SWOV Fact sheet

Young drivers and their young passengers

Summary
More than one-third of all fatalities among car passengers occurs in the 10-24-year age group. The majority of these young passengers die in a car driven by an 18 to 24-year old. Compared with the composition of the population, these are high proportions, yet the exposure (for example in distance travelled) of youths driving in the same car is not known. However, it is known that young drivers run higher risks due to their mental immaturity and lack of experience; passengers of these young drivers are exposed to this same high risks. Moreover, youths driving in a car together may constitute a greater risk. American studies indicate an important role of peer pressure and distraction by passengers. However, American young novice drivers are circa two years younger than those in the Netherlands. As age in particular is an important factor in handling peer pressure and impulse control, the American findings cannot simply be transposed to the Dutch situation. The American findings and the large proportion of young passengers who die in the Netherlands when a young novice driver is behind the wheel, may be a reason for further investigation into the role of distraction and peer pressure among youths in the Netherlands.

Background and content
Youths of the 10-24-year age group generally behave more dangerously in groups of friends than they do individually. This is partly due to the peer pressure they experience (Monahan, Steinberg & Cauffman, 2009). The older they get, the better young people can handle peer pressure (Sumter et al., 2009). The question is how peers handle risks when they are in the car together. Not only group pressure, but also the presence and behaviour of the group can greatly distract the driver. This may result in young drivers accompanied by peer passengers driving more hazardously. A further result of the exposure of young passengers to hazardous driving behaviour is that they are going to accept this behaviour as the standard and will themselves also show this when they later become drivers (Waylen & McKenna, 2008). This fact sheet summarizes the current knowledge about the influence of passengers and answers the following questions: a) Is driving with passengers more hazardous? b) Which mechanisms form its basis? c) What is the effect on driving behaviour? d) How often and when do young passengers in the Netherlands expose themselves to these kinds of risk? Next, the fact sheet will briefly discuss possible interventions and their effects. Due to a lack of background data for the Netherlands, this fact sheet will mainly use results from international research.

Is driving with passengers more hazardous in the Netherlands?
If it is more hazardous for young people to drive in a car together, young passengers of young car drivers will be overrepresented among the fatalities. As it is not known how many and how often (young) car drivers drive with (young) passengers, we must compare this overrepresentation with the composition of the population to get a first impression. In other words: do more young passengers die in a crash than might be expected on the basis of the composition of the population?

Figure 1 shows that in the period of 2004-2009 a total of 538 passengers died in a crash in the Netherlands. This is circa 12% of all fatalities. The subdivision in terms of passenger characteristics shows that they are men (53%) slightly more often than women (47%) (Figure 1). Young men in particular (10-24 years) turn out to be overrepresented among passenger fatalities, with a 24% share. This share is much higher than would be expected on the basis of their share in the total population (9%). The other age groups, boys younger than 10 and men over 24, are therefore underrepresented. There is no over- or underrepresentation among female passengers.

The subdivision in terms of driver characteristics in Figure 1 shows that the majority of passenger fatalities occur with a male driver (84%). It also turns out in this case that this mainly constitutes an overrepresentation of young male drivers: a relatively large share of passenger fatalities (30%) occur with a male driver between 18 and 24 years. This share is much higher than the 6% share of the population of men between 18 and 24.
Figure 1. Distribution of car passenger fatalities in terms of passenger and driver characteristics compared with the distribution in terms of these characteristics of the total population (Pop.). Percentages are percentages of the total number of passenger fatalities in the period of 2004-2009 (n=538), and of the total size of the population (Pop.) for passengers. For drivers, Pop. is the percentage of the population of 18 years and over.

Figure 2 combines driver and passenger characteristics in terms of age and gender for male drivers. The graph first shows the general picture that from the age of 18 passenger fatalities occur in cars driven by peers. Next, the uneven distribution of passenger fatalities can be noticed, consisting of two peaks. The one peak concerns the young male passengers in the 18 to 24 age group of young male drivers (also 18-24 years). The second peak concerns female passenger fatalities from age 40 with a male driver from age 40. As stated, this fact sheet focuses on the young car passengers.

Figure 2. Number of passenger fatalities by age and gender, and by age of the male driver.

The previous comparisons do not yet answer the question whether a higher risk occurs in the Netherlands because of young passengers. In order to answer this question, it is necessary to know
how many and how often certain driver-passenger combinations occur in traffic (exposure). As has been stated in the beginning of this section, this data has not yet been collected in the Netherlands. However, it is clear that the share of young passengers who die in a car with a young (male) driver is very substantial. This fact sheet therefore focuses on this group and tries to find explanations for this fact on the basis of scientific literature.

