Halvtidsuppdatering cykelsäkerhetsforskning

Författare: Tania Dukic Willstrand
Datum: 2017-03-01 till 2017-12_30
Projekt inom FFI - Cyklar och andra fordon i säker och smart samverkan för en hållbar framtid

FFI Fordonsstrategisk Forskning och Innovation
VINNOVA Energimyndigheten TRAFIKVERKET
SCANIA VOLVO

Innehållsförteckning

Kort om FFI

FFI är ett samarbete mellan staten och fordonsindustrin om att gemensamt finansiera forsknings- och innovationsaktviteter med fokus på områdena Klimat & Miljö samt Trafiksäkerhet. Satsningen innebär verksamhet för ca 1 miljard kr per år varav de offentliga medlen utgör drygt 400 Mkr.

För närvarande finns fem delprogram; Energi & Miljö, Trafiksäkerhet och automatiserade fordon, Elektronik, mjukvara och kommunikation, Hållbar produktion och Effektiva och uppkopplade transportsystem. Läs mer på www.vinnova.se/ffi.

1 Sammanfattning

Arbetet som utfördes vid SAFER samt de många intervjuerna avslöjade liknande resultat. Det visade sig att FFI-programmet var inte välkänt bland relevanta aktörer. Vissa hade hört talas om det men deras kännedom av programinnehållet var bristande och hade dragit slutsats att programmet inte var relevant för dem. Fler relevanta aktörer som hade god kännedom av program tolkade finansieringsmodellen med 50% medfinansiering av näringslivet som ett stort hinder för att kunna lägga fram ett förslag. Flera förslag hade inte ens skickats in.

Intervjuerna med relevanta aktörer bidrog till att sprida kunskap om programmets existens och dess relevans för dem. Eftersom gruppen som jobbar med dessa frågor är förhållandevis begränsad var FFI-programmet känt för majoriteten redan efter ett par veckor.

Workshopen som organiserades var en katalysator för att nå flera mål. Slutligen kunde projektet identifiera två huvudsakliga bidragande faktorer för att förklara bristen på ansökningar i programmet. För det första var innehållet i FFI-programmet inte känt av relevanta aktörer. Våra aktiviteter bidrog till att öka medvetenheten om programmet som i sig redan skulle kunna få en effekt. För det andra, bedömdes den nuvarande finansieringsmodellen vara ett enormt hinder. Industripartnerna är intresserade av forskningsförslag som identifierades, deras engagemang för att själva presentera på workshopen var ett bevis på det. Men i ljuset av en stark högkonjunktur har industrin inte tillräckligt med resurser internt för att kunna bidra och prioriteringen av dessa aktiviteter är inte tillräckligt hög.

2 Executive summary in English

The aim is to boost research and innovation for safe cycling to support the restart of the Vision Zero. The project aimed to understand the reason behind why so few proposals are submitted and to contribute for more relevant proposals to emerge.

A small group at SAFER worked together to make a first analysis regarding the lack of proposals in the FFI program. Then, the project leader had numerous discussion with actors within the relevant area of research to understand the reason behind the unattractiveness of the FFI program. People within academia, industry, consultancy company, institutes and SAFER stakeholders have been interviewed.

A workshop was organised to act as a catalyst to make proposals to emerge. People who have failed was given the opportunity to present and new people interested to contribute.

The project could identify two main contributing factors to explain the lack of applications in the program. First, the content of the FFI program was not well-known. Our activities contribute to increased awareness of the program. Second, the finance model was found to be a huge obstacle to apply. Industrials partners are interested in the research proposal, however, they do not have enough resources internally and the priority is too low. Our recommendation is to decrease the amount of private finance from 50% to 25%. This might be sufficient to commit the industrial partners.

3 Bakgrund

Projekt tar sin utgångspunkt i rapporten som låg till grund för den strategiska utlysningen ´Cyklar och andra fordon i säker och smart samverkan´. Sedan 2015 för få ansökningar har kommit in och dess kvalité har varit för lågt. FFI behöver en aktivitet för att få igång flera ansökningar och sprida kunskap om programmet.

