



Pedestrian Infrastructure

Frequently Asked Questions



What types of places need pedestrian infrastructure?

A variety of locales need pedestrian infrastructure—from large cities to small towns, and in urban, suburban, and rural settings. People benefit when there are activity-friendly routes to everyday destinations such as parks, schools, grocery stores, restaurants, healthcare facilities, and work sites. In 2017, 10 percent of all trips taken in the U.S. were taken on foot; the most popular were social and recreational trips (18 percent), followed by school (10 percent), shopping/errands (8 percent), and work (4 percent).¹ Demand for pedestrian infrastructure is higher in areas with compact street grids and a high population density.

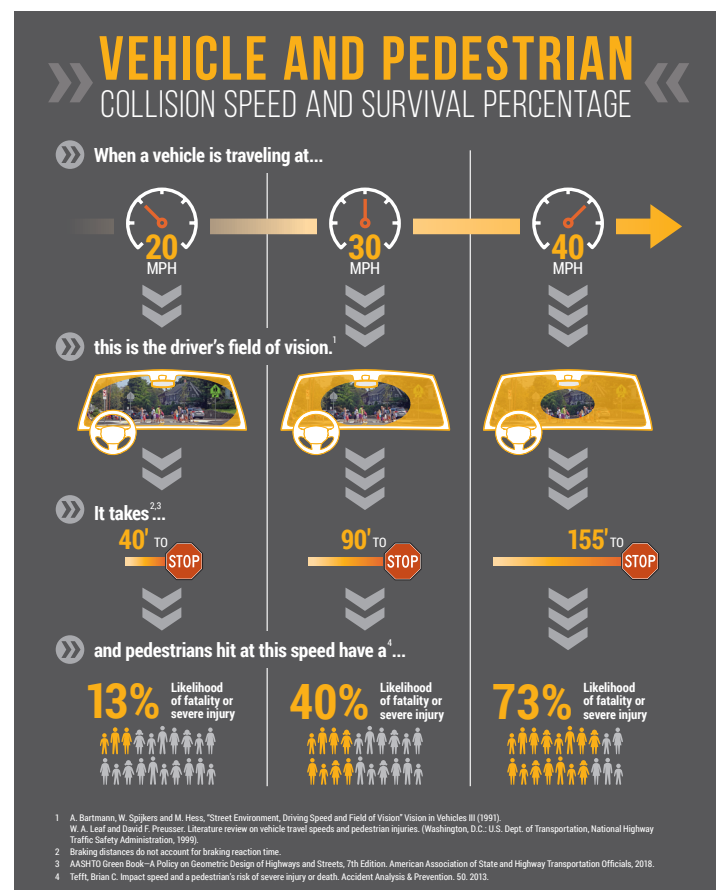
What are the principles of good pedestrian infrastructure?

Communities can create walkable routes for pedestrians by following the principles of safety, comfort, and connectivity. (For more on these principles see the [Bicycle Infrastructure FAQ](#)). Streets are safest where vehicle speeds are slow and interactions between motorists and pedestrians are predictable. When vehicle speeds drop from 40 mph to 20 mph, the likelihood of a pedestrian fatality or severe injury in the event of a crash drops from 73 percent to 13 percent.

1 McGuckin, N. & Fucci, A. (2018). *Summary of Travel Trends: 2017 National Household Travel Survey*. Federal Highway Administration. Retrieved from: https://nhts.ornl.gov/assets/2017_nhts_summary_travel_trends.pdf

Related Resources:

[Active Transportation Planning FAQ](#)
[Bicycle Infrastructure FAQ](#)



As motorist speeds drop, the likelihood of a pedestrian injury or fatality decreases dramatically.

Communities can also make places more comfortable for pedestrians by increasing separation, especially on higher traffic roads. People are more likely to walk along and across streets where they are comfortable, and connectivity between destinations is a positive visual cue for pedestrians. Clearly maintained sidewalks, accessible curb ramps, and visible road crossings increase the likelihood that people will use pedestrian infrastructure instead of driving.

How can a community be designed for walkability?

