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Road safety for young drivers

Abstract

Over 3814 young drivers died in European Countries in 2004. Based on the recent OECD study: "young drivers: the road to safety" (OECD,2006), this paper addresses the question of the factors contributing to this high risk, and it draws together the experiences of many countries in reducing this risk. The comparisons across countries show that young driver safety is related to the quality of the traffic system. Safe countries have also safe young drivers, demonstrating that that raising general safety levels is beneficial for young novice drivers. The analysis of the developments over time reveals that young males in contrast to young females have not benefited enough from the latest safety measures, indicating the need for a better understanding of the nature of the young male driver accident proneness. Although, recent studies on brain development indicate that youngsters may not sufficiently physiologically matured to handle complex and dangerous tasks such as car driving, crash patterns indicate that enhanced driving experience may have protective effects. The paper closes with a 9 point policy plan.
The full OECD report (258 pages) can be downloaded for free from
http://internationaltransportforum.org/Pub/pdf/06YoungDrivers.pdf

Kurzfassung

Verkehrssicherheit Junger Fahrer

Im Jahr 2004 starben in Europa mehr als 3814 junge Autofahrer. Im Rahmen der jüngsten OECD-Studie "young drivers: the road to safety" befasst sich diese Präsentation mit der Frage, welche Faktoren zu hohem Risiko beitragen und bietet einen Überblick über die Erfahrungen vieler Länder mit ihren Initiativen zur Senkung dieses Risikos. Der Vergleich der Länder zeigt, dass die Sicherheit junger Fahrer mit der Qualität des Verkehrssystems zusammen hängt. In Ländern mit einem hohen Verkehrssicherheitsstandard ereignen sich auch weniger Unfälle mit jungen Fahrern. Die Erhöhung der allgemeinen Sicherheitsvorschriften kommt also den Führerscheinneulingen zugute. Eine Auswertung der langjährigen Entwicklungen zeigt, dass junge Männer im Gegensatz zu jungen Frauen von den letzten Sicherheitsmaßnahmen nicht ausreichend profitiert haben. Die Unfallneigung junger männlicher Fahrer muss daher besser analysiert werden. Jüngste Untersuchungen zur Gehirnentwicklung zeigen, dass das Gehirn junger Menschen physiologisch nicht ausgereift genug ist, um komplexe oder gefährliche Aufgaben wie Autofahren meistern zu können. Die Präsentation schließt mit einem Neun-Punkte-Plan.
Der vollständige OECD-Bericht (258 Seiten) steht zum kostenlosen Download unter
http://internationaltransportforum.org/Pub/pdf/06YoungDrivers.pdf zur Verfügung.

1 How large is the problem?

Traffic crashes are the single greatest killer of 15-24 year-olds in OECD countries. Figure 1 shows how traffic deaths rise sharply in this age group.

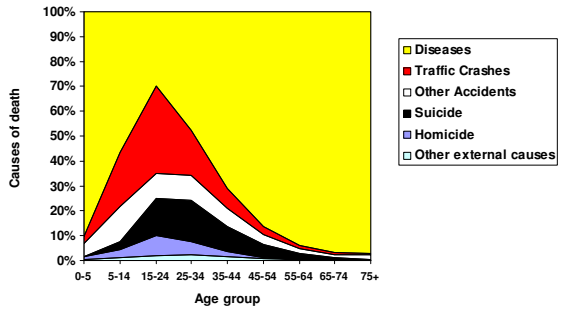

Figure 1: Causes of death by age group in OECD countries, most recent year available Source: World Health Organization Mortality Database (Most recent year available for each country)

For Europe -14, it is estimated that over 3814 young drivers (16-24 yrs) of passenger vehicles were killed in 2004.(source www.erso.eu) This means that young drivers represent about 21% of all drivers killed, although this age group accounts for only 10% of the population

Furthermore, for each young driver killed, it is likely that more than 1.3 passengers or other road users also die in the same crashes, based on findings from the US and the Netherlands. of total road traffic fatalities. Clearly, young drivers play a disproportionate role in the overall public health problem of road traffic safety risk.

2 Should we focus on measures for young drivers only?

In general, the situation for young, novice drivers is better in countries with higher overall standards of driver safety.