4 Syfte, forskningsfrågor och metod

Syftet är att stimulera forskning och innovation för säker cykling för att stödja en omstart av Nollvisionen. Projektets syfte är att förstå orsaken bakom varför så få ansökningar lämnas in och att bidra till att flera relevanta förslag kommer in i framtiden.

5 Mål

Att flera ansökningar kommer in i programmet framöver med bättre kvalité och relevans.

6 Resultat och måluppfyllelse

Arbetet som utfördes vid SAFER samt de många intervjuerna avslöjade liknande resultat. Det visade sig att FFI-programmet var inte välkänt bland relevanta aktörer. Vissa hade hört talas om det men deras kännedom av programinnehållet var bristande och, som en konsekvens, hade det dragit slutsats att programmet inte var relevant för dem. Fler relevanta aktörer som hade god kännedom av program tolkade finansieringsmodellen med 50% medfinansiering av näringslivet som ett stort hinder för att kunna lägga fram ett förslag. Flera förslag hade inte ens skickats in.

Intervjuerna med relevanta aktörer bidrog till att sprida kunskap om programmets existens och dess relevans för dem. Eftersom gruppen som jobbar med dessa frågor inom industri och inom akademi är förhållandevis begränsad var FFI-programmet känt för majoriteten redan efter ett par veckor. Kunskapen om att det fanns stora resurser kvar inom programmet var också väl sprida.

Workshopen som organiserades den 23 maj var en katalysator för att nå flera mål. Personer som tidigare fått ett negativt svar hade ytterligare en chans att presentera sina idéer, fick feedback och kunde hitta nya partners för att bygga en starkare ansökan. Nya aktörer fick presentera sina forskningsidéer och fick möjlighet att hitta relevanta partners att vara med och hitta industripartner som var villiga att medfinansiera. Workshopen bidrog också till att visa FFI programrådet hur många relevanta idéer som finns och de kunde ta del av en intressant diskussion under denna eftermiddag.

Slutligen kunde projektet identifiera två huvudsakliga bidragande faktorer för att förklara bristen på ansökningar i programmet. För det första var innehållet i FFI-programmet inte känt av relevanta aktörer. Våra aktiviteter bidrog till att öka medvetenheten om programmet som i sig redan skulle kunna få en effekt. För det andra, bedömdes den nuvarande finansieringsmodellen vara ett enormt hinder. Industripartnerna är intresserade av forskningsförslag som identifierades, deras engagemang för att själva presentera på workshopen var ett bevis på det. Men i ljuset av en stark högkonjunktur har industrin inte tillräckligt med resurser internt för att kunna bidra och prioriteringen av dessa aktiviteter är inte tillräckligt hög.

Inom projektet genomfördes en olycksanalys baserade på STRADA data där analyserade olyckor mellan fordon (med fokus på personbil och tunga lastbil) och oskyddade trafikanter (med fokus på gående och cyklister). Vi bifogar denna analys i en separat fil.

7 Spridning och publicering

7.1 Kunskaps- och resultatspridning

Hur har/planeras projektresultatet att användas och spridas?	Markera med X	Kommentar
Öka kunskapen inom området	X	
Föras vidare till andra avancerade tekniska utvecklingsprojekt	X	
Föras vidare till produktutvecklingsprojekt	X	
Introduceras på marknaden		
Användas i utredningar/regelverk/ tillståndsärenden/ politiska beslut		

7.2 Publikationer

Ingen

8 Slutsatser och fortsatt forskning

Vår rekommendation är att minska medfinansieringskravet från 50% till 25%. Detta kan vara tillräckligt för att industripartnerna skall kunna bidra inom programmet. Det existerar redan ett stort antal relevanta forskningsförslag och det går att skapa bra projektteam med de kända parterna. SAFER skulle kunna spela en aktiv roll för att understödja utformningen av projekt mellan aktörer.

Projektets förväntade effekt är starka framtida skarpa forskningsansökningar inom området ”Cyklar och andra fordon i säker och smart samverkan för en hållbar framtid”.

