

Summary:

Driver training, driving experience, and crash risk

In Norway, the age limit for driver training (with a professional or lay instructor) was lowered in 1994 from 17 to 16 years. One purpose of this change was to provide learner drivers with more experience before starting driving on their own. An evaluation of this change has been published previously, and the present report consists of additional analyses addressing the following two issues:

- What is the relationship between post-licensing crash risk and the amount of driver training?
- What is the optimal amount of driver training when considering the total effect on crashes both before and after licensing?

The analyses were based on questionnaire responses from about 30000 novice drivers.

The results indicated that the post-licensing crash risk increases with the amount of driver training up to a certain level, and that additional training is associated with decreasing risk. In other words, there is apparently an inverted U-shaped relationship between training and risk. A possible explanation is that training affects both the perceived and the actual driving skills, and that these are differentially influenced by driving experience; in other words, the learning curves are different for perceived and actual driving skills. Those who have very little training are probably very cautious, thus avoiding dangerous situations. A moderate amount of training may result in increasing the perceived skills more than the actual skills, resulting in dangerous situations, which the novice drivers is not competent to handle safely. With still more experience, the discrepancy may be reduced, which explains the descending part of the inverted U. This hypothesised explanation has to be substantiated by further research. The increase in risk with a moderate amount of training was demonstrated both for training in traffic schools and for private training (with a lay instructor).

In the previous analyses it was demonstrated that the crash risk is reduced by about 50% during the first 8 to 9 months after licensing. Consequently it is expected that some of this reduction may be obtained by increased pre-

licensing training. On the other hand, more training will result in some crashes during the training itself. Since there is a decreasing marginal effect of training on post-licensing crash risk, there must be an optimal amount of training, above which additional training produces more crashes than it prevents. The optimal level is defined here as the amount of training resulting in the largest total decrease in the number of crashes per driver, when considering the learning period and the first year of licensed driving.

Based on a set of more or less uncertain assumptions, the following tentative conclusions are presented. (The estimates of optimal amounts of training are based on the most conservative assumptions, in order not to overestimate the favourable effects of training).

- Because the ratio of personal injury (PI) to property damage only (PDO) is lower during training than when driving alone (primarily because of lower speeds), optimal amount of training is higher when PI is considered, as compared to PDO.
- Involvement in PI is reduced by increasing the amount of training up to about 10000 km.
- The largest decrease in PI involvement is obtained by increasing the amount of training by between 3000 and 5000 km.
- Increasing the amount of training by more than 1000 km may result in an increase in PDO involvement.
- A rather cautious recommendation from a safety point of view only would be to increase the amount of training by at least 2000 km compared to the present level, which is about 2000 km on the average.

The need of more research on the assumptions underlying these estimates is pointed out, especially to get more knowledge about the risk during driver training, and how it varies with total driving distance, as well as about the effect of training on the post-licensing risk.