

Pia Mäkelä

## DRINKING HABITS IN THE NORDIC COUNTRIES

Kirsten Fonager, Björn Hibell, Sturla Nordlund,  
Svend Sabroe and Jussi Simpura

# **DRINKING HABITS IN THE NORDIC COUNTRIES**

**Pia Mäkelä**

**Kirsten Fonager**

**Björn Hibell**

**Sturla Nordlund**

**Svend Sabroe**

**Jussi Simpura**

**Statens institutt for alkohol- og narkotikaforskning**

**National Institute for Alcohol and Drug Research**

**Oslo 1999**

**ISBN 82-7171-219-5**

# CONTENTS

|                                                                                                 |    |
|-------------------------------------------------------------------------------------------------|----|
| 1 INTRODUCTION .....                                                                            | 1  |
| 1.1 Background for the project .....                                                            | 1  |
| 1.2 Designing the survey .....                                                                  | 2  |
| 1.3 Aims and scope of this report .....                                                         | 5  |
| 2 DATA AND METHODS .....                                                                        | 7  |
| 2.1 Data .....                                                                                  | 7  |
| 2.2 Construction of indices of alcohol consumption .....                                        | 10 |
| Drinkers and nondrinkers                                                                        | 10 |
| Mean alcohol consumption – the quantity frequency (QF)<br>measure                               | 10 |
| Mean alcohol consumption – the 7-day measure                                                    | 11 |
| Sex specific mean consumption level based on combining<br>data from statistics and surveys      | 12 |
| Intoxication                                                                                    | 12 |
| Index of negative consequences of drinking and of<br>nuisance caused by other people's drinking | 13 |
| 2.3 Further details of the analyses .....                                                       | 14 |
| 3 DRINKING HABITS .....                                                                         | 16 |
| 3.1 Nondrinkers .....                                                                           | 16 |
| 3.2 Mean consumption level in the samples and in official<br>statistics .....                   | 17 |
| Mean consumption by age and sex                                                                 | 21 |

|                                                                                                                       |    |
|-----------------------------------------------------------------------------------------------------------------------|----|
| 3.3 Beverage specific consumption in the samples and in<br>official statistics .....                                  | 24 |
| 3.4 Heavy drinking and the shape of consumption<br>distribution .....                                                 | 27 |
| 3.5 Consumption frequency .....                                                                                       | 32 |
| 3.6 Quantity of drinking and intoxication .....                                                                       | 36 |
| Intoxication and age 41                                                                                               |    |
| Subjective intoxication frequency as a function of average<br>consumption, age, sex and country 42                    |    |
| Frequency of consuming 6 or more drinks at a sitting as a<br>function of average consumption, age, sex and country 49 |    |
| 3.7 Beverage choice at Sunday meals .....                                                                             | 55 |

#### 4 NEGATIVE CONSEQUENCES OF OWN AND OTHER

|                                                                                                            |    |
|------------------------------------------------------------------------------------------------------------|----|
| PEOPLE'S DRINKING .....                                                                                    | 57 |
| 4.1 Negative consequences of own drinking .....                                                            | 57 |
| 4.2 Negative consequences of own drinking as a function of<br>average consumption and by age and sex ..... | 60 |
| 4.3 Nuisance caused by other people's drinking .....                                                       | 65 |
| 4.4 Nuisance caused by other people's drinking as a function<br>of own drinking and by age and sex .....   | 68 |

#### 5 ATTITUDES .....

#### 6 DRUG USE .....

#### 7 SUMMARY AND CONCLUSIONS .....

Summary of main results 81

Conclusions 85

ACKNOWLEDGMENTS ..... 89

REFERENCES ..... 90

APPENDICES ..... 93

Appendix 1. The “prototype” version of the common  
Nordic questionnaire, translated into English. .... 93

Appendix 2. Weights used in the study, the distribution of  
the populations used in constructing the weights, and the  
distribution of the unweighted samples, by age, sex and  
country ..... 106

Appendix 3. Conversion of categorized drinking frequencies  
and intoxication frequencies into annual number of drinking  
occasions. .... 107

Appendix 4. Conversion of categorized “typical amounts of  
drinking” into centilitres of beer, wine or spirits. .... 110

Appendix 5. Conversion of centilitres of beer, wine and  
spirits into centilitres of pure alcohol: alcohol content  
percentages used. .... 113

Appendix 6. Further tables about regression models on  
intoxication frequency and the frequency of drinking 6+, and  
about negative consequences of own and other people’s  
drinking.. .... 114

# 1 INTRODUCTION

## 1.1 Background for the project

Denmark became a member of the EU as early as in 1973. The integrational process in Europe got increased attention in the other Nordic countries during the first part of the 1990's. These countries became formally associated with the European integrational efforts through the EEA Agreement, and the involvement of Finland and Sweden deepened further when they became members of the EU on 1.1.1995. This process can be presumed to have profound economic and political consequences. In the field of alcohol policy, we have already seen some consequences. In Finland, Norway and Sweden, the traditional monopolies on the import, export, wholesale and (partly) production of alcohol have been dissolved. There have also been some changes to the legal quotas for private importation of alcohol, and further changes are expected. All through the 1990's, Denmark has been harmonizing its taxes on wine and beer with the other EU countries, with a noticeable reduction in prices. Similar changes in the price of alcohol can also be expected in the other Nordic countries, because quotas for private importation are likely to increase considerably, which could result in extensive border trade. In fact, some price cuts have already been made.

In all probability, these changes will also affect drinking habits in the Nordic countries: the overall consumption level, the distribution on different types of alcoholic beverages, the pattern of drinking, binge drinking habits, etc. The Nordic Council for Alcohol and Drug Research (NAD) considered it important to follow this process, and decided "to develop a short questionnaire about alcohol use and alcohol-related harm that could be used at short notice in all the Nordic countries". Later, NAD proposed that the questionnaire should also include some

questions about drugs. Sturla Nordlund was charged with the task of forming a group of representatives from each Nordic country to design the questionnaire. In addition to Nordlund (representing Norway), the group consisted of Kirsten Fonager and Svend Sabroe (Denmark), Jussi Simpura (Finland), Ása Gudmundsdottir (Iceland) and Björn Hibell (Sweden). It was decided that the first, baseline survey would be carried out in 1996.

Two large-scale Nordic comparative surveys with a view to alcohol consumption and concerning the general Nordic populations have been conducted before this study. The first one was conducted in 1979 in Finland, Iceland, Norway and Sweden (Hauge and Irgens-Jensen 1987), the second in 1993-95 in Denmark, Finland, Norway and Sweden. Alcohol data from the 1993-95 comparative survey have not been published yet, but a report about the drug questions was published in 1996 (Hakkarainen et al. 1996a). Simpura (1989) compared the development of drinking habits in the Nordic countries in 1979-88 by making a secondary analysis of existing survey results. Hanhinen (1995) did a follow-up to this comparative analysis for the years 1988-93. Before 1979, a few comparative surveys of special populations were conducted. The drinking habits of men aged 30-45 were compared using data from the Nordic capitals (except for Reykjavik) in 1964 (Jonsson and Nilsson 1972), and the drinking habits of the young were compared in 1960 and 1964 (Bruun 1965, Bruun and Hauge 1963).

## **1.2 Designing the survey**

Before designing the questionnaire, the Nordic coordinating group had to decide what kind of survey it would be applied to: postal survey, face-to-face interviews, or telephone interviews. A number of other questions related to the use of the questionnaire were also to be decided by the group, for instance the size of the questionnaire (the number of

questions), the age groups that should be included, recommendations about the size of samples, and the time period when the surveys should be carried out.

The 1979 and 1993-95 comparative studies had used mailed questionnaires. In the past few years, there have been problems with the response rate in postal surveys. In addition, the questionnaire was to be short, and in such cases interviews (face-to-face or by telephone) can compete with postal surveys in cost-effectiveness, because there are some basic costs attached to postal surveys which are independent of the number of questions. It was consequently decided not to use mailed questionnaires. Since it was decided to depart from the method of earlier Nordic surveys, there was no historical precedent to help in the choice between face-to-face interviews and telephone interviews. It seemed, however, that the telephone interview would be the dominant method in the future, and that it would also be increasingly less costly than face-to-face interviews. *Telephone interviews* were consequently chosen as the data collection method.

It was clear that the surveys in each country would have to find national funding, and the group could therefore only make recommendations about sample size and other aspects directly related to the economic resources required for realizing the survey. It was recommended that the number of interviews accomplished in each country should be no less than 1000, preferably 2000. The interviewees should constitute a representative sample of the population, preferably in the age range of 15 years and over, but at least in the age range of 18-70 years. It was also recommended that the surveys be coordinated so that the interviewing could be done at approximately the same time of the year in all countries, avoiding special national celebrations and other festival periods.

The greatest difficulties were encountered in the discussions that dealt with the actual questions to be included in the questionnaire. There was an obvious conflict between the requirement to design a “short” questionnaire and the large number of different aspects of alcohol consumption, attitudes and problems that it would have been good to include. It was emphasized that the number of questions should be kept low, that precedence should be given to questions that could be expected to be sensitive in measuring change in consumption level and drinking patterns, and that it should be possible to connect the possible changes detected to changes in alcohol policy, e.g. as a result of adjustments to EU/EEA-rules. It was agreed that questions should relate to the following areas:

- General drinking frequency
- Specific drinking frequencies for beer, wine and spirits
- The consumption of beer, wine and spirits in the 7 days prior to the survey
- Frequency of intoxication
- Harmful consequences of own alcohol consumption
- Nuisance caused by other people’s drinking
- Norms and attitudes

In addition to these, it was recommended that some questions about the consumption of unrecorded alcohol be included, covering private imports and home-made and smuggled spirits. In line with the NAD-proposal mentioned above, it was also recommended that a few questions about attitudes to, and the use of, cannabis be included. The specific wording of all questions was decided by the group, also that of the additional recommended questions. The “prototype” version of the questionnaire was formulated in Norwegian. Members of the committee translated it each to his/her own language and adjusted it to national

conditions. The “prototype” questionnaire is shown in Appendix 1, now translated into English.

### **1.3 Aims and scope of this report**

Very soon it became obvious that the idea of making a complete coordinated survey of all Nordic countries was rather unrealistic. In Iceland, the funds necessary for doing such a survey could not be raised at all. In Sweden, a large alcohol survey, the so-called KALK survey (Kühlhorn et al. 1997), had already been planned, and it was started before the Nordic questionnaire was ready. In the end, a few questions from the Nordic questionnaire were added to the KALK questionnaire. Additionally, a number of small changes were necessary in developing the recommended “prototype” questionnaire into the final questionnaires used in each country. These changes will be discussed in the chapters below.

Data for the comparative Nordic study which had started in 1993 had been collected in Sweden in 1995. Because many questions, that were important from the comparative viewpoint, had been left out of the KALK survey, it was decided that the present comparative report would use the 1995 Swedish data to fill in any gaps, where possible. The questions about intoxication drinking and cannabis use were particularly useful. The 1995 survey was conducted as a postal survey in Sweden, which can result in some difficulties in comparability. It has been shown earlier that, in comparison to both face-to-face and telephone interviews, mailed questionnaires result in less social desirability effect, particularly in sensitive questions (De Leeuw et al. 1996, Nordlund 1992). This may imply that e.g. intoxication frequency and the consequences of drinking are underestimated less in the Swedish 1995 survey than in the other Nordic surveys; i.e. in our comparison, the Swedish figures from 1995 may appear too high. In any case, we felt that even this potentially

biased information about Sweden would be more informative than no information at all.

The main aim of this report is to compare drinking patterns in the Nordic countries in mid-1990's. For this analysis, we use data mainly from the four new surveys carried out specifically for this purpose in Denmark, Finland, Norway and Sweden in 1996-97. We complement these data with some data from official statistics and with Swedish data from the 1995 survey. This report includes mainly basic descriptive data, which are mostly presented in the form of tables. We hope that this report will serve as a useful source of data: data on the baseline period for future analyses on the effects of European integration and, more generally, data for researchers and other people who have an interest in drinking habits in the Nordic countries. The current report will not consider the effects of the integration.

A comparison of the estimated level of unrecorded alcohol consumption in the Nordic countries will be published as a separate report. Data from the Swedish KALK survey (Kühlhorn et al. 1997) and the Finnish survey (Mustonen et al. 1998) have been published earlier. These results may slightly differ from the ones shown here, because the methods (weights used, systems of constructing indices of consumption etc.) and the subsamples used in the analyses are different.

## 2 DATA AND METHODS

### 2.1 Data

The Danish, Finnish, Norwegian and Swedish samples covered different age ranges. In order to obtain comparable data from all countries, only those age groups which were included in all four countries were included. This principle resulted in an age range of 19-71 in the comparisons. The sample sizes and response rates are given in Table 1.

Table 1. Sample sizes and response rates in the Nordic drinking surveys

|                                                          | Denmark           | Finland | Norway | Sweden           | Sweden |
|----------------------------------------------------------|-------------------|---------|--------|------------------|--------|
| Year                                                     | 1997/98           | 1996    | 1996   | 1996/97          | 1995   |
| Original sample size in registers                        | 3238 <sup>1</sup> | 2000    |        |                  | 3000   |
| Excluded (dead, abroad etc.)                             |                   | 15      |        |                  | 49     |
| Sample with an identifiable tel.no.                      |                   | 1724    | 3210   | 21518            |        |
| Sample who answered phone                                | 3015              | 1628    | 2625   | 16296            |        |
| Sample who agreed to participate                         | 2439              | 1509    | 2000   | 10853            | 1897   |
| Response rate                                            | 75.3 <sup>2</sup> | 87.5    | 62.3   | 50.4             | 64.3   |
| (Total sample with an identifiable telephone number=100) |                   |         |        |                  |        |
| Sample used in the comparison                            | 2439              | 1509    | 1750   | 854 <sup>3</sup> | 1856   |
| (Age group 19-71 years)                                  |                   |         |        |                  |        |

<sup>1</sup> In Denmark the original sample, all age groups included, was 4413 people of whom 92% answered the phone and 69% agreed to participate. The 8% not included in the "answered the phone" category were people without a phone or with a secret number or who did not answer the phone.

<sup>2</sup> The comparable response rate for Denmark, calculated using the "sample with an identifiable telephone number" (which is not available for Denmark) as the reference, would be higher than 75.3%, but not more than 80.9%.

<sup>3</sup> For Sweden (1996) we use a subsample of the KALK project including only those respondents to whom the quantity-frequency questions and the other "Nordic questions" were posed.

In Finland, the data were collected in October 1996, in Norway in November 1996. In Sweden and in Denmark interviews were carried out daily over a prolonged period of time: in Denmark, from January 1997 until January 1998; in Sweden, for the subsample used in this study, from September 1996 until February 1997. The questionnaires for the Swedish postal survey were distributed in April 1995.

In Denmark, Finland, and Norway, random samples of individuals were drawn. In *Denmark* the sample was drawn from the Danish Civil Registration System, stratified by age and sex. The old age groups were over-sampled to improve precision in these age groups, because old age groups were expected to have a higher nonresponse rate and because of the smaller population size in old age groups. If no telephone number could be found by other means, the participant was contacted by mail. In *Finland*, the sample was drawn from census data, excluding the institutionalized and the homeless population. Those whose telephone numbers could be found were first contacted by letter to inform them about the study, and then by telephone to carry out the interview. In *Norway*, the sample was drawn from the Telenors customer catalogue. In *Sweden* (1996) the sample was drawn from the population of 56 municipalities which, together, were representative of Sweden. Within the communes, telephone numbers were selected through the method of random digit dialling. Within each household, the person whose birthday was next was chosen for the interview.

Response rates were different in different age and sex groups: men were under-represented compared to women, and the older population was under-represented in Sweden and Norway and intentionally over-represented in Denmark. Because of these discrepancies between the samples and the populations, weights have to be used in order to make the samples representative. The weights were constructed so that the

weighted sum of sample sizes from all age and sex groups equalled the actual overall sample size, and the proportion of the weighted sample, accounted for by a certain age and sex group, corresponded to the group's proportion of the general population. The age and sex distribution of the samples and populations and the weights used are given in Appendix 2 (Appendix 2: Tables 1-3). All the results presented in this report have been obtained using these weights.

As can be seen from the above, there is considerable variation between the four countries and the five samples with regard to sample size, data collection method, sampling techniques, response rate and time period of data collection. These differences result in differentials in the reliability and validity of the data, but it is very difficult to estimate the effects of the differences on the comparisons we will present. Perhaps the most care should be taken when comparing the Swedish data sets with the others, because the 1996 data set was clearly smaller than the others and had a lower response rate, and the 1995 data set was gathered using a mailed questionnaire. In any case, when interpreting the results below, it is important to remember that survey data in general, and survey data gathered using the dissimilar methods described above in particular, will only give a tentative and uncertain description of reality.

In the current report, so many different descriptive results are shown that the resources available did not permit significance tests on all results or even, unfortunately, on all important results. We calculated confidence intervals for some of the more important differences in frequency tables. This gave us an idea of how big a difference was required to be for it to be statistically significant; we have tried to avoid making statements about smaller differences. For the statistical models presented in chapters 3 and 4, we have been able to give some estimates of the random variation in the regression estimates.

## **2.2 Construction of indices of alcohol consumption**

### ***Drinkers and nondrinkers***

In Denmark, Finland and Norway, nondrinkers were defined using the question about overall frequency of drinking (question 1 in Appendix 1, with a 12-month reference period). Those who replied either “more than 12 months since last drank alcohol” or “have never drunk any alcohol or have only ever tasted it” were defined as nondrinkers.

In the Swedish questionnaires, there were no questions on overall frequency of drinking and the beverage specific questions on frequency of drinking were used instead. If the respondent answered to each of these either “have never drunk or have only ever tasted it” or “once a year or less often,” the respondent was classified as a nondrinker. Swedes had to fulfill this criterion in five questions, instead of just one, in order to be classified as nondrinkers, and hence nondrinking could be slightly underestimated for Sweden as compared to other countries. This is, however, probably more or less compensated by the fact that people who drink only once a year are classified as nondrinkers in Sweden but not in other countries.

### ***Mean alcohol consumption – the quantity-frequency (QF) measure***

Two measures of mean consumption are obtained from the data. The first is based on measuring average frequency and average amount of consumption of beer, wine and spirits in the 12 months preceding the survey. The beverages covered by the Swedish 1996 questionnaire were beer class II (alcohol content above 2.25% and up to 3.5%, usually close to 3.5%), strong beer (alcohol content above 3.5%, usually 5.5%), table wine, fortified wine and spirits.

Appendix 3 (Table 1) shows how the categorized frequencies given in the questionnaire were converted into annual numbers of drinking occasions. Appendix 4 (Tables 1-4) shows how the categories of typical

amount of drinking were converted into centilitres of beer, wine, and spirits, and Appendix 5 shows the beverage specific alcohol content percentages used in converting centilitres of beer, wine and spirits into centilitres of pure alcohol. The quantity-frequency measure was obtained by summing the beverage specific products of frequencies and amounts of drinking. In Sweden, the answer alternatives for frequencies and typical amounts of drinking were somewhat different than in other countries, but the differences are quite small and not likely to result in problems of comparability. The fact that the Swedish questionnaire of 1996 covered more beverage types is likely to have a larger impact. Because the Swedish QF measure is thus more extensive, it is likely to give a larger estimate of mean consumption than the measures used in other countries.

#### *Mean alcohol consumption – the 7-day measure*

The second measure of mean consumption was based on questions about alcohol consumption in the week prior to the survey. First, the respondents were asked when they had last drunk alcohol. If this was within a week, more specific questions were asked about the week's drinking.

The exact way of asking about the week's drinking differed between the countries. In Finland and Denmark, the questions were similar to those in Appendix 1 (questions 11-52). In Norway, respondents were given the same answer alternatives as in the questions about typical amounts of drinking in the 12 months preceding the survey (questions 3, 5, and 7). These were converted into centilitres of pure alcohol in a fashion similar to that explained above for the quantity-frequency measure. In Sweden, the drinking in the two days prior to the survey was asked about, but this question was not included in this study due to difficulties of comparability.

### *Sex specific mean consumption level based on combining data from statistics and surveys*

We combined data from sales statistics with data from the surveys to obtain a second estimate of the level of alcohol consumption among women and men in the four countries. We first calculated of all alcohol consumed, the proportion consumed by women (men). This proportion was multiplied by the total statistics-based consumption in the country, in litres of pure alcohol, yielding the total consumption among women (men) in litres of pure alcohol. When this figure was divided by the female (male) population aged 15+, the result gave us an estimated mean alcohol consumption, in litres of pure alcohol, among women (men) aged 15+.

### *Intoxication*

The frequency of intoxication was measured in three ways. Firstly, a measure of subjective intoxication frequency was used: the respondent was asked to specify the frequency, in the 12 months prior to the survey, of drinking so much alcohol as to feel intoxicated (question 8 in Appendix 1). Secondly, the frequency of drinking 6 or more drinks at a sitting was asked about (question 9 in Appendix 1). Appendix 3 (Appendix 3:Table 2) shows how these frequencies were converted into annual numbers of intoxication drinking occasions. In Denmark, the question about frequency of drinking 6 or more drinks at a sitting was asked as an open-ended question (not offering any suggested answers, but allowing the respondents to report any number of times per year). For comparability, the answers were categorized into the same categories used in the other countries.

The Swedish questionnaire of 1996 did not include a question about the frequency of feeling intoxicated. There was a question about the frequency of drinking more than a specified amount of alcohol (a bottle

of wine or 3 litres of strong beer or 4 litres of beer class II or a small bottle of spirits). The amounts specified do not correspond to the amount of 6 standard drinks used in the other countries. They are closer to 9 standard drinks, depending on the beverage type. The 1995 Swedish data did cover intoxication frequency in the 12 months preceding the survey.

Thirdly, intoxication drinking was measured by recording the number of days in the week prior to the interview when the respondent had drunk six or more drinks during one day (a “drink” was here defined as 1.5 cl of pure alcohol, and thus the criterion for “intoxication” was a report of having drunk at least 9 centilitres of pure alcohol in a day).

*Index of negative consequences of drinking and of nuisance caused by other people's drinking*

In order to describe the association between consequences of drinking and average consumption level and intoxication, an index of negative consequences was constructed: for each of the four consequences of drinking, the respondent got 1 “point” if he or she had experienced the consequence “once or twice” during the previous year, and 3 “points” if he or she had experienced the consequence “several times” during the previous year, and 0 “points” if he or she had not experienced the consequence. As a result, the consequence index varied between 0 and 12.

A similar index was constructed for nuisance caused by other people's drinking. The respondents got one “point” for each nuisance reported “once or twice”, and 3 “points” for each nuisance reported “several times”. This nuisance index varies, in principle, between 0 and 21, in practice between 0 and 18.

### 2.3 Further details of the analyses

In chapter 3.6, the association between intoxication frequency and average alcohol consumption is studied by plotting average intoxication frequency in different categories of average consumption. The difficulty was that a categorization that was sensible for Danish men would produce almost empty heavier consumption categories for Norwegian men, and categories that were sensible for Norwegian men would still produce almost empty heavier drinking categories for Norwegian women. The samples used in the current surveys were much smaller than e.g. those used in 1979, so the categories from that study could not be used. The categorization applied uses gradually increasing category sizes to reflect the corresponding decrease in the number of respondents at each increasing consumption level: (in cl of pure alcohol per year) 0-50, 50-100, 100-200, 200-400, 400-700, 700-1100, and 1100+ for men (possible reports yielding exact consumption levels 50, 100, ..., 1100 were assigned to the lower categories). For women, we use otherwise the same categorization, except that the last category used is 700+. Even then, the number of respondents in the highest category for women is quite small (Denmark: 166, Finland: 33, Norway: 20, Sweden: 40), and this should be remembered when interpreting the figures. We also had the same problem of few respondents in the heaviest drinking category for Norwegian men (N=29 in the highest category, N=40 in the next highest one; in the other countries, the smallest number of respondents in these categories was 74).

In chapter 4.2, the connection between an index of consequences of drinking and average consumption level and intoxication drinking is analysed. For this analysis, some categories of average consumption and intoxication drinking were combined in order to decrease random variation. The division used for the frequency of intoxication (number of times per year; conversion from categorized frequencies to

continuous frequencies is explained in Appendix 3) was 0, 1, 2.5, 4.5-6, 12 or more for women and 0, 1-2.5, 4.5-6, 12, 30, 52 or more for men. The division used for the frequency of drinking 6+ was 0, 1-2.5, 4.5-6, 12 or more (0-0.1, 4, 12 or more in Sweden) for women, and 0, 1-2.5, 4.5-6, 12, 30 or more (0-0.1, 4, 12, 30 or more in Sweden) for men. For average consumption, the two heaviest drinking categories used in chapter 3.6 were combined for both men and women. The aim in forming these categories was to obtain categories with at least 70 observations (in the original categories, a category size of 30-40 was common). In most, but not all, cases this aim was reached with the new categorizations. The categorizations are different for men and women, because the reports of men and women were concentrated in different drinking categories. Therefore, comparisons between men and women should be done with caution.

