

DECLINE IN DRINKING AND DRIVING IN THE NETHERLANDS

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INTRODUCTION

Drinking and driving in the Netherlands has declined in recent years. This has been reported before (Mathijssen & Noordzij, 1993). The main sources of information have been a series of road side surveys (including breath testing) and accident statistics. In addition to this, information is available on factors that may have contributed to this decline. An explanation proved to be difficult due to the quality of the information and to the gradual or combined introduction of a number of countermeasures. In this paper a more detailed analysis of the available information will be given.

ROAD SIDE SURVEYS

Since 1970, SWOV has carried out a series of road side surveys. The design of these studies has been to draw a random sample of car drivers during weekend nights (Friday and Saturday, 22.00-04.00 o'clock). These drivers are interviewed and breath tested. The main result of each survey is a distribution of BAC's in two or more classes for all drivers and for subgroups based on age and sex (among others).

Figure 1 shows the results for BAC's over 0.2 and 0.5 % respectively. The legal limit, which was introduced in 1974, is 0.5% and caused a drastic short term effect, followed by a modest long term decrease in positive BAC's. For about ten years, the level of drinking and driving remained stable with ca. 24% of the weekend night drivers with a BAC over 0.2 % and ca. 12% over the legal limit. Unfortunately, there were no surveys between 1983 and 1987. In retrospect this period is interesting because it was the start of a decline in drinking and driving. It is impossible to decide from this information when the decline started exactly. The 1991 and 1992 surveys result in only 10% of the drivers with a BAC over 0.2 and 4% over 0.5 %.

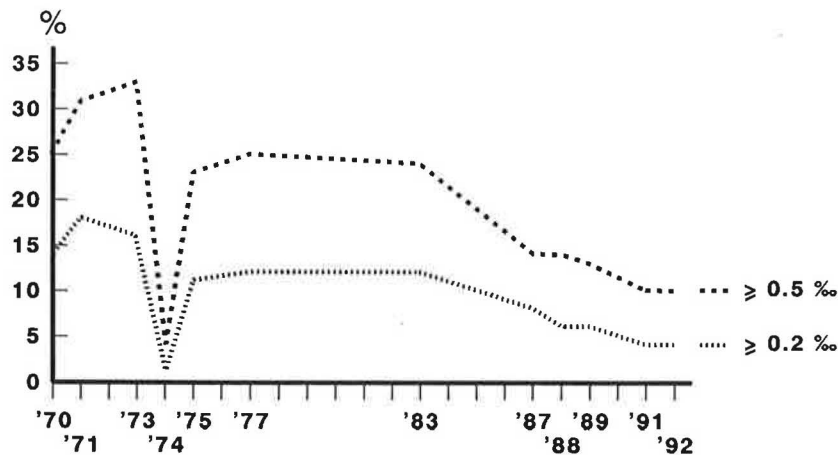


FIGURE 1 BAC of car drivers (weekend nights).

Interestingly this decline is found for positive BAC's both over and under the legal limit, for all age groups and for both sexes. There is a characteristic age pattern with the lowest percentage of positive BAC's for young drivers (15-24 years), the second lowest for old drivers (50+ years) and the highest for the middle ages. This pattern holds for 1983 as well as for 1992, but at a much lower level (see Table 1).

TABLE 1 BAC of car drivers by age (weekend nights)

	Age	% over 0.2 percent	% over 0.5 percent
1983	15-24	21	10
	25-49	27	14
	50+	19	12
	total	24	12
1992	15-24	7	3
	25-49	12	5
	50+	9	3.5
	total	10	4

Drinking and driving has always been much more of a problem for males than for females. But again, the level for both sexes is much lower in 1992 than it was in 1983 (see Table 2).

TABLE 2 BAC of car drivers by sex (weekend nights)

	Sex	% over 0.2 percent	% over 0.5 percent
1983	male	27	14
	female	15	8
	total	24	12
1992	male	11.5	4.5
	female	6	2
	total	10	4

ACCIDENT STATISTICS

Knowing the relation between drinking, driving and accident involvement, the decline in drinking and driving must also show in accident statistics. However, drinking is one of many factors contributing to accidents and the registration of drinking for drivers involved in crashes is far from complete. As a result there is no direct and simple way to determine the effect of a change in drinking and driving on crashes.

One way is to use a so called surrogate measure: car drivers involved in serious crashes at night as a percentage of all drivers (day and night) involved in such crashes. The idea behind this measure is that drinking is much more prominent during nights than days. If drinking and driving changes, this will cause a shift in the percentage of (drivers involved in) nighttime crashes. This idea holds if:

- Most of the drinking is done during nighttime and very little or none during daytime; and
- Other factors equally contribute to crashes during day and night.

