Making Streets Welcoming for Walking

For decades, communities across the United States have been designed for cars, rather than for people walking and bicycling. But this approach to community design has had major negative effects on Americans' health and safety. People on foot are much more likely to be injured or killed on roads with no sidewalks or crosswalks.[1,2] Meanwhile, car-centric roads also discourage people from making walking and biking part of their daily routine, depriving them of the health benefits, such as lower rates of obesity and diabetes, that come from regular walking and bicycling.

When the street environment supports walking – through sidewalks, crosswalks, street trees, easily accessible building entrances, convenient destinations, and the like – the number of people who walk and bike increases significantly.[3] The evidence is clear: regularly walking or biking leads to lower rates of obesity, hypertension, and other health problems.[4]

So, how can communities make their streets welcoming to walking and bicycling? By revising zoning and subdivision codes and adopting ordinances and regulations that support bicycles and walking. These changes make it easier for people to choose healthy ways to get around.

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What Makes an Area Walkable?

If you set an assortment of people down on any street corner in the country, they could quickly tell you whether the location felt safe and inviting for walking. Most people can easily and intuitively sense whether the features of a neighborhood are welcoming to people walking, or whether they create an unsafe, uncomfortable feeling.

But it can be hard to describe what creates those perceptions. The first step for communities and advocates who want to transform a neighborhood or ensure that city codes promote pedestrian-friendly streets is to pinpoint the elements that make a community walkable.

Principles of Walkable Streets

What do pedestrians need to feel comfortable as they walk around an area? Walkable environments meet three crucial needs:

1. **Safety** – People walking need to be protected from vehicle collisions and crime.
2. **Convenience** – People on foot need to be able to get where they are going directly, without going out of their way.
3. **Comfort** – People walking need the street to provide for their physical needs and mental ease.

1. Safety

The street needs to provide conditions that protect people on foot from crime and vehicle collisions, while creating a feeling of safety.

Safety considerations factor heavily into people's decisions about what type of transportation to use.[5,6] People are less likely to walk when they feel unsafe due to dangerous traffic conditions or the risk of crime.[7] What creates an unwelcoming and unsafe atmosphere for walking? Dimly lit streets, secluded public spaces, poorly maintained or narrow sidewalks, and unmarked street crossings all create an unwelcoming and potentially dangerous atmosphere for people walking.[8]

Good street design protects people walking from the potential for physical harm. This means streets must have basic pedestrian infrastructure – the bare minimum of sidewalks and safe street crossings – as well as various other features that decrease the risk of injury from criminal activity and cars. For example, walking is safer and feels more secure when public spaces are well lit and easily visible from homes, other buildings, and the street.[9]

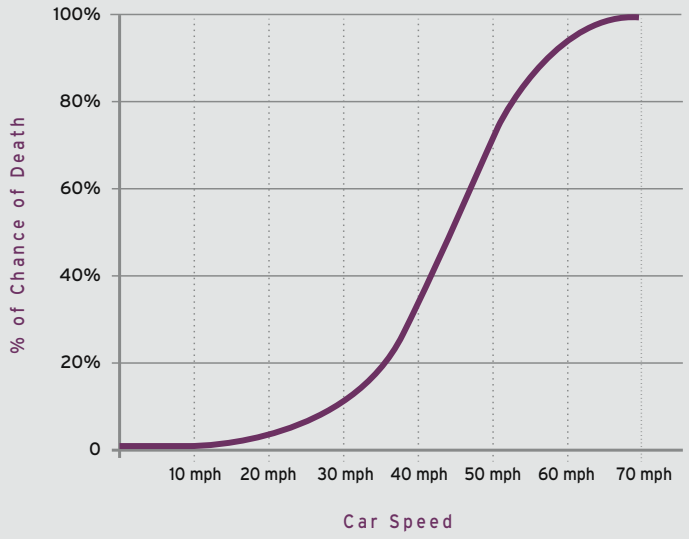
Basic infrastructure: sidewalks and safe street crossings

Research and common sense tell us that the most important part of making a street safe for pedestrians is providing sidewalks and safe street crossings.[10] Why? Because people on foot are generally at their most vulnerable when they share space with automobiles.[11] And yet, up to 40 percent of roads in the United States do not have sidewalks.[12] Pedestrian collisions are more than twice as likely to occur in places without sidewalks; streets with sidewalks on both sides have the fewest pedestrian injuries.[13] In addition, 45 percent of pedestrian fatalities occur where no crosswalk is available.[14] Where there are more sidewalks, people walk more, are more likely to get the recommended daily amount of physical activity, and are less likely to be obese.[15]

What else supports safe street design?