The average walking trip is 15 minutes, or 0.7 miles in length.² As a result, people are more likely to travel on foot in areas with a high density of mixed-use destinations, particularly when buildings are laid out in a pedestrian-friendly manner. Historic downtowns and neighborhoods typically have built-in density that supports walking. Growing communities can encourage walkability through zoning regulations that support mixed uses and smaller block sizes. Suburban areas can also be developed in a pedestrian-friendly manner, with pedestrian shortcuts between parcels that connect residences with important destinations. In new commercial areas, regulations can require reduced building setbacks. Parking can also be placed behind buildings, with building entrances facing sidewalks at the edge of the public right-of-way. All of these measures make it more convenient, faster and more welcoming for people to walk to community destinations.

What are the different types of walkways?

Walkways include sidewalks, paths, shoulders, and shared streets. Typically, walkways are a separate linear space parallel to a road. However in some locations, particularly where there are low traffic volumes and in rural settings, walkways are shared with other modes.

- » **Sidewalks** are usually built with concrete and separated from driving areas with a vertical 6-inch curb. In residential neighborhoods, their width

² Kuzmyak, J.R. & Dill, J. *Walking and Bicycling in the United States: The Who, What Where and Why*. Retrieved from: <http://onlinepubs.trb.org/onlinepubs/trnews/trnews280www.pdf>



Shortcut trails can make suburban street grids more walkable.

typically ranges from 4 to 6 feet. In pedestrian-friendly downtowns, sidewalks can be as wide as 10 to 15 feet. Buffers between the sidewalk and street improve the safety and comfort of people walking, especially in locations with higher traffic volumes.

- » **Trails or paths** can be built with a variety of materials, including asphalt, concrete, and finely crushed stone. They may be narrow (5 to 6 feet) when designed for foot traffic, or wider (8 to 12 feet) if accommodating bicycling. Trails may run alongside roads or follow their own alignment.
- » **Shoulders or pedestrian lanes** are a portion of a road separated from driving areas with a painted line. Shoulders are common on rural and suburban highways, and are typically designed for the safety and use of motorists. Pedestrian lanes are designed for walking, and are usually temporary facilities filling gaps between sidewalks and trails.

Sidewalk



Trail



Shoulder



Shared Street



- » **Shared streets** have low traffic volumes (maximum 2,000 vehicles per day) and low speeds (maximum speed limits of 30 mph), and pedestrians share space with motorists and bicyclists. Many residential streets without sidewalks in small town and suburban settings function well as shared roadways.

What are the elements of a well designed walkway?

Well-designed walkways should incorporate most, if not all, of the following elements:

- » **Streetscapes** create an attractive environment for walking. In downtowns and other business districts, this may include benches, flowers, garbage cans, informational signs, and trees. Streetscape elements are typically placed in a furnishing zone between the curb and the sidewalk, along with bike racks, light poles, and sign posts.
- » **Lighting** along walkways and at crossings makes it easier to see and to be seen by motorists when walking at night. Decorative, pedestrian-scaled lighting that illuminates the sidewalk invites activity and reminds motorists that they are sharing a public space with other users.
- » **Accessibility** for people with disabilities is required by the Americans with Disabilities Act (ADA). This federal civil rights law requires streets, sidewalks, and trails to meet guidelines regarding surfaces, widths, slopes, curb ramps, landing areas, and obstructions, among others. The Public Rights-of-Way Accessibility Guidelines (PROWAG) provide

additional guidance and are considered the model for ensuring accessibility on public roads.

- » **Maintenance** makes walkways safer and more accessible. Surface repairs and snow clearance are primary maintenance concerns and are usually the responsibility of property owners. Municipal-led programs, while less common, are more effective for creating a consistent walkable environment year-round. Maintenance of crosswalks, curb ramps, debris, signs, and vegetation also helps make communities more walkable.

How can pedestrians safely cross roadways?

Several treatments can improve safety and comfort for pedestrians at midblock or intersection crossings. To select appropriate treatments, designers are encouraged to use engineering judgment that is informed by the Ohio Manual of Uniform Traffic Control Devices and national guidance documents. The following treatments, alone or in combination, may be appropriate for different types of roadways based on the number of lanes, posted speed, and volume of vehicles.

