The safety of vulnerable road users (VRUs) is a growing concern for policy makers and road designers. While the total number of fatalities on European roads has strongly decreased over the last years, the reduction in the number of fatalities has been less than proportional for VRUs such as cyclists and pedestrians. Therefore, the share of VRU fatalities increases.

Intersections on urban collector roads can be considered as important points of attention for VRU safety, since high volumes of motorized traffic as well as vulnerable road users are present at these locations. Quite often, such urban collector roads contain an alternation of both signalized and unsignalized intersections. At present, potential differences in VRU safety between both types of intersections on such roads are unclear. Therefore, this study has selected two pairs of highly comparable intersections on two major urban collector roads (i.e. four intersections in total) for elaborate analysis using semi-automated traffic conflict observation. Both collector roads have two traffic lanes per direction.

Three full days of videos are analyzed at each location using the video analysis tool T-Analyst. All interactions between VRUs and motor vehicles that have a calculated severity level of 24 or higher according to the Swedish Traffic Conflict Technique are considered to be serious conflicts and are analyzed into more detail. The dataset contains a total of 178 serious conflicts. For all conflicts, detailed information about the conflict location, types of road users involved, and road users’ maneuvers are registered. Information about other relevant contextual elements is collected as well, such as traffic volumes, weather conditions, and the presence of a sight obstruction between both conflicting road users by a third road user.

Some of the main results are the following:

- The number of serious conflicts is higher at the unsignalized intersections than at the signalized intersections. This indicates that the unsignalized intersections on urban collector roads are generally less safe for VRUs than the signalized intersections.
- The correlation between traffic volume and the number of serious conflicts is low at signalized intersections. There is however a strong positive correlation between traffic volume and the number of conflicts at unsignalized intersections; higher volumes equal higher numbers of conflicts at unsignalized intersections. The correlation is strong for traffic volume expressed in terms of the number of motor vehicles per hour as well as for the number of VRU per hour.
- At signalized intersections, most serious conflicts take place between a turning motor vehicle and a crossing VRU. At unsignalized intersections however, most conflicts include a motor vehicle driving straight through and a crossing VRU.
- There are some indications that crossing VRUs have a higher chance of getting involved in a serious conflict with vehicles that are driving on the second lane (from the VRU’s perspective). Sight obstruction due to a third vehicle on the first lane is present in half of these conflicts, and is therefore a major contributing factor in these types of conflicts.
As an additional methodological contribution, the final paper will also assess the registered conflicts using two promising new traffic conflict indicators, Delta-V and T2min. The goal is to explore how well these indicators perform in assessing different types of conflicts, and whether these indicators would lead to different conclusions.