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SAFETY REPORT

98

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In addition to the 1998 Road Traffic Safety Report, the Swedish National Road Administration is publishing a 1998 Annual Report, a 1998 Environmental Report and a 1998 Sectoral Report covering other activities within the sector. The Swedish National Road Administration is also compiling a special statistical summary. All publications can be ordered from: Swedish National Road Administration, Butiken, 781 87 BÖRLÄNGE, Sweden. Tel: +46 243-755 00. Fax: +46 243-755 50. Text telephone: +46 243 750 90. Publication 1999:35, ISSN 1401-9612

FOREWORD

The Swedish National Road Administration's (SNRA) 1998 Road Traffic Safety Report is the annual report to the Government about the results of all road traffic safety work in Sweden. The report has been produced in co-operation with the National Swedish Police Board and the Swedish Association of Local Authorities.

Traffic-related injuries are one of the most significant public health problems in Sweden. In 1998, some 540 people were killed, and around 13,000 hospitalised following road accidents. The number of fatalities has remained unchanged for the past three years. The goal of reducing the number of road deaths to no more than 400 in the year 2000 will be difficult to achieve unless all parties involved implement highly effective measures. The road traffic safety plan submitted to the Government by the SNRA contains measures which should greatly help accomplish this goal, as long as they are implemented to a sufficient extent.

The SNRA conducts road traffic safety work primarily in co-operation with the police and local authorities. The county administrative boards and the National Society for Road Safety (NTF), together with its member organisations, are also important co-partners in this work. Half of Sweden's municipalities have now introduced road traffic safety programmes. It is essential that these programmes can be successfully implemented, and that the road traffic network in built-up areas is gradually brought into line with the demands of effective road traffic safety. Efficient road traffic surveillance is necessary in order to ensure regulations are being followed. Zero tolerance should apply to the serious road traffic violations, speeding and drink-driving. The NTF's new role of providing support for road-users is an excellent opportunity to lead opinion for safer road traffic.

As far as possible, road traffic safety work should be integrated with environmental work. In 1999, the SNRA, in collaboration with the Police Board, the Association of Local Authorities and the Swedish National Environmental Protection Agency, will be presenting a strategy outlining how environmental and road traffic safety work will be managed in the years to come.

March 1999

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SUMMARY OF RESULTS

ROAD TRAFFIC SAFETY GOALS

Long-term goal

The long-term goal of road traffic safety work is that nobody should be killed or seriously injured as a result of road traffic accidents. The road transport system's structure and function must be brought into line with the demands this goal entails.

Interim goal

The number of people killed or injured as a result of road accidents should be continuously reduced for all categories of road-user. The number of people killed in road traffic accidents should have decreased by at least 50% by the year 2007, based on 1996 figures.

Operational goal

No more than 400 people should be killed and no more than 3,700 seriously injured on the roads in the year 2000 (accidents reported to the police).

RESULTS - Deaths and serious injuries

- 540 people are estimated to have been killed in road traffic in 1998, showing no change over the previous two years (541 and 537 respectively).
- The number of serious injuries reported to the police is estimated at 3,930 for 1998, showing practically no change over 1997 (3,917).

As in recent years, the results of 1998's total road traffic safety efforts are not satisfactory. The road traffic safety goal's demand for a continuous reduction in the number of deaths and serious injuries has not been achieved. The SNRA considers that the goal of reducing the number of road deaths to no more than 400 in the year 2000 will be difficult to achieve unless all parties involved implement highly effective measures.

RESULTS – Status goals

The table below shows that:

- the number of drink-driving offences reported has decreased by 7% in 1998
- there have been no statistically reliable changes with regard to speeding offences, keeping a safe distance, use of seat belts or use of cycle helmets.

The status goals on road-user behaviour formulated within the National Road Traffic Safety Programme for 1995-2000 are far from being achieved, with the possible exception of drink-driving. However, information on to what extent drink-driving has been reduced is unreliable due to a lack of reliable statistics. Moreover, road investments have not produced the road traffic safety benefits necessary to reduce the number of deaths and serious injuries at the rate the goal demands. Nor have speed limits on individual stretches of road been reduced to the required extent. Monitoring of speed limits is still so inefficient that limits are exceeded in over half of total vehicle mileage.

However, important steps have been taken to improve safety in 1998. New criteria for speed limits drawn up in 1997 are now being applied, if only to a limited extent. As a result, the speed limit has been reduced from 110 to 90 km/h on 230 km of road, and from 90 to 70 km/h on 170 km of road. Furthermore, a stretch of the main arterial road north of Gävle has been fitted with a new type of central barrier which will prevent head-on collisions. The effect of this measure on road traffic safety has so far proved highly positive. Safety has also continued to improve as regards vehicles leaving the road, as dangerous objects have been removed from the roadside area on a number of stretches, and fences have been erected at rock-faces, for example.

Road traffic safety reform	Parameter	Target 2000, base year 1994	Result 1998 compared with 1997	Result 1998 compared with 1994	Situation 1998
Road traffic safety valuation	Number of people who regard road traffic injuries as a public health problem	+ 30%	Calculations not ready		
Drink-driving	Number of drink-drivers recorded by police checks	- 27%	-7%	-40% ¹	
Reduction in speeding offences	Average occurrence of speeding in total vehicle mileage	- 35%	No confirmed difference	No confirmed difference	54.5% of vehicle mileage on rural roads exceeds speed limit by 9.9 km/h on average
Reduction in other driving offences	Proportion of drivers who break regulations other than speed limits	- 50%	No confirmed difference in keeping a safe distance between vehicles	No confirmed difference in keeping a safe distance between vehicles	Too short a distance on rural roads: 21.8%
Safer road environment in urban areas	Proportion of street/road kilometres not fulfilling safety requirements	Reduced	No difference		Road traffic safety considered good on 8.2% of total road length in urban areas
Safer road environment in rural areas	Proportion of road kilometres not fulfilling safety requirements	Reduced		No measurements taken in 1998	
Use of safety equipment in cars	Proportion of people using safety equipment in cars	95%	Driver: no change Passenger in front seat: --- Adult in back seat: --- Child in back seat: ---	Driver: no change Passenger in front seat: ---	Driver: 82.4% Passenger in front seat: 85.5%
Safer cars	Increase in crashworthiness index for all cars	+ 12%	No measurement		
Visibility on the roads	Proportion of pedestrians and cyclists with approved visibility	60%	Pedestrians: no measurement 1998 Cyclists: no measurement 1997		Pedestrians: no measurement 1998 Cyclists: 29.9%
Use of cycle helmets	Proportion of cyclists wearing helmets	80%	No confirmed change	+ 8.3% - points compared to 1995	Proportion of cycle traffic wearing helmets = 18.4%
Rescue, care and rehabilitation	Average time between emergency call and adequate medical attention. Knowledge of first aid among general public	Significantly reduced. Knowledge of first aid should increase	No results ready. Unchanged proportion of general public has been on a first aid course in the last five years.	Unchanged proportion of general public has been on a first aid course in the last five years.	42% of the general public have been on a first aid course in the last five years.

¹ Due to the lack of data obtained using the agreed parameters, the total number of reported drink-driving/grave drink-driving offences has been used. Preliminary data.

CO-OPERATION IN ROAD TRAFFIC SAFETY WORK

TASKS AND RESPONSIBILITIES

The main authorities in road traffic safety work are the SNRA, the police and local authorities. Nationalföreningen för Trafiksäkerhetens Främjande (NTF) [National Society for Road Safety], together with its member organisations, as well as transport industry branch organisations, also play an important part in this work.

The SNRA has overall responsibility for road traffic safety at a national level. This includes responsibility for issues which concern road-users, vehicles and the road traffic environment. The SNRA's tasks can be divided into its sectoral responsibility, its role as a public authority, its national road management responsibility and its function as a supplier of road-related works. In 1996 the Riksdag (the Swedish Parliament) made decisions about the SNRA's sectoral responsibilities. Part of this sectoral responsibility includes ensuring that road traffic safety work is managed in a result-oriented way throughout the whole road transport system.

The SNRA is also responsible for the attainment of all goals within the road transport sector, even though all the funds necessary to achieve those goals are not at its direct disposal. For this reason, the SNRA may take financial responsibility for activities where there is no natural authority. This financial responsibility may also apply in certain cases where other management is present, but where goals would not otherwise be achieved.

The police authorities are responsible for the surveillance of vehicles and road-users on Sweden's roads. Local authorities have a general responsibility for the health and safety of local inhabitants. This includes a duty to ensure road traffic safety work is carried out within the municipality. As road managers, the local authorities also have special responsibility for road traffic safety on the municipal road and street network.

Gruppen för Nationell Samverkan (GNS) [National Co-operation Group] is the central body for co-operation between the SNRA, the local authorities and the police. The NTF is also included in this group as an associate member. In 1998, a 'crisis group' has also been working with representatives from the police, the local authorities and the SNRA's regional directorates. The group holds a telephone conference every week in order to exchange information and force the pace of the joint efforts.

A similar collaboration between the parties involved in the sector is in operation within all SNRA Regions. These parties include local and county police, Svenska Kommunförbundet [Swedish Association of Local Authorities] and the individual local authorities, the county councils and administrative boards, as well as voluntary organisations, especially road traffic safety groups and associations.

The SNRA cannot produce a development which leads to road traffic safety goals being achieved on its own. The development of the road transport system must take place in co-operation with all the parties involved in the system. The development of the road transport system is brought about through co-operation and a results-oriented methodology. The parties involved in the system set goals for the utilisation of resources, performance and application status (i.e. wearing seat belts and cycle helmets, speed limits, etc.). The SNRA co-ordinates this work as part of its sectoral responsibility, and reports the effects of these joint efforts to the Government and the various companies and organisations involved.

Vision Zero and other road traffic safety work in Sweden have increased in scope during the year, and have gained international attention. Interest has been shown both in individual countries such as Norway, the UK, the Netherlands and Australia, and from the EU.

NATIONAL ROAD TRAFFIC SAFETY PROGRAMME

Road traffic safety work in 1998 has been mainly in accordance with the National Road Traffic Safety Programme for 1995–2000. The programme was developed jointly in 1994 by the SNRA, Rikspolisstyrelsen [National Swedish Police Board] and Svenska Kommunförbundet.

Seven regional road traffic safety programmes were also drawn up for the respective SNRA Regions.

The programme has a clear public health objective. Key words in the programme's strategy are:

- increased public valuations of road traffic safety
- systematic approach
- result management
- co-operation
- putting people first
- strong grass roots support

The goal of the programme is to reduce the number of deaths to a maximum of 400 and serious injuries to a maximum of 3,700 by the year 2000 (accidents reported to the police). As a guideline for the day-to-day work, specific goals have been set for ten focus areas.

ROAD TRAFFIC SAFETY – THE WORK AHEAD

In October 1997, the Riksdag decided that Vision Zero should be the long-term goal for safety within the road transport system.

Vision Zero is the term for the ideal situation on Sweden's roads – safe road traffic.

According to Vision Zero, it is the deaths and serious personal injuries which have to be eliminated, not that all accidents must be avoided. The ethical basis of the vision is that mistakes which are now made on the roads – and always will be made – should not lead to loss of life or serious injury. The road transport system must be designed so that people's mistakes do not have disastrous consequences.

Since the Riksdag's decision on Vision Zero, the principal parties within the sector have begun making preparations for the production of a new common environmental and road traffic safety strategy for road transport. This programme will in turn initiate collaborative efforts to achieve a safe road traffic situation.

The strategy will build on a shared responsibility for safety among 'system designers' and road-users. System designers bear the ultimate responsibility for the structure and function of the road transport system, while road-users have a duty to follow road traffic regulations, and show consideration and judgement.

The conditions, needs and demands of the people will be the starting point of long-term, goal-oriented road traffic safety work. The main focus should be that:

- relevant decision-makers in both the public and private sectors are stimulated into taking increased responsibility for road traffic safety,
- relevant public and private organisations are stimulated into integrating consideration for road traffic safety in all parts of their activities that affect the road transport system,
- the general public are stimulated into demanding safe products and services,
- road-users increase their interest in and opportunities for obeying road traffic regulations and showing consideration, judgement and responsibility on the roads.

RESULTS

- 540 people are estimated to have been killed in road traffic in 1998, showing no change over the previous two years (541 and 537 respectively).
- The number of serious injuries reported to the police is estimated at 3,930 for 1998, showing practically no change over 1997 (3,917).

ROAD TRAFFIC SAFETY GOALS

Long-term goal

The long-term goal for road traffic safety is that nobody should be killed or seriously injured as a result of road traffic accidents. The road transport system's structure and functioning must be brought into line with the demands this goal entails.

