

# Whiplash injuries and rear-end-accidents in Norway

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**Whiplash injury is an injury mechanism, not a diagnosis. The essential feature of this injury mechanism is thought to be an initial hyperextension of the cervical spine followed by a rapid flexion. In whiplash cases we are generally often dealing with medically non-objectionable injuries with only subjective complaints such as neck pains, headaches, difficulties with concentration irritability and sleeping problems. The lack of objective criteria for a whiplash injury makes the recording and registration of this type of casualties very sensitive to various trends in the society.**

**The scope of this article is to give an overview over the whiplash-syndrome over time in Norway.**

This study is mainly based on statistics over casualties recorded at Gjensidige Insurance and rear-end-accidents recorded at Gjensidige and at the police.

The statistics this study is based on include about 60 000 claims for collisions and single vehicle accidents yearly reported to Gjensidige, of which 3000 with injuries, 8500 accidents recorded yearly by the police including 12000 injured and 300 killed. Gjensidige has a marked share near to 30% of motor vehicle insurance in Norway.

## **Strong increase in the 80ties**

Whiplash injuries among road accident victims are described first time in 1927 (Bastiaans, J. 1989). The incidences of reported

whiplash injuries over time and in different countries vary and are generally increasing. Braunstein & Moore (1959) found that 1.1 % of motor vehicle occupants sustained whiplash injuries in USA, Bäckström (1963) came to 1.4 % in Sweden and Bø (1972) found that 5.5 % of vehicle occupants injured in the Oslo area in 1968 suffered from whiplash injuries. According to Bø (1972) he found no serious injuries caused by the whiplash-mechanism in his material of totally 4389 casualties.

In the seventies it was increasing awareness about the whiplash-injuries in road accidents. First it was recognized by professionals people in the medical field. However, in the eighties the whiplash-syndrome was heavily emphasised in the media. Consequently the public opinion was more aware of this problem and

we observed a marked increase in the number of reported rear-end-accidents with injuries to the occupants. According to the road act any person involved in an accident with injured had to report the accident to the police, except minor injuries. In the period from 1980 to 1990 the number of reported injured and killed people in road accidents in Norway increased from 10 601 in 1980 to 12 218 in the year 1990 – 15.2% increase in ten years. Injured and killed in rear-end-accidents, however, increased in the same period from 410 victims in 1980 to 1563 in 1990 – 281% increase. (Statistisk Sentralbyrå)

The insurance companies in Norway have no reliable statistics over personal injuries for the same period. From the year 1991 the major insurance companies began a systematic and common registration of casualties in road traffic. Statistics from Gjensidige over traffic casualties injured in 1991 shows that 46% of the victims suffer from a whiplash injury. A limited study covering accidents occurred in 1983 and reported to Gjensidige gives indication that only 5% of the victims suffer from a whiplash-injury this year. (Fjeldberg, 1991)

### **Rear-end-accidents**

The major cause to whiplash injuries is rear-end-accidents (Kremer, T.Th & vd Kwaak, D. 1996). In table 1 rear-end-accidents reported to the police and to Gjensidige for the

years 1989 to 1997 are presented.

The percentage of the accidents that are rear-end-accidents depends of type of source to data – reported to the police or to the insurance company – and the severity of the accident. Of all accidents reported to the insurance company, rear-end-accidents represent about 20 percent. For accidents with casualties, however, rear-end-accidents represent 40 percent of the reported accidents.

For accidents with casualties reported to the police, only 13-14% are rear-end-accidents in the nineties. Fatalities in rear-end-accidents are rare and represent only 1-2% of all fatal accidents.

### **Rear-end-accidents with damage**

All accidents reported to Gjensidige – of which 95% are with propriety damage only – and fatal accidents, are almost independent of the definition of an injury or the public propensity to report injuries to the insurance company and/or to the police. Public awareness about the whiplash-syndrome may very well influence the tendency to report the incidence as an accident with injury.

From table 1 and figure 1 apparently the proportion of rear-end-accidents with damage only, have decreased during the last ten years. It has decreased steadily from 22.8% in 1989 to 17.6% in 1998.

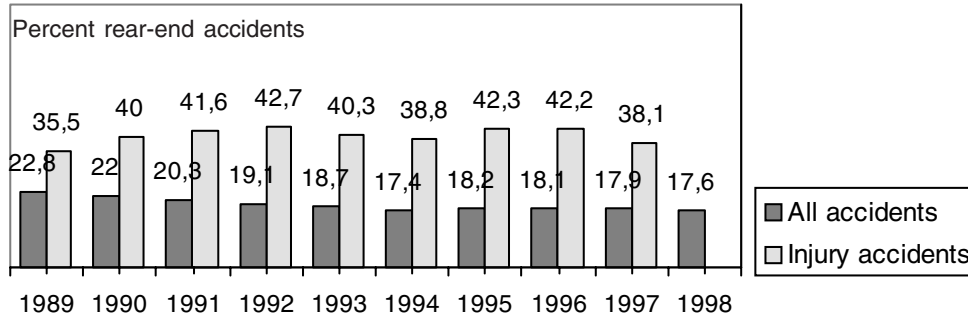
### **Rear-end-accidents with injuries**

In the same period the problems related to

*Table 1: Rear-end-accidents in Norway 1989-1998. Percent of all reported accidents.*

