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ROAD ACCIDENTS IN DENMARK

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1. INTRODUCTION

This article gives a brief overview of the current road accident situation in Denmark and the change in number of accidents for the last 10-15 years. Furthermore the Danish Road Safety Action Plan from 1988 is presented along with some general comments on the observed accident trends.

Denmark has a population of 5.1 million and approx. 1.9 million registered motor vehicles.

2. OFFICIAL ACCIDENT DATA

The national traffic accident statistics are based on police recorded accident data. Police recorded accidents are categorised as 'damage only accidents' or 'personal injury accidents'. Personal injuries are categorised as fatal, serious or slight injuries, whereas fatalities are defined as people killed within 30 days after the accident.

While the level of police reporting is at 100% for fatalities and approximately 60% for serious injuries, there is a high level of underreporting on slight injuries and damage only accidents.

On average, only approximately 20% of the total number of accidents are reported by the police. Accidents that are not reported are typically 'damage only accidents' and accidents with slight injuries among vulnerable road users, e.g. cyclists, pedestrians. The level of police reporting on personal injury accidents with cyclists involved is for instance only about 5%.

In recent years, traffic accident data based on records from hospitals are becoming more common since these data cover most injury accidents. A national data base on hospital recorded traffic accidents is now in progress, but it will so far only cover selected regions in Denmark.

All accident data in this article are based only on police recorded accidents.

3. ACCIDENT DEVELOPMENTS

In 1999, nearly 500 persons were killed and more than 9,000 injured in traffic accidents in Denmark. Even though these figures have decreased significantly over the last 20-30 years, improvements in road safety still need to occur.

Figure 1 illustrates the development in number of killed and injured persons in Denmark and the development in travelled kilometres by motor vehicles. The ob-

served decrease in the number of killed and injured has been obtained in defiance of a dramatic growth in traffic.

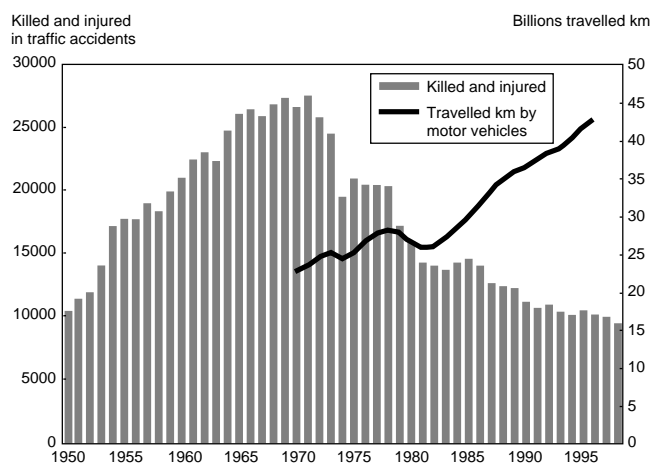


Fig. 1 The development in killed and injured people in traffic accidents from 1950-1998 and the development in travelled km by car

As seen from Figure 1, the number of killed and injured persons culminated around 1970 and the level today is approximately the same as in the early 1950s.

Due to the oil crises in the beginning of the 1970s, general speed limits were introduced in 1973; 60 km/h in urban areas, 90 km/h rural areas and 110 km/h on motorways. A very positive side effect from this regulation was a major drop in the number of killed and injured persons. At the same time the annual amount of travelled kilometres by motor vehicles only decreased slightly.

In the following years a number of new safety measures in terms of regulations and legislation took place. The most important were:

- 1976 Seat-belt legislation: front seats. Max blood alcohol level of 0.08 %;
- 1977 Helmet legislation for motorcycles and mopeds. Daytime running light for motorcycles. 30 km/h zone and shared areas are introduced in urban areas;
- 1979 New general speed limits: Urban areas: 60 km/h, Rural areas: 80 km/h, Motorways: 100 km/h;
- 1985 New general speed limits: Urban areas: 50 km/h;
- 1986 New driver education;
- 1990 Daytime running light on motor vehicles including mopeds. Seat-belts for rear-seat passengers;
- 1992 New general speed limit: Motorways 110 km/h. Increased fines for speeding;

1998 Max blood alcohol level of 0.05 %.

In the same period, major efforts were put in rebuilding roads and junctions, treating black spots, using traffic calming solutions in urban areas, environmentally adapted through roads etc. These initiatives have, along with regulations, legislation, police control, etc., steadily increased safety, while at the same time, travelled motor vehicle kilometres have increased tremendously.

