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ROAD SAFETY

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ABSTRACT

Road safety is a high priority with the Norwegian Public Roads Administration, even if the risk of travelling on Norwegian Roads has decreased since 1970. The main problem in road safety is head on and single vehicle accidents. The Vision Zero concept governs our use of road safety measures and the reduction of accidents with fatalities and severe accidents are important. In this national report we would like to concentrate on three important road safety measures, namely the treatment of head on accidents on two- and three lane roads, road safety audit and inspection and road safety campaigns.

1. MEDIAN BARRIERS ON TWO AND THREE LANE ROADS

With the adoption of the vision zero in 2001 there was a shift in focus for the road safety work. From then on the road safety work should concentrate on reducing the number of killed and seriously injured in road accidents.

It was found that the most serious accidents were head on accidents, running off the road accidents and accidents with pedestrians and cyclists. Hence, the focus was shifted to reduce the number of these three types of accidents. Statistics showed that if one could eliminate these three types of accidents one would reduce the number of killed by some 85%.

To reduce the number of head on accidents, the basic idea is to make it impossible for a vehicle to collide with an oncoming vehicle. Obviously, the most efficient way to obtain this is to install a median barrier between the two directions of traffic. Motorways were already very safe, median barrier or not. The problem was definitely ordinary two lane roads (given that there are very few three lane roads in Norway).

From that on we developed a programme for the development of median barriers on two (and three) lane roads. The main problem in Norway is that the ordinary road width is some 8.5 metres, whereas there is a need for 12.5 metres in order to install a median barrier. Hence there is a need for widening the road when installing a median barrier, which seriously increases the cost. The average cost for installing median barrier and widening the road is today some 1200-1800€ per metre, all costs included.

The length of roads with median barriers is today nearly 90 km, and the plan for the period 2007-2009 is another 40-50 km.

Median barriers are a very efficient safety measures. It has been evaluated from international research that median barriers reduces nearly all head on accidents, and hence they reduce all fatal accidents by some 80% and serious accidents by 45%.



Figure 1 - Example of median barrier on two lane road

Parallel to the development, and partly because of the costs involved, a wide centre line has been introduced as a cheaper alternative. As shown on the picture there are two lines one metre apart with rumble strips in between.



Figure 2 - Example of wide centre line on two lane road

It is proposed that this wide lane will have a safety effect, especially on drivers being distracted and drivers going to sleep. It has been proven that these are important accident causing factors. The distance between opposing traffic streams is increased by some 80 cm, and the rumble strips will wake up drivers crossing the line. The experiments have not lasted long enough to determine the safety effect.

2. ROAD SAFETY AUDITS AND INSPECTIONS

Experiences show that for various reasons, not all new road plans have been equally well prepared with regard to safety. Likewise, existing roads often have a number of design flaws that may lead to severe accidents. Thus, it is important to undertake road safety audits of plans and road safety inspections of existing roads to prevent such accidents from happening.

In Norway, road safety audits and inspections is a central means in the Vision Zero effort. Safety audits of road plans were first undertaken as trial projects in 1997/98, and the first guideline was prepared in 1999. Similarly, a guideline for inspections of existing roads was issued in 2001. These guidelines were replaced by a new, common handbook for road safety audits and inspections in 2005 (number 222 in the Norwegian Public Roads Administration Handbook series). This guideline is also available in English.

In the National Plan of Action for Road Safety 2006-2009, it is stated that road safety audits must be carried out for at least one planning level of all route investments or major investment measures. However, both the development plan and the construction plan are important levels, so preferably, road safety audits shall be undertaken in both cases.

In the period of 2002-2005, road safety inspections were undertaken for 1500 km of the national roads in Norway. As a consequence of the inspections, immediate measures have been put in place on 890 km of the national roads. About 70,600 € is reserved per km of road for such measures in the National Plan of Transport 2006-2015 (issued by the national Government). The road sections inspected are among the 10 % most accident prone in the country, and by 2009, all of these accident roads shall be inspected and immediate measures undertaken within the economic bounds described above.



