Healthy Places: Exploring the Evidence

Howard Frumkin, MD, MPH, DrPH

*SOME PLACES ARE ROMANTIC,* and some places are depressing. There are places that are confusing, places that are peaceful, places that are frightening, and places that are safe. We like some places better than others. Place matters.

“Sense of place” is a widely used term, and one that remains difficult to define. The antecedent Latin term, *genius loci,* referred not to a place itself but to the guardian divinity of that place. In modern, more secular times, the term connotes the atmosphere of a place, the quality of its environment. This matters because “we recognize that certain localities have an attraction which gives us a certain indefinable sense of well-being and which we want to return to, time and again.”

The features of a place affect us in many ways. We gain spatial orientation—our sense of where we are and how to get where we are going—from place cues. Places can evoke memories, arouse emotions, and excite passions. Some places have spiritual resonance; every religion has sacred places, some natural such as the Himalayas for Buddhists and Hindus and some built such as the great Catholic cathedrals. Legends are grounded in places. Places affect our performance as we work and study. Some places—the social gathering spots that sociologist Ray Oldenburg has called “great good places”—help us connect with other people. Some places, as every vacationer knows, seem to enhance well-being. Some places may even promote good health.

The qualities of a place—and its potential impact on health—represent more than its physical features. Place is also a social construct. As noted by sociologists Kevin Fitzpatrick and Mark LaGory in their discussion of inner-city neighborhoods:

While a place’s character is a function of physical qualities, it is also a product of risks and opportunities, the nature of the social organization attached to the locale, its political, social, and economic relationships with other places, the psychosocial characteristics of the individuals occupying the space, and the local cultural milieu. We learn to act in specific ways in certain places; we don’t get drunk in bars or drink beer and eat popcorn in churches. Hence, our actions in various places are conditioned by a number of factors, all of which may operate on the individual to affect not only their [sic] behavior, but also their [sic] health.

People are heterogeneous and vary in their responses to place. Some like forests, others like deserts, others like manicured back yards, and others like bustling city streets. A person’s “place in the world,” including socioeconomic status, sense of efficacy and opportunity, and cultural heritage, affects the experience of place. As with any medication, infectious exposure, or toxin, a full understanding of the effect of places on people requires an understanding of human variability.

There is every reason for those who care about public health to care about place. If places have such varied and far-reaching effects on people, we would expect some places to surpass others in promoting health and well-being. There is an analogy to medications, for which we consider both efficacy and safety. The field of environmental health has focused much attention on safety, defining the dangers of such places as cliff edges, hazardous waste sites, and lead smelters. But what about efficacy? How do we know what makes a good place?

**THE EVIDENCE OF GOOD PLACES**

There is no shortage of guidelines on how to recognize, design, and build a good place. Where do these guidelines originate? Sources range from personal opinion to empirical data.

First, some guidelines appear as *ex cathedra* pronouncements. Much of the literature in architecture, art, and design exemplifies this approach. Authors declare what is beautiful and what is not, what works well and what does not, and how places ought to be built. It often makes for lively reading, but the reader may wonder: Says who? By what authority? Does this arrangement actually work? Does it make people happier or healthier? How would success be measured?

Second, some guidelines emerge out of deductive inference. The practice of Feng Shui, which begins with general principles of place and deduces specific recommendations about how to design rooms, homes, and other buildings, is an example. So is the current interest in
biophilia, the theory that humans have an “innately emotional affilia-
tion . . . to other living organisms.”13,14 On the basis of this theory, some authors have as-
serted that humans should be
around natural places. While there is a certain amount of em-
pirical evidence for both lines of
thought, many recommendations
have flowed directly from the
conviction that nature contact
must be a good thing—an applica-
tion of general principle to spe-
cific actions.

Third, some guidelines
emerge from qualitative obser-
vational research. Jane Jacobs’
careful scrutiny of Greenwich Village, New York, in the 1940s
and 1950s—walking its streets,
visiting its shops, and lingering
in its cafes—as recorded in her
*Death and Life of Great American
Cities*,15 and William Holly
Whyte’s detailed photography of
the sidewalks, parks, play-
grounds, and streets of New
York a generation later, as de-
scribed in *The Social Life of
Small Urban Spaces*16 and *City:
Rediscovering the Center*,17 are
classic examples. In the manner
of anthropologists, these ob-
servers noted patterns that
seemed to function well, such as
mixed land uses around parks,
and offered them as prescrip-
tions for urban design.

