RECENT TRENDS IN COUNTER-MEASURES AND RESEARCH CONCERNING DRINKING AND DRIVING IN THE NETHERLANDS

Contribution to the 8th International Concerence on Alcohol, drugs and traffic safety, Stockholm, June 15-19, 1980
Section 1 - The epidemiology of alcohol and drugs as related to traffic
Plenary Session

R-80-34
P.C. Noordzij
Voorburg, 1980
Institute for Road Safety Research, The Netherlands

INTRODUCTION

Since November 1974 a new legislation on drinking and driving has been in force in The Netherlands. This legislation includes a statutory BAC limit of 0.5 o/oo, the possibility of screening with breath test tubes, and measurement of the BAC by a blood test.
In 1977, in Melbourne, I discussed the short-term effects of this legislation, based on the results of a series of roadside surveys into drinking and driving habits and accident figures (Noordzij, 1979).
Now there are data at disposal concerning the later years, so that long-term effects can be analysed as well.

ROADSIDE SURVEYS INTO DRINKING AND DRIVING HABITS

Details of design of the study have been published earlier (SWOV, 1977A and B). At present I only give an outline of the most important features of our roadside surveys into drinking and driving habits:
- a national sample of sites;
- random sample of motorists;
- on Friday, Saturday and Sunday nights;
- from 10.00 pm to 4.00 am;
- at ten weekends in autumn;
- covering 2 000 - 3 000 test subjects annually;
- the BAC thereof having been determined by blood test or breath analysis.

The most important result for each survey is a distribution of BAC-values, which is valid for all Dutch motorists during weekend nights in autumn.
The results are illustrated in Figure 1, with the years plotted horizontally. Each column represents the result of one survey. The BAC is divided into four categories, three of them positive.
The trend of development over the years is about the same, whether you take into consideration the total measurable alcohol consumption (upper broken line) or only the most serious one (lowest broken line). The conclusion, in any case, is, that till the end of 1977, three years after the change in the law, there was still an effect.

The actual developments undoubtedly followed a more uniform course than that shown in this figure. I tried to give a clear picture by combining the results of our surveys with those obtained by surveys of other researchers. In the spring of 1974 and 1975 surveys have been carried out the results of which could be made sufficiently comparable by limiting them to Friday and Saturday night, from 10.00 pm to 2.00 am and by applying only two positive BAC categories (Steenhuis a.o., 1979). The combined results are shown in Figure 2. The solid curves were plotted by sight and suggest the possible actual trend of alcohol consumption. The broken curves suggest the trend if there had been no effect of the new legislation.

The graphs show, that directly after the change in the law the motorists were practically free from alcohol. Thereafter, within a period of six to twelve months, alcohol consumption increased rather steeply to a level, which was still well below the level prior to the change in the law, again followed by a, this time more gradual, increase.

ACCIDENT FIGURES

In The Netherlands there is no satisfactory registration of alcohol consumption in relationship with traffic accidents. For this reason, a surrogate measure had to be found, in order to be able to assess the share of alcohol in traffic accidents.
For this purpose fatal accidents, involving at least one moving passenger car, were classified according to night (from 22.00 to 04.00 hours) and other hours, furthermore according to workdays and weekends (weekendnight: Friday, Saturday and Sunday nights). In addition, classifications were made according to the place of the accident (within or outside built-up areas) and according to single and multi-vehicle accidents. With the aid of a programme for the analysis of contingency tables the changes in time have been tested for statistical significance (Oppe, 1979). This analysis proved that the number of accidents by night considerably decreased since the change in the law, in contrast to the number of accidents occurring in daytime. These temporal alterations are presented in a suggestive way in Figure 3, showing indexed accident figures (1974 = 100). The figures for daytime accidents decreased in 1974, due to energy problems, while the figures for accidents by night decreased in 1975. There can hardly be any doubt that this is the result of the change in the law. This result was obtained in a slightly more emphasised form with regard to accidents within built-up areas, during the weekend.

EXPLANATION

The conclusion from these two studies was, that the change in the law reduced the consumption of alcohol and the number of alcohol-related accidents during a period of at least three or four years after changing the law. To be quite honest, there is no convincing argument which might support a particular explanation. There are, however, data pointing in the same direction. An analysis of the results of the roadside surveys pointed to a more considerable reduction of alcohol consumption during the late hours of Saturday and Sunday night. This suggests that the change is in connection with the anticipation of the motorists about the time of possible police enforcement.

