“Regular walking and cycling are the only realistic way that the population as a whole can get the daily half hour of moderate exercise which is the minimum level needed to keep reasonably fit.”

“The American Heart Association has listed physical inactivity as the fourth major risk factor associated with chronic disease.”

Creating places for people to walk means more than just 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. It involves land use design, retrofitting the transportation infrastructure, funding, and much more.
Health, Physical Activity & Community Design

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 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.

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.\(^1\)

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.

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.

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 non-motorists.

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.

Barriers to Making Communities More Walkable

If more walkable communities are such a good thing, what’s keeping us from having more of them? Perhaps the best explanation is that pedestrians and walking have been left out of the processes of land-use planning and of the planning, design, and operation of streets and highways.

Lower Density Development
Compact, mixed-use development (e.g., locating employment and shopping closer to residential areas) allows nonmotorized transportation – walking and bicycling – and transit to work more effectively. This type of higher-density development serves to both accommodate and encourage use of these modes as alternatives to the automobile. Although this will not solve the congestion problem, it is a start, and reduces public infrastructure requirements and costs. Not only does low-density development create barriers to walking, it is bad for local economies as well. The good news is that there is growing support for better design of new communities and there are ways to go back and fix the problems in existing neighborhoods.

Transportation Facility Barriers
Some aspects of how we have developed our transportation facilities act as major deterrents to walking and create obstacles to travel for pedestrians and disabled people. These include:

- Lack of sidewalks
- Narrow walkway widths
- Missing curb cuts
- Poorly constructed and/or maintained walking surfaces
- Difficult street crossings (e.g., too wide, too fast)
- Inadequate bridge design (e.g., no place to walk)
- Physical features (e.g., rivers, railroad tracks, major arterial streets lacking pedestrian crossings)
- Inadequate facilities for access to transit services
- High-speed, high volume traffic adjacent to schools, parks, shopping, and residential areas
- Inadequate sidewalk maintenance (including snow/ice removal and repair)

Source: Campaign to Make America Walkable/NCBW (Washington, DC, 1998).

The preferred sidewalk width in a downtown or other activity area is 12 feet, at least 6 feet of which should be clear of obstructions. This width allows two pedestrians to walk side by side, or to pass each other comfortably. It generally provides enough width for window shopping, some street furniture (benches, lamps, etc.) and places for people to stop. More width is desirable to accommodate bus shelters, sidewalk cafes, and other outdoor retail. In a pinch, 8 feet is acceptable. Outside of the downtown area, sidewalks should be at least 5 feet wide.
Safety

Pedestrian safety is a major traffic safety problem, and one that has typically been overlooked or ignored. This problem is evident in many communities where neighborhood streets are becoming speedways due to so-called “design improvements” which make them wider, or when they are invaded by commuters rushing to work, delivery drivers, or unsafe drivers just looking for a shortcut. Add to this a nearly complete lack of effective speed enforcement, and it comes as no surprise that neighborhoods are being overrun by cars and that fewer people are walking today.

Part of the problem is that pedestrian safety has usually been a secondary traffic engineering issue. The overriding goal of traffic engineering has been to improve roadway “level of service” which often means designing roads with wide lanes and shoulders, large turn radii at intersections, passing and turning lanes, and other features that enable more motor vehicles to travel at higher speeds. Few efforts have focused on ensuring that streets are safe for both pedestrians and motor vehicles and fewer still have sought to modify driving behavior to better protect and accommodate pedestrian travel.

Increased speeds put pedestrians at higher risk. A ten-mile-per-hour increase in speed, from 20 mph to 30 mph, increases the risk of death for a pedestrian in a collision ninefold. If a car going 20 miles per hour hits a pedestrian, there is a 95 percent chance that the person will survive. However, if the same car is traveling 30 mph, the pedestrian’s chances of survival are reduced to 45 percent.

Creating walkable communities is a challenge: much of what we’ve done over the past 50 years—in terms of how we’ve developed our communities and our transportation facilities—has made it harder to walk and to get to places we might want to go. Still, many people do walk, and there are signs that they’d like to do more of it.

