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Risk of accident and accident prevention measures for young car drivers

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Preliminary remarks

Young adults aged from 18 to 24 years are, by a long way, at the greatest risk of accident in road traffic. An examination of the different types of road user shows that they are most frequently involved in accidents as car users. In 2019, some 67 percent of young adults who died or were injured as a result of road accidents were car occupants, about 30,000 as drivers and slightly more than 10,000 as passengers [1].

An analysis of the proportion of drivers who were the **primary cause of accidents** (PCA) amongst all those who were involved in an accident shows that 18 to 24-year-old car drivers disproportionately often bore the main responsibility for the accident. In 2019, 65 percent of the young car drivers involved in accidents were considered to be the primary cause of accidents leading to personal injury by the police [1]. In Germany, the category "accidents leading to personal injury" includes fatal accidents and personal injury accidents.

This particularly high accident risk level among young drivers is presumed to be due both to their lack of driving experience (the so-called "beginner's risk") and to age-related and developmental influences (so-called "youth risk"). The latter include, for example, an increased readiness to take risks, distractibility and an overestimation of their own driving abilities [2]. Beyond their specific individual characteristics, peers also appear to have an influence on the risk behaviour of young drivers [3].

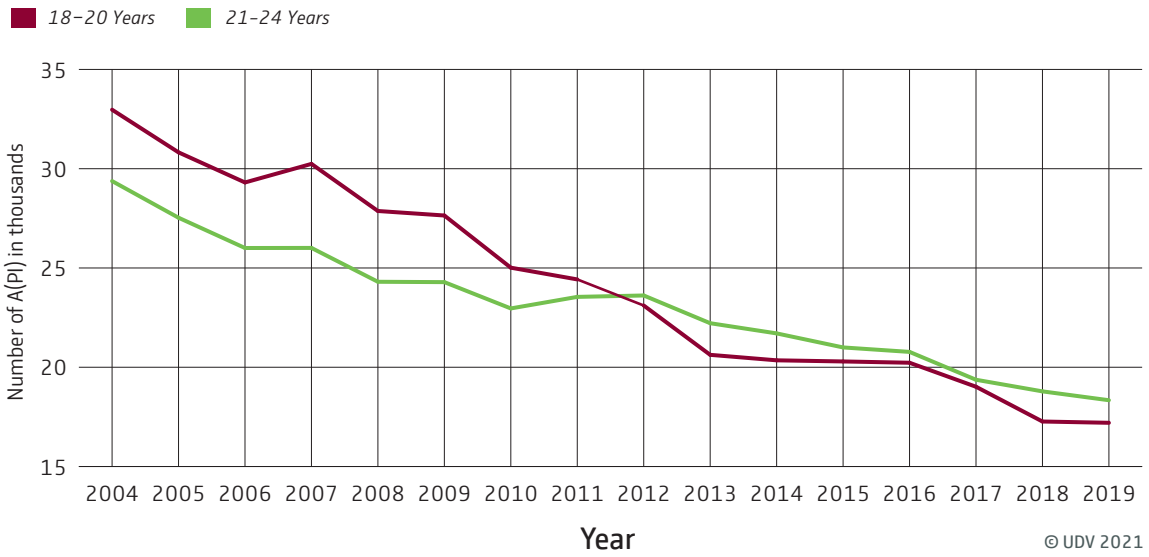
Current situation

According to the accident statistics, car drivers aged from 18 to 20 years caused 17,202 **accidents leading to personal injury (A(PI))** in 2019. In these, 172 people were killed, 3,961 suffered serious injuries and 21,668 suffered minor injuries. Car drivers aged from 21 to 24 years caused 18,339 accidents in 2019. In these, 163 people were killed, 3,680 suffered serious injuries and 22,467 suffered minor injuries [4].

An examination of accident trends since 2004 immediately shows that the number of accidents in the two age groups has fallen continuously, in line with the general tendency (Figure 1). However, this fall has been greater in the group aged from 18 to 20 than among those aged from 21 to 24 years. Indeed, as of 2012, the 21 to 24 year olds have caused more accidents than the 18 to 20 year olds. Previously, the opposite had been the case.

Number of accidents leading to personal injury (A(PI)) with young car drivers as primary cause (PCA)

Figure 1 · **from 2004 to 2019 [5]**



Accident risk compared to other age groups in 2017

A comparison of the accident risk with that of other age groups is presented for 2017 because this is the only year for which exposure data is available. The absolute number of accidents is considered in relation to two variables that can also have an influence on accident numbers. These are, on the one hand, the population size and, on the other, the distance driven per age group.

Figure 2 shows the number of accidents leading to personal injury caused by car drivers of different age groups. The 18 to 20-year-old and 21 to 24-year-old age groups are each responsible for ten percent of these accidents.

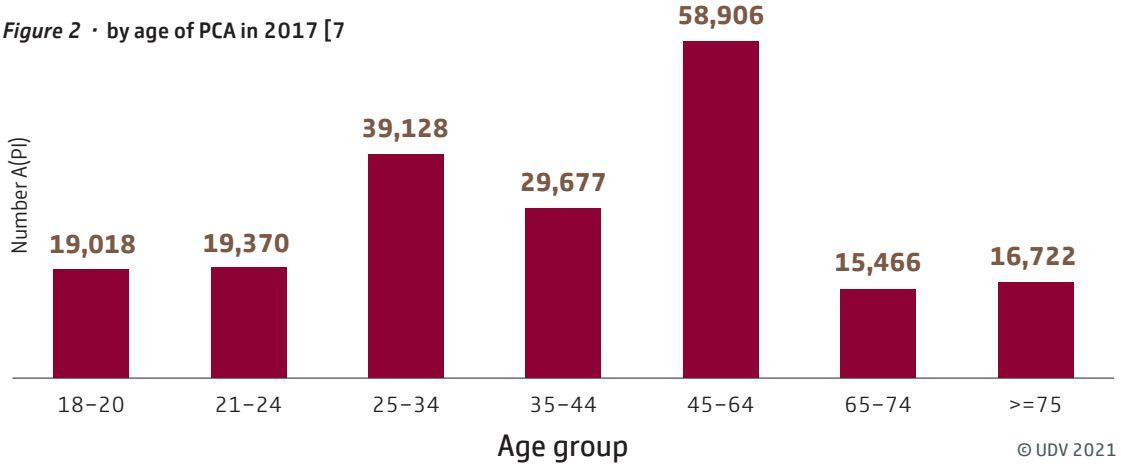
Figure 3 shows the population size per age group. According to these values, the 18 to 20 year olds and 21 to 24 year olds account for only four and five percent, respectively, of the overall population aged 18 or over.