In chapter 3.6, a regression model is presented where annual intoxication frequency is explained by sex, age, average consumption and country. Intoxication frequency is not a continuous, nor a normally distributed, variable. As a consequence, an assumption of normal distribution in the regression model does not hold, and the standard errors and statistical tests presented are not accurate. The regression coefficients are accurate regardless. Because the dependent variable was a categorized one and because we preferred an additive model over a multiplicative one, we did not find a log transformation of the dependent variable helpful. Even if the tests and standard errors are not accurate, they give an idea of the magnitude of the random variation in the data; they also give pointers as to which differences are likely not to be random. We therefore present the standard errors and tests for interactions, even though they must be regarded with caution. The interpretation of interactions can be done using the country specific, age specific and sex specific models presented.

## 3 DRINKING HABITS

### 3.1 Nondrinkers

The proportion of nondrinkers by country, age and sex is shown in Table 2. The proportion of nondrinkers is by far the smallest in Denmark among both men and women, with relatively small differences between the other three countries. In Sweden, the telephone survey (1996) generally resulted in a larger proportion of nondrinkers than did the postal survey (1995).

There is a clear gender difference in the prevalence of nondrinking. In Denmark, Finland and Norway, approximately twice as many women as men report having drunk no alcohol in the 12 months preceding the survey. In the Swedish data from 1996, the relative difference is smaller, but not in the data from 1995. What is slightly surprising is that this gender difference does not increase with age: women are approximately twice as likely to report being a nondrinker as men in all the three age groups in all data sets, except for the Swedish data from 1996.

The Nordic countries share a general age pattern in the proportion of nondrinkers. Within this age range and with this age categorization, the prevalence of nondrinkers seems generally to increase with age among both men and women, particularly from the age group of 35-54 to the age group of 55-71.

In Sweden (1996), in the absence of a general drinking frequency question, nondrinking was defined as having answered “have never drunk or have only ever tasted it” or “once a year or less often” to each of five beverage specific frequency questions. Another possibility would have been to use a specific question about abstaining. The results did not change much when this question was used as a criterion for nondrinking:

the proportion of abstainers among men was 9.1% (vs. 9.8% with our criteria) and among women 12.5% (12.8% with our criteria).

In this study all results, unless otherwise specified, are calculated for the whole population, i.e. for drinkers and nondrinkers combined. Another strategy, also commonly used in this type of studies, is to present results only for the population of drinkers. The results obtained for the two different populations vary systematically, and this should be borne in mind when making comparisons between different studies.

Table 2. Proportion of nondrinkers (%) by country, age and sex

|              | Denmark | Finland | Norway | Sweden<br>1996 | Sweden<br>1995 |
|--------------|---------|---------|--------|----------------|----------------|
| <b>MEN</b>   |         |         |        |                |                |
| 19-34        | 1       | 4       | 5      | 5              | 3              |
| 35-54        | 3       | 5       | 8      | 10             | 5              |
| 55-71        | 4       | 14      | 16     | 18             | 12             |
| All men      | 2       | 7       | 8      | 10             | 6              |
| <b>WOMEN</b> |         |         |        |                |                |
| 19-34        | 3       | 9       | 12     | 7              | 10             |
| 35-54        | 2       | 10      | 14     | 9              | 8              |
| 55-71        | 8       | 27      | 30     | 26             | 21             |
| All women    | 4       | 14      | 17     | 13             | 12             |
| <b>ALL</b>   | 3       | 10      | 13     | 11             | 9              |

### 3.2 Mean consumption level in the samples and in official statistics

In this section, we examine differences in the level of alcohol consumption between the four Nordic countries, based on sales statistics and the surveys. We also examine how well the mean consumption levels obtained from the surveys cover the official per capita alcohol consumption based on sales figures and whether the two different

survey-based consumption measures (QF and 7-day) yield similar results.

The comparison between countries, when based on sales statistics, is biased to the extent that the level of unrecorded consumption varies from country to country. This bias does not interfere with the comparisons made on the basis of the surveys, since they cover alcohol consumption in general, including both recorded and unrecorded consumption. However, there are other kinds of biases in the comparisons based on surveys. Heavy consumers are over-represented among the nonrespondents, and the proportion of nonrespondents, or the response rates, varied between the countries; additionally, people who do participate in the survey underestimate their consumption, and this underestimation may be different in different countries. Hence, the surveys in the different countries differ in their coverage of total consumption.

Holder et al. (1998) have presented estimates of the level of unrecorded consumption for Sweden, Finland and Norway. On the basis of these figures, it seems that, in 1996, the level of unrecorded consumption was roughly on the same level in Finland and Sweden (approximately 2 litres of pure alcohol by persons 15 years and older), and somewhat lower in Norway (approximately 1 litre). There is less evidence about the situation in Denmark, but it is believed that unrecorded consumption in Denmark is at a lower level.

Table 3. The officially recorded consumption level and the survey-based estimated consumption level in litres of 100% alcohol, and coverage rates (estimated mean alcohol consumption level as a percentage of recorded consumption) by country

|                                                                                  | Den  | Fin | Nor | Swe 1996 | Swe 1995 |
|----------------------------------------------------------------------------------|------|-----|-----|----------|----------|
| Recorded consumption in 1996 (1995)<br>(litres 100% alcohol per capita aged 15+) | 12.2 | 8.2 | 5.0 | 6.0      | 6.1      |
| Index (Denmark=100)                                                              | 100  | 67  | 41  | 49       | 50       |
| Estimated mean alcohol consumption level                                         |      |     |     |          |          |
| QF-measure                                                                       | 5.5  | 3.3 | 2.1 | 3.0      | 3.1      |
| Index (Denmark=100)                                                              | 100  | 60  | 38  | 55       | 56       |
| Coverage rate                                                                    | 45   | 40  | 42  | 51       | 51       |
| 7-day measure                                                                    | 5.6  | 3.2 | 1.8 |          |          |
| Index (Denmark=100)                                                              | 100  | 57  | 32  |          |          |
| Coverage rate                                                                    | 46   | 39  | 35  |          |          |

Table 3 shows that, according to statistics on alcohol sales, the level of alcohol consumption in Denmark is clearly the highest among the four Nordic countries. The level of alcohol sales is the next highest in Finland, then in Sweden, and the lowest in Norway. Even if we take into account the estimated differences in unrecorded consumption, this order remains the same. The two sets of survey-based measures of mean consumption yield somewhat different estimates of the differences between countries than the sales statistics, e.g. the difference between Finland and Sweden is smaller on the basis of the survey, but the relative order of the countries still remains.

It is a common observation that survey-based estimates of average alcohol consumption are much smaller than estimates based on sales statistics, and the former only cover 40-60 percent of the latter (Midanik 1982). In this study, the average consumption calculated from the

survey, using the QF-measure, covers 40-50 percent of the average consumption based on sales statistics. The coverage in Sweden is somewhat better than in the other three countries. One probable explanation for the better Swedish coverage rate in 1996 is that the QF-measure was based on measuring the consumption of five different beverages, instead of just the three used in the other countries. In the 1995 Swedish survey the coverage rate was just as high as in 1996, even though only 3 beverage types were used, but the use of a mailed questionnaire is likely to have raised the coverage rate in 1995.

In Norway, the estimate of average consumption level is lower when the 7-day measure is used than when the QF-measure is used, while in Finland and Denmark there is practically no difference between the estimates. One factor contributing to this is that in Norway the survey was carried out in November, one of the months with the lowest levels of consumption. Also in Finland the data were gathered in a month with a relatively low level of consumption (October), while in Denmark all months was equally represented. Another contributing factor is that, as was explained in chapter 2.2, in Norway the amounts of alcohol drunk in the previous 7 days were asked using fixed response categories, which cuts down the amounts drunk in the heaviest drinking occasions.

The respondents in the surveys were asked whether they themselves thought that their consumption, during the period covered by the 7-day measure, was "quite normal", "less than normal" or "more than normal". Unfortunately, this question was posed to all drinkers only in Norway; in Denmark and Finland, only those who had used alcohol during the preceding week answered the question. The following comparison therefore pertains only to those who had used alcohol in the preceding 7 days. Most respondents said that their alcohol consumption was normal (59% in Denmark, 62% in Finland and in Norway). In Norway

and Denmark, there were 6 times as many people who said they had drunk “more than normal” as people who said they had drunk “less than normal” (35% and 6% in Denmark, 33% and 6% in Norway), whereas in Finland there were only twice as many people who said they had drunk “more than normal” as people who said they had drunk “less than normal” (25% and 12%). All in all, if the 7-day consumption figures were somehow “corrected” using these self-reports of normality of consumption (the 7-day consumption figures would be “corrected” on the average downwards but more so in Denmark and Norway than in Finland,) the ratio of the QF-measure to the 7-day measure would increase for all countries. It would probably be very similar for Denmark and Finland, but the ratio for Norway would be much higher, i.e. the QF-measure would exceed the 7-day measure the most in Norway, even more so than now (Table 3).

As mentioned above, in Norway the question about the normality of alcohol consumption in the 7 days prior to the survey was posed to all drinkers (i.e. people who had used alcohol in the 12 months preceding the survey), also to those who had not used alcohol in the preceding week. Among all drinkers, 17% said they had drunk “more than normal” and 9% said they had drunk “less than normal”. This means that it is more common for people to think that their typical consumption is lower than that in the previous week, even though this should not be the case, particularly when this previous week happens to be in November, when people usually consume less alcohol than average.

#### *Mean consumption by age and sex*

The general pattern of differences in mean consumption between the four countries generally applies to both men and women, as estimated on the basis of the surveys (Table 4). The only difference is that the consumption of Swedish women in the sample exceeds that of Finnish

women. We return to this question below when another set of estimates is presented.

The age pattern of alcohol consumption seems to differ between countries. In Denmark, there would not seem to be any major age differences among either men or women within the age range used in this study. In the other countries, consumption generally seems to decrease with age. This is particularly evident among women and among Norwegian men. Because of these differing age patterns in different countries, the differences between countries are much more pronounced in older age groups than in younger ones. In Sweden, the age differences are larger in the 1996 sample than they are in the 1995 sample.

Table 4. Mean consumption (QF-estimate) by country, age and sex in litres of 100% alcohol

|              | DEN | FIN | NOR | SWE<br>1996 | SWE<br>1995 |
|--------------|-----|-----|-----|-------------|-------------|
| <b>MEN</b>   |     |     |     |             |             |
| 19-34        | 7.7 | 5.7 | 4.3 | 5.0         | 4.7         |
| 35-54        | 7.2 | 5.2 | 2.8 | 3.7         | 4.2         |
| 55-71        | 7.5 | 4.0 | 1.3 | 4.0         | 4.3         |
| All men      | 7.4 | 5.1 | 3.0 | 4.2         | 4.4         |
| <b>WOMEN</b> |     |     |     |             |             |
| 19-34        | 3.2 | 1.9 | 1.6 | 2.5         | 2.0         |
| 35-54        | 4.0 | 1.8 | 1.2 | 1.9         | 2.0         |
| 55-71        | 3.3 | 0.8 | 0.5 | 1.0         | 1.5         |
| All women    | 3.6 | 1.6 | 1.2 | 1.8         | 1.9         |
| <b>ALL</b>   | 5.5 | 3.3 | 2.1 | 3.0         | 3.1         |

Estimation of consumption levels in different demographic groups can be made on the basis of official statistics, if information from the

statistics is combined with survey-based information on the distribution of consumption between groups. We used this procedure to obtain a second estimate of the level of alcohol consumption among women and men in the four countries (see chapter 2.2 for details).

The estimated proportion, of all alcohol, consumed by women varies from one-fourth in Finland to one-third in Denmark (Table 5). In Sweden the estimated proportion consumed by women was 30% in both of the two samples. These proportions are quite similar as what have been reported from other studies. Danish women drink considerably compared to other Nordic women, and not inconsiderably compared to men from the other Nordic countries, either: the estimated mean consumption of Danish women is slightly higher than that of Norwegian men (although, if unrecorded consumption could be taken into account, the difference would probably disappear or its direction could change). According to Table 5, the consumption level of Finnish women would seem to be higher than that of Swedish women, even though in Table 4 the situation was the reverse. Assuming that there are no large differences in the level of unrecorded consumption between Finnish and Swedish women, the most likely explanation is that the order shown in Table 4 is an artefact produced by the better coverage rate of the Swedish surveys compared to the Finnish one.

Table 5. Proportion of all alcohol, consumed by women (based on the QF-estimate), and estimated mean consumption as inferred from this proportion and the official per capita consumption (see text)

|         | Proportion of<br>alcohol consumed<br>by women, % | Mean alcohol consumption |       |
|---------|--------------------------------------------------|--------------------------|-------|
|         |                                                  | Men                      | Women |
| Denmark | 32                                               | 16.9                     | 7.7   |
| Finland | 24                                               | 13.1                     | 3.8   |
| Norway  | 28                                               | 7.4                      | 2.8   |
| Sweden  | 30                                               | 8.6                      | 3.5   |

### **3.3 Beverage specific consumption in the samples and in official statistics**

According to beverage specific sales statistics, all the four Nordic countries can be called beer-drinking countries (Table 6). Especially in Denmark, and quite clearly also in Sweden, wine takes the second place. In Finland, more alcohol is sold as spirits than as wine. Also in absolute terms the most spirits are sold in Finland (2.2 litres of pure alcohol per inhabitant aged 15+), while Danes have the highest level of beer and wine sales (6.7 litres and 4.1 litres of pure alcohol per inhabitant aged 15+, respectively).

The beverage distribution obtained from the survey quite closely resembles that observed in the statistics in the case of other countries than Denmark. There, the proportion of wine consumption is overestimated and that of beer consumption underestimated in the survey, as compared to sales statistics. Assuming that unrecorded consumption in Denmark does not distort the picture, this suggests that beer drinkers may be over-represented among the nonrespondents in Denmark.

In Finland, Norway and Sweden, the contribution of unrecorded consumption to total consumption is not at all insignificant (Holder et al. 1998). There are quite considerable differences between beverages in the extent to which their consumption is captured by the sales figures. For example, Nordlund (1992) has estimated that, in Norway, only slightly more than one-half of all spirits consumption, and approximately two-thirds of wine consumption, is recorded in sales statistics. According to the preliminary KALK report, unrecorded spirits consumption similarly constitutes almost one-half of all spirits consumption in Sweden, while its proportion of wine and beer consumption is around 20% (Kühlhorn et al. 1997). For spirits, the proportion of unrecorded consumption in Finland is estimated to be smaller than it is in Norway and Sweden, while the proportion for wine consumption in Finland should be large both as compared to Norway and Sweden and as compared to other beverage types (Hein and Vuorjoki 1998). These differences in beverage specific levels of unrecorded consumption should result in beverage specific differences in the coverage rates. The coverage rates should be the largest for those beverages for which the proportion of unrecorded alcohol is the largest. Surveys in Norway should yield a higher coverage rate for spirits and wine than for beer; in Sweden the coverage rate should be the highest for spirits, and in Finland for wine. At least in many earlier Norwegian surveys this has indeed been the case (Nordlund 1992). It seems probable that, for some reason, in this survey the underestimation of the consumption of spirits in Norway and Sweden (1996) is larger than the underestimation of the consumption of other beverages.

**Table 6. Beverage specific level (in litres of 100% alcohol per inhabitants aged 15+ or per respondent) and distribution of alcohol consumption in official sales statistics and in the surveys, and the beverage specific coverage rates, by country**

|                      |         | Official statistics 1996 |    | Survey-based estimates (QF) |    | Coverage rate |
|----------------------|---------|--------------------------|----|-----------------------------|----|---------------|
|                      |         | Litres <sup>1</sup>      | %  | Litres                      | %  | %             |
|                      |         | 100% alc.                |    | 100% alc.                   |    |               |
| Denmark              | Beer    | 6.7                      | 55 | 2.5                         | 46 | 37            |
|                      | Wine    | 4.1                      | 34 | 2.3                         | 42 | 57            |
|                      | Spirits | 1.3                      | 11 | 0.7                         | 12 | 49            |
| Finland <sup>2</sup> | Beer    | 4.4                      | 54 | 1.8                         | 55 | 40            |
|                      | Wine    | 1.4                      | 17 | 0.6                         | 18 | 42            |
|                      | Spirits | 2.2                      | 26 | 0.9                         | 27 | 42            |
| Norway               | Beer    | 2.9                      | 57 | 1.2                         | 55 | 40            |
|                      | Wine    | 1.1                      | 23 | 0.6                         | 26 | 49            |
|                      | Spirits | 1.0                      | 20 | 0.4                         | 19 | 40            |
| Sweden 1996          | Beer    | 2.6                      | 43 | 1.4                         | 47 | 54            |
|                      | Wine    | 1.9                      | 32 | 0.9                         | 29 | 47            |
|                      | Spirits | 1.5                      | 25 | 0.7                         | 24 | 49            |
| Sweden 1995          | Beer    | 2.8                      | 45 | 1.4                         | 44 | 50            |
|                      | Wine    | 1.8                      | 29 | 0.8                         | 26 | 46            |
|                      | Spirits | 1.6                      | 26 | 0.9                         | 30 | 60            |

<sup>1</sup> Litres per inhabitant aged 15+

<sup>2</sup> The Finnish extra category of "long drinks" covers the rest (3%) of all beverages in official statistics. In calculating the beverage specific coverage rates, "long drinks" have been excluded.

Men and women differ in their beverage specific consumption in one significant way: wine consumption makes up a much larger proportion of total consumption among women than it does among men (Table 7). As a consequence, the gender difference in the level of wine consumption is relatively small, while the difference in beer and spirits consumption is very large. Finland's high level of spirits consumption in the Nordic comparison only applies to men; Finnish women consume

no more spirits than do other Nordic women.

**Table 7. Survey-based beverage specific level of alcohol consumption (QF-estimate; in litres of 100% alcohol), by country and by sex**

|              | DEN        | FIN        | NOR        | SWE<br>1996 | SWE<br>1995 |
|--------------|------------|------------|------------|-------------|-------------|
| <b>MEN</b>   |            |            |            |             |             |
| Beer         | 4.0        | 2.8        | 1.8        | 2.2         | 2.1         |
| Wine         | 2.5        | 0.7        | 0.6        | 0.9         | 0.9         |
| Spirits      | 0.9        | 1.6        | 0.7        | 1.2         | 1.4         |
| <b>Total</b> | <b>7.4</b> | <b>5.1</b> | <b>3.0</b> | <b>4.2</b>  | <b>4.4</b>  |
| <b>WOMEN</b> |            |            |            |             |             |
| Beer         | 1.0        | 0.8        | 0.5        | 0.7         | 0.6         |
| Wine         | 2.2        | 0.5        | 0.5        | 0.9         | 0.8         |
| Spirits      | 0.4        | 0.3        | 0.2        | 0.3         | 0.5         |
| <b>Total</b> | <b>3.6</b> | <b>1.6</b> | <b>1.2</b> | <b>1.8</b>  | <b>1.9</b>  |

### **3.4 Heavy drinking and the shape of consumption distribution**

Two important aspects of the distribution of consumption have already been described above, namely the mean of the distribution (mean consumption) and the proportion of people with zero-consumption (nondrinkers). Another very important aspect of the distribution is its shape, and particularly the right tail of the distribution, or the proportion of heavy drinkers. Table 8 shows several measures which address this issue.

Median is the value which divides the sample into two parts with respect to (here) the consumption level of the respondents: half of the respondents consume more than the median value and half consume less. The median is a better estimate of the drinking level of an

“ordinary man” or an “ordinary woman” than the mean, which is strongly affected by the consumption level of heavy drinkers. In the case of distributions which have a long tail extending toward high values, the means always exceed the medians, as is the case here, too (Table 8). The differences between countries in the medians are mostly similar as in the means: Danes drink more than the Nordic average, Norwegians less. Among men, Finns’ average consumption is larger than that of Swedes’. Yet, an “ordinary Finn” does not drink more than an “ordinary Swede”, as measured with the median consumption. This implies that the heavy drinkers in Finland (whose consumption exceeds the median) have to be heavier drinkers than the heavy drinkers in Sweden. The 90th percentile values (interpretation of 90th percentile: 90% of the sample consume less than the consumption level given by the 90th percentile) confirm this: the 10% who are the heaviest drinkers in Finland, among men, have a higher level of consumption (a self-reported minimum of 11.9 litres) than the 10% who are the heaviest drinkers in Sweden (a self-reported minimum of 9.8 litres, in 1996). It is difficult to assess whether this finding reflects real differences in the consumption distribution between Finnish and Swedish men, or whether this finding is a result of the quite large differences in response rates between the two samples.

A good way to illustrate the skewness of the consumption distribution is to calculate how much of the total amount of reported alcohol consumption is reported by the heaviest drinking 5% or 10% of the samples. Table 8 shows that, among men, the estimated proportion consumed by the heaviest drinking 10% of the sample varies from one-third in Denmark to almost one-half in Norway. Among women, this figure varies from 38% in Denmark to one-half in Finland and Norway. This means that the estimated consumption distribution is most skewed in Norway and Finland, and the least skewed in Denmark.

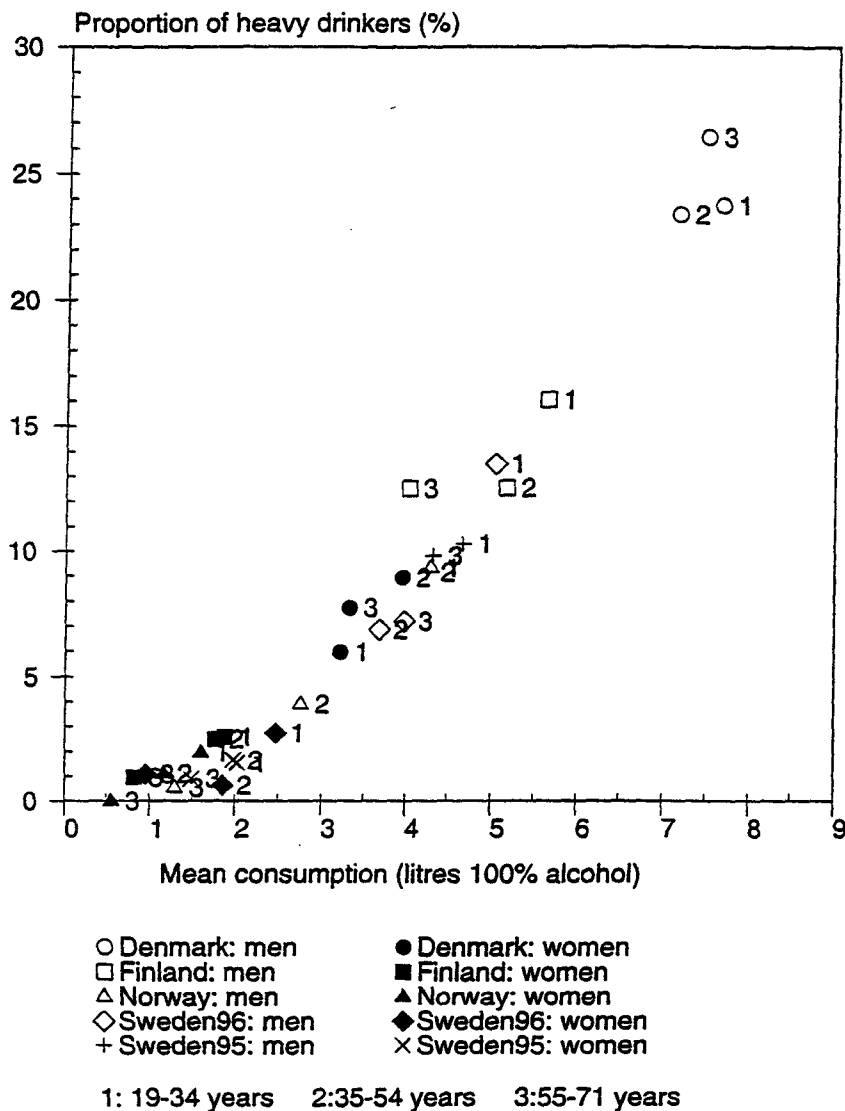
Two measures pertaining to heavy drinkers, shown in Table 8 and already discussed in the above, were the 90th percentile (indicating the level of consumption that separates the heaviest drinking 10% of the population from the rest) and the proportion of all alcohol consumed by this heaviest drinking 10% collectively. It can also be asked what proportion of the population has a consumption level above a certain, fixed, threshold. This part of the population can be called heavy drinkers, but it should be remembered that the choice of the fixed point is arbitrary and therefore also the proportion or the number of heavy drinkers is arbitrary, depending very much on the choice of the fixed point. Table 8 shows the estimated proportion of the population with an annual consumption of more than 10 litres of pure alcohol. As could be expected, the proportion of these heavy drinkers varies among the countries much like the level of mean consumption; by far the highest proportions are found among Danish men and women, and the lowest proportions among Norwegian men and women. This result accords with the established finding of a close relationship between the level of mean consumption and the proportion of heavy drinkers (Skog 1985). Another way to examine the relationship between the mean consumption level and the proportion of heavy drinkers is shown in Figure 1, where these two factors have been plotted against each other, for 30 groups divided by country, age and sex. It is very clear from this figure, that the level of mean consumption is a strong predictor of the proportion of heavy drinkers.

