

Building a Truly Bike-Friendly City

Lessons from Amsterdam



QUICK FACTS

TOTAL BICYCLES
881,000 bikes for 835,000 residents

PROPORTION OF POPULATION WHO CYCLE DAILY
58 percent of those older than 12

TOTAL LENGTH OF CYCLE PATHS AND BIKE LANES
477 miles (767 km)

BICYCLE SHOPS
140

BICYCLE PARKING SPOTS AROUND AMSTERDAM CENTRAL STATION
10,000

BICYCLE RACKS
200,000 to 225,000

SECURED BIKE PARKING GARAGES
25 (including eight free garages)

Source: Adapted from "Amsterdam's Cycling History," iamsterdam.com.

According to the city of Amsterdam, as of 2017, more than 58 percent of Amsterdam residents cycled daily. (S-F/Shutterstock.com)

AMSTERDAM HAS LONG BEEN RECOGNIZED as one of the world's great bicycling cities, and for good reason—the city is home to more bikes than people and a higher percentage of trips within the city are made by bike than by car.

While Amsterdam residents have long had a history of cycling to meet their daily needs, a cultural preference for two-wheeled transportation alone does not explain why the city so vastly outpaces its peers in nearly every measure of bicycle use. Instead, over the past half-century, local advocates, elected officials, and other stakeholders have worked to reverse the city's post-World War II embrace of the automobile by crafting bike-friendly policies and directing funding toward infrastructure that makes meeting one's daily transportation needs by bike a safe, convenient, and even obvious choice.

Beyond merely shaping area travel patterns, the dominance of bicycling in Amsterdam has positive implications for public health and environmental sustainability, and directly influences decisions regarding land use and development.

The Evolution of Bicycling in Amsterdam

Prioritizing the automobile in the post-WWII era. According to the city of Amsterdam, as of 2017, more than 58 percent of Amsterdam residents cycled daily; however, only a generation ago, bicyclists were on the brink of being pushed out in favor of the personal automobile.

While bikes had been the dominant mode of transportation in Amsterdam in the early 20th century, a boom in the post-WWII economy increased the demand for car ownership and use. Public policy and infrastructure investment decisions prioritizing automobiles followed.

In a pattern familiar to Americans, Amsterdam's leaders ordered the demolition of historic buildings, neighborhoods, and public plazas to create wider streets and surface parking lots. Official policy reflected the view that bike traffic would eventually vanish entirely. Increased automobile traffic led to an upsurge in traffic fatalities, with over 3,000 people killed in collisions on Dutch roads in 1972, including more than 400 children, according to the Institute for Road Safety Research.

A shift toward policies and infrastructure investments to support bicycling. Vocal Amsterdam residents, outraged over the sharp increase in traffic-related deaths involving children, reacted to the increasing danger of walking and bicycling in their city by creating advocacy organizations to protest the dominance of cars on city streets. These groups held the view that streets were public spaces that should safely accommodate travel on



Over the past half-century, more than 477 miles (767 km) of bicycle paths and bike lanes have been constructed throughout Amsterdam, greatly enhancing the safety of two-wheeled transportation. (Doin / Shutterstock.com)

foot or by bike, while also serving as places for children to play and neighbors to engage socially.

Actions by these activists in the 1970s were so effective that several advocacy groups came to be funded by the government to develop policies and design solutions explicitly centered around enhancing the bicyclist experience. Since that time, the goal of increasing the use of bicycles to make streets safer and more accessible for citizens of all ages has remained consistent and Amsterdam has invested in numerous bicyclist-focused infrastructure enhancements.

Amsterdam's bike infrastructure projects are funded through a range of sources, including dedicated municipal funds, regional subsidies, European Union funding, income from parking fees, the budgets of larger public infrastructure projects, public/private partnerships, and private development projects.



There were more than 10,000 bicycle parking spots around Amsterdam Central Station as of 2017, with plans for an additional 21,500 spaces by 2030. (*iqwesq wesq*)

Bike-Friendly Policies, Programs, and Infrastructure Initiatives

Since the 1970s, policies favoring bicycles over cars, and incremental yet consistent bike-friendly infrastructure enhancements, have served to once again make bicycling a dominant mode of transportation for Amsterdam residents. The popularity of cycling continues to grow, with the city of Amsterdam reporting an increase in local bicycle trips of 40 percent in the period since the 1990s.