Figure 4 shows the distances driven in each age group. The distances were taken from the survey "Mobilität in Deutschland (MID) - 2017" [6]. The figure presents the total number of kilometres travelled as car driver by all persons in any given age group in the year 2017. According to Figure 4, the 18 to 20-year-old and 21 to 24-year age groups account for a share of only approximately three percent and four percent of the total distance driven, respectively.

In order to calculate the accident risk relative to the group-specific population size and the distance driven per age group, a quotient was formed for each age group.

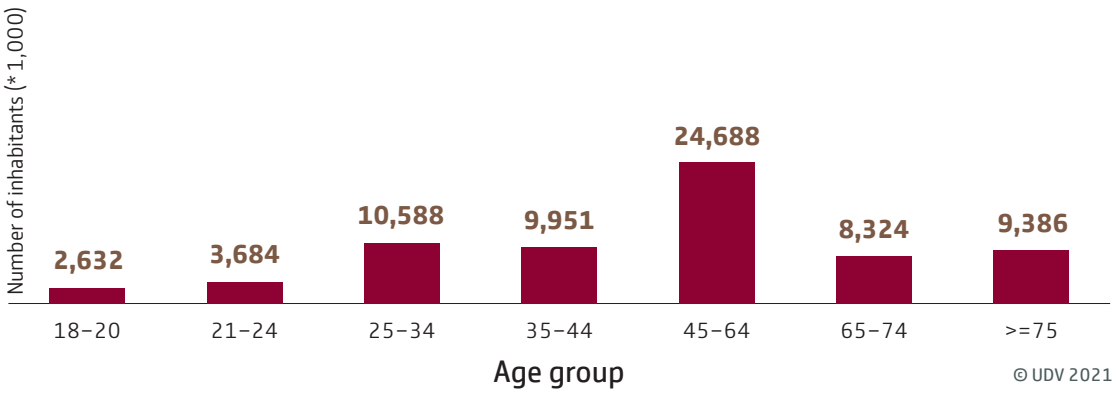
Number of accidents leading to personal injury (A(PI)) with car drivers as PCA

Figure 2 · by age of PCA in 2017 [7



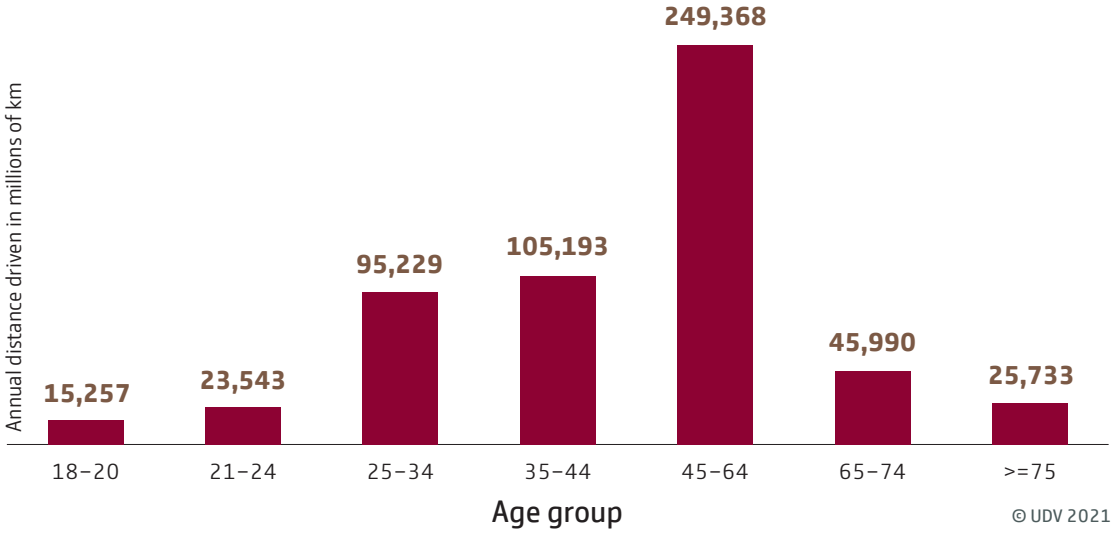
Population size

Figure 3 · by age group in 2017 [8]



Annual distance driven by car drivers

Figure 4 · by age group, in 2017 [the authors' own calculations based on 6]



This quotient is calculated by dividing the share of an age group in the total number of accidents leading to personal injury A(PI) by the respective share of that age group in the total German population or in the total distance driven, respectively. If this quotient has the value 1, then the accident risk of the age group corresponds to its population size or distance driven. Values greater than 1 indicate an increased and values smaller than 1 a reduced accident risk relative to the group's population size or the distance driven (population size-based and mileage-based accident risk).

