

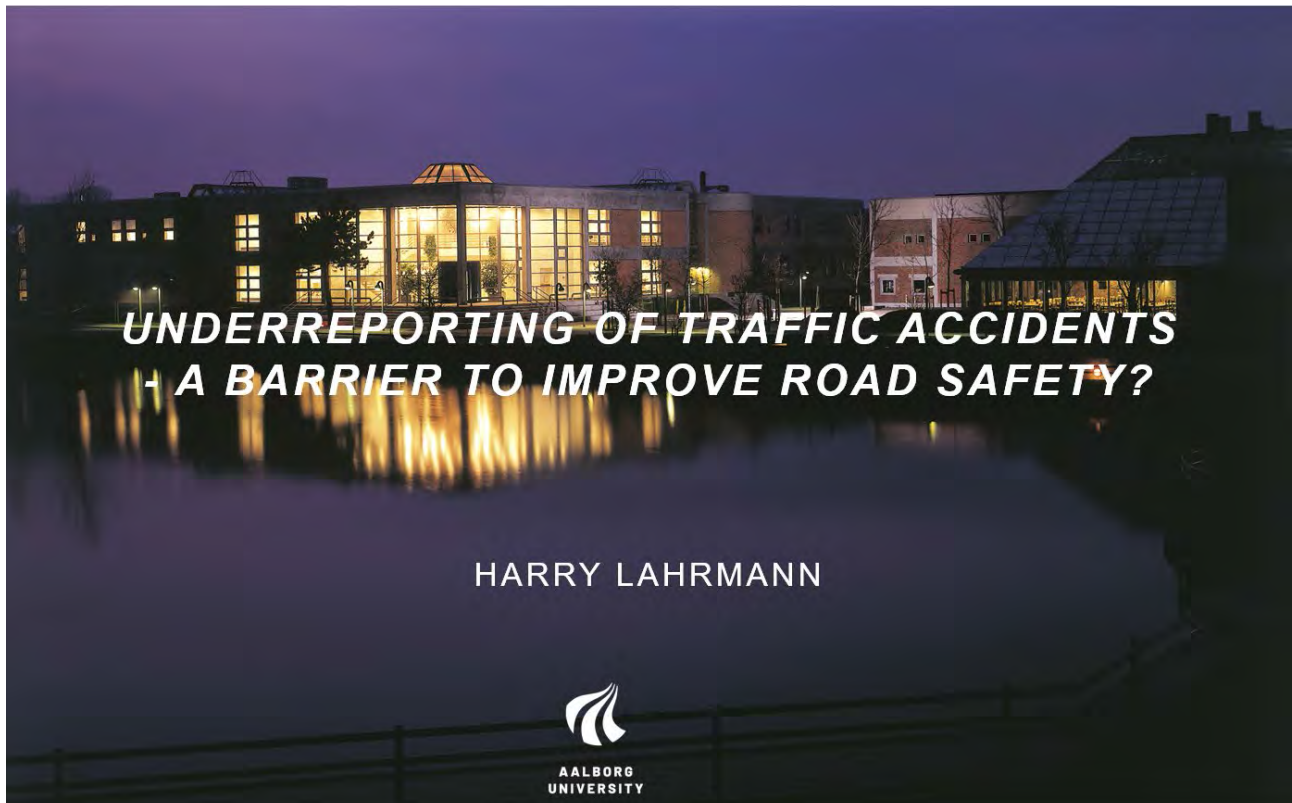


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Keynote speak at Nordic Traffic Safety Academy's yearly seminar (VIRTUAL) on 3. 4. May 2021



Good afternoon to everybody. Sorry we again this year can't meet in real life. I had look forward to visit Luleå – but next year we for sure will see each other in Luleå.

My name is Harry Lahrmann. I am an associate professor at Aalborg University and leader of the Traffic Research Group. As a researcher, I have worked with road safety for over 40 years and in all these years VRU's safety have been my special interest.

Today my biggest concern for road safety is that the interest at the political level is declining - at least in Denmark. The large reduction in the number of people killed in traffic has meant that many say - well, traffic safety is a problem we have solved. This means, among other things, that when electric scooters were introduced, for example, everyone sees them

as a solution on the last mile problem of public transport, but no one listens when road safety professionals point out that they are extremely dangerous.

One of the problems is that although the number of people killed in traffic has fallen, many are still injured in traffic but nobody knows them. The problem is simply that traffic accidents are underreported.

Today I therefore will talk about the dark numbers of traffic accidents. I want also this because the underreporting is skewed and in particular affects accidents with VRU.

It is well known that the accident statistics in all countries are burdened by a large dark figure, but it is also the general opinion, that the underreporting primarily is minor injuries, but is it true?