**What are possible explanations for the increased crash rate of young passengers?**

In theory, three groups of explanations can be given for an increased risk of young (male) passenger fatalities in car crashes with young (male) drivers:

1. greater exposure; young passengers relatively often drive with young drivers and vice versa;
2. a high passenger risk as a consequence of the high risk of young drivers (shared risk);
3. a higher risk when young car drivers drive with young passengers than when they drive on their own (additional risk).

With respect to the first category, the exposure, there is no data for the Netherlands, as was mentioned earlier, and often this also applies for foreign research. With respect to the second category, the shared risk, it is known that the high crash rate of young drivers relates to their mental immaturity, as well as to their lack of experience. Passengers of these young drivers are exposed to this same high risk. The mental immaturity shows from recent studies. They indicate that the structure of the brain systems responsible for impulse control, planning, and integration of information undergo large changes after the beginning of adolescence (around the age of 10 for girls and 12 for boys). Not until well after the age of 20 has been reached, does the brain have its adult form. Furthermore, the influence of hormonal changes due to adolescence results in youths having a great need for new experiences, thrills and excitement. Combined, this results in a young person who seeks after kicks, but who, at the same time, lacks sufficient control to grasp and curb the negative consequences (for further relevant data, we refer to Crone, 2008; Nelis & Van Sark, 2010). In addition to this age-related mental development, a lack of experience often also plays a role with young drivers (see SWOV fact sheet [Young novice drivers](https://www.swov.nl/en) for further background information). The mental development and lack of experience described above probably also play a role in the third category of explanations, the additional risk. The routines of inexperienced drivers are easily interrupted and the negative effect of any kind of distraction, also by passengers, is greater than for experienced drivers (OECD-ECMT, 2006). Peer pressure among youths may also play a role: the older they get, the better young people can resist group pressure (Sumner et al., 2009). Indications of additional risk caused by young passengers can be found in foreign crash and behaviour studies. Moreover, these studies do not only indicate an age-dependent effect of the passenger, but also the role of distraction and peer pressure. These studies are discussed in the next two sections.

**How does the effect of passengers show from crash studies?**

As stated, crash studies into the additional risk caused by passengers have only been carried out in countries other than the Netherlands. These crash studies do not yield unequivocal results (see for a detailed survey of studies, Williams, Ferguson & McCartt, 2007). A number of studies indicate a ‘protective’ effect of the presence of passengers, and others, on the other hand, report a risk-increasing effect. For example, a Swedish study found a protective effect for male, as well as, female drivers (after correction for the distance travelled), which increased the larger the number of passengers (Engström, 2008). Unfortunately, this Swedish study did not distinguish in age and gender of the passengers. Studies in the United States and New Zealand did make this distinction. Williams et al. (2007) compared various studies and concluded that, as far as the United States were concerned, the crash rate clearly increased with the presence of young passengers. Unfortunately, these studies hardly ever corrected for the distances travelled with passengers. One of the few studies that did correct for this confirmed that the crash rate per kilometre travelled was higher when a car was driven with young passengers than driven without them (Ouimet et al., 2010). Young male drivers (15 to 20 years) with young passengers (16 to 20 years) turned out to run the highest risk of a fatal crash per kilometre travelled; this risk was 8 to 10 times higher than without passengers. When it concerned an older passenger (35 and older), the risk did turn out to be much lower than when young people (male and female) drove on their own. This indicates that young passengers increase the risk and older passengers decrease the risk.

**How does the influence of passengers show from studies into driving behaviour?**

In addition to crash studies, behaviour studies have also been carried out into the influence of passengers on young novice drivers. It also applies here that this kind of research has not yet been...
carried out in the Netherlands; the majority of the research in this area has been carried out in the United States. These studies generally involve much younger drivers than in the Netherlands, because in the US, depending on the state, it is allowed to drive a car at a very young age.

An example of a study into driving behaviour is the one among high-school pupils who drove home from school. Their driving speed and vehicle spacing were observed, as were the presence and the characteristics of their passengers. It showed from this study that of all passenger-driver combinations, the young male drivers with young male passengers behaved most hazarously (Simons-Morton, Lerner & Singer, 2005). McKenna et al. (1998) had previously carried out similar research in the United Kingdom and they also observed that young male drivers with young male passengers behaved most hazarously. The most advanced study so far is a study in the United States in which the driving behaviour of 40 young novice car drivers was observed continuously. It showed from this study that the number of (near-) crashes was 75% lower in the presence of adult passengers and 96% higher in the presence of risk-loving friends (Simons-Morton et al., 2011).

