Integrating Planning and Public Health:

Tools and Strategies To Create Healthy Places

Marya Morris, General Editor

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Marya Morris is a senior associate at Duncan Associates in Chicago. She was a senior research associate at the American Planning Association in Chicago from 1988 to October 2006.

Richard Duncan is senior project manager at the Center for Universal Design at North Carolina State University in Raleigh, N.C.

Katharine Hannaford is a research assistant at the American Planning Association in Chicago.

Chris Kochtitzky is the Healthy Homes Goal Team Leader at the Centers for Disease Control and Prevention in Atlanta, Georgia.

Valerie N. Rogers is program manager for the Community Design Partnership Project at National Association of County and City Health Officials in Washington, D.C.

Karen Roof is principal of KERoof Envirohealth, Inc. in Vail, Colorado.

Jessica Solomon is program manager and senior analyst at the National Association of County and City Health Officials in Washington, D.C.

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APA's publications office is at 122 S. Michigan Ave., Suite 1600, Chicago, IL 60603.
E-mail: pasreports@planning.org
APA headquarters office is at 1776 Massachusetts Ave., N.W., Washington, DC 20036.

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CHAPTER 1

Planning and Public Health Reunited: Exploring Shared Objectives and Opportunities for Collaboration

By Marya Morris, AICP, with Valerie Rogers, Jessica Solomon, and Karen Roof

> [Health is] "a state of complete physical, mental, and social being and not merely the absence of disease or infirmity."
>
> —World Health Organization

When asked to describe the significant factors that affect their health—either positively or negatively—most people would list their family medical history (i.e., genetics), their diet, or their level of fitness. For most people, tackling a particular health problem means seeking a medical diagnosis from a doctor and following his or her orders or recommendations on prescription drugs, surgery, physical therapy, and lifestyle changes (e.g., quit smoking, cut back on high-cholesterol foods, find time for exercise). In the medical profession, this approach to health is regarded as the "medical model," which holds that an underlying disease or condition is organic and treatment should be guided by physicians.

APA/NACCHO MEMBER SURVEY METHODOLOGY

A survey sample of 3,320 was selected in systematic, stratified fashion by Membersurvey.com from a list of members of APA and NACCHO for whom we had a valid email address. Two versions of the survey instrument were designed collaboratively by APA, NACCHO, and Membersurvey.com. The questions differed only with respect to the audience being addressed, either planners or public health officials.

On July 8, 2004, Membersurvey.com broadcast initial email requests to a limited pretest sample from each organization (203 APA members, 205 NACCHO members) inviting them to participate in the survey by visiting an access-controlled web site. That sample yielded 62 completed surveys. Minor changes were made to the questionnaire in response to the test group results.

On August 3, 2004, Membersurvey.com broadcast email contacts to the 2,912 individuals in the final survey sample. Reminder emails were sent on August 5, 2004, and August 11, 2004. The survey was closed for tabulation on August 17, 2004, with a total of 938 responses (including pre-test returns)—a 28 percent response rate. Most of the data that we are reporting in this PAS Report are based on the 723 individuals who indicated they are employees of a governmental jurisdiction. The margins of error for the two groups of respondents was +/-5.2 percent for APA members and +/- 4.3 percent for NACCHO members.

In contrast, a "social model" of health considers a person's health as an outcome of the effects of all the factors affecting his or her life, including the built environment, the natural environment, living conditions, and overall community conditions.

In practice, public health is organized within the framework of the two models. As discussed in this chapter, the emphasis is turning toward the social model as health practitioners have grown to recognize the limited effectiveness that years and years of encouraging individuals to modify their nutritional and exercise behaviors has had on improving public health. Furthermore, new and ongoing research continue to reveal the wide spectrum of health problems and diseases related to the built environment, including obesity, cardiovascular disease, asthma, and water-borne disease outbreaks (see Figure 1-1).

FIGURE 1-1. RELATIONSHIP OF BUILT ENVIRONMENT TO HEALTH

Issues Related to Land Use	• Obesity, cardiovascular disease, asthma • Water quality
Issues Related to Automobile Dependency	• Air pollution • Asthma • Car crashes • Pedestrian injuries
Issues Related to Social Processes	• Mental health • Social capital

While recent collaborative initiatives between urban planning and public health may make such partnerships seem novel, the urban planning profession emerged out of nineteenth century public health initiatives, including tenement housing reforms, the construction of urban water supply and sewerage systems, and the design of suburban "greenbelt" towns. To look at current roles and responsibilities of planning and public health practice professionals today, however, it is clear the respective missions of the two disciplines have widely diverged in the last century.

Since 2002, APA has been working with the National Association of County and City Health Officials (NACCHO), the Centers for Disease Control and Prevention (CDC), and the Robert Wood Johnson Foundation to study and to disseminate ideas and examples of how planners and public health advocates and professionals can collaborate on shared objectives of creating healthy, sustainable communities and enhancing quality of life. In spring 2004, APA conducted a survey of approximately 350 planners and 350 public health practitioners to discern the state of current practice in planning and public health collaboration. Each respondent group was asked the same questions.

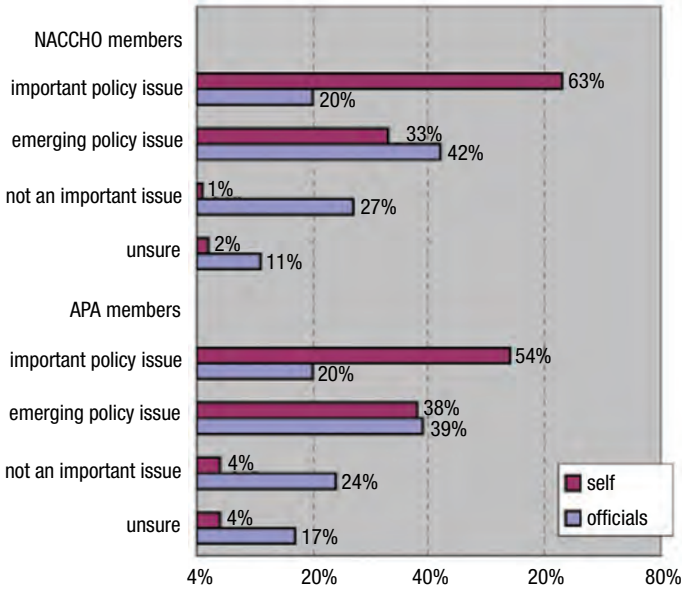
SELECTED SURVEY RESULTS

Leadership

Inasmuch as new public policy at the local level derives from how the mayor, the city council, or other officials react to specific events, trends, or new information, it is clear that some local officials have taken notice of the connections between planning, land use, and public health. Furthermore, both planners and public health professionals have a very similar sense of how the officials in their jurisdiction regard the connections between health and planning. Both public health professionals (NACCHO members) and

practicing planners (APA members) indicated that 20 percent of officials in their jurisdiction see the planning/public health connection as an important issue, 39 percent and 39 percent, respectively, said it was an emerging policy issue for their officials, and 24 and 27 percent, respectively, said it was not an important issue for their officials (see Figure 1-2).

FIGURE 1-2. FEELINGS ABOUT PLANNING-PUBLIC HEALTH CONNECTION
self vs. elected/appointed officials



base: jurisdiction employees (368 NACCHO members, 355 APA members)

Despite the respondents' indication that the planning public health connection is of modest interest to local officials, both respondent groups indicated that elected officials or other persons in a leadership role in their jurisdiction could initiate collaborative efforts between the planning function and public health function. Considerably more public health respondents (79 percent) than planner respondents (66 percent), however, indicated this was the case.

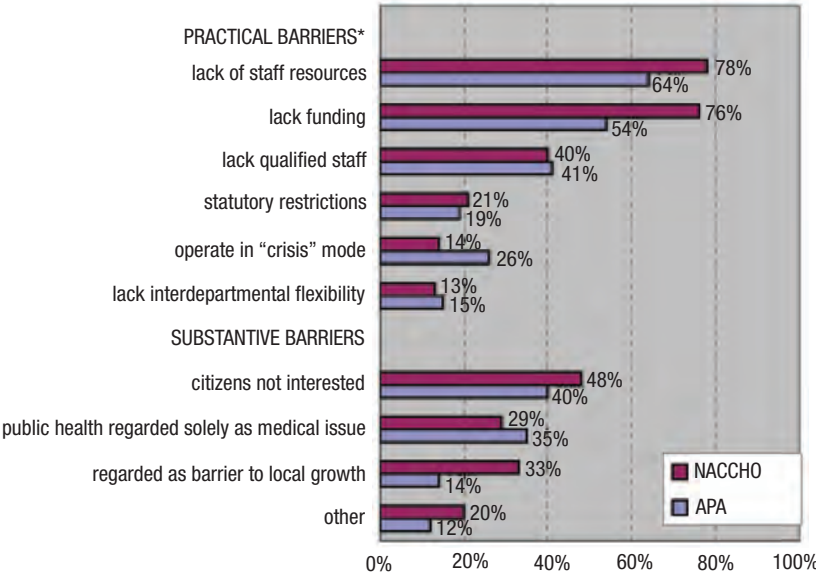
The survey respondents themselves felt much stronger about the public health/planning connection than they perceived local officials to be, although the responses from the two professions varied considerably. Sixty-three percent of public health professionals and 54 percent of planners said this is an important issue to them; 33 percent of public health professionals and 38 percent of planners said it was an emerging issue. Very few from either profession said it was not an important issue (1 percent and 4 percent, respectively).

Barriers to Collaboration

We asked planners and public health professionals about the practical and substantive barriers they face, or could face, if they were to collaborate with one another. The results show that public health professionals perceive or experience greater practical barriers to collaborating with other agencies in their jurisdiction than do planners. The biggest barrier from the standpoint of public health officials (78 percent) was that agencies lack staff resources to expand their focus to include planning. Specifically, 76 percent indicated that lack of funding to expand the agency's focus was a practical barrier. On the planning side, 64 percent said lack of staff resources was the biggest barrier,

and 54 percent said a lack of funding. To the same degree (i.e., 41 percent for public health and 40 percent for planning), both fields indicated their staff is not qualified to address issues in the other field (see Figure 1-3).

FIGURE 1-3. BARRIERS TO COLLABORATION



base: jurisdiction employees (368 NACCHO members, 355 APA members) (multiple answers); *principal concerns

Looking at potential substantive barriers, the difficulty getting the public to take an interest in public health issues, except in the case of emergencies (e.g., natural disaster, disease outbreak) was the top answer (48 percent for public health; 40 percent for planners). For planners, 35 percent said the fact that public health is regarded as a medical issue and not a concern for planners, is a barrier. Thirty-three percent of public health respondents said that health safeguards and regulations (e.g., septic system standards, water-quality standards) are regarded as barriers to local growth and development. In other words, public health officials' interest in broadening their involvement in planning issues could be perceived by the public as opening the door to even more limitations on community growth. Local health departments recognize that if they object to every planning and development issue brought before them, they will be regarded as naysayers and could be excluded from future collaborations.

These findings echo feedback that APA and NACCHO heard from planners and public health professionals in numerous focus groups and workshops conducted in 2004 and 2005. With respect to institutional or practical barriers, several common themes emerged. For example, as each agency works to fulfill its core functions under tight budget constraints, a "silo" effect arises wherein each department focuses almost solely on its own mission, often without knowledge or in-depth understanding of the functions performed or the services provided by other departments located in another government office building or even right down the hall. In many cases this happens because, as health officials have commented in these sessions, their departments can perform only the functions mandated by statute. With public health departments lacking discretionary funds or staff resources to devote to special projects or new initiatives, interdepartmental collaboration becomes difficult if not impossible.

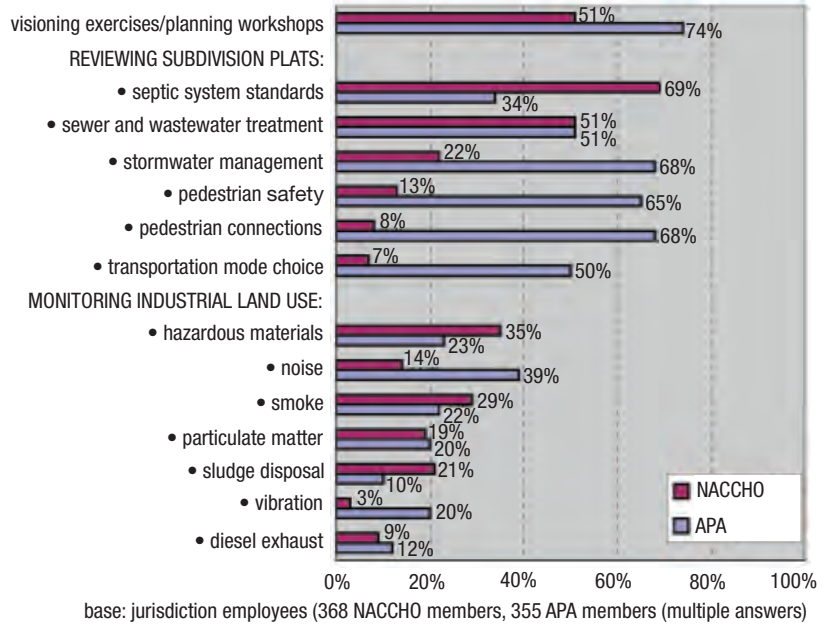
Another barrier discussed in workshops but not addressed in our survey was that the truly coordinated approach needed to tackle issues related to health and the built environment is often a struggle for local planning agencies as well. A public health professional looking at planning from the outside

is often surprised to learn that many decisions regarding transportation planning and investment are made outside of or separate from the land-use planning process. Many solutions to make neighborhoods safer for pedestrians (e.g., instituting traffic calming measures) require the buy-in by the public works office, which may not have participated in the planning process and thus may not regard such techniques as smart, sensible, or timely.

Interagency Activities

Respondents were asked a series of questions about the engagement of their respective departments in a variety of activities for which there is a significant shared interest or potential for collaborative activities. These activities include visioning exercises and planning workshops, monitoring sewer and septic standards by reviewing subdivision plats, and monitoring industrial land uses. Results for each profession indicate significant differences in department involvement on most areas on which they were queried (see Figure 1-4). The area where both public health and planning departments were equally engaged was sewer and wastewater treatment (51 percent of both APA and NACCHO members indicated that they were involved in this). Regarding regulating septic systems, 69 percent of health respondents said they were engaged, and 34 percent of planners indicated they were engaged in such actions. The biggest discrepancies were in pedestrian safety (13 percent of health professionals versus 65 percent of planners), improving pedestrian routes and connections (8 percent of health professionals versus 68 percent of planners), and increasing transportation mode choices (7 percent of health professionals and 50 percent of planners).

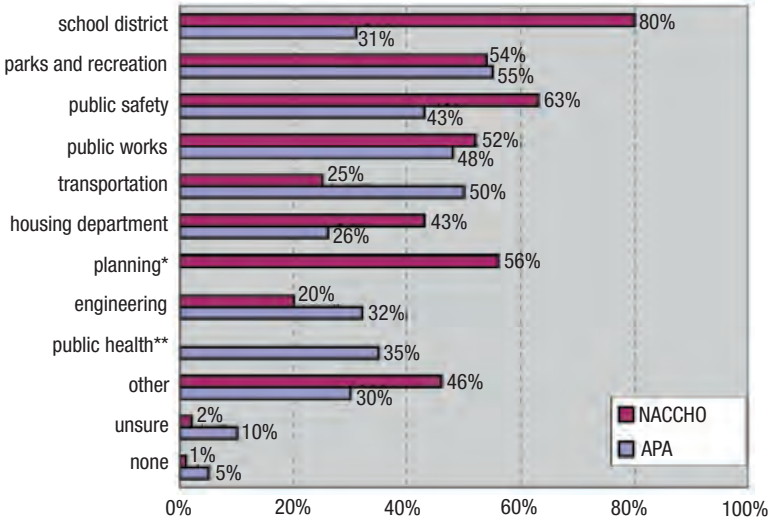
FIGURE 1-4. DEPARTMENT ENGAGEMENT IN ACTIVITIES



base: jurisdiction employees (368 NACCHO members, 355 APA members (multiple answers)

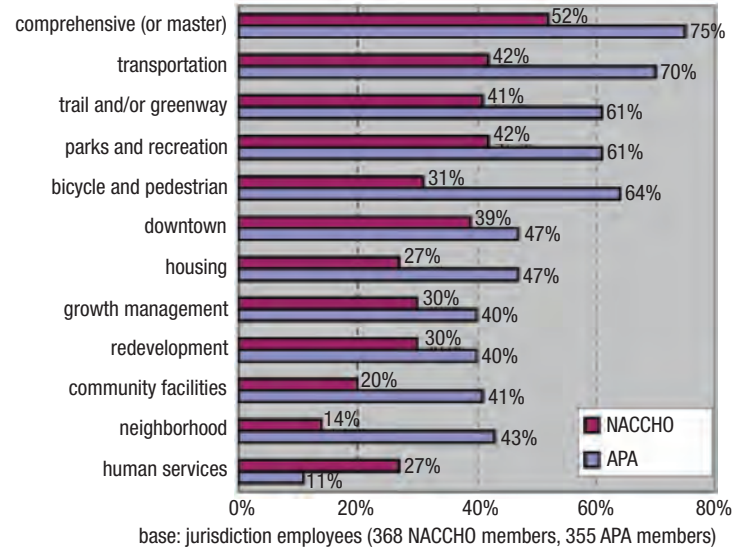
We also asked planners and health professionals which of nine local government agencies their department had cooperated or collaborated with in some fashion in the last five years (see Figure 1-5). For public health officials, 80 percent indicated they had worked with local school districts, 63 percent said they had worked with the public safety department, and 56 percent said they had worked with the planning department. Planners overall indicated fewer collaborative activities with other local agencies. Fifty-five percent said they had worked with the parks and recreation department, 48 percent said the public works department, and 35 percent said they had worked with the public health department.

FIGURE 1-5. INTERAGENCY COOPERATION



base: jurisdiction employees (368 NACCHO members, 355 APA members)
(multiple answers); *not asked of APA members; **not asked of NACCHO members

FIGURE 1-6. PLANS PREPARED/UPDATED in last 5 years



base: jurisdiction employees (368 NACCHO members, 355 APA members)
(multiple answers)

Jurisdiction Activities and Plans

A key objective of the collaboration is to raise awareness in the public health and planning (NACCHO and APA) fields about the shared objectives of the two disciplines and to encourage each field to share its knowledge and expertise. Perhaps most important for planners, working in partnership with health on land-use and community design issues can help leverage support for existing programs. For example, much of the work that planners have done to implement smart growth—creating walkable communities, increasing transportation choices, facilitating more compact development, and preserving open space—is aligned with public health goals to increase the amount of physical activity Americans do and thus reduce or at least slow the rate of obesity among adults and children. As smart growth efforts have grown increasingly politicized in the last decade, bringing health to the table adds a new, strong, credible voice to what communities have been working to implement.

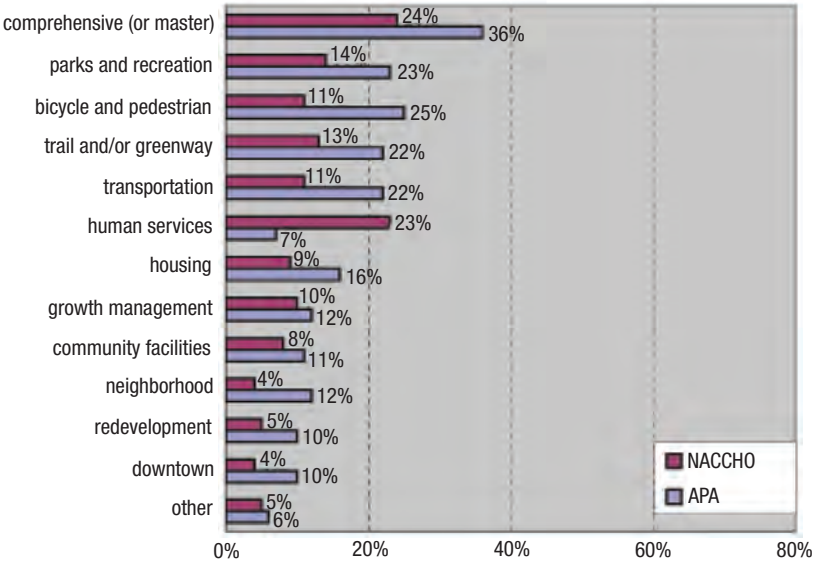
An important step in this process is to formally and explicitly incorporate health goals and data into local plans. In the survey, both planning and public health officials were asked which of 12 plan types their jurisdictions had prepared or updated in the last five years. Not surprisingly, planner respondents had greater familiarity with the status of various plans. This suggests that, at least in some jurisdictions, a lot of what planners do is going unnoticed (see Figure 1-6). (The 12 plan types in the survey were: comprehensive; growth management; housing; parks and recreation; transportation; bicycle and pedestrian; trails and greenways; community facilities; human services; neighborhood; downtown; and redevelopment plans.)

Both groups were also asked which of the 12 plans explicitly address health. Not surprisingly, the results show only a small percentage of communities has incor-

porated health goals in any of the plans. The highest occurrence was in comprehensive plans, where 36 percent of planners and 24 percent of public health officials indicated that their jurisdiction's comprehensive plan explicitly addressed health (see Figure 1-7).

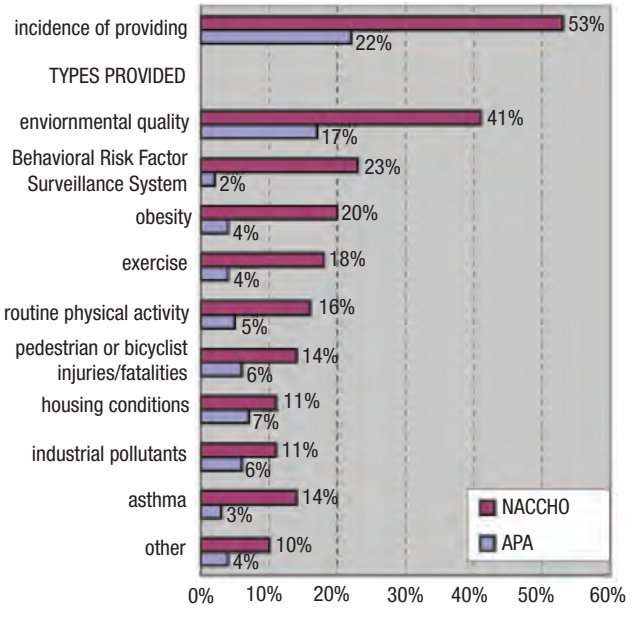
Finally, we also asked both sets of respondents if their jurisdictions' public health departments provided the planning departments with health and environmental data as part of their planning process. Fifty-three percent of public health respondents indicated they had provided such data; however, just 22 percent of responding planners indicated their department had been provided with such data. The types of health and environmental data provided are shown in Figure 1-8. The most commonly provided data—according to 41 percent of public health respondents—were related to environmental quality (e.g., air and water quality).

FIGURE 1-7. PLANS EXPLICITLY ADDRESSING PUBLIC HEALTH



base: jurisdiction employees (368 NACCHO members, 355 APA members) (multiple answers)

FIGURE 1-8. HEALTH AND ENVIRONMENTAL DATA PROVIDED from public health department to planning department



base: jurisdiction employees (368 NACCHO members, 355 APA members (multiple answers)

CONCLUSION

The survey of APA and NACCHO members' opinions and attitudes toward collaborating on topics of shared concern was the first of its kind and it yielded some major insights into the state of local practice with respect to local planning and public health management. The results of the survey, which was conducted in the first year of the APA and NACCHO cooperative agreement, gave us an important baseline of knowledge of how our respective members felt about these issues. To that end, the survey results became instrumental to APA and NACCHO as we designed subsequent training workshops and publications.

The survey revealed that the two disciplines do routinely work together on wastewater treatment and septic system regulations—two areas in which they have long shared responsibility. But as far as the emerging areas where APA and NACCHO see clear benefits

for increased collaboration, such as housing conditions, pedestrian safety, air quality, walkability, and transportation, only a fraction of jurisdictions reported having worked together.

The survey findings on the practical and substantive barriers planners and public health officials would face if they were to collaborate were many, though the biggest barrier reported by the respective professions was a lack of staff resources to expand their agency's mission to include planning or public health activities.

We also learned that, according to public health staff and planning staff, between one-quarter and one-half of the comprehensive plans prepared by jurisdictions represented in the sample contain goals and policies that explicitly address health. And finally, the survey revealed that a majority of planners (54 percent) and public health officials (63 percent) see the planning/public health connection as an important area for local policy makers, but the elected and appointed officials in the respondents' jurisdictions had not expressed the same level of enthusiasm for the issue as had staff. This is most likely due to a lack of understanding about just what such collaborative activities would accomplish, as well as concern about adding staff and additional bureaucracy to local government.

CHAPTER 2

Five Strategic Points of Intervention and Collaboration Between Planning and Public Health

By Marya Morris, AICP

There are numerous aspects of public health and environmental health directly affected by land-use policies and land development in general. APA has chosen to address these areas of common interest between planning and public health by looking at the points in the planning process where public health officials should have a stronger voice. In general, by involving local public health officials at the earliest stages of policy formation and keeping them involved in the planning process until changes are observable on the ground, we can create better plans that provide communities strong tools to protect and even improve health.

The framework that APA is using to promote an interdisciplinary, multi-objective approach to policy making and implementation is what we call the Five Strategic Points of Intervention:

1. Visioning and Goal Setting
2. Plans and Planning
3. Implementation Tools
4. Site Design and Development
5. Public Facility Siting and Capital Spending

Where the points of intervention are aimed at specific outcomes (e.g., revised plans that address the health impacts of land-use policies), we also recommend readers consider the tactical and process-oriented aspects of these interventions. To that end, we recognize these as the five strategic points of *collaboration* to drive the actual interventions.

THE FIRST POINT OF INTERVENTION: VISIONING AND GOAL SETTING

When a plan is being prepared or revised, planners call on a broad mix of stakeholders—the public, developers, builders, housing experts and advocates, transportation specialists, environmentalists, advocates for specific populations (e.g., the elderly or persons with a disability)—to provide input for the plan's goals, objectives, and strategies. Despite the breadth of this stakeholder list, public health professionals and advocates are not usually included. For communities to be successful in planning for and designing health-promoting, active, and accessible environments, planners will have to seek out public health professionals and include them at the very outset of planning processes.

At the initial visioning sessions, a planner or other representative of the coordinating agency gives an overview of the scope of issues. This is followed by a facilitated discussion, breakout groups, or some other type of session in which the public can say what it would like to see the plan contain, what it would not want it to contain, what changes to the built environment it would like to see happen, and what changes it does not want to occur. What emerges from these sessions is some consensus on shared values and a set of principles that provides a broad context within which planners establish the plan's goals.

Protecting and enhancing quality of life is a value that invariably arises in such visioning sessions. From the health profession's standpoint, it is a concept that relates directly to the health and physical well being of individuals. But the quality-of-life discussion affecting land-use planning rarely addresses how the built environment—and the changes being proposed in whichever plan is being prepared—will either enhance or hinder the public's health. Instead, planners define quality of life by a broader set of factors (e.g., the impact of proposed changes on traffic congestion, housing affordability, loss of open space, children's safety outside their homes, availability of local services, and building or code enforcement).

The absence of health, disability, and physical activity representatives at visioning and plan preparation stages results in several missed opportunities. First, planners and public health practitioners could use such sessions to educate the public about how communities develop and the effect development patterns have on:

a) their mobility choices (e.g., whether they can walk, take transit, or must drive to where they are going;
b) their ability to be physically active when following their daily routines;

Pedestrian and Bicycle Information Center

Everyone benefits when public health officials are invited to visioning sessions. Their input can inform planners and other typical stakeholders of the potential health impacts—either positive or negative—of the plans being created or critiqued in a visioning meeting.

c) the effects of land-use and transportation planning decisions on neighborhood and communitywide air quality and water quality;

d) the effects of various proposed development patterns and scenarios on stormwater runoff, which affect groundwater and drinking water quality;

e) the potential impacts of local industry or hazardous waste transportation corridors and facilities on the surrounding community; and

f) the impact of neighborhood design on factors such as crime and mental health.

Second, the public health field has become a strong advocate for smart growth planning, bringing its expertise and support to built environment issues (e.g., compact, walkable neighborhoods, mixed use, street connectivity, traffic calming, parks, recreation and trails planning, reducing impervious surfaces, and supporting transit). The endorsement of these professionals can add significant political weight to the inclusion of health goals in a plan.

Pedestrian and Bicycle Information Center

Walkable communities expert Dan Burden, center, meeting with Arapahoe County, Colorado, planners, developers, and Tri-County staff to evaluate a proposed 900-acre PUD for traffic calming and other changes to make the project more pedestrian and bicycle friendly.

Beyond this opportunity for specific points of intervention in the planning process, planners and public health people should be collaborating routinely on areas of overlap—there is no reason to wait until a plan gets underway. In fact, to the extent that the two disciplines begin collaborating and sharing information formally or informally as a matter or course, the easier it will be to bring public health practitioners to the table when a planning process gets underway. To that end, the activities recommended here should not only be undertaken at the beginning of a planning process, but as a matter of routine.

Prior to the visioning sessions or workshops:

- Public health practitioners should convene to discuss obesity, physical inactivity, and other public health issues related to land use and the built environment.
- Public health professionals should make presentations to planning staff, planning commissioners, and other local officials to explain the connections between planning, community design, and health problems (e.g., obesity, physical activity, asthma, and waterborne disease and outbreaks).
- Public health practitioners can also educate land-use and transportation planners about the issues they as health professional plan to bring to the table (e.g., pedestrian safety, environmental justice, accessibility for those with a mobility impairment, and drinking water protection).
- Planners should brief local public health practitioners about what to expect in the planning process.
- Planners and public health officials can form a standing committee (i.e., a working group) that meets regularly on the relationship between health and the built environment. For example, this group could: a) keep up to date on issues of shared concern; b) pursue collaborative projects (e.g., conducting a community environmental health assessment); c) prepare for future planning processes; and d) monitor plan implementation to ensure that health and physical activity objectives are being met. (See also Chapter 6, Health Impact Assessment, for another example of a collaborative task.)

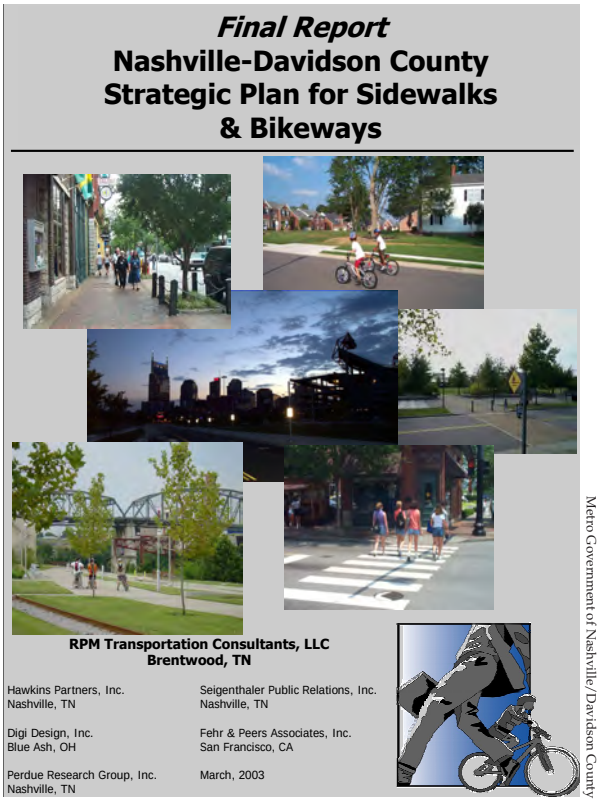
During the visioning process:

- Planners should extend invitations and encourage public health representatives to attend the public visioning and goal-setting sessions.
- Public health representatives should offer to chair or participate in advisory committees or work groups.
- Public health and planners should champion the inclusion of goals and objectives that explicitly relate to improving air and water quality, increasing opportunities for physical activity, reducing obesity, preventing injury, protecting mental health, building social capital, and promoting equity and accessibility.
- Planners should revisit smart growth goals and policies currently in place that support healthy communities.

THE SECOND POINT OF INTERVENTION: PLANS AND PLANNING

The specific goals for public health established in the visioning sessions or the early stages of a planning process can be conveyed in a plan in a number of ways. How that is done will depend on the plan's overall format and the plan's focus (e.g., parks and open space, housing, transportation, etc.). The most effective way of ensuring that public health improvement is addressed by the plan is to make it one of the plan's overarching goals.

In addition to concisely worded goals, the plan can also include a narrative description of the relationship of planning to health. This would provide the public and other plan users with an explanation of the focus on health and



Metro Government of Nashville/Davidson County

Nashville is committing to transportation choice, greater mobility, safer streets, cleaner air, less traffic congestion, healing their citizens, stronger communities, a more sustainable economic climate, and a higher quality of life for all Nashvillians.

physical activity, which will signify a new policy direction for most jurisdictions. In 2005, communities prepared hundreds of excellent plans that contain all that is necessary to achieve the smart growth goals of walkable streets and districts, the inclusion of bike lanes and trails, street connectivity, human-scale architecture, traffic calming, and many other measures that never expressly address health as one of the plan's goals. That is changing gradually. King County, Washington, and Orange County, Florida, in 2005 both incorporated explicit language in their plans making it clear that these plan policies are intended to be in furtherance of both smart growth and public health.

With the overarching goals in place, more targeted health-related objectives and policies can be incorporated into relevant plan elements (i.e., subsets of the plan that address specific issues; for example, land use, needed public health infrastructure, transportation, economic development, etc.) as well as the implementation program, or schedule, for the plan. For example, a broad goal to increase opportunities for people to be physically active as part of their daily routine could be carried forward by policies in the transportation element (among others) to require developers to install sidewalks on both sides of the street. A description of the importance of making it possible for people to make daily trips from home to work, school, or shopping would be well placed in a transportation element, a bicycle and pedestrian plan element, a trails element, and others.

Plan Content and Planning Process Interventions: How to Incorporate Health Objectives into Plans

The Comprehensive Plan

- Provide a narrative description of the rationale for addressing health, physical activity and accessibility for all people in the comprehensive plan, including a description of how smart growth principles already being implemented in the community are supportive of active living.

- Develop overarching goals that tie cardiovascular health, safety, physical activity, and obesity to planning, community design, and land use.
- Establish more specific goals relating to health in each plan element or functional plan adopted as part of the comprehensive plan.
- Create an implementation schedule or program to achieve health-related goals that identifies which agency or organization will lead the implementation, prescribe the timeline, and pinpoint funding sources.

Special Area Plans, Neighborhood Plans, Redevelopment District Plans, Subarea Plans

- Provide a narrative description of the planning/health issue as in the comprehensive plan but include specific language relevant to the physical planning area.
- Reference related goals in the comprehensive plan.
- Give a narrative description of the rationale for addressing health and physical activity in such a plan if it is a stand-alone plan (i.e., a plan adopted and implemented separately from the comprehensive plan such as a stormwater management plan and a trails and recreation plan, for example).

Functional Plans (Comprehensive Plan Elements or Chapters)

- Land use
- Transportation
- Streets and circulation
- Sidewalks
- Bicycle and pedestrian
- Parks, open space, recreation, trails
- Transit
- Health and social services
- Housing
- Economic development
- Schools and campuses
- Accessibility and universal design

THE THIRD POINT OF INTERVENTION: IMPLEMENTATION TOOLS

As is the case whenever a community revises its planning goals to address new concerns or new ways of thinking, achieving the goals related to health and physical activity in the comprehensive plan, function plans, or special area plans will require communities to rethink and retool their land development regulations (i.e., zoning and subdivision ordinances or unified ordinances) and other development regulations.

For example, a community could revise its ordinances to permit new urbanist or traditional neighborhood developments, either as an overlay, as a requirement in certain districts, or communitywide. Some communities will want to consider implementing a form-based code as an alternative to a conventional zoning ordinance. Such a code would help create neighborhoods and commercial districts without rigid constraints on land use. The emphasis

SELECTED PUBLIC HEALTH-RELATED PROVISIONS IN THE SAN DIEGO REGIONAL COMPREHENSIVE PLAN (ADOPTED BY THE SAN DIEGO ASSOCIATION OF GOVERNMENTS, JULY 2004)

Chapter 4d: Healthy Environment:
Enhancing Our Natural Habitats, Air, Water, and Beaches
Vision 2030

The air we breathe is clean. We enjoy exercising and playing outdoors. We drive less frequently, taking advantage of convenient transportation options such as transit, bicycling, and walking. Our cars and trucks are more fuel-efficient and use cleaner-burning fuels, and we have increased numbers of electric vehicles and those that run on alternative fuels. Industrial plants continue to upgrade pollution-control equipment and curb emissions. Residential neighborhoods are free of potentially harmful industries. We now lead the country in compliance with state and federal clean air standards, and as a result, see fewer people with respiratory disease.

Water Quality [Sub-part of Chapter 4D Healthy Environment Element]

Existing Setting [excerpt]

Water bodies within the region, including groundwater, lakes, reservoirs, rivers, streams, lagoons, estuaries, vernal pools, bays, and the ocean are among our most valuable resources. They provide a wide range of "beneficial uses," or the uses of water necessary for the survival or well being of humans, plants, and animals. Beneficial uses of water serve to promote both tangible and intangible economic, social, and environmental goals. Urban runoff can adversely impact the quality of our local drinking water. The significance of urban runoff with respect to drinking water quality has only recently come to be recognized in the region. The deterioration of water quality also can result in a reduced water supply and increased water treatment costs.