Interim goal

The number of people killed or injured as a result of road accidents should be continuously reduced for all categories of road-user. The number of people killed in road traffic accidents should have decreased by at least 50% by the year 2007, based on 1996 figures.

Operational goal

No more than 400 people should be killed and no more than 3,700 seriously injured on the roads in the year 2000 (accidents reported to the police).

Parameter

The number of deaths and serious injuries reported to the police. The SNRA has been commissioned by the Government to develop a new health parameter which defines 'seriously injured'.

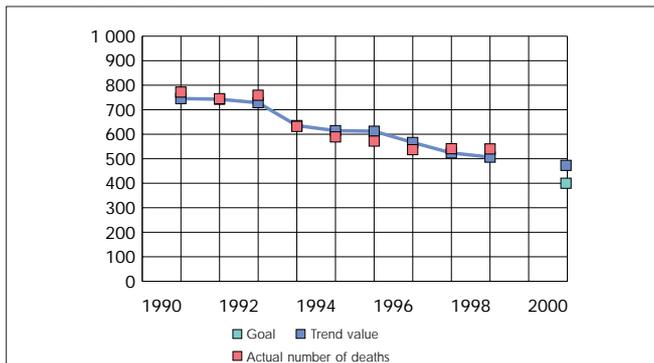
Deaths and serious injuries

In 1998, 540 people are estimated² to have been killed in road traffic, showing no change compared with 1997 (541) or 1996 (537). Since 1994, figures for the number of deaths have included 40 or so cases where the cause of death was illness. Reliable medical methods for identifying such cases and excluding them from official statistics are expected to be established in 1999.

The number of serious injuries reported to the police is estimated at 3,930 for 1998, showing practically no change over 1997 (3,917). In 1998, vehicle mileage is seen as largely unchanged since the previous year, although lorry traffic on the state road network has increased by 2%. This increase is most noticeable on European Highways and other major roads.

According to a statistical model³ produced by the Väg- och Transportforskningsinstitutet (VTI) [Swedish Road and Transport Research Institute], the forecast number of deaths on the roads in the year 2000 is 473, assuming road traffic increases by 1%. This means that the goal for the year 2000 will not be met, unless more effective action is taken or vehicle mileage decreases.

Number of deaths 1990–1998

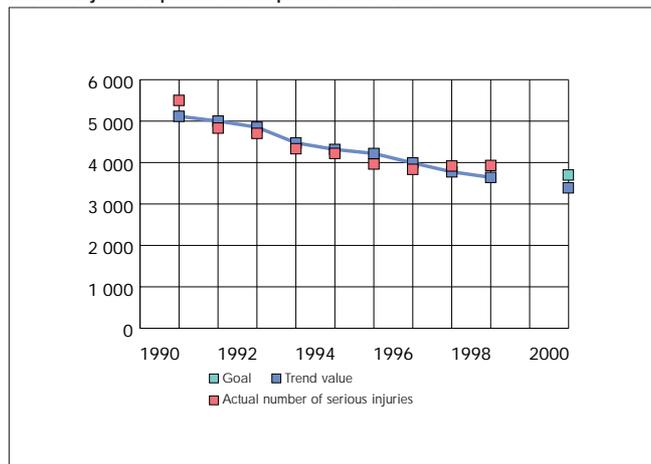


² Finalised figures for the number of deaths and serious injuries in 1998 are not yet available (March 1999). This report therefore gives estimated figures.

³ A model produced by the VTI and used in analysis of goal achievement, see Appendix 1.

⁴ Due to the lack of data obtained using the agreed parameters, the total number of reported drink-driving/grave drink-driving offences has been used. Preliminary data.

Serious injuries reported to the police 1990–1998



The number of serious injuries reported to the police in 1998 is also largely unchanged since 1997. The forecast for the year 2000 is 3,390, 8% lower than the goals for that year. The prospects of achieving the goal for the number of serious injuries in the year 2000 are therefore good, as long as the trend progresses in accordance with the statistical model.

STATUS GOALS

In order to make road traffic safety work more result-oriented, efforts have been organised into a number of different focus areas, called road traffic safety reforms. Each reform is to achieve certain results – quantifiable changes in the road traffic situation. This change in status should have a definite effect on the number of deaths and injuries on the roads. In order to achieve the goals set out in the road traffic safety reforms, the SNRA and other involved parties are conducting activities and implementing measures which have an impact on the status of the road traffic situation.

Road traffic safety valuation

Goal

The number of people who regard road traffic accidents as a public health problem should increase by 30% by the year 2000.

Parameter

The parameter is a 'satisfied customer index', gauged among the general public and among decision-makers within the public sector.

Results

Measurements have been taken for 1997 and 1998, although calculations for a summary satisfied customer index have as yet not been completed.

Drink-driving

Goal

The number of drink-drivers reported in police checks should decrease by 27% between 1995 and the year 2000.

Parameter

The number of drink-driving/grave drink-driving offences.

Results 1998

In 1998, 7% fewer drink-driving offences⁴ were reported to the police than in 1997. Compared with 1994, the number of such offences has fallen by around 40%.

Reduction in speeding offences

Goal

The proportion of speeding offences should decrease by 35% between 1995 and the year 2000.

Parameter

Average speeding as a proportion of total vehicle mileage.

Results 1998

The situation for car speeding offences has not changed compared with 1997, either on the rural road network, or on streets and roads in built-up areas.

Situation 1998

Speed measurements in rural areas indicate that just over 54.5% ($\pm 1.6\%$) of drivers exceed the speed limit on the rural road network. The average excess speed is approximately 10 km/h. The corresponding figures for built-up areas are 50.9% ($\pm 4.5\%$) and approximately 7.5 km/h ($\pm 0.5\%$).

Reduction in other driving offences

Goal

The proportion of vehicle drivers who break regulations other than speed limits should decrease by 50% between 1995 and the year 2000.

Parameter

The proportion of vehicle mileage with too little headway.

Results 1998

Measurements of the distances between vehicles began in 1995 on the rural road network, and on urban streets and roads in 1996. There has been no statistically reliable change to date.

Situation 1998

On the rural road network, 21.8% ($\pm 0.8\%$) of vehicle mileage had too little headway. The corresponding figure for urban streets and roads is lower, at 16.1% ($\pm 0.8\%$).

Use of safety equipment in cars



Goal

At least 95% of all car drivers and passengers should wear a seat belt by the year 2000.

Parameter

The proportion of people using safety equipment in cars.

Results 1998

Basic SNRA figures show no reliable difference between 1998 and 1997.

Situation 1998

82.4% ($\pm 2.1\%$) of car drivers use a seat belt, along with 85.5% ($\pm 3.2\%$) of front-seat passengers. Among car drivers in built-up areas, 77.4% ($\pm 2.2\%$) wear a seat belt, along with 80.7% ($\pm 2.1\%$) of front-seat passengers. The corresponding figures for the rural road network is 82.4% ($\pm 2.1\%$) for drivers, and slightly higher for car passengers, at 86.9% ($\pm 4.3\%$).

Visibility on the roads

Goal

At least 60% of pedestrians and cyclists should be clearly visible in the dark by the year 2000.

Parameters

- The proportion of pedestrians using reflectors or torches.
- The proportion of cyclists using both front and rear lights while cycling in the dark.
- The proportion of bicycles with adequate reflectors.

Results 1998

No measurements have been conducted within the SNRA basic framework. A test survey of cyclist visibility was conducted in autumn 1998. The SNRA's annual road traffic safety survey gauged the use of lights among cyclists. In 1998, lights were used by 61.4% of cyclists, a fall from the 1997 figure of 62.9%.

Situation 1998

The test survey showed that 29.9% ($\pm 5\%$) of cyclists used lights and reflectors. In total bicycle mileage, 52.5% ($\pm 4.9\%$) lacked functioning lights.

Use of cycle helmets

Goal

At least 80% of cyclists should be using cycle helmets by the year 2000.

Parameter

The proportion of cyclists who wear a cycle helmet.

Results 1998

There has been no statistically reliable change in the use of cycle helmets in 1998. However, the use of cycle helmets has increased by 8 percentage points since 1995.



Situation 1998

Helmet use	1994	1995	1996	1997	1998
Children up to 10 years old	47 %	45 %	45 %	54 %	53 %
Children (11-15 years)	25 %	31 %	34 %	34 %	36 %
Adults (commuters)	6 %	9 %	9 %	11 %	14 %
Public cycle paths	7 %	10 %	13 %	11 %	14 %

Source: VTI

VTI statistics indicate that helmet use is higher among children than adults. Over half the children under 10 years old use a cycle helmet.

According to basic SNRA figures, 18.4% ($\pm 1.9\%$) of all cyclists in Sweden wear a helmet. The use of cycle helmets varies in the SNRA's different regions, and is highest in the Stockholm Region, and lowest in Skåne.

Safe, environmentally-sound cars

Goal

The crashworthiness index of cars should increase by 12% between 1995 and the year 2000.

Parameter

The crashworthiness index of cars has not yet been fully developed. For 1994-97 figures, an index of passive car safety has been used.

Results

The passive car safety index rose by 8% from 1994–1997.

Situation 1998

In 1998, 287,000 new cars were registered, and 156,000 deregistered.

Safer road environment in rural areas

Goal



Improving roadside areas increases road safety. Hazardous obstacles such as rock-faces, posts and trees are removed in order to prevent injury in an accident.

To reduce the proportion of major roads⁵ in Sweden which do not fulfil safety requirements.

Parameter

Proportion of road length not fulfilling safety requirements. The road network has been designated codes according to a collision severity index:

- **Code Green** – Vision Zero standard
- **Code Yellow** – some risk of death or serious injury
- **Code Red** – high risk of death or serious injury

Results 1998

No results based on the new parameter can be reported, as assessment methods are not yet ready.

Safer road environment in urban areas

Goals

To reduce the length of street/road which does not fulfil safety requirements. If there is a risk of unprotected road-users competing with motor vehicles, the speed limit is to be no more than 30 km/h.

Parameter

The length of road that does not fulfil certain segregation requirements at given speed limits.

Situation 1998

Road traffic safety is considered good on 8.2% of the total road length in built-up areas. Measurements taken in 1998 show that only 2.5% of all pedestrians and cyclists who cross a road do so in good safety conditions.

Rescue, care and rehabilitation



Goals

The time from emergency call to adequate medical attention should be reduced, and a national minimum emergency response requirement is to be established. Road-users' knowledge of first aid should be improved. By the year 2000, 50% of Swedish citizens should have undergone training in first aid within the last five years.

Parameters

- Average time between emergency call and adequate medical attention.
- Knowledge of first aid among the general public.

Results 1998

In 1998, response times have been assessed for the first time in cooperation with SOS Alarm. The results of these assessments are not yet ready.

In the SNRA's annual road traffic safety survey, 42% of people say they have undergone training in first aid during the last five years. This proportion has remained unchanged since previous years.

⁵ Major roads are E4 – 499 and roads with an AADT equal to or more than 2,000.

ACTIVITIES IN 1998

THE SNRA'S SECTORAL RESPONSIBILITIES

During 1998, work has continued on developing operational strategy based on the interaction between the three main target groups in society – the public sector, trade and industry and the population at large.

The SNRA has carried out co-ordinatory support and has acted as a driving force in its work with the other parties involved in the road sector. In the majority of Sweden's municipalities, the SNRA has supported the work of collaboration groups in the area of road traffic safety.

Road traffic safety performance	Result 1998	Result 1997
No. of municipalities where agreements have been reached on municipal road safety based on Vision Zero	158	*
No. of county councils where agreements have been reached on collaboration based on Vision Zero	8	3
No. of agreements for safer, greener transport.		
– Companies	84	20
– Municipalities	86	49
– County councils	8	3

* The 1997 result is not comparable with the 1998 figure, and has therefore been omitted.

The table shows that the SNRA intensified its efforts to enter into agreements with other parties in the sector. In 1998, agreements were reached with 158 local authorities and 8 county councils as regards road traffic safety work based on Vision Zero.

An important part of road traffic safety work is making people realise that road traffic safety and environmental issues are important aspects of transport quality. In 1998, the SNRA has continued to promote the idea that road traffic safety and environmental considerations should be a natural aspect of all official transport. This may be achieved through quality assurance of in-house transport activity, or by imposing safety demands on its transport suppliers. The issue has also gained attention at several national and international trade fairs. Material has been produced within the SNRA, and among local authorities and the business community, to support these efforts. In 1998, agreements were reached with 84 companies, 86 local authorities and 8 county councils concerning safe, environmentally-friendly transport. The SNRA and the police have reached agreements in 21 counties.

