Alcohol Related Road Accidents in the Federal Republic of Germany – Status till 2002

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Abstract
This article describes the development and actual status of alcohol related accidents in Germany and discusses the effectiveness of police controls, legislative and educational measures.

Alcohol and Road Traffic in Germany – Drink-drive Limits
In 1973, the critical BAC limit of 0.08 % was introduced as an offence, which by statutory definition carries a fine (§ 24a Road Traffic Act, StVG). After the unification of the Federal Republic of Germany and the German Democratic Republic – from 1989 to 1993 – there were two different legal BAC limits in the two former German states (West: 0.08 %; East: 0.00 %).

In January 1993 in all parts of Germany the same BAC limit of 0.08 % became a legal requirement. In 1998 a second BAC-limit of 0.05 % was introduced, which indicated an offence without suspension of licence. The stricter limit was accompanied by a newly introduced limit for breath alcohol concentration of 0.25 mg/l. Instead of taking blood samples the police can carry out breath tests using special measuring instruments. This new and less costly testing procedure is admissible evidence in a court of law. Since April 2001 the limit of 0.05 % has replaced the limit of 0.08 % as an offence, which carries suspension of licence for at least one month.

Alcohol Related Injury Accidents - Data from the Federal Republic of Germany
Alcohol related road traffic accidents are accidents in which at least one involved person has an blood alcohol concentration exceeding 0.03 %.

In 1975 in West Germany 86 of 1 000 injury-accident involved car drivers and 63 of 1 000 pedestrians were influenced by alcohol. Since this time the figure decreased up to the year 2002 to 34 per 1 000 involved car drivers. On the other hand the figure of intoxicated injury accident involved pedestrians increased up to the year 1993 to 73 per 1 000 pedestrians (East: 84/West: 69). Since 1993 this figure also decreased to 53 per 1 000 pedestrians in 2002.

Development Till the Unification of the Two German States
In the German Democratic Republic up to 1989 the trend of the development of alcohol related accidents was similarly favourable: compared with 1980, 14 % less alcohol related accidents with injuries were counted in 1989 and 25 % less fatalities in alcohol related accidents, whereas the number of injury accidents not involving alcohol even rose by 3 % in that time. The number of fatalities also decreased by 8 %, which was clearly lower than in alcohol related accidents [1].

In the period from 1975 to 1990 in the Federal Republic of Germany (West) alcohol related injuries and fatalities in road traffic accidents decreased continuously:
The alcohol related injury accidents decreased significantly (-32 %). On the contrary the non-alcohol related injury accidents increased between 1975 and 1990 (+6 %).

The alcohol related casualties also decreased dramatically in this period (-37 %), meanwhile the non-alcohol related casualties rose (+2.5 %).

The alcohol related fatalities in road accidents decreased from 1975 to 1990 by 57 %, whereas the non-alcohol related fatalities in road accidents accounted only for -44 %.

Three years before unification (1986 to 1989), the share of alcohol related injury accidents in the German Democratic Republic was approximately the same as in Federal Republic of Germany (10 %). The share of alcohol related fatalities in road accidents was also similar (FRG 18 %; GDR 17 %).

But after the unification the road accidents increased dramatically in the former GDR. Especially the alcohol related injury accidents as well as the alcohol related casualties increased substantially from 1990 to 1993, while in Western Germany these figures continued to decrease.

Since 1994 in the western part as well as in the eastern part of Germany all figures of alcohol related injury accidents have decreased. Although, the share of alcohol related accidents in the eastern federal states is higher, the figures of western and eastern countries become more and more equal.

**Alcohol Related Injury Accidents in Germany Since 1994**

In the period from 1994 to 2002 all injury accidents decreased by -7.8 % while there was a continuous decrease concerning alcohol related injury accidents (-36.5 %). Especially the alcohol related fatalities (-49 %) as well as fatalities in general (-30 %) decreased substantially till 2002.

25 333 accidents involving alcohol occurred in the year 2002. That means a reduction of more than one third compared to 1994. These accidents accounted for 33 862 casualties, 932 of them died.

Both, the share of alcohol related accidents and casualties have decreased since 1994:

- The share of alcohol related injury accidents decreased from 1994 to 2002 from 10.2 to 7.0 % [see table 1].
- The share of alcohol related casualties decreased from 1994 to 2002 from 10.5 to 7.0 % [see table 2] while the share of alcohol related fatalities decreased even from 18.6 to 13.6 % [see table 3].
- The share of accident-involved persons influenced by alcohol decreased between 1994 and 2002 from 5.3 to 3.6 %.
Table 1: Time series of injury accidents in total and alcohol related injury accidents in the period from 1994 – 2002 in Germany

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<tbody>
<tr>
<td>Injury accidents in total</td>
<td>392 745</td>
<td>388 003</td>
<td>373 082</td>
<td>380 835</td>
<td>377 257</td>
<td>395 689</td>
<td>382 949</td>
<td>375 345</td>
<td>362 054</td>
</tr>
<tr>
<td>Alcohol related injury accidents</td>
<td>39 892</td>
<td>36 966</td>
<td>34 468</td>
<td>32 884</td>
<td>28 736</td>
<td>28 350</td>
<td>27 375</td>
<td>25 690</td>
<td>25 333</td>
</tr>
<tr>
<td>Share of alcohol related injury accidents</td>
<td>10.2 %</td>
<td>9.5 %</td>
<td>9.2 %</td>
<td>8.6 %</td>
<td>7.6 %</td>
<td>7.2 %</td>
<td>7.1 %</td>
<td>6.8 %</td>
<td>7.0 %</td>
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Table 2: Time series of casualties in road accidents in total and alcohol related casualties in the period from 1994 – 2002 in Germany