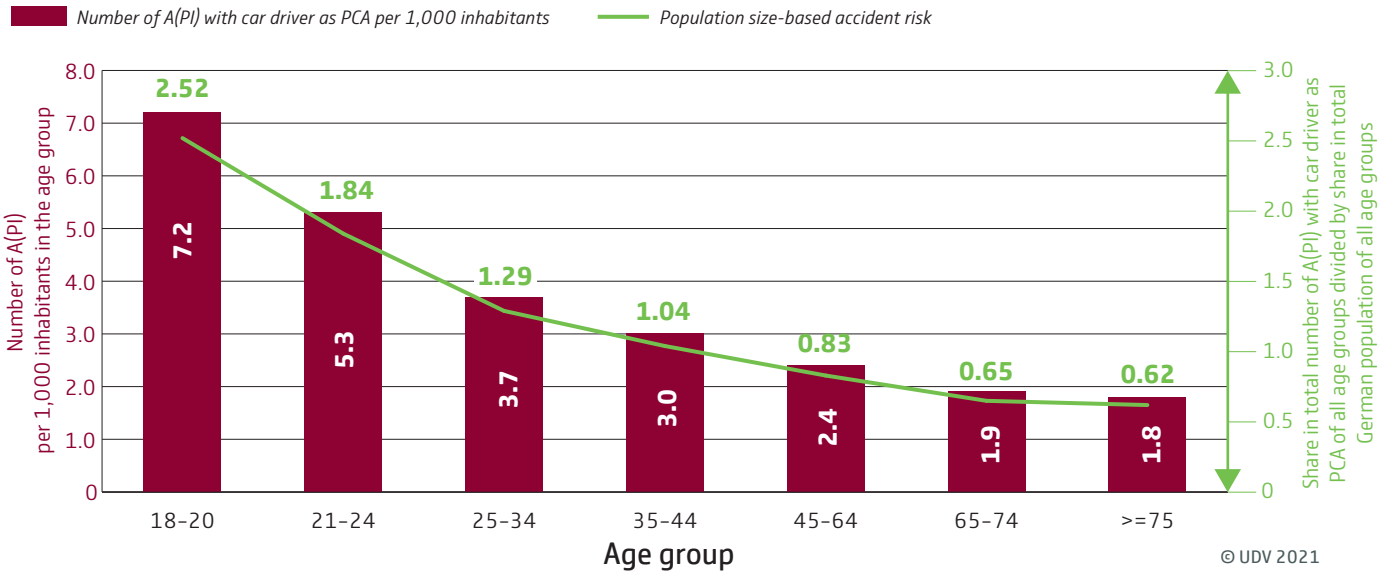
The figure shows that the 18 to 20-year-old age group has the highest **population size-based accident risk** (Figure 5). Car drivers aged between 18 and 20 years cause two and a half times as many accidents (quotient 2.5) than would be expected based on their proportional share of the population. Their population size-based risk is more than twice that of car drivers aged 25 years and over. The second highest risk can be seen for the 21 to 24-year-old age group. They cause nearly twice as many accidents (quotient 1.8) than would be expected based on their proportional share of the population. The population size-based accident risk decreases with increasing age.

However, because the population size-based risk does not take account of the number of kilometres actually driven in the individual age groups, also the **mileage-based accident risk** was calculated (Figure 6). This showed that the group of 18 to 20 year old car drivers has the highest mileage-based accident risk. They cause three and a half times as many accidents than would be expected based on their proportional contribution to total distance driven. Their milage-based risk is more than three times that of car drivers aged between 25 and 74 years. The second highest risk can be seen for the 21 to 24-year-old age group. They cause 2.3 times as many accidents than would be expected based on their proportional share of total distance driven. Their mileage-based risk is more than twice that of car drivers between 25 and 74 years.

These results make it clear that the risk of young car drivers aged between 18 and 24 years causing an accident leading to personal injury is, relative to their proportional share of the population and distance driven, higher than for any other age group. Road safety measures for young drivers are therefore an absolute necessity.

Number of A(PI) caused by car drivers

Figure 5 **· per 1,000 inhabitants in the age group (red) and population size-based accident risk (green) by age group in 2017 (authors' own calculations based on [7] and [8])**



Number of A(PI) caused by car drivers

Figure 6 **· per million kilometers driven by car (red) and mileage-based accident risk (green) by age group in 2017 (authors' own calculations based on [6] and [7]**

Comparison of the mileage-based accident risk in 2008 and 2017

Only data from the years 2008 and 2017 is available for the comparative analysis of the milage-based accident risk because driving distance data was only recorded for these two years by the survey "Mobilität in Deutschland (MID)".

A comparison of the mileage-based accident risk in 2017 with that in 2008 shows that the accident risk for the 18 to 20 year olds has fallen considerably (Figure 7, Table 1). In 2008, they caused 5.3 times as many accidents than would be expected based on the distance driven by them as car drivers; in 2017, they caused only 3.5 times as many accidents.

By contrast, the accident risk of the 21 to 24 year olds actually increased. In 2008, they caused 1.9 times as many accidents than would be expected based on the distance driven by them as car drivers; in 2017, they caused 2.3 times as many accidents. For the remaining age groups, there are either no or only very small changes for the mileage-based accident risk.

