



# Increasing Physical Activity

## THROUGH COMMUNITY DESIGN

A Guide for Public Health Practitioners  
and Livable Community Advocates

NATIONAL CENTER FOR BICYCLING & WALKING | June 2010



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The report may be downloaded at [www.bikewalk.org](http://www.bikewalk.org).



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**“Ultimately it is the right people who make change possible; we either have to be them or find them.”**



**Sharon Z. Roerty, AICP/PP/MCRP  
Executive Director, National Center for  
Bicycling & Walking**

## Walk With Me

*A letter from Sharon Z. Roerty, Executive Director  
of the National Center for Bicycling & Walking*

Picture a place with short, connected blocks, a variety of building types and destinations proximate to each other. Then picture a place with four or more lanes of traffic, double left turn lanes, limited through streets, large gaps between buildings and deep property setbacks. It is probably easy to include people walking or biking in the first mental picture; and less so in the second.

About a year ago I was facilitating a workshop for a group of advocates in southern Alabama who had a vision of a region with a continuous network of sidewalks, paths, trails, and complete streets spanning two counties, and crossing a major body of water. In the audience were two college students, who were leaders in a campus sustainability group. As part of the workshop each person was asked to think of and then describe a place where they like to walk or bike. When it came to be the students' turn, they both retreated, before confessing that they never had lived in such a place. They couldn't picture this place.

In 2002 when we published, *Increasing Physical Activity through Community Design*, we did it as a guide to engage public health practitioners and encourage them to become more involved in community design issues. The current adaptation of the IPA guidebook is still aimed at public health practitioners, however it recognizes that a more deeply rooted trans-disciplinary approach is necessary for creating the public will and support for change and sustaining it. Public health practitioners can't do it alone; planners can't do it alone; elected officials need a reason to do it; environmentalists, social workers, educators, housing developers and advocates—they all need to be part of it.

Not long after I met the college students from Alabama, I participated in a bike rodeo in Newark, NJ. On a steamy Saturday in July, 125 children, ages 3-12, showed up to learn to ride. Thanks to the generosity of many, each and every child was outfitted with a refurbished bike, a new helmet, and received instruction from a trained professional on the rules of the road—all at no cost. They negotiated the cones and the chalk lines of the parking lot obstacle course, learning how to start, stop, and handle their new bicycles. I can still picture the happy faces as the children left the courtyard with their “new” bikes and new confidence. Newark is struggling to become a bicycle friendly city. If everyone continues to work together it will happen.

This guidebook is about implementation. For over a decade, the National Center for Bicycling & Walking has been leading the fight to make our communities healthy by design. Fortunately in 2010 our efforts are bolstered by national leaders and national programs. First Lady Michelle Obama has initiated “Let's Move” a program that promotes physical activity. USDOT Secretary Ray LaHood has been making public statements about community design that supports walking and biking; and he is backing up his statements with policy directives. Also in 2010 there is a better understanding of the built environment and its impact positively and negatively on our mobility and health. We still have a lot of work to do but we are on the right road.



## INCREASING PHYSICAL ACTIVITY THROUGH COMMUNITY DESIGN

*A Guide for Public Health Practitioners  
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NATIONAL CENTER FOR BICYCLING & WALKING

# Chapter One

## INTRODUCTION

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## Physical Activity Guidelines<sup>1</sup>

- For substantial health benefits, adults should get at least 150 minutes (2 hours and 30 minutes) per week of moderate intensity, or 75 minutes (1 hour and 15 minutes) per week of vigorous intensity aerobic physical activity, or an equivalent combination of moderate and vigorous intensity aerobic activity.
- Children and adolescents should get 60 minutes (1 hour) or more of physical activity daily.
- The benefits of physical activity on cardio-respiratory health are some of the most extensively documented of all the health benefits.
- Regular physical activity reduces the risk of developing type 2 diabetes as well as metabolic syndrome.
- Physical activity and caloric intake both must be considered when trying to control body weight. Because of its role in energy balance, physical activity is a critical factor in determining whether a person can maintain a healthy body weight, lose excess body weight, or maintain successful weight loss.