Neither of these two points is very realistic. The absolute number of drivers involved in serious crashes during weekday nights gradually declines over the years. However, the daytime number declines at about the same rate. As a result the surrogate measure does not show a trend for weekdays (see Figure 2). For weekends the nighttime percentage is slightly over 30% till 1985, and slightly under 30% after 1985. This can be taken as a weak indication of a decline of alcohol involvement in serious crashes during weekend nights only.

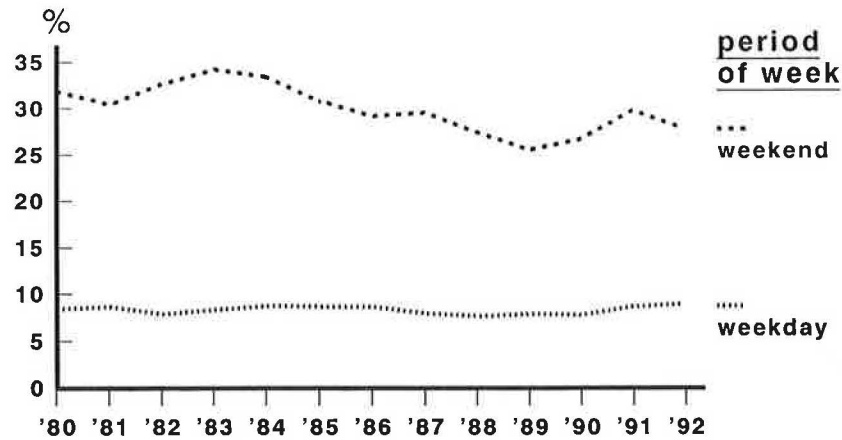


FIGURE 2 Percentage of car drivers in serious crashes at night.

Another way to determine the effect of a change in drinking and driving on crashes is to use alcohol consumption as reported by the police. Since there may be other factors contributing to all (alcohol involved and other) crashes, the measure has to be relative:

- Car drivers involved in serious crashes with alcohol, as a percentage of all drivers involved in such crashes.

In Figure 3 this percentage is given for four periods of the week. For weekend nights the percentage is between 35 and 40 in the early eighties and changes rather abruptly to between 25 and 30 since the middle eighties. For weekday nights the decline is from 30% to almost 20%. The daytime percentages are much lower, but at close inspection they show a similar decrease over the years. The decline in alcohol involvement as shown by this measure has to be taken as an indication rather than as proof. As mentioned before, the registration by the police of alcohol is far from complete and not necessarily stable over time.

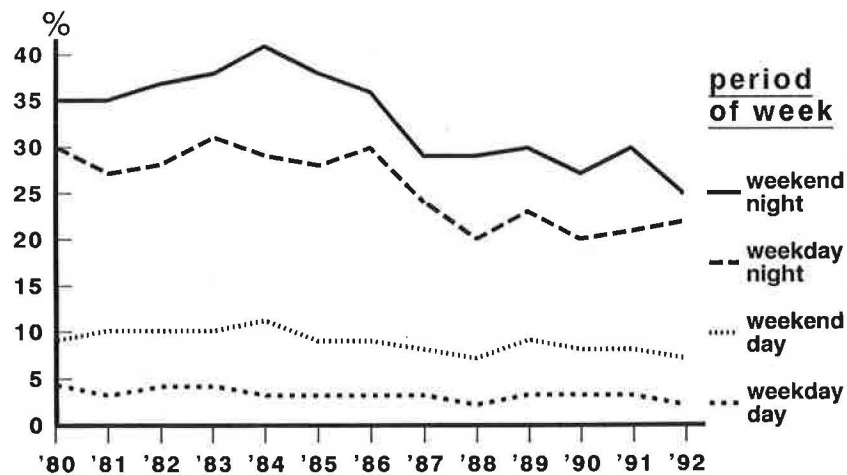


FIGURE 3 Percentage of car drivers in serious crashes with alcohol.

In Figures 4 and 5 this measure of alcohol involvement is presented for different age groups. During weekend nights the decline is much more pronounced for young drivers than for older age groups. For older drivers it is hard to decide if there was a decline at all.

The same information is also provided for pedal cyclists and pedestrians in Figures 6 and 7. There is no sign of a decrease in the percentage reported as drinking for these groups. A breakdown in age groups is not shown because of the low numbers per year.