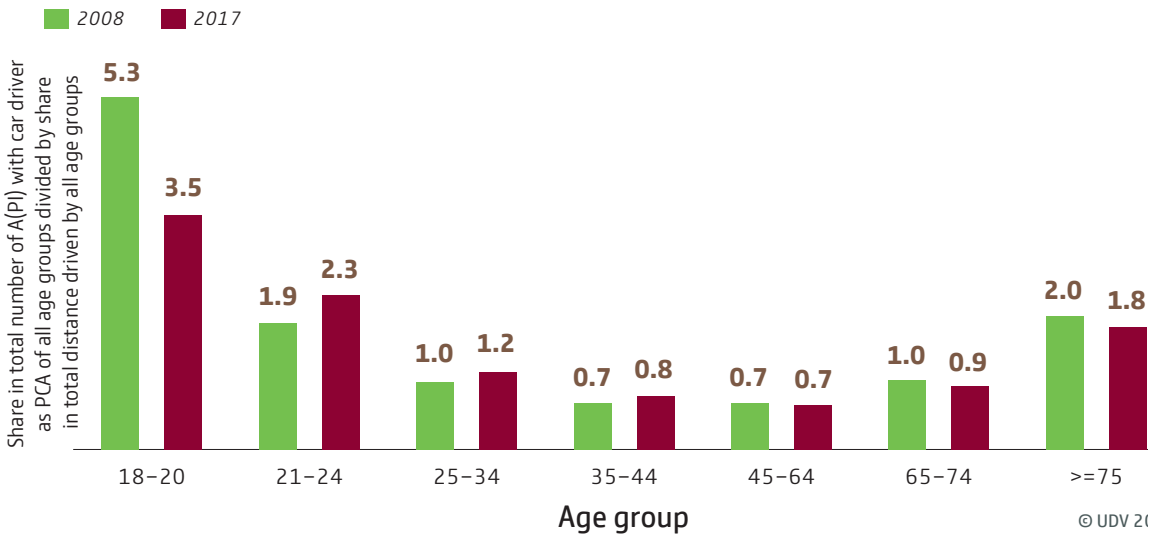
Mileage-based risk of causing an A(PI) as car driver

Table 1 **· by age group of the PCA, comparison of the years 2008 and 2017 (authors' own calculations based on [7], [9] and [10])**

Age	Year 2008	Year 2017	+/-
18-20 years	5.29	3.52	-1.77
21-24 years	1.90	2.32	+0.49
25-34 years	1.01	1.16	+0.15
35-44 years	0.70	0.80	+0.10
45-64 years	0.69	0.67	-0.02
65-74 years	1.04	0.95	-0.09
>=75 years	2.00	1.84	-0.16

Mileage-based risk of causing an A(PI) as car driver

Figure 7 **· by age group of the PCA, comparison of the years 2008 and 2017 (authors' own calculations based on [7], [9] and [10])**



Comparison of the number of A(PI) with car drivers as PCA and comparison of distance driven in 2008 and 2017

Table 2 · by age group (authors' own calculations based on [7], [9] and [10])

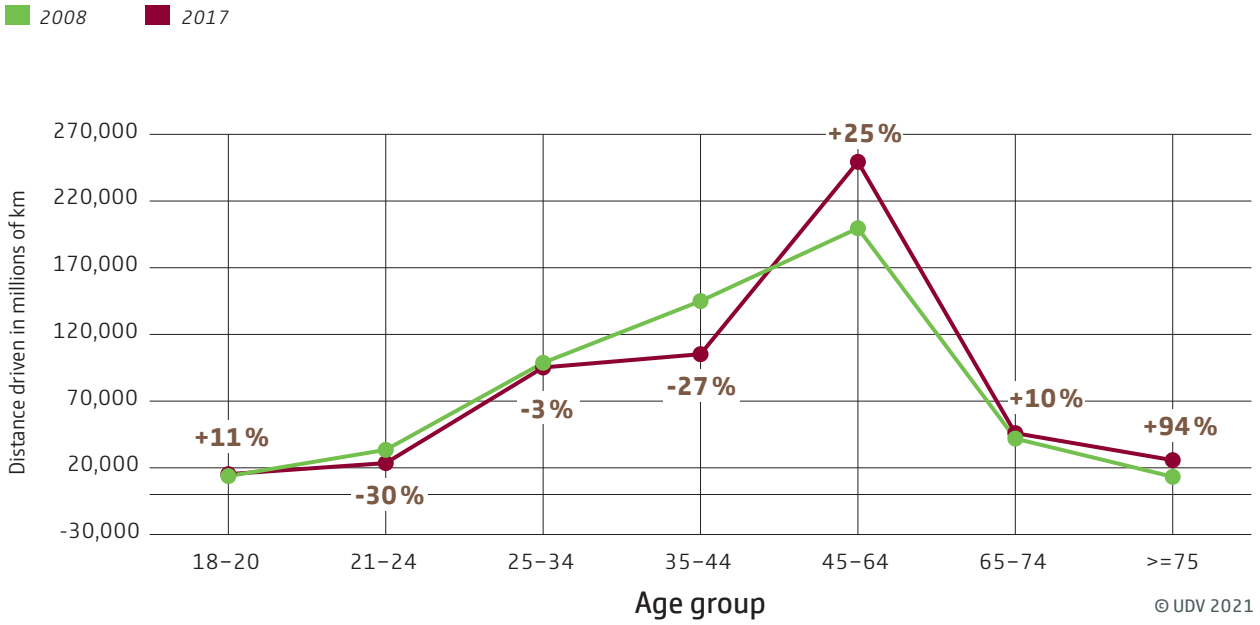
	A(PI)			Distance driven in millions of km		
Age	Year 2008	Year 2017	+/-	Year 2008	Year 2017	+/-
18-20 years	27,870	19,018	-32%	13,797	15,257	+11%
21-24 years	24,305	19,370	-20%	33,470	23,542	-30%
25-34 years	38,011	39,128	+3%	98,732	95,228	-3%
35-44 years	38,855	29,677	-24%	145,014	105,193	-27%
45-64 years	52,499	58,906	+12%	199,618	249,368	+25%
65-74 years	16,696	15,466	-7%	41,902	45,990	+10%
>=75 years	10,128	16,722	+65%	13,249	25,732	+94%

The significant fall in the mileage-based accident risk in the 18 to 20 year old car drivers is due to a considerable fall in the number of accidents (-32 %) together with a slight rise of the distance driven during the same period (+11 %) (Table 2). Among the 21 to 24 year olds, by contrast, the distance driven fell more sharply (-30 %) than the number of accidents (-20 %). As a result, the mileage-based accident risk for this age group was higher in 2017 than in 2008.

Figure 8 again illustrates the distance driven in the years 2008 and 2017.