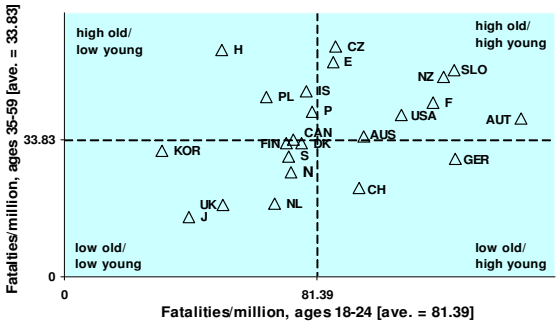

Figure 2: Killed Drivers per Million Population in the 35-59 (Older Drivers) and 18-24 (Young Drivers) Age Groups 2003 Source: IRTAD

Figure 3 shows us that those countries with lower average death rates for drivers aged 35-59 are also very often also those with lower rates for drivers aged 18-24.

3 What have we learned about the risk of young male drivers?

Death rates for young men are consistently much higher than those of their female counterparts, often by a factor of three or more, as has been reported in many studies. In 2004, in the EU-14 the fatality rate of young women (per million young people population) was 22 irrespective of traffic mode. That of young man four times higher (88) These large differences remain after taking into consideration the fact that men drive more than women. Whether adjusted for exposure or not, the high crash fatality and injury rates of young, male novice drivers represent a major public health issue.

Detailed inspection of the crash data show that the older driver safety has significantly improved in this period, and that young drivers are lagging behind. Apparently, the male drivers do not benefit from safety improvements, this in contrast to female young drivers. They closely follow the safety improvements seen in older female drivers. This pattern is not unique to the UK but is also true for Sweden and the Netherlands

4 When do crashes occur?

Young drivers have high numbers of crashes when driving at night and/or on weekends (see figure 5), when carrying similarly aged passengers, and as a result of speeding. Alcohol and driving without seat belts remain key factors in young driver crashes. Drug-driving is on the increase particularly among young men, and becomes especially dangerous when mixed with alcohol. Furthermore, young people are over-represented in single-car and loss-of-control crashes.

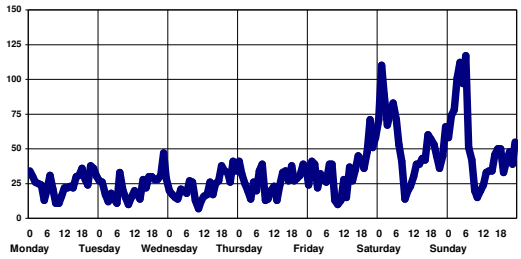

Figure 3: fatalities in European Countries 18-25 yrs by hour of day and day of the week

5 What are the key factor contributing to the crash risk

Why do young drivers have such high crash rates? The response can be summarised under three general headings: experience, age and gender. The universal problem of young, novice drivers is inexperience. As most people learn to drive while they are young, inexperience explains much of the high levels of young driver risk.

Driver Age

Data show that novice driver crash involvement decreases as the licensing age for solo driving increases (see figure 6), indicating that age factors play a role in causing crashes. Indeed, physical and emotional immaturity, as well as the lifestyles associated with youth, can increase crash risk and severity. Young people are typically in a period of rapid maturation, whereby they test boundaries and assert independence. They are at a stage in life that is often intensely social, including being active at night and on weekends, in groups, and sometimes involving alcohol and/or drugs. Recent longitudinal studies about brain development have demonstrated that beyond the age of 18 , the human brain is still developing, especially those areas in the frontal lobe that deal with "executive functions like planning, impulse control, reasoning and integration of information (i.e." thinking before acting") These findings could have an important influence on the discussion regarding how to counteract young driver risk, particularly as the combined ability to take responsibility reflect on consequences and control impulses plays an important role in driving safely. However, much research needs to be done in order to disentangle the processes that may be influencing by education and experience from those that are solely dependent on physiological development of the brain.

Inexperience

Where experience-related factors are concerned, learning to drive takes time and needs extensive practice in order to reach a sufficient competence level – this is true for everyone, not just the young. With time, the actions of driving – changing gears, looking in the rear-view mirror, steering, correctly assessing situations, reacting appropriately, etc. – become automated. However, for the novice driver, these actions require consideration, increasing overall mental workload and possibly distracting attention from the road. Thus, novice drivers' attention is easily overloaded, and their ability to combine simultaneous actions is relatively poor. At the same time, because serious crashes are relatively rare events, new drivers are not provided with the sort of negative feedback that might induce them to drive more carefully, while they might also be motivated to arrive at a destination as quickly as possible, as well as by other factors, such as peer pressure or a desire to "show off".