<b>Source and severity</b>	<b>1989</b>	<b>1990</b>	<b>1991</b>	<b>1992</b>	<b>1993</b>	<b>1994</b>	<b>1995</b>	<b>1996</b>	<b>1997</b>	<b>1998</b>
Gjensidige - all accidents	22.8	22.0	20.3	19.1	18.7	17.4	18.2	18.1	17.9	17.6
Gjensidige - with injuries	35.5	40.0	41.6	42.7	40.3	38.8	42.3	42.2	38.1	
Police reported - injuries	11.0	12.8	13.7	15.0	13.5	13.1	14.0	13.8	13.6	
Police reported - fatal	1.8	1.4	1.0	3.0	0.8	0.4	3.7	0.9	1.5	

Figure 1: Rear-end-accidents reported to Gjensidige



driving too close, rear-end-accidents and whiplash injuries caused by road accidents were heavily emphasized in Norway, as mentioned above. Public campaigns, increasing police enforcement of driving too close in traffic and publicity in the press obviously have some impact on this type of accident. On the other side this publicity may consequently motivate the public and the police to report minor whiplash injury previously notreported.

As stated above the number of injured in rear-end-accidents reported to the police increased by 281% from 1980 to 1990. From table 1 and figure 2, showing rear-end-accidents as a share of all accidents, we can see that this share increased year by year to 1992. The same pattern we can see for statistics of rear-end-accidents with injuries reported to Gjensidige with an “all time high” in 1992.

### Slight improvement from 1993?

From the year 1993 we can observe a slight decrease, or at least a stabilized development, in rear-end-accidents with injuries reported to Gjensidige and/or to the Police. This evidence appears in table 1 and figure 1 and 2. As pointed out earlier, rear-end-accidents with damage only have decreased at least from the year 1989 and in all following years - with one exemption. A reasonable assumption is that after the year 1992 the rear-end-accidents with injury to people follow the general trend of rear-end-accidents with *damage only*.

### Whiplash injuries and neck injuries at Gjensidige

The registration of various data about persons injured is often delayed until the case is

Figure 2: Rear-end-accidents reported to the police

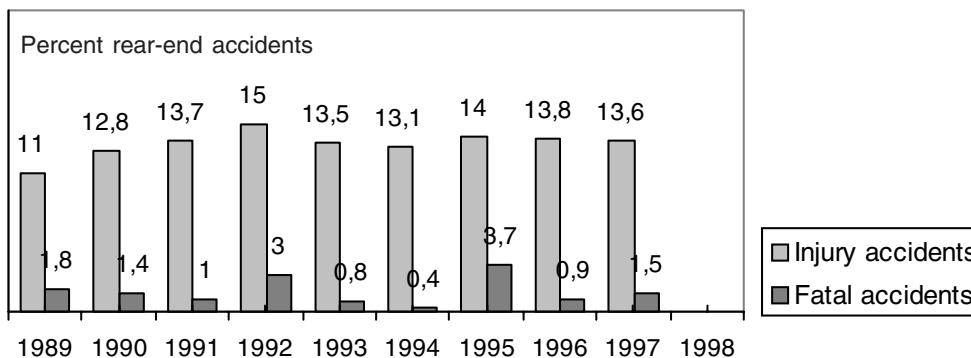


Table 2: Neck injuries and compensation to victims recorded at Gjensidige 1991-1996. Percent of all injured persons in road traffic, settled by March 1999.

	1991	1992	1993	1994	1995	1996
Number of casualties with neck injuries	59.3	60.8	53.4	48.1	50.5	52.4
Compensation to victims with neck injuries	59.9	53.9	52.6	44.9	32.5	31.7

settled. From the time the accident occurs to the case is settled often many years elapses. Especially for whiplash injuries this time is very long. An analysis based on data from the last year consequently is not reliable. In table 2 data from 1991 to 1996 is presented. However, in the last years in this period the data is more unreliable than data from the first years.

The most reliable data is based on settled cases, and data in table 2 include settled cases only. The claim adjusters register the diagnosis and injured body region as well. Whiplash injuries normally correspond to neck injuries. The quality of code setting of injured body region is considered to be of higher quality than the code setting of the diagnosis. This judgement is based on how many cases are lacking data or indicated as "Unknown". For this reasons "Neck injuries" are used as a substitute for whiplash injuries in table 2. Minor injuries are generally not included in this statistics due to missing registration of diagnosis and injured body region.

Most of the whiplash injuries with major compensations cost occurred in the end of this period are not settled and consequently not included in the data in table 2. This evidence may explain the relative reduction in compensation to victims with neck injuries after 1994.

This figure suggests that up to 60% of injured road traffic victims registered at Gjensidige in 1992 suffer from neck injuries. There are some indications that the proportion of neck injuries are slightly improving in recent years.

## Summary

Whiplash injuries reported to the insurance companies in Norway increased during the eighties and culminated about 1992. More than 50% of the injured road traffic victims suffer from whiplash injuries in the beginning of the nineties. There are some indications of slight improvement in recent years.

Rear-end-accidents with injuries reported to the police and the insurance companies as well display the same pattern. However, rear-end-accidents with injuries are far more frequent reported to the insurance companies compared to the records from the police.

For rear-end-accidents with damage only we have the reverse pattern. From 1989 to 1998 rear-end-accidents are reduced from 22.8% to only 17.6% of all accidents.

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