Tests of various kinds of speed-adaptation system have been initiated at various locations nation-wide.

A national cycle helmet campaign was conducted during the year to support the local efforts of both the SNRA and the NTF. At regional level, campaigns have been run with regard to speed, alcohol, consideration for pedestrian traffic, etc. In most cases, the campaigns have been combinations of several different types of activity, and the information has provided support for other operations.

During the year, the SNRA has taken part in a project called 'SEKO och Transport för nollvisionen' [The 'SEKO' and 'Transport' Unions for Vision Zero]. This has meant that the SNRA has trained personnel within the project and supplied information material. All households in Sweden received a mailshot in 1998 with information on Vision Zero.

The year has also seen material being produced to support conscientious endeavours to change the physical road traffic environment. Tests have been initiated on central barriers on 13 metre roads. A list of objectives for a safe street structure has gained far-reaching support. The Swedish document envisioning 'A New Approach to Traffic

Planning and Street Design' has been presented abroad, and has also been adapted to a cyclists' perspective within the framework of the EU project designated 'Promising'. In order to support the classification of roads in built-up areas in accordance with this vision, a method entitled 'Lugna gatan' [Calm Streets] has been put forth during the year by Svenska Kommunförbundet.

Computer support for planning and choosing measures (KLOTS) has been improved, so that Vision Zero and road traffic safety goals can be taken into greater account than previously.

An important part of road traffic safety work is to establish collaboration between the various parties involved. This takes place in different networks and groups on a national or local level, and treats such specific issues as the road traffic environment in built-up areas and drink-driving.

In the area of drugs and alcohol, various projects are under way in co-operation with local authorities, voluntary organisations, and in some cases even companies. 'Operation Civilkurage' [Civic Courage – the courage to stand up for one's beliefs] aims to encourage young people to have the courage to take a stand against the use of alcohol in conjunction with driving. The SNRA has also continued to run courses for court judges, in order to alert this group to alcohol and drug problems in road traffic.



In 1998, Sweden's National Board of Health and Welfare was commissioned by the Government to investigate conditions for a network of helicopter ambulances. These would partly be used to relieve the effects of road accidents. This assignment will be reported on in 1999.

In its maintenance procurements for 1998, the SNRA has stipulated that all companies working over 100 hours a year for the SNRA must have their personnel trained in first aid. Together with the Swedish Red Cross, the SNRA has formulated the study plan 'Hjälp på väg' [Help on the way], which is in line with the SNRA's training requirements. The programme also includes training in fire knowledge. The aim is to increase awareness of what people should do if they are first at the scene of an accident. The Government commission to introduce a new graduated driver education system includes the issue of a compulsory first aid course. The Centrum för Kriskunskap [Crisis Education & Research Centre] in Huddinge has continued its work on a project concerning psychological support for road traffic accident victims.

Sectoral activities are characterised by various regional efforts, which along with the work of other parties affect the road traffic safety situation.

- **SNRA Central Region** has in collaboration with Jämtland county conducted a project in 1998, focusing on the environment, health and safety. The Region has also conducted an information campaign entitled 'Förbättra dina odds' [Increase the odds], which treats the risk of being killed or seriously injured on the roads. The 'Lugna Dalom' [Peaceful Dalom] speed project is being conducted together with the police.
- **In SNRA Northern Region** the police have been making special efforts to increase the use of seat belts, in co-operation with the SNRA, NTF and the relevant local authorities. Local road traffic safety activities within the municipalities have developed in recent years, and this is largely due to the fact that local voluntary road traffic safety networks have been built up.
- **In SNRA Skåne Region** the SNRA has been working together with the police on the 'Lugna Skåne' [Calm Skåne] project. The project has involved intensive speed monitoring on a number of commuter routes. Assessments showed that the average speed decreased by 3% during this period.
- **SNRA Stockholm Region** has in 1998 conducted information activities with regard to safety equipment in cars, not running red lights and keeping a safe distance.
- **SNRA South-Eastern Region** has continued the 'Säkereken' safety project in Blekinge county, together with five local authorities, the county administrative board, the county council and the NTF.
- **SNRA Western Region** has gauged average speeds on sections of road particularly prone to accidents, and following information in the media, average speeds have decreased slightly during the intensive surveillance periods. The start of the intensive surveillance period was announced in the media. Both the proportion of offences and the average speed have displayed statistically reliable reductions compared to checkpoints not intensively monitored. A method involving specially adapted information for different types of driver has been developed in the 'Självssäker' [Self-confidence] youth project, in close collaboration with the NTF. The method will be used by more NTF associations in 1999, in order to reach more young people. In Lidköping, SNRA Western Region has initiated a Vision Zero-oriented project together with the local authority. The project encompasses such aspects as systematic information to local authority and company employees, and to the 400 or so associations in the municipality. The project also involves speed-adaptation tests using GPS equipment. The three-year 'Hastighet på allas villkor' [Speed on everyone's terms] project has been conducted for a third year. The project encompasses media efforts, intensive surveillance in co-operation with the police, seminars for various decision-makers, and active measures with the purpose of forming opinion. The main aim has been to promote the idea among the public of the significance of speed in road accidents, through information, provocation and dialogue.
- **SNRA Mälardalen Region** has managed a project with Mälardalen College in 1998. The aim was to generate more extensive use of cycle helmets, and to increase knowledge of road traffic safety among the 55,000 or so students in the region. In a survey, half of the students indicated they were prepared to buy a cycle helmet. The project will continue throughout 1999 at all colleges and institutions of higher learning in the region.

In-depth studies

The SNRA conducts in-depth studies into all fatal accidents. These aim to ascertain which characteristics in the road environment or vehicle had an effect on the end result. These in-depth studies provide road managers with increased knowledge and a broader basis for decisions on measures that enhance road traffic safety. Based on the completed study and analysis, the working group proposes measures that will help prevent further similar accidents happening.

The Personalised Number Plate Fund

The aim of the Personalised Number Plate Fund is to support projects that improve road traffic safety. The Fund supplements traditional road traffic safety research, and the results are to yield immediate benefits for paying road-users. The Fund was established in 1988, and since then, the rights for some 16,000 personalised number plates have been sold. Over the years, there have been some 500 applications to conduct research projects under the auspices of the Fund, approximately 175 of which have been granted. In 1998, funds were granted for 26 projects.

Research and development

During 1998, a research project studying compatibility in cars involved in head-on collisions was reported in a doctoral thesis. Four different parameters have been identified which affect the extent of damage: the car's mass, its structural design, its rigidity and its geometry. The results show that the smaller the difference in weight between private cars, the less serious the extent of damage in the event of a head-on collision. It was also shown that the most important factors affecting the extent of damage were the inherent safety in each car, which in turn primarily depends on rigidity and geometry, and the speed at collision. Even small changes in the speed of vehicles can have a significant impact on the extent of damage. A mathematical model has also been developed within the project, which can be used to study compatibility between a car and an object in the road traffic environment.

SNRA costs (SEK million) for road traffic safety work 1995–1998

	1995	1996	1997	1998
Road traffic safety work	175	235	277	308*
R&D	6.8	5.1	14.1	17.8

* Of which SEK 65 million paid to NTF through SNRA appropriations.

Children and the local community

The ultimate aims of activities in this area are that no child should ever die or be seriously injured in the road transport system, and that all children should be able to move around freely within the community without being killed or seriously injured on the roads. Furthermore, all children should be given the opportunity to participate in and influence issues and decisions pertaining to accessibility, the environment and safety in their local communities.

Activities in 1998

An investigation is under way which aims to identify ways in which road traffic issues in schools can be steered towards achieving the overall goals in transport policy. An evaluation of the 'Forska och lära' [Exploring and learning] project has begun. A multimedia program, along with the documents 'Närsamhället' [The local community] and 'Närsamhällsstudier' [Local community studies] have been produced to support the SNRA Regions in their work. The SNRA has conducted



The 'Exploring and learning in the local community' project, based on open dialogue, aims to support and stimulate work relating to road traffic, the environment and community in schools and childcare institutions.

a nation-wide conference entitled 'Forska och lära i närsamhället' [Exploring and learning in the local community], which aimed to highlight the significance of the environment in which children grow up on their learning and development. A database of children's issues has been set up to support work on road traffic-related issues.

The disabled

The road transport system is there for everyone, and everyone should be able to use the system safely. The SNRA will do its utmost to ensure that the needs of physically disabled persons are taken into account throughout the road transport system, and is ultimately responsible for co-ordinating adaptation measures for disabled persons on public transport.

Activities in 1998

A survey of the road traffic safety situation for physically disabled persons has been drawn up.

Public transport

The overall goal is to increase the competitive strength of public transport throughout the road transport system. This will help create a safer road traffic situation.

Activities in 1998

In association with Svenska Lokaltrafikföreningen [Swedish Local Traffic Association], Svenska Kommunförbundet and Landstingsförbundet [Federation of Swedish County Councils] and others, the SNRA has drawn up a public transport programme. The programme describes how the SNRA can improve public transport. Efforts will focus on defining areas which need improvement, improving information and services, producing a travel charter, improving connection points and influencing attitudes.

Road informatics

The tasks associated with this area of activity include using information technology to find solutions to road traffic safety problems. New technology and real-time information about the road traffic situation and road conditions, etc., can be used to influence, guide and control traffic. Road informatics can therefore help accomplish accessibility, road traffic safety and environment goals.

Activities in 1998

During the year, the SNRA has produced a national programme for road informatics in Sweden. The programme presents a vision and strategy for the introduction of road informatics. A special programme for Stockholm and Göteborg is currently being produced.

Research and development



Several thousand cars are to be fitted with smart, voluntary support systems to help motorists stay within the speed limit. This test project is being conducted in collaboration with four local authorities, and aims to increase knowledge of

- motorists' use of and attitude towards the system
- road traffic safety and environmental impact
- the system's integration into cars

The test locations are Umeå, Borlänge, Lidköping and Lund, and each municipality is responsible for implementation in its own area. The SNRA is co-ordinating the project nation-wide. The tests will involve different categories of road-user. Private individuals will be the main group, although a considerable proportion of professional drivers, both public and private, will also be involved, including drivers of public transport vehicles. Systems to be tested include an information system, an active support system, and a system for quality assurance. The active support system is also called the 'active accelerator' – the driver senses a resistance in the accelerator pedal, and cannot drive too fast. If the situation demands, the driver can press harder on the pedal to disconnect from the system. Test vehicles in municipal procurements of school transport and mobility services are to be equipped with a unit that records and stores excess speeds if the driver should ignore the flashing warning light and sound signal, and choose not to reduce speed in any case.

THE SNRA'S ROLE AS A PUBLIC AUTHORITY

The SNRA's role as a public authority covers areas such as drawing up and applying regulations for drivers, vehicles and the road traffic environment, as well as the inspection of vehicles and drivers on the roads.

Driving licences

The SNRA is the central driving licence authority, and responsibilities include issues relating to driver education, driving tests and the medical conditions for holding a driving licence, as well as monitoring driving schools and driver training sites. The SNRA also develops the driver education programme, both as regards methodology and checking knowledge. Driving licence activities are connected to road traffic safety goals through the education, control and monitoring of vehicle drivers within the road transport system.

Activities in 1998

A new Driving Licence Act came into force on 1 October 1998. The act contains the requirements for a driving licence for class 1 mopeds, driving permits for all practice driving, approval of instructors for all private practice driving, and extensions of the "higher" category licences (bus, taxi, etc) from the age of 45. The amendments aim to make the statutes easier to apply, and is also a step towards EU harmonisation.

Also during the year, proposals for new courses at driver training sites have been put forward. Work on reforming skid-pad training has been under way since 1994. The aim is to improve the training so as to provide better insight into the risks and greater understanding of the value in driving with greater safety margins. The regulations as regards trials with conditional driving licence withdrawal and the use of an ignition interlock have been drawn up, and trial activities began in Stockholm, Västerbotten and Östergötland counties on 1 February 1999.

The SNRA has been commissioned by the Government to formulate a new kind of graduated driver education. The task is to draw up one or more relevant models, which in the long term will lead to a decrease in the level of risk for young, newly qualified drivers.

The theory test has been completely revised, and the new test will apply from April 1999. The pass demands have also been changed.

150,500 practical driving tests and 177,000 driving theory tests were taken in 1998. The number of practical tests remains greatly unchanged in comparison to 1997, whereas the number of theory tests has decreased by just over 23,000. The main reason for this is that the proportion of passes in the theory tests has increased from 67% in 1997 to 78% in 1998.