Key Issues: Drinking Water [excerpt; one of seven key issues described in the water quality section]

Water imported from the Colorado River already contains some level of pollutants before it reaches our storage reservoirs. That water can be further polluted in the reservoirs. Continued development within our watersheds, and along our rivers and reservoirs, affects water quality and therefore affects local reservoirs and the quality of the water stored within them. Rainfall and melting snow flow to our rivers, become trapped in the region's dams, and is then stored in local reservoirs, such as the Loveland and Sweetwater Reservoirs in the San Diego region. These reservoirs store billions of gallons of water each year and are used as a water supply for almost 3 million local residents.

Water Quality Policy Objectives and Recommended Actions

Policy Objectives

1. Restore, protect, and enhance the water quality and the beneficial uses of local coastal waters, inland surface waters, groundwaters, and wetlands.
2. Reduce or eliminate pollutants at their source before they enter our region's water bodies.
3. Protect local drinking water sources.

(continued)

SELECTED PUBLIC HEALTH -RELATED PROVISIONS IN THE SAN DIEGO REGIONAL COMPREHENSIVE PLAN (ADOPTED BY THE SAN DIEGO ASSOCIATION OF GOVERNMENTS, JULY 2004) *(continued)*

Air Quality [Sub-part of Chapter 4D Healthy Environment Element]

Existing Setting [excerpt]

In general, air quality in the San Diego region has improved dramatically over the past two decades, but continued efforts are needed to sustain this positive trend and ensure clean air. The region has seen remarkable reductions in common air pollutants such as carbon monoxide (CO), ozone, oxides of nitrogen (NOx), and reactive organic gasses (ROG), as well as reductions in more harmful, toxic air contaminants. The air quality improvement is the result of an ambitious undertaking at the federal, state, and local levels to implement the federal and state Clean Air Acts.

. . .

Exposure to polluted air can cause health problems, especially in children and adults who are active outdoors, and in people with respiratory diseases, such as asthma. According to the Air Resources Control Board, air pollution in California contributes annually to as many as:

- 17,000 premature deaths,
- 55,000 hospital admissions,
- 1.3 million asthma attacks, and
- 3.3 million lost workdays.

Air quality standards are set by the state and federal governments to provide an adequate margin of safety in protecting public health.

Key Issue: Reducing Air Pollution [excerpt; one of three Key Issues in the Air Quality section]

Exposure to polluted air can cause health problems, especially in children and adults who are active outdoors, as well as to people with respiratory diseases, such as asthma. Pollutants are caused by on-road motor vehicles, such as autos, trucks, and buses; off-road mobile sources such as utility engines, ships, airplanes, and trains; and stationary sources such as power plants and manufacturing and industrial facilities. Many pollutants are also generated from our homes. Fireplaces and aerosol consumer products, for example, are area wide sources of air pollution.

Key Issue: Environmental Justice [excerpt; one of three Key Issues in the Air Quality Section]

Low- income and minority communities may be more likely to experience air pollution caused by the siting of facilities, such as freeways and industrial parks, and services, such as dry cleaners and gas stations, in their neighborhoods near schools and homes. The region needs to work hard to ensure that all our residents, regardless of income or ethnicity, share the benefits of a healthy environment.

(continued)

SELECTED PUBLIC HEALTH-RELATED PROVISIONS IN THE SAN DIEGO REGIONAL COMPREHENSIVE PLAN (ADOPTED BY THE SAN DIEGO ASSOCIATION OF GOVERNMENTS, JULY 2004) *(continued)*

Air Quality Policy Objectives and Recommended Actions

Policy Objective

Achieve and maintain federal and state clean air standards.

Recommended Actions

Planning, Design, and Coordination:

1. Implement transit-oriented development to reduce automobile trips.
2. Encourage and create incentives for energy-efficient design in new development.
3. Promote reduction of industrial emissions through use of least-polluting cost-effective processes and technologies.
4. Promote reduction of mobile source emissions through the adoption and enforcement of fuel specifications and the improvement of engine and emission equipment systems.

Program and Project Development and Implementation:

1. Continue to implement the Regional Air Quality Strategy to achieve federal and state air quality standards.
2. Implement emission control programs for stationary sources.
3. Site industries and high-traffic corridors in a way that minimizes the potential impacts of poor air quality on homes, schools, hospitals, and other land uses where people congregate, and implement programs to ensure low-income and minority populations are not disproportionately negatively affected.

SELECTED PUBLIC HEALTH-RELATED ELEMENTS, GOALS, AND ACTION STEPS IN THE BROOMFIELD, COLORADO, 2006 COMPREHENSIVE PLAN

VISION

Walkable Community

"A walkable community is the cornerstone to an active and thriving community. The construction of a walkable community provides and affordable transportation system that makes it easy to enjoy physical activity and choose alternatives to driving to schools, parks and nearby activity centers. Everyone benefits from walking, enjoying improved fitness, cleaner air, reduced risks of certain health problems and a greater sense of community. Providing safe, inviting, walking alternatives leads to more social interaction, physical fitness and diminished crime and other social problems. Provision of an interconnected system of on and off street paths and safe places to cross streets will encourage opportunities for activity within the everyday living environment."

OPEN SPACE, PARKS, RECREATION AND TRAILS ELEMENT

Connecting it all together: "A second priority strongly and consistently voiced by the Broomfield community is the need to develop well connected trails network to create a "walkable" community. Addressing this need presents an opportunity to provide biking and walking, alternate modes of transportation that link key public areas together. Trail connectivity provides an opportunity for citizens to walk and ride to many destinations instead of relying solely on the automobile to meet transportation needs."

"A third priority identified by Broomfield citizens is to fulfill a need for more large parks an athletic fields and otherwise promote a better balance of large and small parks."

Goal OP-B: Connected Public Spaces

"Create connected public spaces in order to provide continuous green space throughout the community benefiting wildlife, enhancing recreational experiences and increasing Broomfield's walkability."

Rationale: Parks and open space properties should be linked to the community trails system to further enhance Broomfield's walkability. The creation of an interconnected open lands systems will enable children to walk or bike safely from home to school and to play.

Policies and Action Steps

Policy OP-B.1: Design trail connections to link open space, parks, recreation facilities and other public places (such as schools, libraries or employment areas) into an integrated system.

Action Step OP-B.1.1: Prioritize and develop the key missing links and needed facilities to overcome community barriers in Broomfield's trail system.

Goal OP-C: Community Image and Identity

"Use open space, parks, trails and recreational facilities to establish a strong community image and identity."

Rationale: An interconnected system of parks, open space and trails within easy walking distance of residential neighborhoods will underscore the value placed on community health and walkability by offering residents the opportunity to:

- Enjoy the beauty of open lands
- Cross paths with other residents
- Have space for reflection, and
- Participate in passive or active recreation.

Incorporate public art into parks and trail locations to reflect Broomfield's appreciation for artistic expression.

(continued)

SELECTED PUBLIC HEALTH-RELATED ELEMENTS, GOALS, AND ACTION STEPS IN THE BROOMFIELD, COLORADO, 2006 COMPREHENSIVE PLAN *(continued)*

Goal OP-F: Distribution of Facilities
"Promote the equitable distribution of open space, parks, recreational and trail facilities."

Rationale: Goal is intended to provide all residential areas of Broomfield with comparable access to open lands, parks and recreation facilities and programs and trails.

Policies and Action Steps:
Policy OP-F.1: Promote access for populations with special needs

Policy OP-F.3: Promote accessibility to facilities and programs for residents regardless of income level.

ENVIRONMENTAL STEWARDSHIP ELEMENT
Current Situation and Future Trends
"Efforts also are under way to create a "wellness collaboration" promoting "healthy community initiatives" and an overall active community life for Broomfield residents and employees."

Policies and Action Steps
Policy ES-B.3: Prepare and consider programs and policies that create a walkable community and heighten the demand for overall physical activity in the community. Some programs may help raise awareness of active-living issues, while other programs will mobilize the public to advocate for policy change.

*Action Step ES-B.3.*1: Enhance the link between environmental quality and community and individual health. Promote walking as a means of transportation; develop planning design standards that encourage opportunities for activity within the everyday living environment, and promote alternatives to vehicle transportation.

Action Step ES-B.3.2: Continue efforts to create a strong "wellness collaboration" promoting health community initiatives and overall active community life for Broomfield residents and employees.

FORM-BASED CODES

A form-based code regulates the physical form of a community or a district within a community. This approach is in contrast to conventional Euclidean zoning, which primarily regulates land use and, to a much lesser extent, the physical form of such uses. The practice is still new and relatively untested, although there are increasing numbers of cities and regions making the transition from conventional zoning to form-based codes.

The standard provisions in a form-based code include:

1. Building height—both minimum and maximum
2. Siting standards—placement of structure in relation to fronting streets and adjacent building lots
3. Permissible uses stated in general terms (e.g., retail, residential)
4. Thoroughfare standards for range of recommended street types
5. Landscape standards with appropriate tree and groundcover species
6. A glossary

Communities that want more control over the physical appearance of buildings may include architectural standards, including exterior colors, materials, and construction techniques.

The most common approach to date has been to apply the code on district level (e.g., Louisville/Jefferson County, Kentucky, and Saratoga Springs, New York) or for a specific development project (e.g., the Peninsula neighborhood in Iowa City, Iowa). In 2006, planners and urban designers were still learning how to draft and implement form-based codes. Advocates of the approach expect to eventually see it applied on a communitywide or even regionwide scale. Other examples where it is in use or under consideration include Kentlands, the new urbanist development in Gaithersburg, Maryland; the Columbia Pike Corridor in Arlington, Virginia; a large, mixed-use development Contra Costa County, California; and Denver, Colorado.

(continued)

in a form-based code on the scale and orientation of buildings relative to the street could also be used to create neighborhoods where walking is possible and pleasurable. Other tools that a health-savvy community might want to incorporate into its development regulations include:

- increasing residential development densities to support transit use and walkability;
- enacting wellhead protection ordinances to secure safe drinking water supplies;
- requiring sidewalks and trails in new developments and retrofitting already developed areas with sidewalks, trails, and bike paths;
- instituting traffic calming measures; and
- requiring street connectivity.

Smart code reforms of zoning and subdivision regulations should address:

- land use;
- minimizing impervious surfaces;
- increasing development densities in strategic locations;
- mixing land uses;
- new urbanist/traditional neighborhood development (such specifics may be in furtherance of a Transect Plan being implemented on a communitywide scale or, otherwise applied through overlay districts or special districts);
- urban villages; and
- transit-oriented development and the expansion of transportation choices to reduce vehicle emissions.

Open space and recreation facility reforms should address:

- equitable access to parks, trails, open space in all neighborhoods; and
- land set-asides and in-kind developer contributions for parks, open space, and trails.

Mobility, transportation and traffic circulation reforms should address:

- sidewalk requirements in residential areas;
- pedestrian and bicycle facilities requirements and standards;
- traffic calming in neighborhoods;
- pedestrian overlay districts and zones;
- street connectivity requirements;
- street design improvements (e.g., "complete streets");
- universal design and accessibility;
- safe routes to schools; and
- safety and injury prevention.

Public investment reforms should address:

- directing public investment to targeted growth areas;
- capital improvement programs; and
- equitable allocation of capital improvements spending on activity-friendly projects.

THE FOURTH POINT OF INTERVENTION: SITE DESIGN AND DEVELOPMENT

Communities can make numerous improvements to the public realm and streetscapes to create attractive, safe places where people will want to walk, where it is safe for people of all ages and mobility levels to cross the street, where there is protection from inclement weather, where people feel protected from crime, and where there are opportunities for people to interact with one another. Planners can use a combination of design guidelines and urban design standards to work with developers to create such environments. Common tools include standards that: prohibit long, blank walls abutting sidewalks; require ground floors to have retail stores with windows; specify that buildings, especially those along transit routes and with heavy pedestrian traffic have awnings; require trees, landscaping, and street furniture to be added to the streetscape; and locate parking on the side or in the rear of commercial buildings. The planning department can negotiate with developers for these types of amenities or modifications to building and site design during the site plan review or design review process.

Planners will also need to address additional site design and development considerations when meeting other public health goals affected by land use (e.g., protecting drinking water and minimizing stormwater runoff). These include stormwater management standards for new subdivisions; requirements to minimize the amount of impervious surfaces on a site; and low-impact development site plans, which aim to maintain predevelopment hydrology, using infiltration technology to reroute clean water so that aquifers are recharged. Other erosion and sedimentation control (ESC) measures (e.g., planting vegetation and minimizing soil exposure during construction) should also be addressed during site plan and development review.

There are many intervention points in the site design and development stage that will support and protect public health, including:

- Implement streetscape enhancements that include shade trees, awnings, art work, and pedestrian amenities, such as benches, to encourage people to be physically active.
- Use architectural features to demarcate building entrances; require additional building entrances proportionate to building footprint and orientation to transit, sidewalks, and parking.
- Use building setback and orientation standards to create pedestrian-friendly environments that accommodate people on foot or who use transit equally or preferentially to people in cars.
- In public places or as a recommendation to a developer, include stairs that are safe, conspicuous, and pleasant to use in lieu of elevators.
- Place signage inside and outside of public buildings and facilities to encourage people to use the stairs (e.g., "Make the first choice, the healthy choice"; "Take the stairs, for your heart's sake").
- Use traffic calming, parking lot landscaping, and street redesign to reduce pedestrian and vehicle crashes.

FORM-BASED CODES *(continued)*

Form-based codes can be applied within a spatial basis called a transect. In the context of the built environment, the transect is a geographical cross section that displays a continuum with an increasing degree of human activity and intensity of development. Architect and new urbanist Andres Duany introduced the transect as a means of integrating community design across scales, from regional tiers, to community codes, to architectural design standards. He borrowed the idea from ecology, where it is applied as a cross section through different habitats as a means of understanding their interrelationships across a continuum (Local Government Commission 2005).

Form-based codes are applied to development in each of the six districts the prototypical transect contains. Rural lands (either farmed or wild) are on one end of the continuum; a suburban, village-centered development and an urban center district (which is urbanized but not considered to be a downtown) form the middle districts; and the urban core is at the other end of the continuum. For more information about form-based codes, see:

- Congress for the New Urbanism. 2004. *Codifying New Urbanism: How to Reform Municipal Land Development Regulations*. Planning Advisory Service Report No. 526. Chicago: APA.
- Katz, Peter. 2004. "Form First: The New Urbanist Alternative to Conventional Zoning." *Planning* (November), 16-21.
- Local Government Commission. 2005. "Form-Based Codes: Implementing Smart Growth." Fact Sheet. Available at www.lgc.org/freepub/land_use/factsheets/form_based_codes.html
- Rouse, David and Nancy Zobl. 2004. "Form-Based Development Codes." *Zoning Practice*.

- Apply SafeScape and Crime Prevention Through Environmental Design (CPTED) principles of security, lighting, visibility, and circulation to neighborhood planning to reduce crime, fear, and personal injury.
- Require onsite stormwater management to both protect drinking water and minimize flooding.
- Require buffering between incompatible land uses to reduce noise and improve air quality.
- Provide safe, well-marked connections between commercial areas and neighborhoods.
- Provide landscaping, shade trees, and safe routes within parking lots.
- Preserve trees in suburban and urban areas and increase tree canopy to counteract heat island effects.

THE FIFTH POINT OF INTERVENTION: PUBLIC FACILITY SITING AND CAPITAL SPENDING

Deciding where to locate and how to design public facilities (e.g., post offices, libraries, schools, and community centers) is important for communities serious about creating walkable environments. The most significant part of an individual's decision when making a trip on foot is having a purpose or a destination in mind. In addition to regular destinations like stores, schools, and workplaces, these public facilities serve as regular walking destinations and community gathering places. This is especially true for seniors and persons with a disability, who in general are more dependent on walking and transit for transportation than is the general population.

A recent and very popular approach to combating childhood inactivity and weight problems is to create safe routes for children to walk or bike to school. Researchers have found that children who live in neighborhoods with sidewalks are more likely to walk to school than those who live where there are no sidewalks (Ewing 2005). In Marin County, California, a safe-routes-to-school program that included both street safety improvements and encouraged students to walk increased the number of students walking to school by 64 percent in two years (Staunton et al. 2003).

Health considerations can also be brought to the fore in decisions related to the siting of public housing and to the construction standards applied to such housing. Researchers at Harvard University have found evidence of positive effects on health through interventions that address hazardous physical, chemical, and biological exposures at the individual housing-unit level. In the case of childhood lead exposure, research has documented the positive impact that various methods of lead hazard control have on lead levels in blood (Acevedo-Garcia and Osypuk 2005).

Rajiv Bhatia
San Francisco Department of Public Health

Substandard housing conditions—a common problem in low-income communities—pose numerous health risks to the adults and children who live there. According to the CDC, about 24 million housing units in the U.S. have deteriorated leaded paint. More than 4 million of these dwellings are home to one or more young children. Public investments in affordable and subsidized housing should make lead abatement a top priority.

TABLE 2-1. PUBLIC HEALTH IN THE PLANNING PROCESS

This table describes five common steps in the preparation and adoption of a local comprehensive plan. The right-hand column lists strategies and actions that a public health stakeholder should consider undertaking in the comprehensive planning process to ensure that health considerations are taken into account. Though this model describes the comprehensive planning process, the strategies and actions that public health may undertake are transferable to other plan preparation processes, such as bicycle, pedestrian, and trails plans, an environmental protection plan.

Step 1: Visioning and Goal Setting	
Comprehensive Plan Action	**Public Health Agency Role**
• Engage the public and stakeholders; discuss community goals and values • Refine and articulate a vision for the future • Set goals and priorities • Establish plan scope	• Attend, initiate, or facilitate visioning sessions • Familiarize public health staff with planning process and potential roles for health • Educate planners on role of public health in planning • Recommend inclusion of a Health Element and/or health goals in the plan • Chair or participate in plan committees, work groups
Step 2: Data Collection, Needs Assessment	
Comprehensive Plan Action	**Public Health Agency Role**
• Collect data, track trends, conduct capacity studies, etc. • Survey the public, hold forums and hearings • Use GIS to map needs • Analyze needs and address how to meet them	• Provide health data and statistics to planners, stakeholders, and decision makers • Attend planning and zoning meetings • Disseminate information to the public, including "real life" stories • Introduce Health Impact Assesment (HIA) options (e.g., walkability audit)
Step 3: Drafting the Plan	
Comprehensive Plan Action	**Public Health Agency Role**
• Use technical data and community input to form plan policies that meet established goals • Develop alternative growth scenarios • Develop implementation strategies reflecting costs and potential funding sources • Make plan available for public comment • Hold hearings on final draft plan, formal adoption by governing body	• Continue participation in the plan preparation process; comment on health concerns • Provide decision makers with model or sample functional plans (i.e., pedestrian plan, housing plan) that address health • Encourage citizens to use com-ment time to address health concerns • Attend planning and zoning meetings • Appoint or elect public health officials to decision-making boards

TABLE 2-1. PUBLIC HEALTH IN THE PLANNING PROCESS *(continued)*

Step 4: Adoption and Implementation	
Comprehensive Plan Action	**Public Health Agency Role**
• Plan goes to legislative body for adoption • Plan serves as a guide to future land use decisions • Additional functional plans are prepared (i.e., pedestrian plans) • Plan is implemented through schedule set forth in the plan	• Be an advocate for adoption of the plan if it meets health goals • Take responsibility for implementation of health goals, or work to keep them as a priority • Review development proposals for health aspects • Attend public planning and zoning meetings
Step 5: Revise Development Regulations and Evaluate Plan Performance	
Comprehensive Plan Action	**Public Health Agency Role**
• Revise zoning and subdivision regulations to be consistent with the new plan • Support rezoning initiatives when applicable • Schedule public investments (e.g., streetscape improvements, housing upgrades) • Monitor plan implementation using benchmarks and indicators	• Provide decision makers with model zoning codes, comprehensive plans, and land use ordinances that relate to public health • Support rezoning initiatives when applicable • Attend planning and zoning meetings

Source: Land Use Planning Project Staff, National Association of County and City Health Officials

CONCLUSION

It is important to note that the Five Strategic Points of Intervention framework essentially mirrors a typical planning process (i.e., one that begins with visioning and goal-setting sessions and ends with implementation of the plan through land-use regulations). In practice, users of this report may opt to begin with any of the five points, depending on what is happening in their jurisdiction and what is likely to have a positive impact on the public's health in the short or long term. We recognize, for example, functional plans are not necessarily prepared concurrently with a broader comprehensive planning effort. A trails and greenways plan may be undertaken separately, but in and of itself provides a key intervention point where health should be interjected. Further, a streetscape improvement plan in a specific neighborhood commercial core could provide an ideal opportunity for the community to consider measures to improve pedestrian safety, solve stormwater runoff problems, and address crime.

The five points approach is intended to help planners and public health leaders and their staffs conceptualize how, when, and in what form health matters should be addressed in the planning process. There are no doubt other successful approaches used in communities that have already retooled their planning and land development regulations with the aim of creating healthier communities, including those described in Chapter 7 of this PAS report.

CHAPTER 3

Issues in Public Health: Where Planning Plays a Role

By Marya Morris, AICP, and Katharine Hannaford

Planning and community design can and have played a role in mitigating the effect of development on the public's health. In this chapter, we focus on seven areas that provide opportunities for collaboration between public health and planning professionals. The topics include surface and drinking water quality; air quality; obesity and physical inactivity (i.e., auto-dominated, pedestrian-unfriendly communities; crime and neighborhood safety; pedestrian safety; hazardous materials and human exposure; and mental health and community cohesion). To reiterate, we recommend that planners and public health professionals work together at incorporating and addressing these topics in planning processes not as a special, one-time project, but as part of a new model for collaborative decision making.

THE CONNECTION BETWEEN NONPOINT SOURCE GROUNDWATER CONTAMINATION AND LAND USE

There are five groups of waterborne contaminants that can result from land-use activities:

- **Microbial contaminants**, such as viruses and bacteria, which may come from sewage treatment plants, septic systems, agricultural livestock operations, and wildlife.
- **Inorganic contaminants**, such as salts and metals, which can occur naturally or result from urban stormwater runoff, industrial or domestic wastewater discharges, oil and gas production, mining, or farming.
- **Pesticides and herbicides**, which may come from a variety of sources, including agriculture, stormwater runoff, and residential uses.
- **Organic chemical contaminants**, including synthetic and volatile organic chemicals, which are by-products of industrial processes and petroleum production, and can also come from gas stations, urban stormwater runoff, and septic systems.
- **Radioactive contaminants**, which can be naturally occurring or be the result of oil and gas production and mining activities.

Note: A full list of the specific contaminants that are regulated by the U.S. EPA, their potential health threats, and the maximum quantities of each allowed by law are listed on the U.S. EPA website at www.epa.gov/ogwdw/mcl.html.

SURFACE AND DRINKING WATER QUALITY

The Public Health Problem

Providing safe and clean drinking water is imperative to the protection of the public's health. Numerous aspects of the built environment as well as land-use policies and practices can cause contamination of or otherwise negatively affect groundwater and thus drinking water quality.

Marya Morris

Interactive fountains are an increasingly popular feature within parks and other public spaces where people like to gather and have fun. Researchers have found incidences of waterborne disease in such facilities, caused by leaky diapers and improperly installed or maintained water circulation systems. Shown here the Plenza Fountain in Millennium Park in Chicago.

According to the Department of Health and Human Services Healthy People 2010 project, 85 percent of Americans are served by drinking water that meets U.S. EPA standards. Outbreaks of waterborne diseases, however, many of which are attributable to land use, continue to be a problem. According to the CDC:

- In the period from January 1999 to December 2000, 25 states reported a total of 39 outbreaks of waterborne diseases associated with drinking water. Included among these 39 outbreaks was one outbreak that spanned 10 states. A total of 2,068 persons got sick from these outbreaks, and two people died. Twenty-eight (71.8 percent) of the 39 outbreaks were linked to groundwater sources; 18 (64.3 percent) were associated with private or noncommunity wells not regulated by EPA (WQHC 2003).
- A single outbreak of cryptosporidium in Milwaukee's drinking water supply in 1993 resulted in more than 400,000 cases of illness (Corso et al. 2003).
- Rainfall and runoff have been implicated in site-specific waterborne disease outbreaks. Fifty-one percent of waterborne disease outbreaks between 1948 and 1994 were preceded by precipitation events above the 90th percentile and 68 percent by events above the 80th percentile. Outbreaks due to surface water contamination showed the strongest association with extreme precipitation during the month of the outbreak; a two-month lag applied to groundwater contamination events (Curriero et al. 2001).

Land-Use Implications

The U.S. EPA divides water pollution sources into two categories: point and nonpoint. Nonpoint sources are more diffuse and include urban and agricultural runoff, mining activities, and paved roads. Point sources of water pollution are stationary locations (e.g., sewage treatment plants, factories, and ships).

Nonpoint source pollution. From a planning standpoint, the nonpoint sources of water contamination are the most significant. Such pollution increases with urbanization and urban sprawl because the amount of land covered with impervious surfaces (e.g., roofs, roads, and parking lots) increases. These surfaces collect pathogens, metals, sediment, and chemical pollutants that are transmitted to receiving waters (e.g., streams, rivers, and lakes) during rain or snowstorms. These pathogens and pollutants are linked to chronic and acute illnesses when people are exposed to them through drinking water (Gaffield et al. 2003).

Another aspect of land use that affects water and public health is the pooling or collection of stormwater in retention and detention basins. (A retention basin holds a fixed amount of stormwater permanently. A detention basin stores stormwater and releases it at a controlled rate.) Pooling may also occur in other areas where earth moving and regrading of land to prepare for development has caused incidental depressions. Standing water in these places can increase potential breeding areas for mosquitoes, which can carry dengue fever, West Nile virus, and other infectious diseases.

Other land-use activities in exurban and rural areas can have an impact on groundwater and drinking water quality. Specifically, runoff from agriculture and farming as well as leaking and improperly maintained septic systems in low-density residential areas in semirural rural settings can negatively affect water quality.

Point source water pollution. The Clean Water Act regulates water pollution from point sources (e.g., municipal sewer systems, factories, and many other sources uniquely identified as a potential polluter) through the U.S. EPA's National Pollutant Discharge Elimination System (NPDES). These regulations are distinct from others that manage nonpoint source pollution, but they still require action by local governments, including planners.

Under this permitting program, municipalities must develop the necessary legal authority to reduce the discharge of pollutants in stormwater to the maximum extent practicable and must develop and implement a stormwater management program that includes:

- structural and source control measures to reduce pollutants from runoff from commercial and residential areas, including maintenance, monitoring, and planning activities;
- detection and removal of illicit discharges and improper disposal into the storm sewer;
- monitoring and control of stormwater discharges from certain industrial activities; and
- construction site stormwater control (www.epa.gov/safewater/protect/pdfs/stormwater.pdf).

Planning Measures to Manage Urban Runoff and Protect Water Quality

The U.S. EPA and the Center for Watershed Protection have produced the best sources of information on protecting the public from illnesses caused by water contamination. Here we provide basic information that planners should have on protecting water quality and offer abstracts

RESOURCES ABOUT WATER QUALITY

Corso P.S., M.H. Kramer, et al. 2003. "Cost of Illness in the 1993 Waterborne Cryptosporidium outbreak, Milwaukee, Wisconsin." *Emerging Infectious Diseases.* April. [Accessed July 12, 2006]. Available at www.cdc.gov/ncidod/EID/vol9no4/02-0417.htm

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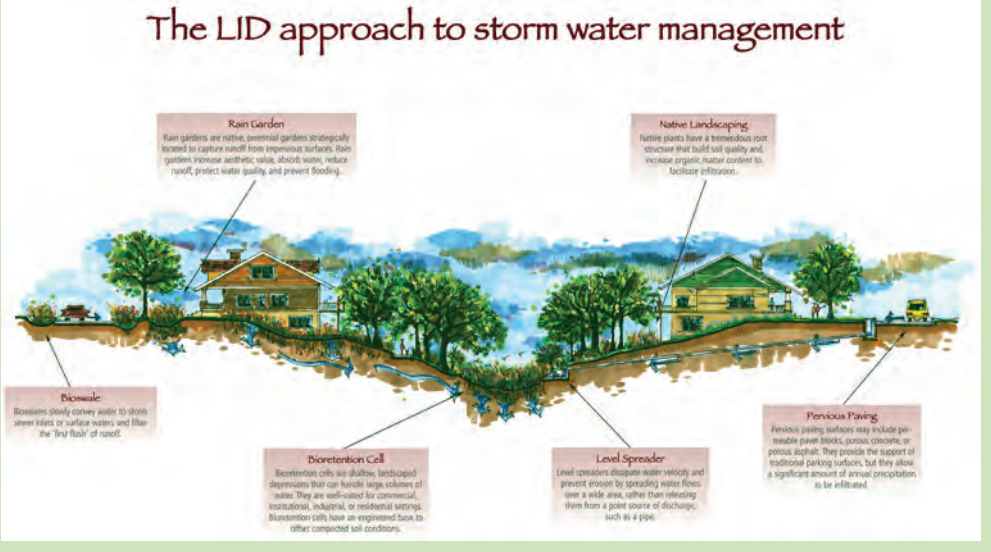
LOW-IMPACT DEVELOPMENT AS A STORMWATER MANAGEMENT TOOL

Low impact development (LID) describes a set of landscaping and site design techniques that maintain the natural, pre-developed ability of a site to manage rainfall. Experts in this area characterize an LID as having a "hydrologically functional landscape." LID techniques capture water on site, filter it through vegetation, and let it soak into the ground where it can recharge groundwater supplies. With LID, rainwater is considered a resource rather than a waste product.

LID is grounded in these principles:

- Integrate stormwater management early in site planning activities
- Use natural hydrologic functions as the integrating framework
- Focus on prevention rather than mitigation
- Emphasize simple, nonstructural, low-tech and low-cost methods
- Manage stormwater as close to the source as possible
- Distribute small-scale practices throughout a site
- Rely on natural features and processes
- Create a multifunctional landscape

The most common LID practices are rain gardens and bio-retention, rooftop gardens, vegetated swales, permeable paving materials, soil amendments, impervious surface reduction, and pollution prevention.



Louisiana Department of Natural Resources

When applied to site designs, best management practices for stormwater runoff can help property owners and municipalities prevent flooding of parking lots. Such floods result in even more pollutants being added to the stormwater (from oil and rubber left on the parking lot by vehicles) and can become a breeding ground for mosquitoes.

In 1987 the Clean Water Act of 1972 was amended to reflect findings that showed stormwater runoff to be a major cause of water quality impairment. National Permit Discharge Elimination System (NPDES) permit requirements were put in place in two phases. Phase I required such permits for medium and small municipal separate storm sewer systems (known as MS4s) that generally serve 100,000 people or more. Phase II began in 2003, when NPDES permits were required for any construction activity that disturbs between one and five acres of land, as well as for MS4s, and some industrial activity that had not been previously regulated by the Act. All MS4s are now required to develop and implement a storm water management program that includes six minimum control measures, evaluation/assessment and reporting efforts, and record keeping.

LID can be used to satisfy five of the six minimum control measures under NDPES Phase II: 1) public education and outreach; 2) public participation/involvement, 3) construction site runoff control; 4) post-construction runoff control; and 5) pollution prevention/good housekeeping. It cannot be used to satisfy the "illicit discharge connection and elimination" control measure.

Resources

Low Impact Development Center website. www.lowimpactdevelopment.org/

Low Impact Development: Technical Manual for the Puget Sound Region. 2005. Olympia, Wash.: Puget Sound Action Team and Washington State University (Pierce County Extension, Tacoma). May. Available at www.psat.wa.gov

Smart Growth Toolkit. n.d. Prepared by the Horsley/Witten Group for the Massachusetts Executive Office of Enviromental Affairs. Available at www.mass.gov/envir/smart_growth_toolkit/index.html

and references from some of the major reports and guidance documents in this area.

The U.S. EPA released the *Handbook for Developing Watershed Plans to Restore and Protect Our Waters* in October 2005. It provides detailed and comprehensive guidance to communities preparing a watershed management plan. Protecting water quality is a chief goal of watershed planning, thus the relevance to this PAS Report, which focuses on public health and land use. The handbook will help planners guide the process of determining the most effective stormwater management techniques in the context of overall watershed planning. The report is available from the U.S. EPA website at www.epa.gov/owow/nps/watershed_handbook/.

A second significant source of guidance is the Center for Watershed Protection, a nonprofit group that has produced a number of documents for local governments on the management of stormwater runoff. In *Managing Stormwater Runoff to Prevent Contamination of Drinking Water*, the center lists the following prevention measures available to both citizens and government entities:

- Land-use controls to protect source water from potential contamination, including stormwater management standards for new subdivisions, and low-impact development, which aims to maintain predevelopment hydrology, infiltration technology, and rerouting of water to recharge aquifers.
- Minimization of directly connected impervious areas to reduce the flow and volume of runoff. Stormwater management standards in land-use ordinances should include provisions for directing runoff from impervious surfaces to grassy areas to promote infiltration and filtration of pollutants.
- Structural designs in the landscape, including grassed swales, buffer strips, filter strips, stormwater ponds, constructed wetlands, and other engineering devices, such as infiltration basins and trenches, and swirl-type concentrators (which are underground vaults that store water).
- Erosion and sedimentation control measures, such as planting vegetation and minimizing soil exposure during construction.

The U.S. EPA issued a bulletin in July 2001 that describes available prevention measures to address stormwater runoff, including the techniques described above. Further details on each measure are provided in the bulletin.

Many states provide grants and low-interest loans to local governments to improve their community water systems and meet the requirements of the Safe Drinking Water Act. Delaware, for example, manages a Drinking Water State Revolving Fund (DWSRF) that gives grants and loans to Delaware communities to improve existing infrastructure and develop the needed technical, managerial, and financial capacities to meet the requirements of the Safe Drinking Water Act. Delaware regards this loan program as an important incentive for local governments to expand and improve water systems in a manner that protects the public health and quality of life.

AIR QUALITY

The Public Health Problem

Land development patterns in a region affect air quality by influencing the extent to which citizens are dependent on automobiles to get to work and school, run errands, and conduct all other activities on a typical day. Urban sprawl with low-density development marked by large separations between drivers' origins (e.g., their homes) and their destinations (e.g., shopping,

ELEMENTS OF A SUCCESSFUL STORMWATER PROGRAM

Stormwater Strategies, a 1999 report by the Natural Resources Defense Council (NRDC), examined 100 case studies of successful stormwater management programs. The case studies offer many examples about how planners and public health officials can play a role. For instance, the cases highlight programs to preserve undeveloped land; to educate the public on ways to prevent pollution; to construct wetlands and ponds as part of wetlands and stormwater mitigation guidelines and requirements; and to establish special maintenance routines for municipal vehicles, parks, and roads. NRDC's research indicated that successful stormwater control programs contain the following elements:

- Advance planning and clear goals
- Broad government and community participation facilitated and encouraged by officials
- Pollution prevention as a priority over treatment of polluted runoff
- Accountability of partners and citizens
- A stable funding source (e.g., a stormwater utility)
- Strategies tailored to local needs and problems
- Education, public participation, monitoring, and enforcement components
- Evaluation programs that improve as they evolve
- Recognition and dissemination of information about the quality-of-life benefits of parks, ponds, and clean streets.

SMOG IS SICKENING

Common air pollution, or smog, is comprised of six different pollutants that together the U.S. EPA refers to as "criteria air pollutants." They are carbon monoxide, lead, nitrogen dioxide, ozone, particulate matter, and sulfur dioxide. These pollutants can cause serious, even fatal, health problems, harm the environment, and result in property damage. Land-use planning and transportation policies can make a significant impact on the public's health when they are used to reduce automobile dependence and the number of vehicles miles traveled in a region, and when they provide less-harmful transportation options, such as walking, bicycling, public transit, and carpooling.

EPA has established National Ambient Air Quality Standards (NAAQS) for each criteria pollutant to define the maximum concentration legally allowable in the air. Adverse effects on human health may occur if a pollutant level exceeds the NAAQS. EPA and state agencies monitor air quality in an area to assess compliance with these standards. A "non-attainment area" is one where air pollution levels persistently exceed health standards.

Carbon Monoxide (CO)

Carbon monoxide (CO) is a colorless, odorless, and poisonous gas produced by incomplete burning of carbon in fuels. When CO enters the bloodstream, it reduces the delivery of oxygen to the body's organs and tissues. Health threats are most serious for those who suffer from cardiovascular disease. Exposure to elevated CO levels can cause impairment of visual perception, manual dexterity, learning ability, and performance of complex tasks.

Seventy-seven percent of CO emissions in the U.S. are from transportation sources. The largest contributors of these emissions are motor vehicles. Thus, the focus of CO monitoring has been at traffic-oriented sites in urban areas where the main source of CO is motor vehicle exhaust. Other major CO sources are wood-burning stoves, incinerators, and industrial sources.

Lead (Pb)

Lead (Pb) is a widely used metal that, once released to the environment, can contaminate air, food, water, or soil. Exposures to even small amounts of lead over a long time can accumulate to reach harmful levels. Harmful effects may therefore develop gradually without warning. Short-term exposure to high levels of lead may also cause harm. Lead can adversely affect the nervous, reproductive, digestive, cardiovascular blood-forming systems, and the kidneys. In men, adverse reproductive effects include reduced sperm count and abnormal sperm. In women, adverse reproductive effects include reduced fertility, stillbirth, or miscarriage. Children are a sensitive population because they absorb lead more readily and their developing nervous system puts them at increased risk for lead-related harm, including learning disabilities.

