and sustain a solid funding base for the association

Oregon
Members: 230
Priorities:
- Support legislation related to adolescent risky behavior
- Support the counties in workforce and management development
- Support the new state health director

Idaho
Members: 85
Priorities:
- Secure infrastructure funding to hire an executive director and enhance effectiveness
- Continue expansion of the Idaho EXCITE program (program that teaches schoolteachers how to use public health and epidemiology to make science and math fun)

Washington
Members: 436
Priorities:
- Advocate for a stable, sufficient, equitable, dedicated public health funding source
- Strengthen infrastructure: hire an executive director; re-engage partners in the conference-planning process; and retool the policy development process

Montana
Members: 200
Priorities:
- Increase the visibility of the organization in the state
- Improve the value to the membership

Wyoming
Members: 124
Priorities:
- Enhance and improve communication with and among members
- Increase membership and participation, including student interaction with the association

Publications, Web Sites, and More

CDCynergy-Social Marketing Edition. http://tangibledata.com/CDCynergy-SOC/Drive-thru/index.cfm.
This multimedia CD-ROM tutorial and planning guide for applying social marketing systematically to public health programs was produced by Turning Point. Find other useful Turning Point products at www.turningpointprogram.org.

The Impact of Inequality: How to Make Sick Societies Healthier. Wilkinson, R.G. (2005). New York, New Press.
The author discusses why low social status—being devalued and looked down on—is so stressful and can have devastating effects on people's lives and communities.

Outbreak at WatersEdge. www.mclph.umn.edu/watersedge/index.html.
An interactive game to introduce high school students to the world of public health; developed by the Midwest Center for Life-Long-Learning in Public Health.

Public Heath Management of Disasters: The Practice Guide, Second Edition. Linda Landesman.Available through the APHA. A reference for health professionals responsible for preparing for and responding to disasters, emergency managers, and government officials.

T2B2: Social Marketing on a Shoestring Budget. http://bookstore.phf.org/prod377.htm.
This one-hour video of the December 16, 2004, Third Thursday Breakfast Broadcast discusses how to keep the focus on your "customer" as you look at effective ways to do marketing and publicity on a limited budget.

Find resources at Northwest Public Health Online!

Look for the journal at www.nwcphp.org/nph/, where you'll find back issue archives and resources on topics in this issue as well as from previous issues.

Dates to Note

Send notices for the calendar to the editor at nph@u.washington.edu

May 12–13, 2005. Third Western Maternal and Child Health Epidemiology Conference.
Portland, Oregon.
http://sphcm.washington.edu/mchepi2005

June 8–12, 2005. Pacific Health Summit/Road to Beijing. For health care, industry, and policy leaders, held in conjunction with three US–China Sports Summits prior to the Olympics in China.

206-296-4850.

July 12–16, 2005. ASTHO-NACCHO Joint Conference
Boston, Massachusetts
www.naccho.org or www.astho.org

September 13–15, 2005. Montana Public Health Association Annual Conference and Business Meeting.
West Yellowstone, Montana
http://mtpha.org

September 27–29, 2005. WPHA Annual Education Conference: Partnering to Meet Wyoming's Public Health Challenges. **May 13, 2005:** Abstracts deadline
Cody, Wyoming
outreach.uwyo.edu/conferences/publichealth/

October 10–2, 2005. WSPHA Joint Health Conference.
May 13, 2005: Abstracts deadline.
August 12, 2005: Poster presentation abstracts deadline.
Yakima, Washington
www.wspha.org

November 5–9, 2005. APHA 133rd Annual Meeting.
New Orleans, Louisiana
www.apha.org/meetings/

June 21–24, 2006. Second American Congress of Epidemiology.
Seattle, Washington
http://www.epicongress2006.org/

Northwest Center for Public Health Practice

August 22–26, 2005. 2005 Summer Institute for Public Health Practice
Seattle, Washington

Other Regional Institutes

June 6–11, 2005. Montana Summer Institute for Public Health
Bozeman, Montana
www.dphhs.state.mt.us/hpsd/MPHTI/mphti-summer-institute.htm

November 28–December 2, 2005. Alaska Health Summit.
Anchorage, Alaska
907-332-1030; publichealth@alaska.net

For information about the Summer Institutes:
206-685-2931
nwcphp@u.washigton.edu
www.nwcphp.org
School of Public Health & Community Medicine
University of Washington

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University of Washington

School of Public Health and Community Medicine

The UW School of Public Health and Community Medicine (SPHCM) has five departments–Biostatistics, Environmental Health, Epidemiology, Health Services, and Pathobiology–and multiple interdisciplinary programs, centers, and institutions. The School's emphasis is on strong academic programs in the public health disciplines and extensive multidisciplinary collaboration. The combination of discipline-oriented academic programs, strong interdisciplinary research, and community-based public health activities provides a setting for faculty and students to apply in-depth expertise to important public health problems.

Web site: sphcm.washington.edu/

UW SPHCM Departments

Biostatistics:	ww.biostat.washington.edu/biostat/
Environmental & Occupational Health:	depts.washington.edu/envhlth/
Epidemiology:	depts.washington.edu/epidem
Health Services:	depts.washington.edu/hserv
Pathobiology:	depts.washington.edu/pathobio/

Find UW SPHCM research center Web sites at:
sphcm.washington.edu/research/centers.htm

Northwest Center for Public Health Practice

The Northwest Center for Public Health Practice was established in 1991 to coordinate outreach activities for the UW School of Public Health and Community Medicine. The Center has expanded significantly in response to community needs throughout the Northwest. Its activities are geared to enhancing public health workforce development and practice-based research through partnerships that encompass teaching, research, and service in the public health community.

Web site: www./nwcphp.org/

Regional Contacts

State Departments of Health

Alaska:	www.hss.state.ak.us/dph/
Idaho:	www2.state.id.us/dhw/
Oregon:	www.dhs.state.or.us/
Montana:	www.dphhs.state.mt.us/
Washington:	www.doh.wa.gov/
Wyoming:	wdhfs.state.wy.us/

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