4. NATIONAL ROAD SAFETY ACTION PLAN

In 1988, the Danish Traffic Safety Commission released its first National Road Safety Action Plan, which was adopted by the Danish Parliament. The target of the plan was to reduce the number of people killed or injured by 40-45% by the year 2000 compared with 1986/87 figures. This target is fixed, which means that it should be attained even with an increased traffic volume. Moreover, the action plan is not intended to benefit particular groups of road users in preference to other groups.

Thirty-two different safety measures were listed in the plan, among these campaigns, road layout changes, vehicle equipment, increased law enforcement, changes in traffic regulations, local road safety councils, etc. For each measure, a cost-benefit analysis was prepared to estimate the annual costs incurred by implementing the measure and the estimated safety effect in terms of fatalities and injuries. The cost-benefit analysis also demonstrated that, for every DKK 1 billion spent on road safety, DKK 2 billion could be saved on the costs incurred through accidents, e.g. for hospitals, medicines, pensions for the disabled, etc.

The plan designates the authorities responsible for the implementation of each measure, e.g. the Ministry of Justice, local road authorities, the police, etc.

A progress report on the Action Plan of 1988 was written in 1996. This report stated that an increased effort is needed if the target is to be achieved. The report led to a new National Road Safety Action Plan, which was submitted to the Parliament in March 1997.

The target is still to reduce the number of persons killed and injured by 45% compared with 1986/87 by the year 2000. This plan is based on a vision of a transport system from which fatalities and serious injuries are banished (zero-vision), on condition that road users observe traffic regulations. The Danish Parliament understands that the zero-vision as a specific target is utopian, but

the Government considers it important that this train of thought permeate road safety work in Denmark. "This is the case where industrial safety is concerned and it should also apply in the case of road safety." It is the Government's opinion that this vision - altering the attitudes of traffic planners and road users - is a vital means for attaining a continued reduction in accident statistics. The new National Road Safety Action Plan focuses on four major topics, which cover more than 80% of all accidents. These topics are:

- accidents related to high speed;
- accidents involving drunken drivers;
- accidents involving cyclists;
- accidents at junctions.

5. TRAFFIC ACCIDENTS 1987 - 2000

During the period from 1986/87 to 1998, the number of killed and injured on Danish roads has been reduced by 28%. Yet, the reduction cannot match the targets set in 1988 by the Danish Road Safety Commission, see Figure 2. The aim was to reduce the number of killed and injured by at least 15% within the year 1991, an additional minimum 15% by the year 1994 and an additional 10-15% by the year 2000. The aim is fixed regardless of traffic growth. Preliminary accident data for 1999 indicates an increase in the number of killed and injured.

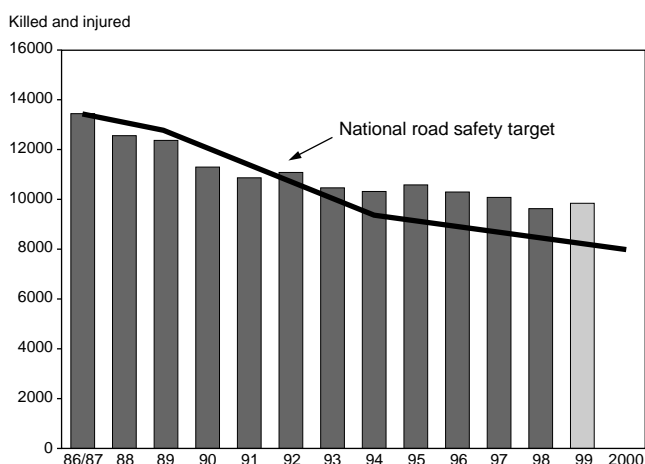


Fig. 2 The development in the number of killed and injured in road accidents compared with the national road safety target. 1999 figures are still preliminary