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<tr>
<td>Casualties in road accidents</td>
<td>526 229</td>
<td>521 595</td>
<td>501 916</td>
<td>509 643</td>
<td>505 111</td>
<td>528 899</td>
<td>511 577</td>
<td>501 752</td>
<td>483 255</td>
</tr>
<tr>
<td>Alcohol related casualties</td>
<td>55 093</td>
<td>51 346</td>
<td>47 348</td>
<td>45 020</td>
<td>38 483</td>
<td>38 110</td>
<td>36 764</td>
<td>34 426</td>
<td>33 862</td>
</tr>
<tr>
<td>Share of alcohol related casualties</td>
<td>10.5 %</td>
<td>9.8 %</td>
<td>9.4 %</td>
<td>8.8 %</td>
<td>7.6 %</td>
<td>7.2 %</td>
<td>7.2 %</td>
<td>6.9 %</td>
<td>7.0 %</td>
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Table 3: Time series of fatalities in road accidents in total and alcohol related fatalities in the period from 1994 – 2002 in Germany

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<tbody>
<tr>
<td>Fatalities in road accidents</td>
<td>9 814</td>
<td>9 454</td>
<td>8 758</td>
<td>8 549</td>
<td>7 792</td>
<td>7 772</td>
<td>7 503</td>
<td>6 977</td>
<td>6 842</td>
</tr>
<tr>
<td>Alcohol related fatalities</td>
<td>1 828</td>
<td>1 716</td>
<td>1 472</td>
<td>1 447</td>
<td>1 114</td>
<td>1 114</td>
<td>1 022</td>
<td>909</td>
<td>932</td>
</tr>
<tr>
<td>Share of alcohol related fatalities</td>
<td>18.6 %</td>
<td>18.2 %</td>
<td>16.8 %</td>
<td>16.9 %</td>
<td>14.3 %</td>
<td>14.3 %</td>
<td>13.6 %</td>
<td>13.0 %</td>
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Most of the persons involved influenced by alcohol were car drivers (62 %). Only a minority of them were women (11.6 %) whereas compared with 1994 (8 %) the share of female impaired car drivers is continuously rising. The problem of alcohol-impaired driving clearly shows age- and sex-specific features. Most of the male drivers involved are aged between 21 and 25 whereas the share of female drink-drivers involved raises continuously till the age of 44.

The temporal distribution of alcohol related accidents shows the connection of alcohol impaired driving and leisure time. Nearly half (48 %) of alcohol impaired involved car drivers in 2002 had an accident at weekend (Saturday and Sunday), more than a quarter (26 %) in the nights of Friday and Saturday between 8 PM and 4 AM.
With regard to the frequency distribution of the BAC level of involved car drivers, it must be taken into account that driving with lower BAC-level occurs more often than with higher levels. On the other hand, the risk of an accident rises with the BAC-level. In combination of both factors the frequency distribution shows a peak between 0.14 and 0.17 % BAC. The mean BAC figure was - depending on the age - between 0.11 % (above 75 years) and 0.19 % (45-50 years).

Despite the mostly positive development of the alcohol related accident statistics the results of alcohol related accidents are more serious than the results of accidents in general. The severity of drink-drive accidents is - expressed as fatalities per 1 000 injury accidents – nearly twice as high as that of accidents in general (18.9). From 45.8 in 1994 this figure decreased to 36.8 in 2002.

**Discussion**

In the years after unification till 1993 in Germany (East) the road accident development in general and especially concerning alcohol related accidents worsened. But the figures from 1994 to 2002 show in general a stabilisation and improvement of the road accident development in Germany, especially with respect to related injuries and fatalities. But in 2002 the decrease of alcohol related accidents and casualties was lower than expected after the lowering of the BAC-limit to 0.5 %. Whereas the decline of alcohol related accidents and casualties continued on a very low level, the number of alcohol related fatalities in road traffic even rose by 2.5 %. While in the years before the decrease of alcohol related accidents was higher than of accidents in general, in 2002 the development turned. So in 2002 the share of alcohol related accidents as well as of injuries and fatalities increased slightly. At the current point of time one cannot assess if the figures in 2002 indicates a turn of the tide, or if the recent development is only a short term deviation from a positive trend in the long term like 1999, one year after the first introduction of the 0.05 %.

But the frequency distribution of the BAC level of involved car drivers influenced by alcohol indicates that the problem is not to be solved only by lowering the legal BAC-limit. From this point of view, it is not only the problem of ‘low-level-driver’, but also of driving alcoholics, especially within the age-group of 25 years and older.

**Outlook**

In view of the complicated structure of social control, a solution to the problem may be found by concentrating on primary prevention. Most drivers (up to 95 percent) remained below the legal BAC limit of 0.08 % [2] [3] and tend also to remain below the new legal BAC limit of 0.05 % as recent police records since 1998 demonstrate. A denser network of police controls would probably not increase the "yield" of undetected offenders much beyond the present level - according to surveys not higher than 2 percent [4].

However, the establishment of breath tests gives the possibility of a less costly and more efficiently policing of drink driving. In further years it has to be examined in which way a more efficient policing together with a more severe sanctioning of drink driving (fine and suspension of licence for at least one month upwards 0.05 % BAC) could contribute to reduce alcohol related accidents and so to improve traffic safety.

Present efforts in the Federal Republic of Germany towards a more systematic integration of driver improvement programs into the existing legal and administrative framework seem to provide a more promising route to traffic safety in the medium term than do demands for radical changes in sanctions [2] [5] [6] [7]. Driver improvement programs can already be
considered as making an important and unique contribution to road safety in the Federal
Republic of Germany, but they cannot be seen as a substitute for legal sanctions and
measures.

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