Lead gasoline additives, non-ferrous smelters, and battery plants are the most significant contributors to Pb emissions into the atmosphere. In 1993, transportation sources contributed 33 percent of the total of annual emissions, down substantially from 81 percent in 1985. Total Pb emissions from all sources dropped from 20,100 tons in 1985 to 4,900 tons in 1993. The decrease in Pb emissions from cars and trucks shifting to lead-free gasoline accounts for essentially all this decline. *(continued)*

SMOG IS SICKENING *(continued)*

Nitrogen Dioxide (NO_2)

Nitrogen oxides (NO_X) include various nitrogen compounds, including nitrogen dioxide (NO_2) and nitric oxide (NO). Nitrogen dioxide is a brownish, highly reactive gas present in all urban atmospheres. These compounds play an important role in the atmospheric reactions that create ozone (O_3) and acid rain. The major mechanism for the formation of NO_2 in the atmosphere is the oxidation of nitric oxide (NO), which is produced by most combustion processes.

NO_2 can irritate the lungs, cause bronchitis and pneumonia, and lower resistance to respiratory infections. NO_2 forms when fuels are burned at high temperatures. The two major emission sources are transportation vehicles and stationary combustion sources (e.g., electric utility and industrial boilers). NO_2 can also be formed naturally.

Ozone (O_3)

Ozone (O_3) is the major component of smog. Ozone in the upper atmosphere is beneficial because it shields the earth from the ultraviolet radiation. At ground level, ozone is created by a chemical reaction between nitrogen oxide (NO_x) and volatile organic compounds (VOC) in the presence of sunlight. Ground-level ozone can damage lung tissue, reduce lung function, and make lungs more sensitive to other irritants. Scientific evidence indicates that ambient levels of ozone not only affect people with impaired respiratory systems, such as asthmatics, but healthy adults and children as well. Motor vehicle exhaust and industrial emissions, gasoline vapors, and chemical solvents as well as natural sources emit NO_x and VOC that help to form ozone. In 1999, the cumulative number of eight-hour person days that U.S. residents breathed in air containing ozone levels that exceeded the NAAQS exceeded 6.6 billion. (This measure is derived by multiplying the number of days when monitored concentrations of a criteria pollutant exceed a NAAQS by the total number of people living in the affected area.)

Sulfur Dioxide (SO_2)

Sulfur dioxide (SO_2) is part of a group of sulfur oxide gases (SO_X). Sulfur is found in all raw materials, including crude oil, coal, and ore, that contain common metals such as aluminum, copper, zinc, lead, and iron.

Sulfur dioxide has a wide variety of health and environmental impacts because of the way it reacts with other substances in the air. Particularly sensitive groups include people with asthma who are active outdoors and children, the elderly, and people with heart or lung disease.

More than 65 percent of the SO_2 released to the air each year comes from electric utilities, especially those that burn coal. Other sources of SO_2 are industrial facilities that derive their products from raw materials such as metallic ore, coal, and crude oil, or that burn coal or oil to produce process heat. Examples are petroleum refineries, cement manufacturing, and metal processing facilities. Also, locomotives, large ships, and some nonroad diesel equipment currently burn high-sulfur fuel and release SO_2 emissions to the air in large quantities.

FIVE CHARACTERISTICS OF URBAN FORM THAT INFLUENCE TRAVEL AND AIR QUALITY

Density

- Density refers to the compactness of a neighborhood, a development, or a region.
- Density can reduce vehicle travel by reducing the distances that people have to drive, reducing the necessity of owning a vehicle, and increasing the viability of using other modes of travel, such as walking or biking.
- Higher-density development also makes mass transit more economically feasible for the public sector.

Land-Use Mix

- Land-use mix refers to incorporating different land uses (e.g., recreation, housing, employment, shopping) within a development, a neighborhood, or a region.
- A proper land-use mix can lead to shorter trip distances and greater use of walking, as well as a reduced need for vehicle ownership.
- A proper land-use mix can reduce required commute distances.

Transit Accessibility

- Transit accessibility refers to locating high-density commercial and residential development around transit stations; also known as "transit oriented development" (TOD).
- Transit accessibility can increase the market for such services, increase ridership, and decrease auto use.
- Transit accessibility can lead to decreased auto ownership.

Pedestrian-Environment/Urban Design Factors

- Certain design features can improve the pedestrian environment (e.g., sidewalks, clearly marked crosswalks, shade trees, benches, and landscaping); some features also improve the bicycling environment (e.g., bike paths and dedicated bike lanes, bike parking, and clear signs). In turn, these features can reduce driving by increasing the desirability of walking and biking and, consequently, lead to decreased auto ownership.

Regional Patterns of Development

- Regional patterns of development refers to the dispersion, centralization, or clustering of activities within a metropolitan area, as well as to the relationship of development to highway and transit systems; these patterns also define the interrelationships between employment and residential development, and the transportation connection between sets of origin and destination points.
- A good regional pattern can reduce driving by locating trip origins and destinations closer together.
- A good regional pattern can also encourage transit use and reduce vehicle trips by concentrating development around transit networks and clustering development.

Source: Adapted from *EPA Guidance: Improving Air Quality Through Land Use Activities*

work) is what has created the auto-dependent land-use patterns that characterize contemporary American communities.

Ozone—a major component of smog—is formed when pollutants emitted by cars, power plants, industrial boilers, refineries, chemical plants, and other sources react chemically in the presence of sunlight. Ozone can irritate the respiratory system, reduce lung function, aggravate asthma, inflame and damage cells that line the lungs, aggravate chronic lung diseases, and cause permanent lung damage.

Carbon Monoxide (CO) emissions—a major component of smog —are the leading contributor to air-quality degradation, which threatens the public's health by causing or exacerbating asthma and other respiratory illnesses. In urban areas, as much as 95 percent of all CO emissions may come from automobile exhaust. Other sources of CO emissions include industrial processes, nontransportation fuel combustion, and natural sources, such as wildfires (US EPA 2001a).

Exposure to certain toxins, such as those found in the air or in homes, have disproportionate negative impacts on children and ethnic groups as well. Because of their physiology and stage of development, children are more susceptible to air pollution than adults (Canadian Association of Physicians for the Environment, n.d.). Children living close to a major road with high traffic volume are significantly more likely to be diagnosed with asthma than children who live farther away, according to a University of Southern California study. Children living within 75 meters (about 82 yards) of a major road had a nearly 50 percent greater risk of having had asthma symptoms in the previous year than did children who lived more than 300 meters (about 328 yards) away (California EPA, 2005). Puerto Ricans are more likely than other groups to suffer from asthma, while African Americans are three times as likely to die from asthma. Further, because a disproportionate number of Hispanics live in air quality non-attainment areas, they may have an elevated risk of exposure to air toxics. Nearly 80 percent of Hispanics live in non-attainment areas, compared to 65 percent of African Americans, and 57 percent of whites. "Ethnic differences in asthma prevalence, morbidity and mortality are highly correlated with poverty, urban air quality, indoor allergens, and lack of patient education and inadequate medical care" (Asthma and Allergy Foundation of America, n.d.).

Particle pollution, or particulate matter, is the second largest component of smog that affects public health. It is composed of microscopic solids or liquid droplets so small that they can get deep into the lungs and cause serious health problems. They come from a variety of sources (e.g., cars, trucks, buses, factories, construction sites, tilled fields, unpaved roads, stone crushing, and wood burning). Particulate matter generally causes the same negative health outcomes as does ozone. Symptoms may include irritation of the eyes, nose, and throat; coughing; phlegm; chest tightness; and shortness of breath. At greatest risk from particle pollution are people with heart or lung disease, older adults (possibly because they may have undiagnosed heart or lung disease), and children.

The most explicit evidence of the effects of motor vehicle emissions on respiratory health was revealed in a study conducted

RESOURCES ABOUT AIR QUALITY

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Friedman, Michael S., Kenneth E. Powell; Lori Hutwagner; LeRoy M. Graham; W. Gerald Teague. 2001. "Impact of Changes in Transportation and Commuting Behaviors During the 1996 Summer Olympic Games in Atlanta on Air Quality and Childhood Asthma." *Journal of the American Medical Association* 285: 897-905.

"Health and Environmental Effects of Ground-Level Ozone." 1997. Technology Transfer Network OAR Policy and Guidance. Fact Sheet. Washington, D.C.: U.S. Environmental Protection Agency. July 17.

"National Air Quality 2001 Status and Trends." 2001. Washington, D.C.: U.S. Environmental Protection Agency. [Accessed July 13, 2006]. Available at http://www.epa.gov/air/airtrends/aqtrnd01/carbon.html

SCORECARD – The Pollution Information Website. [Accessed July 13, 2006]. Available at http://www.scorecard.org/index.tcl

"Smog: Who Does it Hurt? What You Need to Know About Ozone and Your Health." 1999. EPA-452/K-99-001. Washington, D.C.: U.S. Environmental Protection Agency. [Accessed July13, 2006]. Available at www.airnow.gov/index.cfm?action=health2.index

"Transportation Control Measures." 1997. EPA420-F-97-021. Washington, D.C.: U.S. Environmental Protection Agency. December.

World Resources Institute. EarthTrends Environmental Information Portal. [Accessed July 13, 2006]. Available at www.earthtrends.wri.org/pdf_library/country_profiles/cli_cou_840.pdf

during the Atlanta Olympics in 1996 and reported in 2001 in the *Journal of the American Medical Association*. The city had imposed strict limitations on automobile use during the 17-day event to the point of prohibiting cars in the entire downtown. During the Summer Olympics, strategies to decrease potential road traffic congestion problems were implemented, including: closure of the downtown area to car traffic; increased access to public transportation by adding trains to the MARTA rail system and 1,000 buses; and promotion of flexible work schedules, car-pooling, and telecommuting for Atlanta workers. In addition, many Atlanta residents opted not to drive at all, heeding official warnings about potential traffic tie-ups.

Comparing the four weeks immediately preceding and the four weeks immediately following the Olympics with the 17 days the Olympics occurred, researchers noted substantial reductions in the average daily concentration of several key pollutants during the 17-day event. These decreases were 27.9 percent for ozone, 18.5 percent for carbon monoxide, 16.1 percent for small airborne particles defined as particulate matter with a diameter less than 10 micrometers, and 6.8 percent for nitrogen dioxide. The study reported there had been no weather-related factors that could explain the improved air quality; that is, the weather was typical for Atlanta for that time of year. In other words, the dramatic reduction in pollutants could be attributed to the big drop in vehicle miles traveled.

The study looked specifically at the effect of the decreased auto emissions on children under age 16 with asthma. Remarkably, they found that during the Olympics there had been a 41.6 percent reduction in the number of asthma-related emergency room visits and hospitalizations as measured by the Medicaid claims file database. Moreover, asthma-related visits to two large pediatric emergency departments in Atlanta decreased by 11.1 percent, and there was a citywide reduction of 19.1 percent in asthma hospitalizations.

Although one might assume the decrease in asthma attacks had more to do with an overall decrease in the number of people seeking emergency care in that same period of time, in fact the data showed a modest increase in the daily number of non-asthma-related cases in children (3.1 percent increase when measured by the Medicaid database, and a 2.1 percent increase when quantified by pediatric emergency room visits).

Planning Measures to Mitigate the Land-Use and Transportation Impacts on Air Quality

A research team in King County, Washington, (which includes Seattle) released a study in 2005 that explored the links between the built environment, mobility (i.e., how individuals get around, whether by car, transit, bike, or on foot), air quality, and public health. "A Study of Land Use, Transportation, Air Quality, and Health in King County, WA" was intended to inform policy and investment decisions in the county, most significantly, the King County Comprehensive Plan. The report contains extensive findings on the relationships between various land-use patterns (e.g., compact development vs. low-density sprawl), travel mode choice, air quality, and health. It also recommends a number of new land-use policies and implementation measures to improve the public's health in the region. All of the policies and tools in the King County report are transferable to other jurisdictions. They are summarized here.

Planning Recommendations:

- Review and change policies and regulations that are a barrier to compact, mixed-use development
- Create approval processes and incentives for urban developments that:
  - create connected street networks with expanded bicycle and pedestrian facilities;
  - expand the trail network;
  - increase development density (e.g., number of dwelling units/acre) using superior design principles; and
  - provide a balanced mix of residential, commercial, institutional, and recreational uses (Frank 2005).

Implementation Recommendations:

- Improve street connectivity.
- Give priority to nonmotorized travel.
- Expand the regional trail network.
- Increase transit access.
- Make transit investments that support land-use decisions.
- Make pedestrian investments coincident with improved transit service.
- Create a pool of funds for strategic improvements that meet the test of smart development.

L. Henry, *Light Rail Now!*

MAX LRT runs directly through Portland, Oregon's vibrant Saturday Market area at Skidmore Fountain, providing mobility and urban livability benefits to this and other city neighborhoods.

The U.S. EPA has released numerous guidance documents to help local governments shape transportation and land-use policies in a way that will ultimately improve air quality and reduce the negative public health effects of smog. Citations to these documents are in the resources list for this section.The sidebar on the following page is excerpted from one such EPA report. It describes both the characteristics of urban form that affect air quality and the land-use or transportation planning solutions recommended to mitigate those effects.

OBESITY AND INACTIVITY

The Public Health Problem

There is an epidemic of obesity afflicting Americans of all ages. Health experts attribute it to a wide range of factors, including nutrition, dietary choices, social and family dynamics, and a lack of exercise or physical activity. In the mid-1990s, public health experts at the CDC recognized that the design of communities, neighborhoods, and transportation networks had a direct bearing on people's ability to incorporate any amount of physical activity into their daily routines. In other words, sprawling land development patterns have made walking, bicycling, and, in many regions, public transit infeasible as means of transportation. These factors include low-density, auto-dependent development and sprawl; sidewalks in poor condition or nonexistent; a lack of walkable destinations that make up a residents' everyday routine, such as school, work, or the supermarket; disconnected street networks; and a lack of transit options. These factors, combined with poor eating habits have contributed to the epidemic of obesity and overweight among both adults and children:

- One in three Americans is obese, at least 64 percent are overweight (Ewing, Schmid, et al. 2003).
- There were 112,000 more deaths than expected in 2000 among obese individuals (Schmid 2003).
- According to a study of national costs attributable to overweight (Body Mass Index (BMI) 25–29.9) or obesity (BMI greater than 30), medical expenses accounted for 9.1 percent of total U.S. medical expenditures in 1998 and may have reached as high as $78.5 billion ($92.6 billion in 2002 dollars). Approximately half of these costs were paid by Medicaid and Medicare (Finkelstein, Fiebelkorn, and Wang 2003).
- People in more sprawling counties are likely to have higher rates of being overweight or obese, and greater prevalence of hypertension than those living in more compact places (Ewing, Schmid, et al. 2003).

Marya Morris

A 2006 study published in the Journal of the American Medical Association *found that the percentage of overweight children between the ages of six and 11 more than doubled in the past 20 years, from 7 percent in 1980 to 18.8 percent in 2004. And the rate among adolescents aged 12 to 19 more than tripled, increasing from 5 percent to 17.1 percent.*

This new emphasis has spawned numerous research studies, policy analyses, debates, and, increasingly, direct action to address the health problems associated with obesity and being overweight through local community design and to rethink some of the basic characteristics of conventional patterns of growth. In 2005, health experts and policy makers now recognize that built environment factors may be as much of a cause or contributor to obesity as other factors, such as genetics, nutrition, and psychological factors, that lead to unhealthy eating and inactivity.

Planning Measures to Mitigate the Land-Use and Transportation Influences that Contribute to an Overweight and Obese Population

The planning measures that can be taken to address obesity and overweight are more numerous and comprehensive than the solutions offered in this report for some of the other public health problems for which planning can play a mitigating role. In October 2006, APA will publish a separate PAS Report, *Planning and Designing the Physically Active Community*, which will address the relationship between land use, transportation, and the public health problems of obesity and being overweight in great detail. Here we offer a summary of the types of planning tools and approaches that can create community designs giving residents the facilities and opportunities to be physically active.

Reforms of zoning and subdivision regulations should address those items discussed in Chapter 2 of this PAS Report under Implementation Tools.

CRIME

The Public Health Problem

Writing in 1993, sociologists Reiss and Roth noted that the cause-and-effect relationships between community or neighborhood design, crime, and public health are not as straightforward as those between community design, poor air quality, and asthma. Sociologists and others who have researched crime have found it "notoriously hard to disentangle the effects of resident fear, illegal activities, and social breakdown on neighborhood safety" (Reiss and Roth 1993). A tremendous amount of research has been completed since 1993, leading Tom Kingsley of the Urban Institute to assert in 2003 that literature on the social determinants of health does indeed show a strong link between neighborhood conditions and health (Kingsley 2003). A report of the Task Force on Community Preventive Services convened by the CDC in 2003 also concluded that "in virtually all regions of the country, health problems are *highly* concentrated in a small share of all neighborhoods—typically those that rate highest on a number of indicators of stress (Kingsley 2003). (Emphasis in original.) Further, a report prepared by Nacro, a British charity that studies crime and crime prevention in the United Kingdom (McManus 2001), described the direct and indirect effects of crime on individual and public health. The report listed the direct effects as violence, homicide, dangerous driving, and substance abuse. The indirect effects include stress, fear of crime and repeat victimization, and social isolation.

Despite the difficulty researchers have in identifying the precise causal relationships between neighborhood design, safety, and crime, there are several axiomatic aspects to this issue upon which neighborhood improvement safety strategies are often based. The Pew Partnership for Civic Change supports solutionsforamerica.org, a web site that synthesizes research findings on several aspects of neighborhood life, including crime. Specific research findings include the following:

- Safety (i.e., a low crime rate as well as residents' perception that it is safe) is an indicator of a neighborhood's overall economic and social health.
- Safe neighborhoods are necessary to foster common values and community quality of life.
- Neighborhood crime creates fear and distrust among residents.
- Crime is more common in poorer neighborhoods with high population turnover and where bonds between residents are vulnerable.
- Crime also flourishes in neighborhoods where there are more opportunities for violence, such as illegal drug and gun markets (Reiss and Roth 1993).
- Left unchallenged, neighborhood crime contributes to community neglect and disintegration, which in turn are disincentives to economic or social investments in the area.

RESOURCES ABOUT OBESITY

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Finkelstein, E.A., I.C. Fiebelkorn, and G. Wang. 2003. "National Medical Spending Attributable to Overweight and Obesity: How Much, and Who's Paying?" *Health Affairs* W3, 219–26.

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Flournoy, Rebecca et al. 2002. *Regional Development and Physical Activity: Issues and Strategies for Promoting Health Equity*. Oakland, Calif.: PolicyLink. Available at www.activelivingbydesign.org/index.php?id=33

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"Physical Activity Fundamental in Preventing Disease." 2002. Washington, D.C.: U.S. Dept. of Health and Human Services, Ofc. of the Asst. Secy. for Planning and Evaluation. June 20.

Transportation Research Board (TRB). 2005. *Does the Built Environment Influence Physical Activity: Examining the Evidence.* Special Report 282. Washington, D.C.: TRB. January.

Source: Dean Brennan and Al Zelinka

Source: Dean Brennan and Al Zelinka

Above: An entry that provides a clear division between the public space in front of the wall and the semiprivate space inside the courtyard. Below: A central playground area provides a viewable play space for children and an opporunity for parents to interact.

- Neighborhood crime prevention efforts must not neglect the deeper factors that create crime in the first place—lack of legal economic opportunities and weak social bonds between residents.
- In practice, efforts to create safer neighborhoods must go hand in hand with other community development activities such as attracting jobs and increasing access to affordable housing (Sampson 1999; SolutionsforAmerica.org).

The issue of crime and its relationship to community planning is not new. Jane Jacobs, in *The Death and Life of American Cities* (1961) asserted that dense urban environments that contain a fine-grain mix of commercial and residential uses generate a lot of activity on the street at all hours of the day and night, which serves as a deterrent for crime. She called this concept "eyes on the street."

Building on Jacobs' work, architect Oscar Newman put forth the idea that a place can be made safe when residents develop a sense of ownership toward their block or neighborhood. His work focused largely on public housing complexes. In *Defensible Space: Crime Prevention Through Urban Design* (1972), he posited three factors of neighborhood design that could deter criminal activity: surveillance, access control, and territoriality. Surveillance means creating and enhancing visual links between housing and public spaces. Access control means closing streets and minimizing the number of entrances to buildings so residents can easily recognize persons who do not live there or may cause trouble. And territoriality means clearly delineating private and public spaces to encourage residents to take responsibility for the spaces they are assigned.

The work of both Jacobs and Newman continues to resonate in city and neighborhood planning, though certain forces have worked against their ideas (e.g., suburbanization, privatization of space, diminishment of the public realm). New paradigms of good planning, such as smart growth, have evolved to capture some of what Jacobs and Newman prescribed but they also call for actions that run counter to their ideals, such as the push by cities to reconnect streets created as or converted to dead ends or cul-de-sacs.

Al Zelinka and Dean Brennan, in *SafeScape: Creating Safer, More Livable Communities Through Planning and Design* (2001), reasserted that public safety is the cornerstone of vital, economically productive, and livable communities. The SafeScape approach, described in detail below addresses these concepts in the context of smart growth.

Planning and Urban Design Measures to Reduce Citizen Exposure to Crime

Planners have numerous opportunities to partner with public health departments, community groups, police departments, public works departments, and others to create safer neighborhoods and ultimately improve people's health or minimize health risks.

Here we describe two approaches and the tools to implement them that planners and public health representatives can use to make neighborhoods safer and ultimately minimize or eliminate the negative health outcomes experienced by people who live in dangerous areas or in areas they perceive to be dangerous.

The SafeScape Approach. As described in the book, "*SafeScape* challenges citizens, decision makers, and society to create communities that are vibrant, integrated, self policing, and sustaining." The authors note that it is not simply a matter of changing the physical environment and expecting crime and safety problems to take care of themselves; rather, it requires a comprehensive effort that involves empowering and mobilizing citizens, implementing safe growth solutions in the design phase of a plan or project, and creating open, integrated communities (in every sense of the word—economically, racially, and physically).

In terms of the approach, *SafeScape* adheres to seven principles organized into two groups, which are described here.

1. ***Human factor principles for neighborhood and downtown safety*** address the factors that determine what makes people feel safe or unsafe in their neighborhood and community as a whole.

   - *Information and Orientation:* Knowing where we are and having a system of wayfinding to help direct us where we are going reduces fear.
   - *Socialization and Interaction:* Creating neighborhoods that support socialization and interaction with others reduces our fear of other people and provides an incentive to look out for one another's well being.
   - *Stewardship and Ownership:* When we take care to maintain and protect the built environment in which we live, others will respect it.

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Pedestrian and Bicycle Information Center

A pleasant transition between the public and private realms is essential to maintaining a vibrant, safe community. The welcoming streetscape shown in this picture promises an ideal pedestrian environment.

- *Seeing and Being Seen*: Our ability to see our surroundings heightens our awareness of personal safety.

2. ***Implementation principles for addressing human factors*** highlight specific ways in which the built environment can be modified, improved, or designed at the outset to ameliorate residents' fears and perceptions of safety. The three implementation principles are described here.
   - *Land Use and Design:* Identify an appropriate land-use mix and development design standards that make human scale and public safety a top priority.
   - *Activity and Programming:* Create places with a mix of uses that will bring people together.
   - *Management and Maintenance:* Ensure order, dissuade negative perceptions, and discourage undesirable behavior by properly maintaining and managing public, semi-public, and private spaces.

Dan Burden/Pedestrian and Bicycle Information Center

Alleys present a dilemma for planners—new urbanists strongly encourage the use of alleys as a place for garages, utilities, and trash receptacles—opening up the front of residential streets open to people, pedestrians, social interaction, and "eyes on the street." Proponents of crime prevention through environmental design, however, note that alleys can provide escape routes and points of entrapment for criminals. Zelinka and Brennan (2001) recommend that neighborhood and residential designs accommodate "eyes on the alley" as well.

APA's Safe Growth America Checklist

In 2005, APA launched the Safe Growth America initiative to help citizens and planners build safe environments for current and future generations and to protect structures, transportation and utility infrastructure, and the natural environment from damage. Damage may result from natural hazards, technological hazards, or other risk factors. As part of the initiative, APA prepared a *Safe Growth America Checklist* to help facilitate communitywide and neighborhood-level discussions about safety and about actions that planners and others can take to enhance safety. The checklist is available for download at www.planning.org.

PEDESTRIAN SAFETY

The Public Health Problem

According to the Federal Highway Administration (FHwA), 4,641 pedestrians and 725 bicyclists were killed in 2004. This amounted to 13 percent of all traffic fatalities in the United States. An additional 68,000 pedestrians and 41,000 bicyclists were reported injured as a result of collisions with motor vehicles (FHwA 2006).

Children and elderly pedestrians are especially vulnerable to death or injury. In 2004, 19 percent of all children between the ages of five and nine killed in traffic accidents were pedestrians. Americans over the age of 70 made up 15 percent of all pedestrian fatalities and 6 percent of all pedestrians injured in 2004; those older than 65 are more than five times as likely to die in crashes than pedestrians under the age of 14 (Hawaii DOT 2003).

The pedestrian fatality rate for older Americans in 2004 was the highest of any demographic group (2.86 per 100,000) (NHTSA 2004). This population is particularly vulnerable because of limited agility due to muscular and skeletal weakening or arthritis pain; changes in perceptual, cognitive, and

Marya Morris

Using signage to alert drivers to the presence of pedestrians can be useful, but physical improvements, including street trees, landscaped parkways between the street and sidewalk, pedestrian-friendly crossings, and other traffic calming measures are more effective in slowing traffic and saving lives.

motor abilities; and decreased vision. At the same time, the elderly are more likely to use public transportation, necessitating walking trips to bus stops and train stations. Walking to transit is healthful for everyone, induding older people who rely on transit, but streets, sidewalks, and walking routes must be made safe and convenient for people to use them.

Pedestrian safety experts have determined that most pedestrian accidents are the result of unsafe behaviors on the part of both drivers and pedestrians. Much of the unsafe behavior is caused by certain roadway design features rather than poor judgment or irresponsibility on the part of the person attempting to cross the street. Wide streets (e.g., in both residential and commercial areas) lead drivers tend to make drivers want to go faster, and they also attract greater traffic volumes. Wide streets usually have very long crossing distances, as well as wide turning radii, multiple turn lanes, or confusing or complex traffic controls, all of which create unsafe environ-

ments (such as wide streets) for people on foot. A lack of nighttime roadway lighting and walkways along roads are also risk factors. Land-use decisions can exacerbate the safety problem too. For instance, separating residential areas from shopping areas with high-volume multilane roads forces some pedestrians to cross streets in places that may not be safe. Siting new schools on the outer reaches of communities at great distances from students' homes also can lead to inadvertent risk taking by students who walk to school. Drug and alcohol use by motorists and pedestrians (and bicyclists, at times) are also a common factor in accidents involving pedestrians.

Measures to Address Pedestrian Safety in the Context of Planning

While the problem of pedestrian safety needs to be addressed on a number of fronts (e.g., driver and pedestrian awareness and information campaigns), modifications to the physical environment, in light of the vulnerabilities of children and the elderly, are especially important to reduce pedestrian deaths and injuries. The predicted growth in the elderly population, due to the aging of the baby boom generation, will make safe pedestrian environments even more important in the coming years.

Marya Morris

High-velocity traffic and a lack of pedestrian walkways are two reasons that people often choose to drive instead of walking to local destinations. The creation of a safe, pedestrian-only route may resolve these issues. For example, the installation of a pedestrian cut-thru, like the one shown here in Gresham, Oregon, allows residents to move from a residential area to a commercial area without having to cross any major streets.

Transportation planning professionals need to address several objectives to improve pedestrian safety and mobility (adapted from *A Guide for Reducing Collisions Involving Pedestrians* (Transportation Research Board 2003)):

- Reduce the speed of motor vehicles.
- Reduce pedestrian risks at street crossing locations.
- Provide sidewalks and walkways separate from motor vehicle traffic.
- Improve awareness of and visibility between motor vehicles and pedestrians.
- Improve pedestrian and motorist behaviors.

A variety of strategies are available to improve pedestrian safety. Experts in this area recommend a comprehensive approach that can be summarized in the "three E's" (Engineering, Education, and Enforcement). For example, engineering solutions such as traffic calming devices and improved signalization can fix specific safety problems; changes in design guidelines can help improve streets and intersections in future projects; and education and enforcement programs can achieve changes in motorist and pedestrian behavior or attitude.

The Centers for Disease Control and Prevention (www.cdc.gov/ncipi/pedestrian/contents.htm) recommends the following interventions at the national, state, and local levels:

1. At the national level:
   a. Establish transportation policies that encourage local communities to integrate pedestrian access and safety into every phase of transportation planning.
   b. Foster collaboration among federal agencies and national professional groups to help develop and promote public policy that leverages resources to achieve the most effective programs without duplicating efforts.
   c. Develop road construction standards that are more conducive to safe walking.
   d. Compile and disseminate local "best practices" that foster pedestrian safety, especially those that emphasize the use of low-cost solutions and new technologies.
   e. Help teach traffic engineers and engineering students how to retrofit streets and roads to make them safer.
   f. Develop and disseminate curricula, sponsor professional conferences, and assist with continuing education.
2. At the state and local levels:
   a. Encourage state and local officials to revise laws, ordinances, and practices to promote the construction of sidewalks and traffic-calming measures, such as roundabouts, speed humps, and other road designs.
   b. Encourage city planners, engineers, real estate developers, and landscape architects to consider pedestrian safety—particularly for children and persons with disabilities—when designing new communities or modifying existing ones.
   c. Encourage local officials, designers, and planners to enhance pedestrian accessibility and safety when building or remodeling schools, recreational sites, and businesses.

HAZARDOUS WASTE SITES AND TRANSPORTED MATERIALS

The Public Health Problem

Another common but often overlooked land-use-related threat to public health and safety is the proximity of neighborhoods, homes, and workplaces to hazardous materials storage sites, gas pipelines, and major

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ENVIRONMENTAL JUSTICE

The concept of Environmental Justice is an important aspect of any effort by the federal, state, or local governments to protect the public's health and minimize exposure to designated Superfund sites, hazardous materials, and other contaminants such as lead, PCBs, industrial effluents, and airborne pollutants.

In the early 1990s, members of the Congressional Black Caucus joined environmental scientists and political activists in presenting research findings to the U.S. EPA that demonstrated that racial minority and low-income populations bear a higher environmental risk burden than the general population.

The findings prompted the EPA Administrator to create an Environmental Equity Work Group to study the issue further. The work group released its own report, "Reducing Risk in All Communities," in 1992, which confirmed the existence of environmental health disparities and made 10 recommendations for addressing the problem. One of the recommendations was to create an office to address these inequities.

In 1994, President Bill Clinton signed Executive Order 12898, "Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations," to focus federal attention on the comparatively poor health conditions in minority and low-income populations relative to the general population. The order directed federal agencies to develop environmental justice strategies to mitigate such disparities. It also established an Interagency Working Group (IWG) on environmental justice chaired by the EPA Administrator and comprised of the heads of 11 departments or agencies and several White House offices.

The federal environmental justice initiatives are predicated on two requirements: fair treatment and meaningful involvement of all people regardless of race, color, national origin, or income with respect to the development, implementation, and enforcement of environmental laws, regulations, and policies. Fair treatment means that no group of people should bear a disproportionate share of the negative environmental consequences resulting from industrial, governmental and commercial operations or policies. Meaningful involvement means that: (1) people have an opportunity to participate in decisions about activities that may affect their environment and/or health; (2) the publics contribution can influence the regulatory agency's decision; (3) their concerns will be considered in the decision making process; and (4) the decision makers seek out and facilitate the involvement of those potentially affected.

The U.S. EPA environmental justice office provides grants to local nonprofit organizations and community partnerships (not to government agencies) to help them build capacity to address environmental and/or public health issues within their community. To be eligible, grantees must use EPA's Environmental Justice Collaborative Problem Solving Model. Six case studies of such partnerships can be found on the EPA website at www.epa.gov/evaluate/eval_ejcm.htm. The site also contains a detailed overview of the collaborative problem-solving model.

In early 2007, APA will publish a PAS Report, produced in cooperation with the National Academy of Public Administration, devoted to the subject of environmental justice. The report will be ready in time for APA's national conference in Philadelphia in the spring.

highways and thoroughfares where hazardous materials are transported. While both mobile and stationary hazards exist in close proximity to where people live and work in virtually all counties and municipalities in the U.S., very few land-use plans substantively address the health risks to the public or recommend any measures to mitigate the potential spills or accidents that could put peoples' lives at risk.

The Agency for Toxic Substances and Disease Registry (ATSDR) at the CDC is responsible for keeping records on all accidents involving hazardous materials that create a threat to public health. According to the U.S. EPA, about 12 million tons of hazardous waste are transported each year for treatment storage or disposal. Between 1999 and 2004, there were 49,500 events reported to ATSDR's Hazardous Substances Emergency Events Surveillance (HSEES) system, which tracks hazardous materials accidents in 16 states. Of those, 12,845 (30 percent) were transportation related; of these, 1,165 (9 percent) were rail events, which resulted in four deaths and injuries to 271 persons. In that group, nearby residents were the most frequently injured (150; 55 percent) followed by railroad and plant employees (77; 28 percent). The most common injuries from such accidents are respiratory irritation, headache, and eye irritation.

Columbia County, Georgia Ofc. of Public Safety

In this scene from a hazardous materials safety drill, a first responder helps evacuate a local resident from her neighborhood after a truck carrying hazardous materials overturned and exploded near her home.

In addition to risks associated with the accidents or unintentional release of harmful materials, thousands of stationary sources of toxins also pose a risk to people living in or near sites where such material is being created, used, or handled. The U.S. EPA manages a Toxics Release Inventory (TRI) database listing approximately 650 chemicals used by more than 23,000 industrial and other facilities as part of their disposal, recycling, energy recovery, or treatment processes.

Table 3-1 describes the four most pervasive hazardous materials that are associated with land use. This list was assembled using data and background information from scorecard.org, an entity that is part of a broad effort called Green Toolshed to collect and manage environmental data. Scorecard.org uses the 2002 data (which was released in 2004) from the U.S. EPA Toxic Release Inventory. That TRI database was established by Section 313 of the Emergency Planning and Community Right-To-Know Act of 1986 that required EPA to collect information about chemical releases and waste management reported by major industrial facilities in the U.S.

TABLE 3-1. TOP FOUR ENVIRONMENTAL TOXINS RELATED TO THE USE OF LAND

Rank	Chemical Name	Common Sources and Causes of Exposure	Health Effects	Lbs./Yr. released in U.S. (thousands)
1	Hydrochloric acid	Production of chlorides, fertilizers, and dyes in electroplating and in the photographic, textile, and rubber industries.	Corrosive to the eyes, skin, and mucous membranes. Acute (short-term) inhalation exposure may cause eye, nose, and respiratory tract irritation, and inflammation and pulmonary edema in humans.	599.1
2	Zinc compounds	Zinc is a common ingredient in corrosive inhibitors used in the production and use of coolants, fuels, hydraulic fluids, boiler water, and many other fluids used in industry.	Has adverse effects on the functioning of the immune system that result from exposure to chemical substances. Also suspected respiratory toxicant that causes a variety of acute and chronic pulmonary conditions, including local irritation, bronchitis, pulmonary edema, emphysema, and cancer.	485.0
3	Arsenic	The U.S. banned production of arsenic in 1985 and now only imports arsenic for use in industry. Its use as a wood preservative accounts for 88 percent of U.S. arsenic consumption. Stormwater runoff from structures treated with arsenic (such as backyard decks) can seep into groundwater and drinking water supplies.	The U.S. EPA classifies inorganic arsenic as a human carcinogen of high carcinogenic hazard. The inhalation of inorganic arsenic is strongly associated with lung cancer, and its ingestion has been linked to skin, bladder, liver, and lung cancers. Arsenic is also a cardiovascular toxicant that can cause hypertension, hardening of the arteries, and cardiac arrhythmia, and a developmental toxicant that can cause birth defects, low birth weight, biological dysfunctions, or psychological or behavioral deficits. It also adversely affects liver, gastrointestinal and neurological functions.	401.2
4	Lead	The primary cause of exposure to lead poisoning occurs in and around homes with cracked or chipped lead-based paint on doors, windowsills, fences, and walls. The federal government banned lead-based paint in 1978. Common industrial uses of lead occur in the manufacture of circuit boards, paints, lubricants and additives, and heat transferring agents. Those at highest risk for lead exposure are individuals who work with lead or lead smelters.	High levels of lead in children's bodies can cause brain and nerve damage, behavior and learning problems (such as hyperactivity), slowed growth, and hearing problems. In adults, it can cause reproductive problems, high blood pressure, digestive problems, nerve disorders, memory and concentration problems, and muscle and joint pain.	388.9

Source: Adapted from SCORECARD —The Pollution Information Website. [Accessed July 13, 2006]. Available at www.scorecard.org/index.tcl

Planning Measures to Mitigate Negative Public Health Impacts of Hazardous Materials

Local governments can address hazardous materials in their solid waste management plans. The Boulder County, Colorado, Comprehensive Plan, contains a solid waste element with policies that call upon the county's land-use and public health departments to collaborate in several areas. For example, as a baseline, the element requires solid waste authorities to use the latest and most reliable population, land use, and waste-generation types and projections as expressed in the comprehensive plan when solid waste facilities are being planned and designed. The land-use department must also cooperate with the county health department to educate the public about environmentally sound hazardous waste disposal methods and to secure agreements from municipalities in the county to provide drop-off sites for household wastes.

