Cycling and transit both contribute to improved health and environmental outcomes, as well as to reduce energy use and traffic congestion. Bicycle–transit linkages can help replace driving to and from stations, expand transit's catchment area beyond walking distance, reduce the need to transfer among transit services, and attract both existing and new transit users. Bike-and-ride provisions are less expensive and more sustainable and socially equitable than park-and-ride facilities for cars.

Coordination of cycling and transit includes bike parking at stations and transit stops, on-board space for transporting bicycles with travelers, bike rental facilities near transit stations, “complete streets” policies that promote bike routes near public transportation, partnerships that pursue cross-promotion of cycling and transit, and complementary car parking regulations and fees that limit space for automobiles at transit stations and create disincentives for driving.

Strategies to integrate cycling and transit vary globally, and implementation efforts generally have been increasing in recent decades. Coordination efforts in Europe and Japan began much earlier than in North America, reflecting differences in the overall levels of travel by bicycle and transit. There are currently an estimated 800,000 bike parking spaces at metro and suburban rail stations in Tokyo, where 20 percent of transit passengers cycle to stations, and 325,000 bike parking spaces at train stations in the Netherlands, where 39 percent of all rail passengers cycle to stations. In contrast, the entire United States has an estimated 38,000 bike-and-ride parking spaces, and just 3 percent of passengers currently access transit by bicycle.

Implementation of the integration strategies also varies geographically. For example, Japan and Europe have tended to focus on the provision of facilities at transit stations (bike-to-transit), which faces fewer capacity constraints, while North American efforts have prioritized onboard accommodations (bike-on-transit), which North American passengers prefer over leaving bikes at stations. Bike route networks are better connected to transit stations in Europe than in North America, where bike paths are more recreationally oriented along rivers and through parks. In general, the demand for bike-and-ride provisions continues to grow globally, and cities around the world are devoting more resources for both existing and new innovative approaches to support the integration of cycling and transit.
A range of cycling–transit integration strategies have been developed in recent decades. All of the strategies discussed below have been found to be effective at increasing bike-and-ride travel as well as overall cycling and transit levels.

Facilities

The most common cycling–transit integration strategy globally is the provision of bike parking at transit stations. With this strategy, travelers leave their bicycles at the access station and rely on another bicycle or mode of transportation (often walking) at the egress station. In general, bike parking costs less than a tenth as much as park-and-ride facilities for automobiles on a per-passenger basis. There are many different types of bike parking, ranging from simple bike racks near bus stops to full-service bike stations, which are often located near major rail terminals. The degree to which bike parking is enclosed is a key distinction and relates to both sheltering from weather as well as security and theft prevention. The continuum ranges from open-air bike parking on sidewalks to guarded parking lots, bike cages and lockers, and full-service indoor bike stations. Open-air bike parking on sidewalks is the least secure and most exposed. Guarded bike parking lots deter theft but offer no protection from the weather.

Bike cages are typically unguarded restricted-access facilities and are often enclosed and incorporate surveillance cameras. They can be less secure than bike lockers, because anyone with access to the facility has access to all the bikes parked there. Boston, Massachusetts, and Portland, Oregon, are two U.S. cities that have deployed this strategy extensively. Many European and some Australian cities also have bike cages at transit stations.

Bike lockers are sturdy boxes that hold one or two bikes and are rented for hourly, daily, or long-term use. They provide more protection from weather and theft than open-air bike parking and bike cages but require more space and resources to construct and manage. Bike lockers in general are the most common form of secure bike parking in North America.

Bike stations offer the most secure and advanced bike parking at transit stations, with the greatest shelter from weather and mitigation of theft risk. They are staffed facilities...
offering a range of services, such as bike repairs and rentals, showers, and lockers, in addition to secure bike parking. In 2011, the Netherlands had 98 bike stations with space for 85,000 bikes, and Germany had 106 stations offering 32,000 spaces. North American cities with bike stations at that time included San Francisco, Washington, D.C., Toronto, Chicago, Minneapolis, Portland, and Seattle. Tokyo has advanced bike stations that allow the rapid automatic deposit and retrieval of bikes.