Fourth, empirical studies of
stated preference, published for
the most part in the environ-
mental psychology literature,
have yielded conclusions about
what makes good places. Rachel
and Stephen Kaplan of the Uni-
versity of Michigan, pioneers in
this research, have reviewed
much of their work and that of
others in *The Experience of Na-
ture*18 and *With People in Mind*.19
Respondents are shown photo-
graphs of different kinds of
places and asked to choose
which they prefer. People consist-
tently favor such features as a
balance of trees and pasture,

clear borders, and alluring paths
that curve out of sight. The gen-
eral features of preferred places
that emerge include spatial defi-
nition, coherence, legibility, and
mystery (the promise of learning
more through exploration).

Finally, empirical research has
demonstrated associations be-
tween certain aspects of place
and behavioral and health out-
comes.20 For example, Ulrich21
took advantage of an inadvertent
architectural experiment. On the
surgical floors of a 200-bed sub-
urban Pennsylvania hospital,
some patient rooms faced a
stand of deciduous trees, while
others faced a brick wall. Postop-
erative patients were assigned
especially at random to one or
the other kind of room. Ulrich
reviewed the records of chole-
cystectomy patients over a 10-
year interval. Patients with tree
views had statistically signifi-
cantly shorter hospitalizations
(7.96 days vs 8.70 days), less
need for pain medications, and
fewer negative nurses’ notes
than patients with wall views.
These results suggest that views
trees have a salutary effect and, together with other evi-
dence, support the notion that
trees are part of a “good place.”

Recent empirical studies have
documented small-area geo-
graphic variability in lead tox-
icity,22 childhood asthma,23 disab-
ility among the elderly,24 and
infectious diseases,25,26 among
other outcomes, suggesting a role
for place-based risk factors. Such
findings resonate with modern
medical and public health sci-
ence and offer the prospect of
evidence-based guidelines for
healthy places.

**A PLACE FOR PLACE IN
PUBLIC HEALTH**

The appreciation that place
matters for health is not new.
Twenty-five centuries ago, in
*Airs, Waters, and Places*, Hip-
pocrates helped his readers dis-
tinguish unhealthy places (such
as swamps) from healthy places
(such as sunny, breezy hillsides).
Fredric Law Olmsted, the preem-
inent landscape architect and
planner of the 19th century, ex-
plicitly placed human health at
the heart of his work.27,28 A half
century ago, the American Public
Health Association issued a set of
standards, *Planning the Neighbor-
hood*29 that addressed “the physi-
cal setting in which homes
should be located.” These stan-
dards addressed site selection,
sanitary infrastructure, planting
and landscape design, street lay-
out, lighting, residential density,
and community amenities. More
recently, urban planners have
recognized the implications of
their work for public health,30–33
and the field of medical geogra-
phy has been reinvigorated,34 in-
cluding a new journal, *Health &
Place*.

But today’s challenges are
different from those of the past.
First, the built environment is far
more complex, with more materi-
als used in construction, more
elaborate building systems, and
more intricate urban networks.
In some ways, technical advances
have reduced health risks (indoors
air is now far cleaner than in the
days of wood- and coal-burning
stoves), but new risks need to be
better defined. Second, in a
highly mobile society, traditional
links to place may be weakened.
If a “sense of place” has benefits
for health and well-being, then
understanding how to design for
it may have real public health
value. Third, many more aspects
of design, construction, and
transportation are regulated than
in the past, if not by law then by
voluntary standards. This re-
quires that the evidence of how
places affect health and well-
being be collected and codified
as well. Finally, in an age of elec-
tronic communication, such in-
formation is widely and instanta-
nce accessible. If it is useful
in advancing public health, it can
be useful on a large scale.

Members of the public increas-
ingly value their health; consider
the environment to be an impor-
tant influence on health; and
want to live, work, and play in
healthy environments. Both pro-
essionals and members of the
public increasingly expect health
recommendations to be sup-
ported by solid data. For all of
these reasons, then, public health
needs to refocus on the health
implications of place. We need a
broad, vigorous research agenda,
and we need to apply research
findings to practice.