A number of states, among them Florida, Rhode Island, and Maine, require local governments to include a solid waste element in local comprehensive plans. In Florida, where the state has mandated local comprehensive planning since 1985, counties and municipalities are required to include in their plan, "A general sanitary sewer, solid waste, drainage, potable water, and natural groundwater aquifer recharge element" (Ch. 163 Fla.Stat. 2005). Florida counties and cities have some flexibility as far as how they choose to implement this requirement. Alachua County for example adopted separate elements for each area listed in the state law. The chief objective of Alachua County's solid waste element is to ensure that the county's capital improvements planning (which would include the construction of solid waste disposal facilities) is coordinated with land-use decisions to meet the requirement that adequate solid waste disposal facilities be available concurrent with the impacts of new development.

MENTAL HEALTH

The Public Health Problem

The built environment affects mental health both directly and indirectly (Dearry 2004; Evans 2003). Factors with a direct impact include residential crowding, housing type and quality, noise, and quality of light and air (Galea et al. 2005; Weich & Blanchard 2002). The built environment may also indirectly affect the quality of social ties and interactions, thereby affecting residents' sense of well being (Leyden 2003). Mixed-use and walkable environments are more conducive to the maintenance of supportive social networks. Higher levels of "social cohesion" (or "social capital") are associated with lower levels of morbidity and mortality (Kawachi et al. 1999). Evans (2003) defines the indirect effects of the built environment on mental health as whether the built environment: 1) promotes or diminishes a sense of personal control; 2) promotes social support; or 3) allows "restorative" contact with nature.

In most urban and suburban areas and even in some rural areas, many features of the so-called "natural" environment are the products of human interventions. So, to a degree, we must include "nature" in our discussion of the built environment. Research has shown that living in proximity to trees and other natural features has positive effects on mental health, both intrinsically and as a force that mitigates the negative effects of some built environments (Evans 2003; Frumkin 2001).

RESOURCES ABOUT HAZARDOUS AND TOXIC SUBSTANCES

"More Facts About Pollution." Lists of environmental hazards facts categorized by location, polluter, and degree of danger to humans. Available at www.scorecard.org/index.tcl.

Agency for Toxic Substances & Disease Registry. Hazardous Substances Emergency Events Surveillance. Available at www.atsdr.cdc.gov

Suburban sprawl weakens social ties or makes them difficult to establish in the first place. In areas where sprawl predominates, environments are tailored to the needs of motorists rather than to pedestrians, creating neighborhoods that discourage walking and make unplanned social interaction less likely. One study has shown that "every 1 percent increase in the proportion of individuals driving to work is associated with a 73 percent decrease in the odds of an individual having a neighborhood social tie" (Freeman 2001).

Public housing and other low-income housing developments often lack safe green spaces in which residents can congregate. Studies show that those public housing developments that do incorporate trees and other natural features induce a feeling of safety and social connection among residents. Trees tend to draw residents out of their units, their shade providing places for residents to congregate during warm weather (Kuo and Sullivan 1998).

Research has shown that living in proximity to trees and open space improves both mental and physical health.

istockphoto.com

Low-income residents often live in blighted inner-city neighborhoods that lack local businesses and safe places to walk or to gather informally. In *Heat Wave,* Eric Klinenberg (2002) compared how residents of two adjacent Chicago neighborhoods fared in the lethal heat wave of July 1995. He found that residents of Little Village, a largely Hispanic neighborhood characterized by streets dense with shops and pedestrians, suffered far fewer casualties than residents of the adjacent North Lawndale area, whose blighted environment was characterized by "ecological depletion, the collapse of local infrastructure and commerce, population decline, and high levels of violent crime." He hypothesized that the stronger social cohesion of Little Village protected its residents from the social isolation that made residents of North Lawndale much more likely to die of heat-related causes. A similar dynamic may be at play in the area of mental health.

The literature reveals a positive correlation between residential crowding (in terms of number of people per room; aggregate crowding—on the census tract level—has little relationship to mental health) and adverse mental health conditions (Evans 2003). One study shows that adverse affects to mental health begin when people are forced to share rooms at a rate of 1.5 persons per room (Page 2002). Children in particular appear to be at increased risk for stress, aggression, and lower levels of interaction (Page 2002).

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Planning Measures to Mitigate Negative Mental Health Impacts of the Built Environment

Research in environmental psychology and planning suggest the following modifications to the built environment may lead to improvements in mental health:

1. Incorporate trees and open space in housing developments and community public spaces.
2. Create walkable communities where residents have opportunities to interact with one another.
3. Develop a strategy to invite and involve people who rarely or never participate in community activities to town hall meetings, community workshops, and civic events, such as street fairs, art fairs, and activities in local parks.

CONCLUSION

The seven topic areas discussed in this chapter illustrate the interconnectedness of the built environment, planning, and public health. Some of these connections have been recognized and understood for decades, such as the relationship between land development patterns, transportation, and air quality, the effects of land development on water quality, and the effects on human health of exposure to hazardous materials from point-source and non-point source pollution. Other areas, such as how various elements and conditions in the built environment affect mental health, are less well known, although there is a growing evidence base that supports that conclusion, including studies showing that a person's psychological condition does improve or remains stable when they perceive their neighborhood to be safe and when green spaces and trees are within sight. The most recent area of concern to emerge is the effect of the built environment on rates of obesity and physical inactivity within a community. Since 2000 there has been a tremendous amount of academic and applied research that has attempted to identify the precise characteristics in the built environment that can either encourage or discourage people to be physically active within their daily routines. For example, studies cited in this chapter have demonstrated that residents of neighborhoods with connected streets, mixed land uses, and close proximity to trails are indeed healthier and more apt to take in the Surgeon General's recommendation of 30 minutes of moderate to vigorous physical activity each day.

Many of the planning measures described in this chapter that can be used to mitigate the negative impacts of the built environment on public health should sound familiar. . . . Most of them are the tools and approaches that planners, developers, and property owners have been using for more than a decade to accomplish smart growth.

Many of the planning measures described in this chapter that can be used to mitigate the negative impacts of the built environment on public health should sound very familiar to readers of this report. That is because most of them are the tools and approaches that planners, developers, and property owners have been using for more than a decade to accomplish smart growth. For example, a smart growth community that provides for public transit, pedestrians, and bicyclists are reducing vehicle miles traveled, is mitigating traffic congestion, improving air quality, creating safe streets, and making it possible for people to be physically active every day.

It is important for planners to recognize and communicate to their elected and appointed officials that the protection of public health is yet another a compelling public policy objective served by smart growth solutions. Public health advocates and professionals are bringing a new, and very credible point of view to planning and transportation policies and to issues of community growth. Planners should leverage such support from these new partners by bringing them to the table at all points in the planning and development review process.

CHAPTER 4

Universal Design: Community Design, Public Health, and People with Disabilities

By Chris Kochtitzky and Richard Duncan

The findings and conclusions in this chapter are those of the authors and do not necessarily represent the views of the Centers for Disease Control and Prevention.

The importance of land-use planning in creating livable communities for all is even more critical when considering the increasing number of people with disabilities living in the United States today. This issue was described in detail in a 2004 report from the National Council on Disability, an independent council that advises the White House, various cabinet agencies, and Congress (National Council on Disability 2004). In part, due to calls like this from groups such as the National Council on Disability (NCD) and AARP, the Centers for Disease Control and Prevention (CDC) has partnered with both the American Planning Association (APA) and the National Association of County and City Health Officials (NACCHO) since 2002 to examine the public health impacts of local community design and land-use planning choices—especially those that affect vulnerable populations, such as children, older adults, and people with disabilities.

This chapter outlines the origins of the public health/planning connection, the development of the legal and design mechanisms that benefit people with disabilities, and the demographic trends that make the alliance of planning and public health officials more important than ever. Finally, the chapter will review a number of design strategies for local and state-level implementation.

COMMON HISTORICAL BACKGROUND AND LEGAL UNDERPINNINGS

The histories of the planning and urban design professions and the public health profession have much in common (Corburn 2004). An architect and an urban housing specialist were among the seven founders of the American Public Health Association in 1872 (Glasser 2002). Originally, both fields focused on helping people avoid unnecessary risks and pursue optimal health and quality of life. Both professions received a boost in the early twentieth century from several Supreme Court rulings that validated governmental involvement in efforts to protect health and control local community design decisions. In 1905, the Supreme Court, in *Jacobson v. Massachusetts*, 197 U.S. 11 (1905), recognized the authority of governments to enact laws to protect the public's health. In 1926 the Supreme Court heard the landmark land-use case, *Village of Euclid v. Ambler Realty Co.*, 272 U.S. 365 (1926). The *Euclid* decision held that land-use planning and control, using such tools as zoning regulation, was a permissible governmental action to facilitate the "promotion of the health and security from injury of children and others by separating dwelling houses from territory devoted to trade and industry; suppression and prevention of disorder; facilitating the extinguishment of fires and the enforcement of street traffic regulations and other general welfare ordinances; aiding the health and safety of the community by excluding from residential areas the confusion and danger of fire, contagion and disorder which, in greater or less degree, attach to the location of stores, shops and factories." Only during the middle of the twentieth century did the two fields begin to diverge, largely due to improvements in health status among urban populations and competing challenges facing the two fields.

Historical Background of Accessible Design

The first accessible and barrier-free standards were issued by the American National Standards Institute (ANSI) in 1961 as *A117.1— Making Buildings Accessible to and Usable by the Physically Handicapped*. These standards represented the first change in public policies and design practices related to disability. As Ron Mace (1996), the originator of the concept of universal design, wrote about the activism and accomplishments of that time, "The movement was established in response to demands by disabled veterans and advocates for people with disabilities to create opportunities in education and employment rather than institutionalized health care and maintenance." For the first time, "Physical barriers in the environment were recognized as a significant hindrance to people with mobility impairments."

Over the next 30 years, a sequence of federal and state laws, guidelines, and codes expanded the number and type of buildings required to be equally usable by more people. Mace (1996) characterized the progress this way: "These new laws prohibited discrimination against people with disabilities and provided access to education, places of public accommodation, telecommunications, and transportation." Government efforts at the federal and state levels created standards and guidelines (e.g., Minimum Guidelines and Requirements for Accessible Design (MGRAD), Uniform Federal Accessibility Standards (UFAS), Fair Housing Access Guidelines (FHAG), and the Americans with Disabilities Act (ADA) Accessibility Guidelines for Buildings and Facilities (ADAAG) that support laws and regulations requiring accessibility.

By the early 1970s, 49 states had passed their own accessibility legislation. Naturally, this produced a confusing array of federal and state requirements. In 1984, the federal government began to unify standards when the existing ANSI standards were folded into the primary federal accessibility guideline, creating UFAS.

Over time, ANSI's voluntary national standard, A117.1, underwent a series of revisions. Additional private sector improvements have occurred in recent years when model code governing bodies have attempted to include accessibility provisions. The International Code Council (ICC), through the International Building Code (IBC), and the International Residential Code (IRC) have incorporated or referenced accessibility in their codes, which have then been adopted by state or local jurisdictions (Pauls 2004). A convergence of codes and standards is slowly taking place. Collectively, the increased attention to accessibility represents progress, though that progress has not been integrated, comprehensive, or continuous.

Through federal and state laws and guidelines . . . by the 1990s most areas of the nonresidential built environment—both public and private—were required to have elements of accessibility.

The Case for Comprehensive Implementation for Universal Design

As the design and construction industries began to implement accessibility codes, it became apparent to many in the community design field that most ***segregated*** accessibility features were not aesthetically pleasing and were often expensive. Even so, those in the field became aware that many of the environmental changes needed to accommodate people with disabilities (accessibility features) actually benefited a broad cross section of society. By the mid-1980s, the field had 25 years of experience in implementing accessible design concepts and accessibility experts, such as Ron Mace (1996), began to see a unifying design paradigm emerge, which has become known as "universal design."

The timeline (see sidebar on page 54) provides a list of major U.S. accessibility laws and standards, as well as the landmarks in the growth of universal design.

Through federal and state laws and guidelines, and the adoption of model codes on the state and local level, by the 1990s most areas of the nonresidential built environment—both public and private—were required to have elements of accessibility. In addition, many multiunit residential projects were required to have accessibility features in public areas as well as in a portion of the residential units.

Even though it is a civil rights law, ADA has had an enormous impact on architectural and construction practices, including public rights-of-way. ADA and ADAAG quickly became the most recognized accessibility provisions in the U.S. Together with other standards, laws, regulations, and codes referenced above, ADA helped shift the design and construction of the built environment. It has changed the physical structure of many facets of American communities, both at the micro and macro levels, thereby increasing the potential for full participation for the more than 50 million people with a disability in the U.S. (Waldrop and Stern 2003).

Critical Evolutions within the Public Health and Community Design Professions

During the time that these various judicial, legislative, regulatory, and sociocultural activities were occurring, broader issues related to the health and quality of life of people with a disability were beginning to be considered by both the community design (urban planners, architects, and engineers) and public health professions (epidemiologists, environmental health specialists/sanitarians, and public health doctors and nurses).

Within public health, the definitions of public health and disability were changing. In 1948, the World Health Organization (WHO) created a new definition of health: "Health is a state of complete physical, mental, and

TIMELINE OF SIGNIFICANT EVENTS IN UNIVERSAL DESIGN

1961 THE AMERICAN NATIONAL STANDARDS INSTITUTE
A117.1 provides the first voluntary standards for accessible design.

1964 THE CIVIL RIGHTS ACT OF 1964
Martin Luther King's activism and his dream of equality lead to the first of several major pieces of civil rights legislation in the U.S. This was the foundation for future civil rights laws such as Section 504 and the ADA.

1965 VOCATIONAL REHABILITATION AMENDMENT ACT (P.L. 89-333)

1968 ARCHITECTURAL BARRIERS ACT (ABA) (P.L. 90-480)
U.S. Congress passes the first law requiring accessibility for people with disabilities in federal buildings.

1973 REHABILITATION ACT, SECTION 504 (P.L. 93-112)
First civil rights legislation prohibits discrimination against people with disabilities in programs that receive federal funding.

1978 REHABILITATION ACT, SECTIONS 502 and 504 are amended.

1980 ANSI publishes a revised version of ANSI A117.1, designated ANSI A117.1-1980.

1982 U.S. Access Board publishes Minimum Guidelines and Requirements for Accessible Design (MGRAD).

1984 Federal ABA rule-making agencies publish Uniform Federal Accessibility Standard (UFAS).

1985 RON MACE INTRODUCES THE TERM UNIVERSAL DESIGN
In an article in *Designers West*, Ron Mace is quoted on universal design; the first documented use of the term.

1986 ANSI publishes revised version of ANSI A117.1, designated ANSI A117.1-1986.

1988 THE FAIR HOUSING ACT AMENDMENTS (P.L. 100-430)

People with disabilities and children are added to the 1968 civil rights law that prohibits racial discrimination to in housing. It establishes guidelines for universal design in new multifamily housing.

1990 THE AMERICANS WITH DISABILITIES ACT (P.L. 101-336)
The most comprehensive civil rights legislation for people with disabilities establishes that the lack of access to programs, employment, and facilities in public and private settings is discrimination. It establishes a baseline for universal design.

1991 U.S. Access Board publishes Americans with Disabilities Act Accessibility Guidelines for Buildings and Facilities (ADAAG).

1991 U.S. Departments of Justice and Transportation publish the ADA Standards for Accessible Design.

1992 ANSI publishes a revised version of ANSI A117.1, designated CABO/ANSI A117.1-1992.

1995 PRINCIPLES OF UNIVERSAL DESIGN
The Center for Universal Design develops first edition of performance criteria with group of U.S. experts.

1996 TELECOMMUNICATIONS ACT
New U.S. law extends universal access to communications for people with hearing, speech, and vision disabilities.

1998 ANSI publishes a revised version of ANSI A117.1, designated CABO/ANSI A117.1-1998.

2004 International Code Council and ANSI publish "Accessible and Usable Buildings and Facilities" designated A117.1–2003.

Sources: Axelson 1999; Ostroff 2001; AIA 2005.

social well-being and not merely the absence of disease or infirmity" (WHO 1946). This concept did not lead immediately to a broader understanding that "disability" should not be equated with the referenced "disease or infirmity"; rather, it meant some disease or infirmity might cause a disability, but not all disease or infirmity causes disability, and those with some disabilities can still, in fact, be considered "healthy."

Building on these definitions of health, a new perspective on the relationship between disability and health began to emerge. Disability, instead of being considered inherently a sign of less-than-optimal health, is now being regarded as a measure of functionality (WHO 2002).

Signifying another change in philosophy and approach over nearly 50 years, the U.S. Department of Health and Human Services (2000), in *Healthy People 2010*, expanded its definition of environmental health. "In its broadest sense, environmental health comprises those aspects of human health, disease, and injury that are determined or influenced by factors in the environment. This includes the study of both the direct pathological effects of various chemical, physical, and biological agents, as well as the effects on health of *the broad physical and social environment*, which includes *housing, urban development, land-use and transportation industry, and agriculture*" (emphasis added*).*

WHO has also reconsidered its views about disability. According to its most recent (2002) International Classification of Functioning, Disability and Health (ICF), "A person's functioning and disability is conceived as a dynamic interaction between health conditions (e.g., diseases, disorders, injuries, traumas) and contextual factors . . . [which] *include both personal and environmental factors*" (emphasis added)**.** The ICF includes a comprehensive list of environmental factors as an essential component of the classification. With this new concept of disability, WHO moved away from the person-centered (medical) model of disability to the more accurate and useful person-environment (social) model.

Changing Demographics

While these changing definitions of disability were being articulated, demographic changes internationally and in the U.S. brought forth the emergence of large numbers of people whose environment made it difficult or impossible to live full, safe, and independent lives. "At the beginning of the twentieth century, older adults and people with disabilities were true minorities. In general, the average human lifespan was only 47 years, and people who received spinal cord injuries had only a less than 10 percent chance of survival" (Mace 1996).

Change in the demographic makeup of the U.S. has meant an increased interest in how public health and community design professionals approach accessibility. Projections based on U.S. Census Bureau (2004) estimates indicate that the number of people ages 65 years of age and over will grow from 35 million in 2000 to more than 86 million by 2050. Also, more people are now living with disability, either temporary (e.g., a broken leg) or longer-term (e.g., a congenital health problem or a spinal cord injury), and it is becoming more likely that people will age into disability every year. According to the U.S. Census, at the end of 2000, 49.7 million noninstitutionalized persons older than five in the U.S. (19.3 percent of the population) had some level of disability (Waldrop and Stern 2003). Of this noninstitutionalized population, the CDC (2003) reported that:

- 34 million reported an activity limitation due to a chronic condition;
- 4.6 million children, age 3-17 years, have been diagnosed with a learning disability; and
- 18.6 million adults report vision trouble.

These demographic changes have resulted in a population older and potentially more disabled than many realize, and these trends continue. Yet we can see the benefits of a more supportive environment in everyone's daily life. Families with baby carriages appreciate a transit system that makes it easy for them to get around. People with health problems that affect the spine—"bad backs"—are much better off in homes where they do not have to bend or reach so much. Many individuals—delivery people, bicyclists, and those with rolling luggage—use and appreciate curb cuts, stepless entries into buildings, and automatic opening doors. Together with family, friends, and colleagues (including those who may move with some difficulty), all people can enjoy a park or recreation area with stairless and accessible walking paths and accessible amenities. There are many similar examples that show how the concept of "functional accessibility" for specific groups, few in number, has started a trend toward universally designed solutions that benefit a wide range of people throughout their daily and life-long transitions.

ASSESSMENT TOOLS AND DATA SOURCES

A range of evaluative protocols have been developed to assess the accessibility of buildings (ADA or UFAS checklists), transit system accessibility (Adaptive Environments Center 1990), or even "campus" accessibility (Adaptive Environments Center 1986). Checklists exist to assess housing accessibility, including protocols for compliance with the FHAG for multifamily housing. However, only a small number of tools and data collection instruments allow researchers to measure the number of environmental barriers people with potentially disabling conditions face in their communities and to gauge the relative magnitude/impact of these barriers.

One of the best-known assessment tools is the Craig Hospital Inventory of Environmental Factors (CHIEF). CHIEF is designed to assess the frequency and magnitude of perceived physical, attitudinal, and policy barriers that keep people with disabilities from doing what they want or need to do. It is designed to be a short inventory of environmental barriers that can be cited in large-scale surveys and surveillance systems to measure accessibility for individuals both with and without disabilities. CHIEF has been used to demonstrate that, compared with nondisabled people, people with disabilities encounter more frequent and more problematic environmental barriers. Moreover, CHIEF has also demonstrated that the impact of barriers is associated with both the type and severity of the disability. Environmental barriers can include social, attitudinal, and policy barriers, as well as physical and architectural barriers (Craig Hospital 2001).

Finally, one study that used CHIEF found that people with spinal cord injuries reported that barriers in the natural environment and surroundings (the physical/structural subscale) were the most problematic, followed by barriers in transportation, at home, and in health care (Whiteneck et al. 2004). An assessment tool under development is the Home and Community Environments (HACE) Instrument, a self-report measure designed to characterize factors in a person's home and community environment that may influence an individual's level of participation with the environment (Keysor et al. 2005).

In addition to these tools, several broader data collection efforts are underway to document the impact and magnitude of environmental barriers for people with potentially disabling conditions as well as which design changes are facilitating access for those people. These include the following.

1. WHO's 2002 International Classification of Functioning, Disability and Health that:
   - is the conceptual basis for the definition, measurement, and policy formulation for health and disability, and is a universal classification

of disability and health for use in health and health-related sectors, and is important as a planning and policy tool for decision makers;

- is named because of its stress on health and functioning, rather than on disability (previously, disability began where health ended); and
- acknowledges that every human being can, at some point, experience a decrement in health and thereby experience some disability. ICF thus "mainstreams" the experience of disability and recognizes it as a universal human experience.

2. The U.S. Department of Transportation's National Transportation Availability and Use Survey (2002) found that:
   - more than five times as many people with a disability never leave their homes than do people without a disability;
   - 33 percent more pedestrians with a disability experience problems with local transportation systems than those pedestrians without a disability; and
   - 35 percent more persons with a disability report problems with buses within local transportation systems, as compared to persons without a disability.
3. The Centers for Disease Control and Prevention's National Health Interview Survey results from 2002 (Hendershot 2004) documented that, among people with disabilities who reported that barriers limited or prevented their community participation:
   - 43.1 percent described problems with building design, such as stairs, bathrooms, narrow doors, or heavy doors;
   - 31.7 percent mentioned barriers within transportation systems; and
   - 31.2 percent listed problems with sidewalks and curbs as a barrier.

The Principles of Universal Design

Universal design is defined as: "The design of products and environments to be usable by all people, to the greatest extent possible, without the need for adaptation or specialized design" (Center for Universal Design 1997).

A working group of architects, product designers, engineers, and environmental design researchers collaborated to establish in 1997 the following Principles of Universal Design to guide a wide range of design disciplines, including environments, products, and communications. These seven principles may be applied to help evaluate existing designs, to guide the design process, and to educate both designers and consumers about the characteristics of more usable products and environments.

The principles address only universally usable design, while the practice of design involves more than consideration for usability. Designers must also incorporate other considerations such as economic, engineering, cultural, gender, and environmental concerns in their designs. These principles offer designers guidance to better integrate features that meet the needs of as many users as possible.

Principle 1: Equitable Use

The design is useful and marketable to people with diverse abilities.

Guidelines:

1a. Provide the same means of use for all users; identical whenever possible, equivalent when not.

1b. Avoid segregating or stigmatizing any users.

1c. Provisions for privacy, security, and safety should be equally available to all users.

1d. Make the design appealing to all users.

Principle 2: Flexibility in Use
The design accommodates a wide range of individual preferences and abilities.

Guidelines:

2a. Provide choice in methods of use.

2b. Accommodate right- or left-handed access and use.

2c. Facilitate the user's accuracy and precision.

2d. Provide adaptability to the user's pace.

Principle 3: Simple and Intuitive Use
Use of the design is easy to understand, regardless of the user's experience, knowledge, language skills, or current concentration level.

Guidelines:

3a. Eliminate unnecessary complexity.

3b. Be consistent with user expectations and intuition.

3c. Accommodate a wide range of literacy and language skills.

3d. Arrange information consistent with its importance.

3e. Provide effective prompting and feedback during and after task completion.

Principle 4: Perceptible Information
The design communicates necessary information effectively to the user, regardless of ambient conditions or the user's sensory abilities.

Guidelines:

4a. Use different modes (pictorial, verbal, tactile) for redundant presentation of essential information.

4b. Provide adequate contrast between essential information and its surroundings.

4c. Maximize "legibility" of essential information.

4d. Differentiate elements in ways that can be described (i.e., make it easy to give instructions or directions).

4e. Provide compatibility with a variety of techniques or devices used by people with sensory limitations.

Principle 5: Tolerance for Error
The design minimizes hazards and the adverse consequences of accidental or unintended actions.

Guidelines:

5a. Arrange elements to minimize hazards and errors: most used, most accessible; hazardous elements eliminated, isolated, or shielded.

5b. Provide warnings of hazards and errors.

5c. Provide fail-safe features.

5d. Discourage unconscious action in tasks that require vigilance.

Principle 6: Low Physical Effort
The design can be used efficiently and comfortably and with a minimum of fatigue.

Guidelines:

6a. Allow user to maintain a neutral body position.

6b. Use reasonable operating forces.

6c. Minimize repetitive actions.

6d. Minimize sustained physical effort.

Principle 7: Size and Space for Approach and Use
Appropriate size and space is provided for approach, reach, manipulation, and use regardless of user's body size, posture, or mobility.

Guidelines:

7a. Provide a clear line of sight to important elements for any seated or standing user.

7b. Make reach to all components comfortable for any seated or standing user.

7c. Accommodate variations in hand and grip size.

7d. Provide adequate space for the use of assistive devices or personal assistance.

Over time, practice often reveals a more sophisticated approach that, in many cases, integrates accessibility provisions with an overall design scheme.

With experience, the design community has begun to move away from copying accessibility features from codes, guidelines, and standards. This practice often results in "code minimums" being applied in a manner that is separate and different from "normal" design, and is not really "equal." It is also stigmatizing. Over time, practice often reveals a more sophisticated approach that, in many cases, integrates accessibility provisions with an overall design scheme. This also results in increased usability for a wider

U.S. Access Board

U.S. Access Board

A creative solution to an inaccessible commercial entrance is to eliminate some of a building's stairs in favor of a partially ramped entrance, as shown in these two photos. While the stairs in both settings add depth and visual interest to the facade of the buildings, there are also adjacent ramps to ensure that the entrances are accessible to all.

range of people. For example, building better integrated and accessible entrances and routes of travel with slopes that are less steep and more gradual than the required 1:12 minimums (i.e., one foot of rise for every 12 feet of slope) results in more universally positive outcomes. As the design, engineering, and construction professions have had the opportunity to grapple with accessible design over the past 45 years, they have slowly acquired a more mature (but not always evenly applied) sense of the appropriate use of accessibility features. Experience has helped the industry move in a more universal direction.

UNIVERSAL DESIGN IN PLANNING

Codes and guidelines are largely silent regarding the application of improved usability concepts on a larger scale. Accessibility is usually considered within and around the design of individual structures, equipment, or facilities. Beyond this, the geographic scope of accessibility can expand to include significant site issues in multibuilding complexes, campuses, or public transit systems. When leaving the building envelope, designers and planners also consider code issues, such as entrance accessibility, parking location, street crossings, sidewalks, parks, and accessible paths of travel between and among public amenities and other features and buildings. These are the real geographic and programming limits of accessibility compliance in the built environment today. Neither the ADA, FHAG, ANSI 117.1, UFAS, nor any state building code, speak to macro-level community design or urban planning. Some advances have been made in developing codes that create an accessible public transit system. These efforts have not been as successful in creating a transit system that encourages use of transit for those people who cannot drive. A universally designed community might do so.

Beyond the building envelope, designers and planners also consider code issues, such as . . . accessible paths of travel between and among public amenities and other features and buildings.

Ramps are a frequently relied on method to ease indoor or outdoor grade changes for pedestrians. As mentioned earlier, the code for graded routes of travel (such as ramps) specify a minimum 1:12 slope, the steepest allowed. Many people report having difficulty with 1:12 sloped ramps (Center for Universal Design 1995). During winter, the ramps can become slick and dangerous because of ice and snow. They can become slippery because of rain or wet leaves that have accumulated. These conditions can be dangerous for those people in wheelchairs, even more for those using crutches. Universal routes avoid 1:12 slopes whenever possible, instead using more gentle slopes or eliminating ramps altogether.

Another example is stairs. Stairs are often used as an aesthetic design element, and many fear the "bulldozer" mentality whereby all entrances appear flat and uninteresting. In fact, designers can retain stairs in many cases as long as appropriate stepless routes of travel are also made available. Regulations may require accessible routes of travel. Universal design and good design create common routes of travel easier to use for everyone, making wayfinding simple as well. (Wayfinding means the ability of a person to find his or her way to a given destination. Signage is an important component but the information inherent in a building's design is also critical). Standards may require an accessible location at retail counters or hotel check-ins. Good design accommodates guests of short stature—as well as those using wheelchairs—into the overall design scheme, offering an accommodating location for everyone.

In a similar manner, regulations can produce housing with better accessibility features. In multiunit housing projects that comply with the Fair Housing Act Amendments, projects may have public area accessibility and partially accessible units. Since the Act does not require elevators to be installed in projects designed without them, however, it indirectly encourages single-story apartment complexes, thereby taking up more land and driving up costs. The

Marya Morris

"Visitability" is the concept behind inclusive home design that is accessible to all, especially those with disabilities. For instance, climbing or descending stairs is a major obstacle for people who rely on wheelchairs, walkers, or crutches. The incorporation of a ramp into a home's design is a first step to making a home "visitable."

Act may, in fact, produce indirectly more townhouse projects largely exempt from many of the individual unit provisions contained in the FHAG.

Some new concepts focus exclusively on housing and can encompass examination of entire subdivisions. Visitability is one of these. Visitability attempts to change home construction practices so that virtually all new homes, whether designated for residents who currently have a disability or not, offer a few specific features that will make the home easier to live in or visit for people who develop a mobility impairment. Implemented mainly on the local level, visitability provisions can be found in a number of communities in the U.S. (Concrete Change 2006).

The Role of the Planner

Planners often operate in the realm of housing policy and finance, deciding how a development project location is selected, unit density and types, and the land uses and configuration of development projects. Their primary concerns are increasing housing options and making them more affordable, not the usability specifics of how a unit is designed. Planners often leave it to building and landscape architects to comply with codes and make other specific decisions that affect building and site usability.

Planners' land-use decisions, however, can have a positive effect on universal design if those decisions promote easier access for everyone. Planners can design more opportunities for travel by car, wheelchairs, walking, bicycle, or mass transit. This can help people who are sometimes isolated in suburban communities and provide alternatives for people who do not have access to cars or who cannot drive. Included in this group are some people who are younger (children) and older (seniors), and those with certain disabilities. It can also

result in some people driving less often, which has many benefits as described elsewhere in this PAS Report. Universal solutions that address the mobility needs of these individuals are also likely to benefit others (e.g., those who might be temporarily without a car). If designed properly, these solutions can provide a safer environment for all people and protection from the dangers of hazardous interactions between different modes of travel (Kochera et al. 2005).

Current Opportunities and Challenges

As the fields of public health and planning move forward and grapple with new challenges and opportunities, it is important to outline how universal design complements other current planning ideas. A universal housing approach is consistent with sustainable design principles inasmuch as it prevents or reduces otherwise unnecessary (and often very expensive) renovations that might be needed to make a home functional and accessible for someone with disabilities (Peterson and Dorsey 2000, AIA 1997). This also promotes the preservation of resources by avoiding the need for the use of additional products and building materials.

As the fields of public health and planning move forward and grapple with new challenges and opportunities, it is important to outline how universal design complements other current planning ideas.

New urbanism and ***traditional neighborhood design (TND) developments*** are most often transit-oriented, pedestrian friendly, and senior friendly. This is partly due to the mobility options possible with higher-density and mixed-use development patterns. As Malizia (2005) said, "They help make multiple destinations more accessible to pedestrians, create public spaces convenient for social interaction, and locate residences close to the street to increase safety, and so on. Compared with traditional zoning, these outcomes can promote more sustainable and healthy development patterns." New communities are being designed where the origin and destination of people's trips are closer to one another. Sidewalks and streets with clear crossings and slower vehicle traffic are safer and easier for older people, families with children and baby carriages, and people with disabilities who may need longer time to cross. These characteristics are also entirely consistent with pedestrian-friendly and senior-friendly concepts (Ewing 1999, Kochera 2005).

In spite of new urbanism's land-use infrastructure and transportation advantages, it falls short with respect to much of the housing produced. The housing that has been built in many such communities reflects an almost anti-aging and anti-disability outcome. The streetscapes and building frontages often result in brownstones and rowhouses, both of which typically feature deep, narrow building forms set close to the street with first floors three to five feet above the sidewalk, reached by a set of stairs. In residential settings with wood frame homes—detached or attached—a similar scenario is created: small lots with homes with porches set close to the front lot line and/or sidewalk. A new urbanist approach can promote dwelling units located directly over retail businesses, which means they can escape accessibility provisions. These scenarios present challenges for access and universal design—providing stepless entries to the fronts of these buildings can be very difficult. Medium-density situations with two- to four-story semiurban rowhouses—particularly with a garage under the house, brownstones, or small lot or zero lot line housing—present particular challenges to entry access. On the other hand, high-density areas that include multistory residential buildings with elevators offer few obstacles to universal design. Lot sizes on one-half acre and smaller should not limit options for universally designed homes. However challenging the solutions might be, in reviews of numerous TND projects, the authors of this chapter have noted many missed opportunities, indicating that achievable universal design changes are possible. Solutions range from connecting frontages with access at one or both ends of the run of rowhouses or townhouses to employing the design from the rear. Using alternate rear grading to provide separate stepless entries to each unit (or

Michael Moule

Details matter when it comes to creating accessible environments. The ADA standard for a driveway cross slope is 2 percent, which keeps such areas safe for people at all levels of mobility. The differentiated pavement also alerts drivers to look for people crossing the driveway.

access to end units only) is another option. Alley access from the rear would have a similar positive outcome. With a little foresight, creativity, and design experimentation, new urbanist designers could achieve universal design outcomes.

Among other goals, several other current planning trends promote community design that encourages daily movement and ambulation, a variety of transportation options, and mixed-use development patterns. Included in this list are livable communities, healthy communities, and the Robert Wood Johnson Foundation's Active Living by Design initiative.

Finally, smart growth directly addresses the transportation problems facing large populations of aging Americans in suburban and rural areas. These car-dependent communities increasingly restrict people who make fewer and fewer car trips as they age, effectively becoming trapped in their homes and neighborhoods (AARP 2005). Many older drivers may continue driving longer than they should—potentially endangering themselves and others. Some older drivers are then faced with two bad choices: stay at home or drive when they should not. The dispersed spatial development patterns that are so problematic for transit options that do not involve a car and that result in travel restrictions on older residents produce similar problems for children, people who temporarily or permanently are unable to drive, or those without access to cars for others reasons. As with our other examples, smart growth promotes higher densities, mixed uses, public transit, walking, and other nonmotorized transportation possibilities—all of which work well for people with disabilities and seniors.

As stated by WHO almost 50 years ago, health is not just an absence of disease. To be truly healthy, an individual must have a good quality of life as measured in a number of dimensions.

SUMMARY AND CONCLUSIONS

As stated by WHO almost 50 years ago, health is not just an absence of disease. To be truly healthy, an individual must have a good quality of life as measured in a number of dimensions. Community designers, such as planners, engineers, and architects, can greatly influence and help fulfill many of these dimensions, as described in *Healthy People 2010.* The health and quality of life of all people is either promoted or degraded by community design choices made at the local, state, and federal levels. Some populations, however, are even more influenced by elements in the environment within which they live. These populations, such as older persons, young children, and people with all types of disabilities, are even more dependent on the com-

munity design and public health professions to maximize accessibility and usability at all levels—from the micro-community to the macro-community levels. Additionally, these subpopulations continue to expand and will make up a much larger segment of the population of the U.S. by midcentury.

Everyone benefits from community design efforts that use a universal design framework—from delivery drivers to people with mobility impairments, from older pedestrians to parents with children in a stroller.

Universal design, therefore, should not be seen as a movement limited only to improving the lives of people with a disability. Although it is true that this subpopulation will benefit greatly from the application of the principles of universal design, they are by no means the only beneficiaries, as the term, universal, implies. Everyone benefits from community design efforts that use a universal design framework—from delivery drivers to people with mobility impairments, from older pedestrians to parents with children in a stroller. What appears to be lacking at this time is validated data about the specific elements of the environment that cause the most harm, and the specific mitigations needed to address these environmental risk factors. The groundbreaking work of those who created the principles of universal design and those who have developed and initially piloted such tools as ICF, CHIEF, and HACE must be carried forward. Practical assessment tools that validate and quantify the barriers and facilitators in everyday environments must be created and widely disseminated within the design fields of planning, architecture, and engineering as well as the public health and allied professions. Mitigation strategies and "best practices" designs must be developed using the information from current and future data collections and assessments. The professionals from the fields of public health and community design must continue to work together to identify critical intervention points and to educate and empower each other in the specifics of their work so that a safer and healthier world can be created for all.

CHAPTER 5

Tools for Planning and Public Health Collaboration

By Marya Morris, AICP, Valerie Rogers, and Jessica Solomon

The tools and materials provided in this chapter come from numerous project tasks, training workshops, expert symposia, brainstorming sessions, focus groups, and conference presentations that the American Planning Association and the National Association of County and City Health Officials held jointly between 2003 and 2006. Many of the ideas also came out of projects NACCHO had undertaken before entering into a partnership with APA, in particular the worksheets.

