

**Cyclists' Safety at Channelized Right Turn Lanes:  
a Traffic Conflict Study Comparing Cases with Cyclists In and Out Priority**

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## **Abstract**

With increasing traffic volumes, congestion problems become more prominent. Mainly urban areas are affected, possibly due to the large amount of signalized intersections where traffic flows are continuously disrupted. Traffic flow efficiency can be improved by adding channelized right turn lanes, allowing right-turning vehicles to bypass the traffic lights (for right-hand drive countries). When exiting this separate turning lane, drivers only need to yield to vehicles coming from the intersection plane. In many cases, cyclist and pedestrian crossings are added on the channelized right turn lane, but their location and priority rulings differ between intersections. Currently, no guidelines or regulations in Belgium exist that describe how these crossings should be designed, resulting in a variety of configurations. To understand how these different channelized right-turn lane designs affect cyclist safety, we selected the two most common configurations and compared situations in which the priority rules favored the cyclists and the priority rules favored the motorists. This paper provides insight in the safety issues of both channelized right turn lane designs and evaluates which priority ruling is safer for cyclists.

The use of traffic conflicts as surrogate measure for traffic safety is becoming more popular, since many shortcomings of accident data have been recognized. This study adopted the Swedish Traffic Conflict Technique, in which a cross-sectional study design was used. A comparison was made between two pairs of channelized right turn lane configurations, in which the cyclist crossings were constructed at the center of the turning lane, rather than at the entrance and/or the exit. Within each pair, the difference consisted of the priority ruling (either favoring the cyclists or the motorists). One pair only accommodated cyclists, while the other pair contained a zebra crossing right before the cyclist crossing as well. All crossings were bidirectional, meaning that motorists should expect cyclists (and pedestrians) from both directions. Video observations were made during a period of two weeks and the video footage was analyzed using semi-automated video analysis software. Safety assessment was mainly based on the parameters Time-To-Collision and Post-Encroachment-Time, which served as a basis for classifying the observed conflicts. The analysis was extended by including observations of yielding behavior, in which the crossing direction of the cyclists and pedestrians was taken into account, since it might influence the chance of a certain conflict type to occur.

At this moment, the data collection and analysis are still ongoing. Therefore, it is not yet possible to communicate results and conclusions.

**Key words** *Behavioural observation, Channelized right turn lanes, Cyclist crossings, Swedish Traffic Conflict Technique, Traffic Safety, Yielding behaviour*