In the framework of roadside surveys into driving and drinking habits carried out in the spring of 1974 and 1975, questions were asked from test subjects, which may help to find an explanation. One of the questions was: what do you mean by driving under influence?
From the replies it was evident that, after the change in the law, the motorists referred more often to the amount of alcohol and less frequently to characteristics of behaviour. As a reason for abstaining from alcohol quite often the consequences of being stopped by the police were mentioned. Also the penalties for driving under influence were in general estimated as more severe. Mainly this last finding is quite remarkable, because the change in the law did not involve any alteration of the degree of penalty.
An explanation in this respect may be found in the content of publicity. The publicity campaign accompanying the change in the law contained three elements:
1. the possibility of penalising a motorist even in case of moderate alcohol consumption; furthermore,
2. novel means of the police to determine the degree of alcohol consumption, and
3. the maximum penalty.
However, I will not exclude the possiblity, that the extent of the entire publicity campaign was more decisive than the contents thereof. This may have given the impression that the authorities wanted to put

up a really tough fight against the consumption of alcohol by motorists. For many of us this means automatically more severe penalties.
Thus, the effect of the change in the law can be explained by the anticipation of an increase in risk of punishment for driving after drinking. The increased risk of punishment is a consequence of a greater chance of being caught and also of getting a more severe punishment.

Sofar the explanation refers to the sharp drop in drinking after the introduction of the new legislation.
An explanation for the recovery in the next couple of years is even more tentative. A major factor, however, seems to be the actual risk of punishment which proved to be low, probably much lower than anticipated.
The truth of this statement is supported by the difference in the results obtained by roadside surveys into driving and drinking habits and special random police tests, which are to some extent comparable as regards time, place and the random choice of motorists. Roadside surveys into driving and drinking habits yielded percentages for motorists with an excessive BAC (> 0.5 o/oo), which were three times higher than those obtained in random police tests. The most important difference can be found in the methods applied to measuring the BAC. In the roadside surveys into driving and drinking habits, the BAC of all motorists is accurately determined, without any screening. The police applies a screening procedure consisting of three stages: the blood test, as a rule, is preceded at the police station by a breath test with a 0.8 o/oo breath tube, giving a positive result. This test has been preceded on the road by a positive result obtained with a 0.5 o/oo breath tube. The first breath test is carried out in case a motorist is suspected of alcohol consumption. Such procedure of screening involves a very small risk of false positive results, which may subject the motorist unnecessarily to a blood test. On the other hand this may very likely result in a false negative result, permitting the release of motorists with too high a BAC.
The result is that the impact of random police tests, based on the number of prosecutions, seems to be unsatisfactory. In addition, the

motorists may get the idea, that the chance of being caught, is not very high. A reduction of the chance of getting false negative results can thus lead to an increase in the perceived chance of getting caught, and this may help to increase or rather restore the effects of the legislation.

DISCUSSION

Based on such considerations it seems necessary to apply high accuracy devices also in the screening procedure.
A suggestion for such a screening procedure is that roadside screening tests should be very accurate and eliminating any selection based on subjective judgement. At the same time, and this is in contrast with present practice, this test should be calibrated to select with a small chance of false negatives even if this would result in a fair number of false positives. At the police station a second breath test should be made with a very accurate testing device. This second test should be calibrated to give a small chance of false positives. The false positive cases resulting from the roadside screening will have the incovenience of being taken to the police station for a second breath test. In the present situation a false positive result of a roadside screening involves being taken to the police station for a blood test, the result of which is available after about two weeks. During this period the person is still under suspicion. The second breath test at the police station might eventually replace the blood test.
However, this is a subject which I cannot discuss for lack of time.

The suggested screening procedure indicates how the chance of catching motorists with a BAC above the statutory 0.5 o/oo could be increased. However, should such possibilities present themselves in practice, one cannot be sure that they will be fully utilised.
One reason for this is the double objective of the change in the law: on the one hand, to provide simple evidence to replace behavioural observations and on the other one, the extension of the punishable alcohol consumption to include BAC values just slightly above 0.5 o/oo (with no visible symptoms of intoxication). It is not by any means sure, that the police will agree to this second objective. Alcohol consumption leading to a BAC > 0.5 o/oo is equivalent to drinking two, three of four drinks which is a kind of behaviour which quite a lot of people display, even if they have to drive. Formally, such behaviour, which increases to some extent the chance of being

involved in an accident, is identified as the same criminal offence as showing driving behaviour which is obviously dangerous because of drunkenness.