**Table 8. Mean and median consumption; 90th percentile; proportion, of all alcohol consumed by the heaviest drinking 10% of the sample; proportion of heavy drinkers (annual consumption over 10 litres of 100% alcohol; all estimates based on the QF measure)**

|              | Mean | Median | 90th percentile <sup>1</sup> | Proportion (%)<br>consumed by<br>heaviest 10% | % of heavy<br>drinkers |
|--------------|------|--------|------------------------------|-----------------------------------------------|------------------------|
| <b>Men</b>   |      |        |                              |                                               |                        |
| Denmark      | 7.4  | 5.2    | 16.5                         | 34.4                                          | 24.2                   |
| Finland      | 5.1  | 2.9    | 11.9                         | 39.4                                          | 13.6                   |
| Norway       | 3.0  | 1.5    | 6.6                          | 48.3                                          | 5.2                    |
| Sweden, 1996 | 4.2  | 3.0    | 9.8                          | 37.3                                          | 9.3                    |
| Sweden, 1995 | 4.4  | 2.8    | 10.0                         | 37.9                                          | 9.7                    |
| <b>Women</b> |      |        |                              |                                               |                        |
| Denmark      | 3.6  | 2.0    | 8.4                          | 38.3                                          | 7.6                    |
| Finland      | 1.6  | 0.6    | 4.2                          | 50.0                                          | 2.1                    |
| Norway       | 1.2  | 0.5    | 3.1                          | 51.4                                          | 1.2                    |
| Sweden, 1996 | 1.8  | 1.1    | 4.4                          | 40.7                                          | 1.4                    |
| Sweden, 1995 | 1.9  | 1.0    | 4.7                          | 41.9                                          | 1.4                    |

<sup>1</sup>90th percentile: 90% of the sample consume alcohol less than this amount

Fig. 1. Proportion of heavy drinkers (%) as a function of mean consumption (in litres of 100% alcohol) in different combinations of country, sex and age



### 3.5 Consumption frequency

Two factors affect the mean consumption level, namely the frequency of drinking occasions and the amount of alcohol consumed per occasion. In this section, we take a closer look at the first one of these factors, the frequency of drinking. This is done by looking at the general, not beverage specific, frequency question posed to the respondents. Unfortunately, this measure is not available for Sweden in either of the data sets.

Low self-reported drinking frequencies have similar variation among the countries as the already observed variation in the proportion of nondrinkers, with Denmark showing the lowest proportion and Norway the highest (Table 9). In the other end of the frequency scale, among the frequent drinkers, the country differences are in the opposite direction. The highest consumption frequencies are the most common in Denmark and the least common in Norway.

Table 9. Distribution of drinking frequency by country and sex (%)

| Frequency                    | Men |     |     | Women |     |     |
|------------------------------|-----|-----|-----|-------|-----|-----|
|                              | DEN | FIN | NOR | DEN   | FIN | NOR |
| Nondrinkers                  | 2   | 7   | 8   | 4     | 14  | 17  |
| a few times per year or less | 3   | 7   | 13  | 11    | 18  | 24  |
| 1-2 times per month          | 15  | 21  | 36  | 30    | 31  | 38  |
| 1-3 times per week           | 53  | 55  | 39  | 43    | 33  | 21  |
| 4 or more time per week      | 26  | 10  | 3   | 11    | 4   | 1   |
| All                          | 100 | 100 | 100 | 100   | 100 | 100 |

The categorized drinking frequencies can be converted into continuous drinking frequencies by assigning each category a value from the midpoint of the category, e.g. the original category “2-3 times a week” equals an average of 2.5 times a week or 130 times a year. Average

drinking frequencies can then be calculated, and Table 10 shows these by country, age and sex. These average self-reported drinking frequencies tell the same story as the categorized self-reported drinking frequencies in Table 9: average drinking frequency is by far higher in Denmark than in the other two countries, and Norwegians report the lowest frequency of drinking. Women's drinking frequency is much lower than men's in all countries and age groups.

As with mean consumption levels, Denmark has an age pattern which deviates from the age patterns seen in the other countries. Among Norwegian men and women and among Finnish women, consumption frequency seems to be the largest in the age group 35-54. Among Finnish men, there are barely any differences between age groups, or if there is a pattern, it is one of a very modest increase in drinking frequency with age. In Denmark, there is a clear and consistent age pattern, with drinking frequency increasing with age.

The average drinking frequency in a population can also be estimated by first calculating, for each individual, the sum of the beverage specific drinking frequencies and then calculating the mean of these summed frequencies for the population. This estimate can be gotten for Sweden as well. From Table 10, we can see that these summed drinking frequencies are, on the average, considerably higher than the overall drinking frequencies. There are two different explanations for this. Firstly, people can consume different types of alcoholic beverages at one sitting, and these occasions are counted twice or more in the summed drinking frequency; the summed frequency is thus an overestimate of drinking occasions. For example, according to Finnish data from 1992, in 29% of all drinking occasions among men and in 21% among women, two or more types of beverage were consumed (Mustonen et al. 1998). Secondly, it may well be that the more specific the questions are, the

more accurately people remember their drinking occasions. Part of the difference between the two frequency measures can thus be a result of the overall drinking frequency being an underestimate of real drinking frequency.

In Sweden (1996), five different beverage types were covered in the questionnaire, whereas in the other samples only three different beverages were covered. Hence, these figures are not strictly comparable, and the Swedish estimate from 1996 may be upwardly biased in the comparison. With this restriction in mind, the Swedish averages of the summed frequencies, as shown in Table 10, can be roughly compared with those for the other countries. On the basis of these figures, it should be safe to conclude that the drinking frequency in Sweden is smaller than in Denmark, larger than in Norway, and roughly at the same level as in Finland. Also the age pattern in the drinking frequency in Sweden seems to be quite close to that in Finland.

Table 10. Estimated average annual drinking frequencies (times per year) by country, sex and age

| MEN                           | DEN | FIN | NOR | SWE   | SWE   |
|-------------------------------|-----|-----|-----|-------|-------|
| Age group                     |     |     |     | 1996  | 1995  |
| 19-34                         | 114 | 81  | 48  | (104) | (76)  |
| 35-54                         | 143 | 83  | 52  | (117) | (104) |
| 55-71                         | 169 | 86  | 38  | (120) | (104) |
| All                           | 139 | 83  | 47  | (113) | (95)  |
| Summed frequency <sup>1</sup> |     |     |     |       |       |
| All                           | 175 | 103 | 60  | 113   | 95    |
| WOMEN                         |     |     |     |       |       |
| 19-34                         | 56  | 43  | 25  | (64)  | (49)  |
| 35-54                         | 88  | 49  | 32  | (73)  | (70)  |
| 55-71                         | 95  | 32  | 21  | (46)  | (58)  |
| All                           | 79  | 43  | 27  | (63)  | (60)  |
| Summed frequency <sup>1</sup> |     |     |     |       |       |
| All                           | 102 | 50  | 33  | 63    | 60    |

<sup>1</sup>Estimated average of summed beverage specific drinking frequencies. All Swedish figures are estimated in this way.

In addition to the measure of drinking frequency based on a question about typical drinking frequency, we have, for Denmark, Finland and Norway, a measure of drinking frequency from the previous week (Table 11). This shows the same kind of country differences in drinking frequency as did the measure based on typical frequency. Among Finnish and Norwegian men and women, as many as 40-66% of the respondents did not report any consumption in the previous week. Among Norwegian men and women and among Finnish women, only 1-4% of the respondents reported consuming alcohol on 4 or more days during the week prior to the survey. Among Finnish men, this proportion was somewhat higher (12%). In Denmark, only one-fifth of the men and

one-third of the women did not report any consumption in the previous week. 28% of the men and 13% of the women reported drinking alcohol on 4 or more days. The prevalence of this high frequency of drinking among Danish women by far exceeds the corresponding prevalence among Norwegian men and is at the same level as among Finnish men.

**Table 11. Distribution of drinking frequency (%) during the 7 days preceding the survey and the mean and median consumption frequencies, by sex and country**

| Frequency        | Men |     |     | Women |     |     |
|------------------|-----|-----|-----|-------|-----|-----|
|                  | DEN | FIN | NOR | DEN   | FIN | NOR |
| 0 times          | 21  | 40  | 50  | 33    | 56  | 66  |
| 1 time           | 19  | 25  | 33  | 28    | 26  | 24  |
| 2-3 times        | 32  | 23  | 14  | 26    | 15  | 9   |
| 4-5 times        | 14  | 7   | 2   | 7     | 2   | 1   |
| 6-7 times        | 14  | 5   | 1   | 6     | 2   | 0   |
| All              | 100 | 100 | 100 | 100   | 100 | 100 |
| Mean frequency   | 1.8 | 1.1 | 0.7 | 1.3   | 0.7 | 0.5 |
| Median frequency | 2   | 1   | 0   | 1     | 0   | 0   |

### **3.6 Quantity of drinking and intoxication**

In this section, we turn to the second factor that, together with frequency of drinking, affects mean consumption level, namely the amount of alcohol drunk per occasion. Special interest lies in the occasions when large amounts are drunk and in the frequency of these heavy drinking occasions. Table 12 illustrates this aspect of drinking with 5 different measures. The first two of these are measures of the average amount of alcohol drunk in a drinking occasion, the three others are measures of the frequency of heavy drinking occasions.

First, we estimated the average amount consumed on a drinking

occasion, in centilitres of pure alcohol, by dividing the estimated total consumption (QF-estimate) by the sum of beverage specific frequencies of drinking. The second measure is very similar, only it measures average consumption on the drinking days of the week prior to the survey. Overall, the differences between countries in amounts drunk are much smaller than the differences in consumption frequency. Among men, Finns report drinking the largest amounts of alcohol per drinking occasion, although the amounts reported by Norwegians are not much smaller. For Swedes, two quite different estimates are obtained from the two Swedish surveys. The 1996 telephone survey which covered 5 beverage types gives a clearly smaller estimate than the 1995 mailed questionnaire which covered 3 beverage types. It is difficult to say which of these values would be more comparable with those of the other Nordic countries which used telephone surveys and covered 3 beverage types. Among women, Finns report the smallest amounts of alcohol per occasion, on the average. Norwegian and Danish women report drinking more at a time, while it is difficult to say anything certain about Swedish women.

The three last measures are measures of the frequency of drinking large amounts at a sitting. The respondents were asked to give the frequency of drinking 6 or more drinks at a sitting (hereafter: drinking 6+) in the previous 12 months, and the frequency of drinking 6+ during the previous 7 days could also be obtained from the data. In addition, a measure of the frequency of subjective intoxication was used. The self-reported frequency of drinking 6+ seems to be clearly the highest in Denmark among both men and women. Among men, the smallest frequency of drinking 6+ was reported in Norway, and among women in Finland, although the differences between Norway and Finland are not very large among either men or women. In Sweden, there was a question that covered the frequency of drinking certain amounts of

different beverages, but the amounts specified were closer to 9 standard drinks than to 6 standard drinks. The Swedish measure should therefore be corrected upwards rather than downwards in order to make it comparable. According to our estimates, drinking a large number of drinks at a sitting would thus seem to be more frequent in Sweden than it is in Finland or Norway.

The frequency of drinking 6+ and the subjective measure of frequency of intoxication are often considered to be two measures of the same phenomenon. It is, therefore, very interesting to observe that the results on the differences between countries in intoxication frequency depend very strongly on the measure used (Table 12). Danes report drinking 6+ more often than they report intoxication, while Finns report intoxication more often than they report drinking 6+. Norwegians report similar frequencies for both, while Swedes are somewhere between the Norwegians and the Finns. It seems that, on the average, in Finland clearly less than 6 drinks suffice for the subjective feeling of intoxication, whereas in Denmark 6 drinks are not enough, and in Norway just slightly less than 6 drinks are required. Assuming that the differences in the "objective" measure, the frequency of drinking 6+, are accurate, there are several possible explanations for this curious observation. It is possible that, because Danes drink more on the average, they are more used to the effects of alcohol and a given amount of alcohol has, on the average, a smaller effect on them than on other Nordic citizens. It is very likely that there are cultural differences in how "intoxication" is understood, i.e. a difference in the definition of the word. Being intoxicated might also be socially less acceptable in Denmark, while in Finland intoxication is often regarded as "part of the fun". Additionally, there are people also in Finland who require more than 6 drinks to feel intoxicated; it is possible that this higher level of consumption, e.g. 10+, is more common in Finland or the differences

between the two countries smaller.

In Denmark, the question about annual frequency of drinking 6 or more drinks was asked as an open-ended question (not offering any suggested answers, but allowing the respondents to report any number of times per year) while in the other countries, fixed response categories were given. The greater precision in the Danish reports allows for an interesting methodological comparison concerning the impact of fixed response categories. In order to make the Danish measure comparable, for Table 12, it was first categorized as in the other countries, and in calculating the averages the same procedure was used as for the other countries, as explained above. The mean of the original continuous variable is 18.8 for men and 6.1 for women, and the mean of the categorized variable is 15.6 for men and 5.6 for women. That is, the simple, technical procedure of categorizing the answers resulted in smaller means. A similar categorization of amounts of alcohol drunk during the 7 days prior to the survey took place in the Norwegian survey but not in the surveys of the other countries (see chapter 3.2), and this probably biased the Norwegian 7-day measure downwards to some extent.

Table 12. Measures of the amount of drinking per occasion and of intoxication frequency, by country and sex. 1) Typical amount of drinking (total consumption divided by sum of frequencies of drinking beer, wine and spirits) among drinkers. 2) Mean consumption per drinking day in the week prior to the survey among those who drank during the week; 1 and 2 are in centilitres of 100% alcohol. 3) Mean number of days during the week when 6 or more drinks were consumed, among all respondents. 4) Annual frequency of drinking 6 or more drinks, among all respondents. 5) Annual subjective intoxication frequency, among all respondents

|              | 1                                 | 2                                | 3                                       | 4                      | 5                                |
|--------------|-----------------------------------|----------------------------------|-----------------------------------------|------------------------|----------------------------------|
|              | Amount per occasion               |                                  | Frequency of intoxication               |                        |                                  |
|              | Average amount typically consumed | Average amount previous week, cl | Number of days in previous week with 6+ | Annual frequency of 6+ | Annual frequency of intoxication |
| <b>Men</b>   |                                   |                                  |                                         |                        |                                  |
| Denmark      | 4.3                               | 6.2                              | 0.49                                    | 15.6                   | 10.2                             |
| Finland      | 5.2                               | 7.3                              | 0.31                                    | 10.9                   | 14.3                             |
| Norway       | 4.9                               | 6.6                              | 0.20                                    | 8.8                    | 9.8                              |
| Sweden 1996  | 3.9 <sup>1</sup>                  | -                                | -                                       | (11.0) <sup>2</sup>    | -                                |
| Sweden 1995  | 5.0                               | -                                | -                                       | -                      | 10.5                             |
| <b>Women</b> |                                   |                                  |                                         |                        |                                  |
| Denmark      | 3.5                               | 4.4                              | 0.16                                    | 5.6                    | 4.0                              |
| Finland      | 2.8                               | 4.0                              | 0.06                                    | 2.3                    | 3.8                              |
| Norway       | 3.3                               | 4.0                              | 0.04                                    | 2.9                    | 3.7                              |
| Sweden 1996  | 2.9 <sup>1</sup>                  | -                                | -                                       | (4.7) <sup>2</sup>     | -                                |
| Sweden 1995  | 3.2                               | -                                | -                                       | -                      | 3.9                              |

<sup>1</sup> For Sweden (1996), this is calculated as the average of 5 beverages, for the others as the average of 3 beverages.

<sup>2</sup> The measure used here for Sweden is not a frequency of 6+ drinks, but the amounts used in the question equal approximately 9 standard drinks.

### *Intoxication and age*

Table 13 presents two measures of the frequency of heavy drinking, namely self-reports of the annual frequency of drinking 6+ drinks and the frequency of subjective intoxication, by country, age and sex. In all countries there is a clear and consistent age pattern: self-reported frequency of heavy drinking decreases with increasing age.

In all age groups, we can see similar country differences as for all age groups combined: Danes report the most frequent drinking of 6+ drinks, and Finnish men report the most frequent subjective intoxication; Danes report drinking 6+ more frequently than they report intoxication, and Finns report getting intoxicated more frequently than they report drinking 6+. In relative terms, the country differences in both measures are quite small in the youngest age group, but they increase with age.

In Finland, the respondents were posed two questions about intoxication frequency. First, they were asked how often they got intoxicated and then, how often they got intoxicated so much that “it really feels”. The results obtained differ greatly, depending on the formulation used (Table 13). This shows that the way people define “intoxication”, or picture the concept in their minds, has a great impact on the results. In Finland, too, more than 6 drinks seem to be required for a feeling of “real intoxication”. For some people “being intoxicated” may have the same meaning that “being really intoxicated” has for others. In this international comparison, it is impossible to know to what extent the differences in the subjective intoxication frequency are caused by differences in how people define intoxication, and to what extent they reflect differences in the amount of alcohol consumed.

Table 13. Average annual frequency of drinking 6 or more drinks and average annual subjective intoxication frequency (times per year), by country, sex and age; and annual frequency of getting "really intoxicated" in Finland

|           | Annual frequency of drinking 6+ |      |      |                  | Annual intoxication frequency |      |      |      | Annual frequency of getting "really intoxicated" |
|-----------|---------------------------------|------|------|------------------|-------------------------------|------|------|------|--------------------------------------------------|
|           | Den                             | Fin  | Nor  | Swe <sup>1</sup> | Den                           | Fin  | Nor  | Swe  | Fin                                              |
| Men       |                                 |      |      | 1996             |                               |      |      | 1995 |                                                  |
| 19-34     | 22.6                            | 16.9 | 17.1 | (16.6)           | 18.7                          | 21.8 | 17.7 | 17.0 | 10.0                                             |
| 35-54     | 13.1                            | 9.9  | 5.4  | (8.3)            | 7.6                           | 12.7 | 6.7  | 8.2  | 5.8                                              |
| 55-71     | 9.3                             | 4.9  | 1.0  | (7.2)            | 1.9                           | 7.1  | 2.2  | 5.6  | 3.0                                              |
| All men   | 15.6                            | 10.9 | 8.8  | (11.0)           | 10.2                          | 14.3 | 9.8  | 10.5 | 6.8                                              |
| Women     |                                 |      |      |                  |                               |      |      |      |                                                  |
| 19-34     | 8.4                             | 4.4  | 6.4  | (10.2)           | 7.3                           | 7.4  | 7.6  | 7.4  | 2.6                                              |
| 35-54     | 5.5                             | 2.0  | 1.3  | (2.8)            | 3.0                           | 2.9  | 2.3  | 2.6  | 1.5                                              |
| 55-71     | 2.0                             | 0.4  | 0.1  | (0.6)            | 1.0                           | 0.7  | 0.2  | 1.4  | 0.3                                              |
| All women | 5.6                             | 2.3  | 2.9  | (4.7)            | 4.0                           | 3.8  | 3.7  | 3.9  | 1.8                                              |

<sup>1</sup> The measure used for Sweden is not a frequency of 6+ drinks; the amounts used in the question equal approximately 9 standard drinks.

### *Subjective intoxication frequency as a function of average consumption, age, sex and country*

In this section, we look at how subjective intoxication frequency depends on such factors as average alcohol consumption, age, sex and country. Intoxication frequency can be expected to have very strong connection with average alcohol consumption. We also want to see whether this connection varies among different sex and age groups and different countries. In order to improve the readability of this section, we present some of the results only in appendices.

The association between intoxication frequency and average alcohol consumption is first studied by plotting average intoxication frequency

in different categories of average consumption (for details on the categorizations used, see chapter 2.3). Average intoxication frequency is a strongly increasing function of average alcohol consumption in all the four countries (Figure 2), but less so in Denmark than in the other three countries. This means that, at each level of average alcohol consumption, more frequent intoxication is reported in Finland, Norway and Sweden than in Denmark. This difference between Danes and other Nordic people is particularly striking among men. At a given level of alcohol consumption, Swedes appear to have a slightly lower intoxication frequency than Finns and Norwegians. If there were a difference between Finland and Norway, it would be in the group with the largest average consumption, where Norwegians, in this sample, have a higher intoxication frequency than Finns; however, the number of Norwegians in this category is small and the difference could well be random.

Figure 2. Average annual intoxication frequency (times per year) as a function of average annual consumption (in centilitres of 100% alcohol) by country. Men on the left and women on the right

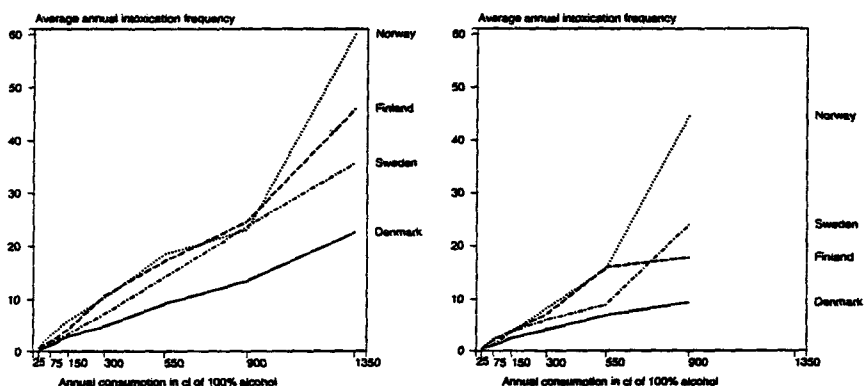


Table 14 presents a series of regression models where annual intoxication frequency (as times per year) has been explained by sex, age, average consumption and country. The benefit in using a model, as compared to Figure 3, is that we get some kind of an estimate of the magnitude of random variation in the data (although the tests and standard errors are not accurate here; see chapter 2.3 for more details). Another benefit is that we can control for several variables simultaneously.

The models confirm what was observed in Table 13 and in Figure 2: when only age and sex are held constant, Finns report the largest annual subjective intoxication frequency, with the other three countries showing quite small differences (Table 14, model 1, for “all four countries”); but when average consumption is also held constant (Model 2 in Table 14, for “all four countries”), the country differences change considerably—at a given level of consumption, other Nordic people report, on the average, from 4 to 6 more occurrences of subjective intoxication per year than Danes.

