Who are private alcohol importers in the Nordic countries?

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ABSTRACT
AIMS – The high price of alcohol in the Nordic countries has been a long-standing policy to curb consumption, which has led consumers to importing alcohol from countries with lower prices. This paper seeks to develop a profile of alcohol importers in four Nordic countries. METHODS – Cross-sectional data from general population surveys in Denmark (2003–2006), Norway (2004), Sweden (2003–2006) and Finland (2005–2006) were analysed by multiple logistic and linear regression. Independent variables included region, socio-demographics, drinking indicators and alcohol-related problems. Outcome variables were importer status and amount of imported alcohol. RESULTS – People living in regions close to countries with lower alcohol prices were more often importers and imported higher amounts than people living in other regions. Higher educated persons were more likely to be importers, but the amounts imported were smaller than those by people with lower education. Persons with higher incomes were also more likely to be importers and they also imported larger amounts than people with lower incomes. In Sweden and Denmark regional differences of importer rates were more pronounced for persons of lower incomes. Age, risky single-occasion drinking, risky drinking and alcohol problems were positively related to the amounts of imported alcohol. CONCLUSIONS – Private importers in the Nordic countries are an integrated yet heavy drinking segment of society and do not appear to be located on the fringes of society.

KEYWORDS – alcohol, private import, travellers’ allowance, Denmark, Sweden, Finland, Norway

Submitted 19.11.2013   Final version accepted 25.11.2013

Acknowledgements
This analysis is part of the study “Effects of major changes in alcohol availability”, conducted collaboratively by researchers at the Centre for Social Research on Alcohol and Drugs of Stockholm University; the Unit of Health Promotion Research of the University of Southern Denmark, Esbjerg; and the Alcohol and Drug Research Group of the National Research and Development Centre for Welfare and Health (STAKES), Helsinki (now part of the Finnish National Institute for Health and Welfare). The study has received support from the Joint Committee for Nordic Research Councils for the Humanities and the Social Sciences (NOS-HS, project 20071); the US National Institute on Alcohol Abuse and Alcoholism (R01 AA014879); and national funding from the Danish Medical Research Council (contract no. 22-02-374) and the Danish Health Insurance Fund (journal nos. 2003B195, 2004B195, 2005B093) who specifically supported data collection. We thank Robin Room for his input. This analysis has also received partial logistical support from the Nordic Council for Alcohol and Drug Research (NAD).
Introduction

The high price of alcohol in the Nordic countries has been a long-standing policy to curb consumption and to generate reliable state income. This has led consumers to import alcohol from countries with lower prices, but imports have been restricted by stringent travellers’ allowances. The situation changed with the development of the single European market: quotas for travellers’ imports were completely abolished in Denmark, Finland and Sweden on January 1, 2004 (Hellman & Ramstedt, 2009). In anticipation of an increase in private imports, the Nordic states took differing strategic decisions: Denmark and Finland lowered excise duties for various beverage types, while Sweden took no action. Norway, a non-EU member, kept high taxes on alcoholic beverages and strict quotas for private imports. The Nordic debate about differing alcohol policy strategies became more lively in light of this new situation (Hellman & Ramstedt, 2009; Wagenaar, Salois, & Komro, 2009; Bygvrå, 2009; Karlsson & Österberg, 2009; Ramstedt & Gustafsson, 2009; Svensson, 2009; Lavik & Nordlund, 2009).

Little research exists specifically on personal importation of alcohol. The literature on border trade examines a variety of commodities, of which alcohol is just one product (Bygvrå, 1998), even though the contribution of private alcohol importation to total alcohol consumption in the Nordic countries is relatively high. In 2004 the proportion was 8.7% in Denmark, 10.1% in Norway, 12.6% in Finland and 25.3% in Sweden (Figure 1) and was even higher in regions near the border to a country with lower alcohol prices. The few studies that have focused specifically on alcohol have primarily involved analyses of changes in quantities imported in relation to changes in policies and laws (Milhøj, 1993; Grittner & Bloomfield, 2009).