Research and development

A number of R&D projects in the field of driving licences have begun during 1998. One of the aims of the projects is to increase knowledge for the development of a new driver education system which will help reduce risks for young, newly qualified drivers, and to increase knowledge as to when and why elderly people stop driving. Knowledge of the medical aspects of holding a driving licence will also be enhanced, in order to increase the reliability of verdicts when applying the law.

Results from the evaluation of the altered minimum age limit (16) for learner drivers in cars shows improved road traffic safety for young, newly qualified drivers. This indicates that the longer time for building up experience, knowledge and driving skills helps reduce the risk level for young, newly qualified car drivers.

Commercial traffic

The aim of this area of activity is to attain safe, environmentally-friendly, cost-effective commercial traffic, with companies operating on equal competitive terms without criminal activity. The SNRA will also work to ensure that professional drivers are competent, and are role models in road traffic, thereby contributing to a sound environment and encouraging safe behaviour on the roads.

Activities in 1998

During the year, the SNRA has run courses for county administrative board personnel, with the aim of making nation-wide evaluation of commercial traffic issues more consistent. The training is based on new commercial traffic legislation introduced in 1998. The SNRA has also worked together with other parties to promote knowledge of rules and regulations in this area. The main purpose of the legislative changes is to build a better basis for inspection and control of commercial traffic, and they also constitute a step towards EU harmonisation.

The SNRA is responsible for testing driving skills among professional drivers, as well as testing the professional knowledge of people wishing to start up transport-related companies. In 1998, approximately 1,400 professional competence tests were taken by prospective bus and lorry drivers.

Road traffic environment Activities in 1998

Large-scale adaptation of the change sequence in traffic signals has begun during the year, in order to bring them into line with the UN Convention on Roads and Traffic. In 1999, all of Sweden's traffic signal systems will be adjusted.

During 1998, the Government has decided that the proposal previously submitted by the SNRA should be adopted. The new road traffic ordinance, which will mainly apply from 1 October 1999, contains a number of regulations judged to have a positive effect on road traffic safety, e.g. directives on giving way at pedestrian crossings, and obligatory use of seat belts among groups currently excepted from the rule.



In the area of road traffic environment regulations, the SNRA has produced new criteria for deciding which roads should be given maximum speed limits of 90 or 110 km/h. The SNRA began an inventory of the road network in 1997, which will form the basis for implementing changes in speed limits. This work has continued in 1998. During the year, the speed limit has been reduced from 110 to 90 km/h on 230 km of road, and from 90 to 70 km/h on 173 km of road. These reductions are expected to result in one less

death and 4 fewer serious injuries per year. The table below shows the SNRA Regions in which speed limits have been reduced.

Reduction of speed limit from 110–90 km/h (km of road)	
Western Region	11.5
South-Eastern Region	217.9
Total	229.4
Reduction of speed limit from 90–70 km/h (km of road)	
Central Region	46.5
Stockholm Region	19.5
Mälardalen Region	39.0
Western Region	10.0
South-Eastern Region	30.2
Skåne Region	27.9
Total	173.1

Vehicles

Both national and international work is to focus on vehicles achieving a satisfactory standard as regards road traffic safety and the environment, while meeting other road-user needs as regards passenger and goods transport.

Activities in 1998

The SNRA and Konsumentverket [National Board for Consumer Policies], in co-operation with Naturvårdsverket [Swedish National Environmental Protection Agency], have been commissioned to produce a compilation of consumer information about vehicles on an annual basis. This information shall include a system of marking cars which indicates road traffic safety and environmental impact.

The results of crash tests on mid-range and large cars were presented within the framework of the European collaboration project EuroNCAP⁶. These activities aim on the one hand to provide car-buyers

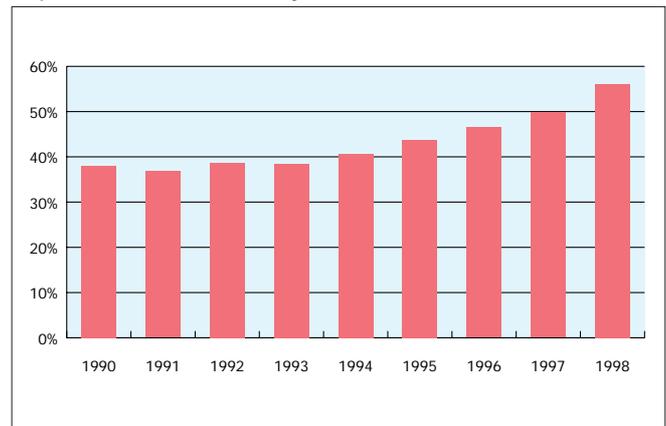


Tests were conducted on 40 different models of car, covering two-thirds of the 50 best-selling models in Sweden.

with objective information on the safety of cars, and on the other to force the pace of development towards safer cars.

In 1998, the SNRA and Närings- och Teknikutvecklingsverket (NUTEK) [National Board for Industrial and Technical Development], in collaboration with Svenska Kommunförbundet, examined and proposed a plan for introducing a co-ordinated technology procurement as support for private and public bodies when purchasing vehicles, road informatics and other technology relating to vehicles. The annual control inspection of cars in use indicates a relatively long life cycle (17 years on average) for Swedish cars compared to the rest of Europe. Thus, older cars are being replaced at a rate which does not favour the overall road traffic safety goal.

Proportion of cars more than 10 years old



NATIONAL ROAD MANAGEMENT

In its capacity as a national road manager, the role of the SNRA is to develop and administrate the state road network in such a way that the goals of road traffic policy can be achieved. The road network should have a satisfactory degree of accessibility, as well as being safe and environmentally sound.

Activities in 1998

New roads are safer than old ones, because both junctions and the roadside areas are better designed. In 1998, 178 km of new road at least 7 metres wide have been completed and opened to traffic.

In theory, the roads opened to traffic during 1998 are expected to reduce the number of deaths and serious injuries on the roads by 3 per year.

Of all investments in 1998, 10% were made primarily for road traffic safety reasons. They include:

- SEK 100 million for road reconstructions, including speed-reduction measures
- SEK 125 million on pedestrian and cycle paths
- SEK 182 million on crossings, of which SEK 40 million for grade-separated crossings
- SEK 274 million on roadside protection/safety fences

Investments have been made to clean up roadside environments. Fixed objects are being removed in order to alleviate the consequences of accidentally driving off the road. An alternative to the removal of fixed objects is to erect side fencing which prevent vehicles from colliding with e.g. rock-faces. During the year, fencing has been erected to the value of SEK 274 million, which is equivalent to a stretch of more than 1,000 km.

⁶ New Car Assessment Program.



The roadway has been divided into two lanes in one direction and one in the other. This division between one and two lanes swaps over every two or three kilometres.

During the year, 48 protective shields have been erected in the central reserve on motorways in the Mälardalen Region, to prevent vehicles from plunging downwards at bridges.

Wide two-lane roads (13 metre roads) with high traffic flows have suffered extensively from serious accidents in many places around the country. The roads invite high speeds, while the high traffic flow often results in head-on collisions. One of the sections of road seriously affected was along the undivided motorway north of Gävle on the E4. A 14 km section of the road has been fitted with a central barrier in order to reduce serious single and head-on collisions. Further development stretches are planned in the coming years throughout Sweden.

A special road traffic safety plan has been drawn up for the period 1999–2003. In this plan, physical road traffic safety measures have been moved ahead in time so that the road traffic safety goals can be achieved more rapidly than would have been possible according to the original national road management plan.

GOVERNMENT COMMISSIONS

Violent forces and the human body

During the autumn of 1997, the SNRA was commissioned by the Government to collect and collate knowledge regarding how much violence the human body can withstand. The aim is to be able to define acceptable trauma levels for both unprotected and “protected” road-users. Work is still in its initial stages.

The severity of personal injuries

During the autumn of 1997, the SNRA was commissioned by the Government to develop a new system for gauging the severity of personal injuries. The conventional method of describing the road traffic safety situation has always been in terms of the number of deaths, serious injuries and minor injuries according to police data in conjunction with the accident. As the work on road traffic safety based on Vision Zero develops, the severity of injuries will need to be defined

more precisely. Within the framework of the project, the road traffic safety goal concept ‘seriously injured’ will also be defined. Work has begun on this.

Accident and injury information system

According to a Government decision in 1996, the SNRA is responsible for introducing a new road traffic accident and injury information system as soon as possible. Work is to be conducted in association with Rikspolisstyrelsen, Socialstyrelsen [National Board of Health and Welfare], Statens Institut för KommunikationsAnalys [Swedish Institute for Transport and Communications Analysis], Statistiska Centralbyrån (SCB) [Statistics Sweden], Landstingsförbundet and Svenska Kommunförbundet. Other parties who are or will be affected by the new information system will also be consulted.

The assignment includes establishing:

- how basic information from the police and medical services can be developed and co-ordinated
- how the system can be co-ordinated with other statistical and information systems, both nationally and internationally
- how confidentiality and integrity aspects can be taken into consideration
- how different user groups can have access to the information they need
- how falling accidents among pedestrians should be included in the system

The new road traffic accident and injury information system should, according to the Government decision, be structured in such a way that it:

- supports road traffic safety work at central, regional and local level
- provides a basis that makes it easier to take the right action from a road traffic safety point of view
- minimises double effort and costs within official administration

An advisory group has been formed together with the Rikspolisstyrelsen, Socialstyrelsen, Statens Institut för KommunikationsAnalys, Statistiska

Centralbyrån, Landstingsförbundet and Svenska Kommunförbundet. The group plays a central role in the project, both as an advisory body, and as an information distribution channel.

In order to gather the opinions of small and medium-sized municipalities, Svenska Kommunförbundet took the initiative of forming a further project sub-group, called the 'municipality group'. This comprises representatives from Västerås, Borlänge and Bollnäs.

The SNRA has initiated a number of project sub-groups involving delegates from the various interested parties. One such group was already active in Göteborg, the ADA⁷ Group, consisting of representatives from SNRA Western Region, the police, Göteborgs Stad Trafikkontoret [City of Gothenburg Traffic & Public Transport Authority] and the road traffic injury register at Östra Sjukhuset hospital.

In addition to these project sub-groups, there are also groups which will:

- develop the medical services' road traffic injury register
- monitor the police's digital aids
- maintain contact with the outside world

Three new ADA groups have been started up in Skåne, Stockholm and Umeå/Västerbotten. The groups have prepared the collection of road traffic injury information from the emergency medical services and the police. Registration began in January 1999. Further such groups are planned for 1999. The aim is that each SNRA Region will run at least one "ADA project".

The basic information material provided by the medical services has come under discussion. Proposals have been put forward, but as yet there have been no decisions on general content, or on what regional and local applications might contain.

Part of the assignment is to highlight the financial consequences for the authorities and other main organisations involved. This analysis is still in its early stages. We can however observe at this stage that road management personnel currently involved in registering accidents will be able to take on other duties once the system is up and running.

For the medical services, the new information system will involve more work than is currently the case. If the resources used by road managers on registration are transferred to the medical services, personnel costs for society will remain much the same. At the same time, the quality of accident and injury data will increase.

Within the Göteborg medical services, two new positions have been created to deal with injury data registration at the accident and emergency clinics at the Sahlgrenska and Östra hospitals.

The new information system is expected to be in production by 2002 at the latest.

Speeds in built-up areas

In December 1997, the SNRA and Rikspolisstyrelsen, in collaboration with Svenska Kommunförbundet, were commissioned to follow the developments intended to lead to a reduction in actual speeds at places in built-up areas where pedestrians, cyclists and motor vehicles all share the road. The assignment also includes monitoring and evaluating local authority efforts to increase road traffic safety for unprotected road-users.

An inquiry was initiated in autumn 1998 intended for the local authorities, the police and the SNRA Regions. This inquiry was to provide basic material for the presentation of the Government commission. The parties involved decided to terminate the work on the inquiry once it was ascertained that it would not produce the information required for the report.

THE POLICE



The police conduct vehicle checks on the roads, as commissioned by the SNRA.

Police surveillance of road-user behaviour and vehicle checks are of primary importance to increased road traffic safety. Part of the basis of this surveillance work is the framework agreement between Rikspolisstyrelsen and the SNRA, as well as the co-operation agreements between county police authorities and the SNRA Regional Road Administrations. Driver checks cover drink-driving, driver qualification, the use of safety equipment in cars, and driving and rest periods for professional drivers. Vehicle checks cover the vehicle's load and weight, as well as compliance with commercial traffic regulations pertaining to the transport of hazardous goods. In addition, checks and test drives are also done on motorised vehicles and trailers (spot checks). Driving and rest times are also checked via visits to companies. Spot checks, driving and rest time checks, and company visits have mainly been carried out by vehicle inspectors.