Planners and public health professionals are encouraged to use the two tools presented in this chapter at the very outset of any collaborative effort. Tool 1 contains a list of ideas of how to launch such an effort. Users of these tools—particularly Tool 2, Action Planning Worksheets and Excercises, should modify them to fit their local circumstances. The tools are very practice oriented, meaning we intend them to be used by practicing planners, public health professionals, community groups, and any other organizations or agencies that are part of the initiative to address challenges of interagency collaboration and partnerships with external organizations. The ultimate purpose of such collaboration is to protect and enhance the public's health by identifying and mitigating the negative health impacts caused by the built environment and to promote changes to the built environment that will result in healthier communities. Additionally, the appendices to this report contain more tools, namely a planning/public health jargon fact sheet and an alternative action planning worksheet.

TOOL 1: IDEAS FOR LAUNCHING AND MAINTAINING A PLANNING/PUBLIC HEALTH PARTNERSHIP

1. Begin internally: Convene a lunchtime roundtable with the local planning director and staff and health director and staff to discuss the departments' respective missions and departmental responsibilities with the purpose of looking for issues of shared concern and responsibility. Topics for such events could include:
   - reexamination of the health department's existing role in subdivision and site plan review; and
   - explanations of the connections between community design and land use and public health, such as neighborhood walkability and physical activity of residents, urban sprawl and the protection of drinking water sources, traffic congestion and air quality.
2. Establish an interdisciplinary planning/public health working group within local government; delegate a staff person in planning, public health, or another department to serve as the liaison between the various agencies and external groups.
3. Educate externally: Make presentations on the planning/public health connection to city councils, village boards, county commissions, community organizations, zoning boards, and others to create political support and visibility.
4. Create new external partnerships: Form partnerships with groups that have an interest in health and neighborhood quality-of-life issues such as neighborhood councils, community development organizations, housing agencies, and pedestrian/bicycling organizations. Such partnerships could lead to a joint project, such as an overall assessment of pedestrian and bicycle safety or an environmental health assessment for a specific neighborhood.
5. Collect data: Identify available sources of health and planning data that can be used to support recommendations. Relevant sources include the U.S. Census; American Community Survey; Behavioral Risk Factor Surveillance System (BRFSS); National Health and Examination Survey (NHANES); community health assessments; local housing inventories and assessments; air pollution statistics from Metropolitan Planning Organizations and air quality management districts; National Personal Transportation Survey data on transportation and travel patterns; local traffic statistics; pedestrian and bicyclist injury and fatality data from local sources and the National Highway Transportation Safety Administration; local safe-routes to schools; and general walkability audits.

6. Collect case studies: Investigate what other jurisdictions have accomplished with respect to planning and public health collaboration to generate ideas for projects and approaches (including those described in this report). Additional case examples can be found at www.naccho.org and on www.planning.org.
7. Document your efforts and share your experiences: Such collaboration is still quite uncommon. Consequently, planners and public health officials are a part of the diffusion of these innovative ideas among other communities in their region and nationwide.
8. Build support for the collaboration over time by hiring a staff person or assigning an existing staff person to take the lead on tracking meetings, events, new legislation, and studies related to creating healthy communities.
9. Write articles for newsletters and other planning and public health publications.
10. Make presentations at local, statewide, and national conferences. Some venues to consider are APA chapter and metro-section conferences, state-level health conferences, the APA and NACCHO annual conferences, the National Environmental Health Association, Congress for the New Urbanism, Rail-Volution, and the New Partners for Smart Growth conference offered each year by the Local Government Commission.

TOOL 2: ACTION PLANNING WORKSHEETS FOR PLANNING AND PUBLIC HEALTH COLLABORATION

We have provided a number of worksheets under this heading that planners and public health officials can use to help with collaborative efforts. The worksheets were originally created by NACCHO as part of a technical assistance tool, "Pulling Together: A Guide to Building Interagency Collaboration at Hazardous Waste Sites." APA modified it for this report to make it usable for a planning and public health collaborative effort that would address a broad range of health issues, in addition to hazardous waste exposure. These worksheets are available for download on the APA website at www.planning.org/research/healthycommunities.htm.

Worksheet 1: Agency Missions and Priorities

This worksheet will assist you in learning more about one another's mission and priorities, and will help as you identify areas of potential concurrence and conflict that may affect your ability to work together. Learning more about one another begins the process of relationship building. Identifying the mission (or mandate) and priorities of agency partners will help in understanding both the focus and the boundaries of each agency's authority.

While this worksheet could be completed by an individual agency, completing it together will provide great additional value if it stimulates discussion and new understanding between agencies. Joint completion will also help to prevent misconceptions and misunderstandings.

- Step 1: Clearly state the mission of each of the agencies and potential collaborative partners.

WORKSHEET 1A: AGENCY MISSIONS AND PRIORITIES

Agency	Mission
Local Planning Department	
Local Public Health Agency	
Local Environmental Health Agency	
Local Transportation Authorities	
State Environmental Health Department	
State Health Department	
Community Groups and Neighborhood Organizations	
State or Regional Transportation Agency	
Others	

- Step 2: Identify potential areas of intersect/commonality among missions.

  As a group, list the potential areas of concurrence among the missions of the collaborating agencies and partners. Each area of concurrence does not need to involve all of the partners, but it may be useful to identify areas where all of the partners' missions converge.

WORKSHEET 1B: AREAS OF CONCURRENCE

Agency	Area of concurrence
Local Planning Department	
Local Public Health Agency	
Local Environmental Health Agency	
Local Transportation Authorities	
State Environmental Health Department	
State Health Department	
Community Groups and Neighborhood Organizations	
State or Regional Transportation Agency	
Others	

- Step 3: Identify potential areas of conflict among agency missions or mandates.

  What are some potential areas of conflict among the missions of the collaborating agencies and partners? Brainstorm a list among the partners. You do not need to prioritize them or to identify those that may be the most critical barriers to collaboration. It is more important to simply be aware of the conflicts at this point in order to help identify an appropriate level of collaboration.

WORKSHEET 1C: AGENCY MANDATES THAT CONFLICT WITH OTHER AGENCIES

Agency	Areas of conflict
Local Planning Department	
Local Public Health Agency	
Local Environmental Health Agency	
Local Transportation Authorities	
State Environmental Health Department	
State Health Department	
Community Groups and Neighborhood Organizations	
State or Regional Transportation Agency	
Others	

- Step 4: Identify priorities.

  State the two or three major priorities for each collaborating agency and partner for action and/or desired outcomes of the group effort.

WORKSHEET 1D: PRIORITIES

Agency	Priority actions and/or desired outcomes
Local Planning Department	
Local Public Health Agency	
Local Environmental Health Agency	
Local Transportation Authorities	
State Environmental Health Department	
State Health Department	
Community Groups and Neighborhood Organizations	
State or Regional Transportation Agency	
Others	

- Step 5: Identify areas of commonality among priorities.

  What are some potential areas of concurrence from the priorities listed above?

WORKSHEET 1D: AGENCIES WITH CONCURRENT PRIORITIES

Agencies with concurrent priorities	Areas of concurrence

- Step 6: Identify areas of conflict among priorities.

  What are some potential areas of discordance or conflict among the priorities of the collaborating agencies and partners?

WORKSHEET 1F: AREAS OF CONFLICTING PRIORITIES

Agencies with conflicting priorities	Areas of conflict

Once you have completed this worksheet, you may consider developing a mission statement to show participants with conflicting viewpoints the common ground that they share, which should create a willingness to share resources and overcome turf issues.

Worksheet 2: Developing Goals for Working Together

This exercise will ensure that the planning, public health, and other agencies working together have a clear understanding of not only aeas of collaboration, but also what the intended outcome of the collaboration will be. This will help invest the partners in the process because they have a tangible outcome to work towards. Clearly state the intended goals and potential consequences of working together. It may be helpful to review this list of common goals and benefits of collaboration and the opportunities for collaboration throughout the course of the partnership. Complete this exercise collaboratively and before working on Agency Commitments.

- Step 1: Brainstorming

  Partnering agencies should conduct a brainstorming session that answers each of the following questions.

  - What do our agencies want to accomplish together?
  - What measurable improvements will we be able to identify if we are successful in working together?

- Step 2: Statement of Purpose

  Draft a statement of purpose for the specific work that will be done by the collaborating agencies. For example: " Improve community outreach and education on pedestrian safety and the health benefits of walking."

- Step 3: Identify Goals

  List at least three goals of the partnership that will support the statement of purpose.

  - Example 1: Raise public awareness of how improvements to pedestrian facilities by the municipality will support a personal health goal of becoming more physically active.
  - Example 2: Raise public awareness about the respective roles of the collaborating agencies on pedestrian safety and physical activity and how they can become involved in making their neighborhood more walkable.
  - Example 3: Foster additional neighborhoods or communities to form partnerships with the collaborating agencies to broaden awareness about pedestrian safety and physical activity beyond the initial project demonstration area.

- Step 4: Objectives

  1. For each goal identified above, develop SMART (Specific, Measurable, Agreed-on, Realistic, Time-based) objectives.
  2. Identify the intended outcome of the objective and how you will measure that outcome.

3. Identify what inputs (e.g., resources, such as funding, materials, and planning tools that need to be created, identified, or acquired) will be needed to ensure the desired outcomes.

4. List the external factors (those that are out of the partners' control) that might affect whether this objective will be met.

Consider the following example shown in this matrix. We have also provided a blank exercise below that can be copied. The number of objectives and action steps do not need to be limited to the spaces provided.

Exercise 1: Identifying Participants' Interest and Ability to Engage in Joint Work

Now that collaborators have identified the mission and priorities, as well as potential areas of concurrence or conflict, they can define how and why working together will enhance their own effectiveness and contribute to the final outcome at the site. Complete the Agency Missions and Priorities exercise before Identifying Participants' Interest and Ability to Engage in Joint Work, as agencies working together must clearly define their shared mission and goals so that individual self-interests are incorporated and focus on the common good. The following is a series of questions to consider and discuss jointly with agency partners.

- What is the agreed mission or vision for the group?
- How will the public interest be served by our agencies working together? What are the potential benefits to the public?
- How will my agency's interests be served by working together? What are the potential benefits to my agency?
- How will my interests be served by working together? What are the potential benefits to me?
- How might working with other agencies and partners negatively impact my agency's interests? What are the potential costs to my agency?
- How might working with other agencies and partners negatively affect my personal interests? What are the potential costs to me?
- What will it take for me to consider this joint effort worthwhile?
- What am I willing to contribute to ensure the success of the joint work? (e.g., time, information, funding, expertise, communication links, or access.)

Exercise 2: Collaborative Road Map and Timeline

Many collaborating partners are likely to have skills in project planning and management. In a collaboration, the main difference lies in the clear articulation of expectations regarding responsibilities and authority for decision making related to particular tasks or products. It is important not only to identify the primary party responsible, but also to identify others who need to be: 1) involved; 2) informed; and 3) part of the approval process for actions and decisions. Clarity now will help to facilitate strong working relationships in the future.

Fill out the grid below for each major task (e.g., media relations, community outreach, facilitation of interagency collaboration) that involves coordination among different agencies. If the activity requires only one agency's involve-

ment, filling out the grid may be too time consuming; however, progress on individual tasks is important to share among partners as well. The following exercise should be completed *before* the activity begins with other agency partners. You might consider completing the Record of Action worksheet upon completing this one.

Action/Task	Due date:
Resources Needed	
Resources Available	
Responsible Party	
Others to Involve	
Others to Inform	
Others to Approve	

Exercise 3: Forming Group Protocols and Ground Rules

Having group protocols and ground rules for participation will provide a consistent standard for group members to evaluate their own and other's participation. Clearly specifying expectations will help to build trust, establish an open and credible process, and avoid potential conflict. Ground rules should be developed jointly by the collaborating agencies. Following are a few questions that will help to establish practices regarding communication between the partners. This worksheet should be completed collaboratively.

Questions to consider in developing ground rules:

- Who will lead the meetings?
- Is the participation in the group by agency or by person?
- May the participating organizations send different representatives to different meetings or is consistency of participation and one singular representative important?
- Who will make which decisions?
- How will decisions be made during meetings (i.e., vote versus consensus)?
- What process will you follow for making decisions outside of the joint meetings? How often will the group meet?
- Will additional work be necessary between meetings?
- What are the preferred methods for communication among collaborators between meetings? (e.g., phone, mail, e-mail, etc.)
- How will the content of communication between meetings be shared with others?
- What system will be used to ensure that all members are adequately informed?
- Will meetings be confidential?

CONCLUSION

The two tools provided in this chapter are intended to help planning and public health practitioners launch a collaborative effort that will ultimately make their communities safer and healthier. The tools are designed to help practitioners recognize and move beyond any bureaucratic hurdles that stymie interagency cooperation and inhibit involvement by nontraditional partners in the visioning, planning, and development review processes. Additional tools—including a fact sheet with definitions of public health terminology and planning terminology and an alternative action planning worksheet can be found in the appendices.

CHAPTER 6

Health Impact Assessment

By Marya Morris, AICP

Health impact assessment (HIA) is a tool for planners and public health professionals that can be used to apply their respective expertise to help inform all manner of public policy decisions, including planning and land-use decisions. While common in Europe and Australia, very few HIAs have been conducted in the U.S. Interest in the tool is growing, and several jurisdictions have completed HIAs or are in the midst of conducting one at the time of this writing (August 2006).

The World Health Organization defines HIA as "a combination of procedures, methods, and tools by which a policy, program, or project may be judged in terms of its potential effects within the population" (1999). HIA can be used to analyze a policy or set of policies, such as a comprehensive plan, or a specific development project, such as a master-planned community, a major rezoning, or a brownfield redevelopment project. The tool can and has been used to analyze other policies not related to planning and land use. The San Francisco Department of Public Health conducted a health impact assessment on the city's proposed living wage ordinance.

The HIA Process

The HIA process follows five basic steps:

1. **Screening:** Identify projects or policies for which an HIA would be useful
2. **Scoping:** Identify which health impacts should be included
3. **Risk assessment**: Identify how many and which people may be affected and how they may be affected
4. **Report results to decision makers:** Create a report suitable in length and depth for audience
5. **Evaluate impact on actual decision process**

HIAs are often compared to environmental impact assessments (EIAs) in that they are an aid to decision making that draws on a scientific knowledge base and not a scientific method in itself (Barnes and Samuel 2002). The latter is a much better known tool whose purpose is to implement the National Environmental Policy Act (NEPA) by analyzing and documenting the effect of federal policies or federally funded projects on the natural environment with the aim of finding the least harmful and most economically sound alternative. Canada, Australia, Thailand, and New Zealand have all integrated HIA into their national-level, project-specific EIA regulations. In European countries, HIAs are conducted as part of an EIA or as an independent action depending on the circumstances (Kemm et al 2004).

There are provisions in U.S. NEPA for addressing the human health impacts of changes to both the natural and physical environment, although the law is clear that potential negative impacts on human health cannot alone trigger the requirement that an EIA be prepared. Rather, such impacts on people should be measured in an assessment of changes to the natural environment. Several states, including California and Washington, have state-level environmental impact laws, where a NEPA-like analysis is applied to state policies and state-funded projects. California's Environmental Quality Act further requires the analysis of adverse impacts on humans resulting from changes to the natural environment (CEQA Sec. 21000). "In practice, such assessments are usually limited to physical and chemical hazards (e.g., pollution of water may lead to gastrointestinal illness) and exclude sociobehavioral factors not mediated by toxicological mechanisms (e.g., construction of walking trails may lead to physical activity)" (Dannenberg et al. 2006).

The way in which HIA is being conceived of and applied in the U.S. has varied considerably depending on the specific circumstances of the agency or entity that has conducted the assessment and the type of project or policy being assessed. They range from informational checklists to multistep processes (Dannenberg et al. 2006). In general, the policy experts and practitioners who are part of the growing field of HIA in this country recognize that a purely regulatory approach, where HIA is incorporated into the EIA process or a similar state-level process, is not politically acceptable at this point (Morris 2004; Dannenberg et al. 2006).

HIA in Practice in the U.S.

In October 2004, the Centers for Disease Control and Prevention and the Robert Wood Johnson Foundation brought together experts in the areas of public health, urban planning, and transportation, including several HIA experts from the United Kingdom and the World Health Organization, to explore issues associated with advancing the use of HIA methods by local health departments, planning commissions, and other decision makers in the U.S. (Dannenberg et al. 2006). Both APA and the National Association of County and City Health Officials (NACCHO) were represented at that meeting. APA and NACCHO further teamed up in February 2006 to host a workshop for 11 jurisdictions in the U.S. that are in the midst of conducting an HIA or are interested and have the capacity to launch such a process in the future.

An HIA checklist was developed by NACCHO and the Tri-County Health Department in the Denver region (see the accompanying case study in this report). The checklist was designed to assist local public health agencies in their review of applications for new development or redevelopment plans in their communities. The tool is not a rigorous measurement device, rather it serves best as an awareness-raising and educational document for planners, public health officials, and citizens in the region that highlights the effects that land-use and transportation policies and plans can have on health.

Checklist

NACCHO NATIONAL ASSOCIATION OF COUNTY & CITY HEALTH OFFICIALS

Public Health in Land Use Planning & Community Design

NACCHO and the Tri-County Health Department in Colorado developed this checklist to assist local public health agencies (LPHAs) in their review of applications for new development or redevelopment plans in their communities. The checklist provides a method to ensure long term protection of public health and consistency in comments submitted for development plans, and broadens the health issues commented on by LPHAs during the planning process. It can also be used to identify potential health impacts and provide a screening process for improving the quality of decision-making. The checklist addresses not only those issues that LPHAs have regulatory authority over, but also the many public health issues that may arise during development and require policy change or other interventions. LPHAs can also incorporate issues that are specific to their jurisdictions. LPHAs should share the checklist with their local planning departments, elected officials, and the public, both to increase awareness of public health issues associated with land use planning and community design, and to encourage appropriate referral of applications to LPHAs for review and comment.

Water Quality

- ☐ What is the source of water for the project? A public system or individual well(s)?
  - ☐ If public, does the agency have any regulatory responsibility for quality assurance?
  - ☐ If private, are wellhead protection procedures proposed? Are the well(s) completed in an area of the aquifer that is free from identified or potential sources of contamination?
  - ☐ In rural areas where gas or oil exploration is occurring, are domestic wells planned with adequate setbacks from gas or oil wells?
- ☐ Does the project adequately address stormwater?
  - ☐ What is the drainage pattern on the site?
  - ☐ Are there indications of drainage problems, such as erosion, steep topography, wetlands, boggy areas, etc.?
  - ☐ Are there adjacent or nearby bodies of water (lakes, reservoirs, ditches, streams, etc.) that receive drainage from the site?
  - ☐ If an erosion control plan has been provided, are effective erosion control methods proposed during construction? Post-construction?
  - ☐ Does the plan include effective project-specific or regional stormwater quality measures? Both engineered and non-engineered?
  - ☐ Does the proposed use warrant specific best management or pollution prevention practices? (e.g., proper use of pesticides on golf courses)
  - ☐ Does the project include unnecessarily large expanses of paved areas?
- ☐ Is the property in a floodplain or a groundwater (aquifer) recharge area?
- ☐ Does the proposed use have the potential to release hazardous products or wastes into the surface or groundwater? (e.g., AST/USTs; chemicals, including agricultural chemicals such as pesticides and herbicides; asbestos)

For more information, visit:

www.epa.gov/water/yearofcleanwater/docs/growthwater.pdf
http://ohioline.osu.edu/ws-fact/0003.html
www.ire.ubc.ca/ecoresearch/publica3.html
www.fhwa.dot.gov/environment/wtrshd96.htm
www.cdc.gov/healthyplaces/about.htm

Wastewater

- ☐ Is the proposed wastewater treatment system adequate and effective?

Centralized service

- ☐ If new central service is proposed, does the proposed facility have an approved utility plan?
- ☐ If new central service is not proposed, is the proposed project within the service area of an existing municipal utility or wastewater treatment district, based on its approved utility plan?
- ☐ Does the existing or proposed service provider have the capacity to serve the development in compliance with regulatory requirements?
- ☐ Is the proposed system fiscally sound?

Individual sewage disposal systems (ISDS)

- ☐ What type of systems do the soils warrant?
- ☐ Are there site features or areas that should be avoided as ISDS locations? What are appropriate setbacks?
- ☐ Should certain site uses be prohibited from discharging into the ISDS? Are provisions in place to segregate and collect these discharges?

For more information, visit:

www.asu.edu/caed/proceedings01/HOOVER/hoover.htm

Tri-County (Colo.) Health Department

The Tri-County (Colorado) Health Department developed this checklist to assist local public health agencies in their review of applications for new development and redevelopment plans in their communities. The full checklist is available at www.naccho.org.

The contents of the checklist display a far broader picture of health and its relationship to land-use issues compared to what local public health agencies are typically required or asked to review in a development proposal; namely, checking the plans for compliance with well and septic system requirements. Topics on the Tri-County checklist include water quality and quantity, transportation and injury prevention, noise, opportunities for physical fitness, natural and manmade hazards, and solid and hazardous waste disposal. Each category includes several questions that local officials should explore regarding proposals for new development and multiple links to additional information on the subject. A copy of the full checklist is available at www.naccho.org/topics/hpclp/land_use_planning/LUP_Toolbox.cfm.

In 2002, the San Francisco Department of Public Health (SFDPH) began to collaborate with community organizations and the San Francisco Department of City Planning on an effort to conduct an HIA of development projects and neighborhood land-use plans. In contrast to the less formal checklist approach used by the Tri-County Health Department in Colorado, the San Francisco effort aimed to "challenge city planning officials to analyze broader health impacts in the Environmental Impact Reports (EIRs) required under the California Environmental Quality Act (CEQA)—a law which ensures transparency of potentially adverse environmental impacts of public actions." As noted earlier, CEQA mandates an EIR to analyze adverse human impacts secondary to environmental change, but the health impacts analyzed relate almost exclusively to physical environmental hazards, such as air and water pollution, noise, and hazardous materials.

In the group's first effort, it analyzed the health and environmental consequences of a 1,600-unit market rate (i.e., very high cost) condominium project that a developer had proposed in the downtown. Representatives of the group (including SFDPH and community members) then presented their analysis in writing and in oral testimony before the city planning commission, noting that the units would be affordable to only 7 percent of the city's households and the commercial and retail services that would occupy the ground floor of the buildings would create even greater demand for housing by persons who would work in those businesses. The city ultimately approved the project, but the group's analysis did prompt the city to require the developer to provide more affordable units in the project than it had originally planned.

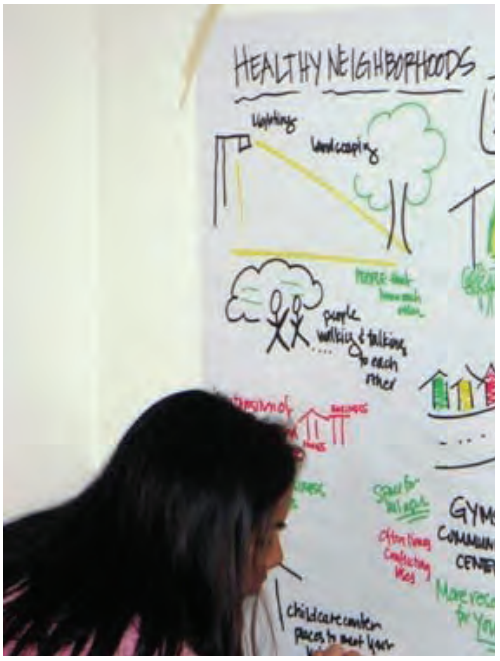
A second case involved the demolition of a 377-unit rent-controlled apartment building that would be replaced by a 1,000-unit market rate condo tower. The HIA group spoke out in support of the local residents' position that the demolition and replacement high-priced housing did not take into account the negative health impacts of unaffordable housing and residential displacement. A local planning official had asserted that because there would be no net loss of housing units with the new development, the project's EIR would have to analyze only the physical changes to the natural environment and not the impacts of the project on the people who occupied the existing housing. The HIA group published a technical report that outlined the health impacts of housing affordability and residential displacement, which prompted city officials to then require the developer to consider those impacts in the EIR. Ultimately, the developer agreed to guarantee to offer lifetime leases to the current residents at their existing rents and to delay demolition until sufficient replacement units were built.

In 2003, the health department and a consortium of community groups on the city's east side joined together to launch the Eastern Neighborhoods Community Health Impact Assessment (ENCHIA). The group began the initiative by creating a "healthy city vision" for San Francisco. The vision is comprised of four elements: adequate housing, environmental steward-

ship, public infrastructure and access to goods and services, and a healthy economy. After reaching consensus on the vision, the group developed a comprehensive, data-driven tool "to evaluate development plans, policies, and projects against a comprehensive set of health-based targets" (San Francisco Dept. of Public Health 2006). In early 2006, ENCHIA released a test version of the "Healthy Development Measurement Tool." Within it, each of the four elements have several objectives that, in turn, each have their own specific indicators, targets, data sources, and a health-based rationale.

As an example, Element Three, Adequate Housing, has five objectives, each of which has at least one indicator associated with it. For each indicator there is a target, a baseline data source, and a health-based rationale. The second objective for Adequate Housing is: "Increase housing availability for what the market does not provide." The indicator is "The proportion of families paying greater than 50 percent of their household income on their homes." The target is: "30 percent of all new housing should be at or below affordability levels that reflect 80 percent of the San Francisco median income." And finally, the health-based rationale for this objective is: "Excessive rent or housing cost burdens contribute to hunger, mental stress, harsh parenting, overcrowding" (San Francisco Dept. of Public Health 2006).

Neighborhood parks and recreation centers provide space for physical exercise and positive social activities. Investments in these places and the people who use them can limit social problems like violence, addictions, and chronic poverty.



(Above) The visioning sessions that started the Eastern Neighborhoods Community Health Impact Assessment project in San Francisco brought together people representing diverse issues including housing, community services, childcare, schooling, small businesses, real estate development, sustainable estate development, sustainable transportation, health advocacy, and neighborhood advocacy. (Right) For many years, community members have asked the Department of Health in San Francisco to address issues related to land use, including issues of environmental hazards due to industrial uses, busy roadways, and contaminated land.

Photos courtesy of San Francisco Department of Public Health

The San Francisco Department of Health is also working with the University of California–Berkeley to develop forecasting tools that will allow quantitative predictions of changes in motor vehicle volumes on health outcomes.

In addition to the two examples just described, the SFDPH now routinely receives requests from the department of city planning to conduct public health analyses of specific planning efforts. In 2005, the department provided an analysis of the health impacts of changes to the Housing Element of the city's General Plan. Aside from its HIA projects, the SFDPH is also working with the University of California-Berkeley to develop forecasting tools that will allow quantitative predictions of changes in motor vehicle volumes on health outcomes. That work is being done as part of a city and statewide effort to reform how transportation level-of-service standards are derived and applied in environmental impact statements required by CEQA.

Another HIA was undertaken by the Georgia Tech Center for Quality Growth and Development with experts at the Centers for Disease Control and Prevention to evaluate the potential health effects of a proposed redesign and redevelopment of a 2.37-mile stretch of Buford Highway and its adjacent right-of-way and land uses. The road is a seven-lane arterial roadway that starts near downtown Atlanta and runs north into the suburbs. The redesign plans included reducing the number of lanes, adding sidewalks, crosswalks, and on-street parking, and increasing development density and street connectivity on the site of an underused

Candace Rutt, PhD

Candace Rutt, PhD

Buford Highway in Atlanta is a seven-lane arterial roadway that starts near downtown and runs north to the suburbs. The adjacent neighborhoods are home to a growing number of Hispanic and Asian households, many of which do not own a car.

Candace Rutt, PhD

Candace Rutt, PhD

A health impact assessment of this stretch of the Buford Highway evaluated the health effects of redeveloping the roadway to reduce the number of lanes, add sidewalks, crosswalks, and on-street parking, all with the goal of making the area less dangerous for people on foot or bike.

shopping plaza. The specific health outcomes extensively examined by the team were physical activity and prevention of fatalities and nonfatal injuries. Other outcomes such as social capital, safety, air pollution, and noise were examined qualitatively.

According to the DeKalb Police Department, under current conditions along the highway study area, there is an average of 6.7 pedestrian injuries, 1.8 pedestrian fatalities, and 123 people injured in car crashes each year. As of August 2006 the HIA was completed and an internal panel at the CDC was reviewing the final results prior to making them public. Without offering specific numbers, members of the research team have told this author that the potential reductions in pedestrian injuries and fatalities and injuries from automobile collisions will be reduced dramatically if the proposed built environment changes are implemented.

The researchers note that Buford Highway study area is typical of the commercial corridor development that has been built in the U.S. in the last 55 years. HIA demonstrates that a set of applied analytical tools and prototypical models for changing the built environment could have very broad applicability in other locales.

CONCLUSION

Although HIA practice is still in its infancy in the U.S., the work that is underway in Ingham County, Michigan, San Francisco, and Atlanta shows it is a promising tool for identifying environmental health risks, demonstrating connections between planning and land-use decisions, development projects, and health outcomes, and deciding upon and executing measures to mitigate potential negative health outcomes and to promote positive health outcomes. From a local government or community organization standpoint, conducting an HIA is a substantive exercise that community advocates, planners, and public health officials can work on together and that ultimately will result in a healthier community than would have likely resulted from a conventional planning process.

CHAPTER 7

Case Studies of Successful Planning and Public Health Collaboration

This chapter contains case studies, written by the principal author and others, of five jurisdictions that have brought public health issues into the land-use planning process. Many of the ideas, concepts, and tools described throughout this PAS Report were gleaned from these early innovators.The Ingham County, Michigan, Health Department got involved with planning after a 2002 community health assessment revealed disparities in the health status of people who lived in the region's suburban and rural areas compared to people living in the region's urban areas. The health department is also working with the area's regional planning body, the Tri-County, Michigan, Regional Planning Commission to examine the implications of land-use trends and growth on the region's future.

In 2004 in Hennepin County, Minnesota, public health officials joined with planners, architects, transportation engineers, and others to form a workgroup that developed recommendations on how to address built environment issues in the county from a public health perspective. The workgroup has conducted a citizen survey and has made recommendations to local leaders, including that the county support a five-year plan to integrate healthy community design into all aspects of planning in the county.

In 2002, physical inactivity was responsible for an estimated $8.9 billion in health-care costs in Michigan and $300 million in Ingham County alone.

The Delaware County, Ohio, General Health District came to the land-use planning table after a community health assessment identified rapid growth and development in the county as the citizens' number one concern with respect to its effect on public health. The findings of the assessment have compelled the health department to become involved in the county's smart growth planning, working side-by-side with the parks department, public works, and the regional planning commission.

In Colorado in 2001, the Tri-County Health Department (which includes Denver, Arapahoe, and Douglas Counties) surveyed planning departments and county commissioners to assess how effective the health department had been in executing its responsibility to review wastewater, air quality, and solid and hazardous waste impacts of proposed subdivisions. That assessment led to a broader role for public health in the planning process. By 2006, the health department was routinely providing comments on many more aspects of proposed development projects than they traditionally had commented on, including neighborhood walkability, traffic flow, street and intersection design, and bike lanes.

INGHAM COUNTY, MICHIGAN

By Marya Morris, AICP, with Janine Sinno and Michelle Reardon

Ingham County is home to Lansing, Michigan's capital, as well as East Lansing, the site of Michigan State University. In August 2004, the Ingham County Health Department published *Our Health Is in Our Hands*, a report that presented the overall picture of health in the county.

According to the report, in 2002, physical inactivity was responsible for an estimated $8.9 billion in health-care costs in Michigan and $300 million in Ingham County alone. Although Ingham County's level of physical activity has improved since 1993, most residents do not exercise enough, and a quarter of the population is sedentary. Approximately 62 percent of Ingham County adults do not engage in moderate physical activity at least three times a week. Almost 80 percent of Ingham County residents, however, participate in some leisure-time physical activity. Leisure-time physical activity, according to Ingham County health officials, includes gardening or leisurely walking. County health officials hope that no more than 10 percent of county residents are inactive by 2010. To them, most people who engage in even low levels of physical activity will experience health benefits.

Population shifts over the past decade greatly affect the health of county residents. Higher-income residents have moved in large numbers from the urban center to rural areas outside of Ingham County, specifically the primarily rural counties of Clinton and Eaton, which has caused a boom in new home construction. At the same time, Ingham County and particularly the Lansing/East Lansing urban center have seen an increase in numbers of African-American, Hispanic, and foreign-born residents.

The shift has had health consequences for both groups, resulting in less active lifestyles for rural residents and declining health in the city. "Michigan is the most economically segregated state in the U.S.," says Bob Glandon, former director of planning and special services for the Ingham County Health Department. "This is causing a huge gap that is helping to exaggerate health disparities." African-American and low-income populations suffer

much poorer health than the population as a whole. African-Americans in particular have higher rates of—and die earlier of—all of the top 12 medical conditions, including cancer, heart disease, birth defects, and diabetes.

In light of this, the health department hopes to do two things: (1) make "health improvement" a goal of the master planning process at local and regional levels, and (2) focus resources in geographic areas where health needs appear to be higher. An indicator used to determine areas with the greatest need is years of potential life lost (YPLL). Levels of health risks displayed by the population, such as smoking, substance abuse, poor diet, lack of exercise, and lack of access to health care, determine YPLL. Compared by census tract, the health department displayed these results on maps using a Geographic Information System (GIS).

The health department used GIS to create a Health Impact Assessment (HIA) planning matrix that planners in 78 local government units can use to assess the impact of county development projects on health. The matrix enabled planners to look at study the impacts in several categories, including water quality, wastewater disposal, air quality, solid and hazardous waste disposal, noise impacts, social capital, physical activity, and food systems. In terms of physical activity, questions asked include:

- Does the project provide mobility options for those who cannot drive?
- Does the project contain elements that enhance feelings of neighborhood safety?
- Does the project provide safe routes for children to walk to and from school?
- Does the project contain design elements to calm traffic?
- Does the project present unsafe conditions or deter access and free mobility for the physically handicapped?
- Does the project include pedestrian crossing signals and pedestrian refuge islands on the median?

The health department held workshops for planners in summer and fall 2005, both to familiarize them with the matrix and to allow them to begin using it. A $12,000 grant from Michigan State University's Land Policy Program funded this effort.

The tool still needs to be refined, according to Glandon. In the prototype phase, he says, "City of Lansing staff *thought* the tool could be good not only for evaluating individual projects, but for master planning. But planners in some smaller jurisdictions—which have smaller staffs and fewer resources—said that for the tool to be useful, it would need to be simpler to use."

Another major initiative to promote active living is the Tri-County Regional Growth Project, supervised by the Tri-County, Michigan, Regional Planning Commission. Ingham County, along with its neighbors Clinton and Eaton Counties, represent the Tri-County region. This project is intended to actively engage citizens of the region to examine the implications of land-use trends and growth on the region's future. Although the $2 million project was not completed as of summer 2006, some of the regional themes and principles reflected in its policy map have been integrated into the comprehensive land-use plans of several local government entitites. The land-use- and health-related principles include the following:

- The regional transportation priority will be to enhance and preserve the existing road network, public transit, and nonmotorized transportation modes rather than further expansion of the road network in rural areas.
- Traditional neighborhood planning and design concepts (walkable elementary schools, mixed-use zoning, village/community design) will be

INGHAM COUNTY, MICHIGAN

For more information about the Ingham County case study, see:

Capital Area Community Voices. 2004. CACVoices.org homepage. [Accessed July 11, 2006]. Available at www.cacvoices.org/.

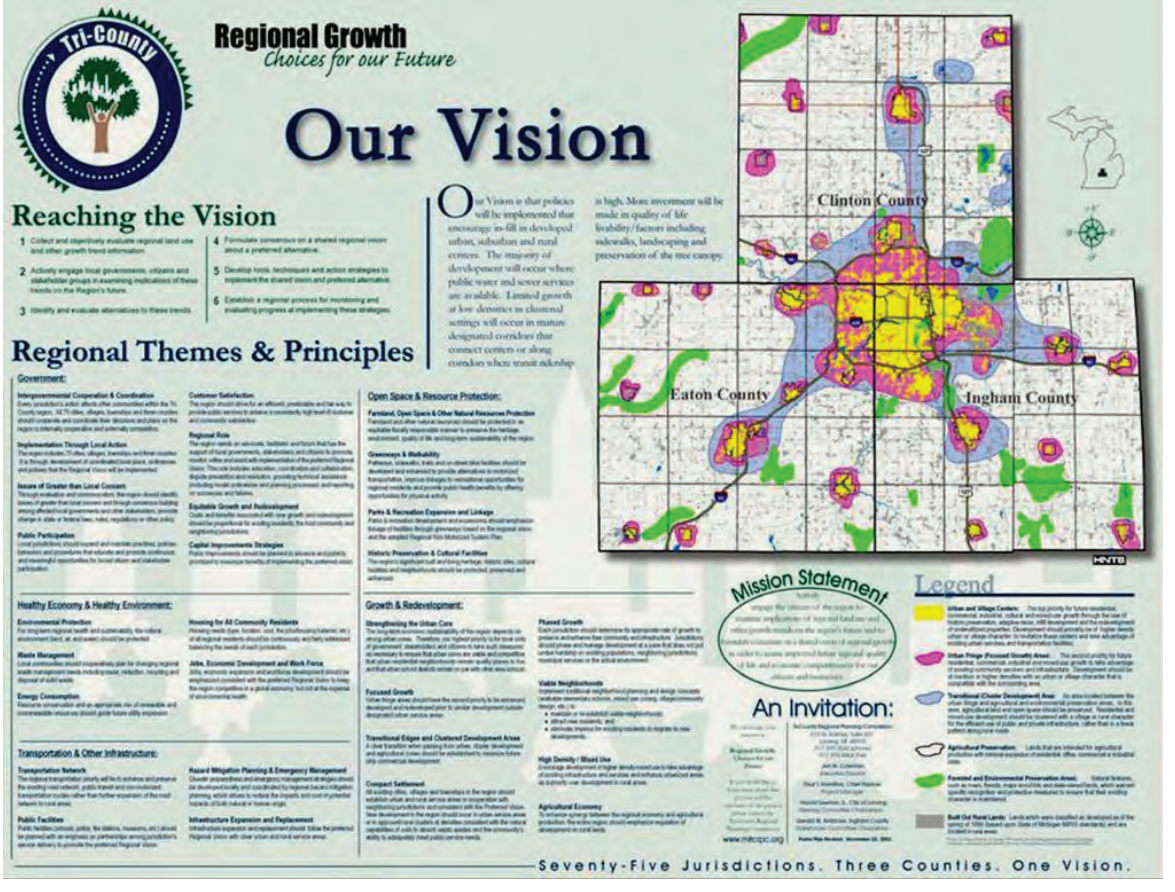
Capital Area Community Voices. 2004. "Land Use and Public Health." [Accessed July 11, 2006]. Available at www.cacvoices.org/upload/91020041131374182642698 2879.htm.