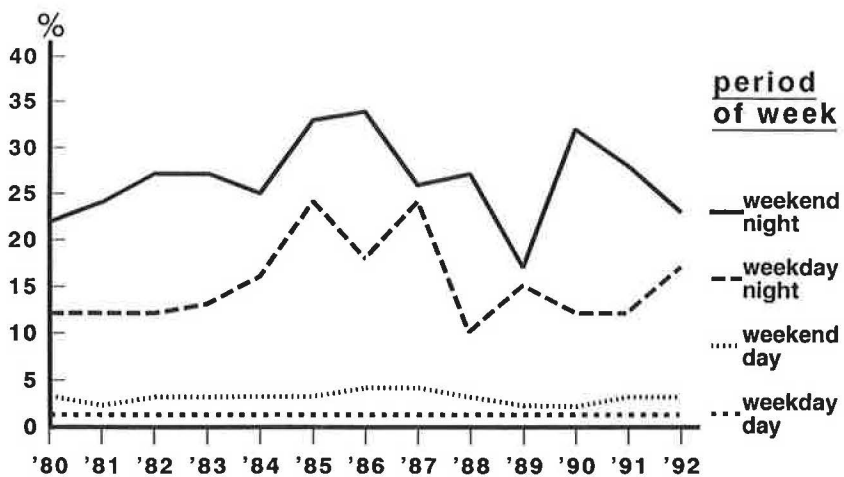


FIGURE 4 Percentage of cyclists in serious crashes with alcohol.

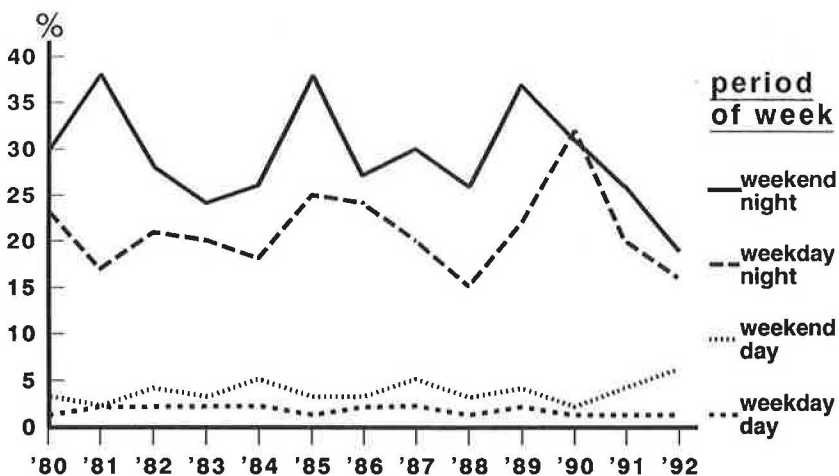


FIGURE 5 Percentage of pedestrians in serious crashes with alcohol.

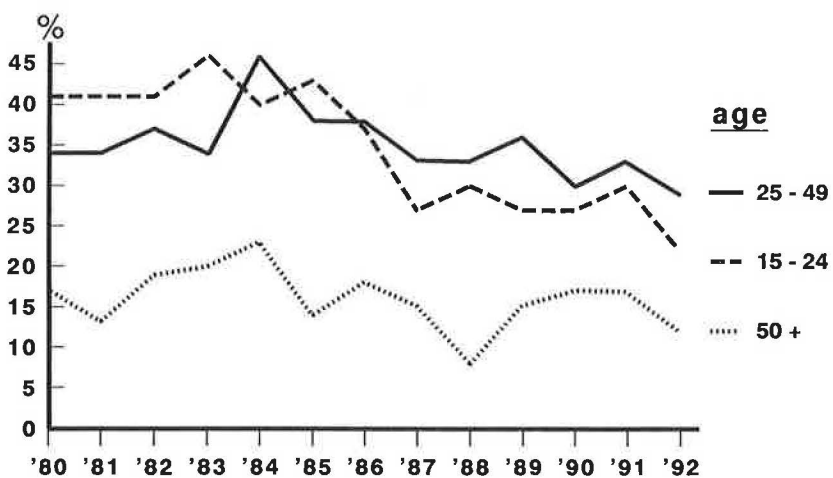


FIGURE 6 Percentage of car drivers in serious crashes with alcohol (weekend nights).

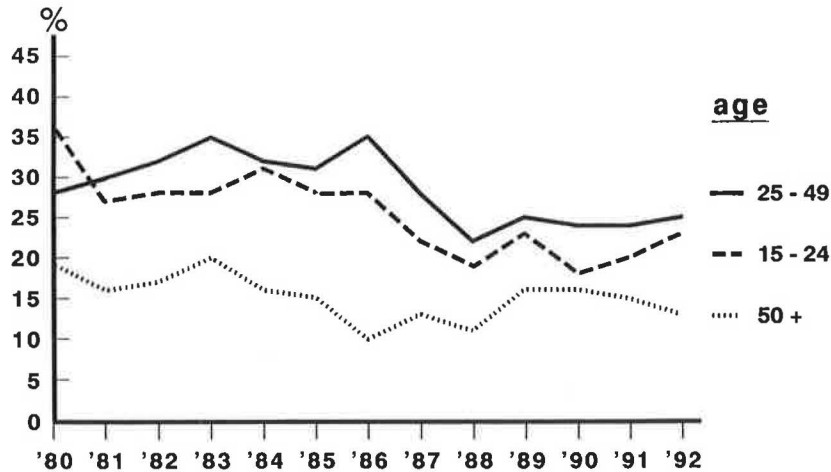


FIGURE 7 Percentage of car drivers in serious crashes with alcohol (weekday nights).