A bicycle commuter in Auckland, New Zealand, takes advantage of on-board bicycle storage to ride a small ferry in 2006. Facilities that make bicycle–transit linkages easier are more developed in parts of Asia and Europe than they are in North America. There are 800,000 bike-and-ride parking spaces alone in Tokyo, Japan, compared to only 38,000 in the entire United States.

Provisions to take bikes onboard transit vehicles are typically in the form of front-end racks for buses, and racks, hooks or delineated spaces on trains. This strategy can
reduce concerns about theft and weather exposure related to bike parking at transit stations, though onboard accommodations face more acute capacity constraints—bicyclists may be unable to board a bus with full bike racks or a train full of passengers or other bicycles. The paradoxical result is that onboard accommodations may be most constrained where cycling and transit are most popular. In general, bike racks are common in North America (with over 70 percent of American and 80 percent of Canadian buses equipped) and rare in Europe. Bicycles are typically permitted on trains in Europe, North America, and Australia outside of peak travel hours.

Bike Rentals and Sharing

Bicycle rental programs at transit stations address many of the limitations of bike parking and onboard accommodations by enabling access to bicycles at both ends of a transit trip, reducing concerns about theft and weather exposure for personal bicycles parked at transit stations, and potentially rendering fewer bike-on-transit trips necessary. Three types of bicycle rental systems have been developed: (1) traditional single hourly or daily rentals requiring a transaction with an attendant, (2) automated hourly or daily rentals based on global positioning system (GPS) technology or membership cards, and (3) public bike sharing systems offering daily or long-term membership and providing access to a network of bicycles.

Bicycle rentals are most widely deployed in Europe, and traditional bike rentals are available at virtually all major Dutch, Danish, German, and Swiss train stations. In addition, several European countries have been leading innovators in the development of public bicycle-sharing systems. Bicycle sharing has evolved in recent decades from “White Bikes” (or “free bikes”) and coin-deposit systems to the information technology–based systems rapidly being deployed around the world today. Typically, bike-sharing fee structures encourage short trips of a half hour or less, and the systems are commonly designed to facilitate “first-mile/last-mile” connections with transit. There are currently approximately 140 public bike-sharing programs in 160 cities with more than 236,000 bicycles around the world.
Bikeways and Bike Lanes

Policies to coordinate bike paths and lanes with the location of transit stations and the operations of transit vehicles are critical for enabling travelers to access transit via cycling and interact with transit vehicles while cycling on the road. “Complete streets” policies have become important for designing streets that facilitate use by transit vehicles and cyclists, as well as automobiles. Cycling paths and lanes close to transit enable cyclists to use transit for planned trips, as well as trips arising from unexpected issues such as mechanical problems and inclement weather. In Europe, cycling networks are typically dense and focused on utilitarian destinations, thereby facilitating cycling for everyday travel needs. In contrast, coordination of paths and lanes in North America has been much more limited and routing has been more focused on recreational cycling.

Other Approaches

Partnerships that facilitate the cross-promotion of cycling and transit can include transit agencies and local jurisdictions, as well as bicycle and environmental advocacy organizations, and may be short-term or long-term collaborations. In North America, where both cycling and transit face less cultural acceptance and more social stigma and opposition, efforts to cross-promote both modes may be more effective at improving the public image of cycling and transit than individual efforts.

Deployment of complementary car parking regulations, fees, and policies is important as well. In Europe, driver licensure is more expensive, gasoline taxes are higher, and free parking lots at transit stations are less common than in North America. When driving to transit stations is convenient and inexpensive, efforts to encourage travelers to access transit by cycling are less effective. Policies that limit the availability of car parking and charge fees for it at transit stations are important for effectively promoting cycling to transit.

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See Also:

- Bicycle Commuting
- Bicycle Facilities
- Bicycle Sharing
- Bus Design
- Complete Streets
- Transit Centers
- Transit Lines/Networks

Further Readings