Ingham County Health Department. 2004. *Our Health is in Our Hands*. [Accessed July 11, 2006]. Available at www.cacvoices.org/.

Tri-County Regional Planning Commission. 2004. *Regional Growth-Choices for our Future*. [Accessed July 11, 2006]. Available at www.mitcrpc.org/pdfs/Growth%20Project%20Library/Tri-County%20Vision%20PE.pdf.

This residential development in Meridian Township, Michigan, has been designed to connect with the township trail system and important destinations nearby through a series of developer-provided trails and sidewalks.

A Poster Plan illustrating the wise growth "preferred vision" and guiding principles; results of the three-county planning process, "Regional Growth: Choices for Our Future."



Kalamazoo Street, an east/west route connecting the cities of Lansing and East Lansing, was redesigned to accommodate bicycle commuters and recreational riders.

Photos courtesy of Ingham County Health Department

implemented to maintain or reestablish viable neighborhoods, attract new residents, and eliminate impediments for existing residents to migrate to new developments.

- Pathways, sidewalks, trails, and on-street bike facilities will be developed and enhanced to provide alternatives to motorized transportation, to improve linkages to recreational opportunities for regional residents, and to provide public health benefits by offering opportunities for physical activity.
- Parks and recreation development and expansions should emphasize linkage of facilities through greenways based on the regional vision and the adopted Regional Nonmotorized System Plan.

The regional planning commission has committed to the growth project in the form of staff support for implementation activities as well as incorporating it into the Regional 2025 Transportation Plan. Where there is no specific allocation of funds for implementation, there is a commitment to the project through these activities.

Funding is still a challenge, but it has come from unexpected sources. In 2004, the area became a nonattainment area for ozone, making it eligible for funding from federal air quality programs. Of those federal funds, $200,000 a year will be directed toward regional land-use projects that reduce emissions, encouraging healthy living in the process.

TRI-COUNTY HEALTH DEPARTMENT, DENVER, COLORADO

By Karen Roof with Carol MacLennan

The Tri-County Health Department (TCHD), a district health department serving more than a million residents in three counties of the metropolitan Denver area, has offered development review services to its jurisdictions for several decades. Each year, TCHD receives as many as 200 to 300 land-use referrals from its jurisdictions. The agency provides comments on mandatory issues (those regulated under public health laws) and discretionary issues (those that may protect or enhance public health but are not subject to regulatory requirements). Discretionary comments make up the bulk of TCHD's input. This is due to the fact that there are few local laws that specifically protect public health as it relates to land use.

The goal of TCHD's Land Use Program is to include environmental public health principles routinely in local planning and development activities. TCHD initiated an effort to become more involved in the planning process in 2001. The land use program staff (i.e., the Public Health Engineer and an Environmental Health Policy Coordinator) met with each county planning department to explain TCHD's program and to seek guidance on the most effective way to participate more actively in the planning process.

In 2002, TCHD conducted a survey of the three county planning departments and Boards of County Commissioners (BOCCs) to evaluate the program's effectiveness in meeting county needs and addressing environmental health issues. The first part of the survey asked respondents to rank the importance of TCHD's input on a range of public health topics and planning activities. The second part sought feedback about the quality and timing of TCHD's services and areas for improvement. The survey responses were helpful in identifying what was most and least important in each county. The issues ranked highest in importance and the percentage of respondents who listed the issue were as follows: wastewater (100 percent), solid waste/hazardous materials/waste (60 percent), air quality (60 percent), and water quality (47 percent).

Commerce City, Colorado, planning staff are shown here in the fall 2005 explaining the walkability audit tool to residents of a mobile home park. During the audit, the team observed a woman who had no choice but to walk in the street on her way home from the grocery store because the sidewalks where she lives are too narrow.

Photos courtesy of Tri-County Health Department

The responses also confirmed that, while most of the planners ranked as lowest their desire for TCHD's involvement in issues such as master planning, injury prevention, and community design for health (e.g., safety, air quality impacts from transportation, supporting more active lifestyles, water conservation), two of the three counties encouraged TCHD to maintain involvement in these areas.

In 2003, TCHD scheduled a follow-up meeting with each planning department to evaluate how well the planners felt TCHD had implemented their 2002 recommendations. TCHD believes these periodic surveys and service assessments have been very useful in improving the effectiveness of their health interventions and educating the counties about the links between community design and public health, particularly on emerging topics, such as active community environments (ACE). An ACE, also referred to as an "active living community," is designed with a pedestrian focus and provides opportunities for people of all ages and abilities to engage in routine physical activity with the goal of meeting the daily minimum standard of 30 minutes of moderate activity (RWJF 2005).

The Tri-County Health Department has found that planners are often strong advocates and proactive partners in promoting public health through the land-use process.

TCHD has found that planners are often strong advocates and proactive partners in promoting public health through the land-use process. Planners, in turn, can then carry the public health message, either directly or with a

Tri-County Health Department

In early 2006, city staff, a walkability consultant, and residents of the historic city of Derby, Colorado, embarked on a "walkabout" as part of the community outreach portion of a redevelopment study. The group analyzed the comfort, image, access, linkages, uses, and sociability features of a major intersection.

local public health agency, to other partners in the land-use process (e.g., open space agencies, parks and recreation districts, bus/transit districts, and school districts). Particularly important are operations that have responsibility for the transportation infrastructure. For example, public works engineers develop street cross sections and ensure proper street function and traffic flow. Fire departments review development plans with an emphasis on road widths and turning radii to guarantee emergency vehicle access. Both of these agencies play a role in the safety and walkability/bikability, and thus the health, of communities.

A recent case in Arapahoe County illustrates how planning staff and the developer of a large mixed-use project leveraged collaboration with the local public health agencies to improve the design of some key intersections. The local agencies facilitated a free consultation for the county by a national "walkability" expert. The planners arranged a session with the local government commission, the local public health agency, county staff, a member of the planning commission, and the developer and his planning consultants. As part of the session, the developer presented his conceptual plan and invited discussion. An idea that emerged was the benefit of replacing some traditional intersections with roundabouts, which were untested in the county. The planning staff and developer pursued the idea and ultimately secured approval after taking fire department and engineering staff to a busy roundabout in a neighboring jurisdiction during rush hour, demonstrating good traffic flow and easy maneuverability by large trucks and school buses.

Another valuable partnership is a land-use group established several years ago by environmental health (EH) staff within TCHD and approximately seven other local public health agencies, primarily in the Metropolitan Denver area and along Colorado's Front Range. Its purpose is for EH staff with land-use review responsibilities to educate themselves on topics of common interest, identify emerging concerns, learn from each other's experiences, and work toward consistent problem-solving approaches on regulatory and nonregulatory matters. The group meets one full morning every quarter at a different host public health agency. Between meetings, members use group e-mail queries to tap each other's expertise when new issues arise. On occasion, the group has collaborated to develop presentations for conferences.

Local public health agencies have long been considered the experts on issues such as air and water quality, immunization, restaurant inspections, and waste management, by virtue of professional training and regulatory authority. In contrast, they have had little or no experience participating in the land-use planning process. While community planning should remain the bailiwick of the planning profession, local environmental public health officials need to understand planning principles well enough to participate effectively in the area of land use and community design as it affects public health. This involves developing new knowledge, relationships and skills.

Over time and with education, TCHD's comments have evolved into recommendations that some planners integrate into their negotiations with applicants and include in their staff reports to policy makers. Here, for instance, is the comment submitted by TCHD on one project proposal.

While community planning should remain the bailiwick of the planning profession, local environmental public health officials need to understand planning principles well enough to participate effectively in the area of land use and community design as it affects public health.

> Evaluate and revise the site plan to accommodate bicyclists as well as pedestrians. Both the Reward Creek and Sarasota Line Light Rail Stations are easily accessible by bike from the property. Also, RTD's 25X express bus travels along Reward Creek Road and East and West Drives, encircling the development and connecting it to the Meadow Creek park-n-ride, the shuttle through the Business Park and the Northland park-n-ride on weekdays, giving resident bicyclists convenient access to a large variety of work, retail, and recreational destinations. In addition, children living in Rawhide might be able to bike to and from school.
>
> - Designate bike lanes on major collectors, arterials or other suitable streets, and on the pedestrian bridge to the Reward Creek Light Rail Station;
> - Where bike lanes do not exist, widen sidewalks from 5′ to 8′ or more where appropriate so that people on foot and on bicycles can use them jointly.
> - Provide bike storage areas in/outside the residential units, bike racks at retail and recreational destinations throughout the development, and bike racks or perhaps bike lockers at the Bus Drop Off.

Based on initial feedback and some anecdotal results, TCHD's level of involvement and detailed health comments in development reviews have made positive changes. TCHD anticipates its future surveys with the counties to identify how its input into the planning process has affected land-use decisions and outcomes.

Recently, TCHD received a multiyear grant from Kaiser Permanente to develop an integrated nutrition and physical activity program in one of its core cities as a means of preventing or reducing the incidence of chronic disease. Fundamental elements of the program include land-use policies and physical changes to the environment. Tri-County and city staff from planning, parks and recreation, engineering, and other departments are working together to promote significant community involvement (residents, businesses, schools, and nonprofits) in these efforts. This program is a collaboration among EH land-use program staff, epidemiologists, health planners, nurses, nutritionists, injury prevention staff, and others. It presents an opportunity to measure the effect of a coordinated interdivisional effort to promote communitywide healthy behaviors.

TCHD's goal is to continually improve its land-use program in terms of the quality of its interventions and relationships and its capacity to offer a more comprehensive program. It does this partly by networking with other LPHAs and monitoring best practices nationally. TCHD's methodical process of expanding its scope and collaboration around how the built environment can impact health has been a necessary component of advancing public health through the built environment.

HENNEPIN COUNTY, MINNESOTA

By Marya Morris, AICP, with Karen Nikolai

Hennepin County is located in Southeastern Minnesota. Its 2004 population estimate was 1.1 million, and Minneapolis is the county seat.

Stemming from national interest about health and the built environment, Hennepin County's Public Health Leadership Team (PHLT), under the Human Services and Public Health Department, decided to study the issue. The PHLT charged an interdepartmental workgroup, which met during 2004 to 2005 to develop a written report and recommendations that addressed built environment issues from a public health perspective. This report would be used to make programmatic recommendations for the 2006 budget cycle and beyond. The workgroup was asked to fulfill several objectives:

- Define and describe the key concepts for the term "built environment."
- Identify two or three alternate terms for built environment that would be understood more easily by the general public.
- Compile an inventory of built environment work already completed or in process in the county's public health service areas.
- Outline potential public health objectives and outcomes regarding built environment issues and the processes for implementing them.
- Write a report that includes recommendations on roles the Hennepin County Human Services and Public Health Department could pursue in addressing built environment issues from a public health perspective.

The workgroup defined "built environment" this way:

> It encompasses all of the buildings, spaces and products that are created, or significantly modified by people. It includes, for example, homes, schools, workplaces, parks, business areas, roads, waterways, sidewalks, bikeways, and mass transit. This human shaped environment ranges from macro scale—such as that of a neighborhood or city—to micro scale—such as building or landscape design—all of which impact physical, mental and social well-being.

The workgroup also identified alternate terms for "built environment," including "community design," "sustainable communities," "neighborhood environment," "human created/shaped environment," "healthy communities," and "smart growth." After much discussion, "community design" was adopted to replace "built environment" because the workgroup believed multiple audiences would more easily understand what was meant by that term.

Members of the workgroup conducted a survey of Hennepin County programs affecting the built environment in October 2004. The survey found that county roadways and bridges are designed in the context of their surroundings and often include sidewalks, trails, and other amenities. Also, public hearings and open houses on land-use projects in the county have generally been effective in gathering community and multicultural input. The departments work to influence legislation and policies in environmental and other areas. Finally, the presence of lead in the environment is a major focus area for many programs, including public health, child protection, housing, and environmental issues. The survey, however, found little evidence of ongoing interdepartmental collaboration within the county.

Four public health objectives were developed in early 2005, followed by nine outcomes. The objectives include: increase the daily physical activity level of county residents; decrease injuries related to pedestrian/bicycle/automobile crashes; increase the number of healthy, affordable housing units;

Creating and maintaining opportunities for residents to be physically active is a key objective of the Hennepin County Public Health Department. The department formed an interagency workgroup in 2004 to assess whether public health concerns were being effectively addressed in planning, transportation, and land-use decisions. Shown here, bicyclists on the Hennepin County Regional Rails Authority trail system.

Photos courtesy of Hennepin County Public Affairs

and attain and maintain federal- and state-recommended air- and water-quality levels in Hennepin County. The nine outcomes are to increase social connectedness, increase physical activity, decrease overweight/obesity rates, reduce mental distress and stress, increase perceived safety/actual safety, improve air and water quality, reduce injury rates, reduce crime rates, and decrease blood lead levels.

The final report was presented to the PHLT in June 2005. Recommendations included the following:

1. Develop a five-year plan to integrate healthy community design into all areas of Hennepin County planning.
2. Establish and fund a Community Design Liaison position to spearhead and coordinate this plan.
3. Convene a Community Design Coalition that will create a vision and drive policy for healthy community design in Hennepin County.
4. Incorporate the use of HIAs into planning and land-use design. (For more on HIAs, please see Chapter 6.)
5. Incorporate evaluation into all community design-related projects.

Following this report, the PHLT forwarded the recommendation to hire a community design liaison to the Hennepin County Board, which approved the position for a two-year term, which began in January 2006. A liaison has been hired and is jointly funded between the Human Services and Public Health Department and the Community Works and Transit (HCWT) department. The staff person is housed in the county's HCWT Department and reports to both departments. The liaison has begun to implement the workshop's recommendations, and

an internal advisory committee has been formed. The advisory committee includes members of the former workgroup as well as new members.

A countywide coalition to create a vision and drive policy is also being formed, and key business, community, and local government leaders from throughout the county are being invited to join. The coalition will be convened by the fall and led by a county commissioner. In May 2006, a small team had begun to conduct an HIA on a county redevelopment project as well. Through these various strategies, Hennepin County hopes to strengthen interdepartmental and interagency relationships and improve the health of its residents.

DELAWARE COUNTY, OHIO

By Marya Morris, AICP, with Susan Sutherland

According to the U.S. Census, Delaware County is the fastest-growing county in Ohio, and the twelfth-fastest-growing county in the U.S. Between July 2000 and July 2005, the county experienced a 36.6 percent increase in population (from 109,989 to 150,268 people). Since the mid-1990s, the county has faced the challenge of a growing and demanding population, rapid changes to the natural environment resulting from new development, and significant limitations of existing infrastructure to manage growth effectively.

In January 1998, the Delaware General Health District (DGHD) formed a committee to lead a communitywide assessment of environmental health. The district became one of 10 communities in the U.S. to test a tool developed by the National Association of County and City Health Officials (NACCHO) known as the Protocol for Assessing Community Excellence in Environmental Health (PACE-EH). The objectives of the PACE-EH process were to:

- collect environmental health data;
- evaluate local environmental conditions;
- identify populations at risk; and
- prioritize local environmental health collection methods.

DGHD gathered this data from five geographic regions within the county, each of which was representative of the area's demographic diversity.

An open-ended questionnaire was also used to facilitate the discussions to determine residents' environmental concerns. The questionnaire asked:

- What do you like best about living in Delaware County?
- What do you think is the biggest problem facing Delaware County today?
- What are the environmental concerns that affect your health?
- How about those that affect your quality of life, and the ecosystem?
- What do you believe are the top five environmental health priorities?

Five focus groups were convened with the help of a professional consulting firm hired by the board of health.

Additional facilitated discussions with the public were held to get their input on environmental problems. At the end of each discussion, participants ranked the issue according to their level of concern. The 26-member PACE-EH steering committee also went through the same process.

DELAWARE COUNTY, OHIO

For more information about the Delaware County case study, please see:

American Public Health Association. 2006. Press release. "Building a Healthier Future for Kids in America: Five Communities Lead the Way." [Accessed July 11, 2006]. Available at www.apha.org/NPHW/2006/pg_press_release_kickoff.htm

Delaware County Health District. 2004. "Protocol for Assessing Community Excellence." [Accessed July 11, 2006]. Available at www.delawarehealth.org/pace.htm.

Delaware County Health District. 2003. *Accomplishments to Date*. [Accessed July 11, 2006]. Available at www.delawarehealth.org/Assessment/PDF/Accomplishments.pdf.

National Association of County and City Health Officials. 2004. "Delaware (OH) General Health District —Project Description/Background." [Accessed July 11, 2006]. Available at www.naccho.org/general839.cfm.

Silva, Hilton, and Paul Rosile. 1998. *Protocol for Assessing Community Excellence in Environmental Health (PACE-EH): From Theory to Practice, the Delaware City/County Health Department Experience*. [Accessed July 11, 2006]. Available at www.delawarehealth.org/Assessment/PDF/PACE.pdf.

Sutherland, Susan. 2004. "*Land Use Planning*." [Accessed July 11, 2006]. Available at www.delawarehealth.org/Assessment/PDF/StPaul.pdf.

By August 1998, the committee had condensed the public input to 20 priority environmental health issues. Phase II of the assessment then began, during which the committee attempted to identify a locally appropriate set of criteria to measure the status of the 20 issues. The criteria used to rank the issues included aesthetics, economic impact, fairness, future generations, health effects, peace of mind, ecological effects, geographical scale, recreation, sustainability, ethical/moral/social responsibility and sense of community.

Ultimately, the committee decided to develop action plans for four issue areas:

1. County Development
2. Environmental Education
3. Surface Water Quality
4. Litter Prevention and Recycling

Of these four issues, the strongest intersection between land-use planning and public health is clearly the effects of rapid development in the county on public health. Health concerns for which the public identified rapid growth as the cause included air pollution (asthma), car crashes and fatalities, pedestrian injuries and fatalities, reduced physical activity, threats to mental health, changes in cardiovascular health, breakdown of perceived community, increased blood pressure, and water contamination.

Given that growth and change had emerged as the public's top concern to come out of the PACE-EH process, the county then recognized that it needed to develop a smart growth plan to address the health problems.

The Delaware County smart growth plan, which, when finalized, will outline a regional network of linear open space and trails to connect neighborhoods as well as link together many of the parks, wildlife refuges, and other protected lands of the watersheds to promote recreation, fitness, conservation, and alternative forms of transportation. This network of paths will ultimately benefit not only Delaware County, but will also help connect communities in central Ohio. The committee overseeing implementation of the plan includes representatives from Preservation Parks of Delaware County, Delaware County Regional Planning Commission, Delaware General Health District, Delaware City Parks and Recreation, and Delaware County Friends of the Trail.

The plan focuses on providing safe recreational and commuter greenway trails for bicyclist and walkers not only throughout the county but regionally in nearby counties. The goal is to provide attractive and convenient greenways that provide opportunities for people to be more physically active and to produce corresponding improvements to overall community health. From a real estate and developers' perspective, experiences elsewhere have shown that trails also increase residential property values.

The Delaware County smart growth plan will also consider smart growth development principles for new infill development and alternative transportation options that would connect isolated subdivisions using the series of greenway trails. More compact development connected by greenways would help reduce air pollutant emissions, preserve significant open space, and reduce off-site drainage impacts.

A number of activities arose in conjunction with the plan. Some of them, along with the roles of various residents, community agencies, and nonprofit organizations are described here.

- School principals, teachers, traffic engineers, and policemen organized the National Walk Our Children to School Day to promote students walking to school. This program was highlighted in *USA Today.*

Following a community-based environmental health assessment in 1999 that revealed the public's top concerns were health effects of rapid growth and development, many community partnerships formed to promote and establish programs to address such issues. Delaware County's participation in National Walk Our Children to School Day (shown here) is one such initiative.

Photos courtesy of Delaware County Health District

After Delaware County, Ohio, residents indicated a strong desire for environmental education, the assessment committee formed the Delaware Environmental Education Partnership (DEEP) with other educators in Delaware County. DEEP's programs now include conservation fairs and an Eagles' Watch Night (shown here) where residents gather to watch bald eagles in a wildlife refuge.

- DGHD, in cooperation with the local chapter of the American Cancer Society, offered "Active for Life" in Delaware County. This 10-week workplace program encouraged employees to be more active on a regular basis by setting individual goals and forming teams for motivation and support. For more information, see: www.cancer.org/docroot/PED/content/PED_1_5X_Active_For_Life.asp.
- The Delaware County Auditors Office developed a GIS map of county parks, which was then distributed by real estate offices in the county.
- The county's regional planning office developed the land-use GIS map, which highlights parkland and subdivisions, to use as a visioning tool for determining county expansion needs, such as planning for transportation, and sewer and water extensions. DGHD assisted in disseminating the land-use map within the community.
- The Health Education team within DGHD and park directors and Township Trustees together developed brochures about the health benefits of parks and an index of all the parks and their amenities. The park directors collaborated with the Delaware County realtors in distributing this information to county businesses.

In 2006, the health department will undertake another health assessment that will describe the current status of land use, identify major health problems and assets, and outline strategies for improvement. Data for the health assessment is being collected for the following: traffic accidents, number of fatalities and locations; walking (plotted in relation to sidewalks); pedestrian injuries and fatalities; surface water quality; noise; land-use planning (trends); and environmental threats. Finally, a county greenways plan is also being created for the following purposes: provide high-quality residential environments and recreational amenities; connect neighborhoods to parks, schools, libraries, and shopping; function as stormwater- and pollution-reducing infrastructures; and form routes for wildlife and connect wildlife habitat in urban areas.

Delaware County was selected as one of the blue ribbon communities for 2006 National Public Health Week, "Designing Healthy Communities: Raising Healthy Kids." The county showcased the variety of solutions that it is using to improve the health of the community and its youngest residents. On April 8, 2006, for public health week, DGHD held a Town Meeting at the Columbus Zoo to share the many projects underway to preserve, develop, and maintain greenways; to build and develop collaborative relationships, strategies, and resources; and to increase greenway mileage and use. The county also shared information about conservation subdivisions. Also on April 8, DGHD held a "Designing Healthy Communities: Raising Healthy Kids" event at the YMCA and offered safety, health, and fitness activities for families and kids. APHA awarded $3,000 to sponsor these events.

The Future of Environmental Health and Planning: Some Thoughts Based on the Florida Experience

By Daniel Parker

Daniel Parker is the Associate Division Director for Environmental Health in the Florida Department of Health. This article is reprinted from The April 2005 issue of *Florida Planning*, the newsletter of the Florida Chapter of APA.

I began thinking about the future of Environmental Health (hereinafter, EH, meaning both the profession and the movement) when given a December 1965 issue of *Florida Health Notes*. This particular issue was dedicated to urban planning for environmental health. The editor cited the complexities posed by modern communities and "the need for constant planning to face Environmental Health problems of the future"—issues just as relevant in 2006 as they were in 1965. The editor advised the health department to work with city and county governments, business, industry, and the general public on environmental health, and to get involved with land-use planning related to water, sewage, air quality, housing, trash collection, vector control, flooding, zoning, and radiological health. Perhaps the most interesting piece of this article was the recommendation to legislate for better control of subdivision development and to revise city and county laws concerning environmental health as needed.

A lot has happened since 1965 and perhaps the author could not imagine the level of development since that time. The population of Florida in 1965 was around 6 million. By the end of this decade, we will be near 20 million, with millions more in tourism. So has EH kept pace with change? Have we prepared for the challenge of 20 million customers? Where are we now and where should EH be heading?

Howard Frumkin, the newly named Director of the National Center for Environmental Health, believes EH is in a period of transition. In one of his recent writings, he relates how Rachel Carson's *Silent Spring* influenced EH to become associated with health threats from chemical exposure. Later, influenced by environmental justice, grassroots leadership became the heart of EH advocacy. He believes that another shift is occurring from the chemical environment to the built environment. EH is now rediscovering its roots in geography and urban planning, rediscovering the public health roots of modern zoning. And not just a public health that ensures communities being free of toxic exposures; rather, a public health that prevents problems by ensuring communities that are well designed, well built, attractive, and functional for all the people who live, work, learn, and play in them.

Can EH in Florida support this kind of "holistic" outlook across the state? Taking a historical perspective, EH in Florida has long been identified with many diverse functions. Bill Bigler's *Public Health in Florida, Yesteryear* (1989) mentions a Division of Sanitation established in the Florida Board of Health's Bureau of Local Health Services in 1958. Its responsibilities originally included consultation to local health units, recruitment and training of sanitarians, and food handler training. Within the next few years, the division was assigned responsibility for general sanitation in the following areas:

- Tourist and trailer parks
- Migrant labor camps
- Food processing, sales, and service
- Abattoirs
- Rendering plants
- Certification of common carrier facilities for water
- Bottled water plants
- Water and waste disposal for private homes
- Housing
- Schools
- Child care centers
- Public buildings and facilities
- Food- and waste-handling problems in the disposal of solid waste
- Sanitary nuisances

Local sanitarians carried out these EH programs with the assistance of Florida Board of Health staff. (It is interesting to note that even back in the 1950s, the effort to get development to pay for itself was a difficult one. The State Board of Health encouraged developers to install sanitary sewage systems, yet the law allowed only the use of "recommendations and persuasion.")

So, how do we go back to the future, to reestablish roles or embrace new realities when there is a lack of programmatic funding, minimal authority

and political support for change, and an absence of trained staff in certain areas? There will even be some reluctance to starting a process that will take time and will cause more work, and, in some cases, dig up more problems. The reality is that it will be challenging, to say the least. If we embrace the challenge, here are several areas to consider building upon.

LISTEN TO OUR COMMUNITIES

In its 2005 draft research agenda, The National Center for Environmental Health (NCEH) states, "local public health agencies need to incorporate community-based perspectives when determining which Environmental Health problems demand urgent attention." This notion of EH being more than the sum of its programs is an especially important issue in Florida, which is experiencing continued, unprecedented growth, adding 750 people every day to its schools, highways, and water supplies. Florida's citizens are becoming increasingly aware of the myriad links between environmental quality and human health, meaning that many will want to see EH efforts intensify. Citizens living in pockets of existing communities will continue at risk for receiving a diminished level of services as new communities, requiring dispersion of effort and funds, are developed, and they will add to the cry for EH programs.

Florida's citizens are becoming increasingly aware of the myriad links between environmental quality and human health, meaning that many will want to see EH efforts intensify.

Community feedback from the Florida Protocol for Assessing Community Excellence in Environmental Health (PACE EH) pilot project lends credibility to the need for closer examination in how we develop and serve communities in Florida. The process has addressed community needs not captured through the programmatic and funding structures of state and local EH agencies. Issues identified by communities as EH issues include:

- no sidewalks;
- no street lights;
- unsafe, uncared for property;
- drinking water problems;
- neglect by local leaders;
- isolation from other neighborhoods;
- sewage problems; and
- noise and air pollution.

The PACE EH process has been successful in getting the attention of local leaders in responding to these communities and their needs. (Complete project summaries are available at the Florida Department of Health PACE EH Website: http://www.myfloridaeh. com/ programs/PACE-EH/PACE-EH.htm.) The project has also demonstrated the need for public health and EH to have a role in local land-use planning decisions, just as the 1965 article that set me to thinking had suggested.

A ROBUST WORKFORCE WILL BE NECESSARY

Jim Collins of *Good to Great* fame was recently featured in *Fortune* magazine. He was asked, Why are people decisions so important? His answer: "Fundamentally, the world is uncertain. Decisions are about the future and your place in the future when that future is uncertain. So what is the key thing you can do to prepare for that uncertainty? You can have the right people with you."

Having the right people has always been a part of the success of EH. Keeping them and expanding expertise will be the challenge. The Association of

State and Territorial Health Officials (ASTHO) issued a report in 2004 that showed the public health profession experiencing a rapidly aging workforce, a retirement rate as high as 45 percent, vacancy rates up to 20 percent, and employment turnover rates of 14 percent. Current challenges identified for the EH workforce include low pay at the state level, minimal advancement opportunities, and competition with the private sector at higher salaries. A 2000 Bureau of Health Professions report showed the ratio of state public health workers to population had dropped from 219 per 100,000 in 1980 to 158 per 100,000 in 2000. Though the events of 9/11 brought renewed emphasis on public health professionals as emergency responders, this was followed by severe state budget cuts across the nation. A 2001 report from the Pew Environmental Health Commission defined the EH ranks as having "a serious lack of trained personnel."

There is no fat in our Florida EH programs. Under the philosophy of less government, less regulation, our EH workforce has consistently performed to high expectations. On the other hand, we now find ourselves in a position where if one local program, such as septic tanks, experiences a surge, the ability to respond and at the same time plan for a broader EH community role becomes more difficult. We will need to continually assess our services for their public health significance, trying to identify that tipping point at which public health begins to suffer from lack of adequate protection. Once done, we will need to better define who and what EH is to both our leadership and to our communities, supporting existing staff and asking for new resources.

In the 2004 ASTHO report, states reported that increased access to advanced education, competitive pay and benefits, and flexible work schedules and telecommuting opportunities are the three most important incentives in attracting and retaining an adequate public health workforce. We will need to assess how well we are doing in these areas locally and at the state level. We will also need to make inroads into existing schools of public health and schools of urban planning and design in preparing for a future workforce.

BETTER REPRESENTATION AND MARKETING FROM STATE AND FEDERAL ENVIRONMENTAL HEALTH GROUPS

The field of EH is suffering from fragmented services spread across agencies, a lack of clear agreement on what EH means, and a lack of leadership from state and federal associations. The fragmentation has in some cases caused a siege mentality. Under siege as a government worker, under siege to hold onto what we have, under siege to accept the programs we have instead of assessing the programs we need. Never has the need to speak with a unified voice been more clear. We have done a great job marketing to ourselves. In today's age of instant information, data, and marketing, EH must become savvier in marketing itself to decision makers and to the public.

Research featured in the *Journal of Environmental Health* supports the need for a "comprehensive messaging campaign" and suggests "we have to stop thinking about how we perceive our field and pay more attention to how the public and the policy makers perceive it." It is when we cannot address and respond to needs on an individual professional level that there must be higher expectation for the groups that represent us, including the Florida Environmental Health Association (FEHA) and the National Environmental Health Association (NEHA). The Center for Disease Control and Prevention's (CDC) National Center for Environmental Health (NCEH) also recognizes the urgency in this in their 2005 draft Research Agenda, stating, "Without effective marketing and communication efforts, Environmental Health becomes either invisible (if successful) or the subject of glaring headlines (if not)."

END THE FRAGMENTATION OF SERVICES

The hurricane season of 2004 highlighted much good teamwork across agencies in responding to the public's needs. From an efficiency and economical standpoint, the community health department network with EH staff in every county showed the comparative advantage we have in responding. The public truly knows that help is on the way. This begs the question of why services remain scattered across agencies. It is time to take a good strong look at whether the current division of services is providing cost-effective and protective services. Responsiveness to a terrorist event and the realities of growing populations and increased international trade means sacred cows must be slaughtered. If services cannot be more appropriately combined, we will need to work with sister agencies even better and in more revolutionary ways in addressing the air, water, sewage, food, and overall community health arenas. We will need more acceptance of a "systems-based" approach, as suggested in the NCEH draft Research Agenda.

The Environmental Health profession needs to rediscover its roots in the planning process.

BECOME A REGULAR PART OF LOCAL LAND-USE PLANNING PRACTICES

The EH profession needs to rediscover its roots in the planning process. In the early 1900s, the public health profession and the early city planning movement shared concern for improving municipal sanitation and housing. By 1917, when planners first made claim to professional status, the fields of public health and planning had grown apart. Emil Malizia, a professor in the Department of City and Regional Planning at the University of North Carolina, believes that most new development, constrained by time and regulation and motivated by profit, has engineered physical activity and healthy lifestyles out of the urban environment, to the detriment of city residents. What is needed is a voice of permanence as attitudes, conditions, and information change. Public health and EH can be that voice of reason. EH professionals can be seen as conveners—those who can bring stakeholders together while remaining neutral. It will be critical for EH to solidify a role in this process as the connection between the environment and physical and mental health is gaining steam. Some efforts have begun. Community assessment processes, such as National Association of County and City Health Officials' (NACCHO) Mobilizing for Action through Planning and Partnerships program (MAPP) or PACE EH, are now actively encouraged, if not required, for each county health department. At the state level, the Florida Department of Health (FDOH) assisted in drafting a Memorandum of Agreement proposal on growth management issues with two other state agencies, the Florida Department of Community Affairs (DCA) and the Florida Department of Environmental Protection (DEP). Effort has also been made to incorporate the FDOH in future growth management and land-use planning processes. There is growing interest in Health Impact Assessments (HIAs). The Florida Springs Initiative and Wekiva Parkway protection efforts have opened up new opportunities and introduced what we do to new (and old) partners. To capitalize on these trends, minimum standards of involvement by public health professionals in local planning processes should be encouraged.

EMBRACE TECHNOLOGY

EH has done a good job at being at the forefront of technology use, from software applications, to handheld computers, to geographic information systems (GIS). The race for technological advantage continues on a global scale. Technology use in EH can change where we work, when we work, how often we visit establishments, etc. For example, the use of GIS to document plausible influences of land use on public health and safety can only grow. EH can map and make use of such criteria as land-use patterns (physical activity and injury prevention), noise, crime prevention, pedestrian

injuries and traffic accidents, surface water quality, threats to and quality of groundwater, air quality, health equity, and food systems. When it comes to technology, we need not ask why, but why not? Technological innovation will change the way we carry out our services and may be the savior of the environment and public health.

Technological innovation will change the way we carry out our services and may be the savior of the environment and public health.

SUPPORT MORE PUBLIC HEALTH RESEARCH

The connection between the environment and human health—mental, social, and physical—is an area looking for answers. Florida's Division of Environmental Health is playing a major role in CDC's initiative to develop a national public health tracking system, which will document the link between environmental hazards and chronic diseases in our communities. FDOH has been working to foster collaboration among other health and environmental agencies to assist in developing a surveillance network that will help us to better understand the relationship between environmental hazards and birth defects, selected cancers, developmental disabilities, and the effects of exposure to lead on children. Research into the connection between planning and public health must move forward as well. What is the benefit to public health from open space, greenways, and trails? Does a deteriorated neighborhood negatively affect environmental health? These questions and more will not only assist EH, but will move the discussion from a medical view of public health to a more comprehensive view. EH should closely watch for a role in such efforts as the National Children's Health Study. The study is designed to examine the effects of environmental influences on children's health. It will follow more than 100,000 children from birth to age 21, looking at a broad array of environmental factors, including biological and chemical factors, genetics, physical surroundings, social factors, behavioral influences, cultural influences, and geography. The goal of the study is "to improve the health and well-being of children." (For more information, see the website: http://nationalchildrensstudy.gov/)

PROTECTING WATER RESOURCES

Florida already is experiencing heavy growth in water-poor areas. Water protection is a critical marketing and education area for EH. The effort to protect water resources, whether for drinking or recreational use, is putting more emphasis on both water and waste systems. Public health professionals already have a strong presence in these areas. Water, not growth management, will define the boundaries of where Floridians can live in the future. State Bill 360, considered a growth management bill and passed in the recent session, recognized this issue and required the availability of a sufficient water supply before people move into new developments or no later than the certificate of occupancy. (Unfortunately, nowhere in the bill is FDOH mentioned despite our responsibility for 70 percent of Florida's drinking water.) The day will come when water is monitored completely from source to use to disposal to reuse, most effectively by one or two entities. A premium will be put on EH services that protect water resources for future use. We'll need to do a better job letting decision makers and the public know what we do and the potential for more. Florida's future depends on it.

LONG-TERM BUDGETING

The CDC's Healthy People 2010 initiative provides a framework for prevention for the nation. It is a statement of national health objectives designed to identify the most significant preventable threats to health and to establish national goals to reduce these threats. The difficulty is trying to marry long-term goals with short-term political objectives. The current legislative process makes it difficult to work long term for EH outcomes. A succession

of health officers and legislators with different priorities is only going to exacerbate this problem.

EH agencies must develop and control a long-term budget if this inefficient shifting of focus and funding is to stop. Maurice McTigue of the Mercatus Center at George Mason University discussed the fiscal contract model enacted between the New Zealand government and state agencies that might be a useful model for EH services in this country. A five-year plan was agreed upon that included the resources and expected outcomes. No more annual guess work. Any changes or additions sought meant that resources had to be added. Managers were held responsible. This model forces long-term strategic planning and accountability. Our current system has no incentives for spending all funds wisely and with focus. And as more effort is made to push services from federal and state to a local level, long-term strategic budgeting will be even more critical.