**RESEARCH ON PLACE
AND HEALTH**

If health research needs to
focus more on place, and if em-
pirical research can profitably be
applied to questions of place and
health, what are the topics to be
investigated? Four aspects of the
built environment offer promis-
ing opportunities for health re-
search: nature contact, buildings,
public spaces, and urban form.

**Nature Contact**

Contact with nature seems to
be good for health, at least for
some people in some circum-
stances.35 As noted earlier, there
is evidence that nature views
speed recovery among postoper-
active patients. In other studies,
contact with nature has been associated with fewer sick call visits among prisoners, improved attention among children with attention deficit disorder, improved self-discipline among inner-city girls, decreased mortality among senior citizens, lower blood pressure and less anxiety among dental patients, and better pain control among bronchoscopy patients. There is evidence that nature contact enhances emotional, cognitive, and values-related development in children, especially during middle childhood and early adolescence. Nature contact has been credited with reducing stress and enhancing work performance.

These findings have important potential implications for the design of the built environment. Should gardens be incorporated into housing? Should windows in offices offer views of trees? Should neighborhood parks include certain kinds of plantings? Should hospitals offer healing gardens to patients and their families? However, before such questions can be answered, research needs to be carried out. This research needs to include careful operational definitions of nature contact, including the kinds of nature (flowers? trees? animals?) and the kinds of contact (viewing? touching? entering?). It needs to include careful operational definitions of health endpoints. It needs careful specification of the populations that are studied, and of personal attributes of study participants, to help clarify individual and group variations in responses to nature contact. It also needs careful control of potential confounders and careful consideration of alternative hypotheses. For example, wilderness experiences may be salutary because of the benefits of companionship, being physically active, taking a vacation, or meeting a challenge, and not because of nature contact per se. As evidence emerges, we will have a clear basis for guidelines on incorporating nature contact into the built environment.

**Buildings**

Building design is a second arena in which health research offers great promise. Recent attention to “sick buildings” has focused attention on indoor air quality as a determinant of health. Indeed, choosing building materials, furnishings, and cleaning agents that minimize indoor emissions; designing and operating effective ventilation systems; and maintaining air circulation and humidity at optimal levels are all recognized as important design strategies to protect health, and evidence-based recommendations are available.

However, broader public health considerations apply as well. First, the design principles known as “green building” (see the US Green Building Council at http://www.usgbc.org, the Energy and Environmental Building Association at http://www.eeba.org, or EarthCraft Homes at http://www.southface.org/home/ech/earthcraft_home.htm) geared primarily toward environmental sustainability, may offer substantial (if indirect) public health benefits. For example, designing for energy conservation may reduce the demand for energy, in turn reducing the emission of air pollutants from power plants. Similarly, using sustainably harvested wood may help reduce deforestation, slowing global climate change and preserving biodiversity. Public health research that takes full account of the health benefits of such environmental building practices will yield important insights.

Second, some aspects of building design are not generally recognized as having direct health impacts but deserve renewed attention. For example, despite the established health benefits of physical activity, most modern buildings with more than 2 or 3 floors have conspicuous elevators in their lobbies, and staircases that are concealed and unappealing. Could the return of prominent, graceful, well-lit staircases seduce people into walking instead of riding to higher floors?

Similarly, although there is some evidence of the role of natural lighting in promoting comfort and performance, not enough is known about how lighting can be designed to promote health. With the advent of energy-efficient compact fluorescent bulbs, this question takes on added importance. Finally, although substandard housing is clearly bad for health, a recent review indicated that evidence of the health benefits of specific housing interventions is scarce. How to design and build good homes, schools, and workplaces remains a pressing, and largely unanswered, health question.

**Public Places**

Many of the best places are neither home nor work, but “third places” in the public realm: streets and sidewalks, parks and cafés, theaters and sports facilities. Such public places are important venues for a wide variety of activities, of which some—such as social interaction and physical activity—have clear health implications.

What makes a good street? There is no shortage of design guidelines issued by government agencies and private groups. Those issued by state departments of transportation typically aim to maximize motor vehicle traffic flow and prevent collisions. Guidelines from other sources are oriented more toward pedestrians. Some, such as Dan Burden’s *Street Design Guidelines for Healthy Neighborhoods*, explicitly focus on health. Such sources typically recommend streets that are narrower and incorporate traffic-calming strategies; sidewalks with sufficient width, buffers, continuity, and connectivity; safe crosswalks; and bicycle lanes.

