

Young drivers: driving behaviour, accidents, and countermeasures

Paper contributed to 1993 Plenary Meeting of the Motor Insurance Committee Road Safety and Young Drivers, Madrid, 1/2 July 1993

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Introduction

What's wrong with young drivers? What factors contribute to their high accident rate? In this paper the following thesis will be put forward: "There is possibly something wrong with young drivers, but there is definitely something wrong with how they are trained".

To begin with data from Dutch research on novice driver performance will be introduced, and the question will be raised: "How expertly do they really drive?".

Next, young driver accident analyses in comparison to performance data will be discussed. Can novice drivers be held responsible for their high accident involvement?

Thirdly, on the basis of performance and accident data, countermeasures are discussed with particular reference to the implications for insurance companies and the role they might play. In the Netherlands, one of these countermeasures has been tested on its effectiveness in a pilot study. At the end, the evaluation results with respect to attitudes and driving performance will be discussed. In other words: Does it really work?

All the data are based on research on the Dutch training system. The research was commissioned by SWOV and carried out in cooperation with other research institutes. Although, this thesis will be presented, using the Dutch driving system as an example, the insights obtained are also valid for training systems in other countries.

Driver training in the Netherlands

The Netherlands operates a highly comprehensive training and examination system for candidate drivers. Candidate drivers have to take a test of practical driving skills and they also have to pass an examination of traffic knowledge. In order to reach the required standards they need approximately 30 hours of practical training. After passing the test there are no restrictions on driving. The novice driver has the same privileges as any more experienced driver.

Driving performance

However, research indicates that this training is not enough to reach adequate standards. In a study carried out by the Traffic Research Centre of the University of Groningen, novice drivers and more expert drivers were compared. This study showed that novice drivers drove too fast for prevailing conditions (De Velde Harsenhorst & Lourens, 1988). This does not mean that they were speeding, but that the speed chosen was too fast to be safe. Moreover, in their choice of speed, they failed to take the particular driving conditions into account.

Similar patterns were observed in young novice drivers who had held a driving licence for less than three months. These drivers were taken to drive in an unfamiliar town, and an official examiner assessed their driving performance. Their driving was also found to be too fast, or more accurately, appeared to be too fast to the observers (Vissers, 1990).

A comparable pattern was observed in a case study in which a young female candidate driver was observed during driver training and also a few months after she had acquired her driving licence. According to her driving instructor she drove much faster a few months after she passed her exam (De Velde Harsenhorst & Lourens, 1989).

Speed therefore appears to be a fundamental problem for novice drivers, even in conditions in which they attempt to perform optimally, and in which they are not being encouraged to show off.

Faulty speed choice is not the only characteristic of young novice drivers. Research shows that novice drivers are error prone. They tend to overlook important information, or 'forget' essential components of a safety routine, such as looking over the right shoulder at a right hand turn, to check for cyclists and checking mirrors (De Velde Harsenhorst & Lourens, 1989). Their driving routine is not stable, and errors seem to appear or disappear in an unsystematic way. Even if a driver has been faultless in certain routines for some time, a serious error may occur, almost unexpectedly.

How are these observations to be interpreted? What is going wrong? Is there a general pattern? There is reason to believe there is. The pattern is that the task of driving is extremely complex. It is not complex in terms of vehicle control, in that novices know how to steer, they tend to respect speed limits, and have a good knowledge of traffic regulations. The complexity is of a more cognitive nature. The cognitive task involves the ability to detect and evaluate dangers and to foresee that an apparently 'normal' traffic condition, may change in seconds into a 'dangerous' one. This cognitive ability needs to be developed. Moreover its application should also be more or less automatic (De Velde Harsenhorst & Lourens, 1990; Milech et al., 1989). Otherwise, the task of driving may exceed the resources of human attention and awareness. As a result drivers will become exhausted after only half an hour of standard driving. Behaviour that is not automatic is not only very demanding, it is also prone to errors. This proneness to errors is intensified by stress factors. Stress factors negatively affect driver performance, especially the performance of inexperienced drivers. Examples of stress factors with known effects include haste, tiredness, but also alcohol in low doses.