- *Buffers between pedestrians and vehicle traffic* – Trees and other landscaping, bicycle lanes, and cars parked along the street all provide a cushion between people walking and vehicle traffic that increases pedestrians' actual safety as well as their feeling of comfort.
- *Traffic calming* – When cars move faster, it increases the number of collisions and the severity of injuries for motorists and especially pedestrians. When a car traveling 30 miles per hour hits a pedestrian, the pedestrian will be killed only 7 percent of the time; if the car is traveling 40 miles per hour, the pedestrian will be killed 31 percent of the time. The rates of injury and death are even higher for children and older adults.[16]

A Pedestrian's Chance of Death If Hit by a Car



Source: Richards, D.C., 2010. "Relationship between Speed and Risk of Fatal Injury: Pedestrians and Car Occupants." *Transportation Research Laboratory.* Road Safety Web Publication No. 16. Department for Transport: London, UK. http://assets.dft.gov.uk/publications/pgr-roadsafety-research-rsrr-theme5-researchreport16-pdf/rswp116.pdf

Reducing speed is crucial for pedestrian safety. Slower cars also increase the social and recreational functions of a street, making the area more livable.[17,18]

Communities have many options to reduce traffic speed, increase pedestrian visibility, and decrease the number of collisions involving pedestrians. Measures include roundabouts, medians, speed humps, in-street signs alerting drivers to the presence of pedestrians, and bulb-outs that extend the sidewalk into the road, shortening the distance people must walk to cross the street.

- *Eyes on the street* – People on the street are safer from crime when they are not secluded. Streets and buildings can be designed to provide "eyes on the street" so that residents, passersby, business owners, and workers can all casually keep an eye on what is happening on the street. The fact that someone might be watching from an overlooking window decreases the likelihood of crime, even if no one happens to be looking out at a given moment. People on foot feel safer and are safer when they can be seen from balconies, through ground floor windows, or by people sitting on benches or drinking coffee in a sidewalk café.[19]
- *Good lighting* – At night, crime and traffic collisions are less likely to take place where lighting is designed for pedestrians and is closely spaced, avoiding pools of darkness between lights.