9 Deltagande parter och kontaktpersoner

Partners	Kontaktperson
Chalmers	Magnus Granström
Autoliv	Cecilia Sunnevang
CycleEurope	Claes Alstermark
If	Irene Isaksson
VTI/SAFER	Tania Dukic Willstrand
Volvo Cars Corporation	Magdalena Lindman
Volvo AB	Anna Wrige Berling

Overview on Road Traffic Accidents in Sweden involving Vulnerable Road Users

Jordanka Kovaceva, Chalmers

Accidents involving Vulnerable Road Users (VRU) are still a very significant issue for road safety. According to the World Health Organisation, pedestrian and cyclist deaths account for more than 25% of all road traffic deaths worldwide. The main objective of this report is to provide an overview and in-depth understanding of the characteristics of road traffic crashes involving vehicles (here focus on passenger cars and trucks) and Vulnerable Road Users (here focus on pedestrians and cyclists) in Sweden. The in-depth understanding of the crashes include the identification of the most relevant road traffic 'accident scenarios' and injury severity levels sustained as well as the transport modes that represent a higher risk for VRUs.

This section provides a general view on the current road safety of VRUs. The focus of this report is on crashes with two participants. This approach allows to compare more precisely crashes with each other which were assigned to the same crash configuration but still differ e.g., in the crash opponent, their collision sequences, resulting personal injuries or material damages. In particular, in-depth crash investigations is expected to gain highest quality in the linkage to injury causing vehicle parts when focusing on two crash participants only. Another aspect is that regarding crashes involving VRUs, the share of crashes with three or more participants is relatively low.

Overview of VRU road safety in Sweden

From 2009-2013, there were 1,489 fatalities recorded in STRADA, see Figure 1. Over this five years period, 7% of the fatally injured were cyclists, more than double pedestrians (15%), and 55% car occupants. The majority of the car occupant fatalities (20%) were in the age of 18-24. More than two-thirds (67%) of the cyclist and pedestrian fatalities were above 55 years, with peak in ages above 75 for the pedestrians (35%). 8% for both, cyclist and pedestrian fatalities were children in ages 17 and under. However, when crashes with fatalities and seriously injured traffic participants were considered together then from the total number of casualties, 16,830, 57% were car occupants, 10% were cyclist and 11% were pedestrians, see Figure 1. The majority of the car occupant killed or seriously injured (KSI) were in the age of 18-24 (25%). Most of the KSI pedestrians were older than 75 (18%), compared to most KSI cyclists that were in age group 45-54 (18%), see Figure 2.

