A CROSSNATIONAL COMPARISON OF DRIVERS' KNOWLEDGE, BELIEVES AND BEHAVIOR RELATED TO DRINKING AND DRIVING.

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Summary. In the present paper a comparison is made between the responses to a questionnaire on factors that may be related to drinking and driving. The questionnaire was distributed to random samples of Danish, Finnish, Norwegian and Swedish drivers. The results indicated a higher incidence of DUI in Denmark and Finland than in Norway and Sweden. Different views on the combination of drinking with driving, on the severity of penalties, on the risk of accidents and differences due to drinking habits, are suggested as possible explanations of the different incidence of DUI.

INTRODUCTION

Although the Nordic countries generally are considered very similar with regard to drinking and driving, there are differences between the countries that might be of importance for decisions to drive after drinking. In Denmark the legal BAC limit is higher, the sale of alcoholic beverages less restricted and the consumption of alcohol higher than in the other Nordic countries. The sanctions against DUI are more severe in Norway and less severe in Denmark than in Finland and Sweden. A strict persee law has existed for more years in Norway and Sweden than in Denmark and Finland. These factors may be related to the extent of DUI through the impact they have on the drivers. The aim of this cross-national study was to discover possible differences between the drivers in Denmark, Finland, Norway and Sweden in their view on drinking and driving.

METHOD

The Nordic countries cooperated in developing a questionnaire comprising questions about drinking habits, previous DUI, the risk of apprehension, the sanctions against DUI, the relation between alcohol consumption and BAC, alcohol consumption before driving, driving to places where alcoholic drinks are served and the conflict between drinking or driving in these situations.

In each country the questionnaires were distributed to a random sample of drivers, in Denmark to 3536 drivers stopped at rural roads, in Norway by mail to 4000 licence holders, in Finland delivered to 400 licence holders and in Sweden by mail to 4000 car owners. The number who responded was in Denmark 1472, in Finland 301, in Norway 2202 and in Sweden 2520.

The samples were drawn from different populations (drivers on the road, licence holders and car owners). As a result there were differences in the age and sex distributions. Since both age and sex are factors assumed to be related to views on drinking and driving, the responses were weighted to adjust for these differences and to make a comparison between the countries possible.

RESULTS

The drivers were asked to report instances of DUI during the last 3 years. The results showed more DUI in Denmark and Finland than in Norway and Sweden. In
of DUI, while the corresponding percentages for Norway and Sweden were 10.8% and 7.7%.

The drivers were asked how often they consume alcoholic drinks, and how often they feel slightly or heavily intoxicated. Table 1 shows the percentage of subjects that reported that they consume alcoholic drinks at least once a week, feel slightly intoxicated at least once a week and feel heavily intoxicated at least once a week.

Danish drivers report more occasions of drinking than drivers in the other countries. This is in agreement with a study (Armyr, Elmer and Herz, 1982) which showed a high alcohol consumption in Denmark compared to the other Nordic countries. The frequency of slight intoxication in Denmark is about the same as in Norway, but significantly lower than in Finland and significantly higher than in Sweden. The frequency of heavy intoxication is significantly higher in Finland and Norway than in Denmark and Sweden. This agree with a study by Makela (1981) which showed that heavy drinking is more common in Finland and Norway than in Sweden.

Most drivers will feel slightly intoxicated when they have a BAC above the legal limit. This is especially true for drivers in Denmark with a legal limit of 0.08%. Hence the results suggest that despite the high frequency of drinking, the Danish drivers do not have a BAC above the legal limit more often than drivers in Finland and Norway, the opposite is in fact more likely.

To investigate the views on the risk of apprehension and penalties for against DUI the drivers were asked the number of times they had been stopped and checked by the police during the last 3 years, how many times they believed they would be stopped and checked by the police during the next 3 years and how severe they felt the punishment for DUI was. The severity of the punishment was measured on a scale ranging from 0 (insignificant) to 4 (extremely severe). Table 2 presents the average frequencies of previous and expected police checks and the perceived severity of the punishment.

As previously found (berg, Engdal and Nilsson, 1986), the drivers report a higher frequency of future police checks than they have experienced in the past. This is possibly due to a reluctance to report zero or a low number of expected police checks.

Table 2 shows that the Finnish drivers have been and expect to be stopped and checked by the police more often than drivers in the other countries. They find on the other hand the penalties for DUI to be less severe than drivers in Denmark and especially than drivers in Norway and Sweden do.

The drivers were asked to estimate the increase of the accident risk for a driver with a BAC just above the legal limit relative to the accident risk for the same driver when sober. (Unfortunately this question was not included in the Finnish questionnaire.) The reported increase was on the average in Denmark 3.9 times, in Norway 5.6 times and in Sweden 7.6 times. Despite a higher legal limit in Denmark (0.08%) than in the other countries (0.05%) the Danish drivers believed the increase to be less than drivers in Norway and Sweden did.

The drivers were asked to estimate how many bottles (0.33 cl) of beer a man had
to drink within one hour to attain a BAC exceeding the legal limit. Most drivers underestimated the amount they had to drink. However, the drivers who overestimated the amount and therefore run the risk of drinking to much, are of special interest. The percentage of subjects that overestimated the number of bottles was about the same in Finland, Norway and Sweden (11.2 %, 8.3 % and 8.0 % respectively) but significantly lower in Denmark (2.0 %).