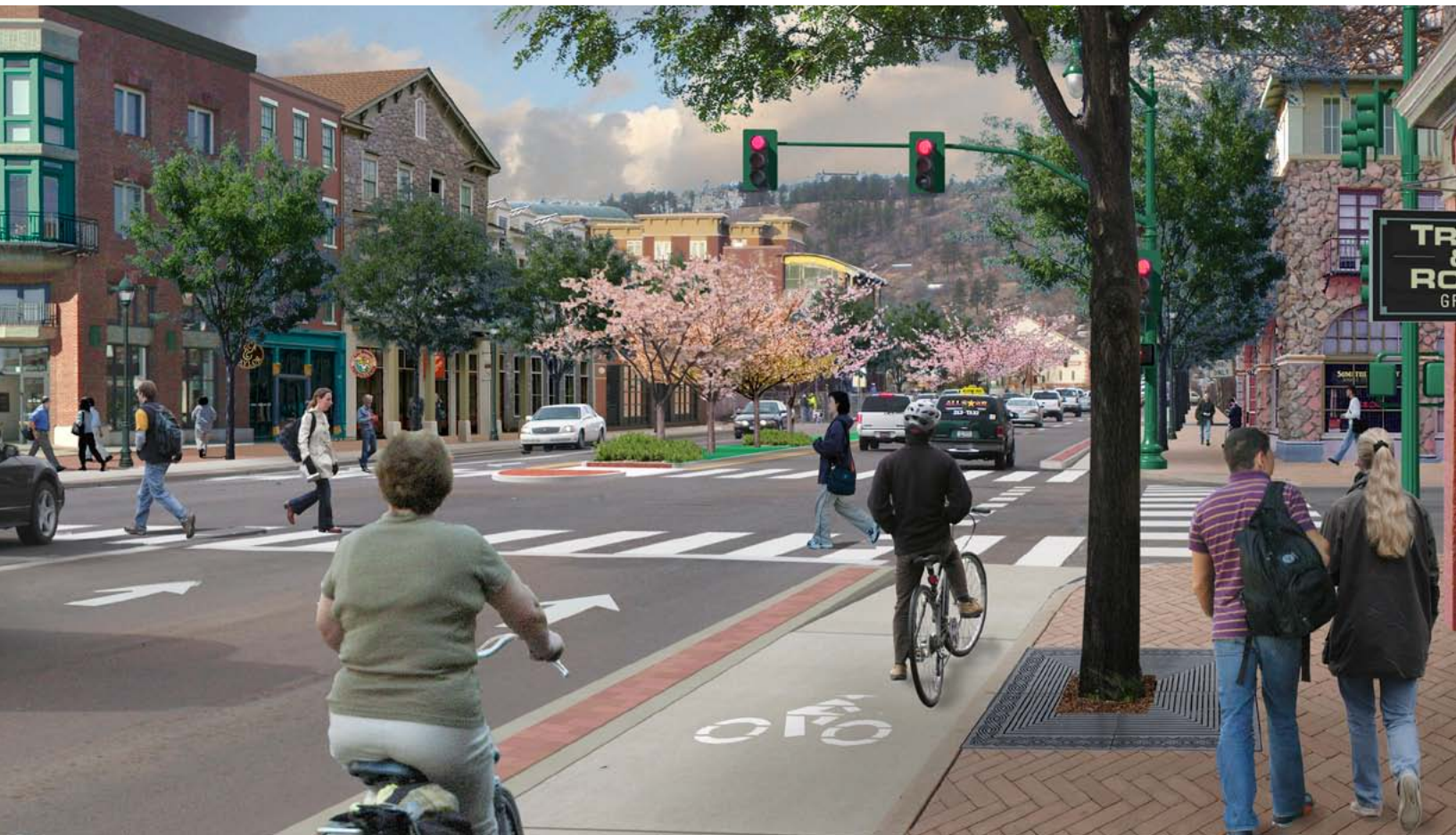
2. Convenience

People walking need to be able to get where they are going directly, without going out of their way.

For someone in a car, being required to travel an extra half-mile to a destination – swooping down a long, curved road and around into a cul-de-sac, for example – is a matter of an extra minute's drive. But for a pedestrian, those ten additional minutes of walking can mean the difference between being willing to make the trip or not, the difference between a quick stroll and an uncomfortable, exhausting slog. Because people walking go more slowly than cars and must engage in physical work in order to move, direct access is much more important for travel on foot than by car.

As a result, people who are walking value:

- *Direct access to buildings* – Accessible storefronts face the street, ensuring that pedestrians don't have to trek through huge parking lots or wander in perplexity seeking an entrance.
- *Street connectivity* – When there are short blocks, many intersections, and frequent street crossings, pedestrians can get to their destinations by the most efficient and direct route. Grid street patterns offer alternative routes, which add interest to frequently traveled paths.[20]
- *Destinations and density* – If there isn't anywhere to go or destinations are far from one another, would-be pedestrians will be discouraged from setting out. When many potential destinations are located closely together, it is easy for people to walk where they want to go quickly.[21]



3. Comfort

People on foot need the street environment to provide for their physical and mental well being.

Cars provide a bubble of comfort that surrounds drivers and their passengers wherever they go, giving them a feeling of enclosure, protection, and privacy. Because the car is doing the work, the people inside rest as they travel. They can easily bring along a snack or bottle of water in case they get hungry or thirsty. If they are taking a heavy load somewhere, the car carries it along effortlessly. If they are hot or cold, or it is raining or snowing, the car protects them from the elements and adapts to their needs.

In contrast, when a pedestrian sets out on a trip, his or her comfort depends on the environment. If it is a hot day, people walking will be uncomfortable unless their route is shaded, with places to sit and rest, and water to drink. When people on foot get hungry or thirsty, they must either carry an extra load or find food and drink along the way. If signs are misleading, pedestrians may become tired and frustrated during the seemingly endless search for their destination. When buildings loom overhead, sidewalks are unkempt, and graffiti covers walls or fences, people walking may feel insignificant and threatened, in contrast to people in cars who can relax in the familiarity of their vehicle.

This means that people walking rely heavily on features such as:

- Short blocks
- Shade trees
- Convenient seating and benches
- Clear, abundant signage
- Buildings, lighting, and signs designed at a human scale
- Water fountains
- Ready access to public transportation

Transforming Car-Centric Streets into a Pedestrian Friendly Community

Communities can create streets that are safe and inviting for people on foot. But to do so, most existing communities need to fix car-oriented environments. Walkable neighborhoods require the involvement of many different local agencies, from planning to public works to transportation. Fostering this kind of collaboration can be a challenge, but can ultimately lead to relationships and processes that support healthier communities.