Another reason for doubting the usefulness of increasing the chance of catching drunken drivers is, that this could lead to a greater number of detected suspects, thereby overburdening the police, legal authorities and the penal system. However, solutions to these problems are available. Two of these solutions already exist, one of them being the imposition of a driving ban in doubtful cases. The second one is given by guidelines to be followed by the public prosecutor in prosecuting motorists driving under influence. According to these guidelines the severity of punishment has to increase in proportion to the BAC level. However, there is no guarantee that the actual sentence as imposed by the judge is in accordance with these guidelines. A third possibility has recently been opened, i.e. the possibility of paying a penalty to prevent prosecution, in case of a not very high BAC.

These solutions should save time and, at the same time, make the second objective of the new legislation more acceptable.

SUMMARY

- The introduction of a statutory BAC level of 0.5 o/oo has a clear effect on fatal accidents occurring by night, involving moving passenger cars. The effect is still evident, even three to four years after the change in the law.
- This effect results from a reduced alcohol consumption by motorists, which in turn, is the result of an increased risk of punishment, which the motorists have to face in case of driving after drinking.
- The content and intensity of publicity contributed considerably to these effects.
- The change in the law is based on two objectives: on the one hand, to provide simple evidence instead of behavioural observations and on the other one, to open the possibility of catching motorists with a BAC slightly higher than 0.5 o/oo. It is not quite sure, whether the second objective is endorsed by all authorities concerned. The situation may improve if penal action is specially adapted to this group.
- Measures aimed at increasing the chance of catching drivers with a BAC > 0.5 o/oo are likely to be effective. The use of breath testing devices, instead of breath tubes, could contribute to the reduction of the number of false negative results and thus increase the chance of detection.
- A screening instrument for roadside use must be very accurate, or screening should be succeeded by accurate measuring with a breath analyser at the police station.

LITERATURE

- Noordzij, P.C. (1979). The introduction of a statutory BAC limit of 50 mg/100 ml and its effect on drinking and driving habits and traffic accidents. In: Johnston, I.R. (ed.). Proceedings Seventh International Conference on Alcohol, drugs and traffic safety, Melbourne, 23-28 January 1977, pp. 454-470. Australian Government Publishing Service, Canberra, 1979.
- Oppe, S. (1979). The use of multiplicative models for analysis of road safety data. Accid. Anal. & Prev. 11 (1979) 2 (June): 101-115.
- Steenhuis, D.W., Van Ooyen, D. & Noordzij, P.C. (1979). Alcomobilisme; Effect van een nieuwe wetgeving op alcoholgebruik bij verkeersdeelname. Gouda Quint BV, Arnhem, 1979.
- SWOV (Noordzij, P.C., Vis, A.A. & Mulder, J.A.G.) (1977A). Drinking by motorists; Report and results of roadside surveys into drinking and driving of Dutch motorists during weekend nights in Autumn 1970, 1971, 1973, 1974 and 1975. Publication 1977-2E. Institute for Road Safety Research SWOV, Voorburg, 1977.
- SWOV (1977B). Appendices 1-9 to Drinking by motorists (see SWOV, 1977A). R-77-44. Institute for Road Safety Research SWOV, Voorburg, 1977.

FIGURES

Figure 1. Distribution of BAC classes of Dutch motorists on Friday, Saturday and Sunday night 22.00-4.00 h.

Figure 2. Distribution of BAC classes of Dutch motorists on Friday and Saturday nights 22.00-2.00 h.

Figure 3. Indexed annual figures of fatal accidents, involving at least one moving passenger car.