Figure 3 - Example of intersection with minor dirt road commented on after the inspection

The road safety audits and inspections are undertaken by persons with extensive knowledge of road planning and/ or road safety. To be an audit/ inspection leader one has to be formally approved as road safety auditor by the Directorate of Roads. This approval requires at least 5 years of relevant experience, as well as having passed the exam of a specific course of road safety audits and inspections. The course is given by the Directorate of Roads in cooperation with the Norwegian University of Science and Technology in Trondheim. As of January 2007, 133 road safety auditors are approved.



Figure 4 - Example of misplaced lighting equipment

3. ROAD SAFETY CAMPAIGNS

3.1 NATIONWIDE SEAT BELT CAMPAIGN



Figure 5 - Example of seat belt signs

Why make a seat belt campaign?

The use of seat belts is one of the most “simple” and efficient measures to reduce the numbers of killed and injured in road accidents. Research tells us that the risk of being killed can be reduced by 50 % in the front seats if we use a seat belt.

The total numbers of killed in traffic accidents in Norway 2005 was 224 persons. Our in-depth analysis groups on fatal accidents found in 2005 that 44% of the car users killed in traffic in Norway did not use seatbelts. If all of them had used the seat belts, we could have saved about 40 lives.

Target and target groups

The main target set for seat belt use in general in Norway is 90 % in urban areas and 94 % outside urban areas by 2010. Our targets are ambitious but as we know how efficient the use of seatbelts can be, it is necessary to be ambitious.

The main target group for the campaign activities is young men, 18 – 30 years old and all others who don't always buckle up. In 2005 there were 28 road fatalities for this age group alone (18 -30 years), of which 16 did not use a seat belt.

The new nationwide campaign – 3 emotional pictures

This campaign, with the “caring” pictures, is a result of research among young people. Some years ago they told us to be as emotional as we possibly could and not be moralistic. The result is the three pictures that tell us what this campaign is about,

and they tell us why we should use the seat belt. It is hard to argue against the expressions, and during several tests and follow up research, we have found that we have very good results on attention and knowledge of the campaign.

The campaign is focused on

- short trips
- back seat passengers
- combination seat belt / airbag

Protection of children in the car and child restraint systems is a part of our ordinary work, but we give advice on how to protect children in our traffic controls.

We emphasize the combination of information about seat belts and traffic controls. The information and control measures shall together contribute to approach the target.

Special road signs

New special designed road signs are one of the main elements in this campaign. Signs have been used from April to September for three years, with a total of 300 signs nationwide.

Film competition in the main target group

In 2007 we invite young people from 16 to 24 years to take part in a competition to write the best script for a new TV-commercial for use of seatbelt. By now we have received more than 1200 contributions. The winner with the best script will be invited to participate in the process to make the film. We invite youth to take part in this competition because we want to engage our main target group.

Traffic control

The Norwegian Public Roads Administration has the authority to control seatbelt usage. Every year we do more than 800 000 seat belt controls.