To the best of our knowledge, the only demographic factor to date that has been studied in the context of private alcohol importation is that of the distance to the border of the importing country, or more precisely, the place of residence of the survey respondent in relation to the border of an importing country. It is a basic assumption of economics that, other things being equal (including prices), people will buy from the nearest supplier (Reilly, 1931). However, travelling longer distances is only attractive if the prices are lower. This may imply that the shortest distance to cheaper goods is across a national border (for example, the southern region of Jutland in Denmark, which borders Germany). Milhøj (1993) studied distance effects and found that tax reductions on wine in Denmark in 1991–1992 were associated with a reduction in the proportion of consumed wine which had been bought abroad. Norström (2000) found that local sales of beer in southern Sweden decreased after EU quotas on private alcohol importation were raised in 1995. Swedes in the southern region purchased more beer in Denmark because of lower Danish prices.

Furthermore, the distance to cheaper alcohol may also have effects on alcohol-related consequences. Jarl and co-authors (2006) analysed the effect of the distance from Denmark on alcohol-related hospitalisation costs in southern Sweden. After the liberalising of import quotas in Sweden in 2003, the distance effect was statistically significant, indicating that hospital costs per capita decreased by 3.7 SEK for
every additional 10 km of distance away from the Danish border.

After the most recent liberalisation of alcohol import allowances, Trolldal (2005) examined Swedish alcohol import behaviour. Comparing data collected before (2003) to data collected after these changes (2004), he found an increase in total private alcohol imports across all regions of Sweden. Increases in importation were found to be the highest in the middle southern regions, not in the southern most region closest to both Denmark and Germany. Trolldal attributes this result to a pre-existing “saturation” in importation in the border region of Sweden.

As the literature on border trade has not examined socio-demographic characteristics of importers, we borrow from previous research concerning the effects of price changes on various groups of alcohol consumers. Although there is mixed evidence as to how young drinkers and heavy drinkers react to price changes, findings from a larger study from which this paper is derived have shown that younger drinkers and heavy drinkers tend to react to price changes most strongly (Herttua, Mäkelä, & Martikainen, 2008; Bloomfield, Rossow, & Norström, 2009). Thus, the purpose of this paper is first to describe the socio-demographic characteristics of alcohol importers in Denmark, Finland, Norway and Sweden, and to examine these factors in relation to the prevalence of alcohol-related consequences, to the amount of privately imported alcohol and to distances travelled. Second, we investigate whether younger drinkers and those with lower incomes are more likely to import alcohol if they live close to countries with lower prices. Since Jarl et al. (2006) have shown that alcohol-related hospitalisation costs in southern Sweden are linked to the distance to the Danish border, this study contributes to the small body of knowledge about characteristics of importers of high amounts of alcohol that include both socio-demographic characteristics and drinking patterns. More detailed information on alcohol importers enables a crafting of specific alcohol policy strategies targeting areas prone to higher importation and a higher incidence of alcohol-related consequences.

Methods

Study design

Because we were interested in the link between education and income to importation of alcohol, we restricted the age range in the surveys to 25–69-year-olds. This age range represents respondents who have completed their education and are of working age. Data for Denmark, Sweden and Finland originate from the Nordic tax study which has been reported elsewhere (Room et al., 2013).

For the purposes of our study, we pooled the four repeated cross-sectional samples collected through a national telephone survey of the Danish general population. Response rates ranged between 36% and 52% (Trolldall, 2005; Bloomfield et al., 2010). Samples were collected for each of the four years from 2003 to 2006. In total 4,006 persons were interviewed.

Telephone surveys were also conducted in Sweden (Trolldal, 2005; Gustafsson, 2010), and as in Denmark, four surveys were pooled that had been conducted between 2003 and 2006. Response rates for these ranged from 33% to 49% (Gustafsson, 2010; STAKES, 2008). Altogether, 11,734 individuals were interviewed. The
design of the original study meant that only samples in the southern and northern regions of Sweden were included. The southern region, including Scandia and Gothenburg, was defined by its proximity to Denmark via bridge or ferry (Mäkelä et al., 2008). The northern region, which was believed to be relatively unaffected by the tax changes and served as a control area in the original study, included an area 150 km north of Stockholm up to 150 km from the Finnish border (Bloomfield, Rossow, & Norström, 2009).