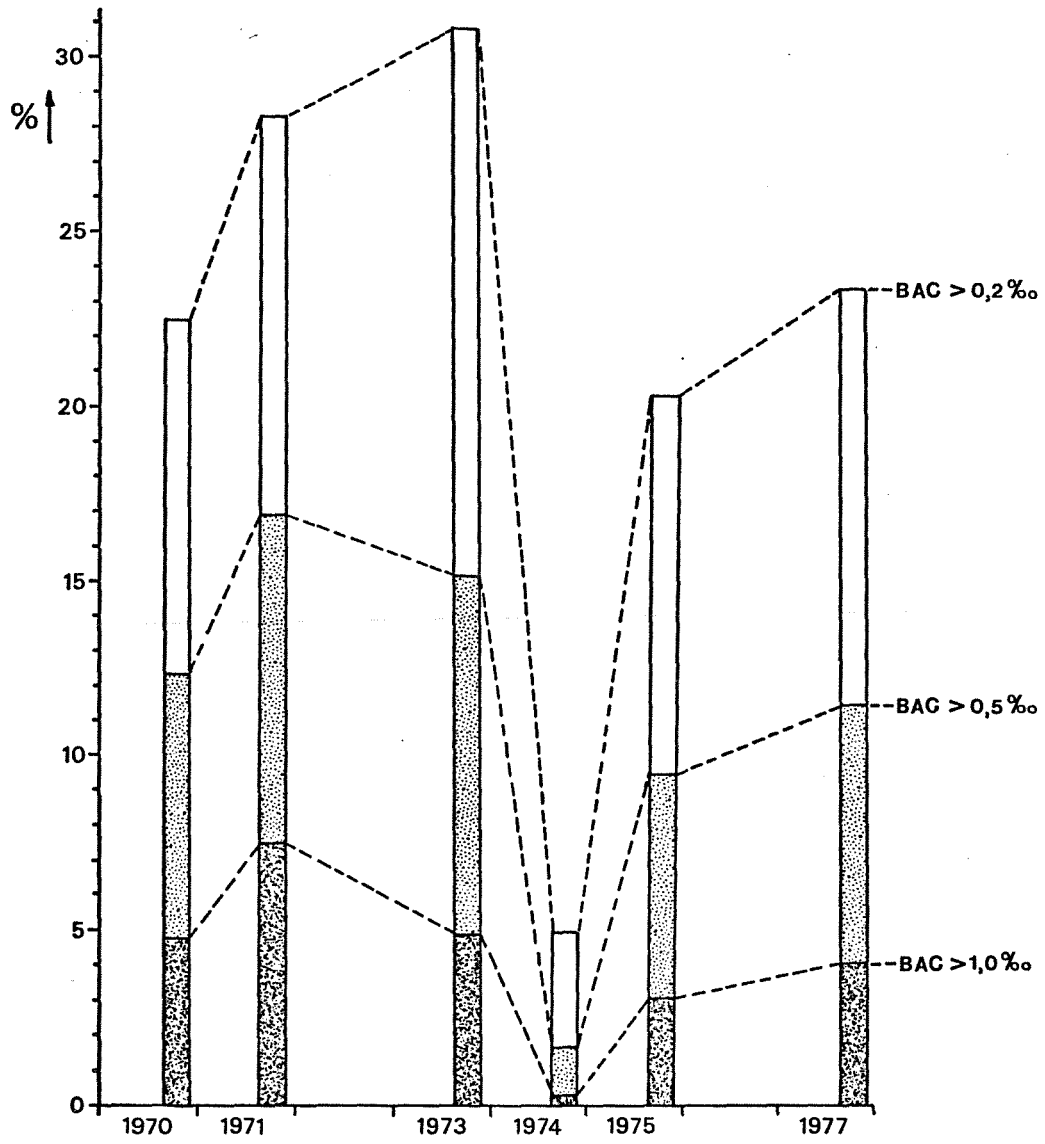

Figure 1. Distribution of BAC classes of Dutch motorists on Friday, Saturday and Sunday night 22.00-4.00 h.

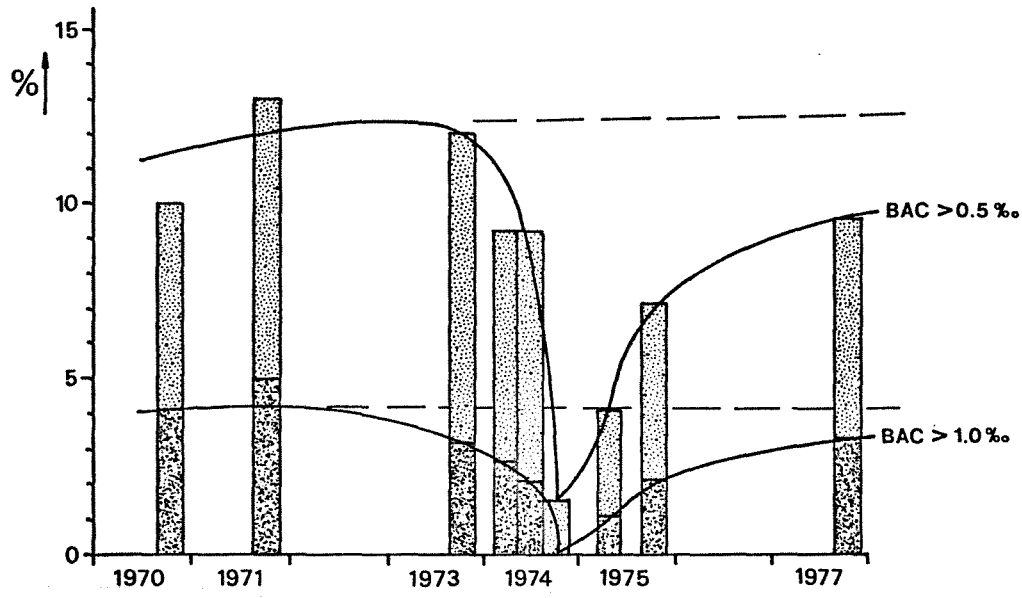

Figure 2. Distribution of BAC classes of Dutch motorists on Friday and Saturday nights 22.00-2.00 h.