In healthy communities—not just in the movies—walking and bicycling are normal parts of daily life. The Centers for Disease Control and Prevention (CDC) calls these kinds of places Active Community Environments (ACEs). It recognizes 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 are not, 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 and environmental agency officials, and citizens—can also benefit from its tips, ideas, and examples. After all, 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.



SOURCE: WWW.PEDBIKEIMAGES.ORG/DAN BURDEN

- ▲ Boulevard malfunction, Missoula, MT
- ◆ Good function, East Lansing, MI



SOURCE: WWW.PEDBIKEIMAGES.ORG/DAN BURDEN



# 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 generations, made us a nation of overweight 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 68 percent in 2007.<sup>2</sup> The prevalence of overweight children and adolescents more than tripled during the same 30-year span, with 19.6 percent of children aged 6-11, and 18.1 percent of those adolescents aged 12-19 identified as obese.<sup>3</sup>

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. The direct economic (health care) cost of obesity in the United States was estimated to be between \$80 and \$90 billion in 2008.<sup>4</sup>

About 60 percent of overweight children between the ages of 5 and 10 already demonstrate risk factors associated with heart disease such as elevated blood pressure and increased insulin levels.<sup>5</sup> 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 National Household Travel Survey, the average American adult takes only 8 percent of their total yearly trips on foot.

In 1969, 41 percent of all children either walked or biked to school. A recent study by the National Center for Safe Routes to School study found between 13 and 17 percent of public school students walk or bike to school today, while 45 percent are driven to school each day by a family member.<sup>6</sup>

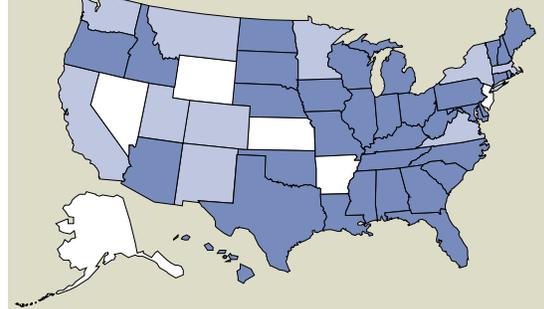
We prepare our children for a sedentary lifestyle. At school, opportunities for physical activity have diminished. Shifting priorities have caused many physical education classes and even recesses to be dropped. After school, kids are driven to events, to the mall or to a friend's house. Add in a daily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

## Obesity Trends\* Among U.S. Adults

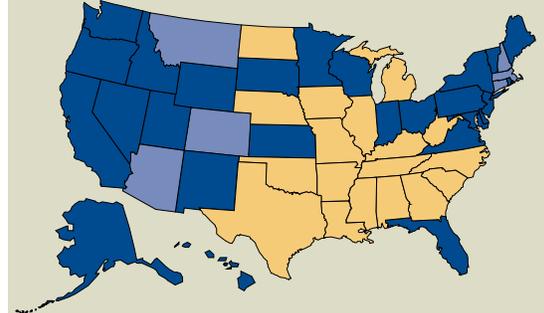
BRFSS, 1990, 1999, 2008

\*BMI  $\geq 30$ , or about 30 lbs. overweight for 5'4" person

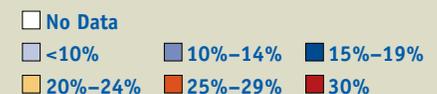
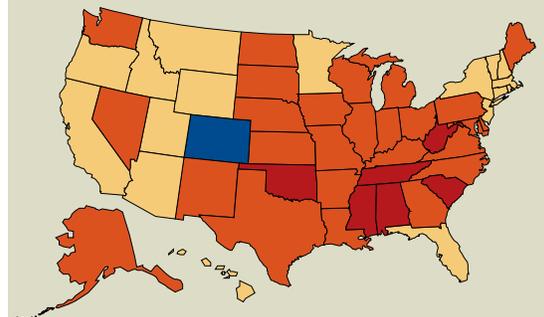
1990



1999



2008



During the last 25 years, obesity rates have increased among men and women across all socio-demographic groups in all regions. In 1985 none of the states had obesity rates of 15 percent or more. In 2008, only one state had an obesity rate of less than 20 percent. Six states had a prevalence of obesity equal or greater than 30 percent.<sup>7</sup>



## Benefits of Daily Physical Activity

According to the American Heart Association, daily physical activity:<sup>8</sup>

- 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;
- 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 opportunities 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; and
- helps delay or prevent chronic illnesses and diseases associated with aging and maintains quality of life and independence longer.