Table 14. Regression models with annual intoxication frequency (times per year) as the dependent variable and sex, age, average consumption category (and country) as independent variables, (by country). Regression coefficients and their standard errors in brackets

|                                     | All 4<br>countries | Denmark     | Finland     | Norway      | Sweden<br>1995 |
|-------------------------------------|--------------------|-------------|-------------|-------------|----------------|
| <b>Model 1</b>                      |                    |             |             |             |                |
| Constant                            | 9.2 (0.4)          | 10.0 (0.5)  | 9.4 (0.9)   | 9.7 (0.6)   | 8.9 (0.6)      |
| <b>Sex</b>                          |                    |             |             |             |                |
| Male (vs. female)                   | 7.0 (0.3)          | 6.1 (0.5)   | 10.4 (0.9)  | 5.9 (0.7)   | 6.6 (0.6)      |
| <b>Age</b>                          |                    |             |             |             |                |
| 35-54 (vs. 19-34)                   | -7.4 (0.4)         | -7.8 (0.6)  | -6.8 (1.0)  | -8.2 (0.8)  | -6.8 (0.7)     |
| 55-71 (vs. 19-34)                   | -10.6 (0.4)        | -11.5 (0.7) | -10.6 (1.2) | -11.4 (0.9) | -8.6 (0.8)     |
| <b>Country</b>                      |                    |             |             |             |                |
| Finland (vs. Denmark)               | 2.2 (0.5)          | -           | -           | -           | -              |
| Norway (vs. Denmark)                | -0.5 (0.4)         | -           | -           | -           | -              |
| Sweden (vs. Denmark)                | 0.2 (0.4)          | -           | -           | -           | -              |
| <b>Model 2</b>                      |                    |             |             |             |                |
| Constant                            | 1.5 (0.5)          | 7.2 (0.8)   | 5.4 (0.9)   | 4.4 (0.6)   | 4.9 (0.7)      |
| <b>Sex</b>                          |                    |             |             |             |                |
| Male (vs. female)                   | 2.0 (0.3)          | 2.5 (0.5)   | 2.7 (0.8)   | 1.4 (0.5)   | 1.4 (0.6)      |
| <b>Age</b>                          |                    |             |             |             |                |
| 35-54 (vs. 19-34)                   | -6.8 (0.3)         | -7.8 (0.6)  | -6.3 (0.8)  | -5.5 (0.6)  | -6.3 (0.6)     |
| 55-71 (vs. 19-34)                   | -8.7 (0.4)         | -11.2 (0.7) | -7.8 (1.0)  | -6.0 (0.7)  | -7.2 (0.7)     |
| <b>Average consumption (in cl.)</b> |                    |             |             |             |                |
| 50-100 (vs. 0-50)                   | 0.5 (0.5)          | -0.9 (1.1)  | -0.1 (1.2)  | 1.4 (0.8)   | 0.7 (0.9)      |
| 100-200 (vs. 0-50)                  | 2.3 (0.5)          | 0.3 (0.9)   | 1.4 (1.1)   | 3.1 (0.7)   | 2.1 (0.8)      |
| 200-400 (vs. 0-50)                  | 5.6 (0.5)          | 1.6 (0.9)   | 6.5 (1.1)   | 7.4 (0.8)   | 5.2 (0.8)      |
| 400-700 (vs. 0-50)                  | 10.9 (0.5)         | 5.1 (0.9)   | 13.7 (1.3)  | 15.0 (1.0)  | 10.7 (0.9)     |
| 700-1100 (vs. 0-50)                 | 16.6 (0.6)         | 8.8 (1.0)   | 19.3 (1.5)  | 23.0 (1.4)  | 20.1 (1.2)     |
| 1100- (vs. 0-50)                    | 29.6 (0.6)         | 17.1 (1.0)  | 40.5 (1.6)  | 53.8 (1.6)  | 34.8 (1.4)     |
| <b>Country</b>                      |                    |             |             |             |                |
| Finland (vs. Denmark)               | 5.9 (0.4)          | -           | -           | -           | -              |
| Norway (vs. Denmark)                | 5.5 (0.4)          | -           | -           | -           | -              |
| Sweden (vs. Denmark)                | 4.2 (0.4)          | -           | -           | -           | -              |

Interactions were tested by comparing a model which included all variables from model 2 plus all the three interactions given below and another model which included all variables from model 2 plus the other two interactions (i.e. excluding the one being tested)

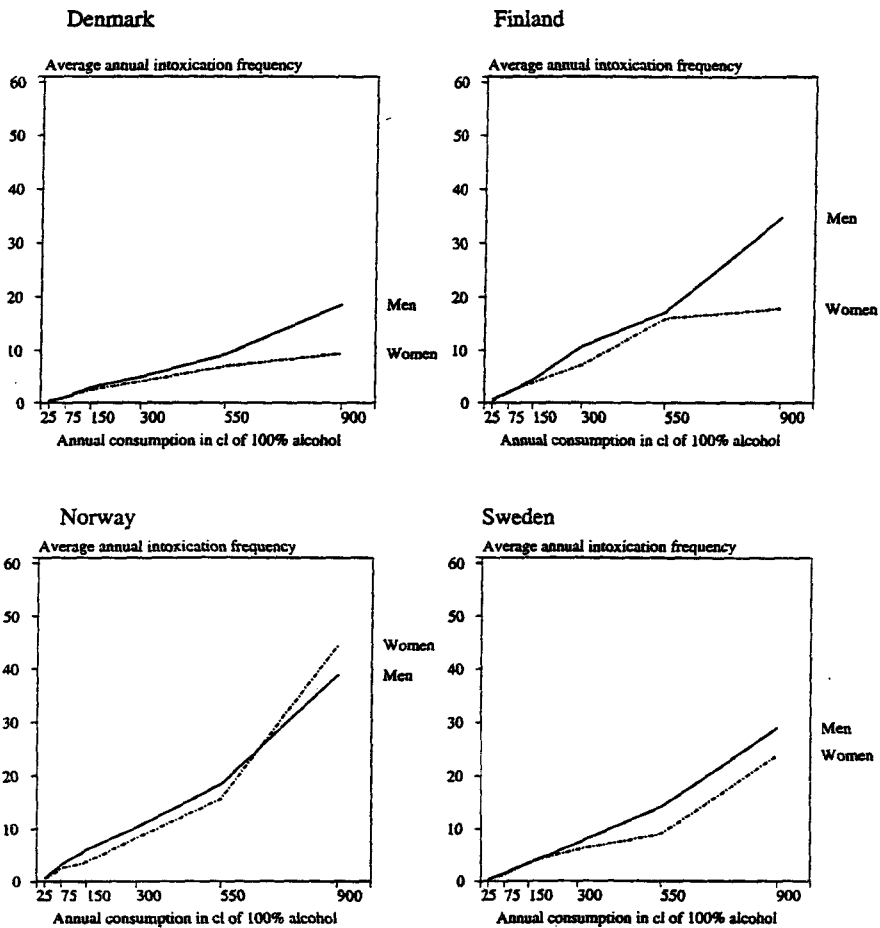
1) country  $\times$  average consumption:  $F=28.7$  (18, 7459),  $p<0.001$

2) country  $\times$  age:  $F=5.2$  (6, 7459),  $p<0.001$

3) country  $\times$  sex:  $F=1.4$  (3, 7459),  $p>0.05$

Men report, on the average, seven more occurrences of intoxication per year than do women (Table 14, model 1 for “all four countries”). From model 2, we can see that most of this difference is caused by men’s higher average alcohol consumption level, i.e. when average consumption is held constant, the difference between men’s and women’s intoxication frequencies is very much reduced. What is surprising is that there remains a clear difference between the sexes: men report more frequent intoxication than the women with the same average consumption. This can also be seen from Figure 3, which presents almost the same data as Figure 2, but this time the men and women are plotted in the same graph, by country, in order to facilitate gender comparison, and the consumption category 700+ cl is the highest category for men as well. Figure 3 shows that, in all countries and in most consumption categories, men report more frequent intoxication. One would be tempted to infer from this that women must have, at a given average consumption level, a higher overall drinking frequency and, correspondingly, a lower average amount consumed. However, in the present data there were no clear differences in drinking frequency between the sexes at a given total consumption level. One explanation could be that men who choose a certain “drinking frequency” category and a certain “typical amount drunk” category given in the questionnaire may, on the average, drink slightly more frequently and slightly larger amounts than the women who choose the same categories. In other words: men drink, on the average, more than women, and because average consumption is only a quasi-continuous measure, men have larger actual consumption than women in each average consumption category. There could also be differences between men and women in the tendency to under-report consumption and intoxication.

Figure 3. Average annual intoxication frequency (times per year) as a function of average annual consumption (in centilitres of 100% alcohol) by sex and country



According to the regression models, intoxication frequency strongly decreases with increasing age (Model 1 in Table 14), as was also seen from Table 13. Controlling for the level of consumption did not change this age effect to any considerable extent, particularly not in Denmark, where there are only relatively small differences between age groups in the level of consumption (Model 1 vs. Model 2; compare with Tables 4 and 13).

The most significant and important predictor of intoxication frequency is the average consumption level of a person. The interactions between average consumption level and country (Table 14), age (Appendix 6: Table 1) and sex (Appendix 6: Table 2) seem to be statistically significant and not caused by mere random variation. That is, the effect of average consumption level on intoxication frequency differs between countries, age groups and sexes. To illustrate this, we have fitted the regression models separately by country, age and sex (in Tables 14 and in Appendix 6: Tables 1 and 2, respectively). According to the country-specific models, intoxication frequency rises in Denmark less sharply and in Norway more sharply than in the other countries as a function of average consumption level ( $p$ -value for the test of interaction  $<0.001$ ; when Denmark was excluded and Norway regarded as the comparison group, the interaction between country and intoxication frequency was still significant,  $p<0.001$ ), which was also seen from Figure 2. There was also clear interaction between average consumption and age: in younger age groups, the association between intoxication frequency and consumption level is stronger than in older age groups. Intoxication frequency was also a more strongly increasing function of average consumption among men than among women, as was seen also from Figure 3. This means that an increase in the level of alcohol consumption does not bring about as large an increase in subjective intoxication frequency among women and among the old as it does

among men and among the young.

There were additionally many further interesting effects and interactions after controlling for the effect of average consumption. The country difference observed above (with consumption level held constant, Danes report fewer occurrences of intoxication) decreased with increasing age (Appendix 6: Table 1), and it was much larger among men than among women (Appendix 6: Table 2). The age pattern observed above (with consumption level held constant, older people generally report lower levels of intoxication frequency than do younger people) was stronger in Denmark than in the other three countries (country-specific models in Table 14) and stronger among men than among women (Appendix 6: table 2).

*Frequency of consuming 6 or more drinks at a sitting as a function of average consumption, age, sex and country*

In this section, we look at how the above relationship, between intoxication frequency and average alcohol consumption, sex, age, and country, changes when the frequency of intoxication is measured using the frequency of consuming 6 or more drinks at a sitting rather than the subjective intoxication frequency measure.

As Table 13 already showed, self-reported frequency of drinking 6+ is much higher in Denmark than in the other three countries (Table 15, Model 1 for all four countries). But when average consumption is controlled for, the picture changes drastically: Denmark has the lowest frequency, with a statistically significant difference between Denmark, on the one hand, and Norway and Sweden, on the other (Table 15, Model 2 for “all four countries”). Denmark differs quite clearly from Sweden and Norway in its reported frequency of drinking 6+, with consumption level held constant, but these differences between

countries are smaller than the corresponding differences in subjective intoxication frequency observed in Table 14. The conclusion here is that Danes' high frequency of drinking 6+ is a result of their average consumption level being so high; given their high average consumption level, they actually report drinking 6+ relatively infrequently.

Table 15. Regression models with annual frequency of drinking 6 or more drinks at a sitting (times per year) as the dependent variable and sex, age, average consumption category (and country) as independent variables, (by country). Regression coefficients and their standard errors in brackets

|                                     | All 4<br>countries | Denmark    | Finland    | Norway      | Sweden<br>1996 <sup>1</sup> |
|-------------------------------------|--------------------|------------|------------|-------------|-----------------------------|
| <b>Model 1</b>                      |                    |            |            |             |                             |
| Constant                            | 11.7 (0.5)         | 10.7 (0.7) | 6.4 (0.9)  | 8.9 (0.6)   | 10.4 (1.0)                  |
| <b>Sex</b>                          |                    |            |            |             |                             |
| Male (vs. female)                   | 8.0 (0.4)          | 9.8 (0.7)  | 8.5 (0.8)  | 5.8 (0.6)   | 6.1 (1.0)                   |
| <b>Age</b>                          |                    |            |            |             |                             |
| 35-54 (vs. 19-34)                   | -6.7 (0.4)         | -6.3 (0.8) | -4.7 (0.9) | -8.4 (0.7)  | -7.8 (1.2)                  |
| 55-71 (vs. 19-34)                   | -9.7 (0.5)         | -9.9 (1.0) | -7.8 (1.0) | -11.1 (0.9) | -9.5 (1.4)                  |
| <b>Country</b>                      |                    |            |            |             |                             |
| Finland (vs. Denmark)               | -3.7 (0.5)         | -          | -          | -           | -                           |
| Norway (vs. Denmark)                | -5.0 (0.5)         | -          | -          | -           | -                           |
| Sweden (vs. Denmark)                | -2.7 (0.6)         | -          | -          | -           | -                           |
| <b>Model 2</b>                      |                    |            |            |             |                             |
| Constant                            | 3.7 (0.5)          | 5.4 (1.0)  | 3.7 (0.8)  | 4.3 (0.5)   | 4.4 (1.1)                   |
| <b>Sex</b>                          |                    |            |            |             |                             |
| Male (vs. female)                   | 2.1 (0.3)          | 3.5 (0.6)  | 2.1 (0.7)  | 1.4 (0.5)   | 0.5 (0.9)                   |
| <b>Age</b>                          |                    |            |            |             |                             |
| 35-54 (vs. 19-34)                   | -5.8 (0.4)         | -6.3 (0.7) | -4.2 (0.7) | -5.7 (0.5)  | -5.7 (0.9)                  |
| 55-71 (vs. 19-34)                   | -7.5 (0.4)         | -9.4 (0.8) | -5.9 (0.8) | -6.0 (0.7)  | -5.3 (1.1)                  |
| <b>Average consumption (in cl.)</b> |                    |            |            |             |                             |
| 50-100 (vs. 0-50)                   | -0.1 (0.6)         | -0.2 (1.4) | -0.3 (1.0) | 0.1 (0.7)   | 0.5 (1.4)                   |
| 100-200 (vs. 0-50)                  | 1.5 (0.5)          | 1.1 (1.2)  | 0.4 (1.0)  | 1.9 (0.7)   | 3.2 (1.3)                   |
| 200-400 (vs. 0-50)                  | 4.8 (0.5)          | 3.5 (1.1)  | 3.3 (1.0)  | 6.2 (0.7)   | 6.9 (1.3)                   |
| 400-700 (vs. 0-50)                  | 9.7 (0.6)          | 8.0 (1.1)  | 7.4 (1.1)  | 12.9 (1.0)  | 11.9 (1.4)                  |
| 700-1100 (vs. 0-50)                 | 17.2 (0.7)         | 14.2 (1.2) | 16.4 (1.3) | 24.7 (1.3)  | 19.3 (1.9)                  |
| 1100- (vs. 0-50)                    | 37.6 (0.7)         | 32.3 (1.2) | 38.9 (1.3) | 54.2 (1.5)  | 43.7 (2.2)                  |
| <b>Country</b>                      |                    |            |            |             |                             |
| Finland (vs. Denmark)               | 0.4 (0.4)          | -          | -          | -           | -                           |
| Norway (vs. Denmark)                | 1.9 (0.4)          | -          | -          | -           | -                           |
| Sweden <sup>1</sup> (vs. Denmark)   | 2.0 (0.5)          | -          | -          | -           | -                           |

Interactions were tested by comparing a model which included all variables from model 2 plus all three interactions given below and another model which included all variables from model 2 plus the other two interactions (i.e. excluding the one being tested)

1) country × average consumption:  $F=7.9$  (18, 6402),  $p<0.001$

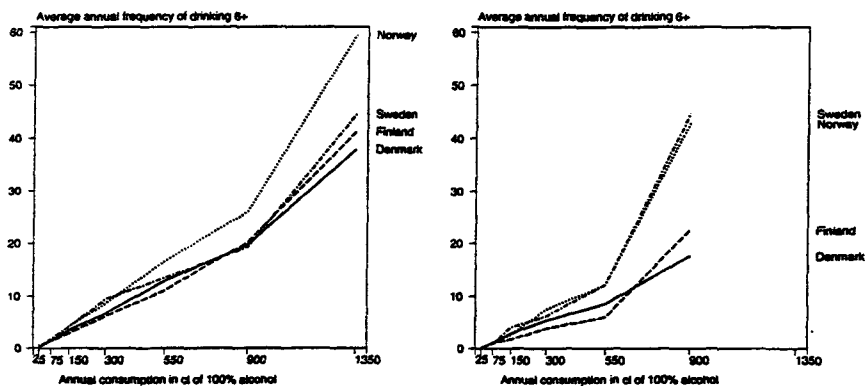
2) country × age:  $F=3.3$  (6, 6402),  $0.001<p<0.005$

3) country × sex:  $F=3.5$  (3, 6402),  $0.01<p<0.025$

<sup>1</sup> The Swedish drinking measure does not correspond to "6 or more drinks" but corresponds to a larger amount of alcohol drunk at a sitting.

Figure 4 shows essentially the same findings. Self-reported frequency of drinking 6+ is a strongly increasing function of average alcohol consumption in all the four Nordic countries, just like subjective intoxication frequency. Among men, the relationships between the frequency of drinking 6+ and average alcohol consumption are quite similar at least in Finland and Denmark, perhaps also in Sweden; Norwegians, however, report drinking 6+ more often than people with a similar consumption level in other Nordic countries, especially at higher average consumption levels. Among women, Finns and Danes have a similar connection between average consumption and frequency of 6+, while Swedes and Norwegians report drinking 6+ more often at each level of average consumption. Again, the measure used for Sweden is not actually "6+", but the amounts specified in the questionnaire were closer to "9+". It is impossible to know exactly what the result for Sweden would be if identical formulation had been used. What we can say is that the line drawn for Sweden should be somewhere above the current one and not below it.

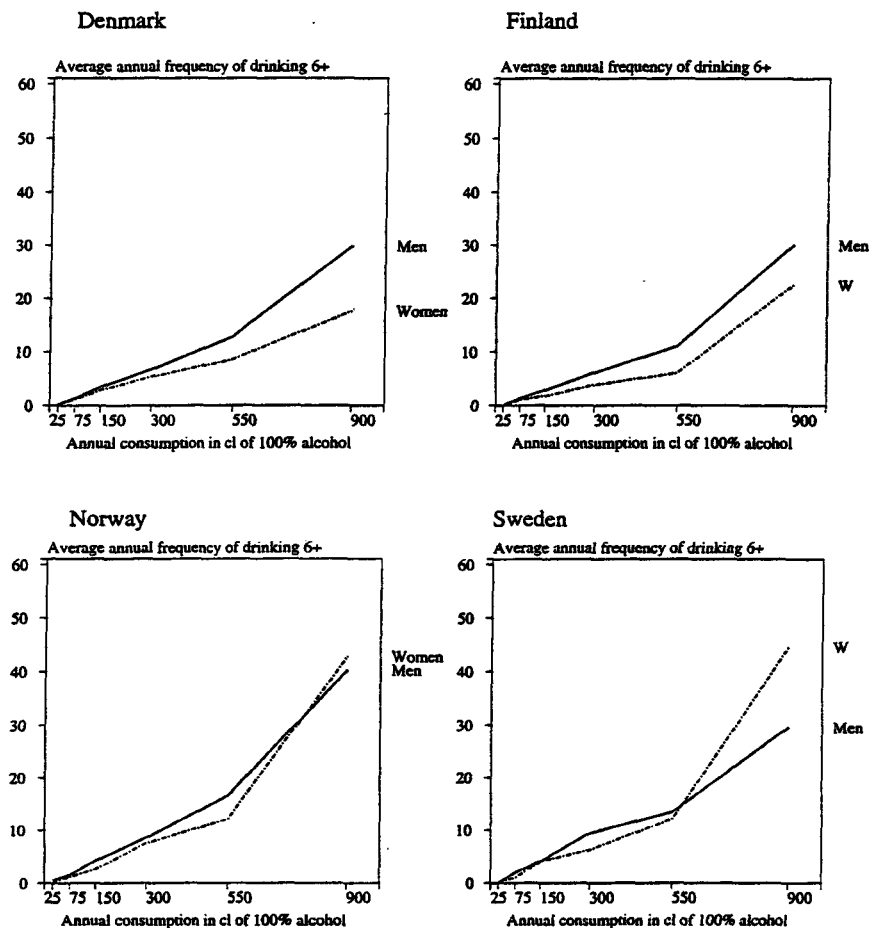
Figure 4. Average annual frequency of drinking 6 or more drinks at a sitting as a function of average annual consumption (in centilitres of 100% alcohol) by country. Men on the left and women on the right



Again, there were interactions. These are illustrated by the country specific models in Table 15, and the interested reader will find the age specific and sex specific models from Appendix 6 (Appendix 6: Tables 3-4, respectively). The result presented above needs to be specified with regard to age: with average consumption controlled for, the self-reported frequency of drinking 6+ in the youngest age group (19-34) was the highest in Norway and the second highest in Sweden, while in the age group of 35-54, there were practically no differences between countries. In the oldest age group (55-71), only Swedes had a higher frequency (Appendix 6: Table 3).

Otherwise, the regression models for the frequency of drinking 6+ show many of the same patterns that were observed for subjective intoxication frequency above, concerning e.g. the gender difference (which is also illustrated in Figure 5, which shows the curves from Figure 4 with a better view to gender comparison), the age pattern, and the interactions of average consumption and age or sex on the frequency of drinking 6+.

Figure 5. Average annual frequency of drinking 6 or more drinks at a sitting as a function of average annual consumption (in centilitres of 100% alcohol) by sex and country



At this point, it is probably useful to summarize some of the results from chapter 3.6. The differences between countries in intoxication frequency depend on the measure used. Among men, subjective intoxication frequency is the highest in Finland and the lowest in Norway, while the frequency of drinking 6+ is clearly the highest in Denmark and the lowest in Norway. Among women, the differences are smaller than among men.

Another set of results about the differences between countries in intoxication frequency was obtained by controlling for the average consumption level. These results are more about differences between countries in how much consumption centres round heavy drinking occasions, not about differences in the raw, “real” frequency of intoxication. These results showed that, at a given level of average consumption, the frequency of drinking 6+ was generally higher in Sweden and Norway than in Finland and Denmark. This was particularly the case among the young. Among older people, mainly Swedes stood out. Among men, the frequency was high particularly in Norway. The frequency of subjective intoxication, with average consumption held constant, was lower in Denmark than in the other three countries.

Important results also included the finding that men and younger age groups had a high intoxication frequency, regardless of intoxication measure, and this result persisted even after controlling for the average consumption level.

### **3.7 Beverage choice at Sunday meals**

The respondents were asked what they usually drank with the principal meal on Sundays. According to the results, it is rather rare to drink alcoholic beverages at the principal Sunday meal in the Nordic countries: 17% of the respondents in Denmark, 5% in Finland and 5%

in Norway reported drinking some alcoholic beverage and, in addition, 1% of Finns and 3% of Norwegians reported drinking light beer (Table 16). There is less variation in the proportion of people drinking beer but, clearly, the proportion of people who drink wine is much larger in Denmark than in Norway and Finland. A Finnish specialty is revealed in Table 16: every second respondent said they normally drank milk with their Sunday meal. Drinking milk was relatively popular also in Denmark, where one-fifth of the respondents reported drinking it. In Denmark and Norway, the most popular drink was water.

Table 16. Distribution of respondents by type of beverage they normally drink with principal meal on Sundays (%).

|                      | Denmark | Finland | Norway |
|----------------------|---------|---------|--------|
| Water                | 38      | 34      | 45     |
| Soft drinks          | 10      | 2       | 26     |
| Fruit juice          | 13      | 7       | 16     |
| Light beer           | 0       | 1       | 3      |
| Medium strength beer | 4       | 2       | 2      |
| Strong beer          | 0       | 0       | 0      |
| Wine                 | 13      | 3       | 3      |
| Milk                 | 19      | 51      | 4      |
| Other                | 3       | 1       | 1      |
| All                  | 100     | 100     | 100    |

## 4 NEGATIVE CONSEQUENCES OF OWN AND OTHER PEOPLE'S DRINKING

### 4.1 Negative consequences of own drinking

In the Nordic questionnaire, there were four questions about the negative consequences of drinking. The first three of these concerned hangover symptoms (feeling unwell, not-being able to get out of bed or go to work), and the fourth one asked whether the respondent had regretted anything he or she had said or done while under the influence (the more exact wordings of the questions can be found in Appendix 1, questions 54-57). This fourth item can be considered as a measure of "moral hangover" or "shame hangover", as opposed to physiological hangover. It is not only related to how much people drink but also to how people behave when they are intoxicated. Differences between countries in this measure, as contrasted with the three first measures of hangover symptoms, can tell us something about the differences in drunken comportment between the countries or about differences in what kind of behaviour is expected from an intoxicated person. Specifically: is it required that people act the same way when they are intoxicated than when they are sober (which probably results in people having less regrets after drinking)? Or does a different set of rules apply for intoxicated people; are they allowed to "act drunk" (which probably results in e.g. more open expression of different types of emotions and in less responsible behaviour, which can be regretted afterwards)?

Table 17 shows the proportion of people (drinkers and nondrinkers combined), by country and sex, who had had any experience of these four consequences of drinking in the 12 months preceding the survey ("yes, once or twice" and "yes, several times" combined). Appendix 6 (Appendix 6: Table 5) presents the proportion of people who had experienced the specified consequences repeatedly ("yes, several

times"). In the calculations, the prevalence among nondrinkers was set to 0 by definition, regardless of whether or not nondrinkers were posed these questions.