CONCLUSION

The July 2005 NEHA meeting in Providence, Rhode Island, was a testament to the leadership of EH in Florida—at least 13 presentations by the Florida EH team were on the agenda. Perhaps it is to the credit of the staff we retain, the uniqueness of the Florida environment, or both that is pushing us forward. We must continue to respond, adapt, and grow. Through a process of continuous improvement and evaluation, we must ask ourselves several questions: If we got all of our EH programs "right" or "complete," could we declare the state environmentally healthy? Could we declare it at the county level? Are we too focused programmatically in Florida? Is the EH programmatic and funding structure of both state and local agencies missing the "bigger picture" of the community's environmental health? These are the questions we need to answer. EH is broad. The effort to define it has been limiting. The marketing has been dismal. The EH needs of our communities are so enormous that the easier route is to often highlight what we've accomplished and ignore what needs to be addressed. Where will we be in 20 years? What kinds of demands are going to be made on us? What challenges will be apparent? With a little luck here, a stroke of genius there, maybe even a mistake or two along the way, we will become stronger, more innovative, and more able to answer these questions. It will take leadership, passion, and vision. And it will take courage.

APPENDIX A

Reducing Disparities Through a Focus on Communities

Editor's Note: *The following is an excerpt of a November 2002 report published by PolicyLink, an Oakland, California-based national nonprofit research, communications, capacity- building, and advocacy organization, dedicated to advancing policies to achieve economic and social equity based on the wisdom, voice, and experience of local constituencies. The report was prepared by the PolicyLink Health Disparities Team. The full report is available for download at www.policylink.org*

REDUCING HEALTH DISPARITIES THROUGH A FOCUS ON COMMUNITIES

There is broad consensus that people who live in more socially and economically deprived communities are in worse health, on average, than those living in more prosperous areas. While there is little question of the need for access to affordable and culturally appropriate health care, the Centers for Disease Control and Prevention has estimated that lack of access to care accounts for only about 10 percent of total mortality in the United States. Much of total mortality is explained instead by environmental conditions, social and economic factors, and health behaviors (McGinnis et al. 2002).

This report explores the relationship between the communities in which people live and their health. What is it about living in certain communities that leads to poor health? How do community factors affect health? And what can be done to strengthen or improve them? Based on recent research, the report describes what community characteristics are important to promote or hinder good health and how these factors influence health.

A key purpose of this inquiry is to improve policies and practices aimed at reducing health disparities—the higher incidence of certain diseases and conditions, including asthma, heart disease, high blood pressure, and infant mortality in low-income communities and communities of color. This report presents evidence from research and practice of the key role that neighborhood—and what are sometimes referred to as "place-based"—factors play in determining health outcomes. It acknowledges these factors from the perspective of a "life course approach": that neighborhood effects on health are cumulative and happen over time. The report also proposes principles and strategies to reduce health disparities that focus not only on individuals, but also on the neighborhoods and communities in which people live. The terms "neighborhoods" and "communities" are primarily geographic references. In this sense, neighborhood is the relatively small area in which people live, while community is defined more broadly in recognition of the fact that individuals and families live, work, and socialize in a wide array of geographic settings: neighborhood, city, and region (Note: We recognize that the term community also may apply to groups of people who do not live in immediate proximity to each other, but nonetheless come together and form a shared connection through an institution (such as a church or clinic) or some other place.)

With a variety of neighborhood (place) and individual (people) factors playing a role in the development of health disparities, many strategies and approaches are required. Moreover, to achieve the ultimate goal of eliminating health disparities, the focus must be on making long-term changes.

Why Social Determinants Matter for Health Outcomes

There is increasing recognition that socioeconomic status, race, and ethnicity influence health. Social determinants of health are formed continuously throughout the life cycle, with many critical influences occurring early in life (Goldman 2001; House and Williams 2000). Recent research also strongly suggests that differences in levels of health are affected by a dynamic and complex interaction among biology, behavior, and the environment, often referred to as the ecological, or multicausal model (Diez-Roux 1998; Smedley and Syme 2000).

The Relationship Between Socioeconomic Status and Health

Numerous researchers have documented the relationship of socioeconomic status (SES) to health (Adler et al. 1994; Backlund et al. 1999; Haan et al. 1987; House and Williams 2000; Krieger and Fee1 994). In a causal framework, the major resources enabling people to achieve better health include education, income, occupation, and wealth (assets), with education and income levels being among the strongest predictors of health (Blau and Duncan, in *The American Occupational Structure* (1967), were among the first sociologists to employ a causal framework in this way). There is mounting evidence that the widening gap between the rich and the poor contributes to health disparities (Wilkinson 1996).

SES shapes exposure to, and the impact of, a wide range of risk factors: mortality (death) and morbidity (poor health status) rates increase as SES decreases. This "gradient effect"—whereby each socioeconomic group has better health than the group just below it in the hierarchy—is especially significant across the broad lower range of socioeconomic position (Adler et al. 1994; Marmot et al. 1991).

The Effect of Race and Ethnicity on Health Outcomes

Race and ethnicity are also major determinants of socioeconomic position (House and Williams 2000). After adjusting for SES, racial differences persist in the quality of education, the family wealth associated with a given level of income, the purchasing power of income, the stability of employment, and the health risk s associated with occupational status (Williams 1997). With respect to health status, data suggest that, for most causes of death and disability, African Americans, Latinos, and American Indians suffer poorer health outcomes relative to whites with statistically equivalent levels of socioeconomic position (Smedley and Syme 2000). To improve medical treatment and prevention and reduce health disparities, efforts have focused on diversifying the healthcare work force to better reflect the diversity of patients and to improve cultural sensitivity and competence. Racial discrimination, evidenced partly through residential segregation, affects health through numerous pathways, including access to resources and opportunities, environmental conditions, and psychosocial factors (Goldman 2001). For example, residential segregation by race and income can limit residents' access to health-promoting resources, such as full service grocery stores and safe, walkable neighborhoods, since such resources are less frequently found in low-income areas (Morland et al. 2002; Sallis 1990).

Consistent with these findings, many researchers and practitioners interviewed for this report asserted that race and ethnicity play a critical role in health disparities, citing a range of societal patterns, including low-quality education systems and subsequent poor student performance, that are shaped in large part by race relations.

Interviewees frequently mentioned the negative impact of chronic, race-related stress on health, ranging from incidences in daily life to institutional racism and internalized racism as contributing to disparities. This race-related stress and its negative health consequences cut across socioeconomic status. For example, middle-class black women with health insurance in Prince George's County, Md., had poorer birth outcomes than white women with the same income and professional status (Byrd et al. 2002).

Examples of the negative impacts of institutional racism include: a lack of providers of color in hospitals and clinics; a lack of multilingual staff; a lack of culturally competent caregivers in communities; patterns of unequal diagnosis and treatment; and a

lack of responsiveness by medical training institutions. A recent Institute of Medicine report similarly found that racial and ethnic bias within healthcare institutions and among practitioners contributes to disparities (Smedley et al. 2002). Interviewees also described how internalized racism, associated with a sense of hopelessness and inability to envision a positive future, contributes to mental health problems among people of color, in particular depression among women, violence and suicide in men, and substance abuse. One interviewee described environmental racism as a contributing factor in health disparities due to such things as poor housing conditions and a lack of clean air and water.

The interplay of ethnicity and SES is also significant for the health of immigrants. Immigrant communities face unique challenges, not just in obtaining quality health services, but also in acculturating into a new society and gaining access to service systems and supports. Two informants who administer clinics that serve Latinos, including large immigrant populations, expressed concerns about recent funding cuts to public health and hospital facilities, which have forced them to provide a wider range of "safety net" services than before. The informants have also observed an increase in diseases and conditions among their clients that were not apparent a few years ago, including asthma and hepatitis C. A director of a community clinic and a director of a public health department also reported increases in substance abuse, and domestic violence.

Acculturation adds another layer of complexity for immigrant populations. For new immigrants, research has shown that race and ethnicity can have positive, protective effects on health. Often new immigrants' health outcomes are far better than would be expected given the many risk factors that they face. Studies of Latino health explain these improvements as being due in part to high levels of social support, kinship networks, cultural resiliency, and selective migration of immigrants (the so-called Latino health paradox was first documented by Markides and Coreil (1986); Alderete et al. 2000; Geundelman 1995; and Vega and Amaro 1994). The length of time in the United States, together with increasing acculturation, often contributes to a *decrease* in health status among many groups of immigrants (House and Williams 2000).

Neighborhood or "Place-based" Factors and Their Effects on Health

Researchers have also documented variations in health based on neighborhood residence for a wide range of outcomes, including: birth outcomes and infant mortality, children's physical health, child development, adult physical health, overall mortality, health-related behavior, and mental health (Ellen, Mijanovich, and Dillman 2001). What is less clear is the exact nature of the relationship between the places where people live and their health.

Multilevel statistical models, which rely on both neighborhood and individual level data, have shown that neighborhood differences in health outcomes exist *even after* adjusting for known individual risk factors (House and Williams 2000). Some researchers have pointed out that, given the reciprocal relationship between SES and neighborhoods, statistical analyses to measure the effects of income and education may unwittingly *understate* a neighborhood's overall contribution to health (Ellen, Mijanovich, and Dillman 2001).

Additional studies have documented the cumulative effects of these neighborhood factors on health. Interviewees acknowledged the importance of these factors on health and health disparities. Those managing programs and services described how they were trying to impact neighborhood factors to improve health. Alternatively, they discussed how they were developing services to compensate for neighborhood factors' negative effects on health. Projects tracking various health indicators over time have emerged to measure the impact of efforts to reduce health disparities and improve health. Healthy People 2010, initiated by the United States Department of Health and Human Services, is an example of a large-scale initiative with the goal of tracking progress toward the elimination of health disparities.

THE EFFECT OF COMMUNITY FACTORS ON HEALTH: AN EMERGING FRAMEWORK

Several useful and complementary conceptual frameworks have been developed to name and organize various neighborhood factors that influence health. These frameworks provide policymakers and practitioners with analytical tools aimed at promoting health and reducing disparities. The following factors and frameworks are adapted and organized into three broad but related categories to differentiate the ways in which neighborhoods affect health:

- Social and Economic Environment—levels of poverty, racial and economic segregation, social networks, social organization, and political organization (Mullings et al. 2001).
- Physical Environment—both the characteristics of the physical environment, such as air and water quality and housing conditions, as well as the relative connectedness or isolation of a community to resources and opportunities, based on factors of location and transportation access.
- Services—the level of access to and quality of health services and other supportive public, private, and commercial services that contribute to healthy living.

These neighborhood factors influence health through at least four causal pathways: (1) direct effects on both physical and mental health; (2) indirect influences on behaviors that have health consequences; (3) health impacts resulting from the quality and availability of health care resources; and (4) health impacts associated with community residents' access to "opportunity structures" (MacIntyre and Ellaway 2000; Ellen, Mijanovich, and Dillman 2001).

Opportunity structures include access to healthy and affordable food, the availability of safe and enjoyable spaces for exercise and recreation, access to economic capital, and transportation resources that may facilitate access to employment, education, and other opportunities.

The effects of these factors on each other and on health are likely to vary according to the economic, political, and social characteristics of a given place and time. A dynamic framework, as well as knowledge and appreciation of diverse neighborhood contexts, is therefore required to understand how and why different places may lead to different health outcomes. One study conducted in Central Harlem stressed the importance of considering social networks when designing interventions: "interventions must also build on and support the protective mechanisms that women and men have developed, such as individual and collective coping strategies around housing, family, and community" (Mullings et al. 2001).

Table A-1 and the subsequent discussion provide a framework for how community-level factors affect health. This framework is derived from conceptual models found in the literature on public health and on the theory and practice of community building—community-driven efforts focused on improving neighborhood and family conditions. The framework describes the positive or protective effects that community factors can have, as well as the potential risks.

In this framework, a given factor may affect health through multiple pathways in independent and cumulative ways. For example, crime may have direct effects on the physical and mental health of victims, indirect effects on health-related behavior, such as the ability of residents to exercise outdoors, and may influence the quality and availability of services and economic opportunities, such as whether businesses will locate in the neighborhood. Similarly, strong social networks can have positive effects on health care, other support services, access to information, levels of assistance from neighbors, and economic opportunities. These advantages can lead to reductions in high-risk behaviors, including sexual risk taking and drug and alcohol abuse. Many factors clearly impact two or even all three of the broad categories, but for conceptual simplicity are not repeated in the table.

TABLE A-1: CONCEPTUAL FRAMEWORK OF COMMUNITY EFFECTS ON HEALTH

	Factors	Protective Factors	Risk Factors
Social and Economic Environments	Neighborhood socioeconomic level.	Economically stable communities are healthier than poor communities.	Racial and economic segregation, concentrated poverty lead to higher stress, higher levels of premature mortality.
	Cultural characteristics—norms, values, and attitudes deriving from race/ethnicity, religion, or nationality, as well as from other types of social and cultural groupings.	Cohesion and a sense of community, with access to key cultural institutions with healthy cultural norms/attributes.	Racism, language barriers, and acceptance of unhealthy behaviors. Absence of community norms and expectations that promote healthy behavior and community safety.
	Social support and networks.	Friends, colleagues, and neighborhood acquaintances provide access to social supports and economic opportunities, as well as to certain health services and resources. Adult role models, peer networks are influential to young people. Networks exist within the community and beyond it.	Lack of social supports. Potential role models have left the neighborhood and have not remained connected to current residents or institutions. Residents do not have access to networks outside the neighborhood that would assist in providing access to employment and other key opportunities. Sometimes referred to as absence of "bridging" social capital.
	Community organization—level of capacity for mobilization, civic engagement, and political power.	Community organizations provide needed supports and services. Political power allows needed resources to be leveraged into neighborhood.	Lack of organization and political power impedes the flow of resources needed for neighborhood problem-solving and hampers community leadership development.
	Reputation of the neighborhood—perceptions by residents, outsiders may affect behavior toward the neighborhood.	Perceived as "good" or "improving" neighborhood with shared community and important regional attributes. Environment conducive to investment of new effort and resources.	Poor and "bad" neighborhoods are shunned, subject to negative stereotypes and discriminated against, limiting success of isolated improvement districts.
Physical Environment	Physical features of the neighborhood—air, water, climate, etc.—shared across a wide area.	A healthy physical environment.	Presence of and exposure to toxics and pollution.
	Physical spaces such as housing, parks and recreation, and workplaces.	Access to affordable, high-quality housing, local parks, and safe workplaces.	Exposure to lead paint, problems with inadequate sanitation and pest infestation, dangerous types of work (e.g., industrial in urban areas or logging/fishing in rural), and unsafe work environments.

(continued)

TABLE A-1: CONCEPTUAL FRAMEWORK OF COMMUNITY EFFECTS ON HEALTH *(continued)*

	Factors	Protective Factors	Risk Factors
Physical Environment	Public safety.	Desired and necessary amount of police and fire protection. Little crime, lots of street/sidewalk activity and interaction.	Prevalence of violence breeds fear, isolation, and a reluctance to seek even needed services, as residents avoid leaving their homes and spending time outside.
	Physical access to opportunities.	Good location and mobility for access to resources and new opportunities throughout the region.	Isolation of homes from job centers, particularly new suburban areas without public transit access. Distance from recreational facilities or safe parks for health-promoting activities such as exercise.
Services	Access and quality of health services.	Necessary, accessible care delivered in a culturally sensitive manner in satisfactory health facilities with well-trained and culturally appropriate practitioners.	Lack of access to necessary healthcare services, while what is available is culturally inappropriate and of poor quality.
	Access and quality of support services, including: Neighborhood-level public services—schools, parks, police and fire protection, transit, and sanitation. Community institutions—churches, clubs, and child care centers. Commercial services-grocery stores and banks.	Quality support services act as important neighborhood institutions providing needed services as well as venues for neighborhood meetings and leadership development.	Needed services are not available while those that are in the neighborhood are undependable and of poor quality.

Following is a review of each of the three broad categories, with an exploration of the research that has looked at the combined effects of neighborhood factors on health.

Social and Economic Environment

The social and economic environment of each neighborhood influences the health outcomes of residents, as described in Table A-1. Neighborhoods that are poor, segregated, less organized socially and politically, and negatively perceived by outsiders, tend to be less healthy than those that are higher income and well organized. People living in poorer neighborhoods have higher stress levels, less access to resources, higher prevalence of unhealthy behaviors, and higher rates of premature mortality.

One study of premature mortality measured Years of Potential Life Lost before age 75 in U.S. counties and found significant variations by regions and by race/ethnicity (Mansfield, Wilson et al. 1999). Areas with larger proportions of African Americans, larger proportions of female-headed households, and residents with less education who experienced chronic unemployment had higher levels of premature mortality. Rural areas also had slightly more premature mortality than urban areas; southeastern and southwestern counties had the highest levels of premature mortality. These mortality findings and other health outcomes have generally been confirmed in studies that also included individual characteristics.

Longitudinal data from the Alameda County (California) Study also provide important evidence for the association between poverty areas and health. After adjusting for age, gender, baseline health status, and race, residents in the federally declared poverty area in the western part of Oakland still had an increased risk of mortality over a nine-year

period. Further analysis and adjustments for other factors, including individual age, income, gender, and education, did not explain the excess risk associated with living in a poverty area (Haan, Kaplan, and Camacho 1987).

De facto segregation of African Americans is also associated with their high infant mortality rates (Ellen 2001). Low-income African Americans are much more likely to live in high-poverty neighborhoods than are low-income whites or Latinos, and African Americans experience the highest amount of residential segregation and isolation from other groups (Jargowsky 1997). One longitudinal study found that African American men ages 25–44 living in areas with the highest segregation had almost three times the mortality risk as those living in areas with the lowest segregation. The risk for African American women was almost twice as great (Williams and Collins 2001; Jackson, Anderson, et al. 2000).

A study in 15 communities in the western United States found significant differences in smoking prevalence, alcohol intake, and seatbelt use, even after adjusting for individual demographic factors (Diehr 1993). The study noted that residents of communities with higher unemployment rates had higher smoking rates and a higher percentage of calories from fats, but less alcohol consumption. Another study of youth found neighborhood effects on dietary habits after adjusting for individual characteristics (Lee and Cubbin 2002). Neighborhood characteristics associated with a healthy diet included higher income, higher education, higher housing values, and lower levels of mobility.

State-level surveys of individuals' degrees of connectedness to friends, neighbors, and various groups provide a useful starting point for measuring social capital in a way that links it to health outcomes. Several analyses found that higher levels of social capital are associated with lower mortality rates and lower levels of self-reported fair or poor health (Kawachi 1999). Another state-level analysis found that a low level of social capital is a strong predictor of sexually transmitted disease and AIDS case rates and of many HIV-related risk behaviors among adolescents (Holtgrave et al. 2002).

Studies of social capital and health at the neighborhood level are less common, but one new book chronicles deaths during a severe Chicago heat wave in 1995 and finds that mortality was linked to differences in individual relationships and neighborhood institutions. A neighborhood with low levels of social capital had a mortality rate 10 times the rate of a neighborhood of similar income with higher levels of social capital (Klinenberg 2002). (Klinenberg's study was cited by Kawachi in this respect in a presentation to the First International Conference on Inner City Health, Toronto, October 4, 2002.)

The Physical Environment

The quality of the built and natural environment influences the health of neighborhoods and residents. For instance, physical activity is an important determinant of many health outcomes and is less prevalent in low-income populations (Centers for Disease Control and Prevention 1996). In neighborhoods with poorly maintained housing, crime, and poverty, few incentives exist to encourage physical activity, and lack of safety can seriously inhibit recreation and exercise. Studies have also shown that exposure to factors such as noise, crime, or violence increases stress (Evans 1997; Ellen, Mijanovich, and Dillman 2001). One study showed that residents of neighborhoods with high levels of crime and violence experienced more stress than residents in areas with less crime (Garbarino et al. 1992). Stress is associated with a wide variety of health problems, such as poor pregnancy outcomes, high blood pressure, diabetes, cancer, respiratory infections, and heart disease (Fitzpatrick and LaGory 2000).

Other attributes of the physical environment, such as clean water and air, the availability of parks and recreational opportunities, safe streets, good housing, and physical access to economic opportunities, all contribute to creating a healthy neighborhood environment. Conversely, the lack of such conditions may directly harm residents or expose them to risk factors that lead to poor health.

Exposure to chemical, physical, and biological agents in the environment may be an important cause of preventable disease. Exposure can differ by neighborhood (e.g., levels of impact of traffic, industry, or contaminated water and land), but the causal connection between environmental exposure and health disparities is not always clear. Nonetheless,

research has shown that low-income communities of color have a higher number of polluting sites than wealthier areas (Lee 2002). Furthermore, individuals in certain neighborhoods and rural communities may be concentrated in occupations with greater potential health threats, including exposure to toxics.

Some communities have experienced success in challenging industries, governmental agencies, and businesses. For example, New York City residents in West Harlem, along with the West Harlem Environmental Action Taskforce, were able to link increased asthma rates with high rates of diesel bus fumes from a local depot. Stricter ordinances and standards were established as a result of advocacy campaigns aimed at improving air quality and the overall health of the neighborhood. The successful advocacy utilized air quality testing, asthma tracking, and community mobilization.

Neighborhoods with more environmental exposure are also more likely to bear the burden of other negative social or environmental conditions. One researcher described the high level of toxic exposure and loss of social capital in poor communities as "stripping and dumping"—stripping the community of its natural resources and dumping undesirable elements into it.

A number of interviewees reported dramatic increases in asthma rates and other respiratory illnesses in both urban and rural areas. One informant, in particular, cited the need to study sub-groups of the broad Asian and Pacific Islander classification, as defined in the census, to detect disparities that are hidden in combined data sets. For example, he mentioned the over-representation of some Asian communities in the dry cleaning industry as contributing to an increase in lung diseases.

Health effects are also associated with the quality of housing and other buildings. In fact, the origins of much of today's public health infrastructure arose from efforts to improve tenement housing conditions to combat tuberculosis and other contagious diseases at the turn of the twentieth century. Poorly built and maintained homes can result in higher exposures to allergens that trigger asthma and present greater potential exposure to lead. Similar issues typically exist in schools and other public facilities in low-income neighborhoods (Leventhal and Brooks-Gunn 2000).

Public health research has identified many health hazards in the home, including improper ventilation, lack of heating or cooling, water leaks, molds and viruses, pests (mice, cockroaches, and dust mites), toxic chemicals in building materials and carpets, and building designs that contribute to falls, burns, and other injuries (Krieger and Higgins 2002).

The larger metropolitan patterns of development and transportation play a critical role in health disparities. The geographic isolation of low-income neighborhoods—a growing trend as much employment and retail move farther from central cities and beyond the reach of mass transit—often leaves neighborhood residents with limited job prospects or inadequate access to services. Lack of access to opportunities effectively places the entire community at risk for poorer health outcomes. (These are other issues of social and economic disparities resulting from regional development patterns are discussed in Policy Link 2002a; Powell 1998; and Orfield 2002.)

Services

The concept of services as a broad category in the framework of neighborhood effects includes health care, along with the basic services typically provided by local governments; the local social support institutions that may be private, public, or nonprofit; and the basic commercial services, such as food stores, that are central to health outcomes. The inequitable distribution of these services contributes to health disparities. Place-based approaches to health can serve two goals—improving service distribution and delivery and promoting the ingredients of healthier places and people (Fitzpatrick and LaGory 2000). The availability of high-quality, culturally sensitive, neighborhood-based health services is an important determinant in access to health care and good health outcomes.

A study of four states found that census tracts with higher median home values and a high degree of segregation had three times as many supermarkets as other neighborhoods. (Neighborhoods wealth was measured as med home values in the census tract. Neighborhood segregation was measured as the proportion of black residents in the census tracts,

with those greater than 80 percent black residents being defined as predominantly black, Morland et al. 2002).) The study also found that supermarkets were over four times more common in predominantly white neighborhoods compared to predominantly African American ones.

It is not only the absence of supermarkets, but also the preponderance of other types of stores that may be related to health outcomes. One study found over three times as many bars in the lowest, as compared to highest, wealth neighborhoods (Tatlow, Clapp, and Hohman 2000). The role of race is raised in other studies, including one in Baltimore demonstrating that liquor stores are more likely to be located in census tracts that are predominantly African American, even after adjusting for median income (LaViest and Wallace 2000). In response, a local groundswell is emerging to restrict outdoor advertising and marketing of alcohol to certain ethnic groups and to limit the proliferation of alcohol outlets.

Just as undesirable services proliferate in lower-income areas, the types of establishments that can promote better health are less likely to be found. The Centers for Disease Control and Prevention has completed extensive literature reviews on the relationship between the built environment and health that focuses largely on physical activity (Frank 2001). One study of a San Diego neighborhood found that those who reported exercising at least three times per week had a greater density of user-pay recreation facilities near their homes than respondents who reported less exercise (Sallis et al. 1990).

Studies have found that there are barriers in physical environments in low-income neighborhoods that make it difficult for residents to exercise. A lack of park space and playgrounds is particularly a problem in high-density, low-income areas where children may not live in housing that has yards and therefore may rely more on these public spaces for playing outdoors. One survey found that people with lower incomes were more likely than those with higher incomes to say that heavy traffic, unattended dogs, and air pollution from cars and factories barred physical activity in their neighborhood. Other studies have found that residents say that concern about safety, lack of sidewalks, and their inability to afford to go to recreation facilities are problems that keep them from walking more than they currently do (PolicyLink 2002). Yet, increasing the amount of walking that low-income communities and communities of color can do as a routine part of their daily activities, and increasing other forms of physical exercise, could help to reduce obesity and improve overall health, thereby reducing health disparities.

Many of these efforts, partnerships, and forms of analysis, outreach, and organizing are too recent to have been systematically evaluated with regard to long-term health outcomes of residents. Over the next several years, information and evidence should emerge that will help our understanding of the most effective strategies for linking public health with other organizations and for promoting the establishment of more health-supportive commercial environments.

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APPENDIX B

A Glossary of Basic Planning and Public Health Terms

Planners and public health officials are forging new partnerships to achieve shared goals in their jurisdictions. These goals include understanding the impact of neighborhood design on resident's ability to be physically active, the impacts of development on natural systems, such as aquifer recharge and groundwater contamination, and the effects of transportation facilities and automobile use on air quality and personal mobility.

To succeed in such partnerships, each profession will have a significant language barrier to overcome. While the meaning of all the acronyms, terms, and concepts used in the respective fields require little or no explanation when one is speaking to or writing for an audience of fellow public health professionals or fellow planners, the case is quite different when one addresses professionals from outside the field In some cases, each field may use the same term, but define it in a much different way

This fact sheet is provided to planners, public health professionals, and all others who are interested in the benefits of interdisciplinary collaboration between the two fields. It can be used as a starting point for discussions between public health professionals and planners who are launching a collaborative effort or as a quick reference guide for the many public health professionals and planners who are already collaborating to improve the health of residents by addressing the effects of planning and community design.

PUBLIC HEALTH TERMS

access The ability to obtain needed health care services.

ATSDR (The Agency for Toxic Substances and Disease Registry) Part of the U.S. Department of Health and Human Services. The agency is mandated by the federal superfund law to assess health risks from hazardous waste sites on the National Priority List. ATSDR determines if additional health studies are needed at these sites, provides health advisories, and publishes toxicological profiles on chemicals found at hazardous waste sites. ATSDR also maintains exposure registries of people exposed to certain substances.

BRFSS (The Behavioral Risk Factor Surveillance System) A telephone questionnaire initially developed by the CDC in the early 1980s to collect state-level data to monitor state-level prevalence of the major behavioral risks among adults associated with premature morbidity and mortality, such as cigarette smoking and inactivity.

behavior/healthy behavior Behavior is the combination of knowledge, practices and attitudes that together contribute to motivate actions we take regarding our own health. Healthy behavior may promote and preserve good health.

CDC (The Centers for Disease Control and Prevention) Part of the U.S. Department of Health and Human Services providing federal leadership in the prevention and control of diseases.

chronic disease A health condition that occurs over a long period of time (e.g., several weeks, months, or years).

environmental factor An extrinsic factor (e.g., geology, climate, insects, sanitation, health services, etc.) that affects the agent and the opportunity for exposure.

environmental health The discipline that focuses on the interrelationships between people and their environment, promotes human health and well-being, and fosters a safe and healthful environment.

epidemiology The study of the distribution and determinants of health-related states or events in specified populations, and the application of this study to the control of health problems.

health disparities The difference in the incidence, prevalence, mortality, and burden of diseases and other adverse health conditions that exist among specific population groups in the U.S.

health indicator A measure that reflects, or indicates, the state of health of persons in a defined population (e.g., the infant mortality rate).

health impact assessment (HIA) Any combination of qualitative and quantitative methods used to assess the population health consequences of a policy, project, or program that does not have health as its primary objective (i.e., assessing the health consequences of non-health-sector actions).

Healthy People 2010 A program of the U.S. Department of Health and Human Services, HP 2010 is a nationwide health promotion and disease prevention agenda. Its two primary goals are to increase the quality and years of life and to minimize health disparities among Americans.

health promotion The process of enabling people to increase control over and to improve their health.

indicator A variable that helps measure changes directly or indirectly. It also makes it possible to assess the success of a program's efforts in achieving its goals. In medicine, indicators help to measure changes in the health situation of a given population (e.g., the elderly).

infectious disease (see also ***chronic disease***) A disease is caused by the presence of disease-causing organisms or agents, such as bacteria, viruses, and parasitic worms.

injury prevention strategies Strategies that focus primarily on environmental design (e.g., road construction that permits optimum visibility), product design, human behavior, education, and legislative and regulatory requirements that support environmental and behavioral change.

intervention The act or fact of interfering with a condition to modify it or with a process to change its course.

NACCHO (The National Association of County and City Health Officials) The national nonprofit organization representing local public health agencies (including city, county, metro, district, and Tribal agencies). NACCHO provides education, information, research, and technical assistance to local health departments and facilitates partnerships among local, state, and federal agencies in order to promote and strengthen public health.

NCEH (The National Center for Environmental Health) One of numerous centers at CDC. Its mission is "to provide national leadership, through science and service, that promotes health and quality of life by preventing or controlling those diseases, birth defects, disabilities, or deaths that result from interactions between people and their environment." The main activities of NCEH include public health surveillance, applied research, statistical and laboratory analyses, and training programs for state and local health officials.

NIH (The National Institutes of Health) Part of the U.S. Department of Health and Human Services that institute conducts scientific research into the causes, prevention, and cure of diseases.

NHANES (The National Health and Nutrition Examination Survey) A survey conducted by the National Center for Health Statistics, Centers for Disease Control (NCHS/CDC). The survey, which takes between four and six years to complete, has been conducted three times since 1971. It is designed to assess the health and nutritional status of adults and children in the United States through interviews and direct physical examinations of approximately 30,000 children, adults, and elderly people.

obesity An excessively high amount of body fat or adipose tissue in relation to lean body mass

overweight Increased body weight in relation to height, when compared to some standard of acceptable or desirable weight.

PACE EH (Protocol for Assessing Community Excellence in Environmental Health) An environmental health assessment tool developed by NACCHO intended for users to identify environmental health related issues, develop indicators, and develop action plans to address them in order to improve local environmental public health status. NACCHO staff conducts regional trainings several times a year for departments interested in using the tool

prevention Actions that reduce exposure or other risks, keep people from getting sick, or keep disease from getting worse.

public health A set of organized interdisciplinary efforts to protect, promote, and restore the public's health. It is the combination of assessment, policy development and assurance that is directed to the maintenance and improvement of the health of all the people through collective or social actions. The mission of public health is to "Promote physical, mental and environmental health and prevent disease, injury and disability. (Source: Institute of Medicine 1988; National Association of County Health Officials 1994.)

quality of life The degree to which individuals perceive themselves as able to function physically, emotionally and socially. In a general sense, it is that which makes life worth living. In a more "quantitative" sense, it refers to a person's time remaining alive, free of impairment, disability, or handicap.

social capital The institutions, relationships, and norms that shape the quality and quantity of a society's social interactions.

social marketing The application of commercial marketing technologies to the analysis, planning, execution, and evaluation of programs designed to influence the voluntary behavior of target audiences in order to improve their personal health and welfare and that of their society

surveillance The ongoing, systematic collection, analysis, and interpretation of health data. This activity also involves timely dissemination of the data and use for public health programs.

LAND-USE PLANNING TERMS

APA (the American Planning Association) A nonprofit public interest, research, and education organization representing 33,000 practicing planners, officials, and citizens involved with urban and rural planning issues whose objective is to encourage planning meeting the needs of people and society more effectively.

built environment All buildings, roads, utilities, homes, fixtures, parks, and all other improvements that form the physical character of a city.

cluster development A development that allows a parcel to be considered in its entirety and permits development to be concentrated on a portion of a tract, leaving the rest of a tract undeveloped. Clustering allows the same number of houses as traditional zoning but reduces the size of lots, setbacks, yards, and other dimensional requirements.

community A subarea of a city consisting of residential, institutional, and commercial uses sharing a common identity Alternately, planners use the term "community" as shorthand to refer to all jurisdictions, irrespective of type (e.g., city or county) or size (e.g., large cities or a neighborhood within a city)

community character The image of a community or area as defined by such factors as its built environment, natural features and open space elements, type of housing, architectural style, infrastructure, and the type and quality of public facilities and services.

community design (also called ***urban design***) The process of giving form, in terms of both function and aesthetic beauty, to selected urban areas or to whole cities. Community design is concerned with the location, mass, and design of various urban components and combines elements of urban planning, architecture, and landscape architecture.

comprehensive plan (also called ***general plan*** or ***master plan***) The adopted official statement of a legislative body of a local government that sets forth (in words, maps, illustrations, and/or tables) goals, policies, and guidelines intended to direct the present and future physical, social, and economic development that occurs within its planning jurisdiction and that includes a unified physical design for the public and private development of land and water.

development review The processes conducted by a jurisdiction of review and approval of applications for any of the following: a (1) site development plan; (2) zoning or rezoning; (3) general, preliminary, or final development plan; (4) final or preliminary subdivision plat; (5) annexation; (6) variance; (7) project development plan; (8) overall development plan; (9) lot merger; (10) boundary line adjustment; (11) zoning compliance plan; or (12) appeal

new urbanism A planning and urban design movement begun in the mid-1980s that aims to reintegrate the components of modern life—housing, workplace, shopping and recreation—into compact, pedestrian-friendly, mixed-use neighborhoods linked by transit and set in a larger regional open space framework.

pedestrian friendly A street or area with sidewalks on both sides of the roadway and safe street crossings In broader terms, it denotes a street, neighborhood, or city that supports, through planning and zoning, the location of stores, offices, residences, schools, recreational areas, and other public facilities within walking distance of each other Such areas also often feature narrow streets, street trees, awnings, covered transit shelters, benches, brick paving, or other less conventional paving types, among other elements

planned unit development (PUD) A large parcel of land for which a unified development plan has been prepared indicating the following: open space, on-site circulation for both pedestrians and vehicles, parking, setbacks, housing densities, building spacing, land coverage, landscaping, relationships, streets, building heights, accessory uses, architectural treatment, and other elements.

quality of life In planning terms, the attributes or amenities that combine to make an area a good place to live. Examples include the availability of political, educational, and social support systems; good relations among constituent groups; a healthy physical environment; and economic opportunities for both individuals and businesses.

smart growth Development that serves the economy, the community, and the environment. It changes the terms of the development debate away from the traditional growth/no growth question to "how and where should new development be accommodated." Principles include:

- mixing land uses;
- taking advantage of compact building design;
- creating a range of housing opportunities and choices;
- creating walkable neighborhoods;
- fostering distinctive, attractive communities with a strong sense of place;
- preserving open space, farmland, natural beauty, and critical environmental areas;
- strengthening and directing development towards existing communities;
- providing a variety of transportation choices;
- making development decisions predictable, fair, and cost effective; and
- encouraging community and stakeholder collaboration in development decisions.

TND (traditional neighborhood development) (see also ***new urbanism***) Development that exhibits several or all of the following characteristics: alleys, streets laid out in a grid system, buildings oriented to the street, front porches on houses, pedestrian-orientation, compatible and mixed land uses, village squares, and greens.

traffic calming A strategic set of physical changes to streets to reduce vehicle speeds and volumes. It refers to the use of street design techniques, such as curb extensions, traffic circles and speed humps, to slow and control the flow of automobile traffic.

TOD (transit-oriented development) A mixed-use community within approximately 2,000 feet of walking distance to a transit stop and core commercial area. TODs mix residential, retail, office, and public uses in a walkable environment, making it convenient for residents and employees to travel by transit, bicycle, foot, or car.

universal design The design of products and environments to be usable by all people, to the greatest extent possible, without the need for adaptation or specialized design.

urban sprawl Low-density, nonrural development at the urban fringe A jurisidiction's definition of sprawl—or identification of urban sprawl as a problem—will depend on the general characteristics of the area (e.g., a rural farming community vs. a growing suburb in a large metropolitan area), historical settlement patterns, the rate of growth, and future population and employment growth projections Characteristics of sprawl include: (a) The premature or poorly planned conversion of rural land to urbanized uses; (b) urbanized development that is poorly connected to other land uses in the immediate area; and (c) urban development or uses that fail to maximize existing public facilities or that occurs outside areas where public services are currently planned for expansion.