The increase in obesity follows a decline in walking and bicycling. 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 those not traveling by car.

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. Suburban shopping development is a familiar example. Within a half-mile radius you may find shopping, dining, and housing. However, many of these destinations are separated by multi-lane arterial roadways that meet at multi-lane intersections. Something is very wrong with our communities when, for safety's sake, we must get in our cars to travel that ¼ mile from the shopping center to the restaurant, because no one wants to cross six lanes of traffic.

## 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;
- protecting our environment; and
- considering needs of all residents regardless of race, ethnicity, age or ability.

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

### Transportation Facilities and Services

People will walk or bicycle in their communities when there are safe and comfortable places to do so. The ideal scenario includes a balanced transportation system that offers choices for all. Public transit, sidewalks, bicycle paths/lanes and roadways all provide people with appropriate transportation choices. A recent

survey found 71 percent of Americans report that they would like to bicycle more, while 53 percent favor increasing federal spending on bicycle lanes and paths.<sup>9</sup> To provide the necessary transportation facilities and services, a community can:

- design new roads to accommodate bicycling and walking;
- retrofit existing roads to accommodate bicycling and walking;
- maintain roads and sidewalks for easy, safe use by pedestrians and bicyclists, even during the winter months;
- make all routes accessible for people with disabilities;
- allocate transportation funds so that (a) all projects include the funding needed for bicycling and walking facilities, (b) an equitable share goes to eliminating pedestrian- and bicycle-related deficiencies in existing roads, and (c) an equitable share goes to addressing safety improvements and education for all road users;
- develop new neighborhoods in which the streets are laid out using a traditional “grid” pattern to provide more route choices, to reduce trip lengths and to slow motor vehicles; and
- develop a coordinated system of transit, pedestrian and bicycling services and facilities.

### Land-Use Planning and Development

Active community 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. In such communities, most people walk or bike to get from one locale to another or specifically for recreation and health. And public health impacts and objectives are a regular, routine and guiding consideration in land-use planning decisions. Communities can integrate public health considerations into their land-planning and development initiatives in many ways:

- Integrate “smart growth” principles in development plans and 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; and
  - ◆ consider positive public health impacts a priority in land-use planning and development decision-making. Conduct a health impact assessment.<sup>10</sup>
- Make traditional neighborhood development (TND) the standard for residential areas.
- Locate commercial and retail development in downtowns, on main streets, and in new town and neighborhood centers.
- Reduce trip distances.
- Make walking, bicycling and transit the preferred transportation choices for the majority of trips.

**“Across our country, childhood obesity has reached epidemic rates and, as a result, our children may live shorter lives than their parents. Obesity has been recognized as a problem for decades, but efforts to address this crisis to date have been insufficient. My Administration is committed to redoubling our efforts to solve the problem of childhood obesity within a generation through a comprehensive approach that builds on effective strategies, engages families and communities, and mobilizes both public and private sector resources....”**

*President Barack Obama, Presidential Memorandum—Establishing a Task Force on Childhood Obesity, 2010*



**“Americans will be more likely to change their behavior if they have a meaningful reward—something more than just reaching a certain weight or dress size. The real reward is invigorating, energizing, joyous health. It is a level of health that allows people to embrace each day and live their lives to the fullest without disease or disability.”**

*Vice Admiral Regina M. Benjamin, M.D.,  
M.B.A., Surgeon General, 2010*

### Schools

Most schools should be of moderate size and located in the neighborhoods they serve. The majority of children should walk or bike to school. School sites should serve a wide range of community services and needs, including recreation and gathering places. When developing schools sites, a community should:

- locate schools within walking distance of the student population;
- provide safe routes to school for students to walk and bike;
- develop school sites that are pedestrian- and bicycle oriented;
- initiate strict controls over the operation of motor vehicles on and near school sites, at bus stops and along school routes;
- encourage children to bike and walk to school;
- design and operate schools as multi-purpose community centers including recreational needs; and
- locate schools away from highways, arterials, and major commercial and industrial developments.