Feeling unwell is by far the most frequently reported consequence of the four consequences covered. Not being able to go to work because of drinking seems to be rare in all four countries, while not being able to get up and regretting things said or done are somewhere between these two extremes. This finding persists whether we look at consequences occurring at least once during the previous year or consequences occurring repeatedly. These specified negative consequences are reported more often among men than among women. It is interesting to observe the differences between the two Swedish surveys. The mailed questionnaire (1995) yielded a clearly higher proportion of people who had had some experience of the specified consequences than the telephone survey (1996). There is, however, no clear difference between the results concerning repeated experience of the consequences. This seems to offer partial support for the hypothesis that, in sensitive questions, a mailed questionnaire results in less social desirability effect than a telephone interview. The figures from 1996 are used in the comparisons below.

The sum of different types of negative consequence was counted (the sum varying between 0 and 4) and averages were calculated by country (Table 17). Among men, both the average number of types of consequence experienced during the previous year and the proportion of men who had experienced at least two different types of consequence during the previous year were larger in Finland and Denmark than in Norway and Sweden. Mostly, the prevalence of an individual negative consequence varied between countries much like the average. However, it may not be a coincidence that the one consequence that was

consistently less frequent in Denmark than in Finland was “regrets” (Table 17 and Appendix 6: Table 5). These results and the findings from chapter 3.6 could be hypothesized to be a result of differences between countries in drunken comportment: with the same amount of ingested alcohol, Danes would seem to behave slightly more according to an every-day code than Finns, who perhaps allow themselves to “act more drunk”; because of this, Danes are less likely to identify themselves as intoxicated and less likely to suffer from “shame hangover”, even though the physical symptoms the following morning were the same. The difference is perhaps not very large but it is quite consistent.

Among women, the average number of negative consequences experienced did not vary much between countries. As among men, the proportion of women who had experienced at least two different types of consequence during the previous year was higher, and some of the individual consequences were more common, in Denmark and Finland than in Norway and Sweden (Table 17).

Differences between countries in the frequency of experiencing negative consequences of drinking, of course, reflect the level of average consumption and the frequency of intoxication in the respective countries. In the next section, we turn to look at whether the differences between countries still hold, if the differences in average consumption and intoxication frequency are controlled for.

Table 17. Proportion of people who had experienced the specified negative consequence of drinking at least once during the previous 12 months (%) by country, consequence and sex, the average number of types of consequence experienced and the proportion of respondents who had experienced at least two different types of consequence

| MEN                                             | Denmark | Finland | Norway | Sweden<br>1996 | Sweden<br>1995 |
|-------------------------------------------------|---------|---------|--------|----------------|----------------|
| Consequence                                     |         |         |        |                |                |
| Felt unwell                                     | 49      | 48      | 37     | 38             | 51             |
| Did not get up                                  | 18      | 20      | 13     | 16             | 26             |
| Did not go to work                              | 4       | 5       | 3      | 4              | 6              |
| Regrets                                         | 18      | 21      | 15     | 20             | 27             |
| Average number of types<br>of consequence (0-4) | 0.9     | 0.9     | 0.7    | 0.8            | 1.1            |
| % with 2 or more types<br>of consequence        | 25      | 28      | 19     | 21             | 34             |
| WOMEN                                           |         |         |        |                |                |
| Felt unwell                                     | 37      | 30      | 25     | 28             | 40             |
| Did not get up                                  | 12      | 13      | 10     | 9              | 18             |
| Did not go to work                              | 2       | 3       | 2      | 1              | 4              |
| Regrets                                         | 9       | 10      | 9      | 10             | 17             |
| Average number of types<br>of consequence (0-4) | 0.6     | 0.5     | 0.5    | 0.5            | 0.8            |
| % with 2 or more types<br>of consequence        | 16      | 15      | 13     | 13             | 23             |

#### 4.2 Negative consequences of own drinking as a function of average consumption and by age and sex

In order to describe the association between consequences of drinking and average consumption level and intoxication, an index of negative consequences was constructed (see chapter 2.2 for details). For this analysis, some categories of intoxication frequency and of average consumption were combined in order to decrease random variation (see chapter 2.3 for details). Figure 6 shows the average consequence index as a function of average consumption. As was expected, the reported

number of negative consequences increases with increasing average consumption. Among men, Danes report somewhat fewer consequences than do the others in the same levels of consumption. Among women, the variation is much larger than among men. Norwegian women report relatively many consequences, and Danish women relatively few.

The gender difference in the frequency of negative consequences, with the level of consumption held constant, has a different pattern in different countries. Danish women report even fewer consequences than do Danish men with the same consumption level (Figure 6). In Norway, the situation is the reverse: women report more consequences than do the men with the same consumption.

Figures 7 and 8 show the average consequence index as a function of annual intoxication frequency and frequency of drinking 6+, respectively. The former is not given for Sweden, because in the 1995 data, where this could be obtained, the frequency of experiencing consequences is not comparable with the frequencies in the other countries (see Table 17).

Compared to the above situation, where we looked at negative consequences as a function of average consumption, the picture changes somewhat when we consider negative consequences as a function of subjective intoxication frequency or frequency of drinking 6+. Among men, with the frequency of subjective intoxication held constant, Danes generally report not fewer but rather more consequences than do the others. Even so, with the frequency of drinking 6+ (the more “objective” intoxication measure) held constant, Danish men again report the fewest consequences. Our interpretation of this is that differences in how people define intoxication affect the connection between subjective intoxication frequency and consequences. Danish men, who admit to

being intoxicated relatively infrequently, compared to how often they drink 6+, get more hangover symptoms than other people with the same subjective intoxication frequency. This implies that, compared to the other Nordic countries, Danes have stricter criteria for intoxication.

The cause for the differences between countries in experiencing consequences of drinking, with the frequency of drinking 6+ held constant, deserves a thought, since it could have been expected that a certain frequency of heavy drinking occasions would predict a similar level of hangover symptoms in all countries. One reason for the low level of consequences in Denmark, relative to their high frequency of drinking 6+, could be that Danes' drinking may be more spread over the day than in the other countries, where drinking may more often be concentrated to just a few hours in the evening. The differences could also be caused by differences in how acceptable or socially stigmatizing hangover symptoms are and how uncomfortable it is for the respondents to admit to having hangover symptoms. There may also be differences between countries in the willingness to report frequency of drinking 6+. It might, of course, take more than just six drinks to cause hangover symptoms in experienced drinkers. At a given frequency of drinking 6+, the frequency of, say, drinking 10+ might be the largest in Finland and the smallest in Denmark. Unfortunately, our data do not allow us to explore this issue further.

Among women, the connection between the average consequence index and the three drinking measures used varies less between the measures, but the nature of the variation among women is similar to that among men. Danish women report relatively few hangover symptoms in relation to all three drinking measures, but the connection is stronger as a function of intoxication frequency than as a function of frequency of drinking 6+. In Finland, it is rather the other way round. In Norway, the

prevalence of hangover symptoms is relatively high, especially at high levels of consumption and intoxication frequency.

Figure 6. Average consequence index as a function of average annual consumption (in centilitres of 100% alcohol) by country. Men on the left and women on the right

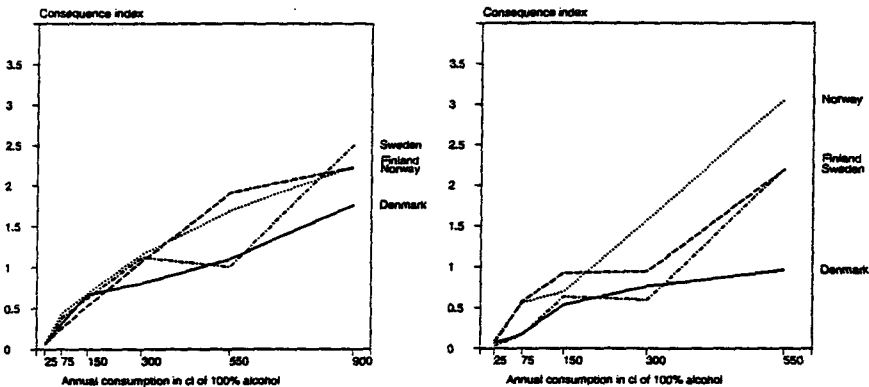


Figure 7. Average consequence index as a function of annual intoxication frequency by country. Men on the left and women on the right

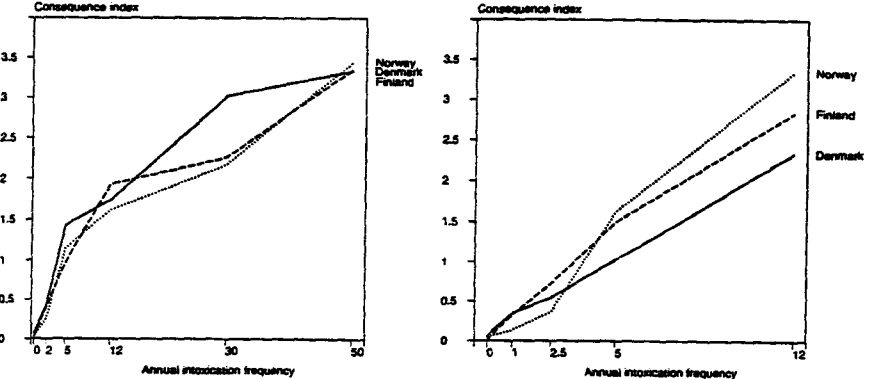
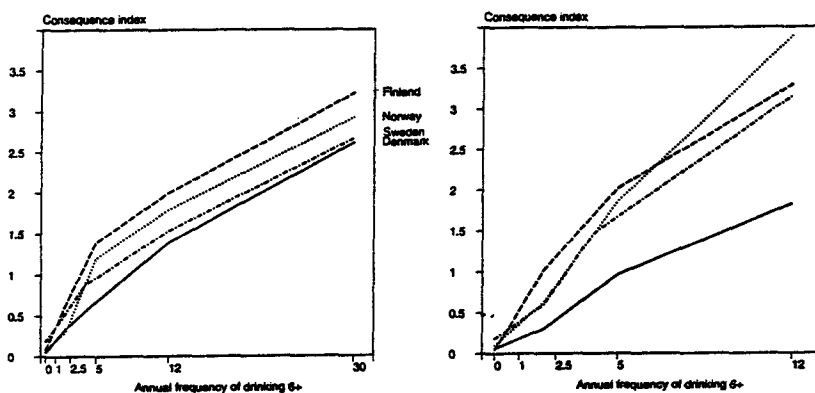


Figure 8. Average consequence index as a function of annual frequency of drinking 6+ drinks, by country. Men on the left and women on the right



Lastly, Table 18 shows how the average consequence index strongly decreases with increasing age. Partly, this is a natural result of the differences between age groups in the frequency of drinking 6+ and in the subjective intoxication frequency, since these show roughly the same age pattern in most of the countries (Table 13). However, relative differences between age groups are so much larger in the reported consequences than in intoxication frequency that this cannot be the only explanation. Three of the consequence items were “did not get up”, “did not go to work” and “regrets”. It may be harder for older people not to get up in the morning or not to go to work, e.g. owing to greater responsibilities in the job. Older people may also have learned to drink more responsibly, with regard to both the following days’ work and their behaviour while under the influence, and they thus have fewer regrets afterwards.

Table 18. Average consequence index by country, age and sex

|           | Denmark | Finland | Norway | Sweden |
|-----------|---------|---------|--------|--------|
| MEN       |         |         |        | 1996   |
| 19-34     | 2.4     | 2.5     | 1.8    | 2.1    |
| 35-54     | 0.6     | 0.8     | 0.5    | 0.6    |
| 55-71     | 0.2     | 0.2     | 0.1    | 0.2    |
| All men   | 1.1     | 1.2     | 0.9    | 1.0    |
| WOMEN     |         |         |        |        |
| 19-34     | 1.1     | 1.4     | 1.4    | 1.2    |
| 35-54     | 0.4     | 0.4     | 0.3    | 0.4    |
| 55-71     | 0.1     | 0.1     | 0.0    | 0.0    |
| All women | 0.6     | 0.6     | 0.6    | 0.6    |
| ALL       | 0.9     | 0.9     | 0.7    | 0.8    |

### 4.3 Nuisance caused by other people's drinking

The respondents were also asked whether they had experienced different types of nuisance caused by other people's drinking during the previous 12 months (response categories were "no", "Yes, once or twice", and "Yes, several times"). This issue has not been covered in earlier Nordic comparative surveys, but these questions have earlier been used in Norway (Amundsen et al. 1995).

Table 19 shows the proportion of people who reported experiences of nuisance at least once during the previous year by type of nuisance, country and sex. Appendix 6 (Appendix 6: Table 6) shows the proportion of people who reported repeated experiences of nuisance.

Among men, the most common types of nuisance are harassment in public place, insults, and noise disturbing sleep (Table 19). Among women, there is another common type of nuisance, namely being afraid of intoxicated people on the street. The average number of types of nuisance reported is somewhat larger among women than among men. The gender difference is particularly clear in Finland, but it is visible in Norway and Sweden as well. The proportion of people who report at least three different types of nuisance is also higher among women.

Among men, more nuisances are reported in Denmark and in Sweden than in Finland and Norway (Table 19). Among women, the country differences are less clear, but Norwegians seem to report less nuisance than citizens of the other Nordic countries. The proportion of women who have been afraid of intoxicated people on the streets at least once is smaller in Denmark than in the other Nordic countries. The overall picture remains very much the same if we look at the proportion of people reporting repeated nuisance experiences (Appendix 6: Table 6).

Table 19. Proportion of people who report experiences of the specified type of nuisance due to other people's drinking at least once during the previous 12 months (%) by country, sex and type of nuisance, the average number of types of nuisance reported and the proportion of respondents who report at least three different types of nuisance

| MEN                                                           | Denmark | Finland | Norway | Sweden<br>1996 |
|---------------------------------------------------------------|---------|---------|--------|----------------|
| Nuisance                                                      |         |         |        |                |
| - Harassed by intoxicated people in a public place            | 22      | 15      | 12     | 26             |
| - Harassed by intoxicated people in a private setting         | 10      | 6       | 3      | 10             |
| - Physical harm caused by an intoxicated person               | 2       | 2       | 2      | 3              |
| - Clothes or other belongings ruined by an intoxicated person | 3       | 4       | 4      | 6              |
| - Insulted by an intoxicated person                           | 23      | 12      | 14     | 22             |
| - Been afraid of intoxicated people on the street             | 9       | 8       | 8      | 12             |
| - Kept awake at night by drunken noises                       | 22      | 17      | 17     | 16             |
| Average number of types of nuisance experienced (0-7)         | 0.9     | 0.6     | 0.6    | 0.9            |
| % with 3 or more types of nuisance                            | 11      | 7       | 6      | 11             |
| WOMEN                                                         |         |         |        |                |
| - Harassed by intoxicated people in a public place            | 19      | 18      | 14     | 25             |
| - Harassed by intoxicated people in a private setting         | 10      | 8       | 5      | 8              |
| - Physical harm caused by an intoxicated person               | 1       | 2       | 1      | 1              |
| - Clothes or other belongings ruined by an intoxicated person | 2       | 3       | 4      | 4              |
| - Insulted by an intoxicated person                           | 18      | 18      | 13     | 19             |
| - Been afraid of intoxicated people on the street             | 15      | 25      | 19     | 24             |
| - Kept awake at night by drunken noises                       | 24      | 23      | 22     | 22             |
| Average number of types of nuisance experienced (0-7)         | 0.9     | 1.0     | 0.8    | 1.0            |
| % with 3 or more types of nuisance                            | 12      | 12      | 10     | 15             |

#### **4.4 Nuisance caused by other people's drinking as a function of own drinking and by age and sex**

We constructed an index of nuisance reported, the same way we did for consequences of own drinking (see chapter 2.2 for details). Here we present a rough description of how the experience of nuisance varies in different levels of consumption and intoxication. Probably the relationship between drinking and experience of nuisance can be very different for different types of nuisance, e.g. for being physically harmed or for sleep being disturbed. This issue deserves more thorough examination, but it is outside the scope of this report.

Figures 9-11 show the average nuisance index as a function of average alcohol consumption, subjective intoxication frequency and frequency of drinking 6+, respectively, by sex. As with the figures for the consequence index, the categorization of the "x-axis" is different for men and women and different from one drinking measure to another, and therefore comparisons between men and women and between different drinking measures should only be done with caution.

There was relatively little variation in the prevalence of reporting nuisances caused by other people's drinking at different levels of consumption (Figure 9), although there does seem to be a slight increase in reporting nuisances, among both men and women, at least after some threshold value. In all categories of average consumption where comparisons can be made between men and women, women report more nuisance than men.

Among women, differences between countries are not very systematic - perhaps nuisances are reported slightly more than average in Sweden and slightly less than average in Norway and Denmark. Among men, when average consumption is held constant, the least nuisance is

reported by Finns, the second least by Norwegians (especially at low levels of consumption), and the most by Danes (especially at low levels of consumption) and Swedes.

At least among women, more nuisances are reported at high levels of intoxication frequency than at high levels of average consumption (Figure 10, compare with Figure 9). Again, at each level of intoxication frequency where comparisons can be made, women report more nuisance, the gender difference being the smallest in Denmark and the largest in Finland.

The picture did not change radically when intoxication frequency was replaced by the frequency of drinking 6+, but the increasing trend among men was somewhat clearer for the frequency of drinking 6+ than for the subjective intoxication frequency (Figure 11). This relationship could be obtained for Sweden as well, and as with the connection between nuisance index and average consumption, Swedes reported nuisances more than average when the level of 6+ frequency was held constant.

The largest difference between Figures 10 and 11 occurs for Danish men. Among them, those who report drinking 6+ frequently report fewer nuisance experiences than those who report frequent intoxication. There is at least two ways to interpret this. First, there may be “real” differences in (drinking) environments between those who have a high intoxication frequency and those who have a high frequency of drinking 6+, although one may wonder why this should be specifically the case in Denmark. The former might have a rougher lifestyle, and they might drink and live in environments where more nuisance is caused by other people’s drinking. Secondly, there could be a difference in the tendency to report nuisance: it is possible that those who claim not to be

intoxicated even though they drink heavily may also underrate the nuisance caused by other people's drinking.

Figure 9. Average nuisance index as a function of average annual consumption (in centilitres of 100% alcohol) by country. Men on the left and women on the right

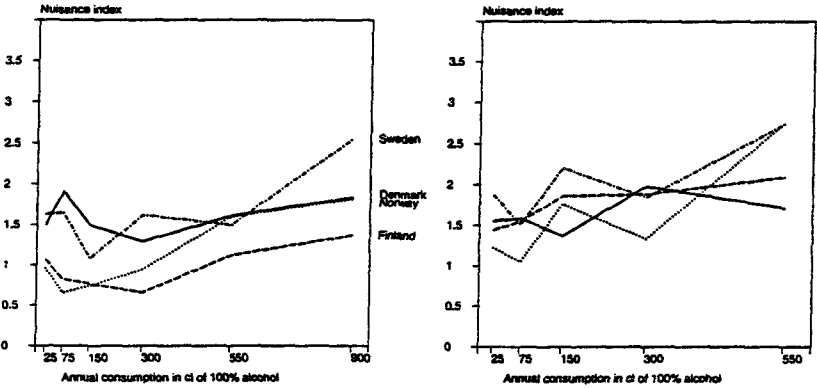


Figure 10. Average nuisance index as a function of annual intoxication frequency by country. Men on the left and women on the right

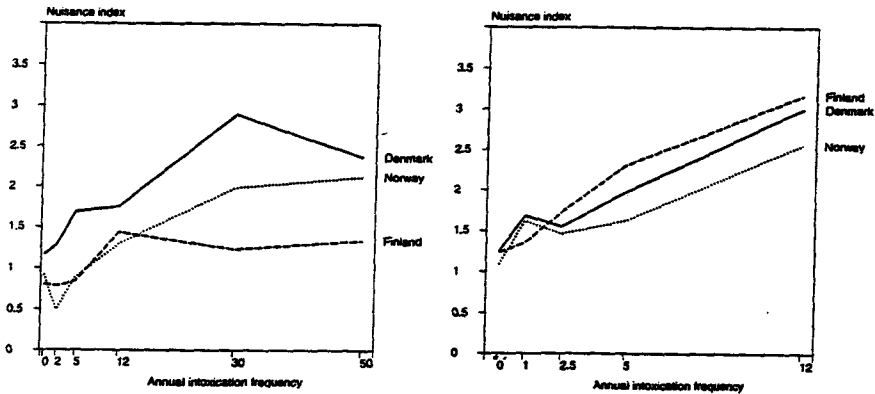


Figure 11. Average nuisance index as a function of annual frequency of drinking 6+ drinks, by country. Men on the left and women on the right

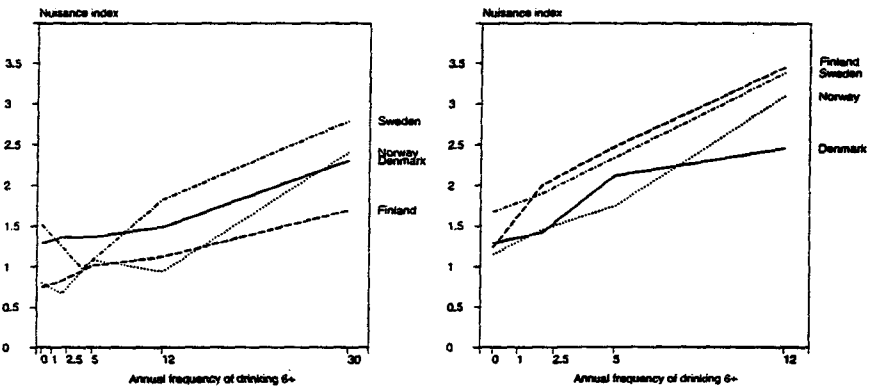


Table 20 presents the connection between reporting nuisances and age, by country and sex. It could be thought that older people are more sensitive to nuisance caused by other people's drinking. Therefore, it is slightly surprising how much more young people experience nuisance than do older people. A partial explanation is again that younger people drink more and get intoxicated more frequently, and as was seen above, these factors are connected to increasing levels of nuisance experiences. In addition, irrespective of people's drinking habits, young people are more likely to socialize outside the home, visit restaurants and other public places, where disturbance is more likely. Young people are also more likely to live in more restless areas, where accommodation is cheaper.

Table 20. Average nuisance index by country, age and sex

| MEN       | Denmark | Finland | Norway | Sweden<br>1996 |
|-----------|---------|---------|--------|----------------|
| 19-34     | 2.4     | 1.6     | 1.6    | 2.3            |
| 35-54     | 1.4     | 0.9     | 0.8    | 1.4            |
| 55-71     | 0.9     | 0.6     | 0.5    | 1.2            |
| All men   | 1.6     | 1.0     | 1.0    | 1.7            |
| WOMEN     |         |         |        |                |
| 19-34     | 2.5     | 2.6     | 2.1    | 3.0            |
| 35-54     | 1.4     | 1.5     | 1.1    | 1.7            |
| 55-71     | 0.8     | 0.8     | 0.7    | 1.1            |
| All women | 1.7     | 1.6     | 1.4    | 2.0            |
| ALL       | 1.6     | 1.3     | 1.2    | 1.8            |

## 5 ATTITUDES

Surveys of public attitudes toward the sale of alcoholic beverages in grocery stores have been conducted several times in Finland, Norway and Sweden. A good time series of these surveys is presented by Holder et al. (1998). These surveys have not been coordinated with respect to the methods used, the questions asked, or the time periods when they have been carried out. They provide an unbiased picture of the development of attitudes, but they are not a good source of data for comparing the different countries. The 1996-97 Nordic comparative survey covered opinions on whether different types of alcoholic beverages should be sold in grocery stores, and these data should be more or less comparable over the countries. The beverage types included were: spirits, table wine (e.g. red wine, white wine), fortified wine (e.g. sherry, port, vermouth), strong beer (sold by the alcohol monopoly), and medium strength beer (this is also the order in which the different beverage types were covered in the survey). The alcohol contents were not specified, and these vary somewhat between countries, but the content of each category was explained by the examples and additions shown in brackets above. Because all alcoholic beverages are already sold in Danish grocery stores, this question was not relevant in Denmark and was, therefore, not included in the Danish questionnaire.