It may be concluded from this that even in a country such as the Netherlands in which a 'comprehensive' driver training program has been developed, and relatively many lessons are taken, novice drivers are in general still very error prone and tend to make inappropriate speed choices.

Accidents

Does this show in accidents? At SWOV an accident analysis was carried out on young driver accident statistics (Van Kampen, 1988).

A comparison between younger and older drivers showed that young drivers are more at risk than their older counterparts (Figure 1). The accident risk among young drivers is about twice as high. Moreover, the analysis showed that young male drivers are more at risk than young female drivers.

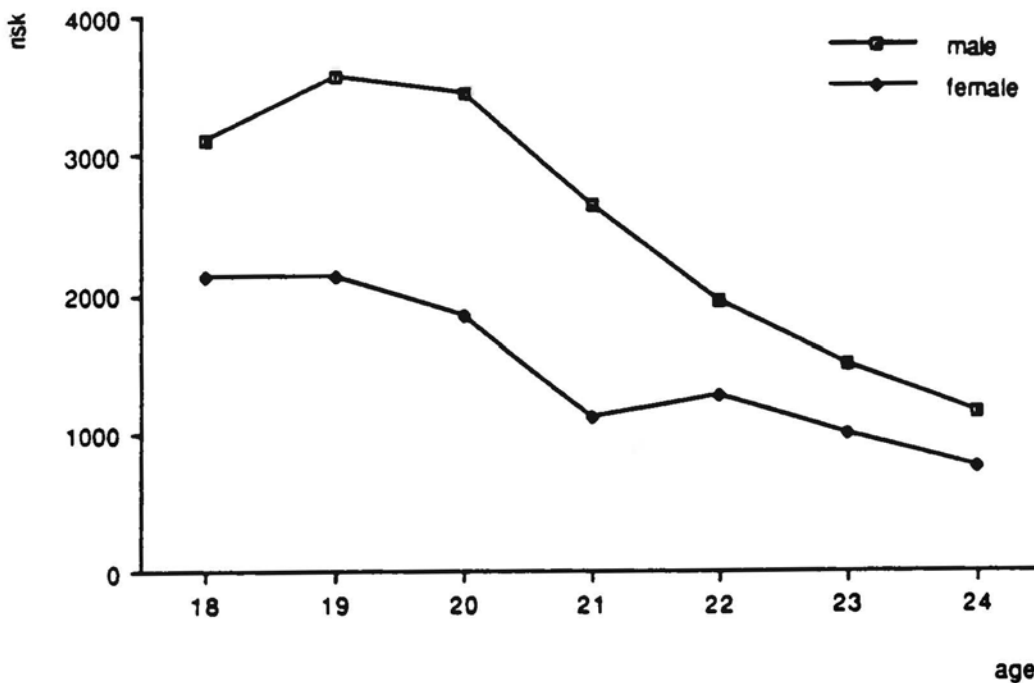


Figure 1. Accident risk by sex and ages for car drivers (Source: CIS).

At the age of 24, accident levels have fallen dramatically, and are similar to accident patterns of older more experienced drivers. Novice drivers learn to drive safely, probably by trial and error.

Dutch insurance data show similar pattern. Although young drivers only represent 3-4% of the total drivers population (third party liability), their claim frequency is relatively high (15%) (source: CIS). Drivers under the age of 24, have a claim frequency which is about twice as high as that of the total group (Figure 2).