Evaluation and results

High attention and knowledge for the campaign

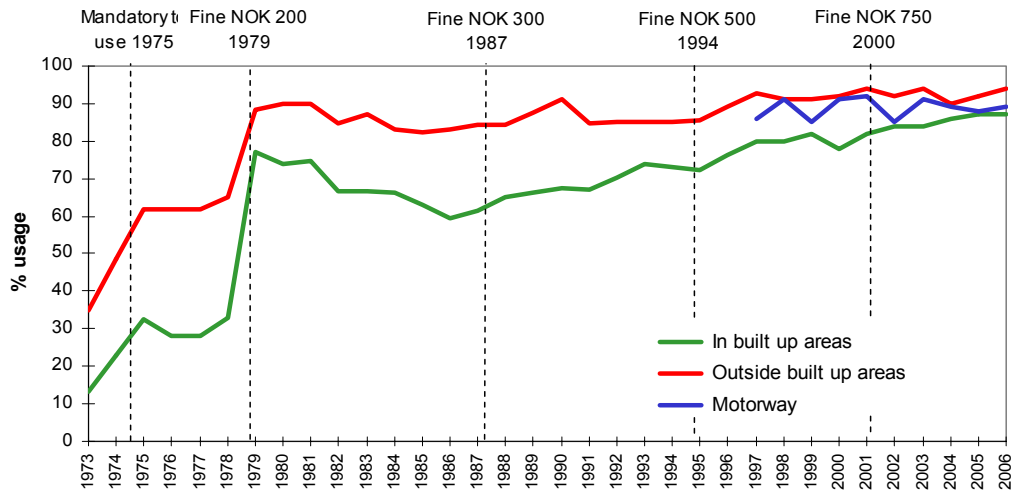
- 77 % knowledge in general, 2003
- 80 % knowledge in general, 2004
- 86 % knowledge in general, 2005
- 94 % (!) in the main target group in 2005
- high score on liking
- has won advertising awards

The road signs are our best channel of knowledge; in 2005 we combined with TV-commercials.

What about the seat belt use?

- hard to increase drivers seat belt use outside the urban areas, about 92 % of the drivers use their seat belt (2005)
- urban areas: the numbers have increased from 84 % in 2004 to 87 % in 2005
- the seat belt use for passengers have also increased, both in front- and back seat
- the increase is higher for young people (main target group) than for adults.

Use of seat belts among Norwegian drivers



Finally

The campaign and the pictures/signs are already adopted by some other countries (Iceland, Russia, Germany and Denmark).

3.2 THE STOP AND SLEEP CAMPAIGN

Background

International research shows that between 15-30% percent of all road accidents are caused by drivers falling asleep. The consequence is often either head-on collisions or single vehicle accidents, the most serious accidents.

A Norwegian study by the Institute of Transport Economics revealed that as much as 80% of drivers of private cars have either fallen asleep or been close to falling asleep. Among professional drivers the figure was 75%.

The in-depth analysis groups in Norway found that drowsiness were a contribution factor in 11 % of the fatal accidents in 2005.

Campaign message: Sleepy behind the wheel? Stop and sleep for 15 minutes.

Aim: To reduce the number of sleep related accidents by 50% by the end of 2008

The campaign's theoretical foundation is based on close cooperation with leading sleep and fatigue specialists in Norway. 15 minutes sleep will revitalise the driver sufficiently for him/her to keep driving for a couple of hours.

Research shows that drivers often use a variety of non-effective strategies in order to stay awake when sleepy, like singing or talking to themselves, playing loud music, opening the window etc. The Stop and Sleep Campaign emphasises that the ONLY effective measure is to stop and sleep.

The Sleeping Beauty Patrol

The fairy tale about Sleeping Beauty inspired us to develop a patrol of "princes" and "princesses" that travelled around Norway for three weeks in the summer of 2004 and

2005. They talked to drivers in road side picnic areas and restaurants, at ferry terminals, parking areas etc. They handed out bottled water, campaign CDs and sleeping masks while reminding drivers to take a nap if sleepy.

Response

Positive feedback from drivers – a serious problem with a simple solution communicated in a friendly manner.

High media attention – both nationwide and in regional/local media

Results

Positive development – from 2003 to 2006 we have increased the amount of drivers that say they stop to nap from 13% to 25%, followed by a reduction in the use of non-effective strategies.

Measures towards Professional Drivers

Information from the Stop and Sleep Campaign was combined with routine controls of hours of service regulation. In November 2005 a nationwide control week with focus on these regulations combined with campaign information was carried out. The nationwide control week was repeated in September 2006.

Three main messages to professional drivers:

Following the regulations is no guarantee against falling asleep

Drivers who violate the regulations are most likely to fall asleep

Drink water instead of beverages containing sugar!