Number of checks, goal and result 1998

Type of check	Goal	Result
Spot checks	103 500	90 187
- of which complete checks	41 400	46 925
Spot checks, foreign registration		5 610
Checks on driving and rest periods (EU legislation)	60 000	69 302
Checks on rest periods (Ordinance on Rest Periods)	16 000	16 213
Company visits (EU legislation)	600	558
Company visits (Ordinance on Rest Periods)	320	394
Breathalyser tests	1 800 000	1 031 863

In 1998, the number of reported speeding offences amounted to 141,292, an increase of 2.8% over 1997. In conjunction with these offences, 10,554 driving licences were seized, a decrease of 3.4% over 1997.

MUNICIPALITIES

Local authorities are concerned with road traffic safety issues both as part of their general responsibility for the health and safety of people living in their area, and as part of their special responsibility for municipal roads. Local authorities also finance public transport, and

⁷ Accident Data Acquisition.



In order to reduce the number of serious accidents on the E4 between Hudiksvall and Iggesund, seven automatic traffic monitoring cameras have been installed in 1998. The equipment includes a radar which gauges the speed of all passing vehicles, which in turn is connected to the camera, which photographs any car exceeding the speed limit.

are major purchasers of publicly funded journeys. Furthermore, they also conduct a great deal of their own internal transport work. Local municipalities therefore constitute an extremely significant party in safe transport policy.

Local authorities are showing increasing interest in road traffic safety issues. Vision Zero and its consequences are being discussed more and more, and new knowledge bases for future planning are being built up.

Many local authorities are in an advanced state of readiness when it comes to planned effective measures to support Vision Zero. Road traffic issues currently have a high priority within municipalities. This insight must be followed up with early prioritisation of funds for municipal road traffic safety projects in conjunction with handling the regional road plans.

Municipal road traffic safety work

Approximately 130 local authorities now have a municipal road traffic safety programme or are in the process of producing one. These municipalities comprise around two-thirds of Sweden's population. The programmes are being implemented in collaboration with the police, the SNRA and the NTF.

It is essential that local authorities can co-ordinate their planning for increased road traffic safety throughout the municipality. The SNRA can contribute to the planning process by helping local authorities decide on specific measures for the smaller built-up areas in which the SNRA is road manager, and for stretches of road particularly prone to accidents. In its role as a road manager on major thoroughfares, the SNRA has an express opportunity both to improve road traffic safety

in smaller developed areas by constructing 'environmentally-prioritised' thoroughfares, etc., and also to help by providing demonstration examples. According to Svenska Kommunförbundet, this opportunity has not yet been used to a sufficient extent.

Calm Streets

The particular efforts initiated by Svenska Kommunförbundet in towns and built-up areas where various kinds of traffic use the roads, have led to an increased interest in road traffic and road traffic safety issues in town planning nation-wide.

In 1998, Svenska Kommunförbundet published a conceptual document entitled 'Lugna gatan' [Calm Streets] after receiving wide support from local authorities, researchers and State representatives. Kommunförbundet is now following up the document with courses and the spreading of good examples.

In at least one-third of Sweden's municipalities, network analysis and action planning is under way in line with 'Calm Streets'. The SNRA has been active in helping conduct network analyses of the municipalities' road traffic systems, in the form of financial support.

A project was concluded during the year concerning local authorities' opportunities for stimulating increased cycle traffic, which was reported in a document entitled 'Det finns bara dåliga kläder' (a title playing on the Swedish adage that 'There's no such thing as bad weather, only inappropriate attire'). The project dealt with road traffic safety, public health and the environment.

Transport quality

Local authorities are major purchasers and providers of their own in-house transport services. In their own road traffic safety policies, and in connection with procurement of external transport services, road traffic safety demands can be expressed in operational control and contracts. Trials are currently under way in Borlänge municipality, in collaboration with representatives of the transport industry, dealing with purchasing school transport services with clearly defined demands on road traffic safety. The trial has been reported on during 1998, within the framework of Kommunförbundet's R&D activities. Just over 40 similar procurement projects are now being arranged in municipalities throughout the country.

COUNTY ADMINISTRATIVE BOARDS

County administrative boards are responsible for driving licence suitability tests, and for licence withdrawal from people who have committed certain driving offences, or who have proved unsuitable through drink-driving or illness. The county administrative boards are also responsible for planning road construction on state roads over and above the national trunk road network, and also for planning county road traffic infrastructure.

NATIONAL SOCIETY FOR ROAD SAFETY (NTF)

The NTF is a non-governmental organisation, which reaches out to authorities, companies and individuals through non profit-making organisations, trade unions and industry organisations. The NTF acts as a self-governing, independent non-profit organisation which works for safe road traffic from the citizen's point of view. Through its member organisations, the NTF aims to mobilise people to assert their right to safe road traffic, and to provide people with a sound basis on which to base these demands. The NTF also aims to influence road-users' attitudes and behaviour by conveying feelings, knowledge and objective information.

The NTF has undergone extensive change over the past two years. The aim has been to unite and focus the organisation towards its role as an opinion-leader. A new operating concept has been established based on Vision Zero. Activities have now been structured into five areas of road traffic safety: reduced speeds, safe road transport, sober driving, and increased use of seat belts and cycle helmets. The NTF is to act as an independent opinion-leader in these areas, using knowledge

development, a well-developed network and consumer information.

In 1998, the NTF's new operating concept has changed the organisation, and strength has been gathered into the new area of safe road transport. Reduced speeds continues to be a high-priority area in which a number of projects are under way. Some 120 projects are currently in progress within the NTF local associations, many of which focus on identifying, supporting and developing local lobby groups. A project database has begun being built up in order to improve the opportunities for follow-up and feedback of experiences.

During the year, the NTF local associations have conducted 250 projects, and the member organisations 45 projects, focusing on local lobby groups promoting speed-related issues and calling for opinion for lower speeds in built-up areas. Motormännens Helynykerhetsförbund [Abstaining Motorists' Association] has conducted a project which aims to produce and test a training concept for professional drivers concentrating on speed adaptation and seat belts. Sveriges Motorcyklisters Centralorganisation [Central Organisation of Swedish Motorcyclists] has carried out a project which aims to influence motorcyclists to adopt behaviour that increases interaction with other road-users, as well as to inform of the risks of excessive speeds.

Through opinion work, the NTF is trying to encourage purchasers and users of transport services to impose road traffic safety demands on suppliers of goods and passenger transport. This is taking place primarily within the industries' various co-operation groups. A natural first step has been to ensure the safety of the NTF's own transport. During 1998, the NTF has been working to produce a travel policy for its own organisation, provide training and support for its member organisations, companies and local authorities, and influence other organisations to adopt travel policies. The sporting world is an important target group in this context.

By far the greatest part of the NTF's efforts to promote sober driving have been within the framework of the 'Civic Courage' project, which targets young people. The project is financed by the SNRA. Work within the project has been in the form of theatre groups and lectures, etc. in schools. Central NTF efforts have also included a special TV project about drink-driving.

A considerable part of the NTF's work on consumer information deals with child safety in cars. Important sources of information regarding child safety in cars are personnel in child care and child healthcare.

Activities promoting the use of cycle helmets are in progress within all the associations. In 1998, the NTF has run campaigns within companies urging personnel to cycle to work, as well as spreading information to elderly cyclists via seniors' organisations.

Most NTF local associations have informed their local members about Vision Zero during the first half of 1998, as well as about their right to demand safer road traffic. A handbook for safe cycle paths, a course of study for sporting associations' road traffic safety work, educational material for the 'SEKO' and 'Transport' Unions for Vision Zero' project, and information material for the NTF's parents network for Vision Zero have been produced during the first half of 1998.

SEKO/Transport

Facket för Service och Kommunikation (SEKO) [Union of Service and Communication Employees] and Svenska Transportarbetareförbundet [Swedish Transport Workers' Union] have conducted a project in 1998 entitled 'SEKO och Transport för Nollvisionen' [The 'SEKO' and 'Transport' Unions for Vision Zero], with the support of the Government, the SNRA and the NTF. The project aims to encourage opinion for safer road traffic, while also having an employment motive.

The project will help build far-reaching opinion for Vision Zero. Citizens, the business community and public organisations will increase their commitment to safer road traffic, as well as their insight into the

injurious effects of road traffic. The project is limited to spreading the ethical approach that Vision Zero calls for.

The aims have been:

- To increase insight into the injurious effects of road traffic
- To ensure all households are aware of what Vision Zero entails
- To ensure that public organisations and companies that have taken part in the project have their own action plan for safety and environmental considerations in internal transport, transport to and from the premises, and personnel work-related trips
- To increase the demand for a safe road traffic infrastructure and safe road products
- To ensure that everyone involved in the project has gainful employment without repressive effects

The SNRA has been responsible for training, information and other material along with the NTF. The SNRA has also trained certain project personnel, who will in turn be able to train other personnel.

During the year, opinion-leading has taken place under various themed areas, such as alcohol in traffic, speed and visibility.



Project personnel have helped form opinion at e.g. shopping centres and trade fairs, as well as on the streets.

A growing debate on a safer road traffic environment is under way throughout Sweden. More and more companies have begun discussing an endeavour towards "quality stamped" road traffic that fulfils certain demands, an endeavour in which an ethical approach and economic profit would go hand in hand. This project is continuing in several municipalities, with either the local authority or the NTF as the leading authority. The number of people employed in the project was around 1,000 in December 1998. The project is estimated to have employed a further 1,000 people on a temporary basis. The ratio of men to women is roughly 7:3.

Due to the fact that other labour market programmes have absorbed so much of the recruitment base, the project has not achieved the scope originally planned.

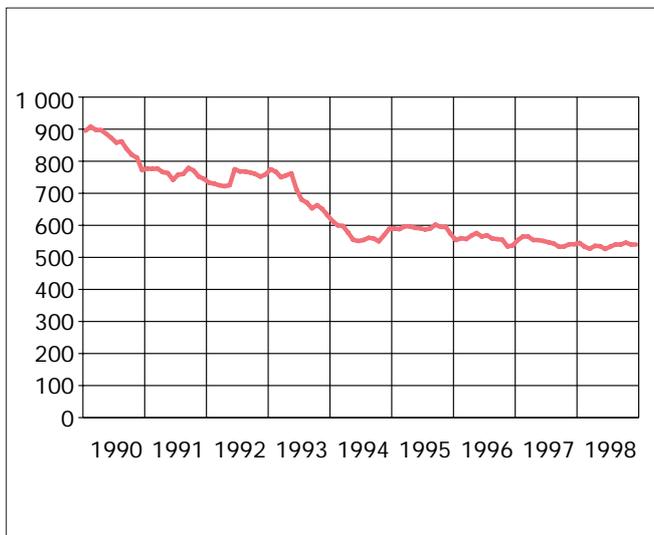
ROAD TRAFFIC SAFETY SITUATION AND ROAD TRAFFIC SAFETY DEVELOPMENTS FOR VARIOUS CATEGORIES OF ROAD-USER

- It is estimated that 540 people died on the roads in 1998, a decrease of 30% compared with 1990.
- The number of people seriously injured was 3,930 according to police statistics, 29% fewer than in 1990.
- Road traffic safety development in the 1990s has been most favourable for those in the age group 18-24 years. The number of deaths in this group has fallen by 51% since 1990. 18-19 year-olds account for the largest proportion.

To study the development of the number of deaths and injuries more closely, 'rolling twelve-month values' can be used (see graph). These values provide flexible average figures, which show seasonal adjustment while also revealing annual values. Each point of reference shows how many fatalities there have been over the past twelve months. For example, 110 people were killed on the roads in June 1992, and this affects the 12-month value up until June 1993, whereupon it is replaced by 60. This reduction of 50 is not primarily because 60 deaths constitute a low number, but because the figure 110 is no longer included.

As the graph shows, a sharp decline started in April 1990 and continued until the end of that year. The reduction in the number of deaths amounted to approximately 15% with a final figure of 772 in 1990. On 1 March 1990, the price of petrol increased by SEK 1.15 per litre, which contributed to a reduction in vehicle mileage. The amount of petrol sold fell by almost 5% in 1990.