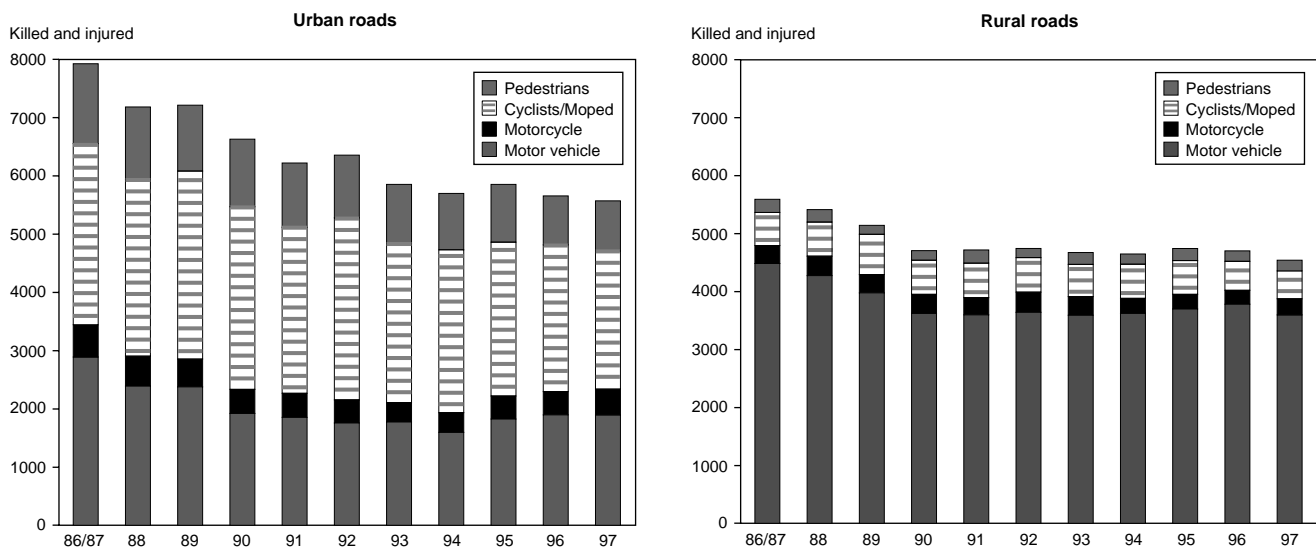


Fig. 3 Development in killed and injured on rural and urban roads by transport mode

The number of accidents in urban areas makes up for approximately 55% of all killed and injured in Denmark. The trends in the number of killed and injured for urban and rural roads are illustrated in Figure 3.

The most favourable trend occurred in urban areas, but diversity in the trends between urban and rural areas should also be seen in the light of a noticeable diversity in the trend of travelled vehicle kilometres. During the period 1986-95 a growth of approximately 48% in vehicle kilometres travelled took place in rural areas. During the same period, the growth in urban areas was only approximately 10%.

Vulnerable road users (cyclists, moped riders and pedestrians) represent more than 60% of those killed and injured in urban areas, see Figure 3. The most favourable trend can be found among pedestrians, which could be explained by the fact that people walk less nowadays compared to earlier. The number of killed and injured among motor vehicles seems to be increasing again after a positive trend in the period 1986 - 1994.

Killed and injured cyclists and mopeds on urban roads have been reduced by 24% since 1987. The reduction has been achieved mainly for mopeds though. It should be mentioned that the bicycle traffic in the same period has increased by about 20%. For the last 10 years, a great effort has been put into safer facilities for cyclists

by building cycle tracks, safer junctions and cycle routes.

On rural roads, a 20% reduction in the total number of killed and injured has been observed, see Figure 3. The reduction is equally distributed on all transport modes. The accident reduction has been attained mainly by rebuilding roads and junctions (e.g. to roundabouts), moving traffic to safer roads (motorways and express roads) and by general black spot treatments etc.

6. ROAD SAFETY INITIATIVES AHEAD

A new national road safety action plan is now in progress and will probably be published in the middle of 2000. The new target will most likely be another 40% reduction in killed and seriously injured by the year 2012 compared with 1998. The new action will still be focusing on the 4 topics: high speed, junctions, cyclists and drunk driving. Safety measures that are relevant in the years ahead are, among others, increased police control, speed camera control, campaigns on use of safety belts, black spot treatments, and speed management in urban and rural areas.

REFERENCES

1. The national traffic accident base (VIS), The Danish Road Directorate
2. Urban Safety Management - Overview of Danish Experiences. Note 37. The Danish Road Directorate, 1998.