Support for a beverage to be sold in grocery stores decreased with increasing alcohol content, with one exception: the respondents were more in favour of selling table wine than strong beer in grocery stores, even though table wine has generally a higher alcohol content (Table 21). This is somewhat surprising, since it is hardly conceivable that table wine would be sold in grocery stores but strong beer would not. This finding was true particularly in Finland, but also in Sweden. In Norway, these beverages were favoured equally. With no exceptions, men were

more in favour of selling alcoholic beverages in grocery stores than were women.

Norwegians were the least willing to accept selling of different types of alcohol in grocery stores, among both men and women. Finns were, more than Swedes, in favour of selling table wine in grocery stores, but Finns, and particularly Finnish women, opposed selling spirits in grocery stores more than Swedes.

Compared to the figures shown by Holder et al. (1998), our proportions in favour of selling different types of alcoholic beverages in grocery stores are clearly larger for Finland and Sweden, but not for Norway. Explanations to this are probably found in the differing methods of conducting the surveys and in differences in how the questions were formulated. For example, the Finnish surveys which Holder et al. used were conducted as face-to-face interviews, which are likely to yield smaller proportions in favour of alcohol sales in grocery stores than a telephone survey. On the other hand, the Norwegian data presented by Holder et al. was also gathered using face-to-face interviews, and for Norway there was no clear difference in the results of ours and those of Holder et al. In some of the questions, used in the survey shown by Holder et al, a category of "cannot say" or "indifferent" was an alternative, which may result in somewhat smaller proportions of both those who do and those who do not want alcoholic beverages sold in grocery stores.

Interpreting the differences in opinions between countries and the causes of these differences is not straight-forward. According to a study made by the Swedish National Public Health Institute (Arvidsson and Lindén-Boström 1998), public opinion on whether or not spirits, wine or strong beer should be sold in grocery stores was very much dependent on how

the question was posed and whether the expected consequences of an increase in the availability of alcohol were mentioned. Without any additional information given, as was the situation with the Nordic questionnaire, 36% of the respondents did not want any of the three beverage types sold in grocery stores (31% in this study). But when the respondents were told about the expected increase in alcohol-related deaths and alcohol-related violence, the proportion rose to 63%, and when the respondents were further told about the expected increase in teenage alcohol consumption, the proportion rose to 72%. It is clear that the responses are very much affected by how much information the respondents have about different benefits and harms related to increased availability. The average amount of information people have on these issues is also likely to vary from country to country and from time to time, depending on how much publicity different research results and discussions on the subject receive in the media. It is not possible to say, on the basis of Table 21, how much the sale of strong beer, wine and spirits would be favoured in the different countries, if knowledge of the effects of increasing availability could be held constant.

Table 21. Opinions about whether different types of alcoholic drinks should be sold in grocery stores (% yes)

|                      | Men |     |     | Women |     |     | All |     |     |
|----------------------|-----|-----|-----|-------|-----|-----|-----|-----|-----|
|                      | Fin | Nor | Swe | Fin   | Nor | Swe | Fin | Nor | Swe |
| Spirits              | 41  | 28  | 43  | 17    | 13  | 31  | 29  | 20  | 37  |
| Fortified wine       | 57  | 41  | 56  | 30    | 24  | 41  | 43  | 33  | 49  |
| Table wine           | 89  | 62  | 75  | 75    | 49  | 64  | 82  | 56  | 69  |
| Strong beer          | 75  | 67  | 67  | 46    | 44  | 47  | 60  | 56  | 57  |
| Medium strength beer | 96  | 81  | 96  | 87    | 70  | 91  | 92  | 76  | 93  |

## 6 DRUG USE

The last area covered in the Nordic survey was the use of cannabis (marijuana or hashish) and attitudes towards cannabis use. The previous Nordic comparative survey, carried out in 1993-95, was the first comparative study to explore differences in drug use and attitudes to drug use between the Nordic countries (Hakkarainen et al. 1996b). The study confirmed the expectation that drug use is the most widespread in Denmark and the least so in Finland (and Iceland), with Norway and Sweden somewhere in-between, and that in the majority of cases drug use is limited to sporadic experimenting with cannabis. The proportion of ever-users of cannabis in 1993-95 was 30% in Denmark, 11% in Sweden, 8% in Norway and 7% in Finland.

Table 22 shows the prevalence of drug use in the four countries, as estimated from the current data. In all four countries, a clear majority of the population has never used cannabis. The rank-order of the four countries in the proportion of ever-users of cannabis is the same as it was previously, but the proportions are smaller in Denmark and Finland and higher in Norway (the Swedish data are the same as above; the difference, 11% vs. 12%, is caused by using slightly different age groups). The smaller Finnish and Danish proportions, as compared to the 1993-94 data, are more likely to be caused by differences in data collection than to show a real decrease in use. The earlier surveys were all conducted using mailed questionnaires, which are more likely to result in higher estimates of the proportion of users. Only less than one per cent of the respondents in Finland and Norway, and less than two per cent in Denmark, report drug use during the 30 days preceding the survey.

In all four countries, the proportion of people who report ever-use

decreases with age (Table 23). Denmark is in a league of its own in all age groups. Among young men, there is practically no difference in ever-use between Finland, Norway and Sweden.

Table 22. Use of cannabis (marijuana or hashish) by country (%)

|                 | Denmark <sup>1</sup> | Finland | Norway |
|-----------------|----------------------|---------|--------|
| Ever-use        | 26                   | 6       | 11     |
| 0-30 days ago   | 1.8                  | 0.4     | 0.7    |
| 1-12 months ago | 2.6                  | 1.3     | 1.7    |
| Over a year ago | 21.3                 | 4.4     | 8.7    |
| Never           | 74                   | 94      | 89     |
| All             | 100                  | 100     | 100    |

|                   |                          |  |
|-------------------|--------------------------|--|
|                   | Sweden 1995 <sup>2</sup> |  |
| Ever-use          | 12                       |  |
| 0-6 months ago    | 1.4                      |  |
| Over 6 months ago | 10.2                     |  |
| Never             | 88                       |  |
| All               | 100                      |  |

<sup>1</sup> In Denmark, the question formulation included only “hashish”, in the other countries “marijuana or hashish”

<sup>2</sup> As calculated from two questions posed: 1) Have you ever used marijuana or hashish? 2) Have you used marijuana or hashish during the past 6 months? Both offered the alternative “do not know”, which was used in 0.2% of the cases in the first question and 0.1% of the cases in the second one. Data from a postal survey.

**Table 23. Proportion of ever-users of cannabis (marijuana or hashish) by country, age and sex (%)**

|              | Denmark | Finland | Norway | Sweden<br>1995 <sup>1</sup> |
|--------------|---------|---------|--------|-----------------------------|
| <b>Men</b>   |         |         |        |                             |
| 19-34        | 49      | 19      | 21     | 20                          |
| 35-54        | 33      | 5       | 14     | 16                          |
| 55-71        | 7       | 1       | 3      | 2                           |
| All men      | 33      | 8       | 14     | 14                          |
| <b>Women</b> |         |         |        |                             |
| 19-34        | 28      | 9       | 14     | 14                          |
| 35-54        | 21      | 2       | 7      | 11                          |
| 55-71        | 2       | 1       | 1      | 0                           |
| All women    | 19      | 4       | 8      | 9                           |

<sup>1</sup>Data from a postal survey

Attitudes towards cannabis use were covered by asking whether the respondent agreed with the sentence “marijuana and hashish are no more dangerous than alcohol, and it should therefore not be forbidden to use such substances” and whether he or she thought that cannabis should be sold in pharmacies over the counter, or with prescription. Unfortunately, in Denmark these questions were only posed to ever-users of cannabis. Therefore, we first show the results for the whole population in Finland, Norway and Sweden (Tables 24 and 25), and then the results for ever-users in all four countries (Table 26).

Legalization of cannabis use gets very little support in Norway and Sweden, and even less in Finland (Table 24). Finns, Norwegians and Swedes do not want to have cannabis sold in pharmacies, either, over the counter or on prescription (Table 25). There were no major changes in these attitudes since the 1993-95 study. Among ever-users of cannabis, the attitudes were, naturally, much more liberal, but even among them,

only a relatively small part of the respondents favoured legalization or sale in pharmacies (Table 26). Even when making comparisons within this liberal subgroup of ever-users, Danes had more liberal attitudes than others.

Heavy drinkers seem to have more liberal attitudes towards cannabis: among those whose annual consumption was over 10 litres of pure alcohol, the proportion in favour of the legalization of cannabis use was 13% in Finland, 32% in Norway and 11% in Sweden. The proportion of ever-users of cannabis was also much higher among the heavy drinkers than in the general population: 38% in Denmark, 16% in Finland, 46% in Norway and 30% in Sweden. This same pattern was also observed in the previous surveys. Among nondrinkers, the proportion of ever-users was very low in Finland, Norway and Sweden (1%, 3%, 4%, respectively) but it was relatively high in Denmark (18%).

Table 24. Agreeing with the sentence "marijuana and hashish are no more dangerous than alcohol, and it should therefore not be forbidden to use such substances" (%)

|            | Finland | Norway | Sweden 1995 <sup>1</sup> |
|------------|---------|--------|--------------------------|
| Agree      | 3       | 5      | 3                        |
| Disagree   | 92      | 87     | 89                       |
| Cannot say | 5       | 8      | 8                        |
| All        | 100     | 100    | 100                      |

<sup>1</sup>Data from a postal survey

**Table 25. Opinion on whether cannabis should be sold in pharmacies, over the counter or on prescription only (%)**

|                      | Finland | Norway | Sweden 1995 <sup>1</sup> |
|----------------------|---------|--------|--------------------------|
| Over the counter     | 1       | 4      | 1                        |
| On prescription only | 7       | 4      | 4                        |
| Should be forbidden  | 89      | 87     | 89                       |
| Cannot say           | 3       | 5      | 7                        |
| All                  | 100     | 100    | 100                      |

<sup>1</sup>Data from a postal survey

**Table 26. Proportion of ever-users of cannabis who agree and disagree with legalization of cannabis use and with the sale of cannabis in pharmacies, over the counter or on prescription only (%).**

|                                      | Denmark | Finland | Norway | Sweden 1995 <sup>2</sup> |
|--------------------------------------|---------|---------|--------|--------------------------|
| Agree with legalization <sup>1</sup> | 35      | 24      | 24     | 11                       |
| Disagree with legalization           | 55      | 70      | 62     | 80                       |
| In pharmacies, over the counter      | 26      | 7       | 18     | 7                        |
| In pharmacies, prescription only     | 22      | 11      | 11     | 5                        |
| Should be forbidden                  | 43      | 75      | 62     | 74                       |
| N                                    | 625     | 91      | 195    | 212                      |

<sup>1</sup>Agreeing with the sentence “marijuana and hashish are no more dangerous than alcohol, and therefore it should not be forbidden to use such substances”. In Denmark, this was expressed in the form “...and therefore it should be allowed to use these substances.”

<sup>2</sup>Data from a postal survey

## 7 SUMMARY AND CONCLUSIONS

The main aim of this comparative project was to lay a foundation for following Nordic drinking habits in the changing Europe. Success in reaching this aim was not perfect, since Iceland could not participate in the project, and in Sweden only parts of the standardized questionnaire could be used and only for one part of the whole KALK sample. We still believe that this project serves its purpose. In the present report, we have concentrated on describing similarities and differences in drinking habits and attitudes towards drinking and drug use between Denmark, Finland, Norway and Sweden. In the following, the main findings of this comparative survey are listed; after this, some conclusions are drawn about the current drinking habits in the Nordic countries.

### *Summary of main results*

The *proportion of nondrinkers* did not differ much between Finland, Norway and Sweden, but it was clearly smaller in Denmark. The proportion of nondrinkers was approximately twice as large among women as among men in all countries, and this ratio did not vary much between age groups. In general, the proportion of nondrinkers increased with age.

*Mean alcohol consumption level* was the largest in Denmark, followed by Finland, Sweden and Norway. Finnish men drink, on the average, clearly more than Swedish men, but among women the difference is much smaller.

The *estimated proportion of all alcohol, drunk by women*, varied from 24% in Finland to 32% in Denmark. A detail that well describes the country differences in average consumption level within the Nordic countries is that Danish women's consumption seems to be at

approximately the same level as that of Norwegian men.

In Finland, Norway and Sweden, *the mean consumption level* generally decreased with increasing age. In Denmark, there were no systematic age differences. As a consequence, the country differences in mean consumption level were the largest in the oldest age groups.

Much larger differences between countries were found in the *frequency of drinking* than in the *average amount consumed when drinking*. The average drinking frequency was almost three times higher in Denmark than in Norway, with Finland and Sweden in between these two extremes, closer to Norway than to Denmark. Denmark was the only country where drinking frequency increased with age. In the other countries, drinking frequency did not increase; it was rather more likely to decrease from the middle age group (35-54) to the oldest age group (55-71).

The *estimated average amounts drunk on a drinking occasion* were the largest in Finland, among men, and in Denmark, among women, but the differences were very small compared to the differences in drinking frequency. The average amount drunk during the previous 7 days varied, among men, from 6.2 cl (approximately 4.1 drinks) of pure alcohol in Denmark to 7.3 cl (4.9 drinks) in Finland and, among women, from 4.0 cl (2.7 drinks) in Finland and Norway to 4.4 cl (2.9 drinks) in Denmark.

*Beer drinking dominated* in all four Nordic countries. Wine consumption has also gained ground. More wine than spirits (as 100% alcohol) is consumed in all countries except Finland. Danish, Norwegian and Swedish women drink even more, or at least as much, wine as beer.

In general, the *proportion of heavy drinkers* (here defined as people with

an annual consumption of at least 10 litres of pure alcohol) was very closely associated with the average consumption level of the country or of the subgroup of the population. The proportion of all alcohol, drunk by the heaviest drinking 10% of the population, was very large in all four Nordic countries, indicating that the consumption distributions are very skew. This estimated proportion varied among men from one-third in Denmark to almost one-half in Norway, and among women from approximately 40% in Denmark to one-half in Finland and Norway.

Danes reported clearly the highest *frequency of drinking 6 or more drinks at a sitting*, Norwegians the lowest. The *frequency of subjective intoxication* was the highest in Finland, among men. Among women, the differences were small. Put it in another way, Danes report drinking 6+ drinks more often than they report intoxication, while Finns report intoxication more often than they report drinking 6+. In Sweden and Norway, these two measures were roughly in balance. This pattern was consistent across age groups and genders.

When average consumption was controlled for, Norwegians and Swedes reported a somewhat higher frequency of drinking 6+ than did Danes and Finns, while subjective intoxication frequency was clearly lower in Denmark only.

At all levels of average alcohol consumption, men reported a higher intoxication frequency and a higher frequency of drinking 6+ than did women, and younger age groups reported a higher frequency than the older ones.

*Alcoholic drinks have not become common beverages at Nordic meals.* Only in Denmark the proportion of people who normally drink wine with the Sunday meal is relatively large (13%). The proportion that

reports drinking any kind of beer is also quite small in Denmark, Finland and Norway.

*Hangover symptoms* were somewhat more frequently reported in Finland and Denmark than in Norway and Sweden, at least among men. In comparison with men from other countries, Danish men had a lower level of hangover symptoms when average consumption or the frequency of drinking 6+ was held constant. Yet, when subjective intoxication frequency was held constant, Danes had a higher level of symptoms, implying that Danish men have stricter criteria for "intoxication". Among women, the same pattern could be seen, although less clearly. Thus, differences in how people regard "intoxication" interfere with the results, when subjective intoxication frequency is used as a measure of intoxication frequency.

The most common *nuisances caused by other people's drinking* were harassment in a public place, insults and noise disturbing sleep and, among women, also being afraid of drunken people on the street. Nuisances were experienced slightly more by women than by men, in all other countries but Denmark. Nuisance experiences increased with increasing average consumption and increasing frequency of intoxication, particularly among women.

Among men, Swedes and Danes reported more nuisances than Finns and Norwegians; among women, Norwegians reported fewer nuisances than the others. This same order pretty much persisted even when average consumption or frequency of intoxication was held constant.

Nordic citizens had rather liberal views on *whether alcoholic beverages should be sold in grocery stores*. The majority of people in Finland, Norway and Sweden said they would allow strong beer and table wine

to be sold in grocery stores. Finns expressed the most liberal views and Norwegians the most restrictive views. It is known that people's opinions about increases in alcohol availability are strongly affected by the information they have about its effects. In this study, we could not distinguish to what extent the differences between countries were due to differences in knowledge and to what extent to differences in opinion, with knowledge held constant. .

*Cannabis use* is clearly more prevalent in Denmark than in the other three Nordic countries, and less prevalent in Finland than in Norway and Sweden. On the one hand, drug use is thus the most common in the same country where the level of alcohol consumption is the highest, i.e. Denmark, but on the other hand, drug use is the least common in Finland, which has the second highest alcohol consumption level. Nordic people, and even Nordic ever-users of cannabis, were quite opposed to liberalization of cannabis sales. Here, too, the most liberal attitudes were found in Denmark.

### *Conclusions*

The clearest difference that emerged from the data on drinking patterns in the four Nordic countries studied was that Danes' drinking differed from that of all others' - not always much, but quite systematically. The level of consumption, according to both statistics and the surveys, was the highest in Denmark, then in Finland and Sweden, and it was the lowest in Norway. Also the proportion of heavy drinkers, the frequency of drinking 6+, and the experiences of negative consequences of own drinking generally had this same pattern, with Danes showing high and Norwegians showing low prevalences. It seems that the factor behind this pattern is the overall level of alcohol consumption, just as the total consumption model suggests (Skog 1985). Level of consumption may be the most important predictor of hangover symptoms, proportion of

heavy drinkers and frequency of heavy drinking occasions, but it is not the only factor affecting these. In addition to the level of consumption, also drinking patterns and drinking culture have an effect. When the level of consumption was held constant, Danes, and Finns, had actually a smaller frequency of drinking 6+ than did Norwegians and Swedes. Similarly, relative to their high level of average consumption and relative to their high frequency of drinking 6+. Danes had a low level of hangover symptoms. It seems that, in Denmark, consumption centres less round heavy drinking occasions (even though the absolute frequency of heavy drinking occasions is the highest in Denmark), and consumption probably spreads more evenly both over different days of the week and over different hours of the day than in the other Nordic countries. All in all, it seems that Danes' drinking is, in some respects, closer to the stereotype of a "continental drinking pattern" (which exists more in people's minds than in any particular country): fewer abstainers; larger mean consumption, which is caused by a relatively high frequency of drinking, not by drinking larger quantities at a sitting; more frequent wine consumption at meals etc.

Subjectively defined frequency of intoxication turned out to be a very different measure of frequency of heavy drinking than the more objective measure of frequency of drinking 6+, at least in an international comparison. Finns showed the highest levels of frequency of subjective intoxication. Finns also reported a higher frequency of subjective intoxication than of drinking 6+, whereas in Denmark the situation was the reverse. One important reason for this is likely to be that there are differences between countries in how people define the word intoxication, in how socially (un)acceptable it is to be intoxicated, and in differences in how people behave when they are intoxicated. Further support for this was obtained from the differential connections between experiencing hangover symptoms and the frequency of drinking

6+, on the one hand, and between experiencing hangover symptoms and the frequency of subjective intoxication, on the other: with the frequency of drinking 6+ held constant, Danes generally report fewer hangover symptoms than the others, but with the frequency of subjective intoxication held constant, Danes (especially Danish men) generally report not fewer but rather more hangover symptoms than do the others; i.e. Danish men, who admit to being intoxicated relatively infrequently, compared to how often they drink 6+, get more hangover symptoms than other people with the same subjective intoxication frequency. This implies that, compared to the other Nordic countries, Danes have stricter criteria for intoxication. Additionally, compared to the frequency of reporting other hangover symptoms, Danes reported "regrets" due to drinking relatively infrequently. This, too, fits the hypothesis about differences between countries in drunken comportment: if drinking is a part of everyday life and if the ordinary norms about suitable behaviour apply also to intoxicated people in Denmark to a larger extent than in the other Nordic countries, then Danes, more than other Nordic people, try to act as if they were sober even when they have drunk a lot, and as a consequence, they are less likely to identify themselves as intoxicated and less likely to regret things said or done while intoxicated, even though the physical symptoms the following morning were the same.

A comparison between drinking habits in Finland, Norway and Sweden has been carried out also in 1979 (Hauge & Irgens-Jensen 1987). No great changes have taken place in the level of alcohol sales since that time. Drinking patterns, as reported in the surveys in 1979 and 1995-97, seem not to have changed considerably, either, at least not so considerably that we could distinguish an actual change from the effect of differences in the methods used (mailed questionnaires vs. telephone interviews). Perhaps the clearest change, which can also be seen from the sales statistics, is that spirits consumption has given way to beer and

wine consumption. Drinking patterns seem to be slow to change.

In the future, it is likely that consumption *patterns* will continue to change slowly. Nordic people will not very easily trade their Friday and Saturday night (beer) bottles for a wine bottle at the Sunday dinner. One major change that is likely to occur is a rise in the *level* of consumption, predicted to follow the expected cuts in the price of alcohol should the quotas for private importation of alcohol increase. Another likely change, expected to result from the foreseeable increase in average consumption, is a rise in the prevalence of different types of harm related to alcohol. We hope that this report serves as a useful source of data for future studies on developments in drinking habits in the Nordic countries.

## **ACKNOWLEDGMENTS**

We want to express our gratefulness to Leena Metso (Finland), Arvid Amundsen (Norway), Mats Ramstedt (Sweden), Leena Hubner (Sweden) and Karin Bergmark (Sweden) for helping to create and interpret the comparative data set, to Marko Ylitalo (Finland) for drawing some of the graphs, to Tove Nielsen at SIFA for her good editorial work, and to Heli Mustonen and several researchers at SIFA for valuable comments. We would also like to thank NAD for initiating the comparative study. We are grateful to Ása Gudmundsdottir (Iceland) for her contribution to the planning of the comparative study.

## REFERENCES

Amundsen A, Nordlund S, Vale PH (1995) Alkohol og narkotika i Oslo. (Alcohol and drugs in Oslo). SIFA-rapport nr. 1/95, Oslo.

Arvidsson O, Lindén Boström M (1998) Allmänhetens inställning till systembolaget eller som man frågar får man svar. (The general opinion of Systembolaget). Alkohol & Narkotika. CAN:s tidskrift 92(1): 13-14.

Bruun K (1965) The drinking habits of 18-year-old males in the northern capitals, 1960 and 1964. Alkoholpolitik XXVIII, 208-24.

Bruun K, Hauge R (1963) Drinking habits among northern youth. Helsinki.

De Leeuw ED, Mellenbergh GJ & Hox JJ (1996) The influence of data collection method on structural models. A comparison of a mail, a telephone and a face-to-face survey. Sociological Methods & Research 24(4): 443-72.

Hakkarainen P, Laursen L & Tigerstedt C (Eds) (1996a) Discussing drugs and drug policy. Comparative studies on four Nordic countries. NAD publication No. 31, Helsinki.

Hakkarainen P, Hübner L, Laursen L & Ødegård E (1996b) Drug use and public attitudes in the Nordic countries. In: Hakkarainen P, Laursen L & Tigerstedt C. (Eds) Discussing drugs and drug policy. Comparative studies on four Nordic countries. NAD publication No. 31, Helsinki.

Hanhinen S (1995) Nordic, Italian, and German drinking habits. A comparison between surveys made since the 1980s. Nordisk Alkoholtidskrift 12: 14-30.

Hauge R, Irgens-Jensen O (1987) Alkoholen i Norden. En sammenliknende undersøkelse av bruk av alkohol, holdninger till alkohol og konsekvenser av alkoholbruk i Finland, Island, Norge og Sverige. (Alcohol in the Nordic countries. A comparative study of use, attitudes, and consequences). Alko and NAD, Helsingfors.

Hein R, Vuorjoki S (1998) Alkoholi ja huumeet 1997. [Alcohol and drugs, in Finnish]. National Research and Development Centre for Welfare and Health, Statistical report 17/1998, Helsinki.

Holder HD, Kühlnhorn E, Nordlund S, Österberg E, Romelsjö A, Ugland T (1998) European intergration and Nordic alcohol policies: changes in alcohol controls and consequences in Finland, Norway and Sweden, 1980-1997. Ashgate, Aldershot.

Jonsson E, Nilsson T (1972) Samnordisk undersökning av vuxna mäns alkoholvanor. (Nordic comparative study of men's alcohol habits). CAN, Stockholm.

Kühlnhorn E, Ramstedt M, Hibell B, Larsson S, Zetterberg HL (1997) Svenskarnas konsumtion av alkohol från legala och illegala källor vid mitten av 1990-talet. En preliminär rapport. (The Swedes' consumption of alcohol from legal and illegal sources in the mid-1990's). OAS, Stockholm.