Through a combination of approaches, communities can achieve short-term improvements and significant changes in the long-term.

Strategies include:

- *Safe Routes to School* and other infrastructure grants – Create change on the ground by retrofitting infrastructure through Safe Routes to School programs and other grants.
- *Zoning & subdivision codes* – Amend zoning and subdivision regulations to change practices around constructing roads, buildings, and other development.
- *Complete streets policies* – Adopt complete streets policies that require that all renovated and new streets meet the needs of people walking, bicycling, and others of all ages and abilities.
- *Comprehensive plans* – Update comprehensive plans to address health directly, setting out a vision for active community design.
- *Pedestrian plans* – Create pedestrian, bicycle, or multimodal plans that spell out how to make a street network that encourages and supports people walking and biking.
- *Regional transportation planning* – Get involved in regional transportation planning to ensure that local projects that support active transportation get funded and built.

Whether a community makes one change at a time, or develops a plan with a comprehensive strategy for renovating local streets, each change accomplished makes it easier for people to be physically active while going about their daily routines.

More ChangeLab Solutions Resources for Walkable Communities

Safe Routes to School
changelabsolutions.org/childhood-obesity/safe-routes-schools

Pedestrian Friendly Code Directory
changelabsolutions.org/childhood-obesity/pedestrian-friendly-code

Move This Way: Making Neighborhoods More Walkable and Bikeable
www.changelabsolutions.org/publications/move-this-way

Getting the Wheels Rolling: A Guide to Using Policy to Create Bicycle Friendly Communities
www.changelabsolutions.org/bike-policies

[1] *See* Jackson K. *Crabgrass Frontier: The Suburbanization of the United States*. New York and Oxford: Oxford University Press, 1985.

[2] Safe Routes to School. "Sidewalks," *www.saferoutesinfo.org/guide/engineering/sidewalks.cfm* (a site with a paved sidewalk is 88.2 percent less likely to be a crash site than a site without a sidewalk, after accounting for traffic volume and speed limits (citing McMahon P, Zegeer C, Duncan C, et al. "An Analysis of Factors Contributing to 'Walking Along Roadway' Crashes: Research Study and Guidelines for Sidewalks and Walkways." University of North Carolina Highway Safety Research Center, Chapel Hill, NC: 2002, available at: *www.walkinginfo.org/pdf/r&d/SidewalkReport.pdf.*)).

[3] Frank K, Andresen M, and Schmid T. "Obesity relationships with community design, physical activity, and time spent in cars." *American Journal of Preventive Medicine*, 27(2): 87-96, 2004.

[4] Active Living Research. "The Economic Benefits of Open Space, Recreation Facilities and Walkable Community Design." Research Synthesis, 2010 at p.1. Available at: *http://atfiles.org/files/pdf/Economic-Benefits-Active.pdf. See also* Centers for Disease Control. "Four Common Causes of Chronic Disease" (citing lack of physical activity, poor nutrition, tobacco use, and excessive alcohol consumption as principal contributors to chronic disease), *www.cdc.gov/chronicdisease/overview/index.htm;* Ewing R, Schmid T, Killingsworth R, et al. "Relationship between urban sprawl and physical activity, obesity, and morbidity." *American Journal of Health Promotion,* 18: 47-57, 2003.

[5] Loukaitou-Sideris, A. "Transportation, Land Use, and Physical Activity: Safety and Security Considerations." *Transportation Research Board Special Report #282.* Available at: *http://onlinepubs.trb.org/onlinepubs/archive/downloads/sr282papers/sr282Sideris.pdf.*

[6] Trost SG et al. "Correlates of Adults' Participation in Physical Activity: Review and Update." *Medicine and Science in Sports and Exercise*, 34(12):1996 – 2001, 2002.

[7] *See* Zhu X & Lee C. "Walkability and Safety Around Elementary Schools: Economic and Ethnic Disparities." *American Journal of Preventive Medicine*, 34 (4): 282-90, 2008. Available at: *http://activelivingresearch.org/files/3_AJPM08_Zhu.pdf* (study of disparities in environmental support for walking in Austin, Texas found that low-income and Latino children's neighborhoods had higher traffic accident and crime rates than their more affluent counterparts, despite higher neighborhood-level walkability).

[8] Hess PM et al. "Site Design and Pedestrian Travel." *Transportation Research Record: Journal of the Transportation Research Board*, 1974:9 – 19, 1999.

