

Increasing Physical Activity



Through Community Design

A Guide for Public Health Practitioners

May 2002

National Center for Bicycling & Walking

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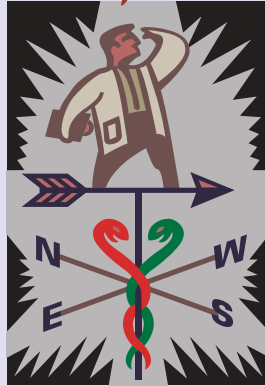
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Public Health
Practitioners

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"If you design an environment for children, it will work for everyone."

–Larry Beasley, Director of Central-Area Planning, Vancouver, B.C.



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Overview

Summary

In healthy communities — not just in the movies — walking and bicycling are a normal part of daily life. The Centers for Disease Control and Prevention (CDC) call these kinds of places *Active Community Environments* (ACEs). They recognize that providing for active living through community design is a health issue.

This guide tells you how to help create places for people to walk and bicycle. This doesn't just mean special trails, though those might certainly be an important element of an overall plan. Creating an active community environment means taking a look at the broader scope of where there are — and aren't — opportunities to safely walk and bicycle. It involves land use design, retrofitting the transportation infrastructure, funding and much more.

Although this guide is written for public health professionals, others — community leaders, local planners and transportation agency officials, and citizens — can also benefit from reading it because poor community design affects the health of the entire community. The increased awareness each of us brings to the problem is another step towards the solution.



Four interrelated aspects of a community.

“Part of what we’ve done is to engineer an epidemic of obesity. I would hope we could engineer ourselves out of this as well.”

–Katrina Hedberg, MD, MPH, Deputy State Epidemiologist, State of Oregon Health Division



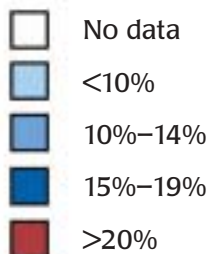
Two streets of similar function but the left design ignores the needs of an active community.

Chapter One: Overview

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Adult Obesity Trends

(Body Mass Index ≥ 30 , or ~30 lbs overweight for 5'4" woman)

**1985****1990****1995****2000**

Obesity has increased in men and women across all socio-demographic groups and all regions. In 1985, none of the 20 participating states had obesity rates of 15% or more; by 1995, 27 states did. In 1995, none of the states had obesity rates of 20% or more; by 1998, such rates were seen in 7 states and in 2000, in 22 states.

–A. Mokdad, et al., CDC, *The Continuing Epidemic of Obesity in the United States*, Journal of the American Medical Association, October 4, 2000

Health, Physical Activity & Community Design

A Health Crisis

America faces a national health crisis of epidemic proportions. Physical inactivity combined with overeating has, in just a few decades, made us a nation of fat and out-of-shape people. The incidence of overweight or obese adults increased steadily from 47 percent in 1976, to 56 percent in 1994, and 61 percent in 1999. The prevalence of overweight children and adolescents almost doubled during the same period.

Recommended Physical Activity

- It is recommended that Americans accumulate at least 30 minutes (adults) or 60 minutes (children) of moderate physical activity most days of the week. More may be needed to prevent weight gain, to lose weight or to maintain weight loss.
- Less than 1/3 of adults engage in the recommended amount of physical activity.
- Many people live sedentary lives; 40 percent of adults in the United States do not participate in any leisure time physical activity.
- 43 percent of adolescents watch more than 2 hours of television each day.
- Physical activity is important in preventing and treating overweight and obesity and is extremely helpful in maintaining weight loss, especially when combined with healthy eating.

–Surgeon General's *Overweight and Obesity At a Glance*, 2001

Obesity, diabetes, heart disease, stress and a host of other ills are increasing. Physical inactivity and obesity rank second to smoking in their contribution to total mortality in the United States. Nearly 80 percent of obese adults have diabetes, high blood cholesterol levels, high blood pressure, coronary artery disease or other ailments (K. Flegal, et al., *Overweight and obesity in the United States: prevalence and trends, 1960-1994*, Int J Obesity, 1998).