Let me tell you a story from real life. In November two thousand and ten, Lotte in the morning was on her way to work by bike. Lotte was Fifty-one years old and she lived in Næstved, a town in the southern part of Zealand. She drove along Ringstedgade and in the place, you see here, she overturned because the road was slippery. She hit the asphalt with her head. She was wearing a helmet, which took the shock, and when she has

recovered a little, she continues to cycle to work. Around noon, however, she becomes ill and went home and the next day she went to her local doctor who finds a concussion [kincussion]. The concussion was serious, and she ends up receiving 20% compensation from the insurance company and had to reduce her working hours by 20%. But it became never good and after 10 years a specialist declares her 100% incapacitated for work and today she has been granted an early retirement pension.

A sad accident that was never recorded by the police and nor at the hospital because she went to her family doctor first, and showing , that even through hospital data, we are not sure to have knowledge of all serious accidents.

The dark numbers of traffic accidents in Denmark

- Population survey (2016-17): 85,000 injured (95%: 63,157-107,442)
- Road Directorate Accident Statistics 2019 (police): 3,076 injured
- National Patient Register 2018 (hospitals): 34,329 injured



But what is the ground truth of traffic accidents? We investigated this in the INDEV project. An EU project on VRU's safety. In a population survey, a representative sample of over 5,000 Danes reported their traffic accidents during a year. If this group's accidents are representative for the entire population, the best guess is that we have eighty-five thousand injuries after traffic accidents in Denmark every year. Equal to fifteen thousand per mio. inhabitants.

These figures are to be compared with the official accident statistic is reporting 3,000 injured and the National Patient Register which reports thirty-four thousand injured

Severity of injuries

	<u>Number of injuries</u>	<u>%</u>
<u>Absence work / school</u>	37.000	44
<u>No absence</u>	48.000	56

	<u>Number of injuries</u>	<u>%</u>
<u>Has been in rehabilitation</u>	27.000	32
<u>No rehabilitation</u>	58.000	68



Getting injured on the roads are of course many things, so we asked in the survey two questions, to investigate the seriousness of the accidents. First, whether the injured had been absent from work or school. Here forty-four % answered yes. Next, if they got some form of rehabilitation after the accident, here thirty-two % answered yes. These answers indicate that between one third and half of the accidents were more than bruises and abrasions.

Personal injury by road type

	Number of injuries	%
Urban	58.000	68
Rural	21.000	25
Motorway	5.000	6
Unspecified	1,000	1



We also asked, where did the accident happened, and nearly 70% answered urban area.

Personal injury by road user type

	Number of injuries	%
Pedestrian - Fall	20,721	24
Pedestrian - multiparty	1,143	1
Bike - solo	24,898	29
Bike - multiparty	11,216	13
Moped – solo	3,125	4
Car – solo	4,239	5
Car – multiparty	18,126	21



Finally, we asked for their transport mode, and if there had been involved other road users in their accident. The results can be seen in this figure.

As you can see, no less than twenty-six % of accidents are pedestrian accidents. But hey, some of you would say: Fall accidents with pedestrians

are not a traffic accident, according to the common definition of a traffic accident.

That is correct, but why have we arranged our accident statistics in this way? The goal of an accident statistic is to have a basis for designing the most effective traffic safety strategy for the prevention of all accidents on all areas for which the road authorities is responsible, and if you do not include fall accidents in the accident statistic, they will not be included in the prevention strategy. For example a good standard for anti-slip on sidewalks and paths.

Therefore, the definition of a traffic accident should be changed to include falls with pedestrians on public road areas.

Notice, too, that solo accidents with bicycle includes no less than twenty-nine % of the reported accidents. If we look instead at the police reports of solo accidents with bikes, they only cover 9% in the police statistic. In total, the VRU represent seventy-one % of the reported accidents, compared to only 49%, when we look at the police recorded accidents.

So there are good arguments for focusing on VRU in urban areas in the coming years.

The population survey was based on self-reported accidents and thus also self-reported injuries. But how serious are these many accidents with VRU compared with injuries in car crashes? We all have a feeling that car accidents are far more serious than bicycle accidents, but is that right?

Direct public costs due to traffic accidents estimated in a case-crossover design

Aalborg Universitet



AALBORG UNIVERSITY
DENMARK

Direkte offentlige omkostninger som følge af trafikuheld estimeret i case-crossover design

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To investigate this, we conducted a case-crossover study to estimate the average cost of hospital, municipal care and sickness benefits in **the first year** after a traffic injury was recorded in the Danish National Patient Register in one year – in total forty-seven thousand injuries. The National Patient Register collects all data from treatments at our hospitals. The forty-seven thousand injuries is therefore only those, who came to the hospital after the accident and not them, who only went to the local doctor from a starting point.

And what was the result?

Average direct public costs (EURO) for municipal care, etc., sickness benefits and hospital in the first year after a traffic personal injury registered in the National Patient Register.