Postal surveys on alcohol consumption and importation were conducted in Finland in 2005 and 2006 (Mäkelä et al., 2008; Mustonen, Mäkelä, & Huhtanen, 2007). These, too, were pooled for present purposes. Response rates of the original surveys were 53% and 55% (Mustonen, Mäkelä, & Huhtanen, 2007). A total of 3,135 people completed the questionnaires.

Norwegian data were obtained from a single survey conducted in 2004 by face-to-face interviews with a representative sample of 2,167 persons, using quota sampling methods (Nordlund, 2010).

For all surveys, the data were weighted according to age, sex and regional distributions in the general population. Nine persons in Denmark, 231 persons in Sweden and 242 persons in Finland had missing data on all import variables and were excluded from the analysis.

Measures

Dependent variable: alcohol imports
In Denmark and Sweden respondents were asked how often they had been abroad in the last 12 months, whether they had brought alcohol back from their last trip abroad, and if so, how many adults had brought back alcohol, from which country, which types of beverages and how much of each had been imported. The Finnish questionnaire asked for the number of times the respondent had brought alcohol back in the last 12 months, from which country, which type of beverages and how much of each beverage on each occasion. Norwegian respondents answered questions about frequency of trips abroad during the last 12 months, if they had imported alcohol on these trips, and if so, how much of each beverage had been imported. The same questions were also asked specifically for trips to Sweden. Thus, based on these available variables the outcome, private alcohol imports, was defined for Finland and Norway as reported alcohol importation in the past 12 months; for Denmark and Sweden it was defined as alcohol brought back on the last trip abroad.

For respondents from Finland and Norway we calculated the amount of imported alcohol for the last 12 months. For respondents from Denmark and Sweden we calculated the amount of imported alcohol based on information from the last trip.

Independent variables
Socio-demographics
We used sex, age, survey year, educational achievement and income as independent socio-demographic variables. Educational achievement was divided into three groups: low educational achievement (less than upper secondary level), middle educational achievement (upper secondary level), high educational achievement (tertiary level).

Income was measured on the basis of personal monthly or yearly income before tax and was categorised as reported in the table above.
Definition of income (yearly income) categories by country

| Country | Low          | Middle                  | High         |
|---------|--------------|-------------------------|--------------|
| Norway  | <200,000 NOK | 200,000–300,000 NOK     | >300,000 NOK |
|         | (< 24,000 €) | (24,000–36,000 €)       | (>36,000 €)  |
| Denmark | <180,000 DKK | 180,000–360,000 DKK     | >360,000 DKK |
|         | (<24,000 €)  | (24,000–48,000 €)       | (>48,000 €)  |
| Sweden  | <180,000 SEK | 180,000–348,000 SEK     | >348,000 SEK |
|         | (<19,800 €)  | (19,800–38,400 €)       | (>38,400 €)  |
| Finland | <12,000 €    | 12,000–24,000 €         | >24,000 €    |

The differences in the categorisation of the income variable are related to (1) differing response categories in the questionnaires and to (2) the specific distribution of this variable in each country.

Drinking variables
As drinking indicators we used drinking status, frequent risky single-occasion drinking (RSOD) and risky drinking. Those who had not drunk alcohol in the last 12 months were defined as abstainers. Frequent RSOD drinkers were those who drank at least weekly the equivalent of one bottle of wine or 6 bottles of beer or 12 small glasses of spirits or more on one occasion. Risky drinkers included those who drank on average two or more centilitres of ethanol per day, which corresponds roughly to 20 grams of ethanol. This cut-off is a standard in defining low-risk drinking (Babor, Higgins-Biddle, Saunders, & Monteiro, 2001).

If respondents reported at least one of the following alcohol-related social consequences during the last 12 months, they were coded as problematic alcohol consumers: had a quarrel after drinking, had gotten into a fight after drinking, said that drinking had harmed work or studies (Norway: missed work) and had regretted things said or done after drinking (Denmark: not asked in 2003).