Midanik L (1982) The validity of self-reported alcohol consumption and alcohol problems: a literature review. *British Journal of Addiction* 77: 357-82.

Mustonen H, Metso L, Paakkanen P, Simpura J, Kaivonurmi M (1998) Suomalaiset juomatavat 1968, 1976, 1984, 1992 ja 1996. Juomatapatutkimuksen perustaulukoita ja julkaisuluettelo. [Finnish drinking habits in 1968, 1976, 1984, 1992 and 1996. Basic tables from the drinking habits surveys and a list of publications].

Nordic alcohol statistics 1992-1996. *Nordisk Alcohol- & Narkotikatidskrift* 14, 1997 (English Supplement), 110-26.

Nordlund S (1992) Metoder og metodeproblemer ved estimering av alkoholforbruk. (Methods and problems in estimating alcohol use). SIFA rapport Nr. 3/92. Statens Institutt for Alkohol- og Narkotikaforskning, Oslo.

Simpura J (1988) Comparison of indices of alcohol consumption in the Finnish 1984 drinking habits survey data. *The drinking and drug practices surveyor* No 22, p. 3-10.

Simpura J (1989) Drinking habits in the Nordic countries in the 1980's. A comparison of survey results. In: Waahlberg RB (ed) *Prevention and control/realities and aspirations. Proceedings of the 35th International Congress on Alcoholism and Drug Dependence. Vol IV. National Directorate for the Prevention of Alcohol and Drug Problems, Oslo.*

Skog O-J (1985) The collectivity of drinking cultures: a theory of the distribution of alcohol consumption. *British Journal of Addiction* 80, 83-99.

## APPENDICES

Appendix 1. The “prototype” version of the common Nordic questionnaire, translated into English. The original was formulated in Norwegian, then translated to the different Nordic languages and adjusted to special national conditions by the national members of the committee.

### Joint Nordic Questionnaire for Telephone Interviews (draft)

This survey charts drinking habits in the Nordic countries. Please answer the following questions about your own alcohol consumption, beginning with a general question about alcohol use. By alcohol, we mean all alcoholic beverages with an alcohol content of 2.5-3% or more. Non-alcoholic beer and beer with a low alcohol content (e.g. ....[local brands]) are thus excluded, as are non-alcoholic wines and wines with a low alcohol content (e.g. ....[local brands])

1.

**How often do you typically drink alcohol, whether it be in large or small quantities and whether it be beer, wine or spirits?**

1. Almost daily
2. 4-5 times per week
3. 2-3 times per week
4. Approximately once a week
5. A couple of times per month
6. Approximately once a month
7. A few times per year
8. Once in the past 12 months

- 9. More than 12 months since last drank alcohol
  - 0. Have never drunk any alcohol, or have only ever tasted it -
- GO TO QUESTION 58**

(If your answer to question 1 was 1-8:)

Next, a couple of questions about your beer consumption. By beer, we mean all types of beer with an alcohol content of 2.5% or more. Medium strength beer is thus included, but not mild ales, non-alcoholic beer or home-brewed beer with a low alcohol content.

**2.**

**During the past 12 months, approximately how often have you drunk beer?**

- 1. Almost daily
- 2. 4-5 times per week
- 3. 2-3 times per week
- 4. Approximately once a week
- 5. A couple of times per month
- 6. Approximately once a month
- 7. A few times per year
- 8. Once in the past 12 months
- 9. More than 12 months since last drank beer
- 0. Have never drunk beer, or have only ever tasted it

**3.**

**When you drink beer, approximately how much do you typically drink?**

- 1. Have never drunk beer, or have only ever tasted it
- 2. Less than 1 half-bottle
- 3. On average 1 half-bottle (ca 35 cl)
- 4. Between 1 and 2 half-bottles (ca 0.5 litres)

5. On average 2 half-bottles (ca 70 cl)
6. On average 3 half-bottles (ca 1 litre)
7. 4-5 half-bottles (ca 1.5 litres)
8. 6-9 half-bottles (2-3 litres)
9. 10 or more half-bottles (3.5 litres or more)

Then a similar couple of questions on wine, including all kinds of wines, both table wine and fortified wine, bought in a store or home-made, but not non-alcoholic wines or wines with a very low alcohol content (i.e. less than 2.5%)

**4.**

**During the past 12 months, approximately how often have you drunk wine?**

1. Almost daily
2. 4-5 times per week
3. 2-3 times per week
4. Approximately once a week
5. A couple of times per month
6. Approximately once a month
7. A few times per year
8. Once in the past 12 months
9. More than 12 months since last drank wine
0. Have never drunk wine, or have only ever tasted it

**5.**

**When you drink wine, approximately how much do you typically drink?**

1. Have never drunk wine, or have only ever tasted it
2. A small glass of wine (up to 10 cl)
3. A normal glass of wine (ca 10-15 cl)

4. A couple of normal glasses of wine (ca 20-30 cl)
5. On average half a bottle of wine (ca 35 cl / 3 glasses)
6. Less than 1 bottle (ca 50-60 cl)
7. On average 1 bottle of wine (ca 70-80 cl)
8. More than 1 bottle of wine (ca 1 litre or more)

Then a couple of questions about spirits, including all kinds of spirits, both bought in a store and home-distilled. Pharmaceutical alcohol ("sprit" in Norwegian; spirits with alcohol content of 96%), liqueurs and cocktails are also counted as spirits. Spirits are often mixed with soda water, coffee, fruit juice etc. but we are only interested in the amount of actual spirits consumed.

**6.**

**During the past 12 months, approximately how often have you drunk spirits?**

1. Almost daily
2. 4-5 times per week
3. 2-3 times per week
4. Approximately once a week
5. A couple of times per month
6. Approximately once a month
7. A few times per year
8. Once in the past 12 months
9. More than 12 months since last drank spirits
0. Have never drunk spirits, or have only ever tasted them

**7.**

**When you drink spirits, approximately how much do you typically drink?**

(Do not count mixers, such as Selters, Cola, or the like; count only the

amount of actual spirits, whether they be in the form of shots, liqueur, whisky or other)

1. Have never drunk spirits, or have only ever tasted them
2. A small shot or mild drink (2-3 cl)
3. A large shot or strong drink (4-5 cl)
4. A couple of shots or drinks (6-10 cl)
5. On average 1 quarter bottle (3-5 glasses, ca 15 cl)
6. Just over a quarter bottle (ca 20 cl)
7. Less than half a bottle (ca 25-30 cl)
8. On average half a bottle (ca 35 cl)
9. More than half a bottle (45 cl or more)

**F1.**

**During the past 12 months, have you tasted home-distilled spirits or some drink based on home-distilled spirits?**

1. Yes
2. No
3. Cannot say

(If your answer to question F1 was Yes:)

**F2.**

**What percentage of the spirits you drank during the past 12 months would you say was home-distilled?**

Answer: ..... per cent

**F3.**

**Do you know of anyone who has purchased smuggled spirits or pharmaceutical alcohol during the past 12 months?**

1. Yes
2. No
3. No answer

**F4.**

**During the past 12 months, have you been invited to purchase smuggled spirits or pharmaceutical alcohol?**

1. Yes
2. No
3. No answer

**F5.**

**During the past 12 months, have you purchased smuggled spirits?**

1. No
2. Yes, I have purchased ..... bottles of smuggled spirits and ..... bottles of smuggled pharmaceutical alcohol.
3. No answer

**F6.**

**During the past 12 months, have you travelled abroad?**

1. Yes
2. No - GO STRAIGHT TO QUESTION 8

**F7.**

**During the past 12 months, have you imported spirits, wine and/or beer from abroad?**

1. Yes, I have imported spirits, wine and/or beer.
2. No, I have not imported any spirits, wine or beer - GO STRAIGHT TO QUESTION 8

**F8. During the past 12 months, how much beer, wine and spirits have you imported from abroad?**

|                 |                          |       |
|-----------------|--------------------------|-------|
| SPIRITS:        | Bottles                  | ..... |
|                 | Half-bottles             | ..... |
| FORTIFIED WINE: | Bottles:                 | ..... |
|                 | Half-bottles:            | ..... |
| TABLE WINE:     | Bottles:-                | ..... |
|                 | Half-bottles:            | ..... |
| BEER:           | Bottles/cans (ca 33 cl): | ..... |

**F9. (Questions asking which countries alcohol has been imported from will obviously have to be formulated according to the situation in each individual country. I include here two questions that were used in Norway in 1994:)**

**Was any of the beer, wine or spirits you imported during the past 12 months purchased in Sweden, i.e. at Systembolaget? (Do not include alcohol that you purchased tax-free at Swedish airports or ferries.)**

1. Yes
2. No

**F10.**

**Was any of the beer, wine or spirits you imported during the past 2 months purchased from normal stores (not tax-free) in any of the following countries?**

|                                       | YES | NO |
|---------------------------------------|-----|----|
| 1. Finland                            | 1   | 2  |
| 2. Russia                             | 1   | 2  |
| 3. Denmark                            | 1   | 2  |
| 4. Other EU country (besides Denmark) | 1   | 2  |

We would then like to ask you a question about intoxication:

**8.**

**During the past 12 months, approximately how often did you drink so much beer, wine or spirits that you felt intoxicated?**

1. A couple of times per week or more often
2. Approximately once a week
3. 2-3 times per month
4. Approximately once a month
5. Approximately once every two months
6. 4-5 times during the past 12 months
7. 2-3 times during the past 12 months
8. Once in the past 12 months
9. More than 12 months since last felt intoxicated
0. Have never drunk so much as to feel intoxicated

**9.**

**During the past 12 months, how often have you consumed 6 or more standard drinks of beer, wine or spirits at a sitting? (FOR THE INTERVIEWER: The following are considered standard drinks: 35 cl (one half-bottle) of beer, 12-15 cl table wine, 8-10 cl fortified wine, 4 cl spirits. 6 drinks of beer thus correspond to approximately 4 pints, 6 drinks of table wine equal one bottle of wine, 6 drinks of fortified wine equal approximately half a litre, i.e. more than a half-bottle, and 6 drinks of spirits equal 24 cl, i.e. notably less than a half-bottle.)**

1. A couple of times per week or more often
2. Approximately once a week
3. 2-3 times per month
4. Approximately once a month
5. Approximately once every two months
6. 4-5 times during the past 12 months

7. 2-3 times during the past 12 months
8. Once in the past 12 months
9. More than 12 months since last consumed that much alcohol
0. Have never consumed that much alcohol at a sitting

**10.**

**How long has it been since you last drank alcohol of any kind?**

1. 7 days (1 week) or less (GO TO QUESTIONS 11-52)
2. 8-30 days
3. 1-3 months
4. 4-6 months GO TO QUESTION 53
5. 7-12 months

**11-52. (ONLY FOR THOSE WHOSE ANSWER TO THE PREVIOUS QUESTION WAS 1.)**

**Think back to your alcohol consumption during the past week. Please state, for each day of the week, what kinds of alcoholic beverages you drank and in what quantities? (FOR THE INTERVIEWER: state the quantities as precisely as possible, in centilitres, glasses, pints, half-bottles (ca 35 cl), bottles (ca 70-75 cl), standard drinks or the like, but ALWAYS REMEMBER TO GIVE THE UNIT ON THE FORM, e.g. 2 standard drinks, 3 pints, 4 drinks, etc. Exclude any alcohol consumed on the day of the interview!)**

| BEER       |      | WINE   |      | SPIRITS |      |
|------------|------|--------|------|---------|------|
| Amount     | Unit | Amount | Unit | Amount  | Unit |
| Yesterday  |      |        |      |         |      |
| 2 days ago |      |        |      |         |      |
| 3 days ago |      |        |      |         |      |
| 4 days ago |      |        |      |         |      |
| 5 days ago |      |        |      |         |      |
| 6 days ago |      |        |      |         |      |
| 7 days ago |      |        |      |         |      |

53.

Was last week's alcohol consumption fairly normal for you, or did you consume more alcohol than normal or less alcohol than normal?

1. Less than normal
2. Quite normal
3. More than normal

54-57. Tick the appropriate box

| During the past 12 months, has your own alcohol consumption resulted in any of the following:                         | No | Yes, once or twice | Yes, several times |
|-----------------------------------------------------------------------------------------------------------------------|----|--------------------|--------------------|
| You have had a headache, been sick, or felt otherwise unwell the morning after                                        |    |                    |                    |
| You have not been able to get out of bed at the usual time in the morning                                             |    |                    |                    |
| You have been so indisposed that you have not been able to go to work or to do the work you otherwise would have done |    |                    |                    |
| You have regretted something you said or did under the influence                                                      |    |                    |                    |

(FROM HERE ON, THE QUESTIONS ARE FOR EVERYONE)

58-64. Tick the appropriate box

| During the past 12 months, has it ever happened that...                                                 | No | Yes, once<br>or twice | Yes,<br>several times |
|---------------------------------------------------------------------------------------------------------|----|-----------------------|-----------------------|
| - You have been harassed or bothered by intoxicated people on the street or in some other public place? |    |                       |                       |
| - You have been harassed or bothered by intoxicated people at a party or some other private setting?    |    |                       |                       |
| - An intoxicated person has harmed you physically?                                                      |    |                       |                       |
| - An intoxicated person has ruined your clothes or other belongings?                                    |    |                       |                       |
| - You have been called names or otherwise insulted by intoxicated people?                               |    |                       |                       |
| - You have been afraid of intoxicated people you encountered on the street?                             |    |                       |                       |
| - You have been kept awake at night by drunken noises?                                                  |    |                       |                       |

65.  
When eating at home, what do you usually drink at the principal Sunday meal?

(Circle the closest alternative)

- 1. Water
- 2. Soft drinks (Farris, fizzy lemonade, Cola, Solo etc.)
- 3. Fruit juice
- 4. Mild ale or nonalcoholic beer
- 5. Medium strength beer (light beer, sold at grocery stores)
- 6. Strong beer (export beer, sold by Vinmonopolet)
- 7. Wine (red wine, white wine, rose wine etc., but not nonalcoholic wines)
- 8. Milk
- 9. Other, what? .....

**66-70. (Optional for Denmark)**

**In your opinion, should the following alcoholic beverages be sold in grocery stores?**

(Tick the boxes on the right)

| TYPE OF BEVERAGE                                    | YES | NO |
|-----------------------------------------------------|-----|----|
| <b>Spirits</b>                                      |     |    |
| <b>Table wine (red wine, white wine etc.)</b>       |     |    |
| <b>Fortified wine (sherry, port, vermouth etc.)</b> |     |    |
| <b>Strong beer (sold by Vinmonopolet)</b>           |     |    |
| <b>Medium strength beer (light beer etc.)</b>       |     |    |

**71-73.**

**In your opinion, whose responsibility is it to prevent drinking problems?**

I will suggest 5 different alternatives, of which you should select the three that you feel are the most important ones: which one should have the greatest responsibility, which one the second greatest, and which one the third greatest responsibility? (FOR THE INTERVIEWER: enter 1 in the box on the right for the alternative(s) the interviewee selects as having the greatest responsibility, 2 for the second greatest, and 3 for the third greatest responsibility to prevent drinking problems)

Order

|                                                                                            |  |
|--------------------------------------------------------------------------------------------|--|
| <b>1. The individual</b>                                                                   |  |
| <b>2. The individual's immediate circle<br/>(family, friends, fellow employees)</b>        |  |
| <b>3. Voluntary organizations<br/>(sports clubs, corps, temperance organizations etc.)</b> |  |
| <b>4. Communes<br/>(licenses, opening times, schools, youth projects)</b>                  |  |
| <b>5. The state<br/>(instruction, beverage tax, legislation etc.)</b>                      |  |

Then a (some) question(s) about the use of marijuana and hashish.

**76.**

**Have you used marijuana or hashish during the past 30 days, during the past year, some time earlier, or never?**

(Remember that all answers will be treated anonymously)

Tick

|                             |  |
|-----------------------------|--|
| <b>In the past 30 days</b>  |  |
| <b>1-12 months ago</b>      |  |
| <b>More than a year ago</b> |  |
| <b>Never used</b>           |  |

**F11.**

**According to some people, marijuana and hashish are no more dangerous than alcohol, and it should, therefore, not be forbidden to use such substances. Do you agree or disagree?**

1. Agree
2. Disagree
3. Cannot say

**F12.**

**In your opinion, should marijuana and hashish be sold in pharmacies, over the counter or on prescription?**

1. Over the counter
2. On prescription only
3. Should be forbidden
4. Cannot say

**Appendix 2.** Weights used in the study, the distribution of the populations used in constructing the weights, and the distribution of the unweighted samples, by age, sex and country

**Table 1.** Weights used in the study by age, sex and country

|       | Denmark |       | Finland |       | Norway |       | Sweden 1996 |       | Sweden 1999 |       |
|-------|---------|-------|---------|-------|--------|-------|-------------|-------|-------------|-------|
|       | Men     | Women | Men     | Women | Men    | Women | Men         | Women | Men         | Women |
| 19-29 | 1.12    | 1.01  | 0.94    | 1.03  | 1.45   | 1.06  | 0.90        | 0.76  | 0.92        | 0.95  |
| 30-39 | 1.13    | 1.09  | 1.11    | 1.02  | 1.05   | 0.79  | 0.98        | 0.82  | 1.14        | 0.94  |
| 40-49 | 1.22    | 1.12  | 1.15    | 0.96  | 1.15   | 0.82  | 1.15        | 1.13  | 1.24        | 0.82  |
| 50-59 | 0.98    | 0.89  | 0.91    | 1.00  | 0.98   | 0.82  | 1.33        | 0.85  | 0.98        | 0.94  |
| 60-71 | 0.69    | 0.80  | 0.90    | 0.96  | 1.20   | 0.93  | 1.51        | 1.14  | 1.02        | 1.23  |

**Table 2.** Distribution of populations used in constructing the weights. This equals the distribution of the weighted samples. By age, sex and country.

|       | Denmark |       | Finland |       | Norway |       | Sweden <sup>1</sup> |       |
|-------|---------|-------|---------|-------|--------|-------|---------------------|-------|
|       | Men     | Women | Men     | Women | Men    | Women | Men                 | Women |
| 19-29 | 12.1    | 11.6  | 10.6    | 10.1  | 12.7   | 12.2  | 11.8                | 11.3  |
| 30-39 | 11.1    | 10.6  | 11.2    | 10.8  | 11.6   | 11.1  | 10.7                | 10.1  |
| 40-49 | 11.0    | 10.6  | 12.3    | 11.9  | 11.1   | 10.6  | 11.1                | 10.7  |
| 50-59 | 8.9     | 8.8   | 8.4     | 8.5   | 7.9    | 7.8   | 8.9                 | 8.7   |
| 60-71 | 7.2     | 8.1   | 7.3     | 8.9   | 7.2    | 7.9   | 8.0                 | 8.8   |
| Σ     | 50.3    | 49.7  | 49.8    | 50.2  | 50.4   | 49.6  | 50.3                | 49.7  |
|       | 100     |       | 100     |       | 100    |       | 100                 |       |

<sup>1</sup> The same distribution was used for both of the Swedish data sets.

**Table 3.** Distribution of unweighted samples by age, sex and country

|       | Denmark |       | Finland |       | Norway |       | Sweden 1996 |       | Sweden 1995 |       |
|-------|---------|-------|---------|-------|--------|-------|-------------|-------|-------------|-------|
|       | Men     | Women | Men     | Women | Men    | Women | Men         | Women | Men         | Women |
| 19-29 | 10.8    | 11.5  | 11.3    | 9.8   | 8.7    | 11.6  | 13.1        | 14.8  | 12.7        | 11.9  |
| 30-39 | 9.8     | 9.8   | 10.1    | 10.5  | 11.1   | 14.1  | 10.9        | 12.3  | 9.4         | 10.8  |
| 40-49 | 9.0     | 9.5   | 10.7    | 12.3  | 9.7    | 12.9  | 9.6         | 9.5   | 8.9         | 13.0  |
| 50-59 | 9.1     | 10.0  | 9.3     | 8.5   | 8.1    | 9.5   | 6.7         | 10.2  | 9.1         | 9.3   |
| 60-71 | 10.5    | 10.1  | 8.2     | 9.2   | 5.9    | 8.5   | 5.3         | 7.7   | 7.8         | 7.2   |
| Σ     | 49.2    | 50.8  | 49.6    | 50.4  | 43.5   | 56.5  | 45.6        | 54.4  | 47.8        | 52.2  |
|       | 100     |       | 100     |       | 100    |       | 100         |       | 100         |       |

Appendix 3. Conversion of categorized drinking frequencies and intoxication frequencies into annual number of drinking occasions

Table 1. Conversion of categorized drinking frequencies into annual number of drinking occasions

| Drinking frequency                                                          | Number of annual occasions  |                     |
|-----------------------------------------------------------------------------|-----------------------------|---------------------|
|                                                                             | Denmark, Finland,<br>Norway | Sweden<br>1995,1996 |
| 1. Almost daily                                                             | 338                         | 338                 |
| 2. 4-5 times per week                                                       | 235                         | 235                 |
| 3. 2-3 times per week                                                       | 130                         | 130                 |
| 4. Approximately once a week                                                | 52                          | 52                  |
| 5. A couple of times per month                                              | 24                          | 24                  |
| 6. Approximately once a month                                               | 12                          | 12                  |
| 7. A few times per year                                                     | 6                           | 6                   |
| 8. Once in the past 12 months<br>(Once in the past 12 months or less often) |                             | 1<br>0.5*           |
| 9. More than 12 months since last drank<br>alcohol                          | 0                           | 0                   |
| 10. Have never drunk alcohol,<br>or have only ever tasted it                | 0                           | 0                   |

\* Figure 0.5 was used for the Swedish category “once during last year or less often”. This figure is a crude approximation based on the distribution of respondents in other countries between groups 8 (once per year) and 9 (0 times per year). In Finland and Norway the respondents were distributed approximately fifty-fifty in the two categories in the frequency questions for beer, wine and spirits; in Denmark category 9 was more prevalent than category 8.

**Table 2. Conversion of categorized intoxication frequencies (subjective intoxication frequency and frequency of drinking 6+) into annual number of occasions of intoxication in Denmark, Finland, and Norway, and of categorized frequency of subjective intoxication frequency in Sweden (1995)<sup>1</sup>**

| <b>Intoxication frequency</b>                                  | <b>Number of annual occasions</b> |
|----------------------------------------------------------------|-----------------------------------|
| 1. A couple of times per week or more often                    | 104                               |
| 2. Approximately once a week                                   | 52                                |
| 3. 2-3 times per month                                         | 30                                |
| 4. Approximately once a month                                  | 12                                |
| 5. Approximately once every two months                         | 6                                 |
| 6. 4-5 times during the past 12 months                         | 4.5                               |
| 7. 2-3 times during the past 12 months                         | 2.5                               |
| 8. Once during the past 12 months                              | 1                                 |
| 9. More than 12 months since last<br>felt intoxicated          | 0                                 |
| 10. Have never drunk so much alcohol<br>as to feel intoxicated | 0                                 |

<sup>1</sup>In Sweden, there is a category of “never or not during last 12 months” instead of categories 9 and 10.

Table 3. Conversion of categorized frequency of drinking a specified amount of alcohol at a sitting, Sweden (1996)

| Frequency                                              | Number of annual occasions<br>(did not appear in the data) |
|--------------------------------------------------------|------------------------------------------------------------|
| 1. Daily or almost daily<br>(at least 5 days per week) |                                                            |
| 2. A few times per week (2-4 times per week)           | 104*                                                       |
| 3. Once per week                                       | 52                                                         |
| 4. 2-3 times per month                                 | 30                                                         |
| 5. Once per month                                      | 12                                                         |
| 6. 2-6 times per year                                  | 4                                                          |
| 7. Less often or never                                 | 0.1                                                        |

\*Because there were no observations in the first category, this second category is effectively the same as the highest category in the Nordic questionnaire (A couple of times per week or more often), and hence the same conversion was used as in Table 2 in this appendix (104 times per year).

