

**Summary:**

# **Differentiated driver's training: Effect on young drivers' accident risk**

## **Background**

Young novice drivers are frequently involved in road accidents and it has repeatedly been demonstrated that this group has an excessive accident risk compared to other age groups. One way to deal with this problem is to further develop and improve driver training courses. In recent models of driver training, *attitudes* as well as consciousness about one's own and others' attitudes and behaviour are emphasised. In support of this, scientific studies have shown that attitudes can be used to predict risky traffic behaviour among young drivers.

Based on the research demonstrating the existence of different kinds of driver behaviour and driver attitude, Linderholm (2000) has developed a questionnaire identifying different types of young drivers: sensation seekers, risky drivers, responsible drivers, and safety seekers. It has further been suggested that for young novice drivers to learn in an optimal way, driving lessons should be differentiated, that is, matched to the type of driver in question. The point is to make the driving lessons "fit" the drivers' attitudes and behaviour.

As part of the local project "Road Safety Lillehammer – Towards Vision Zero" (2003-2006), a differentiated anti-skid driving course was implemented and tried out for evaluation.

## **Evaluation**

The present study is an evaluation of the above mentioned differentiated anti-skid driving course. The evaluation has been conducted by the Institute of Transport Economics and commissioned by The Norwegian Public Roads Administration.

The main aim of the study was to find out if and how the differentiated course affects accident risk. More specifically, the following research questions were addressed:

- Does the differentiated course have an effect on accident risk?
- Does the course affect accident risks on slippery (winter) roads?
- Is the effect dependent on driver types?
- Does the course affect confidence in driving abilities, attitudes and behaviour?

The results of the present study are mainly based on questionnaires filled in by 169 of the driving students participating in the project. Participants were assigned to two groups; the experimental group consisted of 98 students from Lillehammer and surroundings going through the differentiated course, whereas the control group consisted of 71 students going through a regular anti-skid training course. All participants were identified as one among four driver types. In addition, three questionnaires measuring attitudes, confidence in own driving ability, behaviour and accident involvement were administered before, immediately after, and 1-2 years after the anti-skid training course.

### No effect of the differentiated course on accident risk

In order to investigate if the differentiated course had an effect on accident risk, a comparison of accident risk between the experimental group and the control group was conducted. Accident risk was estimated as the ratio of reported accidents in each group to the amount of traffic exposure in the respective group. Traffic exposure was measured by means of a) number of months with driving licence (risk per month), b) number of winter months with driving licence (risk per winter month), and c) driving length, i.e., kilometres (risk per 1000 kilometres). The difference in accident risk between the two groups is expressed as relative risk (RR). If  $RR < 1$ , the experimental group has a lower risk than the control group, if  $RR = 1$ , there is no difference in accident risk. If  $RR > 1$ , the experimental group has a higher risk than the control group.

The course had no statistically significant effect on accident risk. The figures suggest, however, a tendency towards lower accident risk in the experimental group than the control group (table 1). That is, the participants exposed to the differentiated course had a somewhat lower risk than the participants exposed to the regular course. This applies to estimations based on measures with a) months (13 percent lower risk) and b) kilometres (6 percent lower risk). The differences are, however, not significant, and consequently it is likely that the results are due to mere chance.

Table 1. Difference in accident risk between the differentiated and the traditional anti-skid course.

	RR	Percent	95 % confidence interval
Months	0.86	-13	-50, +23
Kilometres	0.94	-6	-45, +33

Source: TØI report 943/2008

As the differentiated course is an anti-skid driving course, one could expect a larger effect on accident risk under *winter conditions*. Thus, difference in risk of such accidents was estimated as well as accident risk in general.

We could find no effect on the risk of accidents under winter conditions. However, contrary to the results reported in table 1, the analyses of accident risk under winter conditions show a tendency towards *higher* risk in the experimental group than in the control group (table 2). This applies to estimations based on measures with a) months (19 percent higher risk), b) winter months (15 percent higher risk), and c) kilometres (28 percent higher risk). The differences are not statistically significant.