VMT (vehicle miles traveled) A primary indicator of automobile use; one vehicle traveling one mile constitutes a vehicle mile.

zoning The division of a city or county into areas, or zones, which specify allowable uses for real property and size restrictions for buildings within these areas. It is the chief land-use implementation tool for a plan. A zoning ordinance or zoning code is the legal document that describes each zoning district, the regulations applicable within each district, and a zoning map that depicts each district.

Alternate Action Planning Tool

ACTION PLANNING WORKSHEET FOR PLANNING AND PUBLIC HEALTH COLLABORATION City/County Name: _____		
What do we want to accomplish?	Write goal statement here.	
Why is it important?	Write the long-term values that support the goal.	
How are we going to do it?	List your activities here: line them up with the long term values/behaviors they support.	I.
		II.
		III.
		IV.
		V.

(continued)

ACTION PLANNING WORKSHEET FOR PLANNING AND PUBLIC HEALTH COLLABORATION *(continued)*

City/County Name: _____

Who are our partners? What are our resources?	List Partners and resources for each activity.	Activity I.	Partners:	Resources:
		Activity II.	Partners:	Resources:
		Activity III.	Partners:	Resources:
		Activity IV.	Partners:	Resources:
		Activity V.	Partners:	Resources:

When will we complete it?	Enter projected dates for completion of each activity.	Activity I.	Date Completed:
		Activity II.	Date Completed:
		Activity III.	Date Completed:
		Activity IV.	Date Completed:
		Activity V.	Date Completed:

Excerpts From APA's Policy Guide on Smart Growth That Address Public Health

The APA's Policy Guide on Smart Growth was adopted by the APA Chapter Delegate Assembly on April 14, 2002, and ratified by the Board of Directors on April 15, 2002.

APA develops policies that represent the collective thinking of its members, and represents a collective view on positions of both principle and practice. APA policies are developed through a thorough process of chapter and division involvement under the overall guidance of the Legislative and Policy Committee. The Smart Growth Policy Guide, excerpted here, contains explicit language describing how smart growth implementation can help protect and improve the public's health. The inclusion of this language in the guide is credited to Chris Kochtitzky, an APA member who works for the Centers for Disease Control and Prevention and who has been closely involved with APA and NACCHO's efforts to promote collaboration between the respective fields. The complete smart growth policy guide is available on the APA website at www.planning.org/policyguides/.

Editor's note: *Included here are health-related policies and associated rationales from three of the five categories. At this writing in summer 2006, knowing what APA and NACCHO have learned from and shared with planners and public health professionals in the last four years, this guide could have been much more direct about the use of a smart growth strategies and tools to protect the public's health. As is argued in Chapter 3 of this PAS Report and throughout, protecting the natural environment through air quality standards and groundwater standards benefits both natural processes and minimizes risks to human health—this has always been true but rarely do policies, plans, and regulations frame it in such specific terms. Further, there is now a solid evidence base to support policies that promote walking and bicycling as a means of fighting the epidemic of obesity. And, too, there is new research on neighborhood and community design and social cohesion and mental health.*

The guide includes policies organized in five categories:

A. Planning Structure, Process, and Regulation

B. Transportation and Land Use

C. Regional Management and Fiscal Efficiency

D. Social Equity and Community Building

E. Environmental Protection and Land Conservation

I. MOTION TO ADOPT A DEFINITION OF SMART GROWTH

Smart growth means using comprehensive planning to guide, design, develop, revitalize and build communities for all that:

- ❑ have a unique sense of community and place;
- ❑ preserve and enhance valuable natural and cultural resources;
- ❑ equitably distribute the costs and benefits of development;
- ❑ expand the range of transportation, employment, and housing choices in a fiscally responsible manner;
- ❑ value long-range, regional considerations of sustainability over-short term incremental geographically isolated actions; and
- ❑ promote public health.

Compact, transit accessible, pedestrian-oriented, mixed use development patterns and land reuse epitomize the application of the principles of smart growth.

In contrast to prevalent development practices, Smart Growth refocuses a larger share of regional growth within central cities, urbanized areas, inner suburbs, and areas that are already served by infrastructure. Smart Growth reduces the share of growth that occurs on newly urbanizing land, existing farmlands, and in environmentally sensitive areas. In

areas with intense growth pressure, development in newly urbanizing areas should be planned and developed according to Smart Growth principles.

B. TRANSPORTATION AND LAND USE

…

5. The American Planning Association and its Chapters support federal and state incentives and local initiatives that encourage locating new development, especially the development of public facilities, in areas that are supported by a balanced transportation network that provides a variety of transportation choices and supports more active, healthy lifestyles.

Reason to Support the Specific Policy: Public facilities should be located so they are accessible by multiple modes, including transit, bicycles, and walking. Such facilities will be more widely used than if accessible only by automobile, and the employers will have more access to people who depend on transit, walking, and bicycling.

D. SOCIAL EQUITY AND COMMUNITY BUILDING

…

3. The American Planning Association and its Chapters support federal and state policies and programs that encourage mixed-income neighborhoods as the foundation for healthy regions, including requirements for the provision of affordable housing in all new-growth areas or through the reinvestment in core communities.

Reason to Support the Specific Policy: Affordable housing should be coordinated regionally to limit concentrations of poverty. Growth strategies must specify provisions for production and maintenance of affordable housing through affirmative measures such as inclusionary zoning practices (zoning that includes a variety of housing types for a variety of income levels) that are applied equally and regionally. Advancement of equity means developing a varied housing stock and planning for stable, mixed income neighborhoods.

E. ENVIRONMENTAL PROTECTION AND LAND CONSERVATION

…

5. The American Planning Association and its Chapters support a balanced energy policy including conservation and development of renewable energy resources.

Reasons to Support the Specific Policy: A comprehensive energy policy should include reduction of energy consumption, development of new supplies, and use of existing natural resources, such as coal, gas and oil, while protecting sensitive ecosystems. Energy conservation would include transportation policy, development patterns that minimize vehicular miles traveled, and green architecture. Development of new energy supplies should include renewable energy. Use of renewable energy sources will contribute to reduce dependence upon fossil fuels, also helping to reduce concentrations of carbon dioxide and other gases in the atmosphere. Increased use of alternative energy sources will also contribute to healthier, more stable local economies through reduced dependence on one or two energy sources that have an uncertain future. Solar power is likely to become more important in future years and development patterns should balance the need for solar access with the need for dense urban development. Development may be able to take advantage of industrial cogeneration possibilities, utilizing waste heat from industry to heat surrounding buildings. APA's Policy Guide on Planning for Sustainability can provide additional insight on steps that can be taken to develop a balanced energy policy.

…

7. The American Planning Association and its Chapters support comprehensive water supply, distribution, treatment, and stormwater planning to protect water supplies, preserve water quality, and prevent flooding.

Reasons to Support the Specific Policy: Clean and adequate water supplies are indispensable for life. Comprehensive programs are needed to protect both water quality and quantity. Development practices, including design and construction, must protect water resources. A variety of planning strategies, design and development standards, and management practices are needed:

- ❑ Xeriscaping and natural, local landscaping that minimizes water usage
- ❑ Minimizing of paving and impervious surfaces that inhibit natural water drainage and ground water recharge
- ❑ Innovative legislation and regulations may include conservation and engineering performance standards, buffers, maximum water run-off, agriculture zoning, etc.
- ❑ Minimizing of fertilizer and other chemical usage that produces polluted run-off and affects water quality off site

APPENDIX E

Summary of Proceedings of a Symposium on Land Use and Health: Fostering Collaboration Between Planners and Public Environmental Health Officials

Hosted by the American Planning Association (APA) and the National Association of County and City Health Officials (NACCHO) and Sponsored by the Centers for Disease Control and Prevention (CDC), February 19-20, 2004, Washington, D.C.

This summary of the proceedings was prepared by NACCHO staff, with additional comments and editing by APA staff.

Contents

I. INTRODUCTION

The National Association of County and City Health Officials (NACCHO), in partnership with The American Planning Association (APA), has initiated a national initiative to build the capacity of local health and planning agencies to increase health considerations in planning and community design projects. NACCHO and APA recognize the origins of both planning and public health are rooted in the goals of protecting the public from outbreaks of disease and improving the quality of people's lives. Yet, this shared history is barely evident in a review of current practice in the respective disciplines. To bridge this gap, both organizations are working to provide education, training opportunities, and practical tools to support local initiatives. As a part of this partnership initiative, NACCHO and APA sponsored a two-day symposium on land-use planning and public health on February 19-20, 2004, in Washington D.C.

The goal of the symposium was to provide a set of recommendations to guide development and implementation of capacity-building measures at the local level to address the public health issues related to the built environment with a specific focus on eliminating health disparities and using health impact assessment (HIA) tools. The presentations and discussions focused on these addressing the following questions:

a) How do we build the capacity of local health and planning practitioners to begin to address health disparities attributed in part to land use/community design?

b) How can health impact assessments or other proactive tools/processes be used to redress health inequities and create better living environments?

More than 30 people attended the event, representing an array of disciplines, including local public health agencies, local planning agencies, federal agencies, and academic researchers. The discussions provided and opportunity for participants to respond to material presented and exchange perspectives on opportunities to collaborate to address ideas presented. Recommendations were specific to types of plans, programs, processes, that local officials can adopt and that NACCHO, APA, and other national partners could develop and support. Additionally, a brief overview of NACCHO/APA tools was pro-

vided and feedback from the symposium participants provided recommendations for next steps for NACCHO/APA activities. Furthermore, participants will have the opportunity to continue to serve as project advisors to the NACCHO/APA partnership project as we seek to implement suggested strategies.

PART II

Session 1: Expanding the Panning Process to Include health

Gerrit Knaap (Speaker), Director and Professor, National Center for Smart Growth Research and Education, University of Maryland

The opening session of the Land Use and Health Symposium began with a presentation and a subsequent discussion on expanding the planning process to include public health issues. Gerrit Knaap began his presentation on expanding the planning process by stating the desired outcomes that such a shift would bring. The desired outcomes he listed included creating built environments that are conducive to routine activity, eliminating health disparities related to land-use planning and improving the community's overall health. To demonstrate the correlation between land use and health, Knaap introduced an issue he works directly with, urban sprawl, as a land-use issue with potentially negative health impacts. Among the health implications of sprawl that Knaap discussed were an increase in driving and more time spent in cars, thus an increase in greenhouse emissions and air pollution, a potential decrease in physical activity, and an overall reduction in social capital, meaning less human interaction.

The focus of Knaap's presentation was on five strategic points of intervention that he proposed would help to expand the role of public health in the planning process. The first point of intervention that Knaap identified was the vision and goal-setting process. If residents desire healthy communities, then health should be included in the vision statement for planning. Secondly, Knaap emphasized that planning is an *ongoing* process that occurs all the time and in many cycles. Therefore, there are many opportunities for public health issues to be interjected into the planning process.

The third point of intervention Knaap discussed was local implementation tools, which included subdivision regulations and zoning ordinances. Knaap expanded on this topic by discussing research he had worked on that analyzed the discrepancies between a survey of ordinance requirements from communities across the nation and how they match up in comparison to what the APA recommends in their principles of smart development. His fourth and fifth points of intervention were somewhat interrelated: thinking about site design and development, and site location and public facilities respectively, Knaap stressed that the purpose of planning is to protect health, safety and general welfare, and that these points of intervention are where health might be most closely related to land-use planning.

Discussion. In response to the presentation and with guidance from a set of questions, symposium participants provided a comprehensive list of suggestions to bridge the gap between planning and health. There were several themes, issues, and suggestions that recurred in the discussion. Among them was a general consensus among participants that *planners and public health agencies and officials* need to explicitly state the issues that need to be dealt with and that there is a necessity for change. Participants felt that public health and planning professionals have to move away from the traditional, categorical framework to more interdisciplinary, collaborative, and community-based approaches. Discussion participants identified terminology as being a potential barrier that can hinder planners and public health officials from easily engaging in a collaborative, interdisciplinary approach.

Symposium attendees elaborated on the need for planners and health officials to collaborate. Participants stressed that public health can be a political ally and bring a new constituency to the table. One health official said that many community-based organizations are already making the connections between land use and health. He went on to add that these local groups possess an expert knowledge that could be incorporated into the early, visioning stages of the planning process.

The discussion reiterated the idea that public health really needs to stretch beyond its traditional boundaries and be redefined, particularly in how it relates to land-use planning. A health official from San Francisco mentioned that while sprawl and physical activity are important issues, affordable housing issues are the main reason that he is interested in planning decisions. He went on to say that health officials need to legitimize work that

might not neatly fall under their purview as public health work. Suggestions for doing this included engaging mayors and other elected officials, and making the connection between health and the built environment explicit to them. Another suggestion for legitimizing public health's role in planning decisions would be to build a campaign around these issues and make them bigger community issues (e.g., crime).

Essentially what many of the comments and suggestions were implying was the need and perhaps inevitability of not only a process change, but also cultural change. One participant felt that simply inserting public health words into a plan was meaningless if there was no process change. Meanwhile, one health official felt that the desire and drive for some development, such as single-family, detached homes, might not be congruent with healthy planning. But to arrive on a consen sus on such decisions, participants stressed employing both a top-down and bottom-up approach to planning. Health and planning officials need to engage in dialogue with both each other and also the communities and community groups that they represent.

Session 2: Health Inequities

Jason Corburn (Presenter and Discussion Moderator), Associate Director, Center for Occupational & Environmental Health, Hunter College of CUNY

Marya Morris (Recommendations Moderator), Senior Research Associate, American Planning Association

For the second presentation of the symposium, Jason Corburn provided a brief overview on the importance of addressing health inequalities/disparities related to built environment issues. Corburn identified existing disparities between class, race, ethnicity, gender, and even location (e.g., urban vs. rural) and not just in terms of disease outcomes, but also in broader health terms. He proposed the idea that planners and health officials should focus on health disparities to reconnect their fields.

Corburn defined health disparities as being deeply rooted in class, racism, discrimination, etc., and as a result, they affect certain groups disproportionately. He emphasized the point that planners and public health officials could learn from social movements, such as civil rights and environmental justice, which are already working in this area. Corburn highlighted throughout his presentation the need to examine health disparities as a human rights issue. To do so, he argued that there is a need for more local monitoring and data on the local level.

The scope of the presentation was extended to address a largely ignored link between health and the built environment: housing. Corburn mentioned the need for safe and affordable housing as well as the negative health impacts of residential segregation. He cited a practice in New York that public health is reinvigorating, the neighborhood health center; these centers take a holistic view of health and provide health and social services to the public as well as a link to various community organizations.

Corburn discussed the effects of neighborhoods on health and put them into two categories: acute effects and the longer-term, more persistent, chronic weathering effects that a neighborhood has on health. He discussed trying to incorporate the social determinants of health into the Environmental Impact Assessment process. Also mentioned was the concept of *adaptive environmental management* in neighborhoods with persistent poverty and health problems. This basically means that there is not one set of interventions or one environmental standard to eliminate disparities. Therefore, keeping the process open-ended and keeping the intervention and dialogue process open is often more effective. He highlighted the value of tapping into local knowledge and horizontal deliberation, particularly in places like New York where there is rich community diversity and variance in types of local expert knowledge.

Discussion. The discussion began with a clarification of the health implications of poor and inadequate housing. Corburn discussed how segregated neighborhoods produce housing that creates pockets of poverty and pockets of stress. Problems that are more commonly found in substandard housing include mold and other asthma triggers, stress related to poor housing and poverty, more cases of elevated lead levels (particularly among African-American children), higher unemployment levels, and even lack of access to proper nutritious foods.

Another participant identified four groups of health inequality issues related to housing and the built environment: 1) cost and affordability 2) housing quality and size 3) housing as a link to social resources/neighborhood organizations 4) and housing as a personal right/refuge.

The participant extended the discussion to macro-social processes that affect whether or not people have adequate and affordable housing, such as displacement, eviction, segregation, etc. Certain terms were discussed and defined in great length, such as *social determinants* of health and *health inequality.* A phenomenon that was cited throughout the discussion was the web of causation, which was written about initially by Nancy Krieger. She was expressing the problem that the canon of traditional epidemiology stresses epidemiological methods, rather than theories of disease causation. The stress on endless biological factors avoids the sources of disease and the social and economic conditions that cause disease. Her question in regards to the web of causation was, Where is the spider? meaning what are the underlying root causes of disparities.

The participant who introduced the web concept into the discussion stressed not placing the social determinants of health in a list of mere factors. He also stressed not categorizing issues like racism and class as factors, but rather as a deeply rooted set of historical and institutional practices.

During the discussion, many participants stressed the importance of educating all stakeholders on the negative effects of gentrification. One participant stressed that informed health and planning officials must work to drive home the point that gentrification can be bad for the health status of populations who are negatively affected by it. Many residents are displaced as a result of gentrification, and as a result, affordable housing becomes a very crucial issue. This does not imply that integration or redevelopment is a bad thing, but the participant stressed working on both smart growth *and* equity in conjunction with one another.

The discussion deliberated over the issue of accountability. Several of the discussants felt that added pressure through state and federal policies such as NEPA and environmental justice policies should be reinforced and applied to this issue. Linking with community-based organizations was seen as another way of ensuring that these issues are addressed or that added pressure can be applied to elected officials. Developers should feel pressure to provide measures for affordable housing and other pertinent issues such as sidewalks, bus stops, etc. One participant emphasized that all of these issues relate to much larger social movements that are in place and do not constitute just a health movement. *There is already work being done on these issues, it is just a matter of linking health and planning with the groups doing the work.*

The discussion concluded with a final statement on engaging communities and giving them the tools and resources that they need to be players in the decision-making process. Communities have the knowledge of themselves and their own issues and needs, and this should be integrated into the planning process. It is important to note that this discussion focused heavily upon the systemic, root causes of health inequalities and how the conventional definition of health needs to be broadly widen to increase the scope of issues that it encompasses.

Recommendations: Health Inequities. In the recommendation session for health inequities, participants were asked to identify strategies that local planners and local health officials can take in order to address health inequities caused by community design. More specifically, the participants were asked to identify ways to build the capacity of local health and planning practitioners to begin to address health disparities attributed in part to land use/community design.

A recommendation that participants echoed from various professional backgrounds was to provide local health officials and planners with more funding, resources, and education. In a similar vein, participants thought that local health officials and planners should fund neighborhood groups to help them get organized. Local planning and health officials can also take part in the CDC-supported environmental health tracking activities to identify and track local/regional health concerns/issues related to planning practices.

From a resources/education perspective, participants encouraged local health officials to arm planners and community-based organizations with research data to help them sell the issue. Participants also felt that local health officials could provide social health indicators, including data outside of the western biomedical paradigm, that might spark a different way of thinking and addressing the subject matter.

On a collaborative level, one participant recommended that APA and NACCHO facilitate further dialogue between its members and have joint conferences and audio conferences with each other. Interdisciplinary collaboration is very effective and helpful on the local level to help overcome both funding and legitimacy obstacles.

One participant encouraged APA to take position statements on the practice of Environmental Impact Assessment and how it has failed to adequately consider social and health impacts. He also recommended that APA look at different ways of doing democratic, community-involvement processes (such as practiced in Europe/ the Institute for Development Studies) and publish and market them to their members. The participant cited Agenda 21, the United Nations' Environmental Program that is collaborating with the World Health Organization on a sustainable cities' approach that sets a framework for health in economic development, planning, and collaboration. There is ample documentation on these processes, case studies, etc., that has the potential to be distributed.

In regards to a question on gentrification, in which participants were asked to identify possible steps that local health officials and planners can take to prevent gentrification and displacement, several approaches were discussed. First, local planning and health agencies are capable of presenting the negative health impacts related to the destruction of public housing; presenting the health consequences of the lack of affordable housing. Participants said that solutions for gentrification must be multi-objective, taking into account a wide range of issues (affordability, social capital, safety, accessibility, etc.). One-sided development could lead to potentially harmful effects for populations.

Several discussants also pointed out that promoting greater democracy at the community level is a key to ensuring a valid, sustainable, community-based planning process. National organizations can help facilitate conversations on the local level. Specifically, national organizations such as NACCHO and the APA can set up one-day meetings in cities across the country between planners and health officials.

Many participants, particularly those from health departments, felt that the planning decision-making process is not accountable to ordinary people. One participant suggested promoting expertise integration, which brings together local and national experts to engage in dialogue and strategizing sessions.

Participants also recommended that APA and NACCHO use visual presentations to make the case on health inequities at the local level. Having effective, quantitative data is important, but being able to incorporate pictures to support that data is also important, particularly on the community/lay level. Participants also encouraged APA and NACCHO to incorporate social justice principles into tools and documents that are developed.

While many topics were discussed and touched upon in this lively session, there were several themes that recurred throughout. Certain participants stressed the need for national organizations to collaborate with community-based organizations and to collaborate across disciplines. Also, while there has traditionally been a top-down structure to decision making, local/community knowledge needs to be integrated into the process and regarded as one form of expert knowledge, not beneath other expert knowledge. Also, being able to link the issue at hand with the social determinants of health, and interjecting the environmental justice/social determinants components into the environmental impact statement process is important. Finally, the issue of housing and affordable housing emerged as one of the key links between land use planning, health, and health inequities.

Session 3: Health Impact Assessment

Catherine Ross (Speaker), Harry West Chair of City and Regional Planning, Center for Quality Growth and Regional Development, Georgia Tech College of Architecture

Rajiv Bhatia (Speaker), Director, Occupational & Environmental Health, San Francisco Department of Public Health

Brian Cole (Discussion moderator), Project Manager, UCLA School of Public Health

Heidi Urquhart (Recommendations moderator), Program Manager, NACCHO

Catherine Ross provided an overview of one perspective of health impact assessment (HIA). The focus of her presentation was on the main components of one type of HIA and how they have been used abroad. While HIAs focus on potential health impacts, Ross felt that HIAs have not been successful in determining long-term cumulative impacts. It is for this reason that there has been widespread debate over whether or not HIA should become a part of a regulatory process or strictly voluntary.

A central theme that Ross discussed was that studying community impact and garnering community participation play a significant part throughout the implementation of the tool in Europe. In Europe, collaboration between health professionals and planners is common. She suggested collaboration with metropolitan planning organizations (MPOs) as a natural

opportunity to include health issues in the transportation planning process.

Rajiv Bhatia followed Ross with an overview of a similar process that the San Francisco Department of Public Health's Occupational and Environmental division is using that may be considered HIA. Throughout his presentation, Bhatia linked the significance of this type of process with beneficial health outcomes. He discussed gaining community and political buy-in on the HIA, developing a cost-benefit analysis to help drive support, and stressing the utility value so that planners will engage in HIA.

Bhatia highlighted the major lessons learned from this process, such as providing strong qualitative and policy evidence and not mechanistic evidence, and linking with all decision makers to make it a truly collaborative process. Other lessons learned included providing an opportunity to integrate public health knowledge, research, and the health mission into the planning process, and the need to incorporate data to validate health issues/considerations in an EIA/EIS.

Brian Cole gave the third presentation of the morning on his work at UCLA with developing HIA tools. He provided more research on the benefits as well as potential drawbacks of HIA. He led a discussion on HIAs, in particular on the question of whether or not we should move forward in standardizing HIA methods. The discussion also covered topics such as implementation methods, the relationship with EIS, the roles of LPHAs and local planners, community's roles in HIAs, and what data should be included in an HIA.

Discussion: Health Impact Assessment. After the presentation, the various tools and processes called HIA were discussed. The range of HIAs include rapid HIAs to more lengthy processes, such as stand-alone community-participatory process and EIAs addressing health impacts. The wide range of responses in the discussion raised the question as to whether anything that promotes health could be considered a type of HIA. Participants were in agreement that there is no singular format for HIAs, and they take many forms. There was a general consensus among participants that HIAs are needed to address both specific and general impacts.

While some presentations applauded the implementation of HIA in Europe, discussants expressed interest in tracking implementations of HIAs in the United States, where examples are lacking. It was suggested that smart growth planning activities would be a useful place to discuss the benefits of HIA and help increase greater buy-in. The group also discussed the relevance of HIAs in the development review process and comprehensive planning process. Overall, the group thought that pilot projects are the optimal way of building momentum for HIAs in the United States.

NACCHO staff introduced PACE EH (Protocol for Assessing Community Excellence in Environmental Health) into the discussion. She asked if tools such as PACE EH would be helpful to use to address specific land-use planning/community design issues. One participant responded by explaining PACE as an attempt to apply principles about community-based participatory action research to environmental health. He said it could be applied to land-use planning/community design, but cautioned that community-based participatory research has become a loaded political term in the United States. Community-based participatory research means working with the disempowered communities in a particular way and should always include co-learning with planning staff or political officials.

Symposium members were asked to discuss how the HIA should be used. One participant responded that the *comprehensive* planning model is where health needs to be inserted because the concept of health is embedded in development issues. The participant referenced states and cities that already have comprehensive planning laws; these laws could make it easier to require or recommend that local entities broaden the public health element in the planning discussion. Also, a local planner said that planners generally feel it is easier to defend their actions when they are based on health grounds. For example, having health concerns as the argument against a planning action, as opposed to a strictly environmental constraint, would be a good place to start building momentum.

A representative from APA discussed the legislative aspects of land-use planning. Each state has enabling legislation that prescribes how planning happens in that state, which means that there is variation from state to state. Some states leave the process to the discretion of localities while other states might be heavily prescriptive. While it is difficult to change state law, the participant argued that we should at least try to change state law to require or suggest a health component. More importantly, however, is the need to go to the community directly and to advocate to the constituency that they ought to consider health impacts in the planning process.

When the discussion often turned into recommendations for improving HIAs, there were some points to highlight. First, participants felt that HIAs should allow for flexibility. HIAs can be used to show the community impact of major development and could make the case for healthier development concepts (e.g., affordable housing). Also, HIAs should be a part of the development review submission requirements. HIAs can offer guidance to developers to mitigate uncertainty. Finally, participants felt that there must be a public policy approach to garner stronger political support for HIAs.

Recommendations: Health Impact Assessment

This session was structured in the form of a group exercise. Heidi Urquhart, of NACCHO, led the exercise by having every participant in the group submit ideas for strategies and activities that APA and NACCHO can use to help local planners and LPHAs address HIA. The responses were collected and organized into seven basic groups. For clarification and organizational purposes, the groups are listed and defined below.

Definition: There was a consensus that not only should the various types of HIAs be defined, but examples of effective HIAs should be described as well. While the definition of HIAs should not be narrowed too much, there needs to be an explanation of HIA. One participant recommended developing a health quick-scan for all public decisions, or at least some process by which even tiny decisions that are made on a daily basis can be standardized. Another suggested idea was developing a white paper that might streamline the definition of HIA and that can be promoted to group members.

Training: Training was a heavily discussed part of the recommendation session. The emphasis was on ways that national organizations such as APA and NACCHO can help facilitate the educational and collaborative process on multiple levels. Participants recommended that NACCO and APA to sponsor joint training sessions at their national conferences that include community leaders, local officials, and experts in each field. Distributing publications that stress the importance of collaboration from the national to local level could help institutionalize HIA as a common practice.

NACCHO and APA were also urged to develop curriculum, and perhaps even a joint degree, that brings planning and health together. Also, in the discussion of joint partnerships, participants suggested the need to have training about the "languages" of each field so that collaborators understand the terminology of their partners.

Strategic/Model Practice: The model/best practice category included a survey of best practices that can be promoted to health, planning, and elected officials. Examples of model and best practices can be combined in a publication that highlights examples of both new as well as practiced models. In line with this, there was a suggestion for compiling a list of actions that are already being done to provide examples. Again the subject of European models came up, and participants recommended highlighting the applicability of potential models. The key theme in this category was the need to identify where comprehensive health assessment can or does occur in the planning process. Near the end of this discussion, participants agreed that using terms such as "best" or "model" was inappropriate, rather all practices should be highlighted in order to provide many examples and to garner both positive and negative outcomes. As such, practices would be shared rather than judged.

Political Strategy: Participants once again stressed the importance of interdisciplinary collaboration to engage a wide constituency, including both Democrats and Republicans. Specific suggestions included developing interdisciplinary conferences to draw attention to HIA, and the importance of HIAs should also be marketed towards legislators. Another recommendation included developing a media campaign to teach community members the importance of HIAs. Also, LHOs can describe to local elected officials the shortcomings of an EIA to measure health impacts to help make the case of implementing HIAs in the planning process stronger. A final strategy was to have children and seniors share health concerns in public meetings (vulnerable populations can be effective spokespeople).

Professional Interaction: This category highlighted the need to develop more collaboration throughout the planning process. However, suggestions on how to do this varied. There was a suggestion that local health officials should be required to review development plans early on. APA and NACCHO were also encouraged to facilitate regional information exchange and interaction between local planners and health officials. Also, all stakeholders (developers, transportation officials, community groups, etc.) should be linking into HIAs and the planning process.

Support and Recognition: One suggestion was to create a national award that would exhibit successful implementation of the HIA or successful collaboration efforts. Also, in order to gain greater buy-in from developers and elected officials, there needs to be more incentives for local planning health agencies/planners to implement the HIA. Further, APA and NACCHO could partner with other networks (e.g., Environmental Protection Agency, Smart Growth America, etc.) to put together a pilot project for this work.

Information Resources: Suggestions included developing fact sheets for practitioners, creating a clearinghouse on HIA literature and practice, identifying health data to support health objectives in plans, and using visual examples of health impacts.

Post-Exercise Discussion

In the original symposium agenda, this session was titled, "Recommendations for Advancing Integration of Health in Land use Planning//Community Design and Developing a Consolidated National and Local Agenda." Because the previous session raised new sets of questions and ran over its allotted time, this session was used as an extension of the HIA recommendations section.

After the group exercise, the moderator posed the question of what can NACCHO and APA do to get HIA included in local processes, and whether it is broad and participatory or more narrow. For looking at existing practices, she asked participants to identify what strategies NACCHO and APA can take and what some of the inhibiting factors will be for both local and national organizations.

One participant said that APA and NACCHO can observe commonalities in what people are already doing and collect a survey of existing practices. Since there are few examples of proven models in the U.S., we could look at gateway HIAs in Europe as there are more successful models abroad. One participant said that in the U.S. there needs to be a paradigm shift in the mission of local public health officials. He cited money as both the largest barrier and incentive, as it can often limit innovation within public health. If public health professionals saw their goal as improving the community health no matter what it takes, then as a discipline, it would be that much closer to changing the way health is incorporated into the planning process.

Another participant suggested creating a document that has examples, guidelines, and case studies. This publication could include a combination of both new models that were never implemented and some experiences of practices from the field. She also suggested obtaining additional research that might be useful and helpful in understanding what has lead other places to start implementing HIA.

Session 4: Advancing Integration of Health in Land-Use Planning/Community Design and Developing a Consolidated National and Local Agenda

Valerie Rogers (Moderator), Senior Analyst, NACCHO

Recommendations. This session began with clarification of the word "agenda" from the session title. In this case, the word *agenda* refers to both a community and policy agenda. The subject led into a discussion of the policy-making process. Some participants in particular felt that the policy-making process needs to be more democratized and more inclusive of all stakeholders. One participant commented that the current process does not adequately include community interests and instead makes decisions in more private settings where they are not necessarily accountable to all stakeholders. He also stressed the importance of co-learning and co-participation on multiple levels.

One of the first areas identified for integrating health and land-use issues was transportation planning. A participant gave a list of health issues that relate to transportation considerations, such as making an environment more accessible to reduce pedestrian and bicycle injuries, lowering air pollution and increasing physical activity, etc. There is good science data available from highway departments that touch on many areas of public health.

One discussion question pertained to identifying the priority issues concerning the health impacts of land-use planning that need immediate consideration and action. A participant reiterated a point that he had made earlier in the symposium; namely that the most critical issue in his region was affordable housing. He discussed the ways in which this issue limits the actual work that his health department can do: "A lack of affordable housing means that people are homeless; homelessness is a huge public health cost to the safety net system; the safety net system takes money from the public health system; thus, we are limited in the public health work that we can do."

In keeping with the question of how to integrate health and land-use planning/community design, the conversation returned to the idea of changing the status quo and addressed how the issue is approached. Participants reiterated the idea of the spider in the web, in which everything drives everything else; many policies back these decisions for reasons that are not random. One participant questioned the values that were being expressed when urban sprawl began to increase. He encouraged value-oriented planning that would avoid the negative health outcomes from the built environment.

The question arose of how local organizations can advance the objectives of HIA and address the issues of health inequalities. Participants discussed tapping into the wealth of resources that groups like NACCHO and APA have to contact thousands of people through email, Web sites, newsletters, conferences, etc., and in that fashion, create some form of a sub-network of organizations and individuals. This way, information can be disseminated to a broad range of people. Participants felt that resources need to be distributed to local planners and health officials, as many do not understand the connection. Health officials, in particular, need to understand that they have a much larger role to play in local planning. For many people, this concept is new or might seem somewhat vague or irrelevant. The traditional purview of health departments needs to be expanded to include these issues, and as a result, greater training and education will be needed on the local level.

There were some recommendations raised on the issue of education. Many participants felt that some form of document or paper needs to be written that formally highlights the importance of the land-use planning/public health connection. This paper could discuss the roles and responsibilities for people in planning and public health and it could be used as a communication tool to broaden awareness. To keep the conversation going, it was recommended that conferences and trainings be implemented to facilitate dialogue between respective disciplines.

Participants also recommended building a constituency among member of Congress, among both Democrats and Republicans. One participant discussed the need to have conversations with congressional staffers on health issues, and to make them aware of the connection between health and planning. He recommended presenting a short document that is about a 1-2 page overview of the subject. The subject of language came up because it is very important on Capitol Hill, and it would be easy to lose support (particularly among Republicans) as the result of semantics.

A final suggestion on areas of integration of land-use planning and public health is community design. Community design could offer the opportunity for joint projects that would serve as a cross-disciplinary bridge. Community design was stressed because it extends beyond the typical issues of just land use, and more into planning issues.

One participant repeatedly discussed the idea of a Health Equity Index that could serve as an indicator for how society is faring. Regardless of whether or not this idea is merely hypothetical for the time being, the participant stressed that the point of this example was that planners and health officials should not let others define what the questions are and what is important to discuss. Collaborators should be fearless in the way that they approach the discussion of health issues as they relate to the built environment.

Session 5: NACCHO/APA Partnership Project

Marya Morris, Senior Research Associate, APA

Jessica Solomon, Program Associate, NACCHO

Jessica Solomon began the discussion with some background on what NACCHO and APA have been doing and will be doing on land use-planning/health issues. One of the tools that NACCHO has worked on with Tri-County, Colorado, Health Department is a checklist intended for use in development review (not to be used as an HIA). It is designed to get health official to think outside of the box when commenting on development review, and to consider subjects that they might not normally. NACCHO has also been working with Healthy People 2010 (HP 2010), the Department of Health and Human Services health agenda, and developing action steps for local public health agencies to use in regards to HP 2010 objectives that relate to land-use planning.

NACCHO has sponsored sessions at national conferences throughout the year, such as the Partner for Smart Growth national conference, ATSDR Partner's Meeting, APA's national conference and two sessions at NACCHO's conference this year. One session at the 2004 NACCHO conference will concentrate specifically on how to work with your elected

officials on these issues and the other session will discuss the PACE EH tool.
Solomon also discussed the State Association of County and City Health Officials (SACCHOs) and the Healthy Planning 101 sessions that NACCHO and APA have already sponsored in some states. NACCHO has an Environmental Health Advisory Committee and a Health and Social Justice Advisory Committee, which provide insight and guidance to NACCHO's land-use planning project.

Marya Morris is the lead person working on a national survey that is being conducted by APA in local planning and health offices on opportunities for collaborating. The survey is designed to get feedback on what local practitioners are already doing to collaborate and what they consider to be likely, reasonable, and possible initiatives to add to their work programs.

Morris also discussed a workshop in April that will be pairing a planner and a health official to work together on a specific case problem. Shortly after the symposium will be the APA conference in Washington, which will have sessions on related fields. She also attended the SACCHO meeting in Florida and presented a Planning 101 session. Morris discussed SACCHO meetings in Kentucky and in Washington State later this year that will cover these issues.

Another area that Morris is working on for the NACCHO and APA project is compiling fact sheets on jargon busting, which will attempt to demystify the terminology of health and planning professionals. She will also be writing an article for the *PAS Memo* that overviews the relationship between land use and public health. She hopes to do a full Planning Advisory Service (PAS) Report on the issue. And finally, APA and NACCHO will sponsor audioconferences that can reach hundreds of people simultaneously, both planners and health officials. The topics of each audioconference have yet to be determined.

Recommendations. Because of time constraints, this session was fairly brief and to some extent a rehashing of topics from previous discussions. One participant began by trying to reach a consensus on whether or not environmental impact assessment should be equated to HIA. Some participants had previously mentioned that people run when they hear the term environmental impact assessment and thus, HIA should not be equated to it. Others felt that environmental impact assessment does provide a legal framework that specifically mentions health, which could be beneficial to developing HIA.

There was a suggestion on taking the word i*mpact* from environmental impact assessment/HIA because the phrase *impact assessment* could bring unwanted connotations to the table. The participant said that it could be better from a marketing standpoint. Also, people want to lump many different issues under HIA that might not necessarily fit in an impact assessment. A counter argument was that the term *health assessment* would connote evaluating people's health. Another suggestion was that the National Association of Environmental Professionals should be invited into the discussion on environmental impact assessments and HIAs.

On a final note of the session, one participant cited the need to formulate specific action items that could be taken from the discussion as reference points to look back on. As for action steps, nearly all participants were willing to engage in a follow-up conference call discussion on the symposium. Another participant mentioned keeping up with the pilot project as a strategic issue. The workshop in April will also generate some strategies for next steps of how to incorporate public health into land-use planning decisions at the local level.

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