About 60 percent of overweight children between five and 10 years of age already demonstrate risk factors such as elevated blood pressure and increased insulin levels associated with heart disease. These factors lead to chronic diseases later in life.

Daily Physical Activity

Moderate, daily physical activity, such as bicycling or walking, has long been recognized as an essential ingredient of a healthy lifestyle. Yet many Americans, both young and old, lead a sedentary lifestyle. Our workplaces are increasingly automated. Many jobs require workers to spend hours at a desk. We use the automobile as our primary means of travel even for short trips.

According to the U.S. Department of Transportation's Nationwide Personal Transportation Survey, the number of trips the average American adult takes on foot each year dropped 42 percent between 1975 and 1995.

Among children, walking trips dropped 37 percent. Only 10 percent of public school students are estimated to walk to school today compared to a majority of students a generation ago. The most common means of transportation to school is by car.

We prepare our children for a sedentary lifestyle. At school, opportunities for physical activity have diminished. Shifting priorities have caused many physical education classes and even recesses to be dropped. After school, kids are driven to events, to the mall or to a friend's house. Add in a daily dose of television, often accompanied by high-calorie snack foods, and it's no wonder that so many young people find themselves outside the recommended height/weight range.

The increase in obesity follows a decline in walking and bicycling. We use the automobile for even the shortest trips. About 25 percent of all trips made in the United States are less than one mile in length, and 75 percent of those short trips are made by automobile (1995 Nationwide Personal Transportation Survey).

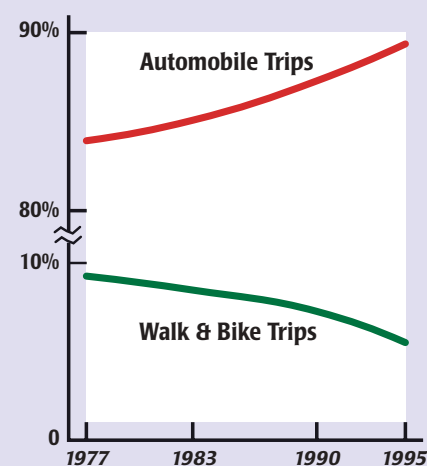
We don't walk or bicycle as much as we used to, partly because our communities — designed around the automobile — lack walkways and bikeways that would otherwise accommodate and encourage such activity. Even where facilities exist, features that support driving, such as wide roads and intersections, large parking lots and drive-through businesses, create an environment that is uncomfortable and unsafe for nonmotorists.

Spread-out, isolated destinations typical of car-oriented suburban development also discourage walking and bicycling. Even in communities where most places are near enough to walk or bicycle, people may not feel safe because of high motor vehicle speeds and volumes.

"Our young people need help to get moving... Nearly half of all young people do not take part in regular, vigorous physical activity, and less than half of all high school students have regular physical education classes at school..."

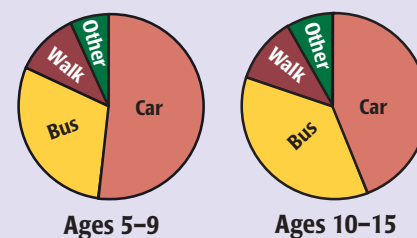
—David Satcher, Surgeon General, remarks at *First International Walk to School Day*, 2000

Less Walking & Bicycling, More Driving



Source: Nationwide Personal Transportation Survey

Most Children Driven or Bused to School



Source: Nationwide Personal Transportation Survey (1995)



Benefits of Daily Physical Activity

According to the American Heart Association, daily physical activity:

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

"In 2000... 28 percent of U.S. adults did not engage in any physical activity, and another 28 percent were not regularly active.... The prevalence of obesity and diabetes continues to increase among U.S. adults. Interventions are needed to improve physical activity and diet in communities nationwide."

—Obesity and Diabetes are Major Causes of Morbidity and Mortality in the United States, Journal of the American Medical Association, 2001

"It is now clear that regular physical activity reduces the risk for coronary heart disease, diabetes, colon cancer, and several other major chronic diseases and conditions."