Male versus Female

Young men drive more than young women, and have more fatal crashes per kilometre driven. Furthermore, research has revealed that they are generally more inclined toward risk-taking, sensation-seeking, speeding and anti-social behaviour than their female counterparts. They are also more likely to over-estimate their driving abilities and more susceptible to the influence of their friends.

A fatal mix

It is precisely the interaction of experience and age-related factors, exacerbated by gender differences, which makes young drivers' risk situation unique. The impacts of both age and experience are shown in Figure 6, where the black lines represent the crash risks of men and women first getting their licence at each different age level, and the red lines show the

progression of the crash risk level of men and women who get their licences at 17 years of age. In other words, the black lines show the impact of age, while the red lines show that of experience. Obviously, the impact on risk of one year of experience is particularly important. However, the higher initial risk associated with acquiring a licence at a younger age cannot be ignored. Furthermore, while men have more crashes than women at any age, the impact of gender is particularly strong among the young and exacerbates the negative effects of both age and inexperience.

6 What actions does the OECD recommend?

Countermeasures need to be implemented in a strategic manner that shows results both immediately and over the longer term. In doing so, particular attention should be paid to the key elements that underlie and exacerbate risk. Furthermore, there are important differences between the various countermeasures in terms of their impact, their costs, and the timelines within which they can be implemented, which will condition the options for action. In particular, those that require new legislation will take considerable time to implement.

In addressing the young driver problem, the following recommendations are worth considering:

1. Important reductions in young driver risk will result from *higher overall road safety levels*, which require effective legislation, enforcement and standards, particularly dealing with speed, alcohol, drugs and seatbelts.

2. A*ny increase in the driving age will result in fewer crashes and fatalities.* Licensing conditions for motorised two-wheeled vehicles should be sufficiently stringent to avoid migration toward less safe forms of transport.

3. *High levels of accompanied practice before licensing for solo driving, involving a variety of driving circumstances*, will result in lower levels of fatalities. While at least 50 hours of pre-licensing practice are recommendable, experience in one country showed that increasing this to 120 hours reduced crashes in the two years following licensing by about 40%.

4. Exposure to risk is particularly great immediately following licensing for solo driving, and can be reduced by *protective restrictions that are progressively lifted as the novice gains experience*, as seen in graduated licensing (GDL) systems. Compared to older drivers, young drivers' crash risk increases at a much greater rate with each alcoholic drink consumed, and, thus, young, novice drivers should be subject to blood alcohol content (BAC) restrictions of no more than 0.2 g/l. Also, initially restricting driving with young passengers and at night has been shown to greatly reduce risk.

5. Young, novice drivers should be subject to *initial probationary periods* in which higher demerit points can be assigned for infractions or for non-compliance with licensing conditions, leading to concrete repercussions, such as loss of licence.

6. The fundamental goals of the licensing system, including training and testing, should be *to create drivers who are safe, as well as technically competent*. Novice drivers need to gain greater self-assessment skills and understanding of the factors behind risk.

7. *Persuasive communications should accompany other countermeasures*, with a view to changing attitudes and creating greater understanding of risk, noting that attitudes regarding safety are formed years before the driving age, and are highly influenced by role models' behaviour.

8. Important new reductions in young driver risk could result from *technological applications*, such as Intelligent Speed Adaptation, Adaptive Cruise Control, Electronic Stability Control, black boxes, alco-locks and smart cards. More research should be conducted in this area, particularly focusing on the impact on young drivers.

9. Non-road-safety measures, such as the availability of public transport at reasonable cost and regulations regarding the availability of alcohol, can also reduce young drivers' risk exposure.

7 References

This paper is based on three major sources.
OECD (2006) Young drivers: the road to safety
OECD, Paris
www. erso.eu. The website of the Safetynet Consortium.

Parts of the paper was published before in the Twisk, D (2007) *Young drivers the road to safety* proceedings of the Second International Traffic expert conference 'fit to drive' Vienna, June 14th to 15th 2007.