



Best practice bicycle safety – improvement fact sheet

# Narrow infrastructure

## Overview

Too narrow bicycle infrastructure and insufficient space between bicycle infrastructures and curb-side parked cars can cause **dooring collisions** and impose **safety risks** for cyclists. Cyclists are at risk of **frontal collisions** with oncoming cyclists and collisions with **vehicle doors** as well as collisions with other vehicles. This can happen, when cyclists **swerve** to avoid a collision with opening vehicle doors and end up in the path of oncoming traffic or when vehicles overtake cyclists with **insufficient safety distance**. These issues are particularly prevalent in urban areas as well as at bridges and underpasses, where there is usually limited space for the implementation of cycling infrastructure. Bicycle crashes due to narrow infrastructure and dooring are a **common phenomenon** and especially in urban areas a significant proportion of bicycle accidents are dooring collisions.

## What is the problem and where does it occur?

Many countries' bicycle manuals suggest specific minimum widths for uni- and bidirectional cycle paths as well as specific distances to curb-side parked cars. However, especially **urban areas, bridges and underpasses** provide challenges due to **limitations of space**, resulting in too narrow cycling facilities and insufficient space between the bicycle infrastructure and curb-side parked cars [2]. Bicycle infrastructure that is too narrow or too close to the door zone of parked cars poses **safety risks** to cyclists and can easily dissuade them from their path [5, 10]. Hitting the sharp edge of the vehicle's door or possibly breaking the window glass can result in **cutting injuries** and often cause the cyclists to fall, which leads to injuries due to a **collision with the asphalt** [6]. However, injuries not only result from direct impacts with the vehicle's door, but also by **pushing the cyclists into the path of oncoming traffic** [3]. The latter may also occur if the cyclist suddenly swerves to avoid a collision. These incidents can be **fatal** [6].

Narrow bicycle infrastructure is **particularly problematic** with **high speeds, contra-flow traffic** and a **high volume of cyclists** as it does not allow safe passing and overtaking of cyclists and can cause **frontal crashes** between cyclists because of insufficient space between directional driving and oncoming cyclists [4]. In addition, especially in curves, too narrow bicycle infrastructure also might impose **visibility issues**. Another problem that occurs at narrow bike lanes and advisory lanes, in narrow streets in particular, are vehicles overtaking cyclists with **insufficient safety distance**.

## What is the problem and What causes the problem?

Narrow bicycle infrastructure or bicycle infrastructure that is located too near to curb-side parked cars is typically caused by **limitations of space**, i.e., road authorities have a lack of space to provide the required widths & distances for bicycle infrastructures. However, too narrow infrastructure can also be a **planning and projecting issue**, when bicycle infrastructure is planned too narrow, regarding the volume of cyclists, even if there would have been enough space, or when in countries with lower volumes of cyclists, unidirectional cycle paths are converted to **bidirectional cycle paths** [4].

## What is the size of the problem?

Exact numbers of bicycle accidents that are caused by narrow infrastructure are hardly available. However, for the Netherlands [9] – based on data of 148 bicycle-bicycle accidents from hospitalised bicycle victims – report that 18% were accidents in which handlebars of the bicycles have hit each other and 11% were collisions with oncoming bicyclists, indicating that **accidents between cyclists** can often be **attributed to limited width of bicycle infrastructure**. Moreover, particularly in urban areas, dooring collisions caused by **insufficient space between the bicycle infrastructure and curb-side parked cars** account for a high share of accidents, and for some cities in North America such collisions are even among the **most common collisions** between bicyclists and motor vehicles [1]. In Vienna, 12% of all cycling accidents in 2015 involving personal injury were dooring collisions [8].

In addition, for Germany, [7] analysed cyclist accidents at mandatory and advisory cycle lanes and indicated that stretches of **roads with narrow mandatory** (under 1.85 m) and **advisory** (under 1.5 m) **cycles lanes** had **higher accidents rates** than stretches with wider cycle lanes and that the accident density on stretches of roads with advisory cycle lanes with **adjacent parking** was almost **four times as high** as for advisory cycle lanes without.

## Examples



*Too narrow bicycle infrastructure at an underpass on the EuroVelo 9 in Austria [11]*



*Curb-side parked cars too near to bicycle infrastructure on the EuroVelo 6 in Austria [12]*

## Related fact sheets

### SOLUTIONS

- » Strategies
- » Planning principles
- » Junctions and crossings
- » Roundabouts
- » Overpasses and underpasses
- » Types of facilities: mixed with motorised traffic and/or pedestrians
- » Separated cycling paths



## References and links

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