

Summary:

Evaluation of the "Drivers 65+" refresher course for elderly drivers

The effect of a refresher course for elderly drivers was evaluated in regard to mobility and accident risk. Compared to a randomly selected group of drivers aged 65 years or older, the course participants had reduced their risk of being involved in a traffic accident by an estimated 22 percent one year after completing the course. This reduction was, however, not statistically significant. Based upon a 22 % reduction of accident risk, the estimated benefits of the course were three times larger than the costs. The results did not show any effects on elderly drivers' mobility or on their feeling of insecurity while driving.

Background and methodology

Since 1991, the Norwegian Public Roads Administration has been organising a voluntarily refresher course for drivers aged 65 or older, called "Drivers 65+". The purpose of the course is to maintain elderly drivers' freedom of movement and at the same time reduce their risk of being involved in traffic accidents. The present evaluation study of the "Drivers 65+" course had three major aims:

- To examine whether there were any changes in accident risk after completing the course
- To examine whether there were any changes in mobility (i.e. the use of car) after completing the course
- To estimate the social cost efficiency the course

The evaluation was designed as a before and after study with a test group and a comparison group. The test group consisted of 1450 drivers who had signed up for the course in springtime 2004, the comparison group consisted of 1900 drivers aged 65 years or older randomly selected from the national driver licence register. Both groups were contacted in springtime 2004 (before the test group attended the course) and one year later. At both times, the two groups completed a questionnaire and filled in a travel diary. The questionnaire included measures of accident involvement, annual mileage, driving behaviour, uncertainty experienced when driving, avoidance of different traffic situations, health and life-quality, and need for support to carry out various daily activities. All trips conducted during a one-week period were registered in the travel diary. This also included the purpose of the trip, the means of transportation used, and information about traffic conditions and the distance travelled in case a car was used.

The response rate for the test group was 65 % in 2004 and 43 % in 2005. The corresponding numbers for the comparison group was 34 and 23 percent, respectively. The low response rate in the comparison group was probably due to a high degree of driving cessation among the drivers who were randomly drawn from the national driver's licence register.

Minor differences between the test group and the comparison group before the course took part

A major, potential source of error in a before-and-after study is systematic differences between the test group and the comparison group. A comparison of the two groups before the course took place, showed that there were no significant differences between the groups on various factors believed to influence either accident risk or mobility (e.g. annual mileage, age, driving behaviour). The course participants (the test group) did, however, report feeling somewhat more insecure while driving, compared to the comparison group. This difference was nonetheless regarded as being very small and of little practical importance. The proportion of female drivers was higher in the test group than in the comparison group, respectively 38 % and 32 %. In order to take this possible source of error into account, separate analyses for male and female drivers were carried out when the two groups were compared.

Indications of reduced accident risk one year after completing the "Driver 65+" refresher course

The effect of the refresher course on accident risk was estimated calculating the accident rate ratio:

Effect (accident rate ratio) = $(A_i/B_i)/(C_i/D_i)$, where:

A_i = Number of accidents per million km, driven in the after-period among course participants (the test group)

B_i = Number of accidents per million km, driven in the before-period among course participants

C_i = Number of accidents per million km, driven in the after-period among the comparison group

D_i = Number of accidents per million km, driven in the before-period among the comparison group

Using this estimation method, a preliminary analysis showed that the "Driver 65+" course participants had reduced their risk of being involved in a traffic accident by an estimated 43 % one year after completing the course compared to the comparison group. This risk reduction was statistically significant at the 5 % level.

However, there is reason to believe that this reduction in accident risk was over-estimated. This is because female drivers in the comparison group had

experienced a considerable increase (i.e. a three-fold increase) in their accident risk from the year 2004 to 2005. Thus, it was suspected that this increase was a result of the number of accidents being abnormally high for this group of drivers in 2005, i.e. a result of random variation in the accident counts. Four different models were applied in order to control for this effect. In practice, this means that the accident risk among female drivers in the comparison group was adjusted down for the year 2005. The results from the four different models showed that the course participants had reduced their accident risk by somewhat between 22 % and 35 % compared to the comparison group. This reduction in accident risk was, however, not statistically significant.

This suggests that the reduction in accident risk among the course participants may be a result of random variation in the number of accidents, and not necessarily a result of participating in the refresher course. However, there are several conditions favouring the conclusion that the refresher course had a positive effect on the participants' accident risk:

- After controlling for the abnormally high accident count among female drivers in the comparison group, the female course participants still showed a reduced accident risk compared to the comparison group.
- Male course participants also had reduced their rate of accident involvement compared to male drivers in the comparison group. There were no indications of any abnormally high accident count among males neither in the test group nor in the comparison group.
- A similar evaluation study carried out in 1997 also found that elderly drivers who took part in the "Driver 65+" course had reduced their accident risk compared to elderly drivers who did not take part in the course.

Based upon an expected reduction in accident risk of 22 % one year after completing the course, a cost-benefit analysis concluded that the estimated benefit from the "Driver 65+" course (in terms of saved costs of accidents and injuries) was three times higher than the costs of arranging the course. This is, however, an uncertain estimate since the reduction in accident risk among the course participants was not statistically significant.

No indications of changes in mobility after completing the course

There is a general reduction in the number of trips by made by car and annual mileage driven by car from the year 2004 to 2005. This reduction is approximately the same in the test group and the comparison group. Thus, the "Drivers 65+" course does not seem to affect car use. There were also no indications of course participants driving under different traffic conditions after completing the course than before. Furthermore, the degree of uncertainty experienced during driving was the same after completing the course as before. Additional analyses found no relationship between the use of car, health and life quality, and the need for support to carry out different daily activities.

Conclusion

The "Driver 65+" refresher course was found to affect neither mobility nor insecurity experienced while driving a car. There is, however, indications of a reduction in the risk of being involved in a traffic accident one year after completing the course. Assuming that this reduction is not a result of random variation, the estimated benefit of the course exceeds the cost of arranging the course threefold. If this seemingly positive effect persists for more than one year after completing the course, the benefit of the course will be more than three times higher than the costs.

One objection against the results of this study is that the drivers who took part in the course are not necessarily comparable to the sample of drivers who did not take part. The most striking difference is that the course participants volunteered to take part in the course, and thus can be expected to be more motivated towards safety when driving. On the other hand, we found no differences of importance between course participants and the comparison group in terms of central variables such as self-reported violations conducted while driving. Thus, the belief that these two groups are not comparable is not supported by the data.

The most important objection against the course reducing the accident involvement risk is probably that the reduction in risk was not statistically significant at a 5 % level (nor at a 10 % level). This is an important objection, and it cannot therefore be concluded with absolute certainty that the refresher course actually reduces drivers' risk of being involved in accidents. However, both male and female course participants showed a reduction in their risk of being involved in accidents. Furthermore, a previous evaluation also gave the same conclusion.

To sum up, the indications of reduced accidents risk after completing the "Driver 65+" course are several. Still, it cannot be firmly concluded that the course actually reduces elderly drivers' accident risk. In order to reach a more unequivocal conclusion, it is recommended either to follow elderly drivers' accident involvement over a longer period of time and/or to carry out additional evaluation studies of the "Driver 65+" course as new participants complete the course.