

Turning-off accidents involving vehicles turning and cyclists riding straight ahead

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Introduction

Relevance of turning-off accidents involving cyclists in urban areas*

- approx. 80 % of these accidents result in personal injury
 - personal injury 6 times more common than in total accident statistics
- 36 % of total numbers of turning-off accidents with personal injury
- 15 % of total numbers of cycling accidents with personal injury

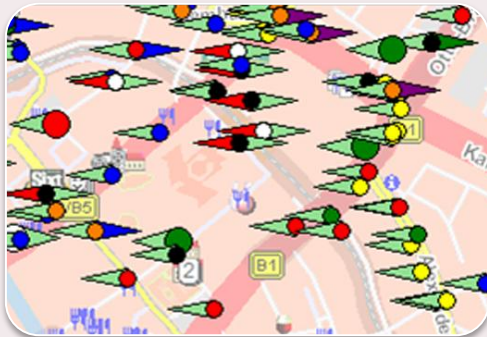


Introduction

Examination questions

- What influence has the design of the traffic infrastructure on turning-off accidents and road safety?
- Is there a typical erratic traffic behaviour that causes turning-off accidents?
- Are there traffic situations or local circumstances with a negative influence on the traffic safety when turning-off?

Methodology - overview



Accident analysis toA i.cycl.* MS, MD, DA, EF 2007-09

- macroscopic
approx. 6.300 A i. cycl.
approx. 870 toA i.cycl.
- microscopic
approx. 453 toA i.cycl.
approx. 151 intersection
legs



Observation of behaviour (incl. on-site survey)

- 3 cameras, 2 observers
- 43 intersection legs
450 cyclists interviewed
135h video footage
> 6.000 vehicles turning-off
708 vehicle-cycl. interactions
thereof:
67 slight conflicts
4 serious conflicts



Representative telephone survey

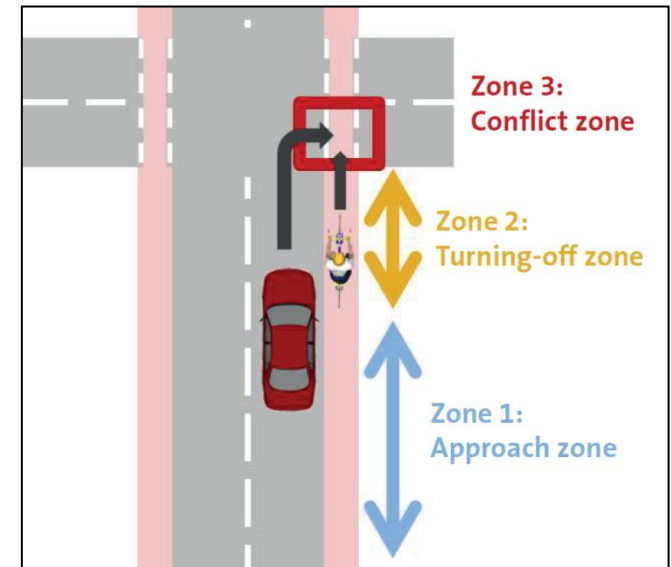
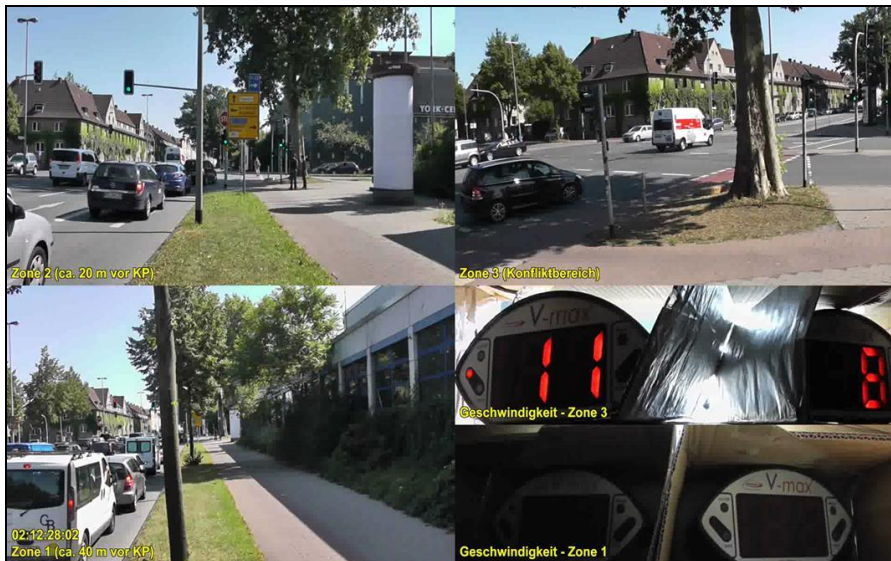
- 200 drivers and
200 cyclists
in the 4 cities