### Recreation, Parks and Trails

Basic park and recreation facilities should be available in every neighborhood, so that most users walk or bike to them. Other recreation facilities should be easily accessible by transit. Most organized sports activities should take place at parks or school sites located in or near the neighborhoods where the children live. Trail-type facilities should be within walking distance of most residential areas. When planning for new parks and making changes to existing facilities, a community should:

- develop neighborhood park and recreation facilities in new subdivisions and in currently underserved residential areas;
- locate neighborhood park and recreation facilities so they are easily and safely reached by most people, especially children;
- utilize smaller sites for youth sport activities, instead of large-scale regional facilities to which people must drive;
- utilize public facilities, such as schools, as multi-purpose facilities, especially for recreation services; and
- develop a system of trails that is readily accessible to most people.

### Safety, Security and Crime Prevention

A safe and secure community is one in which people of all ages are present and active and where motor vehicle traffic does not pose a serious threat, especially to children near schools and parks. Motor vehicle operation should be strictly regulated, and traffic laws obeyed by all users.

When this occurs, 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. A community must coordinate keeping its residents safe and secure while providing accessible



routes for all modes of travel. To promote safety and security a community should consider the following:

- Ensure all drivers are careful and responsible.
- Restrict motor vehicle speeds in neighborhoods, near schools and in shopping areas.
- Design neighborhoods to reduce the threat of crime.
- Institute pro-active community policing programs.
- Encourage and support the formation of neighborhood associations and tenants groups (neighbors that know each other are more likely to take an active role in crime prevention and resource networking).
- Engage business leaders, civic groups and youth mentors and organizations (i.e. YMCAs, Boys & Girls Clubs, PALs) in community safety and design issues; and to increase positive outdoor activity including community events.

### Protecting our Environment

Protecting our environmental resources and taking care of our communities is at the forefront of concern for all neighborhoods. Air pollution is not only a threat to everyone's overall health, but causes a great number of people to suffer physical ailments. Utilizing any mode of transportation other than driving alone in an automobile can help improve environmental conditions in a community. Cold start emissions occur upon starting and driving a vehicle within the first few minutes. Higher emissions are released because the automobile has not reached its optimum operating temperature.<sup>11</sup> Short trips add to our cold start emissions and can be reduced by emphasizing alternative modes.



SOURCE: WWW.FEDBETIMAGES.ORG/LAURA SANOT

### Crime Prevention Through Environmental Design (CPTED):

Crime prevention philosophy based on the theory that proper design and effective use of the built environment can lead to a reduction in the fear and incidence of crime, as well as an improvement in the quality of life.

### Carbon Footprint Calculator:

Estimates how many tons of carbon dioxide and other greenhouse gases each person creates each year.

Go to: [www.nature.org/initiatives/climatechange/calculator](http://www.nature.org/initiatives/climatechange/calculator)



**“As I traveled around the country, I became convinced that everyone was asking the wrong questions, focusing on the wrong consequences and talking about the entire problem sideways instead of head on. Issues like body weight and heart rate certainly count for something, but the incredible decline in physical activity in the United States has ripped apart our civic life, further demoralized struggling low-income populations, undermined our collective morality and has created a devastated rift between human society and nature.”**

*Mary Collins, American Idle—A Journey Through our Sedentary Culture. Capital Books Inc., 2009, page 155*

Communities collectively working together with local governments, public health agencies, businesses, schools, community groups, and residents can make great strides against pollution and provide a cleaner and healthier place for all to live. Some strategies to protect our environment include:

- emphasize the benefits of bicycling and walking to our existing environment;
- develop and implement “clean commuting” campaigns;
- collaborate with local businesses, schools and community groups to promote green alternatives;
- designate No Idle zones around schools;
- provide free public transportation on pollution alert days; and
- publicly recognize individuals and organizations that are good environmental stewards.