What about parks? Parks exist in a variety of settings, from urban pocket parks to waterfronts, from large expanses such as Cullen Park in Houston, Fairmount Park in Philadelphia, and Griffith Park in Los Angeles to reclaimed transportation corridors such as the C&O Canal between Washington, DC and Cumberland, Md. Research on park use suggests that several design features play a role, including amount and type of vegetation; presence of interesting, meandering pathways; quiet areas for sitting and reading; recreational amenities; adequate information and signage; and perceived level of safety. People’s conceptions of parks, the expectations they bring to them, and the ways they use them vary greatly according to age, gender, ethnicity, and other factors.

What features of street and park design predict social interactions and physical activity? A large literature provides some answers with regard to physical activity. Proximity, accessibility, attractive scenery, good lighting, toilets and drinking water, and well-designed and well-maintained paths all seem...
to predict physical activity. Less information is available regarding social interactions, but studies have suggested that “sense of community” increases when neighborhoods are walkable and when well-maintained public spaces are located near homes. Again, much remains to be learned. If a sidewalk or trail is built, will people walk and bike? If a park is built, will people come? Which park designs are most restorative? What are the best ways to site, design, and build public places in ways that attract people, lift their spirits, encourage them to socialize, and promote physical activity?

Urban Form

Urban form results from design, transportation, and land use decisions at a larger scale than buildings and public places. In recent decades, the growing dominance of the automobile, the migration from central cities to suburbs, and zoning codes that segregate different land uses have resulted in the phenomenon known as “urban sprawl.” There is no single pattern of urban sprawl, but principal features include low residential and employment density; separation of distinct land uses such as housing, employment, and retail sales; low connectivity among destinations; weak and dispersed activity centers and downtowns; and heavy reliance on automobiles with few available transportation alternatives.

A corollary of suburban growth has been the decline of central cities. As jobs and economic activity migrated from the center to the periphery, the neighborhoods left behind became different kinds of places, with neglected and abandoned buildings, dilapidated and dangerous parks and streets, dysfunctional transportation systems, and failing infrastructures. Poor people and members of minority groups are concentrated in such environments, raising profound social justice concerns.

Research has suggested that the land use and transportation patterns that characterize urban sprawl have health implications. Heavy use of motor vehicles contributes to air pollution, which increases respiratory and cardiovascular disease as well as overall mortality. Declining physical activity, related to decreased walking, contributes to obesity, diabetes, and associated ailments. Increased time spent in traffic raises the risk of traffic crashes, and roads built for cars but not pedestrians pose a risk of pedestrian injuries and fatalities.

Mental health is threatened by factors as diverse as road rage and physical inactivity, and social capital—an important predictor of health, both directly and mediated through income inequality—may decline. At the same time, the complex of physical and social risk factors in the central city—the concentration of poverty, the dearth of social and medical services, the prevalence of substandard housing, the threats of crime and drug use, the squarol of many areas—are so well recognized that they have spawned a subfield, “urban health,” with its own research centers, journals, and specialists.

Urban form has much to do with health. Attention to the health problems of the central city has focused largely on social and organizational factors rather than features of the built environment. Similarly, health researchers seek on the consequences of suburban sprawl have been limited. Research is needed on a variety of issues. What urban arrangements, what zoning codes, what transportation plans, and what industrial policies lead to the most livable and healthy cities and suburbs? Of the many sweeping plans for urban design and urban renewal, that have come and gone over the years, which do the most for human health and welfare? What methods are available for “health impact assessment” and how are they best applied?

CONCLUSIONS

Public health needs to rediscover the importance of place. From nature contact to buildings, from public places to cities, there are research needs and unmet opportunities to design and build healthy places. As health professionals, urban planners and architects, transportation engineers and real estate developers, environmental psychologists and geographers learn the vocabularies and perspectives of each other’s fields and pursue active collaborations, these research questions will be asked and answered with solid evidence, and healthier, more sustainable human environments will be envisioned, planned, and built.

About the Author

The author is with the Department of Environmental and Occupational Health, Rollins School of Public Health, Emory University, Atlanta, Ga. Requests for reprints should be sent to Howard Frumkin, MD, MPH, DrPH, Emory University, Rollins School of Public Health, Department of Environmental and Occupational Health, 1518 Clifton Rd, Atlanta, GA 30322 (e-mail: medh@sphs.emory.edu).