—Physical Activity and Health: A Report of the Surgeon General, 1996

Active Living Through Community Design

The Vision

The CDC refers to places where everyone can enjoy daily, moderate levels of walking, bicycling and other exercise as Active Community Environments (ACEs). A walking- and bicycle-friendly community is also a more livable community where people of all ages and abilities can travel freely. Active Community Environments encourage and accommodate walking and bicycling through their approach to:

- Transportation facilities and services.
- Land-use planning and development.
- Schools.
- Recreation, parks and trails.
- Safety, security and crime prevention.



This section describes what “model” communities look like and how they are planned. Today, few communities exhibit all of the factors described below, but they generally share a least a few of them. Chapter 2 discusses how to make the streets work better for pedestrians and bicyclists.

Transportation Facilities and Services

There are safe, easy and pleasant places for people of all ages to walk or bicycle using public streets and highways. A balanced system that includes transit, walking, bicycling and automobiles provides people with appropriate transportation choices. Most trips under one mile are made by walking or bicycling. The community:

- Designs new roads to accommodate bicycling and walking.
- Retrofits existing roads to accommodate bicycling and walking.
- Maintains roads and sidewalks for easy, safe use by pedestrians and bicyclists, even during the winter months.
- Makes all routes accessible for people with disabilities.
- Allocates transportation funds so that (a) all projects include the funding needed for bicycling and walking facilities, and (b) an equitable share goes to eliminating pedestrian- and bicycle-related deficiencies in existing roads.
- Lays out new roads using a traditional “grid” pattern to provide more route choices, to reduce trip lengths and to slow motor vehicles.
- Develops a coordinated system of transit, pedestrian and bicycling services and facilities.

A study in the December 2001 issue of the American Journal of Public Health finds that communities that build bicycling and walking trails, support exercise programs, and provide public areas, such as parks and sidewalks, can boost physical activity levels. Researchers say that providing these facilities could encourage millions of sedentary people to exercise.

Author Ross C. Brownson of Saint Louis University in Missouri, said the results indicate that, “parks and sidewalks matter, and could affect obesity rates. We have an epidemic of obesity so we can’t wait for every study to be completed before taking action.”

About two-thirds of survey respondents who did at least some physical activity said they exercised on neighborhood streets. Some cited neighborhood obstacles to exercise, including heavy traffic, air pollution from cars and factories, and unattended dogs. Rates of exercise were found to be twice as high among individuals who believed that their neighborhoods were safe.

—S. Rostler, Sidewalks, Parks Could Boost U.S. Exercise Rates, New York: Reuters Health

“The built environment presents both opportunities for and barriers to participation in physical activity, thereby influencing whether or not we exercise. Research by CDC and others has indicated that two of the main reasons for not exercising are lack of structures or facilities (such as sidewalks and parks) and fears about safety.”

—R. Jackson, et al., *Healthy Environment: The Impact of the Built Environment on Public Health*, CDC, 2001

Human Scale: Facilities are designed for a person walking, such as buildings near the sidewalk, trees, small signs, low lighting, windows, and benches.

Refer to the **Glossary** at the end for an explanation of other terms.

Land-Use Planning and Development

Development plans and practices focus on creating transit- and pedestrian-oriented communities where the majority of trips are made by a combination of walking, bicycling and transit. Most people walk or bike as part of their routine activities or specifically for recreation and health. Public health impacts and objectives are a regular, routine and guiding consideration in land-use planning decisions. The community:

- Integrates “smart growth” principles in all development programs to:
 - ✓ Increase opportunities for walking, bicycling and transit use.
 - ✓ Efficiently utilize land and existing urban services.
 - ✓ Create transportation options by mixing development and land uses within existing downtowns and new town centers.
 - ✓ Design the urban environment to a more detailed, human scale.
 - ✓ Place buildings facing the street near the sidewalk with parking on the street or behind the buildings.
- Makes positive public health impacts a priority in land-use planning and development decision-making.
- Makes traditional neighborhood development (TND) the standard for residential areas.
- Locates commercial and retail development in downtowns, on main streets, and in new town and neighborhood centers.
- Reduces trip distances.
- Makes walking, bicycling and transit the preferred transportation choices for the majority of trips.