*Table 2. Difference in accident risk on winter conditions between the differentiated and the traditional anti-skid course.*

	RR	Percent	95 % confidence interval
Months	1.19	19	-35, +73
Kilometres	1.28	28	-29, +84
Winter months	1.15	15	-39, +69

Source: TØI report 943/2008

The differentiated course builds on the idea that driver types differ in their attitudes and behaviour and that the driving course should be matched to the driver type in question. Specifically, sensation seekers and risky drivers are assumed to hold an exaggerated belief in their own driving abilities, and thus need to get a more realistic view in this respect. Responsible drivers and safety seekers, on the other hand, need to strengthen the confidence in their own abilities. Based on this line of reasoning, one could expect the differentiated course to have unequal effect on the various groups of driver types. Thus, differences in risk between the experimental group and control group have been estimated separately for a) sensation seekers and risky drivers, and b) responsible drivers and safety seekers.

The results confirm the tendencies reported in table 1 and 2: There is a tendency towards lower accident risk in the experimental group than in the control group, while the opposite is true for accidents under winter conditions (table 3 and 4). These tendencies are detected for sensation seekers and risky drivers, as well as for responsible drivers and safety seekers. Importantly, though, the results are not statistically significant.

*Table 3. Difference in accident risk between the differentiated and the traditional anti-skid course for a) sensations seekers and risky drivers and b) responsible drivers and safety seekers.*

	RR	Percent	95 % confidence interval
Sensation seeker/risky driver (kilometres)	0.97	-3	-85, +80
Sensation seeker/risky driver (months)	0.85	-15	-98, +67
Responsible driver/safety seeker (kilometres)	0.58	-42	-89, +63
Responsible driver/safety seeker (months)	0.98	-2	-50, +45

Source: TØI report 943/2008

Table 4. Difference in accident risk on winter conditions between the differentiated and the traditional anti-skid course for a) sensation seekers and risky drivers and b) responsible drivers and safety seekers.

	RR	Percent	95 % confidence interval
Sensation seeker/risky driver (kilometres)	1.75	75	-60, +210
Sensation seeker/risky driver (winter months)	1.40	40	-95 +176
Responsible driver/safety seeker (kilometres)	1.04	4	-70, +77
Responsible driver/safety seeker (wintermonths)	1.72	72	-2, + 145

Source: TØI report 943/2008

### **No effect on confidence in own driving ability, on attitudes or behaviour**

Given the intended effect of the differentiated course, one would expect differences in attitudes, behaviour and confidence in own abilities among driver types and across groups (experimental and control).

The results show a significant change in confidence in own driving abilities from before to after going through the anti-skid driving course. However, this was true for all driver types, as well as for both groups in the study, indicating that it is not the differentiated aspect of the course that has an effect. Rather, it is participating at an anti-skid course in itself that influences confidence in own driving behaviour.

Moreover, there was no difference in confidence in own driving abilities between the driver types. The differentiated course is based on the notion that the driver types differ in this respect, and consequently our results suggest that the driver types and the driving course are not appropriately matched.

Regarding attitudes, there were no differences between the experimental group and the control group. However, participants in the experimental group reported to comply with the “three-second-rule” more often than did participants in the control group. This rule is important when it comes to driving under winter conditions.

### **Conclusions**

The results reported from this evaluation suggest that the differentiated anti-skid driving course did not have the intended effect. Alternative explanations of the non-existing effects in the present evaluation could be that the identification of driver types is not good enough, that our measures are not optimal, that the sample is too small to find a statistical significant effect or that the differentiated course is not comprehensive enough to have an effect on accident risk. However, the following conclusions should be taken into consideration before implementing a differentiated aspect in driver training courses in general:

- We found no statistically significant effect of the differentiated course on accident risk in general or accidents under winter conditions.

- We found that the differentiated course has not had the intended effect on confidence in own abilities, attitudes or behaviour.
- There was no difference in confidence in own abilities between the various driver types before the differentiated course. This may indicate that the mapping of driver types does not match the differentiated course, which emphasises the difference in confidence in own driving abilities.