Some of the most notable policies, programs, and infrastructure initiatives employed in Amsterdam since the 1970s to support travel by bicycle include the following:

- >> **Car-free Sundays.** During the 1973 oil crisis, the Dutch government banned all private automobile traffic on Sundays for three months to conserve fuel; the experience of being able to walk, bike, and socialize on car-free streets led to greater public support for bike-focused roadway design initiatives.
- >> **Development of the *woonerf*.** Since the 1970s, more than 6,000 streets in the Netherlands, including many in Amsterdam, have been retrofitted to reduce traffic speeds and allow drivers, cyclists, pedestrians, and children to share road space. These “living streets,” known as *woonerfs*, force cars to drive at walking pace through strategic placement of plantings, play areas, and other design features.
- >> **Dedicated bicycle paths and bike lanes.** Over the past half-century, more than 477 miles (767 km) of bicycle paths and bike lanes have been constructed throughout Amsterdam, greatly enhancing the safety of two-wheeled transportation. According to the city of Amsterdam, as of 2015, twice as many cyclists per kilometer were struck by automobiles on 50-kilometer-per-hour roads that did not conform to the latest national safety standards, such as including separate cycle paths.

- >> **Bike parking.** In addition to municipal facilities—including 25 secure bike parking garages and an estimated 225,000 public bike racks—bike parking is allowed anywhere in Amsterdam unless a sign specifically forbids it. In 2015, the city announced plans to further expand bike parking through the construction a 7,000-space garage under the River IJ.
- >> **Limits to on-street car parking.** Since the 1990s, Amsterdam has reduced the number of car parking spaces in the city center and implemented parking fees of up to €5/hour—some of the highest fees in Europe. Revenue from paid municipal parking is used to fund improvements to public transportation and cycling infrastructure.
- >> **Development car parking maximums.** To further reduce street space dedicated to cars, city policy dictates that for every parking space created off-street, an on-street parking space must be removed. In general, developers of residential projects may include only 0.6 car parking space per public housing unit and one space per market-rate housing unit.

Development, Quality of Life, and Economic Impacts

Transportation safety improvements in the Netherlands since the 1970s—including the addition of bicyclist-focused infrastructure—have led to significant reductions in traffic fatalities nationwide. According to the Institute for Road Safety Research, there were 629 road deaths in 2016—down from over 3,000 in 1972. (The number of children killed on Dutch roads fell from over 400 to 12 during the same period.)

The high rate of cycling in and around Amsterdam has also led to positive health, livability, and economic impacts for residents and visitors. According to the city of Amsterdam, the overall economic value of these benefits is equivalent to nearly €122 million (US\$142.25 million) annually. Examples of quality-of-life benefits reported by the city include the following:

- >> **Reduced traffic congestion.** Amsterdam’s high rate of bicycling leads to reduced automobile congestion, saving motorists 60,000 hours of traffic time annually, equivalent to €60 million (US\$69.85 million).
- >> **Better air quality.** Local cycling saves 40,000 metric tons (44,092 tons) of carbon dioxide each year, equivalent to a €9.2 million (US\$10.71 million) boost to the economy.
- >> **Fewer sick days.** Amsterdam residents who ride bikes regularly call in sick less frequently than those who do not cycle, saving an estimated 50,000 sick days annually, equivalent to an economic value of €15.3 million (US\$17.81 million).

Furthermore, a 2015 study by the *American Journal of Public Health* showed that the increased level of physical activity associated with the high rate of cycling in the Netherlands is responsible for the prevention of roughly

6,500 deaths per year, leading to an average of a half-a-year-longer life expectancy for residents—equivalent to an economic value of 3 percent of the country’s gross domestic product.