[9] Addy CL et al. "Associations of Perceived Social and Physical Environmental Supports with Physical Activity and Walking Behavior." *American Journal of Public Health*, 94(3):440 – 443, 2004. (concluding that street lighting, trust in neighbors, access to parks and sidewalks, and sense that others in neighborhood are walking were all associated with higher physical activity).

[10] Retting R. et al. "A Review of Evidence-Based Traffic Engineering Measures Designed to Reduce Pedestrian-Motor Vehicle Crashes." *American Journal of Public Health*, 93(3):1456 – 1463, 2003.

[11] Although there may be circumstances where pedestrians can safely share space with cars, such proximity is dangerous in light of how most streets are designed in the United States. Nonetheless, the concept of shared spaces (known as woonerf), in which cars, pedestrians, and others coexist on a plaza or street and use eye contact and other signals to negotiate space, may work well under the right circumstances. *See, e.g.,* Hanley J & Garrick N. "How Shared Space Challenges Conventional Thinking about Transportation Design." *Planetizen*, Dec. 16, 2010, available at: *www.planetizen.com/node/47317.*

[12] AARP. "AARP Poll: Fighting Gas Prices, Nearly A Third of Americans Age 50+ Hang Up Their Keys To Walk But Find Streets Inhospitable, Public Transportation Inaccessible." Aug. 13, 2008. Available at: *www.aarp.org/about-aarp/press-center/info-08-2008/aarp_poll_fighting_gas_prices_nearly_a_third_of_am.html* (national survey of people over 50 finding that that 40% had no sidewalks); U.S. Department of Transportation, Bureau of Transportation Statistics. "Sidewalks Promote Walking." Issue Brief No. 12, 2004 at p.1. Available at: *www.rita.dot.gov/bts/sites/rita.dot.gov.bts/files/publications/special_reports_and_issue_briefs/issue_briefs/number_12/pdf/entire.pdf* (national survey showing 66% of respondents reporting they had sidewalks).

[13] *www.walkinginfo.org/problems/problems-sidewalks.cfm*. (Citing: Knoblauch RL, Tustin BH, Smith SA, Pietrucha MT. Investigation of Exposure-Based Pedestrian Accident Areas: Crosswalks, Sidewalks, Local Streets, and Major Arterials. DOT publication FHWA-RD-87-038. Washington, DC: US Dept of Transportation; 1987).

[14] Mean Streets 2002. Surface Transportation Policy Project, available at: *www.transact.org/PDFs/ms2002/MeanStreets2002.pdf.*

[15] Active Living Research. "Active Transportation: Making the Link from Transportation to Physical Activity and Obesity," Research Brief, Summer 2009, available at: *https://folio.iupui.edu/bitstream/handle/10244/691/20091112alractivetransportationfinal.pdf.*

[16] Leaf WA and DF Preusser. "Literature Review on Vehicle Travel Speeds and Pedestrian Injuries Among Selected Racial/Ethnic Groups." US Department of Transportation, National Highway Traffic Safety Administration, 1999. Available at: *www.nhtsa.gov/people/injury/research/pub/hs809012.html.*

[17] Wheeler S. "Livable Communities: Creating Safe and Livable Neighborhoods, Towns, and Regions in California." IURD Working Paper 2001-04. Institute of Urban and Regional Development, UC Berkeley, 2001. Available at: *http://escholarship.org/uc/item/8xf2d6jg#page-1.*

[18] Morrison DS et al. "Evaluation of the Health Effects of a Neighborhood Traffic Calming Scheme." *Journal of Epidemiology and Community Health*, 58:837 – 840, 2004.

[19] Davidson KK et al. "Children's Active Commuting to School: Current Knowledge and Future Directions." *Preventing Chronic Disease*, 5(3):A100, 2008. Available at: *www.cdc.gov/pcd/issues/2008/Jul/pdf/07_0075.pdf.*

[20] Saelens BE et al. "Environmental Correlates of Walking and Cycling: Findings From the Transportation, Urban Design, and Planning Literatures." *Annals of Behavioral Medicine*, 25(2):80 – 91, 2003.

[21] McCormack GR et al. "Relationship Between Destination Proximity, Destination Mix and Physical Activity Behaviors." *Preventive Medicine*, 46(1):33 – 40, 2008.

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Photos by Urban Advantage (pages 1 and 3) and pedbikeimages.org/Dan Burden (page 4).