Total direct costs the first year after the accident	EURO
Total expense per. injuries	3.384
Pedestrians with counterpart	9.313
Fall (pedestrians without counterpart)	3.603
Bike with counterpart	3.496
Bicycle solo accident	2.501
Motorcycle with counterpart	11.155
Motorcycle solo accident	5.860
Car with counterpart	2.904
Car solo accident	4.011



The average cost in the first year was just over 3,000 EURO. But is there a difference between the different means of transport? Do car accidents cost more than accidents with VRU? The answer is no, car accidents cost between 3 and 4 thousand EURO while accidents VRU cost between 3 and 9 thousand EURO with pedestrian accident as the most expensive. Also motorcycle accident are very expensive, but they are few.

So the hypothesis, that accidents with VRU is small scratches can be rejected, they are at least as serious as car accidents.

Accident factors in 349 self-reported single accidents on bikes



The next question is now how do we prevent single accidents with VRU? We have investigated accident factors in three hundred and forty-nine self-reported single accidents on bikes. We found, that lack of daily operations - primarily snow and ice - was the single factor, which was included as a factor in most accidents – in fact in 60% of the accidents. There was also other factors, which can be prevented by the road authorities, for example, high ramps, vertical objects close to the cycle path and so on.

We have not investigated fall accidents with pedestrians in the same way, but I think we also have many slippery sidewalks and crooked pavement tiles as a contributing factor.

The conclusion is, that we have a very large dark figure in accident statistics, and that the dark figures have a predominance of accidents with VRU and with accidents in cities, but also that the road authorities have tools in the toolbox to prevent many of these accidents , if there is focus on them.

But how do we record a larger proportion of traffic accidents? In Denmark the basis for the official accident statistics is the police records, but

traffic accident is also recorded in hospitals and the hospitals records about 10 times as many injuries as the police.

But still the hospitals record still less than half the estimated true number based on our population survey. At the same time, the hospitals record very little information about each accident - in fact only the transport mode and whether there was a counterpart. And thus, hospital data can only be used to a limited extent in the accident prevention work.



In our research group we have had several projects, where we have collected additional information on hospital data through self-reporting from the patients. These projects shows that we got good and valid information from the patients - the patients wish to tell about their accident.

We believe in self-reporting as a method and have several projects in preparation, where we will try to self-report traffic accidents in new ways. In one of them, we have a collaboration with Denmark's two largest insurance companies. In this project, we will ask their customers, who receive compensation after a traffic accident, to self-report the accident. It will be interesting to see, this approach can provide new knowledge.

Consequences of the dark figure and the skew in the reported accidents?



Now to the consequences of the dark figure and the skew in the reported accidents. What consequences does this have for the accident prevention work? The resources for traffic safety are always limited, this means that if there is too much focus on accidents with cars in rural areas there will be too little focus on accidents with VRU in cities. And too much focus on the very serious police-reported accidents will give too little focus on VRU accidents, which also can have quite fatal consequences, but often never are reported - just think on the story of Lotte.

Let me give you some examples: In Denmark, there is a great focus these years on preventing accidents in rural areas. 2 + 1 roads are being built to prevent meeting accidents, roads are being rebuilt so that they become more forgiving to prevent the consequences of single car accidents, and roundabouts are being built to prevent crossing accidents, but maybe the money was better spent on good winter maintenance in the cities in places with many cyclists and pedestrians? We do not know, but we know, that seventy-one % of accidents are with VRU, and that accidents with VRU has just as many socio-economic costs as car crashes, and 70% of all crashes occur in urban areas.

We still have a lot of lack of knowledge about how to prevent accidents with VRU, but the figures clearly show that there should be a much greater focus on the safety of VRU in the coming years. Also because safer and safer cars these years means, that safety for people inside the cars is getting bigger and bigger - probably best illustrated with Volvo's goal , that nobody should be killed or be seriously injured in a Volvo.

And just because the cars becoming safer and safer for them, sitting inside the cars, the public's focus – and thus the politicians' focus on road safety as a serious social problem is weakened. We no longer see the headlines in the newspaper, where over a weekend 5 fatal accidents occurs and where a family of four were all killed in one of them.



Lotte's story never reached either the newspaper or the traffic accident statistics. So we have to get on the barricades and fight for VRU's safety the coming years.

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We now have a question and answer session and I look forward for your comments

I would suggest to start the discussion with the following questions:

- Should fall accident with pedestrian be recorded as a traffic accident – I mean yes, but are there arguments against?
- How do we report more accidents – What is the solution?
 - Better police registration
 - Extended hospital registration
 - Self-reporting as a supplement
 - Hospital
 - Insurance data

- STRADA is a common Swedish database with both police and hospital accidents

What is the experience – and the Swedish recommendation?

- One of the advantages of self-reporting is that you can ask about conditions that happened before the accident occurred, but the weakness is that you probably suppress accident factors that are self-inflicted.

Do you have experience with self-reporting of accident?

- The insurance companies have a large amount of data on traffic accidents that are not used in the accident prevention work - at least in Denmark.

How is it in other countries - are there countries where insurance data is systematically used in road safety work?