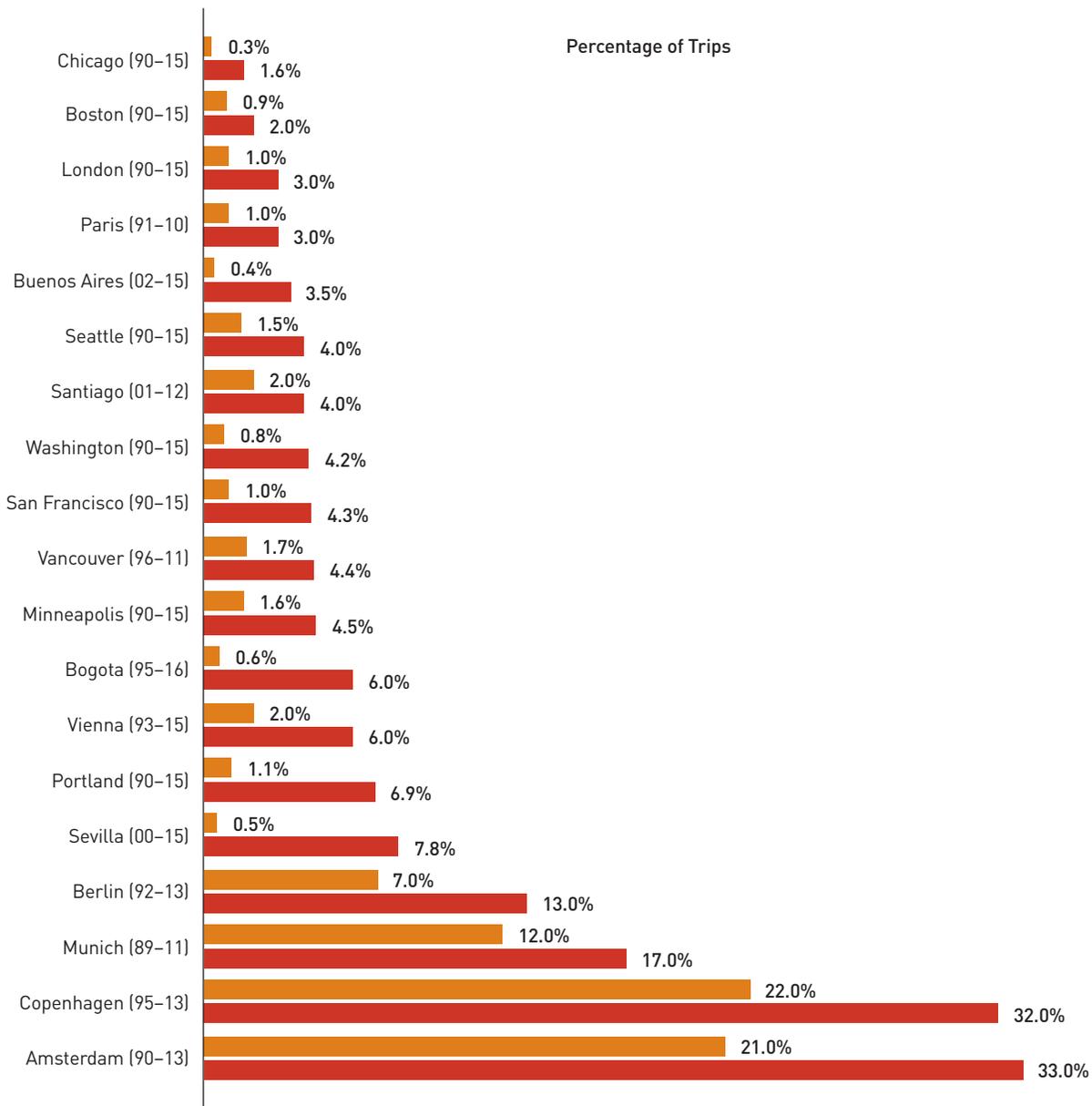
The economic benefits of bicycling in Amsterdam also extend to real estate development. For example, in 2017, the Amsterdam City Council initiated plans to connect the city center to North Amsterdam—a trip that currently requires a car or ferry—by building two bike-only bridges across the River IJ. These bridges, along with a new metro line expected to open in 2018, will

facilitate the continuing expansion of apartments, offices, shops, restaurants, bars, and museums in an area with some of the last remaining developable land close to Amsterdam’s city center.

By investing in additional safe and convenient bicycle infrastructure, as well as efficient and economical transit systems, Amsterdam is reducing traffic congestion and supporting new development opportunities throughout the city that leverage the ever-increasing shift toward active transportation.

FIGURE 2

>> Increasing Bike Mode Shares in Large Cities of Europe and the Americas, 1990–2015



Source: Pucher, J., & Buehler, R. (2017). *Cycling Towards a More Sustainable Transport Future*. *Transport Reviews*, 37(6), 689–694. doi.org/10.1080/01441647.2017.1340234