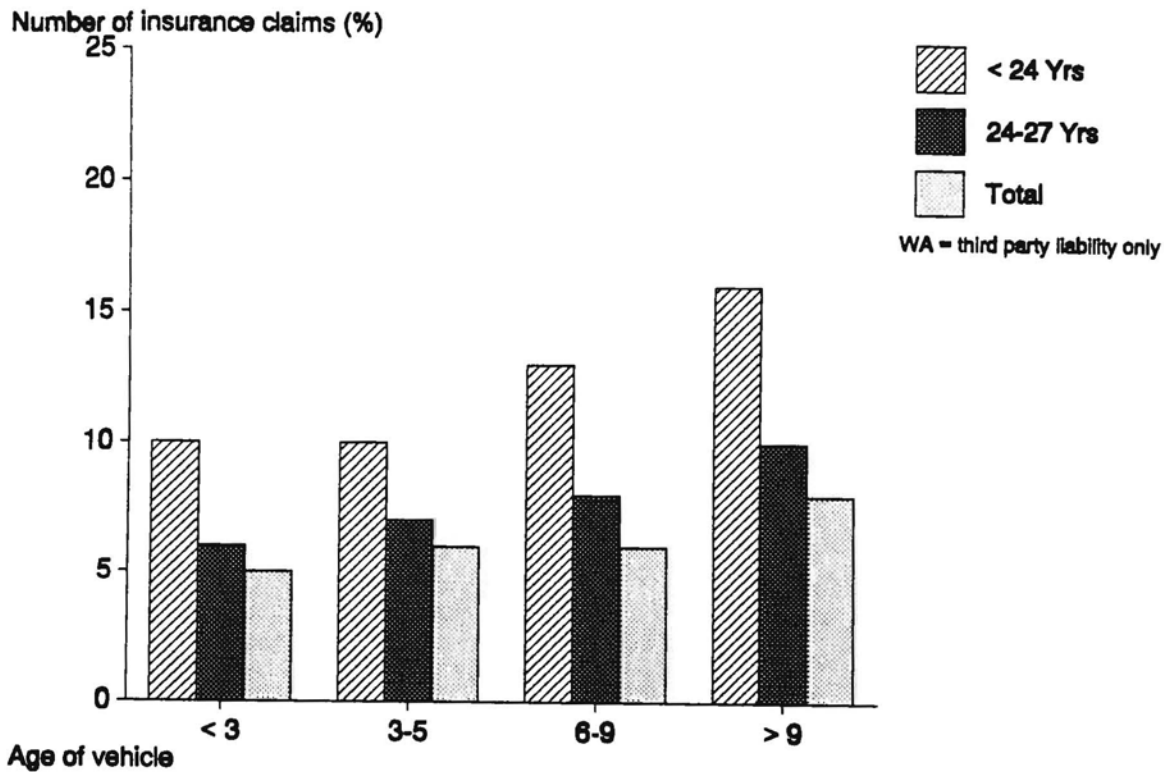


Figure 2. Number of WA-Insurance claims per age of vehicle (Source CIS)

How are claim frequencies related to car characteristics such as age and weight of the car? Figure 2 indicates claim frequency to be related to the age of the car, in that claim frequency linearly increases with the age of the car. However, this is a general pattern which applies to all age groups. Young drivers do not differ in this respect from the total group.

Young drivers tend to drive in low weight cars (Figure 3), and in this weight class their claim frequency is twice that of the total population. Their claim frequency seems to increase, in the higher weight classes (Figure 4).

What group of young car-drivers get involved in accidents? Is there a hard-core group, that gets involved in accidents more often than other groups? The insurance statistics (Source: CIS) show that in the younger and older age groups only 10% of drivers that were involved in a accident, get a second or a third accident. This indicates that the risk of an accident is not concentrated within a small group of drivers but is evenly spread across the whole population. And the younger age group does not differ in this respect from the older age groups (Source: CIS).

What can be concluded from the accident statistics data and the insurance claim frequencies? Basically, that novice drivers are badly prepared for the task in hand. This appears to be a problem of the total group of young drivers, and it is not concentrated in particular sub-groups. Age and weight of the car are important factors in car accidents in general. However, both are to the same degree related to young driver accidents as to accidents of older drivers.