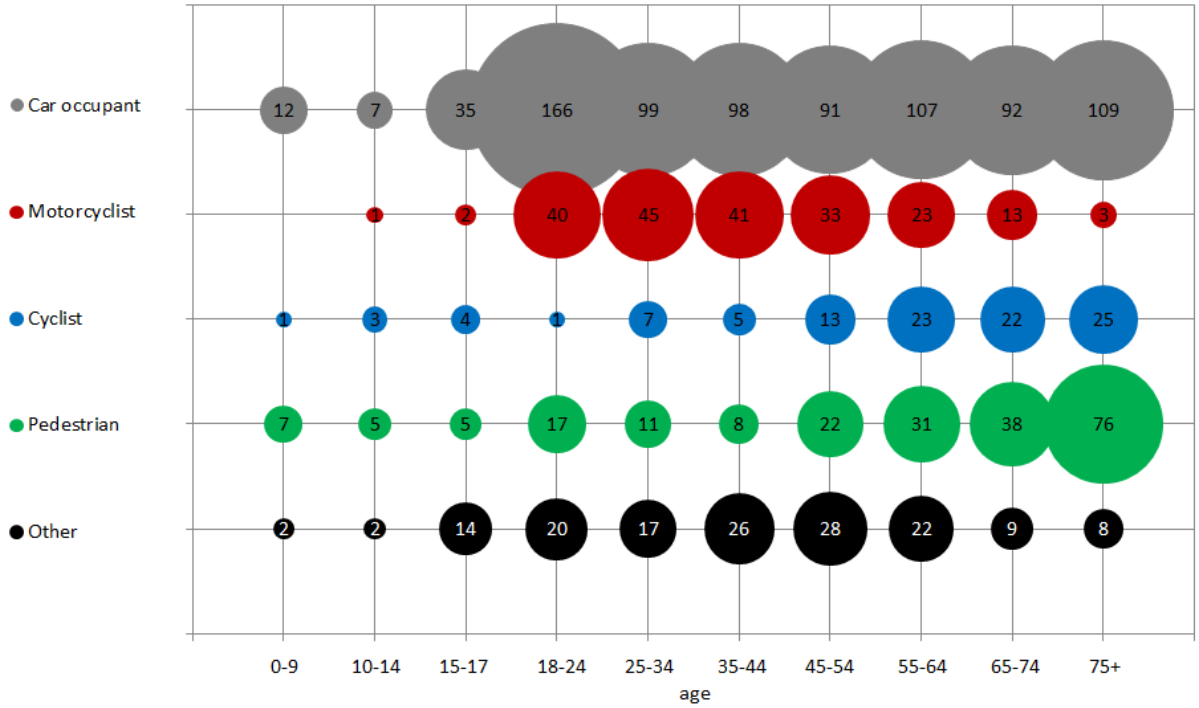

Figure 1: Fatalities in Sweden 2009-2013 by age and traffic participant.

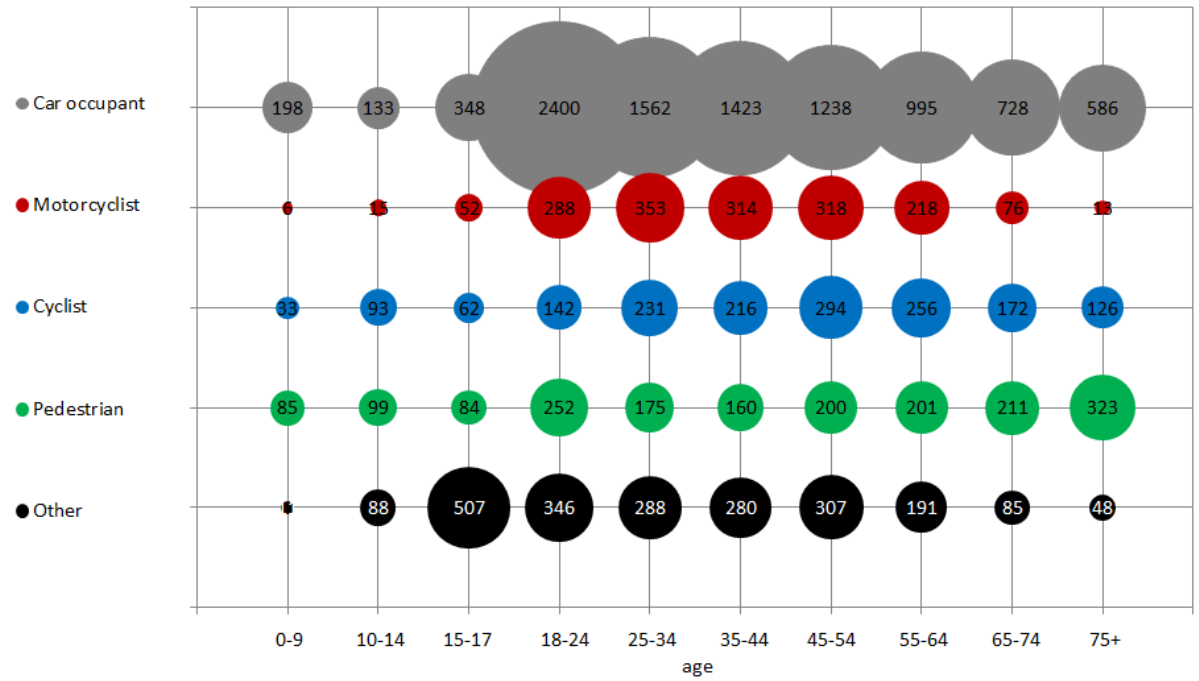

Figure 2: Killed and seriously injured traffic participants by age group in Sweden 2009-2013.