We need to give people more choices on how to travel when it comes time to make a trip to the store, to go to school, to go to the park or library, or to visit a friend. We need to make neighborhoods places where parents feel comfortable with their children running around, playing with friends. We need to make our communities places where the elderly and the disabled are free to move around in relative comfort and safety. We need to make the places where we live and the places where we work environments that encourage us to be active—just for the health of it!

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### Average Trip Characteristics by Purpose

<table>
<thead>
<tr>
<th>Purpose of Trip</th>
<th>Distance (in miles)</th>
<th>Duration (in minutes)</th>
</tr>
</thead>
<tbody>
<tr>
<td>To or from work</td>
<td>0.74</td>
<td>10.86</td>
</tr>
<tr>
<td>Work-related business</td>
<td>0.5</td>
<td>9.11</td>
</tr>
<tr>
<td>Shopping</td>
<td>0.44</td>
<td>9.42</td>
</tr>
<tr>
<td>Other family or personal business</td>
<td>0.45</td>
<td>9.06</td>
</tr>
<tr>
<td>School or church</td>
<td>0.55</td>
<td>10.89</td>
</tr>
<tr>
<td>Doctor or dentist</td>
<td>0.81</td>
<td>14.80</td>
</tr>
<tr>
<td>Vacation</td>
<td>1.41</td>
<td>18.96</td>
</tr>
<tr>
<td>Visit friends or relatives</td>
<td>0.47</td>
<td>9.07</td>
</tr>
<tr>
<td>Other social or recreational</td>
<td>0.64</td>
<td>12.74</td>
</tr>
<tr>
<td>Other</td>
<td>0.79</td>
<td>12.37</td>
</tr>
</tbody>
</table>

The 1995 Nationwide Personal Transportation Survey established that at least 5.4 percent of all trips are made by walking. The study also revealed that the average pedestrian trip length was 0.53 miles.

Source: U.S. Department of Transportation, 1995 Nationwide Personal Transportation Survey (Washington, DC, 1997)
Principles of Pedestrian Design

Walking is the number-one method of human transport in the world. Virtually everyone does it and it makes up some part of nearly every trip. While this may seem obvious, it has none the less been routinely overlooked in the planning and development of our communities and in the design of our transportation facilities.

Children and elderly are most likely to depend on walking for many trip purposes. In many cases if adequate provisions for walking are not available, these individuals will become transportation-dependent; that is, they will be forced to rely on someone else to accommodate their travel needs.

Distance

Distance is the key factor limiting utilitarian walking trips. Although distance is a subjective factor in mode choice, walking trips are predominantly short. When asked what they considered the maximum distance suitable for walking on errands, 40 percent of Seattle residents reported one mile or less and 70 percent reported two miles or less. Residents of Ontario, Canada, were asked how many minutes they would be willing to walk on errands and to work. The average for both trips was just over 20 minutes, which translates to about 1.25 miles.

Pedestrians prefer to limit walking distances and will often take unusual short cuts to save a few steps or a few seconds of time. Acceptable walking distances are dependent on trip purpose, total travel time related to this purpose, physical condition of the pedestrian, walking environment, perceived safety and security of the walking route, and in some instances, economic factors.

Walking Speed

Walking rates are generally 2.5 to 6.0 feet per second with an average of 4.0 feet per second, according to the Manual on Uniform Traffic Control Devices (MUTCD). However, many studies acknowledge that the speed is significantly slower for older pedestrians and propose that a walking rate of 3.0 feet per second should be considered. A new report issued by the Institute of Transportation Engineers (ITE) states “the fifteenth percentile walking speed should be used for setting the design walk speed where there is a high proportion of elderly pedestrians. In the absence of a specific study this would be between 3 and 4 feet per second, depending on the presence of slower pedestrians.”

Reasons for not walking

The main reasons Americans give for not walking are distance and time: 61% say “things are too far to get to,” and 57% “do not have enough time.” Both these factors are directly related to community design.