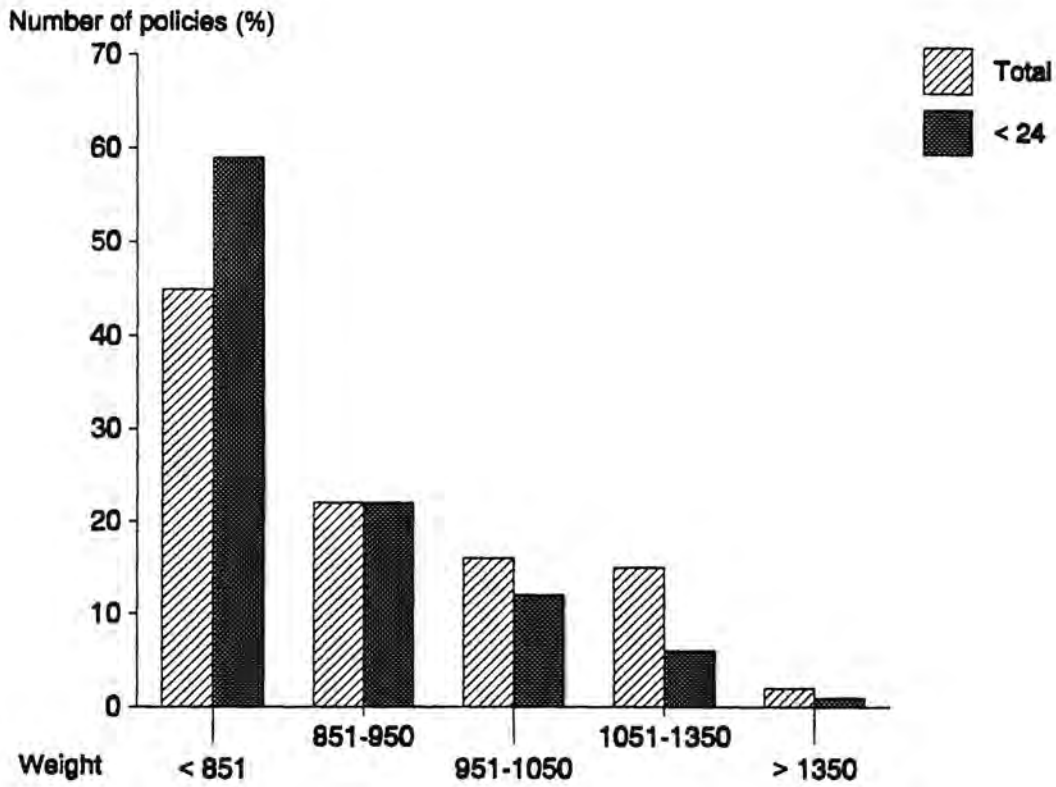


Figure 3. Number of policies per weight class of vehicle (Source: CIS).