This article was accepted May 6, 2003.

Acknowledgments

Thanks to Peggy Barlett, Andrew Dannenberg, Thomas Galloway, Michael Greenberg, Richard Jackson, Rachel Kaplan, Steven Kaplan, Catherine Staunton, William Sullivan, and 2 anonymous reviewers for their valuable comments and suggestions.

References

72. Ewing R, Pendall R, Chen D. Mea-
Designed to Reduce Pedestrian–Motor Vehicle Crashes

A Review of Evidence-Based Traffic Engineering Measures

Are sprawl and its impact a public health problem? It is estimated that, each year, 80,000 to 90,000 people are killed in car crashes, and an additional 2.5 million are injured.1 These injuries and deaths are a focus in Europe, where the reduction of pedestrian–vehicle crashes is a priority.2

In this article, we provide a framework for prevention of pedestrian injuries, primary approaches include modification of the built environment, enforcement of car fronts, and pedestrian education. Modifying the nation's roadway system, pedestrian features to reduce the risk of pedestrian injury, and severities of vehicle–pedestrian crashes are priorities in the United States.3 Despite research showing potential for about 35%3-4 the prevalence of pedestrian injuries, primary approaches include modification of the built environment, enforcement of car fronts and other pedestrian features to reduce the risk of pedestrian injury, and severities of vehicle–pedestrian crashes.3,4 The prevalence of pedestrian injuries is well documented.5-7

Pedestrian education is a popular approach that can be highly effective. In this article, we provide a framework for prevention of pedestrian injuries, primary approaches include modification of the built environment, enforcement of car fronts, and pedestrian education. Modifying the nation's roadway system, pedestrian features to reduce the risk of pedestrian injury, and severities of vehicle–pedestrian crashes are priorities in the United States.3 Despite research showing potential for about 35%3-4, the prevalence of pedestrian injuries is well documented.5-7

Children aged 5 to 14 years have the highest population-based injury rate, and people older than 80 years have the highest population-based injury rate. People older than 80 years have the highest population-based injury rate. The truly disadvantaged: The Inner City, the Underclass, and Public Policy. Washington, DC: Smart Growth America; 2002.

In this article, we provide a framework for prevention of pedestrian injuries, primary approaches include modification of the built environment, enforcement of car fronts, and pedestrian education. Modifying the nation's roadway system, pedestrian features to reduce the risk of pedestrian injury, and severities of vehicle–pedestrian crashes are priorities in the United States.3 Despite research showing potential for about 35%3-4 the prevalence of pedestrian injuries is well documented.5-7

Children aged 5 to 14 years have the highest population-based injury rate, and people older than 80 years have the highest population-based injury rate. People older than 80 years have the highest population-based injury rate. The truly disadvantaged: The Inner City, the Underclass, and Public Policy. Washington, DC: Smart Growth America; 2002.

1. Pedestrian education is a popular approach that can be highly effective. In this article, we provide a framework for prevention of pedestrian injuries, primary approaches include modification of the built environment, enforcement of car fronts, and pedestrian education. Modifying the nation's roadway system, pedestrian features to reduce the risk of pedestrian injury, and severities of vehicle–pedestrian crashes are priorities in the United States.3 Despite research showing potential for about 35%3-4, the prevalence of pedestrian injuries is well documented.5-7

Children aged 5 to 14 years have the highest population-based injury rate, and people older than 80 years have the highest population-based injury rate. People older than 80 years have the highest population-based injury rate. The truly disadvantaged: The Inner City, the Underclass, and Public Policy. Washington, DC: Smart Growth America; 2002.

In this article, we provide a framework for prevention of pedestrian injuries, primary approaches include modification of the built environment, enforcement of car fronts, and pedestrian education. Modifying the nation's roadway system, pedestrian features to reduce the risk of pedestrian injury, and severities of vehicle–pedestrian crashes are priorities in the United States.3 Despite research showing potential for about 35%3-4 the prevalence of pedestrian injuries is well documented.5-7

Children aged 5 to 14 years have the highest population-based injury rate, and people older than 80 years have the highest population-based injury rate. People older than 80 years have the highest population-based injury rate. The truly disadvantaged: The Inner City, the Underclass, and Public Policy. Washington, DC: Smart Growth America; 2002.