Comparison of distance driven by car drivers in the years 2008 and 2017

Figure 8 **· by age group (authors' own calculations based on [10])**



Driving errors of young car drivers

The most frequent driving errors among young car drivers aged between 18 and 24 years involved in accidents leading to personal injuries (A(PI)) are "inappropriate speed", followed by "safety distance errors" and "failure to cede priority/give way" (Figure 9).

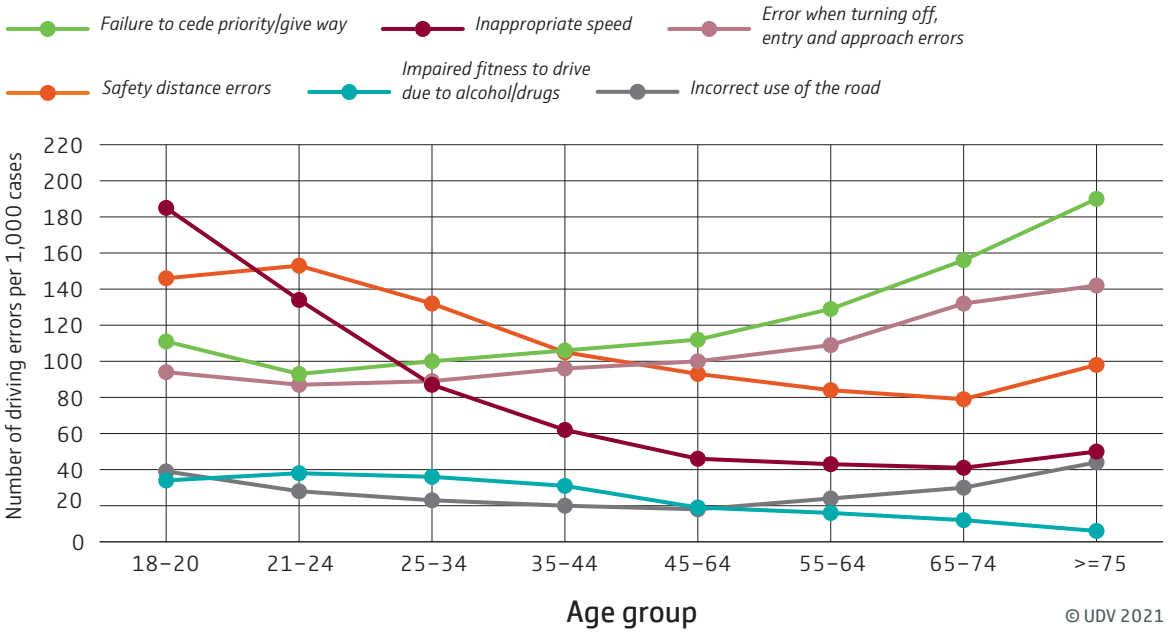
If we consider only the particularly serious accidents, i.e. the accidents involving fatalities, it can be seen that the most frequent accident cause among the 18 to 24-year-old car drivers who were involved in accidents in 2019 was "inappropriate speed" followed by "incorrect use of the road" and "influence of alcohol" [1].

Because accidents involving alcohol lead to a disproportionately high frequency of fatalities or severe injuries, we shall pay particular attention to accidents occurring under the influence of alcohol. Table 3 presents the number of accidents leading to personal injury in which car drivers were the main cause, the number of accidents with car drivers under the influence of alcohol as the main cause and the distance driven per age group for the year 2017. Once again, it can be seen that both the 18 to 20 year olds and the 21 to 24 year olds constitute a higher proportion of primary accident causes than would be expected on the basis of their share of total distance driven. This again clearly illustrates the disproportionately high mileage-based accident risk in these groups.

Table 3 also shows that the proportion of drivers who are the primary cause of accidents (PCA) driving under the influence of alcohol in the 18 to 20-year-old age group (7.9 %) corresponds to their overall PCA proportion (9.6 %) (to be precise, it is actually slightly lower). Consequently, this group is no more strongly represented than their overall PCA proportion would lead us to expect. This can be seen as an indication that the alcohol ban for inex-

Six of the most frequent driving errors on the part of car drivers involved in A(PI)

Figure 9 · **by age group, in 2019 (authors' own presentation based on [4])**



perienced drivers during their two-year probationary period and/or for drivers who have not yet turned 21 has a positive effect on the occurrence of alcohol-induced accidents.

However, the proportion of PCAs driving under the influence of alcohol in the group of 21 to 24-year-old car drivers (13.2 %) is higher than their overall PCA proportion (9.8 %). Consequently, this group is overrepresented here. 21 to 24-year-old car drivers are more frequently found to be PCAs driving under the influence of alcohol than would be expected on the basis of their overall PCA proportion. The same is true of the group of 25 to 34 year olds and 35 to 44 year olds. It is only in the age groups from 45 years onwards that the proportion of PCAs driving under the influence of alcohol is smaller than their corresponding overall PCA proportion.

Number of A(PI) with car drivers as PCA under the influence of alcohol and distance driven

Table 3 · by age group in 2017 (authors' own calculations based on [7], [10] and [11])

			of total PCA			
	Total PCA		PCA driving under the influence of alcohol		MID 2017	
Alter	Number	Percentage	Number	Percentage	Mill km/year	Percentage
18-20	19,018	9.6	581	7.9	15,257	2.7
21-24	19,370	9.8	972	13.2	23,543	4.2
25-34	39,128	19.7	2,272	30.7	95,229	17.0
35-44	29,667	15.0	1,337	18.1	105,193	18.8
45-64	58,906	29.7	1,869	25.3	249,368	44.5
65-74	15,466	7.8	242	3.3	45,990	8.2
>=75	16,722	8.4	116	1.6	25,733	4.6
Total*	198,277	100.0	7,389	100.0	560,312	100.0

* excluding under 18 year olds

Measures

Measures for improving road safety and their effectiveness

Measures have already been taken in the past to improve the road safety of young drivers, in particular for the 18 to 20 year olds. The following measures have proved to be particularly effective.