Car-to-Cyclist Crash Details

In this section, data from the national crash database STRADA in Sweden is described. The extracted dataset contained in total 6,825 car-to-cyclist crashes with exactly two traffic participants (one car and one bicycle) during the years 2009-2013, an average of 1,365 crashes per year. In these crashes

6,825 bicycles were involved, with 43 of them, carrying two persons on the bicycle, which led to 6,868 persons injured on the bicycle. The following paragraphs are focusing on the distribution of the injury extent, crash factors and cyclist characteristics of these 6,868 persons.

During this five year study period, the injury severity distribution of cyclists in car-to-cyclist crashes was as follows: 1% fatally injured, 13% severely and 85% slightly injured cyclists (1% were assigned to an unknown injury severity). The car-to-cyclist crashes involving older cyclists with an age of 75 years or higher accounted for one third of the fatalities while more than two-thirds of the severely and slightly injured were cyclists aged 18-64, see Figure 3. 53% of cyclists involved in these crashes and 65% of cyclists fatally injured were male.

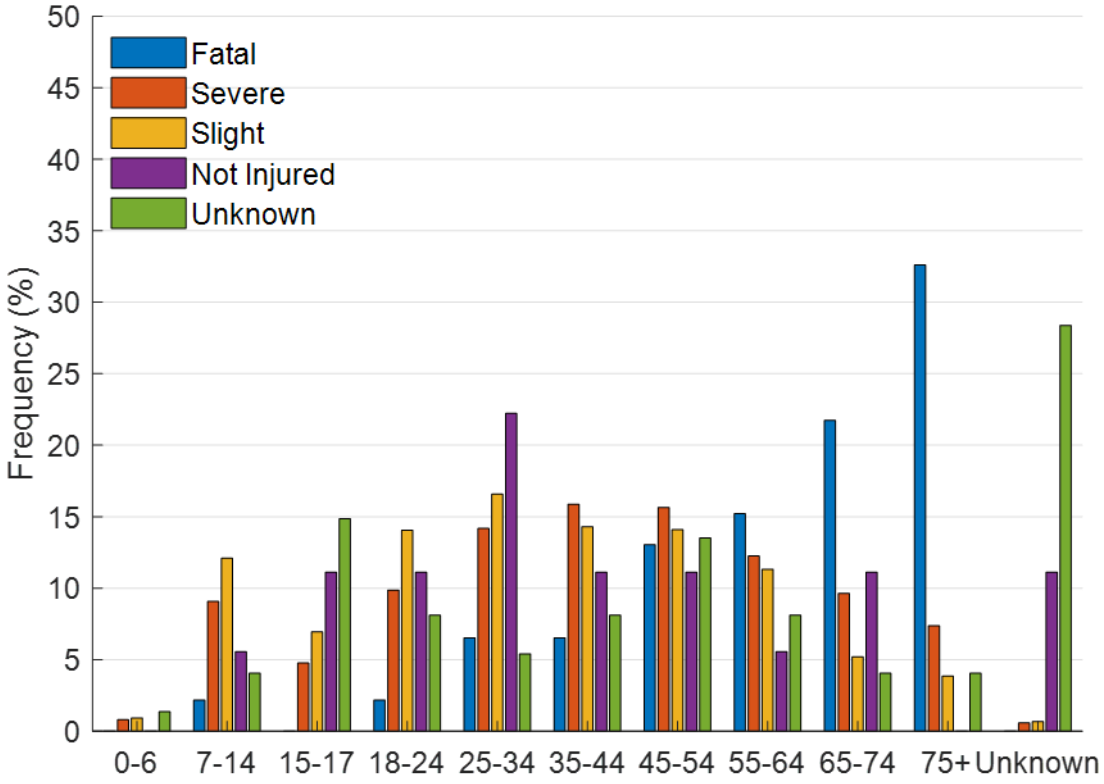

Figure 3: Cyclist injury extent in Sweden by age groups (2009-2013). N=6,868 cyclists.