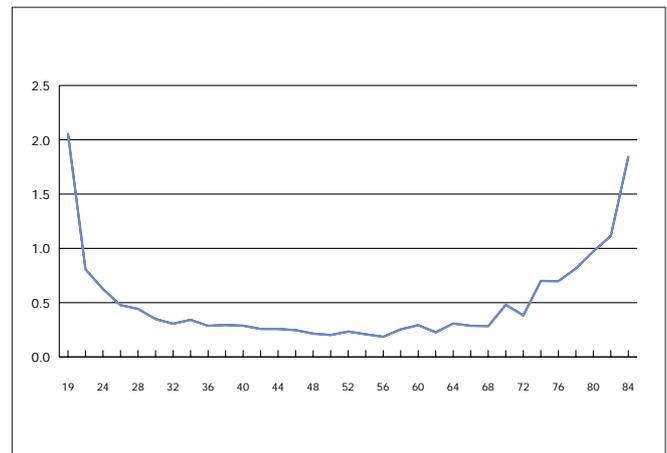
Number of deaths in rolling 12-month periods, December 1989–December 1998



In 1991 and 1992 vehicle mileage increased again by 2-3% overall, but the number of deaths stayed at approximately 750 throughout the two-year period. On 1 January 1993, the price of petrol increased again, by SEK 1.25 per litre, and vehicle mileage decreased by 3-4% in 1993. A sharp decrease in the number of deaths followed, beginning in June 1993 and lasting until June 1994. In this period the number of deaths per year fell from 762 to 551.

The reduction trend for the number of deaths calculated on an annual basis was broken in July 1994, and the 12-month value in 1995 was almost 600. At the end of 1995/early 1996, the number of deaths decreased to around 550, and has since then remained at the same level for each 12-month period. This is in spite of the fact that vehicle mileage has increased by just 3% between 1993 and 1998. The number of deaths by 12-month period has fallen by just 2% since June 1994. The number of serious injuries reported to the police has fallen by just under 4%, and the number of minor injuries reported to the police has since then increased by 8%.

Car drivers involved in road traffic accidents resulting in human injury (number per million km by age, 1994–1997) according to police reports

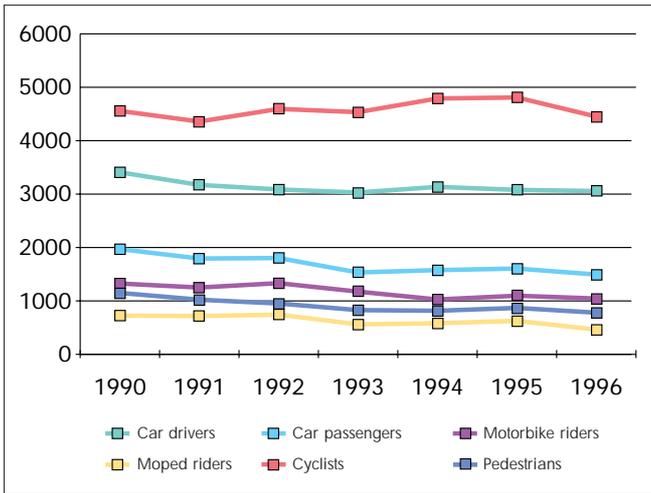


There have therefore been two periods during the 1990s that have displayed a dramatic decrease in the number of deaths. The primary cause of this reduction was the great decrease in vehicle mileage during these periods. The reduction in mileage has had a considerably greater effect, as the highest-risk groups reduced their mileage most. The risk of death for drivers in the 18–24 age group is around six times higher than for middle-aged drivers. Young drivers also run a higher risk of being involved in accidents where other road-users are killed or injured. Reduced vehicle mileage among younger drivers therefore also has a positive effect on the number of unprotected road-users killed. The total distance travelled by drivers in the 18-24 age group was approximately 45% lower in 1994 than in 1989. The number of driving licence holders in the 18–19 age group was 28% lower at the end of 1998, while the number in the 20–24 age group was 25% lower. In addition, there was a general lowering of risk levels as a result of all the road traffic safety measures being implemented on a continuous basis.

PATIENT STATISTICS

It is not possible to confirm figures for the number of people injured on the roads, due to discrepancies in official road traffic accident statistics. Socialstyrelsen's medical register records anyone admitted to hospital for 24 hours or more. These records show that the development in the 1990s up to and including 1996 (the last year for which medical statistics are available) was positive for all categories of road-user, apart from cyclists. The number of motorists admitted to hospital has fallen by almost 10% since 1990. For pedestrians, motorbike riders and moped riders the reductions were 32%, 21% and 36% respectively. A comparison with patient injury statistics indicates that the discrepancy in official road traffic accident statistics is highest for cyclists. The number of seriously injured cyclists is six times higher than the figure shown in official accident statistics.

Number of people admitted to hospital according to patient statistics, by category of road-user 1990–1996



UNPROTECTED ROAD-USERS

The risk* of being killed on the roads is significantly higher for unprotected than for “protected” road-users. A majority of accidents are single accidents, but the accidents with the most serious consequences are collisions.

In most fatal accidents, the unprotected road-user is in collision with a car. Most collisions occur in built-up areas. However, the most serious occur on the rural road network.

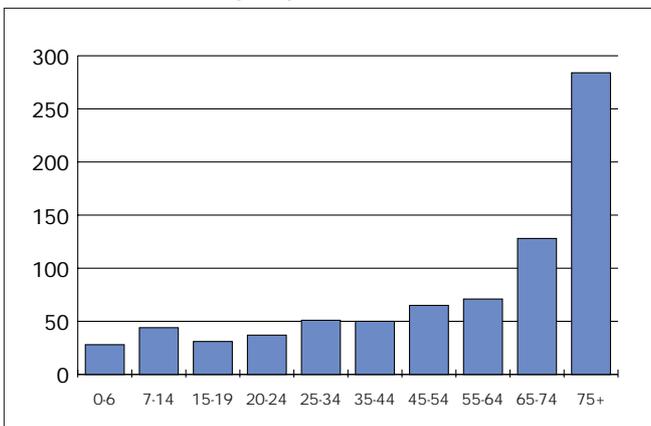
Pedestrians

During the period 1990–1998, the number of pedestrians killed on the roads has decreased by 48% from 134 to 70. This reduction has mainly occurred in the 64+ age group.

Road traffic accident statistics only include pedestrians in collision with vehicles. However, a large number of pedestrians are injured in solo accidents, i.e. accidents where the pedestrian slips or stumbles and falls. It is not known for sure how many people are injured in this way. Based on information from the medical services, the number of people injured so seriously that they seek emergency treatment is estimated at approximately 25,000 per year, of whom some 900 are registered as being admitted to hospital.

In 1998, 70 pedestrians were killed on the roads, showing no change over the past five years. Over 90% of these pedestrians were killed in accidents where a car or heavy lorry was involved. Fatal accidents to pedestrians mainly involve the elderly. More than half the pedestrians killed were 65 years old or more.

Pedestrian deaths according to age 1990–1998



Risks

The risk of being killed or seriously injured as a pedestrian on the roads is highest for the elderly and young children. Overall, the risk of being killed as a pedestrian is approximately 10 times higher than as a motorist.

Road traffic environment

90% of all collisions between motor vehicles and pedestrians occur in built-up areas.

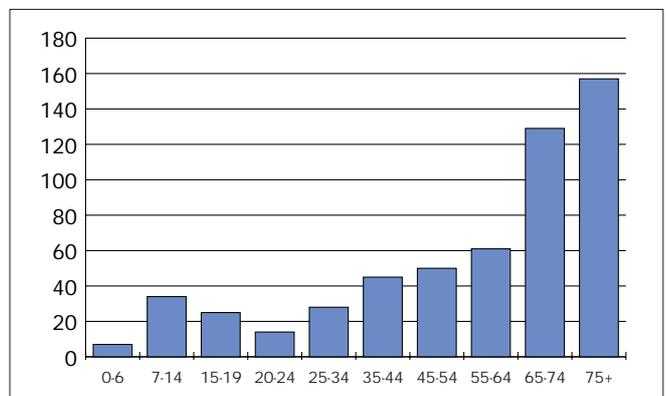
Cyclists

The number of cyclists killed on the roads has decreased from 68 in 1990 to 58 in 1998.

Road traffic accident statistics do not show how many cyclists are injured on the roads. Attempts to estimate the actual number from medical statistics give an approximate figure of 20,000 per year, of whom some 4,800 are admitted to hospital. More than two-thirds of the cyclists killed are men or boys.

More than half of the cyclists killed were aged 65 and above. Children and young people are also a high-risk group, accounting for approximately 15% of all cyclists killed in recent years.

Cyclists killed according to age 1990–1998



Risks



The risk of being killed or seriously injured as a cyclist is approximately four times higher than as a motorist. It is highest among children and the elderly. The risk of being killed or seriously injured for the age group 4–6 years is five times higher than for the age group 35–45 years. For the age groups 65–74 and 75–84, the risk is three and six times higher respectively than in the age group 35–44.

* Risk refers to number of deaths or serious injuries per person-kilometre.

Types of accident

Solo accidents are the most common types of accident, but the biggest problem for cyclists and their safety is that they often interact with car traffic. Approximately 80% of the cyclists killed in 1998 were involved in a collision with a car or heavy lorry. Almost 80% of the collisions between bicycles and motor vehicles in built-up areas occur at road junctions.

Collisions at junctions are also common outside built-up areas. Approximately 60% of collisions between bicycles and motor vehicles occur at junctions. Overtaking accidents and rear-end collisions are also relatively common outside built-up areas.

Road traffic environment

Almost 90% of human injuries on bicycles occur in built-up areas. The proportion of cyclists killed in built-up areas is approximately 55%. This means that cycling on rural roads accounts for almost half of all cyclists killed.

Darkness

Approximately 20% of collision accidents between motor vehicles and bicycles occur in the dark or at dawn or dusk. A common kind of accident in the dark is rear-end collision.

Alcohol

According to police statistics, approximately 5% of the cyclists killed were under the influence of alcohol.

Types of injury

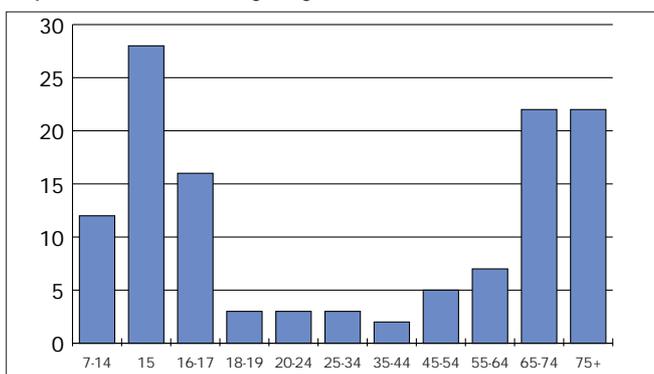
Head injuries are common in cycle accidents. Other common injuries are to the arms and legs. The risk of suffering lasting injuries in cycle accidents is not negligible. In a survey among children, more than 10% still had problems with the effects of their injuries two years after the accident.

Moped riders

During the period 1990–1998, the number of moped riders killed decreased from 22 to 13.

The number of moped riders injured has been estimated at approximately 1,500 per year, of whom approximately 600 have been admitted to hospital. So far in the 1990s, an average of 14 moped riders have been killed each year. More than 30% of the moped riders killed were between 15 and 17 years old, and approximately 40% were aged 65 or older. 10% were under 15 years old. Of all moped riders killed on the roads in 1998, all but one were in the 14–17 age group. Moped riders who are killed or seriously injured account for a large proportion of the young people killed or seriously injured on the roads. Over 60% of 15-year-olds killed or seriously injured on the roads are moped riders.

Moped riders killed according to age 1990–1998



Risks

The risk of being killed on the roads for moped riders is almost 25 times higher than for motorists. Moped riders are therefore the road-users, who together with motorbike riders, are exposed to the greatest risks on the roads. The risk of being killed on a moped is considerably higher for elderly than for young moped riders. Almost 10 times as many moped riders were killed per person-kilometre in the 65+ age group as in the 15–17 age group. The higher risk is largely due to the fact that the elderly run a greater risk than the young of dying from serious injuries. There is also a difference in risk between beginners and slightly older youngsters. 15-year-old moped riders are five times more likely to be killed than 16–17-year-olds.

Types of accident

Most moped accidents are solo accidents. Medical data has shown that approximately 60% of moped riders have been injured in solo accidents. However, collisions are more serious than solo accidents.

Road traffic environment

Most moped accidents occur in built-up areas. Approximately 80% of this type of injury reported to the police occur in urban areas. However, the proportion of moped riders killed in urban areas is significantly lower, approximately 40%.

Alcohol

Of the moped riders killed in recent years, approximately 5% were suspected of being under the influence of alcohol. All of them were boys or men, and approximately 40% were in the 15–17 age group.