DISCUSSION

The decline in drinking and car driving started in the middle eighties. It has resulted in a decline in drinking (by car drivers involved in) serious crashes. Although the road side surveys are restricted to weekend nights, the accident statistics suggest a decline for all periods of the week. There is no sign of such a decline with pedal cyclists or pedestrians.

There are several points of confusion when comparing the results from different sources of information:

1. The road side surveys as shown in Figure 1 suggest a gradual decline, compared to an abrupt change in the percentage of car drivers in crashes with alcohol. It has to be remembered, however, that the exact time of at which the decline started cannot be determined from the road side surveys.
2. The surrogate measure (percentage of drivers in serious crashes at night) gives an indication of a decline for weekend nights only. The other measure (percentage of drivers in serious crashes with alcohol) shows a clear decline for weekends and weekdays. This difference may be explained by the lack of sensitivity of the surrogate measure.
3. According to the results of the road side surveys, the decline in drinking covers all age groups. However, the information from accident reports shows a more pronounced decline for drivers under 25 years during weekend nights. A likely explanation is given by the relation between age, drinking and risk of involvement in crashes. Drivers with a positive BAC have a higher crash risk than sober drivers. There is evidence that this relative risk is even higher for young drivers. This explains why the same change in drinking results in a greater change in crash involvement for young drivers.

With this more detailed analysis of the available information it is still difficult to explain what caused the decline in drinking and driving. The factors that may have contributed could be specific for drinking and driving or relate to drinking in general. Drinking in general has changed in the past, with a continuous rise until 1975. Since then, it levelled off. Figure 8 is based on sales figures. Population surveys suggest a decrease in the percentage of drinkers (in particular among women) and a decrease in the amount of alcohol for drinkers (in particular for men). The first of these surveys was held in 1986, to measure the effects of a series of intensive, nationwide campaigns against excessive drinking (WVC, 1992). This is not enough evidence to conclude that drinking in general started to change in 1986, let alone that this caused the decline in drinking and driving. At best, the change in drinking in general has been a favourable background for factors that are more specific for drinking and driving. Another reason to look for more specific factors is that drinking and driving declined for car drivers, but not for pedal cyclists and pedestrians.

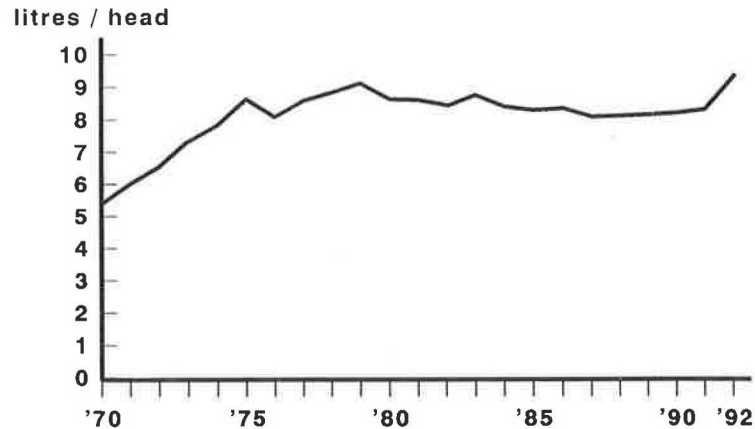


FIGURE 8 Alcohol consumption.

Publicity campaigns and police enforcement have been specific for drinking and driving. These publicity campaigns became more aggressive in 1984 and may have contributed to the decline in drinking and driving. However, the abrupt change in drivers in serious crashes with alcohol was some years later. Some improvements in police enforcement coincide more closely with the decline in drinking and driving. The most important improvements were:

- Gradual introduction of electronic screening equipment (to replace chemical test tubes) after 1984;
- Replacement of blood test by evidential breath test after 1987;
- Gradual transition from selective to random breath testing since 1985; and
- Change in enforcement strategy from large static teams to smaller, mobile ones since 1986.

Taking all the evidence together, it is likely that the decline in drinking and driving was caused by a combination of factors. In order of priority these are:

- Police enforcement;
- Publicity campaigns against drinking and driving;
- Publicity campaigns against drinking in general;
- Other factors, specific or general.

REFERENCES

Mathijssen, R. & Noordzij, P.C. (1993). The decline of DWI and of alcohol related accidents in the Netherlands, 1983-1991. In: Alcohol, drugs and traffic safety - T92. Verlag TÜV Rheinland, Cologne.

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