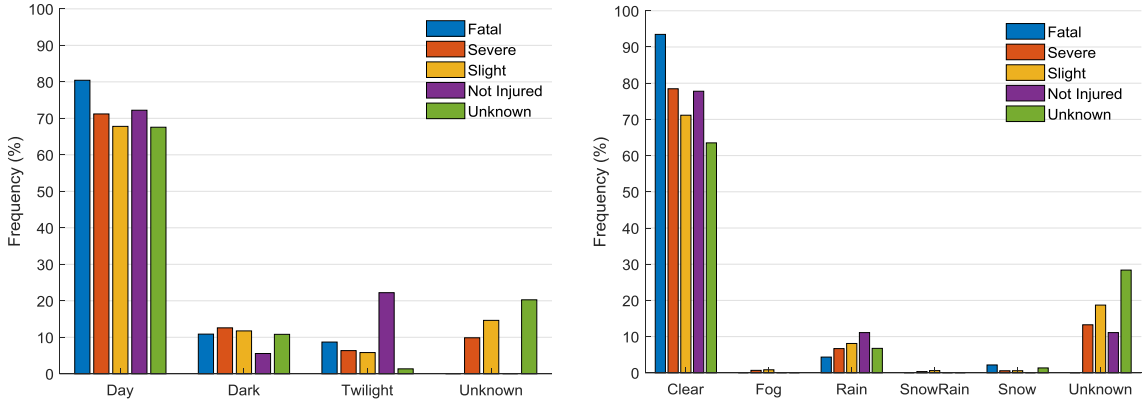

Figure 4: Cyclist injury extent in Sweden (2009-2013) by light (left) and weather conditions (right).

The majority of crashes occurred during daylight and in clear weather conditions, see Figure 4.

Most crashes where the cyclist was slightly or severely injured occurred in urban traffic environment (around 80%). However, the cyclist fatality rate was reported to be half and half regarding urban and non-urban environments, see Figure 5.

Posted speed limit, used as a proxy for vehicle speed, showed that more than 30% of all crashes occurred at 50km/h, see Figure 5.

In conclusion, (a) older cyclists suffer more often from higher injury severities compared to younger ones, (b) male cyclists are injured more often than females, (c) higher injury severities (in particular fatal crashes) happened more often on rural roads, and (d) crashes occurred most often in fine weather conditions. Further, it needs to be noted that exposure data, required to estimate risks, was missing. This is a general issue valid for nearly all European countries, including Sweden.

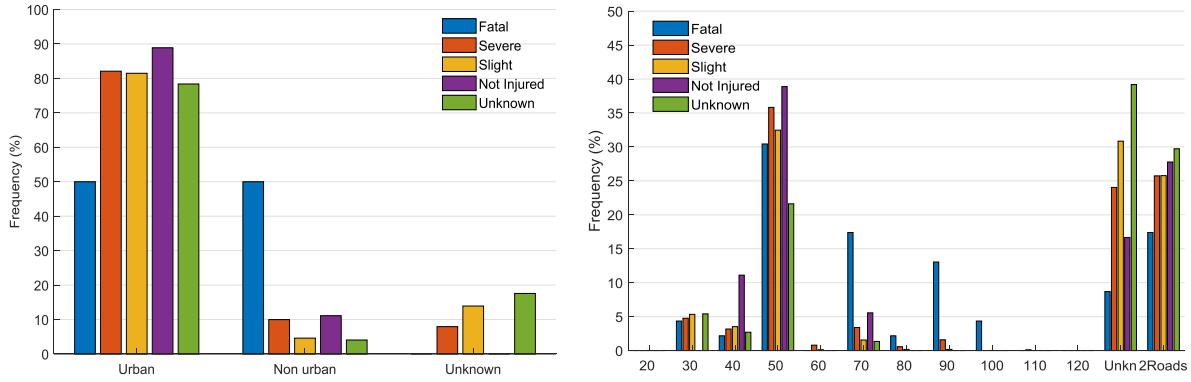

Figure 5: Cyclist injury extent in Sweden (2009-2013) by traffic environment (left) and posted speed limit (right).