Analysis and statistical methods
In order to account for differences in the data structure, analyses were conducted separately for each country. For descriptive statistics, we calculated the proportion of importers in each country as well as for subgroups of the countries (based on, for example, sex, age and education). Proportions of importers by regions of the study countries are displayed in Figure 2. To test differences in subgroups we used Chi-square tests. Furthermore, we calculated means and median amounts of imported alcohol for importers only. To test differences in subgroups we used Kruskal-Wallis tests. For multiple analyses we used regression models with survey year as an independent variable.

Multiple logistic regressions were conducted separately for each country to calculate odds ratios for the likelihood of importing alcohol. Multiple linear regressions were conducted to test related factors for imported amounts among importers only. Independent variables included sex, age, education, income, drinking status, frequent RSOD, risky drinking, alcohol-related problems, survey year and region. For linear regressions we used the log-transformed amount of imported alcohol as outcome. Variable selection for the final models was done with a stepwise forward method.
We included the interaction terms of (1) age and region and (2) income and region to test our specific hypothesis that those who are more likely to be importers and to import more alcohol are (1) younger adults who live closer to the border of a country with lower priced alcohol as well as (2) those with lower incomes who live closer to the border of a lower alcohol-priced country.

Results

Who imports alcohol?

Table 1 displays the proportions and characteristics of alcohol importers in the study countries. In Finland and Norway, more than half of respondents had imported alcohol during the last 12 months. In Denmark and Sweden, around 40% of respondents had imported alcohol on their last trip abroad. The most prominent countries from which people imported were Germany (53% of all imports) for Denmark; Estonia (more than 55% of all imports) for Finland; Denmark (27% of all imports) and Germany (21% of all imports) for Sweden; and Sweden (37% of all imports) for Norway (data not shown).

Significant differences in age, education and income were evident and similar across the four countries. Younger people with higher education and higher income reported more often to be alcohol importers than older people or people with lower education or income. Those who reported to be drinkers, regular RSO drinkers, risky drinkers and those reporting at least one alcohol-related consequence were more likely to be alcohol importers. Rates of alcohol-related consequences were significantly higher in the southern region of Finland than in the other regions of the country; in Sweden higher rates were reported in the northern part (after adjusting for survey year, age and sex). No regional differences were found for prevalence of alcohol-related consequences in Denmark and Norway (data not shown).

Table 2 displays the results of multiple logistic regressions which examined various characteristics in relation to being an alcohol importer. Risky drinkers were more often importers than moderate drinkers or abstainers in Denmark, Finland and Sweden. Regular RSO drinkers were more often importers in Sweden and Denmark. Also, reporting at least one alcohol-related problem was linked to alcohol importation in Finland, Sweden and Norway.

In all countries it was shown that people with higher educational achievement or higher income were more often importers than people with lower educational achievement or lower income. Regional differences were significant in all study countries (Figure 1). In Denmark people who lived in southern Denmark and in central Jutland were most likely to be importers. In Finland those who lived in the south, close to Estonia, were much more often importers than people in other regions. In Sweden, those who lived in the south near the Danish border and next to Germany were more often importers than those in the north. In Norway those in Oslo (as well as in the east and the west) were more likely to be importers than Norwegians in the north.

Although our main findings showed that income was positively related to being an importer, the interaction term tested for income and region proved significant for Denmark and Sweden, indicating that amongst those of lower income, regional
Table 1: Proportion and characteristics of alcohol importers (%. significance tests are based on comparisons within the countries)

