Bicycle Needs and Preferences

Bicyclists are generally grouped into four categories based on their experience and abilities. Based on surveys conducted in Portland and other communities around the nation, bicyclists have generally been divided into four types.

- **Strong and fearless bicyclists** are those that are more experienced, and generally ride for recreation, touring, and commuting. Enthused and confident bicyclists have intermediate to advanced skills and generally feel comfortable commuting by bike. These bicyclists need on-road bike lanes and routes that are well connected, wide shoulders where possible and wayfinding signage to make their trips more comfortable.

- **The majority of the community falls in the interested but concerned category.** These tend to be novice riders, families, and children who feel more comfortable using separated bike paths and physically protected bike lanes. To encourage the shift to bicycling for transportation, it's important for communities to plan and build these types of improvements that can be used by families and novice riders. With these physically separated facilities, people that say they would never ride might be enticed to try bicycling for recreation.

Innovative Bicycle Facility Designs

Several new facility types are beginning to appear in communities across California. Most notably, protected bike lanes, bike boxes, and protected intersections are innovative designs that improve safety for all users of the road. These treatments tend to slow traffic and make bicyclists and pedestrians more visible.

Parking Protected Bike Lanes (E. Market Street, Salinas)

Using Active Transportation Program grant funds, the City of Salinas recently installed parking protected bike lanes on East Market Street by shifting parking away from the curb, and implementing a road diet on this segment.
of street in front of Fremont Elementary School. The City also added a bike box at the crossing to improve bicyclist visibility.

**Bike Box**
*(E. Market Street, Salinas)*

Much like bike boxes, protected intersections extend the curbs out and create islands for bicyclists and pedestrians. These intersections make bicyclists and pedestrians more visible to car traffic, and shorten crossing distances. Locally, the Canyon Del Rey (SR 218) Corridor Study is analyzing this design style for the intersection of Del Monte Ave and Canyon Del Rey Blvd in Seaside.

**Protected Intersection on El Camino Real**
*(State Route 82)*

*Source: City of Menlo Park*
Pedestrian Needs and Preferences

Similar to bicyclists, pedestrians can be divided into a few different types based on age and ability. These different pedestrian types have different challenges and design solutions:

<table>
<thead>
<tr>
<th>Challenges</th>
<th>Design Solutions</th>
</tr>
</thead>
<tbody>
<tr>
<td>Few crossings, little separation from moving vehicles, high traffic volumes, few destination access points, inadequate ADA access, little/no shade or shelter, poorly lit walkways and crossings, slippery surface materials, obstructed routes, inefficient drainage, indirect routes</td>
<td>Pedestrian signal actuation and adequate crossing time, traffic calming, continuous sidewalk network, short blocks, ample width, planting strip/on-street parking, ADA ramps, street trees and pedestrian-scale lighting appropriately designed storm drains</td>
</tr>
<tr>
<td>Small gaps in traffic, long crossing distances, few crossings inadequate ADA access, shade or shelter, poorlylit walkways and crossings, slippery surface materials, obstructed routes, inefficient drainage</td>
<td>Adequate crossing time at signalized intersections, curb extensions, high-contrast markings, two-stage actuated crossings, medians, audible countdown pedestrian phase (signalized) and ADA ramps, street trees, pedestrian-scale lighting</td>
</tr>
</tbody>
</table>

Visitors and tourists

Few/no pedestrian destinations, limited/no way-finding, unmarked crossings, narrow sidewalks, little/no shade or shelter, few/no pedestrian amenities, poorly-lit walkways and crossings

Pedestrian plaza, way-finding signage, highcontrast marked crossings, wide sidewalks, onstreet parking, street trees, outdoor seating, public art, public toilets, pedestrian-scale lighting

Innovative Pedestrian Facility Designs

Many of the same innovative bicyclist treatments also benefit pedestrians. Protected intersections and protected bike lanes shorten pedestrian crossing distances. Other innovative treatments that benefit pedestrians are:

Leading Pedestrian Intervals

Source: PedBikeSafe
Leading pedestrian intervals (LPI) give pedestrians a 3-7 second head start to begin crossing an intersection while vehicles still have a red light. LPI’s enhance pedestrian visibility and reduce conflicts between pedestrians and vehicles turning right. LPI’s have been shown to reduce pedestrian-vehicle collisions by 60%\(^1\).

Rectangular Rapid Flash Beacon

![Rectangular Rapid Flash Beacon](image)

Source: City of Alexandria, VA

Rectangular Rapid Flash Beacons (RRFB) are activated pedestrian flashing lighted crosswalks that enhance pedestrian visibility at unsignalized intersections or mid-block crossings. RRFB’s have been shown to significantly increase driver yielding behavior at crossings\(^2\). These types of crossings can also be used by bicyclists.

Advanced Stop/Yield Lines

![Advanced Stop/Yield Lines](image)

Source: PedBikeSafe

Advance stop/ yield lines encourage driers to stop further back from the crosswalk. These lines encourage drivers to stop when there’s a multi-lane roadway. These lines improve pedestrian visibility at mid-block or uncontrolled crossings.

