



Best practice bicycle safety – improvement fact sheet

# Junctions and crossings: roundabout issues

## Overview

Roundabouts can be problematic for cyclists as passing through roundabouts is a challenging **orientation task**, **physically demanding** and it involves **bicycle-motorised vehicle interactions**. Conflicts particularly arise when motorists entering the roundabout **do not give way** to the cyclist on the edge of the roundabout or motorists leaving the roundabout **overtake the cyclist** at the edge of the roundabout. Roundabouts are especially problematic for cyclists when there is **no bicycle facility**, when there is a **marked cycle lane** next to the circulation carriageway, when there are **multiple lanes**, and when there are **high speeds and high traffic volumes**. Studies indicate that a considerable percentage of especially bicycle-motor-vehicle accidents occur at roundabouts.

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

In general, roundabouts have a favourable effect for road safety and improve the safety of intersections for motor vehicles, however, several studies suggest poor results for bicyclist accidents [3, 9]. In fact, roundabouts can impose **safety risks for cyclists**, as passing through roundabouts is a **challenging orientation task, physically demanding** and it involves **bicycle – motor vehicle interactions** which can result in potential conflicts and accidents [7, 13, 15]. Roundabouts are especially problematic for cyclists when there is no bicycle facility present, i.e., mixed traffic, a **marked cycle lane next to the circulation lane, extremely low or high central island diameters**, or more than one travel lane, i.e., **multi-lane roundabouts** [1, 4, 10, 14]. Beside these design elements, also **high speeds** and **high traffic volumes increase the risk** of cyclists at roundabouts [7].

## What causes the problem?

Roundabouts can be problematic for cyclists as they represent a challenging orientating task because of the **circular design** which can trigger **orientation failure** and increase crash **risk**. Furthermore, because passing through a roundabout is physically more demanding due to the **circular deflection of the road**, the number and **proportion of single-bicycle accidents** may be increased [7]. Especially situations that involve a **circulating bicycle** and an **exiting or entering car** are perceived with a **high level of risk** from cyclists [11]. In this regard conflicts particularly arise when **motorists entering the roundabout do not give way to a cyclist** in the circle, or **motorists leaving the roundabout pull out** in front of the cyclist towards an exit. This is mainly an issue on **multi-lane roundabouts** because motorists are focusing more on the centre of the roundabout, as well as at **large roundabouts**, when a cycle lane forces the

cyclists to remain close to the edge. In addition, conflicts also arise when a **cyclist entering the roundabout** cuts across a motorised vehicle entering the roundabout at the same entry, because the cyclist wants to cross in a straight line [13, 14]. Furthermore, perceived risk from cyclists is particularly high when cyclists are exiting the roundabout and cars are coming from behind, and the cyclists feel **less able to control and predict the interaction** with the exiting cars [11]. These potential conflicts can result in accidents which often lead to **serious injuries or even death** of the cyclists [10].

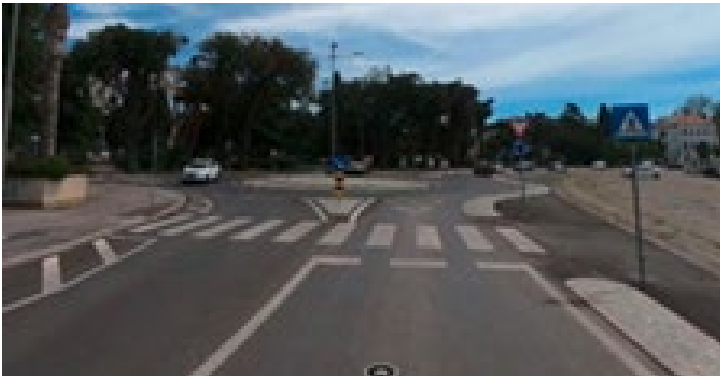
## What is the size of the problem?

[6] reported that around **2% of cyclist fatalities** in the EU in 2018 occurred at roundabouts. For Switzerland, [2] reported that 2% of serious single-bicycle accidents in the period 2012-2016 occurred at roundabouts, but for **collisions with motor vehicles** this share was even **10%**. In addition, [8] – also for Switzerland – indicate that almost **one-third of the accidents at roundabouts involve cyclists** and that **bicycle accident accumulations often are located at roundabouts**. [5] indicated that in the Netherlands **50% of the victims at roundabouts** in the period 2015-2018 were **cyclists**. For North Rhine-Westphalia in Germany, [12] reported that the share of accidents involving cyclists in all accidents with personal injury in built-up areas at roundabouts in the period 2004-2009 was 38%. In conclusion, studies indicated that a **considerable share** of especially **bicycle-motor-vehicle accidents** occurs at roundabouts.

## Examples:



*This roundabout in Tulcea, Romania, is lacking any markings (central, cycle path, lanes) and makes it very difficult to navigate by cyclists and drivers together. [16]*



*This roundabout in Pula, Croatia, has recently been built, and even though cyclists can be frequently seen along this road section, no infrastructure has been dedicated to them (EuroVelo 8). [17]*

## Related fact sheet

## SOLUTIONS

» Roundabouts



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16. SABRINA. Picture by FPZ
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