In order to understand which processes play a role in the passenger influence, a large number of studies have been carried out under more fully monitored circumstances, for example in simulators and instrument-equipped cars. For example, the role of distraction was researched in a study into the effect of an 'attractive' passenger on the number of errors that young drivers (18 to 24 years) made, because they failed to notice important information in traffic (White & Caird, 2009). These so-called 'looked-but-failed-to-see' errors increased the 'more attractive' the driver considered the passenger to be (White & Caird, 2009). The influence of peer pressure was researched in an American study into red light running. Young car drivers turned out to run red lights more often with a peer beside them than when they drove on their own. This difference did not occur with older drivers (Gardner & Steinberg, 2005). These studies show that distraction, as well as peer pressure can play a role. That peer pressure does not always have to be negative shows from the Swedish study among 20-22-year old men (Engström, 2008). If the passengers tried to pressurize the driver into driving faster, the effect was nil. It further showed that the mutual relation is important. If the group dynamics are positive, that is to say, when the passengers feel positive appreciation for the group, negative pressure was less often put on the driver than in the absence of any group dynamics or when the dynamics were negative (Engström, 2008).

How often and when do passengers expose themselves to risks?
Passengers expose themselves - willingly or not - to additional risks by driving along with a young driver. In order to investigate how often passengers of 13 and 14 years old are exposed to hazardous behaviour of a driver, how they handled this and how they experienced this, circa 700 youths in the Netherlands filled in a questionnaire (Twisk & Vlakveld, 2011). Youths state that in general they do not step into anybody's car at random. Yet, when the driver is a friend, they are far less careful; 15% state to have occasionally taken a ride with a driver who had drunk alcohol. This share is similar to the 19% that were found in a previous Dutch study (Kemler et al., 2007). Many youths state that they occasionally encounter speeding drivers, parents (70%), as well as friends (45%). The research also showed that young men indicate speeding more often than young women that they expose themselves to this kind of risk. In general, the youths interviewed were little aware of the fact that they can influence the driver with their behaviour and that they are therefore co-responsible for their own safety.

Which interventions are possible?
The concern about the effect of passengers on safety has resulted in a prohibition for novice drivers to have passengers with them in their car, especially outside Europe. This measure is often applied in the United States, Australia, Canada and New Zealand, as part of a graduated driving licence (see SWOV fact sheet [The graduated driving licence]). It shows from research in the US that the prohibition on passengers helped to decrease the involvement in fatal crashes of 16 and 17-year old drivers by 9% (Fell, Todd & Voas, 2011).

In various countries campaigns are used to motivate passengers to correct the driver when he does something that is hazardous for the passengers. One example is the Norwegian campaign 'Speak out', in which mass media elements are combined with police surveillance. An evaluation study (Elvik, 2007) showed that the number of injured or dead passengers decreased by 30% during the campaign period, but that the number of injured and dead drivers remained the same. Another approach is to improve the communication in the car by applying the 'Crew resource management' principles, so that youths are trained to act effectively and, as a passenger, to assist the driver instead of hindering him...
and to correct him instead of inciting him. Alternatively, other campaigns do focus on the driver’s behaviour and his effect on and responsibility for passengers. One example is the ‘You hold the key’ campaign in the United States that has resulted in safer self-reported behaviour until six months after the campaign had finished (King et al., 2008). However, in the absence of a control group, alternative explanations for the effect, as, for example, increased mental maturity, cannot be excluded.

In the Netherlands there are currently only two initiatives that focus on young passengers: namely ShotGun by the Dutch Traffic Safety Organization and RoadSense by Mercedes Benz. Research indicates that the programmes have a positive effect on behavioural intentions (Madomi, 2011; Twisk & Vlakveld, 2011). It has not yet been investigated whether it has resulted in changes in everyday behaviour.

Conclusion

Of all passenger fatalities, more than one-third occur in the 10-14-year age group. The majority of these young passengers die in a car driven by an 18 to 24-year old. Compared with their share in the population, young passengers as well as young car drivers are highly overrepresented. This overrepresentation can partly be related to car use: young drivers possibly drive with (many) young passengers more often (and vice versa), but can also be the consequence of peer pressure and distraction. As no Dutch research on this issue is available, practically all knowledge about the backgrounds to the influence of passengers and the effects of measures comes from American research. However, young novice drivers in the United States are not easily compared with young novice drivers in the Netherlands, because they generally are a few years younger. The effects of peer pressure and distraction gradually decrease during adolescence (Sumter et al., 2009). This leaves the question how strong the effects is among young novice drivers in the Netherlands. The large proportion of young passengers who die when a young novice driver is behind the wheel is a good reason for wanting to find the answer to this question.

Publications and sources