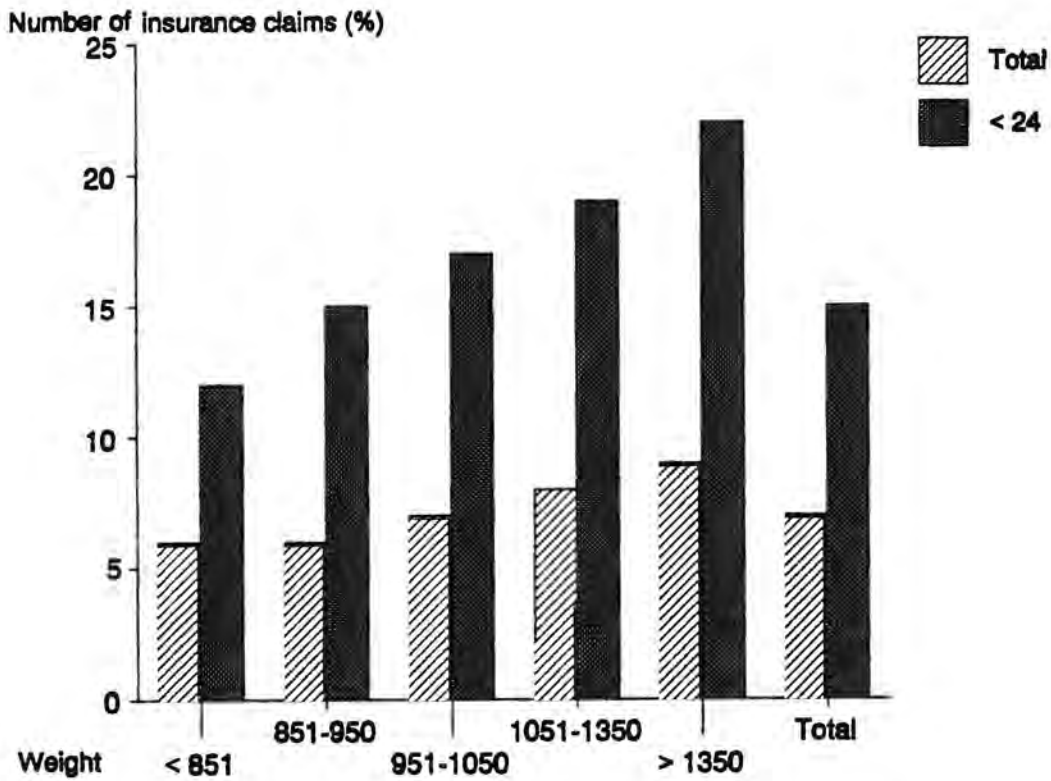


Figure 4. Number of insurance claims per weight class of vehicle (Source: CIS).

After four years of obtaining their licence, young drivers experience dramatically fewer accidents, and in terms of accident levels, are not very different from older drivers. It would therefore appear that young drivers do learn to drive safely, probably by trial and error.

These accident graphs - which are almost universal in nature - are often interpreted as being evidence of risk-taking. In the light of the research on driving performance, however, lack of experience appears to be as important a factor.

Countermeasures

As it has been argued, only when correct driving routines have become more or less automatic, it can be expected that safety standards have been achieved. However, this is only attained after hours and hours of practice (Milech et al., 1989). Some researchers have postulated that expert levels of driving performance are only reached after about six years of driving or 100.000 km of driving. Although these claims are based on educated guesses, the presented performance data support the idea of lengthy learning period, which exceeds the formal driver training period. This implies that countermeasures should not only be directed at driver training but should also be applied to the post-exam learning period.

Training stage

In traditional driver training young drivers learn to control their vehicle. Even at high speeds they learn to feel comfortable and confident. They experience feelings of control, which, looking at the accident and performance data, they clearly don't possess. There is reason to believe that novice drivers get desensitized to danger as a result of training (McDonald, 1985), and as a consequence the driver's tendency to over-estimate his capabilities is reinforced.

An important last phase in driving instruction should therefore aim to increase the driver's awareness of his limitations. He should be dissuaded from thinking that he is an expert driver. He should be made aware of the fact that he isn't yet able to cope with every driving condition.

This might motivate the novice driver, to search for 'safe conditions' under which to practice and to gain experience. Moreover, it may correct the novice misconception of the seriousness and controllability of accidents, and deepen his awareness of his social responsibilities with respect to the safety of others.

Post-exam learning stage

In this stage, countermeasures might primarily be aimed at creating 'safe' learning conditions. Such a safe learning condition can be created by:

- Preventing overload to occur. Novice drivers should not be confronted by driving conditions they cannot handle on their own. They should gradually progress to more complex conditions. More complex conditions may arise in driving in the dark, driving with passengers or driving while intoxicated. Positive results of restrictions on weekend night driving have been reported.
- Providing feedback on driving performance on a structural basis to protect and strengthen 'correct' routines. Advanced courses after licensing, re-testing, or accompanied driving may ensure feedback.