Accompanied Driving at 17 years ("BF17", as of 1.1.2011 throughout Germany)

Thanks to the possibility of accompanied driving at 17 years, participants as of the age of 16 and a half years are able to attend driving school. After passing a driving test (theoretical and practical), they receive a test certificate as of their 17th birthday. This enables them to drive a car up until their 18th birthday provided that they are accompanied by at least one other person. The accompanying persons:

- must be at least 30 years of age,
- must have held a class B driving licence for at least five years without interruption,

- must not have more than one penalty point in the registry of the licensing authority in Flensburg.
- must be specified as an accompanying person in the test certificate. There is no limit to the number of accompanying persons who can be entered in the test certificate.

An evaluation of the effectiveness of the BF17 accompanied driving scheme showed that the mileage-based accident risk of former BF17 participants in their first year of independent driving was 22 percent lower than that of inexperienced drivers of the same age who had acquired their driving licence immediately after their 18th birthday in the normal way. The level of traffic offences was also 20 percent lower relative to the distance driven [12].

The ban on alcohol for inexperienced drivers (since 1.8.2007)

Inexperienced drivers during the two-year probationary period and drivers who have not yet reached the age of 21 are subject to a strict alcohol ban. According to this, they may not consume any alcoholic beverages when driving a motor vehicle in road traffic or take to the wheel when under the influence of any such beverage. Inexperienced drivers during their probationary period and drivers under 21 are therefore subject to a zero-alcohol limit. Any infringement results in at least one penalty point in the licensing authority register and a fine of 250 euros.

An initial evaluation of effectiveness immediately after the introduction of the ban showed that it had reduced the number of car drivers with a probationary driving licence or aged between 18 and 20 years who were involved in accidents while under the influence of alcohol by nine percent. This fall was observed in addition to the general reduction in the number of car drivers involved in accidents while under the influence of alcohol [13].

A re-evaluation in 2019 showed that the (former) 18 to 20-year-old inexperienced drivers in the initial cohort to be subject to the alcohol ban were also less frequently involved in road traffic accidents when under the influence of alcohol than drivers in various comparison groups. The number of alcohol-related traffic offences was also reduced to a significantly greater extent in the long term in this group. Acceptance of the alcohol ban continues to be very high among current 17 to 20-year-old inexperienced drivers and has indeed risen compared to the first evaluation. This indicates that the alcohol ban for inexperienced drivers and drivers who have not yet reached the age of 21 years also makes a positive long-term contribution to road safety by continuing to exert a favourable influence in subsequent years when drivers are no longer subject to the ban [14].

Further-reaching measures after obtaining the driving licence

18 to 20-year-old car drivers (high-risk phase)

The mileage-related accident risk of car drivers aged between 18 and 20 years has fallen considerably. The measures taken to improve road safety in this group are showing their effect. Despite this, it continues to be the group with the highest mileage-related accident risk. Further efforts are therefore necessary.

A project group which was set up by the German Federal Highway Research Institute (BASt) and of which the UDV was a member has proposed further-reaching measures for reducing the accident risk of inexperienced drivers during the phase of maximum risk, which starts as soon as they are able to drive independently (so-called "high-risk phase") [15]. In particular, these comprise:

→ A general lengthening of the probationary period from the current two to a total of three years in order to extend the time during which inexperienced drivers can become accustomed to careful driving that is respectful of the regulations.

→ The possibility to reduce the three year probationary period by a maximum of twelve months for drivers who voluntarily participate in qualified measures (the lower limit continues to be a two-year probationary period in accordance with the current regulations).

→ The BF17 (Accompanied Driving at 17 years) (with simplified regulations, e.g., with regard to the accompanying persons) and pedagogic measures are proposed as such qualified measures.

→ Opening Accompanied Driving to drivers aged over 18.

In addition, the scientific further development of driving instruction and the preparation of inexperienced drivers should be placed on an institutional footing.

According to a survey of BF17 participants in 2014, they spend an average of 8.4 months in the BF17 scheme and drive approximately 2,500 kilometres. Only about a quarter of them take advantage of the maximum possible period of twelve months and drive more than 3,600 kilometres [16]. A survey of persons who have accompanied inexperienced drivers conducted in 2019 revealed similar results. In it, 37 percent of the accompanying persons stated that the period of accompaniment had started nine to twelve months before the inexperienced driver's 18th birthday. A further 23 percent indicated a period of six to eight months [17]. This means that only a small proportion of BF17 participants take advantage of the complete twelve-month accompanied driving phase.

A lack of time is the most frequently cited reason for not taking advantage of the BF17 scheme (Table 4). This problem could, for example, be alleviated by opening up Accompanied Driving to over-18s. The accompanied driving phase could therefore also conclude after the driver's 18th birthday. It is also worth considering lowering the age for the start of instruction from the current sixteen and a half to sixteen years in order to ensure that when participants turn seventeen, they will have completed their driving instruction and be able to start the accompanied driving phase.

Accompanied Driving as early as 16?

The state of Lower Saxony has proposed the model of Accompanied Driving at 16 (BF16). In a similar way to Accompanied Driving at 17, this is intended to allow young people aged 16 or over who have been issued with a test certificate to drive with an accompanying person. In this model, young people could attend driving school as of the age of fifteen and a half. The accompaniment phase would then be extended to a maximum of two years up to the young person's 18th birthday. The aim sought here is to enable more young people to benefit from Accompanied Driving and to extend the period of and distance driven during Accompanied Driving.