- » **Crosswalks** should be placed at locations where there are pedestrian origins and/or destinations on both sides of a street. People walking often choose the shortest path to their destination, even if there is no marked crosswalk. As a result, crossings should be spaced every 200 to 500 feet, with greater frequency in destination-rich areas. Crossings can be marked with parallel bars, diagonal bars, or ladder designs. Ladder crosswalks are the most visible to motorists.
- » **Pedestrian signs** may be added to marked crosswalks to increase visibility. They may be mounted on the side of a road, overhead, or in the street.
- » **Flashing beacons** may be installed with signs and crosswalks to encourage motorists to yield. Pedestrian hybrid beacons, warning beacons, and rectangular rapid flashing beacons are the three most common beacon types.
- » **Traffic signals** should include pedestrian indicators and countdown timers, timed for a minimum walking rate of 3.5 feet per second. To reduce conflicts, pedestrians may be allowed to enter the crosswalk with the walk signal before

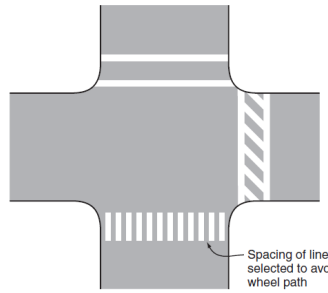


Regular maintenance of walkways is crucial to keep communities walkable year-round.



parallel traffic is given the green light. This is referred to as a Leading Pedestrian Interval.

- » **Intersection geometry** can be shaped to reduce crossing distances, slow vehicle turning speeds, and improve visibility. **Curb extensions**, also called bumpouts or bulbouts, make it easier to see people waiting and narrow the roadway width that pedestrians must cross. Intersections with tighter curves are more pedestrian-friendly and are often achieved by using flexible designs to accommodate turning movements of large vehicles.
- » **Pedestrian crossing islands**, also called medians, are raised areas between opposing traffic lanes that separate crossing pedestrians from motorists and allow them to cross only one direction of traffic at a time. These can reduce pedestrian crashes by approximately 50 percent.³
- » **Raised crosswalks** act as a speed bump for motorists, and prioritize the continuity of the pedestrian pathway across the street.



All of the above crosswalk styles are permissible, but the bottom "ladder" style is the most visible.



Pedestrian warning signs enhance visibility at marked crosswalks.



Crossing islands increase pedestrian safety when crossing multi-lane roadways.

3 Federal Highway Administration (n.d.). Medians and Pedestrian Crossing Islands in Urban and Suburban Areas. Retrieved from: <https://safety.fhwa.dot.gov/provencountermeasures/pdfs/fhwasa17064.pdf>

Where can I find out more?

- » Blackburn, L. et. al. (2017). *Guide for Improving Pedestrian Safety at Uncontrolled Crossing Locations*. Federal Highway Administration. https://www.fhwa.dot.gov/innovation/everydaycounts/edc_4/guide_to_improve_uncontrolled_crossings.pdf
- » Centers for Disease Control and Prevention (CDC) (2019). Connecting Routes + Destinations. <https://www.cdc.gov/physicalactivity/community-strategies/beactive/index.html>
- » FHWA (2016). *Small Town and Rural Multimodal Networks*. https://www.fhwa.dot.gov/environment/bicycle_pedestrian/publications/small_towns/
- » FHWA (2019). Safe Transportation for Every Pedestrian (STEP) - Resources. https://safety.fhwa.dot.gov/ped_bike/step/resources/
- » Huber, T et. al. (2013). *A Guide for Maintaining Pedestrian Facilities for Enhanced Safety*. FHWA. https://safety.fhwa.dot.gov/ped_bike/tools_solve/fhwasa13037/
- » Massachusetts Department of Transportation (2018). *Municipal Resource Guide for Walkability*. https://www.mass.gov/files/documents/2018/09/17/MunicipalResourcesGuide-ForWalkability_2018-08-24.pdf
- » Ohio Department of Transportation (2012). *Ohio Manual of Uniform Traffic Control Devices (OMUTCD)*. http://www.dot.state.oh.us/Divisions/Engineering/Roadway/DesignStandards/traffic/OhioMUTCD/Pages/OMUTCD2012_current_default.aspx
- » Porter, C. et. al. (2016). *FHWA Achieving Multimodal Networks – Applying Design Flexibility & Reducing Conflicts*. FHWA. https://www.fhwa.dot.gov/environment/bicycle_pedestrian/publications/multimodal_networks/
- » United States Access Board (2011). *Proposed Public Right-of-Way Accessibility Guidelines (PROWAG)*. <https://www.access-board.gov/guidelines-and-standards/streets-sidewalks/public-rights-of-way/proposed-rights-of-way-guidelines>