Source: Americans’ Attitudes Toward Walking and Creating Better Walking Communities, April 2003, survey conducted for the Surface Transportation Policy Project.
Elements of Good Pedestrian Planning

There is a wide range of planning and design activities that takes place as part of the development of our communities. Local comprehensive plans, area plans, open space plans, transportation plans, site plans, zoning ordinances, and subdivision covenants impact the character, density and nature of our development. Together, they have a major effect in determining how walkable our neighborhoods and communities will be.

Rethinking The Role of Transportation

One of the keys to creating walkable communities is to rethink our approach to development and planning. One approach is to develop communities that are oriented to a more balanced transportation system supporting automobiles, bicycles, transit, and walking. Such a “multimodal” community would have all or most of the following kinds of features. A neighborhood center (providing retail and office uses) is located within 5 minutes walking distance, roughly a one-quarter mile radius for the majority of residents in the neighborhood.

• The streets are laid out in well-connected patterns, at a pedestrian scale, so that there are alternative automobile and pedestrian routes to every destination.

• The streets are treated as complex public spaces, containing traffic and parking, and they are an integral part of the “public realm,” including trees, sidewalks, and the buildings that front on them.

• The streets are relatively narrow, in order to discourage high-speed automobile traffic. Streetscapes should be well-defined by buildings and trees along them.

• On-street parking is permitted and provides an adequate supply of spaces. The cars act as additional buffers between pedestrians on the sidewalks and moving vehicles on the adjacent street. They also serve to slow down the passing traffic, helping to balance the overall use of the street.

• The buildings are generally limited in size, and building uses are often interspersed; that is, small houses, large houses, outbuildings, small apartment buildings, corner stores, restaurants, and offices are compatible in size and placed in close proximity.
A Checklist for Creating Pedestrian-Friendly Communities

In this guide we’ve explored a vision of what a community might look like when designed to accommodate all the various modes of transportation. The following checklist details the key characteristics of pedestrian-friendly communities and what makes them walkable:

✔ Continuous Systems/Connectivity. Provide a complete system of interconnected streets, pedestrian walkways, and other pedestrian facilities to increase pedestrian travel.

✔ Shortened Trips and Convenient Access. Provide connections between popular origins and destinations, between dead-end streets or cul-de-sacs, or as shortcuts through open spaces.

✔ Linkages to a Variety of Land Uses/Regional Connectivity. Provide pedestrian circulation and access to shopping malls, transit, down town, schools, parks, offices, mixed-use developments, and other communities within the region.

✔ Coordination Between Jurisdictions. Put pedestrian facilities in place to meet current and future needs by ensuring close coordination between jurisdictions and other modes of transportation.

✔ Continuous Separation from Traffic. In pedestrian-oriented areas, minimize or eliminate street and driveway crossings. Provide buffers from motor vehicles.

✔ Pedestrian-Supportive Land-Use Patterns. Use a grid street layout with short blocks in business districts and downtowns to enhance pedestrian mobility.

✔ Well-Functioning Facilities. Ensure adequate width and sight distance, accessible grades, and alignment to avoid blind corners for all pedestrian facilities. Make sure common problems, such as poor drainage, are avoided.

✔ Designated Space. Delineate, sign, and mark pedestrian facilities, as appropriate.

✔ Security and Visibility. Design walkways to ensure a secure environment for pedestrians. Lighting, increased visibility, open sight-lines, and access to police and emergency vehicles are important considerations.

✔ Automobiles are Not the Only Consideration. Design streets to accommodate all modes of transportation.

✔ Neighborhood Traffic Calming. Design narrow streets lined with trees, install roundabouts (small traffic circles) and curb bulbs; make use of other techniques to lower vehicle speeds and create safer, more pleasant conditions for pedestrians.

✔ Accessible and Appropriately Located Transit. Situate transit facilities adjacent to work, residential areas, shopping, and recreational facilities to encourage pedestrian trips.