In this context, however, it is necessary to bear in mind that reducing the starting age for driving lessons and accompaniment could be problematic for road safety. The current results of research conducted by the UDV show that it is only from the age of 14 years that the traffic-related skills are developed to a sufficient extent for it to be possible to assume that children/young people are capable of safe, independent road use [18]. Taking the example of 15-year-old moped riders, it was recently shown that these road users do not yet meet the minimum requirements placed on adults assessed for their fitness to drive with regard to the cognitive criteria of distractibility and risk perception [19]. Furthermore, young people undergoing puberty have not yet completed their socio-emotional development or fully developed the ability to inhibit impulsiveness. This entails a potential for conflict with the accompanying person that should not be underestimated. In a survey conducted in 2014, the comments of the accompanying person at the end of the BF17 period were perceived as being less helpful by inexperienced drivers than in an initial survey and the acceptance of the appropriateness of the comments fell slightly [16]. In a current survey of persons who have accompanied inexperienced drivers, 30 percent reported experiencing conflicts with the young inexperienced driver [17].

As mentioned above, a lack of time is the most frequently cited reason for not taking advantage of the BF17 scheme. However, a lack of interest in the BF17 mechanism (for a variety of reasons) and an inability to pay for driving lessons are cited with almost the same frequency (Table 4). The introduction of BF16 might make it possible to address the time-related issue. It is, nevertheless, unclear whether this would increase interest in the scheme or alleviate the financial problems relating to driving lessons.

Reasons given for not participating in the BF17 scheme by 18-year-old inexperienced drivers

Table 4 · More than one answer permitted, 2,686 answers obtained from 910 respondents [16]

Reasons for not taking part in BF17	Answers		Respondents
	Number	Percentage	Percentage
Lack of time	394	14.7	43.3
No benefits of BF17	368	13.7	40.5
BF17 was not interesting	319	11.9	35.1
Did not want to learn to drive at 17	310	11.5	34.0
No money to learn to drive	234	8.7	25.7
Learning to drive took a long time	229	8.5	25.1
Did not want to drive with accompanying adults	217	8.1	23.8
No car available	95	3.5	10.5
Already had driving experience with another licence	64	2.4	7.1
The possible accompanying persons were not acceptable to me	51	1.9	5.6
The possible accompanying persons had not had their driving licence for long enough	39	1.4	4.3
The possible accompanying persons were not yet 30 years old	36	1.3	4.0
Parents did not give their consent	32	1.2	3.5
The possible accompanying persons had too many penalty points	25	0.9	2.8
No accompanying person available	25	0.9	2.8
Did not know about the BF17 scheme	11	0.4	1.2
Other reasons	236	8.8	26.0
Total	2,686	100.0	

21 to 24-year-old car drivers

Although the number of accidents leading to personal injury has fallen in the group of car drivers aged from 21 to 24 years, the mileage-based accident risk nevertheless increased between 2008 and 2017. The distance driven by this group has fallen considerably more than the number of accidents leading to personal injury. In addition, the 21 to 24-year-old group is over-represented among the primary causers of accidents under the influence of alcohol with regard to accidents leading to personal injury. Consequently, more attention should be paid to this age group in the future in order to achieve a similar dynamic in the reduction of the accident risk as in the group of 18 to 20 year olds.

The following measures appear to be extremely promising for this age group:

- Extending the Accompanied Driving scheme to inexperienced drivers aged over 18 years as has already been recommended by the BASt project group [15].
- Extension of the alcohol ban for young and inexperienced drivers. At the time it was introduced, the age limit for this ban (21 years) was chosen arbitrarily. However, the risk due to the youthfulness of the drivers continues to at least the age of 24. In the context of the disproportionately high number of PCAs under the influence of alcohol relative to the number of PCAs overall in this age group, it seems perfectly justifiable to extend the ban to the age group of 21 to 24 year olds.

Summary

In line with the general trend, the absolute number of car accidents for which drivers in the young age groups are themselves responsible has fallen continuously over recent years. However, this fall has been greater in the group aged from 18 to 20 than among those aged from 21 to 24 years. Indeed, as of 2012, the 21 to 24 year olds have caused more accidents than the 18 to 20 year olds. Previously, the opposite had been the case. Relative to the distances driven by them, the risk of drivers in these two groups to cause an accident leading to personal injury is higher than for any of the other age groups. A longitudinal comparison shows that the mileage-based accident risk for the 18 to 20 year olds in 2017 was significantly lower than in 2008. By contrast, the mileage-based accident risk of the 21 to 24 year olds actually increased. In this age group, the distance driven fell more sharply than the number of accidents caused by drivers of this age.

The measures taken to improve the road safety of 18 to 20-year-old drivers, such as the BF17 and the alcohol ban for inexperienced drivers during the two-year probationary period and drivers who have not yet reached the age of 21, are showing positive effects. However, since this continues to be the age group with the highest mileage-based accident risk, further efforts are necessary. It is possible, for example, to consider extending the probationary period. In addition, more attention should be paid to the group of 21 to 24-year-old car drivers in the future in order to achieve a similar dynamic in the reduction of the accident risk as in the group of 18 to 20 year olds. Potential suitable measures here include opening up the possibility of Accompanied Driving to inexperienced drivers aged over 18 and extending the alcohol ban.

References

[1] German Federal Statistical Office (2020). Verkehrsunfälle. Unfälle von 18- bis 24-Jährigen im Straßenverkehr 2019. [Traffic Accidents. Accidents of 18 to 24-year-olds in road traffic]. Wiesbaden.

[2] Holte, H. (2012). Einflussfaktoren auf das Fahrverhalten und das Unfallrisiko junger Fahrerinnen und Fahrer. [Influencing factors on the driving behaviour and accident risk of young drivers.] Berichte der Bundesanstalt für Straßenwesen (BASt), Mensch und Sicherheit. [Reports by the Federal Highway Research Institute (BASt), People and Safety] Issue M 229. Bremerhaven: Wirtschaftsverlag NW.

[3] Baumann, E., Geber, S., Klimmt, C. & Czerwinski, F. (2019). Einfluss gleichaltriger Bezugspersonen (Peers) auf das Mobilitäts- und Fahrverhalten junger Fahrerinnen und Fahrer. [Peer influences on young adults' risk behavior in road traffic.] Berichte der Bundesanstalt für Straßenwesen (BASt), Mensch und Sicherheit. [Reports by the Federal Highway Research Institute (BASt), People and Safety] Issue M 292. Bremen: Fachverlag NW.