Pedestrian Bulbouts in Gonalzes

![Pedestrian Bulbouts in Gonalzes](image)

Source: Google Maps

Pedestrian bulbouts shorten the pedestrian crossing, and increase pedestrian safety. Bulbouts tighten the curb radius for turning vehicles and slow traffic. These crossing treatments also increase space for street furniture, benches, plantings, and street trees.

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\(^1\) National Association of City Transportation Officials (NACTO): [https://nacto.org/](https://nacto.org/)

\(^2\) NACTO
Public Health, Environmental, Economic, and Social Equity Benefits

The following infographics summarize the many benefits of bicycling and walking for transportation. These graphics are courtesy of the Joint Venture Silicon Valley³.

### Health Benefits

<table>
<thead>
<tr>
<th>Benefit</th>
<th>Graphic</th>
</tr>
</thead>
<tbody>
<tr>
<td>Reduces cardiovascular risk.</td>
<td><img src="image" alt="Cardiovascular Risk" /></td>
</tr>
<tr>
<td>Results in fewer sick days.</td>
<td><img src="image" alt="Sick Days" /></td>
</tr>
<tr>
<td>Reduces health care costs.</td>
<td><img src="image" alt="Healthcare Costs" /></td>
</tr>
<tr>
<td>Reduces stress.</td>
<td><img src="image" alt="Stress" /></td>
</tr>
<tr>
<td>Bike-friendly growth decreases negative health outcomes.</td>
<td><img src="image" alt="Bike-Friendly Growth" /></td>
</tr>
</tbody>
</table>

³ Joint Venture Silicon Valley: [https://jointventure.org/](https://jointventure.org/)
SAFETY BENEFITS

Bike lanes make roads safer for all.

Protected bike lanes can result in a 40-50% drop in injury crashes for all road users (drivers, cyclists, and pedestrians).^{5}

Bicyclists make roads safer for all.

Cities with high bicycling rates ... tend to have lower crash rates for all road users. ^{5}

Build it safely and they will come.

Bicycle safety improvements attract proportionately more people to bicycling than automobile safety improvements. ^{7}

40-50% reduction in crashes on streets with protected bike lanes

... for all road users

For example, a 10% increase in bike safety will result in more than 10% increase in the share of people commuting by bicycle.
**ENVIRONMENTAL BENEFITS**

**Biking to work reduces CO2.**

Commuting four miles by bike saves 2,000 miles of driving and 2,000 lbs of CO2 per year.³

4 mile bike commute results in:

- **2,000 lbs of CO2**
- **2,000 miles of driving**

That's the equivalent of a 5% reduction in the average American's carbon footprint!

- **5% carbon footprint**

**More overall walk and bike trips reduces CO2.**

Increasing the mode share of all bike and walking trips from 12% to 15% could lead to fuel savings of 3.8 billion gallons per year and a 33-million-ton reduction in GHGs per year.³

- **33,000,000 ton reduction in GHGs**

That is equivalent to replacing 19 million conventional cars with hybrids!

- **19M conventional cars**

**Bikes have a carbon-neutral life cycle.**

When the complete life cycle of the following modes are taken into account, the carbon emissions (grams per passenger per kilometer) are approximately:¹⁰

- **271** Grams CO2 per passenger per kilometer
- **101**
- **21**

**hybrid cars**
**ECONOMIC BENEFITS**

**Bike projects create more jobs.**

Bicycling and walking projects create 11-14 jobs per $1M spent, versus only seven jobs per $1M spent on highway projects.¹⁰

**Bike lanes are less expensive than roads.**

One mile of street widening for cars is equivalent to 600 miles of bike lanes; 300 miles of buffered bike lanes; 120 miles of bike boulevards; and 30 miles of off-street bike trails.¹¹

**Bike parking costs less to build than car parking.**

It costs $150–$300 to install a bike rack for two bikes compared to $36,000 for one parking spot in a parking structure in Silicon Valley.¹²

**Bicyclists spend more on local retail.**

People on bicycles spend more on local retail per week than other modes: $163 per week compared to $143 per week.¹³
SOCIAL EQUITY BENEFITS

The lowest-income households bike most.

Households earning less than $20,000 per year are roughly twice as likely to bike for transportation as all other income groups.10

Bicycling is more affordable.

The average cost of operating a vehicle for one year in 2013 was approximately $10,000. The cost of operating a bicycle for a year in 2013 was roughly $300.19

Bicycling benefits zero-vehicle households.

Households with people of color are less likely to have access to a motor vehicle.20

Share of U.S. households without motor vehicles

<table>
<thead>
<tr>
<th>Category</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Black</td>
<td>21%</td>
</tr>
<tr>
<td>Hispanic or Latino</td>
<td>13%</td>
</tr>
<tr>
<td>American Indian or Alaska Native</td>
<td>13%</td>
</tr>
<tr>
<td>Asian</td>
<td>11%</td>
</tr>
<tr>
<td>Two or more races</td>
<td>11%</td>
</tr>
<tr>
<td>White</td>
<td>7%</td>
</tr>
</tbody>
</table>