Types of injury

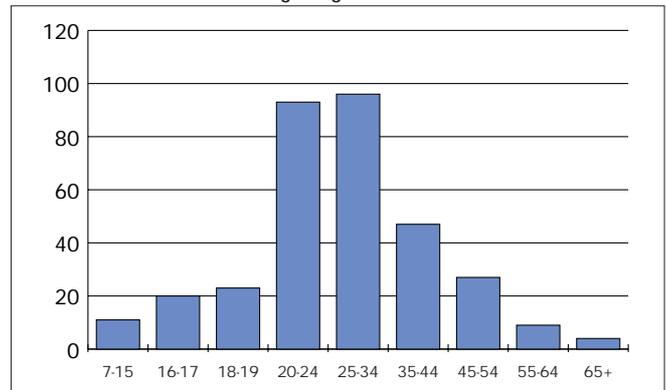
Leg injuries are the most common type of injury for moped riders. Other common injuries are to the arms and head.

Motorbike riders

The number of motorbike riders killed in 1998 was 42. Approximately 10% of the motorbike riders killed during the 1990s have been pillion riders. The proportion of women killed was also approximately 10%.

The number of motorbike riders injured has been estimated at 2,000 per year, of whom approximately 1,100 have been admitted to hospital.

Motorbike riders killed according to age 1990–1998



Risks

Together with riding a moped, riding a motorbike is the most dangerous way of getting around on the roads. As with moped riders, the youngest motorbike riders are at greater risk of being killed or injured than older riders.

Types of accident

Solo accidents often lead to very serious injuries for motorbike riders. However, the injuries resulting from collisions are in general more serious for motorbike riders than those from solo accidents. Of the motorbike riders killed in 1998, approximately 40% died in collisions with cars or heavy lorries. The most common types of collision with motor vehicles are those at junctions, which account for almost 80%.

Road traffic environment

Between 50% and 60% of personal injuries on motorbikes occur in built-up areas. The proportion of deaths in built-up areas is lower, approximately 40%.

Alcohol

Approximately 20% of motorbike drivers killed were under the influence of alcohol.

Types of injury

Skull injuries are common among motorbike riders. Other common injuries are to the arms and legs. Serious spinal injuries are also quite common.

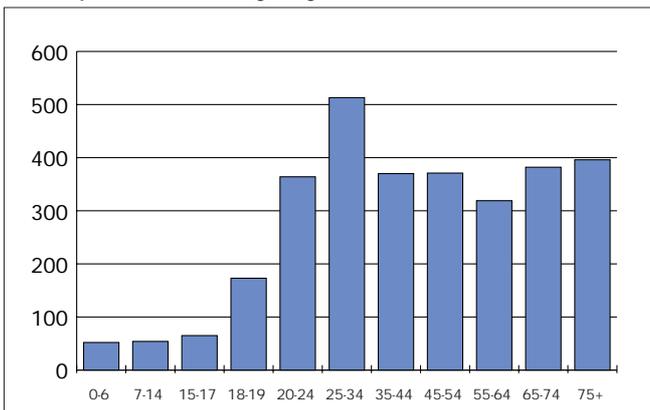
"PROTECTED" ROAD-USERS

Car occupants

496 car occupants were killed in 1990, and this figure has decreased to 350 in 1998.

In 1998, approximately 65% of the total number of people killed on the roads were car occupants. The number of car drivers killed in the 65+ age group has increased from 18% in 1990 to 22% in 1998. The number of car occupants injured so seriously that they sought some kind of medical attention is estimated at between 15,000 and 20,000 per year. Approximately 4,500 injured car occupants were admitted to hospital in 1996. In the years 1990–1998, deaths in the 18–24 age group have decreased by over 50% from 51 to 22.

Car occupants killed according to age 1990–1998



Risks

The danger of being killed or seriously injured is six times greater for car drivers in the 18-19 age group than those in the 45–54 age group. People over 64 also run a greater risk of being killed or seriously injured than the middle aged. The risk is double for those in the 65–74 age group, and six times as high for those in the 75–84 age group.

An analysis of fatal solo accidents in the first half of 1997 clearly indicated that the road-user had been subjected to excessive trauma⁹. The primary cause of this trauma was a lack of passive safety. For example,

the speed limit was not set in accordance with the road's technical standard, and the roadside area was badly designed (with posts, trees, rock and badly constructed barriers). Another major category is people subjected to excessive risk¹⁰. This group includes those who have travelled in vehicles with a lower standard of passive safety than the road has been designed for. The most common type of excessive risk is non-use of seat belts. The excessive trauma and excessive risk groups are roughly the same size. They also overlap each other to some extent, as excessive trauma and excessive risk both exist in certain accidents.



Types of accident

The most common type of car accident is the solo accident. Another common type of accident is rear-end collision. Young car drivers are involved in more accidents per distance travelled than other car drivers, especially in solo accidents, head-on collisions and overtaking accidents. Older car drivers are involved more in accidents at junctions, especially in connection with left turns. Half the car occupants killed have died in collisions with other cars or heavy vehicles.

Road traffic environment

The proportion of accidents where car occupants are injured is approximately 40% in built-up areas and 60% in non built-up areas. In terms of deaths, the proportion outside built-up areas is considerably higher, approximately 85%.

Alcohol

In a study of car drivers who were killed in the early 1990s, 20–25% were under the influence of alcohol. In solo accidents, the proportion was approximately 50%, while in collisions it was around 10%. On average, the blood alcohol level amounted to 1.7 parts per thousand. More than one in three fatal accidents involving drivers under the influence of alcohol occurred between midnight and six in the morning on Saturdays and Sundays. The proportion of car driver deaths caused while under the influence of alcohol has decreased by almost 20% in recent years, while the average blood alcohol level has remained unchanged at 1.7 parts per thousand.

Lorry drivers

It is estimated that between 700 and 1,000 lorry drivers have been injured and about 20 have been killed per year in recent years. Most were drivers of light lorries or vans. Some 75% of injured lorry drivers are men between the ages of 18 and 44.

⁹ Excessive trauma refers to a level of violence beyond what the human body can withstand, even where various protection systems have been in place and the vehicle has had a good standard of safety.

¹⁰ Excessive risk refers to situations where people have not used safety equipment or have used defective safety equipment, while passive safety in the road environment has also been unsatisfactory.

Risks

The risk of being killed as the driver of a light lorry or van is roughly the same as for car drivers, while drivers of heavy lorries run a relatively small risk of being killed in road accidents. However, heavy lorries represent a significant risk of death and serious injury to other road-users. More than 100 (20%) of the people killed on the roads in 1998 died in collisions with heavy lorries.

Types of accident

Over half the accidents where drivers of heavy lorries are injured are solo accidents. The most common type of solo accident is driving off the road, which often results in the vehicle tipping over.

Alcohol

Out of approximately 2,000 lorry drivers per year involved in road accidents, the police suspect approximately 1% of being under the influence of alcohol.

Bus drivers and passengers

Between 1990 and 1998, an average of 3 people per year have been killed on buses. In recent years, between 300 and 400 people per year have been injured on buses as a result of road accidents. Of these, approximately 50 were drivers. Most bus passengers are injured while getting on or off buses, or when the bus brakes sharply. Half of the people injured are over 60 years old and the majority are women.

Risks

Taking the bus is the safest way to travel on the roads. However, the average risk for the journey as a whole is adversely affected by the relatively high risk when people are walking to or from or waiting at a bus stop.

Types of accident

Accidents resulting in serious injuries for bus passengers are dominated by collisions with heavy vehicles and by solo accidents in slippery road conditions.

Slippery roads

A large proportion of accidents in which bus passengers are injured occur in the winter. According to a study of medical data, 53% of bus passengers are injured in slippery road conditions.

Alcohol

In the period 1990–1998, 0.3% of bus drivers involved in road traffic accidents were suspected of being under the influence of alcohol. This makes bus drivers the most sober of all driver categories on the roads.



This kind of lay-by bus stop offers several advantages in built-up areas, e.g. increasing road traffic safety, providing space for waiting passengers and increasing car parking space.

APPENDIX 1 ASSESSMENT METHODS

FACTS ON ROAD ACCIDENT STATISTICS

Official road traffic accident statistics are based on police reports. The police authorities report details of road traffic accidents to the road manager.

The definition of a road traffic accident

An event occurring in road traffic, in which at least one moving vehicle is involved, and which has resulted in injury to person or property.

The definition of a death in a road traffic accident

A person who has died within 30 days of a road traffic accident. The person must have died as a direct or indirect result of that accident. However, a number of people each year die of other causes, such as illness. These amount to around 40 per year, and have only started being included in road traffic statistics since 1994. A development project has been initiated with the purpose of discovering reliable methods for deciding which victims have died of other causes than the road accident.

Far from all accidents actually come to the attention of the police. Just about 100% of deaths on the roads are reported, but there is a discrepancy in the reporting of other accidents involving personal injury. Only around half of the serious injuries and approximately a third of the minor injuries are reported. The discrepancy also varies depending on the category of road-user, the type of accident and the age of the victim, etc.

These shortcomings limit the scope for describing and analysing road traffic safety developments and problems. This is also the reason why statistics in analytical studies are dominated by fatal accidents. However, in order to improve the monitoring of trends in serious injuries, information from Socialstyrelsens's medical register has been used. One problem is the two-year delay in accessing nation-wide medical data.

FACTS ON STATISTICAL METHODOLOGY

Road accidents occur at random times in random locations. Therefore an analysis of road traffic safety developments cannot simply be based on accidents in a single year. The analysis must be based on a forecast of trends using data from several years.

The VTI has developed a model which describes trends in the statistical data. This model can be used to calculate the expected number of deaths and injuries for a particular year. The explanatory variables in the model include a traffic development factor as well as a trend factor.

During a random year before the year 2000, the number of deaths or injuries must not be higher than the goal minus the random deviation to determine if the development is heading towards the desired goal.

METHODS OF ASSESSING THE STATUS GOALS

Basic framework

In order to assess whether the status goals have been achieved, the SNRA uses a basic framework. From this framework, a basic statistical selection consisting of two parts is made. The first part comprises a selection of stretches of road on the state road network, and the second a selection of urban geographical areas.

In 1998, the urban areas in the basic framework were used for gauging the use of cycle helmets. Speeds and headway, as well as the use of seat belts, were gauged both in urban areas and on state roads.

Road traffic safety survey

Each autumn, in conjunction with SCB, the SNRA carries out an extensive survey of road traffic safety. In October 1998, SCB sent a questionnaire with some 30 questions to around 10,000 randomly selected members of the public between the ages of 15 and 84. The survey included questions on the use of seat belts, cycle helmets, bicycle lights and reflectors, along with other safety issues. This survey has been carried out every year since 1981.

Other surveys

The SNRA has commissioned a number of observation studies from the VTI, covering such aspects as the use of seat belts and cycle helmets. These observations have been carried out for a number of years, which means it is possible to see changes over time. The VTI also conducts a road traffic safety survey for the SNRA, which gauges factors such as traffic exposure in different road traffic environments.



Every day, vehicle mileage, speed, headway and type of vehicle are gauged at some 250 'assessment stations' like this on the road network.