Truck-to-cyclist crashes

Data were extracted from the national crash database STRADA in Sweden in this section. "Truck" includes light and heavy truck but also trucks that are not assigned any of these categories in the dataset, but are marked as 'unknown truck'.

The extracted dataset contained in total 382 truck-to-cyclist crashes with exactly two traffic participants (one truck and one bicycle) during the years 2009-2013 with an average of 76 crashes per year. In these crashes 382 bicycles were involved and 384 persons (two bicycles carried two passengers each). The distribution of the cyclist injury outcome and the cyclist's age are shown in Figure 6. One cyclist was not injured and one was with unknown injury severity in ages 35-44 and 'unknown' respectively (not shown in the figure).

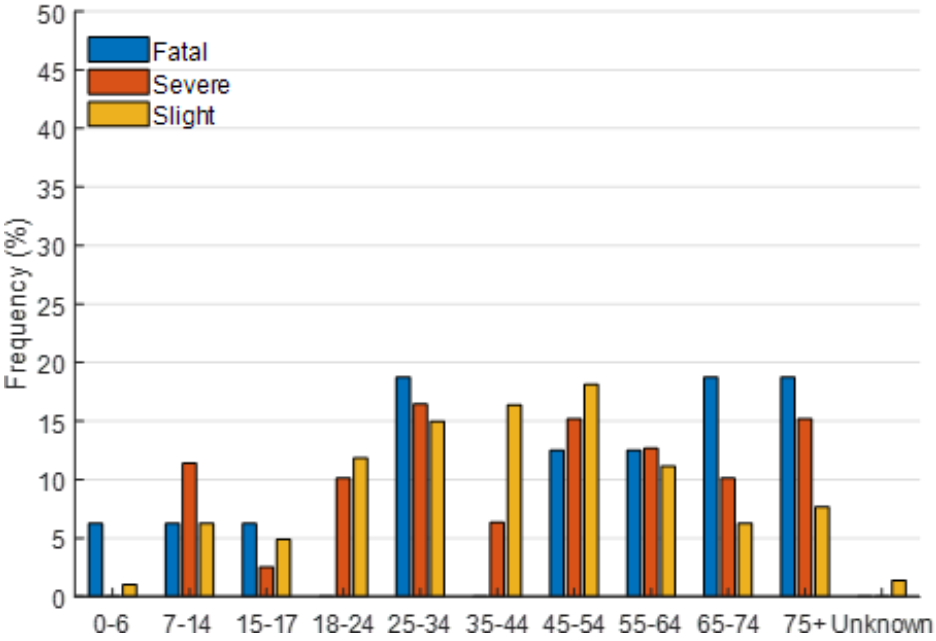

Figure 6: Distribution of injured cyclists in truck-to-cyclist crashes in Sweden, 2009-2013, by age. N=384 cyclists.

During this five year study period, the dataset contained 4% cyclist fatalities, 21% severely injured and 75% slightly injured cyclists. The truck-to-cyclist crashes involving cyclists above an age of 54 years accounted for half of the fatal crashes while the cyclists in ages 18-54 years accounted for more than half of the slightly and severely injured casualties.

In addition, there were slightly more male cyclists involved in the truck-to-cyclist crashes than females (55% vs. 45%). The majority of the crashes were in daylight (76%), clear weather (75%) conditions and in an urban environment (77%).

Truck-to-pedestrian crashes

The extracted dataset contained 439 truck-to-pedestrian crashes with exactly two traffic participants (one truck and one pedestrian) during the years 2009-2013 with an average of 88 crashes per year. 9% were pedestrian fatalities, 24% severely and 62% slightly injured pedestrians, see Figure 7. Further, 5% accounted for an unknown injury severity.