### Considering the Needs of All Residents (Social/Environmental Justice)

A single community can consist of residents from many different social, ethnic and age groups. It is important to consider all populations when providing facilities in a community. Many people are unable to or choose not to drive, and walking is their primary method for travel. Older residents may no longer be able to drive, while residents with disabilities may not be able to drive. Additionally, recent economic conditions have impacted many households. They may no longer be able to afford to keep or use a family automobile. Communities can ensure transportation choices are available to all of their residents in a number of ways:

- Develop a coordinated system of transit, pedestrian and bicycling services and facilities to serve all neighborhoods.
- Develop equitable transportation plans and policies that include access not only to schools and work, but also to health facilities, grocery stores and shopping and services.
- Provide all community members opportunities to be involved in public decision-making processes.
- Encourage and support mixed-use and mixed-income development to locate residential and community services nearby.



SOURCE: WWW.PEDBIKETHINGS.ORG/DAN BURDEN



## Treating the Patient

Creating local environments that encourage physical activity for all age groups—promoting active living through community design—is one way to build healthy communities. In most cases, people don't need lavish new facilities to achieve higher levels of physical activity. Communities across the country are finding that they can make 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 also help. In 2001, San Francisco, CA, re-striped parts of Polk Street, providing marked bicycle lanes where they had not existed prior. There were also some adjustments made to existing automobile travel lanes, reducing some areas from three travel lanes to two. After the addition of marked bicycle lanes, the city recorded an increase in bicycle users along the corridor.<sup>12</sup>

Changing existing communities is a complex process involving many agencies, organizations, institutions and the public. A community's infrastructure—streets, parks, schools and residential areas—takes years to develop. It may take decades 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, TN:

**“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*.  
Fundors' Network for Smart Growth and Livable Communities,  
Translation Paper Number Four, November 2000.



SOURCE: WWW.FEBBIKEMAGES.ORG/DAN BURDEN

**Regular physical activity in children and adolescents** promotes health and fitness. Compared to those who are inactive, physically active youth have higher levels of cardio respiratory fitness and stronger muscles. They also typically have lower body fatness. Their bones are stronger, and they may have reduced symptoms of anxiety and depression. Youth who are regularly active also have a better chance of a healthy adulthood.<sup>13</sup>



SOURCE: WWW.FEBBIKESIMAGES.ORG/DAN BURDEN

## Endnotes

- 1 *Physical Activity Guidelines for Americans*. Washington: U.S. Department of Health & Human Services, 2008.
- 2 *Prevalence of Overweight, Obesity and Extreme Obesity among Adults: United States, Trends 1960-62 through 2005-2006*. Hyattsville, MD: National Center for Health Statistics, December 2008, [www.cdc.gov/nchs/data/hestat/overweight/overweight\\_adult.htm](http://www.cdc.gov/nchs/data/hestat/overweight/overweight_adult.htm) (accessed May 2010).
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The **National Center for Bicycling & Walking** is a national nonprofit organization with offices in Washington, DC, and New Jersey. NCBW developed the award winning Walkable Community Workshop program, which brings together planners, engineers, public health professionals, citizen advocates, youth and others to develop community transportation systems that work for all users. We have facilitated hundreds of community workshops and walking audits, and we count numerous state departments of transportation, metropolitan planning organizations, and local governments as our clients.

The **Active Living Resource Center** is a program of the National Center for Bicycling & Walking. The ALRC is dedicated to reducing health disparities by helping communities remove barriers to everyday physical activity—like walking and bicycling. We have a specific interest in reducing childhood obesity by increasing opportunities for children to regularly and safely walk and bicycle to school and other destinations.

The Active Living Resource Center was initiated with funding support from the Robert Wood Johnson Foundation.

For more information on NCBW and/or ALRC visit us at [www.bikewalk.org](http://www.bikewalk.org).

For copies of this report, please visit [www.bikewalk.org](http://www.bikewalk.org).

THE NATIONAL CENTER FOR BICYCLING & WALKING



BUILDING STRONGER COMMUNITIES



Active Living  
RESOURCE CENTER