| Survey years | Denmark (last trip) 2003–2006 | Finland (last 12 months) 2005–2006 | Sweden (last trip) 2003–2006 | Norway (last 12 months) 2004 |
|--------------|-------------------------------|-----------------------------------|-----------------------------|-----------------------------|
| N            | 3997                          | 2930                              | 11503                       | 2167                        |
| All respondents | 41.6                        | 51.7                              | 42.0                        | 56.2                        |
| Sex          |                               |                                   |                             |                             |
| men          | 44.0                          | 52.5                              | 44.3                        | 56.6                        |
| women        | 39.3                          | 50.9                              | 39.7                        | 55.8                        |
| Age          |                               |                                   |                             |                             |
| 25–34        | 43.2                          | 54.7                              | 39.6                        | 55.8                        |
| 35–44        | 41.4                          | 54.6                              | 40.7                        | 61.2                        |
| 45–54        | 43.2                          | 52.0                              | 43.6                        | 59.1                        |
| 55–64        | 41.3                          | 51.3                              | 45.3                        | 50.6                        |
| 65–69        | 33.1                          | 34.2                              | 38.0                        | 44.7                        |
| Education    |                               |                                   |                             |                             |
| low          | 35.8                          | 39.2                              | 35.6                        | 45.3                        |
| middle       | 40.5                          | 49.7                              | 39.8                        | 52.6                        |
| high         | 45.4                          | 64.4                              | 48.4                        | 70.1                        |
| Income       |                               |                                   |                             |                             |
| low          | 34.6                          | 31.3                              | 31.1                        | 46.5                        |
| middle       | 44.6                          | 51.3                              | 43.0                        | 56.0                        |
| high         | 44.8                          | 66.5                              | 57.4                        | 68.3                        |
| Drinking status |                             |                                   |                             |                             |
| abstainer    | 9.6                           | 5.5                               | 8.7                         | 11.4                        |
| drinker      | 43.5                          | 57.2                              | 46.0                        | 60.9                        |
| RSOD         |                               |                                   |                             |                             |
| less than weekly RSOD | 38.6                  | 49.2                              | 38.5                        | 55.7                        |
| weekly RSOD  | 51.3                          | 65.0                              | 54.0                        | 68.7                        |
| Risky drinking |                             |                                   |                             |                             |
| not risky drinking | 38.6                  | 48.6                              | 39.2                        | 55.0                        |
| risky drinking (2 cl or more per day) | 52.2                  | 67.8                              | 59.3                        | 62.5                        |
| Alcohol-related problems |                             |                                   |                             |                             |
| no problems  | 40.9                          | 44.4                              | 40.4                        | 52.6                        |
| one or more problems | 45.8                  | 65.0                              | 52.6                        | 68.6                        |

* p<0.05, ** p<0.01, *** p<0.001
differences were more pronounced than amongst those with higher incomes. Among those with lower incomes, importer rates were 25% in northern Jutland compared with 43% in southern Denmark. In Sweden the rates among those with lower incomes were 23% in northern Sweden versus 41% in southern Sweden. For those with higher incomes the rates were higher but the regional differences were much smaller: 54% in the north of Sweden in contrast to 60% in the south of Sweden. In Denmark the highest importer rate amongst those with higher income was found in north Jutland (59%) in contrast to 55% in south Denmark (data not shown).

How much do people import?
The results of multiple linear regressions are presented in Table 3. Age was positively associated with the amount imported in Finland, Sweden and Norway. Education had no effect on imported amounts, but respondents with middle or higher incomes imported more in all countries. RSO drinkers imported more than moderate drinkers or abstainers in Denmark, Finland and Sweden. Risky drinkers imported more than non-risky drinkers in Finland and Norway. Problem drinkers imported more than non-problematic drinkers or abstainers in Finland, Sweden and Norway.

There were regional differences in all countries with regard to imported amounts (Table 3). In Denmark people living in the south imported more than those...
Table 2: Multiple logistic regression for likelihood of being an importer (OR and 95% CI, separate regressions for each country)