**Appendix 4.** Conversion of categorized “typical amounts of drinking” into centilitres of beer, wine or spirits. The exact formulation of the category labels, given as answer alternatives to respondents, varied by country. In Finland and Denmark the category labels were formulated so that the contents of each category would be as close to the Norwegian standard as possible. The Norwegian standard is presented below, translated to English

**Table 1.** Conversion of categorized “typical amounts of drinking beer” into centilitres of beer in Denmark, Finland, Norway, Sweden 1995 and 1996

| Category                                             | Centilitres of beer |
|------------------------------------------------------|---------------------|
| 1. Have never drunk beer or have only ever tasted it | 0                   |
| 2. Less than 1 half-bottle                           | 20                  |
| 3. On average 1 half-bottle (ca 35 cl)               | 33                  |
| 4. Between 1 and 2 half-bottles (ca 0.5 litres)      | 50                  |
| 5. On average 2 half-bottles (ca 70 cl)              | 70                  |
| 6. On average 3 half-bottles (ca 1 litre)            | 100                 |
| 7. 4-5 half-bottles (ca 1.5 litres)                  | 150                 |
| 8. 6-9 half-bottles (2-3 litres)                     | 250                 |
| 9. 10 or more half-bottles (3.5 litres or more)      | 350                 |

**Table 2. Conversion of categorized “typical amounts of drinking wine” into centilitres of wine**

| Category                                                   | Centilitres of wine         |                     |
|------------------------------------------------------------|-----------------------------|---------------------|
|                                                            | Denmark,<br>Finland, Norway | Sweden<br>1995+1996 |
| 1. Have never drunk wine or have only tasted it            | 0                           | 0                   |
| 2. A small glass of wine (up to 10 cl)                     | 8                           | 8                   |
| 3. A normal glass of wine (ca 10-15 cl)                    | 12                          | 12                  |
| 4. A couple of normal glasses of wine (ca 20-30 cl)        | 25                          | 25                  |
| (Less than half a bottle)                                  |                             | 28                  |
| 5. On average half a bottle of wine (ca 35 cl / 3 glasses) | 35                          | 35                  |
| 6. Less than 1 bottle (ca 50-60 cl)                        | 55                          | 55                  |
| 7. On average 1 bottle of wine (ca 70-80 cl)               | 75                          | 75                  |
| 8. More than 1 bottle of wine (ca 1 litre or more)         | 100                         | 100                 |

**Table 3. Conversion of categorized “typical amount of drinking spirits” into centilitres of spirits in Denmark, Finland and Norway**

| Category                                                  | Centilitres of spirits |
|-----------------------------------------------------------|------------------------|
| 1. Have never drunk spirits or have only ever tasted them | 0                      |
| 2. A small shot or a mild drink (2-3 cl)                  | 2.5                    |
| 3. A large shot or strong drink (4-5 cl)                  | 4.5                    |
| 4. A couple of shots or drinks (6-10 cl)                  | 8                      |
| 5. On average 1 quarter bottle (3-5 glasses, ca 15 cl)    | 15                     |
| 6. Just over a quarter bottle (ca 20 cl)                  | 20                     |
| 7. Less than half a bottle (ca 25-30 cl)                  | 27.5                   |
| 8. On average half a bottle (ca 35 cl)                    | 35                     |
| 9. More than half a bottle (45 cl or more)                | 50                     |

**Table 4. Conversion of categorized “typical amounts of drinking spirits” into centilitres of spirits in Sweden in 1995 and 1996**

| <b>Category</b>                                           | <b>Centilitres of spirits</b> |
|-----------------------------------------------------------|-------------------------------|
| 1. Have never drunk spirits or have only ever tasted them | 0                             |
| 2. A small shot (ca 4 cl)                                 | 4                             |
| 3. A large shot (ca 6 cl)                                 | 6                             |
| 4. 2 shots (ca 12 cl)                                     | 12                            |
| 5. 3 shots (ca 18 cl)                                     | 18                            |
| 6. 4 shots (ca 24 cl)                                     | 24                            |
| 7. 5 shots (ca 30 cl)                                     | 30                            |
| 8. On average half a bottle (ca 37.5 cl)                  | 35                            |
| 9. More than half a bottle                                | 50                            |

**Appendix 5. Conversion of centilitres of beer, wine and spirits into centilitres of pure alcohol: alcohol content percentages used**

| Beverage*      | Denmark | Finland | Norway | Sweden<br>1996 | Sweden<br>1995 |
|----------------|---------|---------|--------|----------------|----------------|
| Beer           | 4.7     | 4.5     | 4.5    |                | 4.1            |
| Beer class II  |         |         |        | 3.3            |                |
| Strong beer    |         |         |        | 5.2            |                |
| Wine           | 11.9    | 10.9    | 11.8   | 11.5           | 11.5           |
| Fortified wine |         |         |        | 17.7           |                |
| Spirits        | 38.5    | 37.1    | 39.8   | 38.0           | 38.0           |

\*The beverage categories covered were beer, wine and spirits for Denmark, Finland, Norway, and Sweden in 1995, and beer class II, strong beer, table wine, fortified wine and spirits for Sweden in 1996.

Source: Denmark, Finland, Norway and Sweden in 1995 - Nordic Alcohol Statistics 1992-1996. The alcohol content for wine in Finland has been changed from 9.8 to 10.9 on the basis of other statistics, because the lower percentage included cider. Swedish figures from 1996 are based on the sales statistics of the Swedish Alcohol Retailing Monopoly (Systembolaget).

**Appendix 6.** Further tables about regression models on intoxication frequency and the frequency of drinking 6+, and about negative consequences of own and other people's drinking

**Table 1.** Regression models with annual intoxication frequency as the dependent variable and sex, average consumption category and country as independent variables, by age group. Regression coefficients and their standard errors in brackets

|                             | 19-34      | 35-54      | 55-71      |
|-----------------------------|------------|------------|------------|
| Constant                    | -4.7 (0.8) | -4.1 (0.6) | -3.1 (0.5) |
| Sex                         |            |            |            |
| Male (vs. female)           | 1.6 (0.6)  | 2.3 (0.4)  | 1.0 (0.4)  |
| Country                     |            |            |            |
| Finland (vs. Denmark)       | 6.9 (0.8)  | 5.5 (0.6)  | 4.4 (0.6)  |
| Norway (vs. Denmark)        | 7.4 (0.8)  | 4.4 (0.6)  | 3.0 (0.6)  |
| Sweden (vs. Denmark)        | 5.0 (0.8)  | 3.4 (0.5)  | 3.8 (0.5)  |
| Average consumption (in cl) |            |            |            |
| 50-100 (vs. 0-50)           | 2.2 (1.0)  | 1.2 (0.7)  | 1.0 (0.7)  |
| 100-200 (vs. 0-50)          | 5.5 (0.9)  | 2.7 (0.6)  | 1.3 (0.7)  |
| 200-400 (vs. 0-50)          | 10.8 (0.9) | 4.9 (0.6)  | 3.3 (0.7)  |
| 400-700 (vs. 0-50)          | 18.7 (1.0) | 9.6 (0.7)  | 4.0 (0.8)  |
| 700-1100 (vs. 0-50)         | 29.2 (1.2) | 12.8 (0.8) | 7.0 (0.9)  |
| 1100- (vs. 0-50)            | 47.3 (1.3) | 24.3 (0.9) | 14.1 (0.9) |

Interactions were tested by comparing a model which included all variables from model 2 in Table 14 plus all the three interactions given below and another model which included all variables from model 2 in Table 14 plus the other two interactions (i.e. excluding the one being tested)

- 1) age × average consumption:  $F=54.6$  (12, 7466),  $p<0.001$
- 2) age × country:  $F=4.0$  (6, 7466),  $p<0.001$
- 3) age × sex:  $F=1.7$  (2, 7466),  $p>0.05$

Table 2. Regression models with annual intoxication frequency as the dependent variable and age, average consumption category and country as independent variables, by sex. Regression coefficients and their standard errors in brackets.

|                             | Men   |       | Women |       |
|-----------------------------|-------|-------|-------|-------|
| Constant                    | 2.5   | (0.9) | 1.9   | (0.4) |
| Age                         |       |       |       |       |
| 35-54 (vs. 19-34)           | -8.7  | (0.6) | -4.7  | (0.3) |
| 55-71 (vs. 19-34)           | -12.0 | (0.7) | -5.4  | (0.4) |
| Country                     |       |       |       |       |
| Finland (vs. Denmark)       | 8.6   | (0.7) | 2.9   | (0.4) |
| Norway (vs. Denmark)        | 7.7   | (0.7) | 3.3   | (0.4) |
| Sweden (vs. Denmark)        | 5.7   | (0.7) | 2.4   | (0.4) |
| Average consumption (in cl) |       |       |       |       |
| 50-100 (vs. 0-50)           | 0.7   | (1.1) | 0.7   | (0.4) |
| 100-200 (vs. 0-50)          | 2.5   | (0.9) | 2.4   | (0.4) |
| 200-400 (vs. 0-50)          | 6.5   | (0.9) | 5.2   | (0.4) |
| 400-700 (vs. 0-50)          | 12.1  | (0.9) | 9.6   | (0.5) |
| 700-1100 (vs. 0-50)         | 18.8  | (1.0) | 12.4  | (0.7) |
| 1100- (vs. 0-50)            | 32.6  | (1.0) | 21.0  | (0.9) |

Interactions were tested by comparing a model which included all variables from model 2 in Table 14 plus all the three interactions given below and another model which included all variables from model 2 in Table 14 plus the other two interactions (i.e. excluding the one being tested)

- 1) sex  $\times$  average consumption:  $F=14.0$  (6,7476),  $p<0.001$
- 2) sex  $\times$  country:  $F=19.7$  (3, 7476),  $p<0.001$
- 3) sex  $\times$  age:  $F=39.8$  (2, 7476),  $p<0.001$

Table 3. Regression models with annual frequency of drinking 6 or more drinks at a sitting as the dependent variable and sex, average consumption category and country as independent variables, by age group. Regression coefficients and their standard errors in brackets

|                             | 19-34      | 35-54      | 55-71      |
|-----------------------------|------------|------------|------------|
| Constant                    | -1.8 (0.9) | -0.7 (0.6) | -0.7 (0.7) |
| Sex                         |            |            |            |
| Male (vs. female)           | 1.8 (0.6)  | 2.2 (0.5)  | 1.5 (0.6)  |
| Country                     |            |            |            |
| Finland (vs. Denmark)       | 0.4 (0.8)  | 0.1 (0.6)  | 0.0 (0.7)  |
| Norway (vs. Denmark)        | 4.0 (0.8)  | 0.2 (0.6)  | -0.1 (0.8) |
| Sweden (vs. Denmark)        | 2.4 (0.9)  | 0.6 (0.8)  | 2.0 (0.9)  |
| Average consumption (in cl) |            |            |            |
| 50-100 (vs. 0-50)           | 1.7 (1.1)  | 0.6 (0.9)  | 0.3 (0.9)  |
| 100-200 (vs. 0-50)          | 4.4 (1.0)  | 2.0 (0.8)  | 0.7 (0.9)  |
| 200-400 (vs. 0-50)          | 9.7 (1.0)  | 4.3 (0.7)  | 2.1 (0.9)  |
| 400-700 (vs. 0-50)          | 17.2 (1.1) | 8.2 (0.8)  | 3.3 (1.0)  |
| 700-1100 (vs. 0-50)         | 28.8 (1.3) | 14.2 (1.0) | 7.2 (1.2)  |
| 1100- (vs. 0-50)            | 50.2 (1.3) | 32.9 (1.1) | 28.0 (1.2) |

Interactions were tested by comparing a model which included all variables from model 2 in Table 17 plus all three interactions given below and another model which included all variables from model 2 in Table 17 plus the other two interactions (i.e. excluding the one being tested)

- 1) age  $\times$  average consumption:  $F=26.2$  (12, 6409),  $p<0.001$
- 2) age  $\times$  country:  $F=4.3$  (6, 6409),  $p<0.001$
- 3) age  $\times$  sex:  $F=0.3$  (2, 6409),  $p>0.05$

Table 4. Regression models with annual frequency of drinking 6 or more drinks at a sitting as the dependent variable and age, average consumption category and country as independent variables, by sex. Regression coefficients and their standard errors in brackets

|                             | Men        | Women      |
|-----------------------------|------------|------------|
| Constant                    | 5.9 (1.0)  | 2.9 (0.4)  |
| Age                         |            |            |
| 35-54 (vs. 19-34)           | -7.4 (0.6) | -4.0 (0.3) |
| 55-71 (vs. 19-34)           | -9.9 (0.8) | -5.0 (0.4) |
| Country                     |            |            |
| Finland (vs. Denmark)       | 0.5 (0.8)  | 0.1 (0.4)  |
| Norway (vs. Denmark)        | 2.5 (0.8)  | 1.2 (0.4)  |
| Sweden (vs. Denmark)        | 1.7 (0.9)  | 2.0 (0.5)  |
| Average consumption (in cl) |            |            |
| 50-100 (vs. 0-50)           | 0.0 (1.3)  | 0.1 (0.5)  |
| 100-200 (vs. 0-50)          | 2.0 (1.0)  | 1.7 (0.5)  |
| 200-400 (vs. 0-50)          | 5.6 (1.0)  | 4.6 (0.5)  |
| 400-700 (vs. 0-50)          | 11.1 (1.0) | 8.6 (0.5)  |
| 700-1100 (vs. 0-50)         | 18.9 (1.1) | 14.3 (0.8) |
| 1100- (vs. 0-50)            | 39.7 (1.1) | 32.2 (0.9) |

Interactions were tested by comparing a model which included all variables from model 2 in Table 17 plus all three interactions given below and another model which included all variables from model 2 in Table 17 plus the other two interactions (i.e. excluding the one being tested)

- 1) sex  $\times$  average consumption:  $F=5.1$  (6,6418),  $p<0.001$
- 2) sex  $\times$  country:  $F=1.1$  (3,6418),  $p>0.05$
- 3) sex  $\times$  age:  $F=18.8$  (2, 6418),  $p<0.001$

Table 5. Proportion of people who had experienced the specified negative consequence of drinking "several times" during the previous 12 months (%) by country, consequence and sex, the average number of types of consequence experienced "several times" and the proportion of respondents who had experienced at least two different types of consequence "several times".

| MEN                                                                         | DEN | FIN | NOR | SWE<br>1996 | SWE<br>1995 |
|-----------------------------------------------------------------------------|-----|-----|-----|-------------|-------------|
| Consequence                                                                 |     |     |     |             |             |
| Felt unwell                                                                 | 26  | 23  | 22  | 23          | 16          |
| Did not get up                                                              | 10  | 9   | 7   | 8           | 10          |
| Did not go to work                                                          | 2   | 2   | 1   | 1           | 2           |
| Regrets                                                                     | 6   | 7   | 6   | 6           | 6           |
| Average number of types<br>of consequences (0-4)<br>occurring several times | 0.4 | 0.4 | 0.4 | 0.4         | 0.3         |
| % with 2 or more types of<br>consequences occurring<br>several times        | 11  | 10  | 9   | 10          | 9           |
| WOMEN                                                                       |     |     |     |             |             |
| Felt unwell                                                                 | 14  | 11  | 11  | 10          | 12          |
| Did not get up                                                              | 5   | 4   | 5   | 4           | 6           |
| Did not go to work                                                          | 1   | 1   | 2   | 0           | 1           |
| Regrets                                                                     | 2   | 2   | 4   | 4           | 3           |
| Average number of types of<br>consequences (0-4)<br>occurring several times | 0.2 | 0.2 | 0.2 | 0.2         | 0.2         |
| % with 2 or more types of<br>consequences occurring<br>several times        | 5   | 4   | 5   | 6           | 6           |

Table 6. Proportion of people who report experiences of the specified type of nuisance due to other people's drinking "several times" during the previous 12 months (%) by country, average number of types of nuisance experienced "several times" and the proportion of respondents who reported experiencing at least three different types of nuisance "several times".

| MEN                                                           | DEN | FIN | NOR | SWE  |
|---------------------------------------------------------------|-----|-----|-----|------|
| Nuisance                                                      |     |     |     | 1996 |
| - Harassed by intoxicated people in a public place            | 10  | 5   | 5   | 12   |
| - Harassed by intoxicated people in a private setting         | 2   | 2   | 1   | 4    |
| - Physical harm caused by an intoxicated person               | 0.3 | 0.4 | 0.8 | 0.6  |
| - Clothes or other belongings ruined by an intoxicated person | 0.3 | 0.3 | 0.7 | 0.4  |
| - Insulted by an intoxicated person                           | 8   | 4   | 5   | 9    |
| - Been afraid of intoxicated people on the street             | 3   | 2   | 2   | 3    |
| - Kept awake at night by drunken noises                       | 11  | 5   | 7   | 9    |
| Average number of types of nuisance experienced several times | 0.4 | 0.2 | 0.2 | 0.4  |
| % with 3 or more types of nuisance occurring several times    | 3   | 1   | 1   | 3    |

| Cont.<br>WOMEN                                                   | DEN | FIN | NOR | SWE<br>1996 |
|------------------------------------------------------------------|-----|-----|-----|-------------|
| - Harassed by intoxicated people<br>in a public place            | 9   | 8   | 6   | 12          |
| - Harassed by intoxicated people<br>in a private setting         | 3   | 2   | 1   | 3           |
| - Physical harm caused<br>by an intoxicated person               | 0.3 | 0.1 | 0.2 | 0.2         |
| - Clothes or other belongings<br>ruined by an intoxicated person | 0.1 | 0.4 | 0.5 | 0.8         |
| - Insulted by an intoxicated person                              | 7   | 5   | 5   | 7           |
| - Been afraid of intoxicated people<br>on the street             | 6   | 8   | 6   | 11          |
| - Kept awake at night by<br>drunken noises                       | 13  | 11  | 11  | 13          |
| Average number of types of<br>nuisance occurring several times   | 0.4 | 0.3 | 0.3 | 0.5         |
| % with 3 or more types of<br>nuisance occurring several times    | 4   | 3   | 3   | 5           |

# SIFA rapport

Følgende rapporter er tidligere utkommet i denne serien:

Rapportene kan bestilles fra instituttet.

- |      |                                                                                                                                                                                                                    |
|------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1/88 | Krogh, Per: <i>Pasienter i A-klinikker og kursteder.</i> 218 s., Oslo 1988.                                                                                                                                        |
| 1/89 | Skretting, Astrid og Ole-Jørgen Skog: <i>Arresterte sprøytemisbrukere.</i> 113 s., Oslo 1989.                                                                                                                      |
| 2/89 | Hauge, Ragnar og Olav Irgens-Jensen: <i>Bruk av narkotika i Norge.</i> 38 s., Oslo 1989.                                                                                                                           |
| 1/90 | Skog, Ole-Jørgen: <i>Utviklingen av intravenøst narkotikamisbruk i Norge. Anslag for insidens og prevalens.</i> 66 s., Oslo 1990.                                                                                  |
| 2/90 | Nordlund, Sturla: <i>Drikkevaner og restaurantbruk i Trondheim.</i> 151 s., Oslo 1990.                                                                                                                             |
| 3/90 | Skog, Ole-Jørgen: <i>Prognose for aids-epidemien blant sprøytemisbrukere 1990 - 1999.</i> 26 s., Oslo 1990.                                                                                                        |
| 1/91 | Skog, Ole-Jørgen: <i>Selvbetjeningssalg av sterkøl i svenske systembolagbutikker.</i> 26 s., Oslo 1991.                                                                                                            |
| 1/92 | Hauge, Ragnar og Jens J. Guslund: <i>Straffutmålingen i promillesaker. En undersøkelse av hvordan endringene i promillelovgivningen i 1988 har påvirket domstolenes straffutmålingspraksis.</i> 104 s., Oslo 1992. |
| 2/92 | Irgens-Jensen, Olav: <i>Bruk av alkohol og narkotika blant tilsatte i Forsvaret. Resultater av en spørreskjemaundersøkelse høsten 1991.</i> 40 s., Oslo 1992.                                                      |
| 3/92 | Nordlund, Sturla: <i>Metoder og metodeproblemer ved estimering av alkoholforbruk.</i> 117 s., Oslo 1992.                                                                                                           |

- 1/93 Arner, Oddvar: *Hva er alkoholmisbruk? En undersøkelse av nordmenns holdninger til spørsmål omkring alkoholmisbruk og alkoholisme*. 48 s., Oslo 1993.
- 2/93 Skretting, Astrid, Randi Ervik og Kjell Erik Øye: *Aids-informasjonsbussen i Oslo. En intervju-undersøkelse av brukere*. 59 s., Oslo 1993.
- 3/93 Saglie, Jo og Sturla Nordlund: *Alkoholpolitikken og opinionen*. 56 s., Oslo 1993.
- 4/93 Skog, Ole-Jørgen, Øyvind Horverak, Sturla Nordlund og Thor Norström: *Vurdering av konsekvenser av ulike endringer i omsetningsform og priser for alkohol i Norge*. 61 s., Oslo 1993.
- 5/93 Rossow, Ingeborg: *Trends and variations in suicide in Norway. A description and short bibliography*. 28 s., Oslo 1993.
- 1/94 Saglie, Jo: *Norske drikkekulturer: Geografi, sosial bakgrunn, livsstil og tilgjengelighet*. 85 s., Oslo 1994.
- 2/94 Hauge, Ragnar og Amundsen, Arvid: *Virkninger av økt tilgjengelighet på alkohol. En undersøkelse av virkningene av åpning av vinmonopolutsalg i Sogn og Fjordane*. 103 s., Oslo 1994.
- 3/94 Aas, Henrik: *Aksjon mot ulovlig spritomsetning: Data fra evalueringens forundersøkelse*. 100 s., Oslo 1994.
- 4/94 Bretteville-Jensen, Anne Line: *Narkotikadødsfall i Norge. En analyse av utviklingen fra 1976-1993*. 69 s., Oslo 1994.
- 5/94 Rossow, Ingeborg og Amundsen, Arvid: *The Norwegian Conscript Study. A description of data collection, linkage of registers and establishment of data files*. 32 s., Oslo 1994.
- 1/95 Amundsen, Arvid, Sturla Nordlund og Per Halvor Vale: *Alkohol og narkotika i Oslo*. 27 s., Oslo 1995.

- 2/95 Rossow, Ingeborg og Træen, Bente: *På kafe i Norge. Om kafebruk, alkoholbruk og livsstil*. 59 s., Oslo 1995.
- 3/95 Arner, Oddvar, Grethe Lauritzen, Helge Waal og Arvid Amundsen: *Forprosjekt til en nasjonal studie av stoffmisbrukere i behandling. En undersøkelse ved 14 behandlingstiltak for Oslo*. 194 s., Oslo 1995.
- 1/96 Skretting, Astrid: *Bruk av tobakk, alkohol og narkotika blant norske 9. klassinger. Resultater fra en skoleundersøkelse - 1995*. 48 s., Oslo 1996.
- 2/96 Aas, Henrik Natvig: *Evaluering av Aksjon mot ulovlig spritomsetning*. 107 s., Oslo 1996.
- 3/96 Pernanen, Kai: *Sammenhengen alkohol - vold*. 143 s., Oslo 1996.
- 4/96 Ugland, Trygve: *EØS, EU og alkoholmonopolene: En komparativ studie av de nordiske lands respons og strategivalg*. 89 s., Oslo 1996.
- 5/96 Ødegård, Einar: *På ulendte veier - evaluering av Stifinnerprosjektet*. 125 s., Oslo 1996.
- 6/96 Christensen, Astrid: *"Jenter som kommer og jenter som går" En oppfølgingsundersøkelse av kvinnelige rusmiddelmisbrukere som har vært i behandling på kvinnekollektivet ARKEN i tiden 1992-1993*. 101 s., Oslo 1996.
- 1/97 Lund, Ingeborg: *Alkohol og marked. Nye utfordringer i kjølvannet av EØS-avtalen*. 111 s., Oslo 1997.
- 2/97 Fugleberg, Ole: *Metodiske problemer i forbindelse med estimering av det uregistrerte alkoholkonsumet i Norge. Bruk av aggregerte data fra Vinmonopolets salg og oppgitt konsum fra surveyundersøkelser*. 76 s., Oslo 1997.
- 3/97 Rossow, Ingeborg og Grimsmo, Asbjørn: *Alkohol og sykefravær*. 62 s., Oslo 1997.

- 4/97 Skretting, Astrid: *Evaluering av metadonprosjektet i Oslo. Del 1: Etablering, inntak av pasienter og forholdet til øvrig behandlingstiltak.* 116 s., Oslo 1997.
- 5/97 Ervik, Randi: *Evaluering av metadonprosjektet i Oslo. Del 2: Behandlingsforløp og status.* 133 s., Oslo 1997.
- 1/98 Rossow, Ingeborg; Astrid Skretting og Arvid Amundsen: *Fra straff til varm seng. Beskrivelse av utviklingstrekk i til for rusmiddelmisbrukere og klienter ved en avrusningsstasjo gjennom 25 år.* 106 s., Oslo 1998.
- 1/99 Lund, Ingeborg; Björn Trollidal og Trygve Ugland: *Norsk-svensk grensehandel med alkohol.* 131 s., Oslo 1999.

ISBN 82-7171-219-5

**Statens institutt for alkohol- og narkotikaforskni**  
***National Institute for Alcohol and Drug Research***