

Speed limits save lives

Experience in Denmark has shown that lowered speed limits on the roads are more effective than any other safety measures in reducing the numbers of deaths and injuries caused by traffic accidents.

The ever increasing number of motor vehicles on the roads since the 1950s has resulted in an upsurge of traffic accidents in both the developed and developing countries that has taken on the characteristics of an epidemic. In Denmark, however, this trend was reversed following the oil crisis of November 1973, when the numbers of injuries and deaths caused by road accidents fell markedly, and again in 1979, when a similar fall was observed. To what factors can these changes be ascribed?

Road Deaths in Denmark

Over the period 1970-73 the number of people killed annually in road accidents in Denmark varied from 1116 to 1213 (see figure). Between 1973 and 1974, however, the number fell from 1132 to 766, a reduction of nearly a third. It is surely no coincidence that before November 1973 there was no speed limit on superhighways and main roads outside urban areas but that, after that date, a speed limit of 80 km/h on roads outside urban areas was introduced. It is also significant that in March 1974 the speed limits were raised to 110 km/h on superhighways and to 90 km/h on main roads outside urban areas and that this increase was followed in 1975 by a rise in the number of deaths caused by traffic accidents. The same trends were observed in the figures for numbers of road accidents and the casualties caused by them (1).

Between 1975 and 1978 about 800 people were killed annually in road accidents. In 1979, however, new speed restrictions were introduced, essentially with the aim of reducing petrol consumption. On superhighways the limit was 100 km/h, and outside urban areas 80 km/h, while the limit of 60 km/h in urban areas was not changed. These new lower limits were followed by a further decline of more than 100 in the numbers killed on the roads.

In addition to the reduction in road deaths, there is every reason to believe that there has been a corresponding, or perhaps even greater, reduction in the number of injuries causing permanent disability, but few data are available on such injuries.

A number of other traffic safety measures have also been gradually introduced in Denmark over the last 10 years with the specific aim of reducing both the number of road accidents and the severity of the injuries caused by them. Thus the wearing of seat belts was made compulsory in 1977 and in the same year drivers of motor cycles and power-assisted bicycles were compelled by law to wear helmets. In 1980 the minimum age at which a licence to drive a powered bicycle could be obtained was raised from 15 to 16 years. While it must be assumed that these measures did have some effect, their introduction was not followed by the marked reduction in deaths seen following the lowering of the speed limits.

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Why Speed Kills

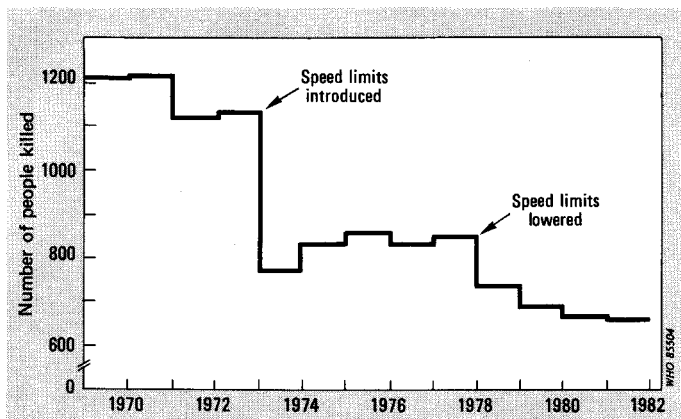
The energy released in a collision is directly proportional to the mass of the vehicle and to

the square of its velocity; the latter is therefore the major factor in determining the severity of the collision. High speed also makes it more difficult to avoid accidents since, as is well known, the higher the speed the greater the distance needed to bring a vehicle to a halt. This is in addition to the distance travelled during the time that it takes for the driver to react to an emergency—usually considered to be one second but for certain individuals may be considerably longer. At a speed of 100 km/h on a dry road, a vehicle is unlikely to be brought to a stop in less than 100 m. Even after 95 m, the speed is still 30 km/h.

Attention has been repeatedly drawn—by researchers, insurance companies, and certain groups such as pedestrians, cyclists, and motor cyclists—to the fact that reducing speeds increases road safety, but action in that direction has rarely been taken. In addition, both the American Assurance Association and the Danish insurance companies have officially stated that lower premiums could be charged if speed limits were reduced.

Why Action is Not Taken

Since it has been so clearly established that lowering speed limits can save lives it is curious that so little has been done to put this knowledge into practice. It is possible that road users have a false sense of security, since research has shown that both drivers and pedestrians underestimate the magnitude of the mortality due to road accidents, and overestimate both the se-



People killed in road traffic accidents in Denmark, 1970-82.

curity afforded by pedestrian crossings and the capacity of the legal system to respond adequately (2). In fact, speed limits were reduced in 1973, not to increase traffic safety but to save petrol during the oil crisis. But the experience gained since that time has made it impossible to overlook the direct connection between speed limits and road deaths. National decision-makers should take note of this and act accordingly. □

REFERENCES

1. *Road traffic accidents*. Copenhagen, Danmarks Statistik, November 1983, pp. 10-11.
2. SCHIOLDBORG, P. *Fotgjenger og bilfører - to forskjellige verdener?* [Pedestrians and drivers—two different worlds?] Oslo, Oslo University, Institute of Psychology, 1979.