A similar number of male and female pedestrians were involved in the truck-to-pedestrian crashes (51% vs. 49%). 62% of the crashes occurred in daylight while 19% in dark, 5% in twilight and 14% in unknown light conditions. Looking at pedestrian fatalities 31% of these crashes occurred in dark light conditions compared to 14% in the case of severely injured pedestrians. More than two-thirds of the crashes occurred in urban traffic environment (69%) and in clear weather (69%) conditions. As for crashes with passenger cars, it could be seen that the older the pedestrian the higher the injury severity.

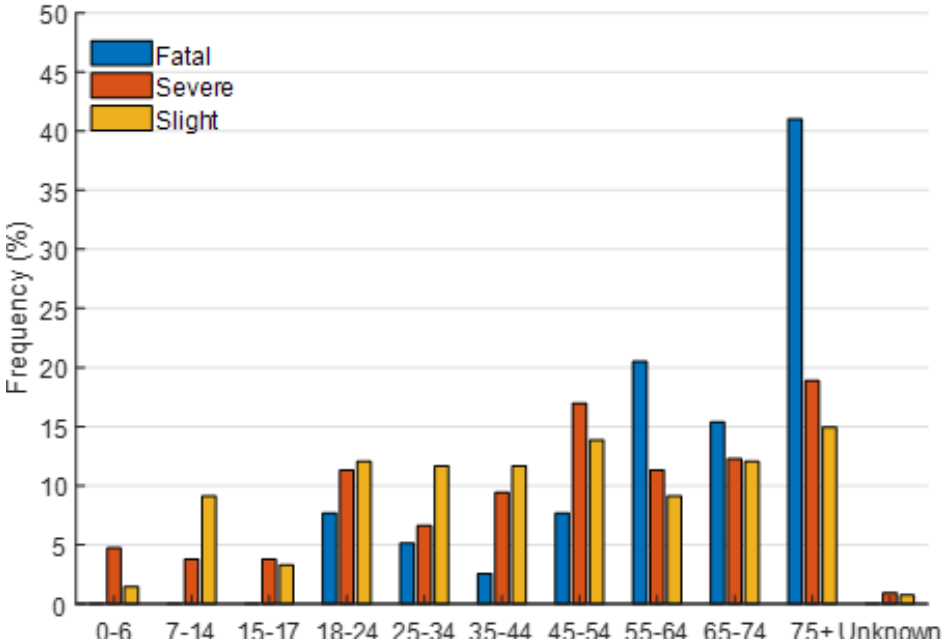

Figure 7: Distribution of pedestrian injuries in truck-to-pedestrian crashes in Sweden, 2009-2013, by age. N = 439 pedestrians.

Summary and Future Work

The crash databases from Sweden, STRADA, has been analysed regarding crashes between passenger cars or trucks and VRUs. It has been shown that not only car-to-cyclist crashes but also truck-to-cyclist crashes need to be considered in future as mobility trends show an increase in these types of two-wheelers.

Usually, crash databases are analysed in a descriptive way. However, to calculate the risks of getting injured or killed requires also information on uninjured casualties (but involved in a crash), information on under-reporting and exposure data (e.g. mileage) which is rarely available. For instance, the large majority of single cyclist crashes (which also constitute the largest proportion of cyclist crashes in Sweden) are unreported by the police. These are general issues, presumably valid for all European countries.

Historically, the first and still the most reliable variable for the comparison on accident situation between countries is the number of fatalities in road crashes. Comparing the number of slightly or seriously injured people among European countries yields less reliable results as such comparisons are affected by a large number of factors, including different definitions, different health care systems, different organizational issues of rescue services and alert chains, different organizations of police, different insurance-practice and -culture, different traffic laws and also the different definitions of injury severity. Therefore, it would be important to have a common definition for “road traffic crashes” and for injury severities in order to remove part of the uncertainty.

The harmonization of road accident database collection (ex. classification of accidents by different aspects) including data from all European countries is required and would be effective in the EU to determine road traffic safety priorities.