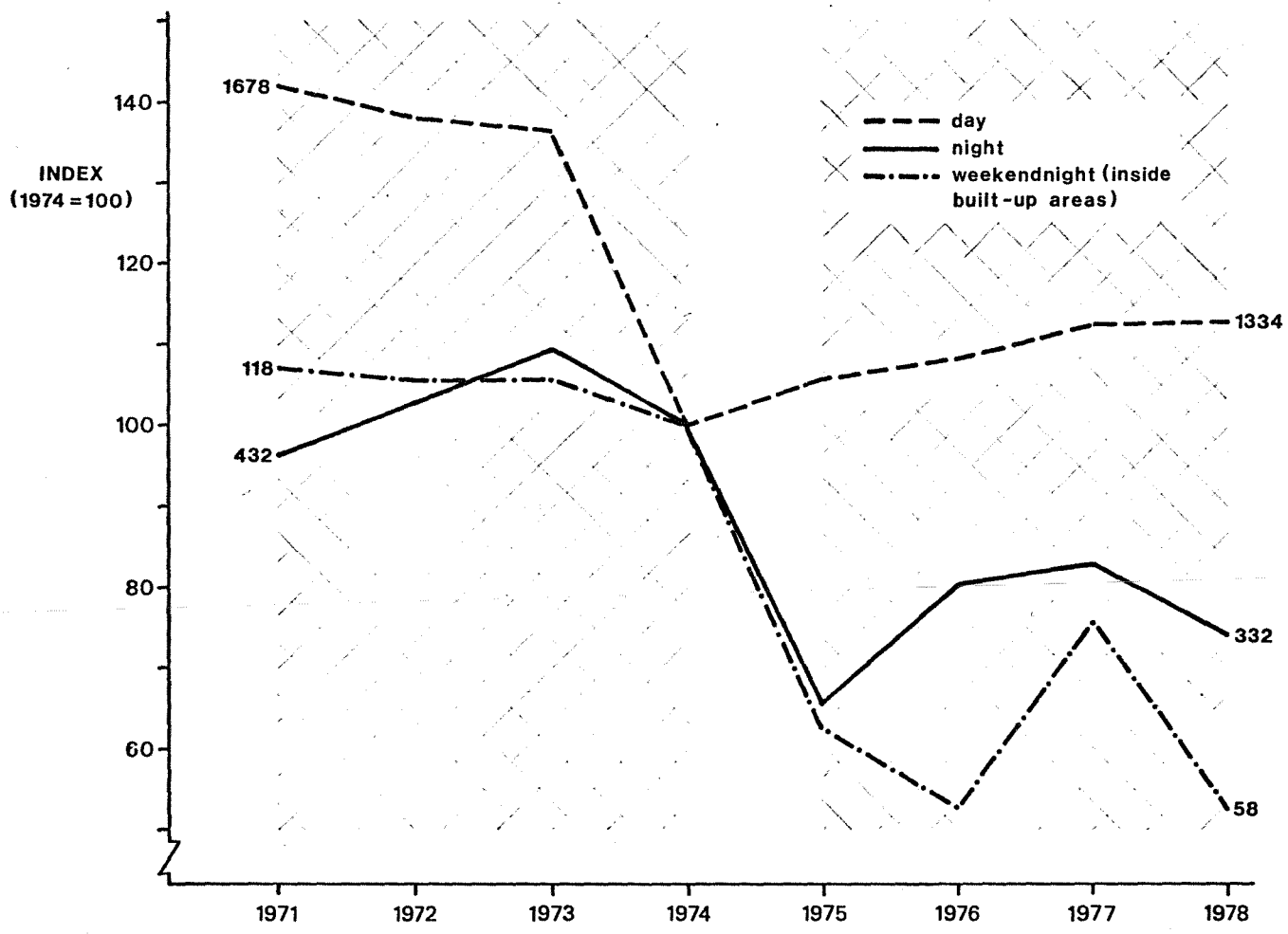

Figure 3. Indexed annual figures of fatal accidents, involving at least one moving passenger car.