Each drivers' estimate of the number of bottles necessary to drink in order to exceed the legal limit, minus one bottle, gives roughly the number of bottles that the driver believes he/she can drink and still have a BAC below the legal limit. The drivers were classified according to the number of bottles they believed they could drink and for each group the average number of bottles the drivers reported to allow themselves to drink before driving was calculated. In figure 1 a comparison is made between statements of how much the drivers believe they can drink and of how much they allow themselves to drink.

The figure shows a marked difference between Denmark and the other countries. The drivers in Finland, Norway and Sweden allow themselves to drink nearly nothing before driving, irrespective of what they believe they can drink without exceeding the legal limit. For the Danish drivers there is a positive relation between what they believe they can drink and what they allow themselves to drink. Apparently most drivers in Finland, Norway and Sweden are not willing to combine drinking and driving at all and are in fact adapting to a BAC limit close to zero. The Danish drivers on the other hand accept drinking before driving and seem to adjust their drinking to what they believe they can drink without exceeding the legal limit.

The overestimation among drivers in Finland, Norway and Sweden of the amount of alcohol consumption necessary to attain a BAC exceeding the legal limit, will probably have little effect on the extent of DUI, since most of these drivers allow themselves to drink very little before driving.

Concerning drivers' exposure to situations involving both alcohol consumption and driving, the drivers were asked to reported how often during the last year they had brought the car to places where they knew that alcoholic drinks were to be served. On a scale from 0 (never) to 5 (always) the average points for Denmark were 3.2, for Finland 1.6, for Norway 1.5 and for Sweden 1.6. Obviously the Danish drivers take the car more frequently to places where they may consume alcohol and therefore probably more often experience a conflict between drinking and driving than drivers in the other countries.

The drivers who had brought their car to places where alcoholic drinks were served, were asked how they solved the conflict between drinking and driving in these situations. The responses showed a marked difference between Denmark and the other countries. The most common solution among drivers in Finland, Norway and Sweden was to refrain from drinking alcoholic beverages and in that way avoid conflicts between driving or not driving, while the most common solution among Danish drivers was to drink a limited amount and then drive. Other solutions equally frequent in all countries were to let a sober person drive, to leave the car behind or to stay overnight.
DISCUSSION

The results of the present study show that DUI is more common in Denmark and Finland than in Norway and Sweden. Otherwise the results for Denmark and Finland are fairly different. This suggests different explanations of the relatively high frequency of DUI in Denmark and Finland.

One possible explanation for the high incidence of DUI in Denmark is the drivers' readiness to combine drinking and driving. They often drive to places where alcoholic drinks are served, have some drinks and drive. The drinking habits of the Danish drivers seem to result in BACs above the legal limit less frequently than the drinking habits among Finish and Norwegian drivers. However, their willingness to combine drinking and driving makes them more prone to drive when they have a too high BAC than drivers from the other countries in the same situation. One possible reason for this is the fact that Danish drivers find the penalties for DUI more lenient than Norwegian and Swedish drivers although not as lenient as Finish drivers.

According to the results there are two possible reasons for the high incidence of DUI in Finland. First, there is a high frequency of slight and heavy intoxication which means that the Finnish drivers relatively often have a BAC above the legal limit. Second, the Finnish drivers perceive sanctions for DUI as quite lenient. The risk of apprehension is higher in Finland than in any of the other countries. However, other results suggest that the perceived severity of penalties has a greater impact on the behavior than the risk of apprehension (see Berg, Glad, Bernhoft and Maki in the present proceedings).

Norwegian and the Swedish drivers appear to be very unwilling to combine drinking and driving and they expect serious negative consequences of drinking and driving, i.e. severe penalties and high accident risk. This may at least to some extent explain the low incidence of DUI in these countries. Besides, the alcohol consumption among Swedish drivers in general seem to be low and they apparently seldom attain a BAC above the legal limit.

ACKNOWLEDGEMENT: The development of the questionnaire and the preparation of this paper was financed by the Nordic Council of Ministers.

REFERENCES


Figure 1  The average number of bottles (0.33 cl) of beer the drivers allow themselves to drink before driving (ordinate) for drivers who believe they can drink either 0, 1, 2, 3, or 4 or more bottles of beer before exceeding the legal BAC limit (abscissa)
Table 1  Percentage of drivers who report to be drinking at least once a week, to feel slightly intoxicated at least once a week or to feel heavily intoxicated at least once a week.

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<th>Denmark</th>
<th>Finland</th>
<th>Norway</th>
<th>Sweden</th>
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<tr>
<td>Drinking</td>
<td>72.9 %</td>
<td>50.2 %</td>
<td>47.7 %</td>
<td>43.0 %</td>
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<td>Slightly intoxicated</td>
<td>14.1 %</td>
<td>24.8 %</td>
<td>16.3 %</td>
<td>10.5 %</td>
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<td>Heavily intoxicated</td>
<td>2.3 %</td>
<td>7.6 %</td>
<td>4.6 %</td>
<td>1.1 %</td>
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Table 2  The average frequency of experienced police checks during the last 3 years and of expected police checks during the next 3 years. The average perceived severity of the sanctions for DUI (0 = insignificant, 4 = extremely severe).

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<th>Denmark</th>
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<tr>
<td>Police checks</td>
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<tr>
<td>during last 3 years</td>
<td>0.7</td>
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<td>Police checks</td>
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<tr>
<td>during next 3 years</td>
<td>2.3</td>
<td>3.8</td>
<td>2.6</td>
<td>2.2</td>
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<tr>
<td>Severity of sanctions</td>
<td>3.0</td>
<td>2.3</td>
<td>3.7</td>
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