|                | Denmark (last trip) | Finland (last 12 months) | Sweden (last trip) | Norway (last 12 months) |
|----------------|---------------------|--------------------------|-------------------|------------------------|
| N              | 3737                | 2686                     | 10823             | 1869                   |
| R²             | 0.09                | 0.25                     | 0.18              | 0.22                   |
| Survey year    | 0.83 (0.78–0.88)    | 0.79 (0.66–0.94)         | --                | --                     |
| Sex (women, ref: men) | --                  | 1.28 (1.07–1.53)         | --                | 1.25 (1.01–1.54)       |
| Age (in decades) | --                  | --                       | 1.17 (1.13–1.22)  | --                     |
| Education      |                     |                          |                   |                        |
| low            | 1                   | 1.08 (0.88–1.33)         | 1.27 (1.01–1.59)  | 1.14 (1.01–1.28)       |
| middle         | 1.08 (0.88–1.33)    | 1.76 (1.32–2.34)         | 1.65 (1.28–2.13)  | 1.40 (1.23–1.58)       |
| high           | 1.31 (1.06–1.62)    | 1.31 (1.06–1.62)         | 1.31 (1.06–1.62)  | 2.01 (1.52–2.66)       |
| Income         |                     |                          |                   |                        |
| low            | 1                   | 1.69 (1.33–2.15)         | 1.88 (1.48–2.37)  | 1.36 (1.17–1.59)       |
| middle         | 1.69 (1.33–2.15)    | 2.69 (2.20–3.79)         | 2.69 (2.20–3.79)  | 1.93 (1.48–2.51)       |
| high           | 1.76 (1.32–2.34)    | 2.89 (2.20–3.79)         | 2.91 (2.36–3.58)  | 1.93 (1.48–2.51)       |
| Drinkers (ref: abstainers) | 5.15 (3.15–8.42) | 15.10 (8.98–25.42)       | 7.33 (5.93–9.06)  | 11.1 (6.97–17.70)      |
| Weekly RSOD (ref: less than weekly or no RSOD) | 1.36 (1.15–1.61) | --                       | 1.36 (1.12–1.53)  | --                     |
| Risky drinking (2 cl or more per day) (ref: moderate drinking or abstaining) | 1.44 (1.21–1.71) | 1.46 (1.16–1.84)         | 1.37 (1.20–1.56)  | --                     |
| Alcohol-related social consequences* (ref: no consequences) | 1.43 (1.20–1.71) | 1.28 (1.12–1.46)         | 1.45 (1.15–1.85)  | --                     |

Region

|                | Nordjylland (NJ) | Hovedstaden (HS) | Sjælland (SJ) | Midtjylland (MJ) | Syddanmark (SD) | Lapland | north | south | north | south |
|----------------|------------------|------------------|---------------|------------------|----------------|---------|-------|-------|-------|-------|
|                | 0.97 (0.75–1.26) | 0.92 (0.69–1.23) | 2.15 (1.50–3.07) | 2.01 (1.40–2.88) | 4.94 (2.88–8.49) | 3.26 (1.89–5.61) | 2.75 (1.54–4.90) | 1.98 (1.09–3.60) | 2.21 (1.85–2.65) | 2.14 (1.99–4.26) |

Interaction region*income

|                | low income or living in NJ, HS or SJ | low income or living in the north | middle income and living in MJ or SD | middle income and living in the south | high income and living in the south | high income and living in MJ or SD |
|----------------|-------------------------------------|----------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-----------------------------------|
| low            | 0.68 (0.49–0.95)                    | 1.11 (0.90–1.37)                 | 0.62 (0.41–0.94)                    | 0.55 (0.42–0.72)                    | --                                 | --                                |

Interaction age*region

-- Tested variables that were not significant and are not included in the final models

* at least one of the following alcohol-related social consequences during the last 12 months: had a quarrel after drinking, had gotten into a fight after drinking, drinking had harmed work or studies (Norway: missed work), had regretted things said or done after drinking (Denmark: not asked in 2003)
Table 3: Multiple linear regression for import level (logged volume, only significant coefficients, separate regression models for each country)