✔ Lively Public Places. Provide secure, attractive, and active spaces as focal points for the community, where people can gather and interact (e.g., pedestrian pocket parks and plazas).

✔ Pedestrian Furnishings. Provide furnishings, such as benches, rest rooms, drinking fountains, artwork, architectural fountains (especially for play!), and other similar elements to create more attractive and functional environments for pedestrians.

✔ Street Trees and Landscaping. Provide street trees to bring a human scale to the street environment.

✔ Proper Maintenance. Provide frequent cleanup and repair on a regular basis to ensure continued use of areas by pedestrians.
**Resources & Contacts**

A wealth of resources are available on the Internet for those who want to know more about pedestrian facility design and planning and how to make their communities more walkable. For additional resources, start at:

- **National Center For Bicycling & Walking**
  [http://www.bikewalk.org](http://www.bikewalk.org)

- **Pedestrian & Bicycle Information Center**
  [http://www.walkinginfo.org](http://www.walkinginfo.org)

- **America Walks (Coalition of advocacy groups)**
  [http://www.americawalks.org](http://www.americawalks.org)

**Creating Walkable Communities: A Guide for Local Governments.** Prepared for the Mid-America Regional Council (MARC) by the Bicycle Federation of America/NCBW. 1998. Some of the materials in this guide are drawn from the MARC report. You can view the entire 100-page document, which contains a good deal more material and detail, on the NCBW web site at [http://www.bikewalk.org](http://www.bikewalk.org). The guide is accessed through the Pedestrian navigation link.

**Increasing Physical Activity Through Community Design: A Guide For Public Health Practitioners.** National Center For Bicycling & Walking (NCBW). May 2002. This popular booklet is also used as a source for some of the materials in this guide. You can access the full 48-page guide at the NCBW web site: [http://www.bikewalk.org/PubHealth.htm](http://www.bikewalk.org/PubHealth.htm). You can also request one or printed copies of the booklet at that same link.

**Good Pedestrian Plans and Design Guidelines** (from the PBIC: [www.walkinginfo.org](http://www.walkinginfo.org))

- **Portland Pedestrian Master Plan.** One of the first comprehensive pedestrian plans for a city; complemented by a detailed design manual for pedestrian facilities:
  [http://www.trans.ci.portland.or.us/Plans/PedestrianMasterPlan/default.htm](http://www.trans.ci.portland.or.us/Plans/PedestrianMasterPlan/default.htm)

- **Cambridge Pedestrian Plan.** Beautifully produced and thorough plan incorporating specific suggestions for sites throughout the city, design guidelines, links to other modes, and more. [http://www.ci.cambridge.ma.us/~CDD/envirotrans/walking/pedplan](http://www.ci.cambridge.ma.us/~CDD/envirotrans/walking/pedplan)


**Additional Resources**

- **Walk to School Day**

- **Safe Routes to School**
  [http://www.saferoutestoschools.org](http://www.saferoutestoschools.org)

**The Inactivity Epidemic.** A 15-20 minute PowerPoint presentation you can use locally with service clubs, city councils and other community groups to highlight the need to design communities for active living. Available as a CD-ROM or as a download from the NCBW. [http://www.bikewalk.org/PubHealth.htm](http://www.bikewalk.org/PubHealth.htm)

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Americans support policies to make walking safer and easier but are rarely given the choice.

Source: *Americans’ Attitudes Toward Walking and Creating Better Walking Communities*, April 2003, survey conducted for the [Surface Transportation Policy Project](http://www.surfacetran.org).

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**86% favor better enforcement of traffic laws such as speeding.** 57% 29%

**84% favor trans budget shift to safe sidewalks & crossings, even if it means driving slowly.** 48% 36%

**74% favor using state transportation budget for safe school access, even if it means less money for highways.** 41% 33%

**68% favor spending for safe walking, even if it means less money to build roads.** 31% 37%

**59% favor using more state transportation budget for transit, even if it means less money for highways.** 29% 30%

**47% favor designing communities so places are walking distance, even if it means building homes closer together.** 19% 28%