APPENDIX 2

Table 1. Statistics of road traffic accidents reported to the police 1950–1998

Year	People killed	People injured	Of which seriously injured	Cars in use at year end (thousands)	Petrol sales (thousands of m ³)	Inhabitants at year-end (thousands)	Deaths per 100,000	
							Cars	Inhabitants
1950	595	10 583	–	345	825	7 042	172.5	8.4
1951	708	11 240	–	410	1 024	7 099	172.6	10.0
1952	750	12 846	–	466	1 151	7 151	160.9	10.5
1953	921	15 033	–	542	1 265	7 192	169.9	12.8
1954	942	16 963	–	652	1 390	7 235	144.5	13.0
1955	902	18 050	–	755	1 537	7 290	119.5	12.4
1956	889	19 220	3 275	855	1 668	7 341	104.0	12.1
1957	946	19 934	3 277	987	1 747	7 393	95.8	12.8
1958	941	20 859	3 104	1 098	1 892	7 436	85.7	12.7
1959	1 000	21 475	3 137	1 216	2 012	7 471	82.2	13.4
1960	1 036	21 536	2 983	1 324	2 125	7 498	78.2	13.8
1961	1 083	22 989	3 031	1 439	2 318	7 542	75.3	14.4
1962	1 123	22 438	2 942	1 562	2 394	7 581	71.9	14.8
1963	1 217	23 400	3 068	1 697	2 607	7 628	71.7	16.0
1964	1 308	24 935	3 370	1 810	2 853	7 695	72.3	17.0
1965	1 313	23 618	3 158	1 934	3 043	7 773	67.9	16.9
1966	1 313	21 430	4 700	2 033	3 165	7 843	64.6	16.7
1967	1 077	21 001	5 304	2 126	3 293	7 893	50.7	13.6
1968	1 262	23 028	6 111	2 223	3 451	7 935	56.8	15.9
1969	1 275	23 199	6 529	2 350	3 635	8 004	54.3	15.9
1970	1 307	22 230	6 614	2 446	3 782	8 081	53.4	16.2
1971	1 213	21 872	7 031	2 513	3 869	8 115	48.3	14.9
1972	1 194	21 256	6 657	2 618	4 025	8 129	45.6	14.7
1973	1 177	22 551	7 264	2 667	4 252	8 144	44.1	14.5
1974	1 197	20 902	6 982	2 809	3 919	8 176	42.6	14.6
1975	1 172	20 809	6 728	2 931	4 381	8 208	40.0	14.3
1976	1 168	21 843	6 679	3 060	4 629	8 236	38.2	14.2
1977	1 031	20 916	6 529	3 039	4 811	8 267	33.9	12.5
1978	1 034	20 573	6 431	3 042	4 945	8 284	34.0	12.5
1979	928	19 552	6 036	3 059	4 913	8 303	30.3	11.2
1980	848	19 246	6 064	3 077	4 755	8 318	27.6	10.2
1981	784	18 554	5 984	3 093	4 679	8 323	25.3	9.4
1982	758	19 277	5 950	3 143	4 712	8 327	24.1	9.1
1983	779	19 803	6 063	3 222	4 825	8 331	24.2	9.4
1984	801	20 635	6 068	3 305	5 026	8 343	24.2	9.6
1985	808	20 671	5 814	3 383	5 067	8 358	23.9	9.7
1986	844	21 614	5 804	3 497	5 334	8 382	24.1	10.1
1987	787	20 468	5 423	3 626	5 534	8 414	21.7	9.4
1988	813	22 838	5 869	3 764	5 739	8 459	21.6	9.6
1989	904	23 531	5 790	3 887	5 910	8 527	23.3	10.6
1990	772	22 497	5 501	3 925	5 627	8 591	19.7	9.0
1991	745	21 057	4 832	3 945	5 751	8 644	18.9	8.6
1992	759	20 727	4 705	3 906	5 878	8 692	19.4	8.7
1993	632	19 741	4 334	3 882	5 587	8 745	16.3	7.2
1994*	589	21 083	4 221	3 912	5 655	8 815	14.8	6.6
1995*	572	21 173	3 965	3 953	5 763	8 837	14.5	6.5
1996*	537	20 810	3 837	3 981	5 694	8 844	13.5	6.1
1997*	541	21 280	3 917	4 135	5 577	8 848	13.4	6.1
1998*	540**	21 130**	3 930**	4 145**	5 427	8 854	13.2	6.1

* Figures for 1994-1998 include deaths on the roads in which the cause was illness

Source: SCB

** Estimated figures

Table 2. People killed according to category of road-user 1980–1998

Year	Car drivers	Car passengers	Motorbike riders	Moped riders	Cyclists	Pedestrians	Others	Total
1980	295	203	43	34	112	133	28	848
1981	277	185	53	32	76	135	26	784
1982	278	153	47	41	82	142	15	758
1983	258	151	84	31	90	157	8	779
1984	266	161	75	32	111	152	4	801
1985	306	205	57	26	91	113	10	808
1986	347	160	68	30	85	148	6	844
1987	334	162	59	24	58	144	6	787
1988	359	166	57	24	66	136	5	813
1989	377	213	40	24	87	155	8	904
1990	342	154	46	22	68	134	6	772
1991	333	157	37	12	68	125	13	745
1992	356	129	33	17	76	138	10	759
1993	294	114	42	14	70	94	4	632
1994	293	115	31	10	52	86	2	589
1995	283	111	32	9	57	71	9	572
1996	243	113	40	14	49	74	4	537
1997	273	98	36	13	42	72	7	541
1998*	270	80	42	13	58	70	7	540

* Estimated figures

Source: SCB

Table 4. People seriously injured in accidents reported to the police according to category of road-user 1980–1998

Year	Car drivers	Car passengers	Motorbike riders	Moped riders	Cyclists	Pedestrians	Others	Total
1980	1 934	1 549	459	452	776	817	77	6 064
1981	1 884	1 389	548	408	812	846	97	5 984
1982	1 875	1 358	645	439	850	722	61	5 950
1983	1 915	1 344	680	380	945	749	50	6 063
1984	2 030	1 332	628	312	895	821	50	6 068
1985	2 055	1 386	532	282	794	717	48	5 814
1986	2 006	1 385	586	246	815	716	50	5 804
1987	1 962	1 328	533	208	652	701	39	5 423
1988	2 297	1 351	482	257	717	720	45	5 869
1989	2 272	1 274	435	259	742	746	62	5 790
1990	2 149	1 239	357	299	772	647	38	5 501
1991	1 918	1 052	286	248	755	545	28	4 832
1992	1 793	998	348	273	703	562	28	4 705
1993	1 685	928	293	195	719	486	28	4 334
1994	1 622	895	267	216	727	459	35	4 221
1995	1 490	834	268	235	670	434	34	3 965
1996	1 504	825	243	161	643	433	28	3 837
1997	1 549	838	274	183	675	364	34	3 917
1998*	1 660	900	230	160	560	390	30	3 930

* Estimated figures

Source: SCB

Table 3. People killed according to age group 1980–1998

Year	0-6	7-14	15-17	18-19	20-24	25-34	35-44	45-54	55-64	65-Unknown	Total
1980	26	45	54	43	77	111	92	76	118	206	848
1981	23	32	56	56	97	96	77	69	77	201	784
1982	17	33	46	50	86	88	69	56	95	218	758
1983	16	31	48	71	88	100	86	56	82	201	779
1984	15	34	46	69	108	90	85	60	72	222	801
1985	11	33	49	67	97	103	86	60	87	215	808
1986	10	36	51	55	115	120	78	67	93	219	844
1987	14	32	48	50	113	116	87	64	55	208	787
1988	11	25	55	51	119	98	76	73	78	227	813
1989	25	34	54	70	102	114	86	78	77	263	904
1990	12	23	34	62	92	116	76	82	83	192	772
1991	16	20	30	47	86	117	88	68	63	210	745
1992	16	21	21	41	93	117	77	75	86	212	759
1993	9	16	28	29	62	105	63	67	62	191	632
1994	13	21	12	26	56	76	73	56	58	198	589
1995	11	22	18	22	56	74	58	80	54	175	572
1996	7	15	29	17	50	67	49	67	55	181	537
1997	13	11	14	10	57	79	73	62	51	171	541
1998*	4	20	16	22	54	82	51	65	67	159	540

* Estimated figures

Source: SCB

Table 5. Vehicles in use at the year-end 1980–1998

Year	Cars	Lorries	Buses	Total vehicles	Motor bikes*	Mopeds**
1980	2 882 956	181 571	12 796	3 077 323	54 332	215 528
1981	2 893 242	186 251	13 074	3 092 567	69 068	204 678
1982	2 935 985	193 461	13 277	3 142 723	85 749	194 355
1983	3 006 761	201 716	13 543	3 222 020	100 393	181 624
1984	3 080 981	209 979	13 607	3 304 567	107 904	167 537
1985	3 151 195	217 778	13 664	3 382 637	105 153	159 981
1986	3 253 601	229 917	13 779	3 497 297	103 524	153 814
1987	3 366 571	245 730	13 846	3 626 147	100 839	145 586
1988	3 482 656	267 281	14 106	3 764 043	99 887	138 735
1989	3 578 042	294 901	14 530	3 887 473	98 112	140 285
1990	3 600 518	309 520	14 595	3 924 633	100 475	138 553
1991	3 619 411	309 531	14 555	3 945 459	102 545	137 500
1992	3 586 707	304 630	14 252	3 905 589	109 450	133 713
1993	3 566 040	301 567	14 127	3 882 034	113 540	129 435
1994	3 594 199	303 541	14 293	3 912 023	115 196	125 610
1995	3 630 760	307 709	14 577	3 953 046	117 387	121 874
1996	3 654 920	311 751	14 753	3 981 424	121 950	120 000
1997	3 702 778	321 749	14 844	4 039 371	130 041	117 000
1998	3 792 056	338 320	14 895	4 145 271	137 466	***

* At 30th June

** Insured for the roads

*** Information not available

Source: SNRA, Sveriges Forsäkringsförbund
[Swedish Insurance Federation]

Table 6. Driving licence holders at the year-end according to gender 1980–1998

Year	Men	Women	Total
1980	2 574 207	1 713 162	4 287 369
1981	2 637 901	1 769 850	4 407 751
1982	2 701 893	1 827 516	4 529 409
1983	2 710 633	1 884 179	4 594 812
1984	2 704 105	1 929 198	4 633 303
1985	2 777 070	1 995 690	4 772 760
1986	2 786 058	2 049 039	4 835 097
1987	2 819 338	2 103 270	4 922 608
1988	2 850 613	2 156 715	5 007 328
1989	2 878 274	2 210 001	5 088 275
1990	2 895 134	2 246 587	5 141 721
1991	2 911 286	2 281 811	5 193 097
1992	2 929 070	2 319 343	5 248 413
1993	2 946 570	2 355 204	5 301 774
1994	2 954 737	2 386 682	5 341 419
1995	2 973 925	2 413 325	5 387 250
1996	2 991 131	2 445 047	5 436 178
1997	2 995 460	2 468 056	5 463 516
1998	2 996 290	2 493 176	5 489 466

Source: SNRA

Table 7. Driving licence holders in thousands at the year-end according to age group 1980–1998

Year	up to 17	18-19	20-24	25-44	45-64	65+	Total
1980	15	128	435	1 997	1 264	449	4 287
1981	17	134	435	2 033	1 293	496	4 408
1982	18	143	435	2 065	1 321	547	4 529
1983	18	149	431	2 056	1 340	601	4 595
1984	18	154	456	2 096	1 353	556	4 633
1985	14	156	477	2 122	1 378	625	4 773
1986	9	151	496	2 141	1 396	641	4 835
1987	8	143	511	2 157	1 429	674	4 923
1988	7	140	515	2 153	1 485	708	5 007
1989	7	142	504	2 157	1 541	737	5 088
1990	4	120	488	2 156	1 601	773	5 142
1991	4	113	472	2 150	1 657	798	5 193
1992	3	114	452	2 142	1 713	825	5 248
1993	3	111	439	2 127	1 765	856	5 302
1994	2	98	433	2 113	1 821	874	5 341
1995	2	89	422	2 110	1 861	903	5 387
1996	2	90	405	2 108	1 897	934	5 436
1997	1	78	385	2 100	1 938	962	5 464
1998	2	86	367	2 089	1 968	977	5 489

Source: SNRA

Table 8. International road traffic statistics for 1997

Country	People killed	Population, million	No. of motor vehicles, in thousands	Deaths per 100,000 inhabitants	Deaths per 100,000 motor vehicles
Belgium	1 364	10.2	4 891	13.4	27.9
Denmark	489	5.3	2 142	9.3	22.8
Finland	438	5.1	2 226	8.5	19.7
France	8 444	58.5	31 267	14.4	27.0
Greece	2206	10.5	3 589	21.0	61.5
Ireland	472	3.7	1 432	12.8	33.0
Italy	6 724	57.5	33 975	11.7	19.8
Luxembourg *	71	0.4	257	17.3	27.6
Netherlands	1 163	15.6	6 516	7.5	17.8
Portugal	2730	9.4	3 944	29.0	69.2
Spain	5 604	39.3	18 553	14.3	30.2
Great Britain	3 743	59.0	28 796	6.3	13.0
Sweden	541	8.8	4 040	6.1	13.4
Germany	8 549	82.0	43 755	10.4	19.5
Austria	1 105	8.1	4 108	13.7	26.9
Total EU	43 643	373.3	189 491	11.7	23.0
Australia	1 766	18.5	11 025	9.5	16.0
Japan	11 254	126.2	70 003	8.9	16.1
Canada	3 064	30.3	16 815	10.1	18.2
Norway	303	4.4	2 154	6.9	14.1
New Zealand	540	3.7	1 851	14.4	29.2
Switzerland	587	7.1	3 850	8.3	15.2
Hungary	1 391	10.2	2 766	13.7	50.3
USA	41 967	267.6	201 170	15.7	20.9

* 1996 figures

Source: International Road Traffic Accident Database (IRTAD), OECD, Bilismen i Sverige [Motorism in Sweden]

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