- Facilitating 'safety oriented' attitudes to develop/to sustain. Countermeasures: point demerit systems, accompanied driving and advanced courses.

With respect to the application of the countermeasure the following is of importance:

- Because of the complexity of the novice driver problem it is to be expected that only a combination of all the mentioned measures will lead to maximum results, as different but relevant aspects of driver behaviour are affected by each measure.
- On theoretical grounds it may be expected that these countermeasures will be effective. However, only careful evaluation research can show whether these expectations come through.

In a Dutch study an one-day course was developed aimed to 're-sensitize' novice drivers to danger. Subsequently, this course was evaluated on its effectiveness. The evaluation results will be presented here, as an example of a development and evaluation of a specific countermeasure.

Experiment: re-sensitization in the training stage (driver training)

This one-day course was developed with the assistance of driving-instructors. During one half of the day, young drivers trained on a traffic range and during the other half they drove in real traffic situations.

On the range the drivers were taken into a skid and experienced the difficulty, or rather the impossibility of controlling such a skid. They also experienced the effect of speed on skidding and emergency manoeuvring, such as braking. The practice session was limited to a few trials, in order to avoid habituation to the fear provoking experience, to avoid the development of false confidence and to keep experienced control at low levels.

On the road, youngsters drove in an unfamiliar town, and took their own decisions with respect to speed and choice of route. The instructor only reflected upon the driving decisions taken by the driver.

Evaluation results

This then is how it was meant to work and how it was implemented. But did it result in any changes?

Questionnaire

In comparison to a control group, the drivers who participated in the one-day course had a more positive attitude with respect to safety related behaviour.

After the course more youngsters were reported to be willing to wear safety belts than before. They had a better understanding of the technique involved in emergency stops, without an increase in perceived control of dangerous situations. On the contrary, their intention to drive defensively was strengthened.

Driving performance

Driving performance in both the course and control group was poor. If it is assumed the

test to have been a driving exam, only 25% would have passed. Nevertheless, the course group performed significantly better than the control group. About 40% of the course group would have passed, while only 12% of the control group of the drivers would have passed.

Disappointingly, adequate speed choice did not differ between the two groups. The course group was no better than the control group (Vissers, 1990).

On the whole, however, the course appears to work, in the desired direction. There is yet no evidence of the effect of such courses on accident involvement. Only, if the experiment is carried out on a larger scale will such studies become feasible.

Conclusions

What then can be learned from this? The following conclusions can be drawn with respect to accident frequency and performance levels:

1. Driving performance measures do indicate that novice drivers are ill prepared and smooth, error free performance is not achieved after formal driver training.
2. Accident patterns are often incorrectly interpreted as evidence of risk-taking.
3. In the light of poor-performance data, accidents may well be explained as indications of inadequate skills.

With respect to feasible countermeasures it can be concluded that only a combination of measures will lead to optimal effects because of the complexity of the young driver problems. These countermeasures are:

4. Improve driver training especially with respect to the over-confidence problem and desensitization as a result of training. The Dutch course showed to be effective in counteracting over-confidence.
5. Create a safe learning environment. There is great potential in the French Accompanied Driving Scheme. But, also a weekend-night curfew has been reported to be effective.
6. Protect error-free routines, by continuous assessment of driving performance in the post-exam learning stage. This may be achieved by introducing a second test after a fixed driving period or by accompanied driving in which the novice driver is continuously provided with feedback on his performance.
7. Nurture a safety-oriented attitude in the novice driver, and penalize continuous risky driving, e.g. by implementing a strict point demerit system for novice drivers.

In conclusion, it should be pointed out that it is not necessary to learn to live with the high risk of young drivers. Research indicates that considerable safety gains can be achieved. Insurance companies may stimulate developments by incentive policies with respect to the mentioned countermeasures.

The young cannot be blamed for being inadequate, if they are refused the means in order to become more adequate.

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