Schools

Schools are of moderate size and are located in the neighborhood they serve. Most children walk or bike to school. School sites and facilities serve a wide range of communities services and needs. The community:

- Locates schools within walking distance of the student population.
- Provides safe routes to school for students to walk and bike.
- Develops school sites that are pedestrian- and bicycle-oriented.
- Strictly controls the operation of motor vehicles on and near school sites, at bus stops and along school routes.
- Encourages children to bike and walk to school.
- Designs and operates schools as multi-purpose community centers.

Recreation, Parks and Trails

Basic park and recreation facilities are available in every neighborhood, and most users walk or bike to them. Other recreation facilities are easily accessible by transit. Most children can go to their neighborhood parks by themselves or with their friends. Most organized sports activities take place at parks or school sites located in or near the neighborhoods where the children live. Trail-type facilities are within walking distance of most residential areas. The community:

- Develops neighborhood park and recreation facilities in new subdivisions and in currently underserved residential areas.
- Locates neighborhood park and recreation facilities to be easily and safely accessed by most people, especially children.
- Utilizes smaller sites for youth sport activities (vs. large-scale, regional facilities to which people must drive).
- Utilizes public facilities, such as schools, as multi-purpose facilities, especially for recreation services.
- Develops a system of trails that is readily accessible to most people.

Safety, Security and Crime Prevention

The community controls motor vehicle traffic so it no longer poses a serious threat to children in neighborhoods or near schools and parks. Motor vehicle operation is strictly regulated, and traffic laws are obeyed by all users. Crashes, injuries and fatalities decline significantly. Crimes of all kinds decline, especially in residential areas. Parents are at ease with the notion of their children playing outside, unsupervised in their neighborhood. Children spend more time outside, playing with other children. The community:

- Ensures that all drivers are careful and responsible.
- Restricts motor vehicle speeds in neighborhoods, near schools and in shopping areas.
- Designs neighborhoods to reduce the threat of crime.
- Improves policing and enforcement to help prevent crime.

“Obesity is second behind tobacco in U.S. health risk factors, contributing to 300,000 deaths a year. Twenty-five percent of Americans are obese, resulting in \$100 billion a year in national health care costs, or one in every \$10 spent, and diabetes, often an obesity complication, represents 25 percent of all Medicare costs.”

– J.P. Boyle, et al., *Projection of Diabetes Burden Through 2050: Impact of changing demography and disease prevalence in the U.S.* *Diabetes Care*. 24: 1936-1940, 2001



Treating the Patient

Creating local environments that encourage physical activity for all age groups — promoting active living through community design — is one way we can build healthy communities. In most cases, people don't need lavish new facilities in order to achieve higher levels of physical activity. Communities across the country are finding that they can implement simple changes to the physical environment to benefit pedestrians and bicyclists. The next chapter of this guide focuses on some achievable actions that can make a difference.

Some of these changes include retrofitting roadways with sidewalks, curb ramps and features that slow traffic, making it easier and safer to walk. Multiple-use trails, bicycle parking and striped bicycle lanes can be provided to encourage more people to bicycle more often.

Changing existing communities is a complex process involving many agencies, organizations, institutions and the public. A community's infrastructure — streets, parks, schools, residential areas — takes years to develop. So we should expect it to take years to make large-scale adjustments. Think of each small change as part of a time-release treatment that eventually will provide people with widespread opportunities to be more physically active.

And realize that it's unlikely to happen without you. It will take bringing people together to create a new sense of community, and to build the will, capacity and commitment to make the places where we live, work, go to school and play more livable. Consider the wisdom of the motto that has guided progress in Chattanooga, Tennessee:

"It takes all of us... and it takes forever."

—As quoted in *Civic Participation and Smart Growth: Transforming Sprawl into a Broader Sense of Citizenship*. Funders' Network for Smart Growth and Livable Communities, Translation Paper Number Four, November 2000.

"Many people believe that dealing with overweight and obesity is a personal responsibility. To some degree they are right, but it is also a community responsibility. When there are no safe, accessible places for children to play or adults to walk, jog, or ride a bike, that is a community responsibility."

—David Satcher, Surgeon General, *Call To Action To Prevent and Decrease Overweight and Obesity*, 2001