* toA i.cycl. = turning-off accidents involving cyclists

Methodology – behavioural observation

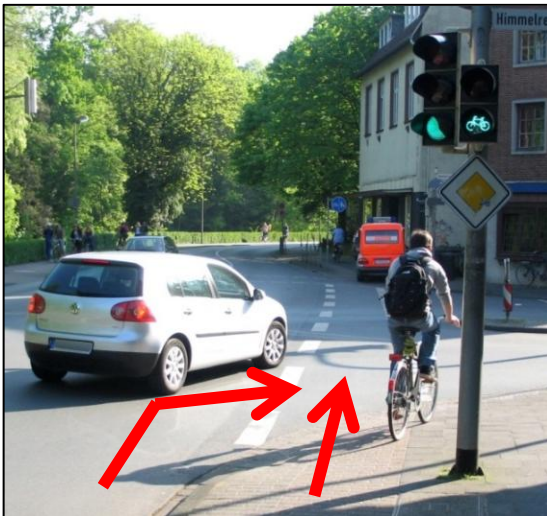
Observation of traffic behaviour

- 3 observation zones
- Main emphasis on the interaction in the conflict zone



Results of the accident analyses

- 2/3 right-turning accidents, 1/3 left-turning accidents
- Main causer is the driver (>90%) (turning-off error)
- Most frequent causes of cyclists are cycling on the pavement or in wrong direction (in total 12%)



Infrastructure with poor results for the calculated accident indicators

Turning-off accidents to the right (near side)

- Intersection legs with cycle paths and a cycle crossing with a set-back distance more than 2 m (with or without traffic lights)
 - Particularly high accident cost rates
 - High influence of obstructions to visibility (70 - 80 %)



Infrastructure with poor results for the calculated accident indicators

Turning-off accidents to the left (far side)

- Intersection legs without traffic lights where the road is shared by cyclists and motor vehicles in mixed traffic
 - Highest accident (cost) rates by far
- Negatively affected by
 - Low traffic volumes of cyclists and/or cars turning left
 - Cyclists not using designated infrastructure and/or cycling in wrong direction



Source: UDV, Naturalistic Cycling Study

Traffic behaviour and situations on the road

- One in five drivers do not look over shoulder although a cyclist is approaching
- Cycling facilities were accepted by cyclists, contrary to cycling in mixed traffic
- Drivers expect cyclists on the cycling facility and were surprised to see them elsewhere (e.g. on the sidewalk)



Source: Fotolia

Traffic behaviour and situations on the road

- Likelihood of conflict is increased
 - when cars and cyclists both approach at running green
 - for lines of vehicles turning off
 - in case of rule violations
- Gaps in knowledge whether it is mandatory to use cycling facilities
 - 85% of the cyclists and drivers did not know that it is only mandatory to use it when it is signalised by a corresponding traffic sign



Recommendations on infrastructure

- Removal of obstructions to visibility (also for the look over the shoulder)
- Guidance of cyclists on cycle lanes or cycle paths close to the road
- Separate phases in signalisation for cyclists cycling ahead and drivers turning
- Cycle crossings should generally be marked out



Recommendations on infrastructure

- Clear easily understandable guidance of cyclists at intersections
- The permission for cyclists to cycle on the sidewalk should be avoided
- Cycle paths must be designed and maintained with safety in mind even where it is not mandatory to use them



(avoid)

Recommendations on traffic behaviour

General

- Adhere to the rules of the road!

Drivers

- Always look over your shoulder when turning-off!
- Be aware, that the use of cycling facilities is not always mandatory!

Cyclists

- Do not cycle on sidewalks! Use the designated cycling facility!
- Do not cycle in wrong direction!
- Be heedful - even when you have the right of way!

Thank you for your attention



The corresponding publication in English can be downloaded from our website www.udv.de.

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