



Best practice bicycle safety – improvement fact sheet

Junctions and crossings: blind spot



Overview

The blind spot issue imposes safety risks for cyclists and can lead to **conflicts and collisions at junctions**. It typically arises in situations when the cyclist is riding straight ahead and has right of way and a motor vehicle turns right but cannot see the cyclist because he is located in the vehicle blind spot, i.e., not visible through the window or mirrors. This is mostly a phenomenon in **urban areas** at junctions with traffic lights that turn green for cyclists and other traffic simultaneously and on roads with cycle tracks or cycle lanes. It is especially problematic for **heavy goods vehicles and lorries** leading to serious injuries or even death for the cyclists in case of a collision. Studies indicate that a considerable number of collisions, especially between lorries and cyclists, can be attributed to the blind spot issue.

What is the problem and where does it occur?

At junctions, collisions of bicycles with motor vehicles can often be attributed to turning **accidents** that are caused by **visibility issues** and **blind spots**. Such accidents happen between straight ahead riding bicyclists and right turning motor vehicles (also known as right-hook accidents), in which the cyclist is located in the blind spot and **cannot be seen or is seen too late** by the driver of the motor vehicle and both vehicles approach the intersection [2, 3, 7]. Especially with **heavy goods vehicles and lorries** this imposes a high safety risk with **severe collisions** and even **death** for the cyclists [6]. However, even near misses in such right-turn scenarios are perceived as **very scary** by the cyclists, because they feel that they have **little control of how the situation will unfold** [1, 5]. The majority of turning accidents at junctions due to blind spots occur in **urban areas, at junctions with traffic lights that turn green for cyclists and other traffic simultaneously** and on **roads with cycle tracks or cycle lanes** [2, 10].

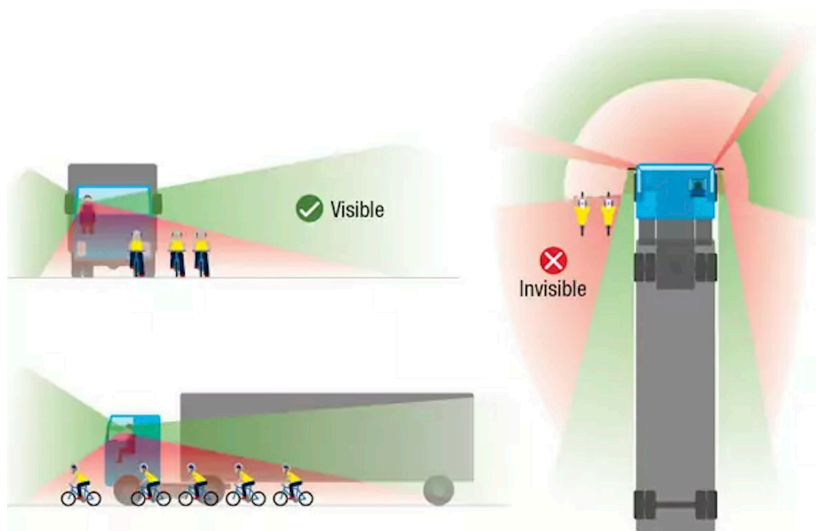
What causes the problem?

Dangerous situations and **accidents** at junctions between right turning motor vehicles and bicyclists – when motor vehicles cross into the cyclist's path – are mainly attributed to the **blind spot issue** [6]. This problem particularly arises with heavy goods vehicles and lorries, whose drivers due to the **size of the vehicles** have **poor vision around the vehicle** [9]. In these cases, often also the bicyclist is **unaware** that the lorry **driver has not seen him/her or that the driver wants to turn right**, which even exacerbates the problem [8]. Turning accidents between motor vehicles and cyclists can lead to serious injuries and death, especially when lorries are involved which due to the **size and weight of the vehicles** increase the severity of injury for the bicyclist in case of a collision [9].

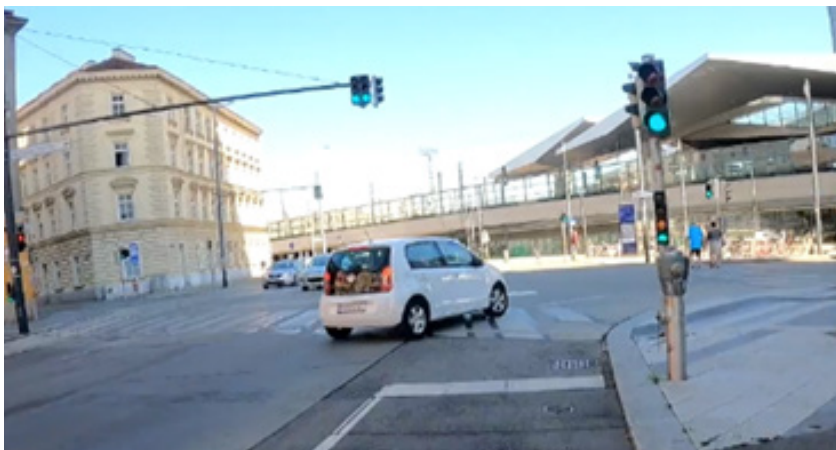
What is the size of the problem?

Overall, for Germany, [7] indicated that **turning accidents** make around **one fifth** of all cyclists-involved accidents. With regard to the blind spot issue, for the UK, for the period 2011-2016 [4] reported that in 3% of cars involved in collisions with cyclists, the **vehicle's blind spot was cited as a contributory factor**, and **for heavy good vehicles the figure was even 17%**. For Austria, [11] reported that of all accidents between cyclists and heavy goods vehicles between 2015 and 2019, in which the cyclist was killed or seriously injured, **21%** were collisions in which a lorry wanted to turn right and the cyclist wanted to go straight ahead – **the typical blind spot crash**. Similarly, for the Netherlands, [9] reported that between 2005-2013 the number of fatalities among cyclists due to crashes in which a lorry wanted to turn right and the cyclist wanted to go straight ahead **averaged 9 deaths per year**. All these studies indicate that blind spot issues – especially in connection with lorries – **impose huge safety risks for cyclists at junctions**, causing **severe injuries and even death** of cyclists in case of collisions.

Examples



Sharing the road with heavy vehicles is especially risky for cyclists [12]



Potential blind spot problem at junction on EV9 in Austria [13]

Related fact sheets

SOLUTIONS

- » Junctions and crossings
- » Roundabouts

References and links

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