[4] German Federal Statistical Office (2020). Verkehr - Verkehrsunfälle 2019. [Traffic - Traffic accidents 2019] Fachserie 8 Reihe 7. Wiesbaden.

[5] German Federal Statistical Office (2005-2020). Verkehr – Verkehrsunfälle 2004 – 2019. [Traffic – Traffic accidents 2004 – 2019] Fachserie 8 Reihe 7. Wiesbaden.

[6] Federal Ministry of Transport and Digital Infrastructure (2019): MiD (2017) - Mobilität in Deutschland 2017, SPSS-Datensatz der Studie Mobilität in Deutschland 2017 [Mobility in Germany 2017, SPSS dataset for the study Mobility in Germany 2017], Berlin.

[7] German Federal Statistical Office (2018). Verkehr - Verkehrsunfälle 2017 [Traffic – Traffic accidents 2017] Fachserie 8, Reihe 7 Wiesbaden.

[8] German Federal Statistical Office (2019): Bevölkerung und Erwerbstätigkeit – Bevölkerungsfortschreibung auf Grundlage des Zensus 2011 [Population and employment – Future population estimates based on the 2011 census], Fachserie 1, Reihe 1.3, Wiesbaden.

[9] German Federal Statistical Office (2009). Verkehr - Verkehrsunfälle 2008 [Traffic – Traffic accidents 2017] Fachserie 8, Reihe 7 Wiesbaden.

[10] Federal Ministry of Transport and Digital Infrastructure (2019): MiD- Mobilität in Deutschland, SPSS-Datensatz der Studie Mobilität in Deutschland, Zeitreihendatensatz 2002 2008 2017 [Mobility in Germany 2017, SPSS dataset for the study Mobility in Germany 2017, Longitudinal dataset 2002 2008 2017], Berlin.

[11] German Federal Statistical Office (2018). Verkehrsunfälle. Unfälle unter dem Einfluss von Alkohol oder anderen berauschenden Mitteln im Straßenverkehr - 2017. [Traffic Accidents. Accidents under the influence of alcohol or other intoxicating substances in road traffic - 2017] Wiesbaden.

[12] Schade, F.-D. & Heinzmann, H.-J. (2011). Sicherheitswirksamkeit des Begleiteten Fahrens ab 17. Summative Evaluation. [Safety effects of Accompanied Driving from 17. Summary evaluation.] Berichte der Bundesanstalt für Straßenwesen (BASt), Mensch und Sicherheit. [Reports by the Federal Highway Research Institute (BASt), People and Safety] Issue M 218. Bremerhaven: Wirtschaftsverlag NW.

[13] Holte, H., Assing, K., Pöppel-Decker, M. & Schönebeck, S. (2010). Alkoholverbot für Fahranfänger. [The Zero Tolerance Law for novice drivers Berichte der Bundesanstalt für Straßenwesen (BASt), Mensch und Sicherheit. [Reports by the Federal Highway Research Institute (BASt), People and Safety] Issue M 211. Bremerhaven: Wirtschaftsverlag NW.

[14] Evers, C. & Straßgütl, L. (2020). Re-Evaluation des Alkoholverbots für Fahranfängerinnen und Fahranfänger. [Re-evaluation of the zero tolerance law for novice drivers] Berichte der Bundesanstalt für Straßenwesen (BASt), Mensch und Sicherheit. [Reports by the Federal Highway Research Institute (BASt), People and Safety] Issue M 305. Bremen: Fachverlag NW.

[15] Projektgruppe "Hochrisikophase Fahranfänger" [Project group "High-risk phase for novice drivers"] (2019). Fahranfänger – Weiterführende Maßnahmen nach dem Fahrerlaubniserwerb. [Proposal of measures for novice car drivers after driver education and licensing tests] Berichte der Bundesanstalt für Straßenwesen (BASt), Mensch und Sicherheit. [Reports by the Federal Highway Research Institute (BASt), People and Safety] Issue M 293. Bremen: Fachverlag NW.

[16] Funk, W. & Schrauth, B. (2018). Fahranfängerbefragung 2014: 17-jährige Teilnehmer und 18-jährige Nichtteilnehmer am Begleiteten Fahren – Ansatzpunkte zur Optimierung des Maßnahmenansatzes „Begleitetes Fahren ab 17. [German novice driver survey 2014: 17-year old participants and 18-year old non-participants in the Accompanied Driving scheme – Starting points for optimizing "Accompanied Driving from age 17"] Berichte der Bundesanstalt für Straßenwesen (BASt), Mensch und Sicherheit. [Reports by the Federal Highway Research Institute (BASt), People and Safety] Issue M284. Bremen: Fachverlag NW.

[17] ADAC (2019). Begleitetes Fahren. Umfrage unter Begleitern zum Begleiteten Fahren (BF17). [Accompanied Driving. Survey of accompanying persons in the Accompanied Driving scheme (BF17) [https://www.adac.de/-/media/pdf/motorwelt/mfo_begleitetes-fahren.pdf?la=de-de&hash=AA1348AB84E4E4406145861C2C573220, last accessed on 03.03.2021

[18] Schlag, B., Richter, S., Buchholz, K. & Gehlert, T. (2018). Ganzheitliche Verkehrserziehung für Kinder und Jugendliche. Teil 1: Wissenschaftliche Grundlagen. [Comprehensive traffic education for children and young people. Part 1: Scientific bases.] Research report no. 50. Berlin: German Insurers Accident Research.

[19] Schützhofer, B. et al. (2019). MOVER – Jugendliche MopedlenkerInnen und Verkehrsreife. [MOVER – Young moped drivers and traffic maturity.] Research report of the Austrian Road Safety Fund. No. 069. Vienna: Federal Ministry for Mobility, Innovation and Technology.

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