| Variable                        | Denmark (last trip) | Finland (last 12 months) | Sweden (last trip) | Norway (last 12 months) |
|---------------------------------|---------------------|--------------------------|--------------------|-------------------------|
| N                               | 1596                | 1504                     | 4656               | 1211                    |
| R²                              | 0.64                | 0.13                     | 0.23               | 0.15                    |
| constant                        | 4.72***             | 0.26***                  | 3.70***            | 1.69***                 |
| Survey year                     | 0.97***             | --                       | 0.04*              | --                      |
| Sex (ref. women)                | 0.21**              | --                       | 0.22***            | -0.08**                 |
| Age (centred, in decades)       | --                  | 0.02***                  | --                 | 0.04**                  |
| Education (ref. low)            |                     |                          |                    |                         |
| middle                          | --                  | --                       | -0.12*             | --                      |
| high                            | --                  | --                       | -0.21***           | --                      |
| Income (ref. low)               |                     |                          |                    |                         |
| middle                          | 0.22**              | 0.08***                  | 0.09*              | 0.12***                 |
| high                            | 0.11                | 0.12***                  | 0.17**             | 0.18***                 |
| Drinking status                 |                     |                          |                    |                         |
| (ref. abstainers)               |                     |                          |                    |                         |
| drinker                         | --                  | --                       | --                 | --                      |
| Weekly RSOD                     | 0.24**              | 0.06**                   | 0.20***            | --                      |
| (less than weekly or no RSOD)   |                     |                          |                    |                         |
| Risky drinking                  | --                  | 0.11***                  | 0.20***            | 0.27***                 |
| (2 cl or more per day)          |                     |                          |                    |                         |
| (ref. no risky drinking)        |                     |                          |                    |                         |
| Alcohol-related social consequences (ref. no consequences) | -- | 0.06*** | 0.10* | 0.09** |
| Region                          |                     |                          |                    |                         |
| Hovedstaden ref                 |                     | ref                      | south ref          | north ref               |
| Nordjylland                     | --                  | ref                      | --                 | -0.20***                |
| Middelfynen                     | 0.17*               | --                       | north              |                         |
| Syddanmark                      | 0.30***             | --                       | --                 |                         |
| Sjælland                        | --                  | ref                      | Oulu               | -0.08**                 |
| Interaction income*region       | --                  | --                       | --                 | --                      |
| Interaction age*region          | --                  | --                       | --                 | --                      |

--- tested variables that were not significant and are not included in the final models

a at least one of the following alcohol-related social consequences during the last 12 months: had a quarrel after drinking, had gotten into a fight after drinking, drinking had harmed work or studies (Norway: missed work), had regretted things said or done after drinking (Denmark: not asked in 2003)
Figure 2: Proportion of alcohol importers by region*

* In Denmark and Sweden respondents reported if they imported alcohol from their last trip abroad, in Norway and Finland respondents reported if they had imported alcohol during the last 12 months.

living in the greater Copenhagen area. In Sweden those living in the south imported more than people living in the north. In Norway people living in Oslo and in the eastern part of the country imported larger amounts of alcohol than people in other
regions. In Finland importers in the northern region of Oulu imported significantly less alcohol than those in the more southerly areas. In none of the countries was there a significant interaction between age and region or income and region regarding the amount of imported alcohol.

Discussion

Our study appears to be the first to examine the socio-demographic characteristics of persons privately importing alcohol to the Nordic region. In all countries it was demonstrated that import behaviour is related to socio-economic status, drinking behaviour and to place of residence.

In most countries RSOD, risky drinking and alcohol-related social consequences were positively related to being an importer as well as to amounts imported. This finding is in line with our a priori expectations. Also as expected from the literature (Milhøj, 1993; Norström, 2000; Trolldal, 2005), people living in regions closer to lower priced countries were more often importers and imported larger amounts than people living in other regions.

Contrary to our expectations, however, we found that older people tended to import more than younger people. Furthermore, those of higher education were more likely to be importers. However, income had a more complex relationship to importer status. In general those of higher income were more likely to be importers. But in Sweden and Denmark an interaction term showed that those with lower incomes were more likely to be affected by regional differences while those with higher incomes were more often importers in all regions. These findings, along with the previously cited research showing a distance-to-the-border relationship for alcohol-related hospitalisations in Sweden (Jarl et al. 2006), give policymakers information in considering new strategies specifically tailored for the border regions in their countries.

With regard to Denmark, it has been observed that the country is in “a league of its own” when it comes to drinking patterns and amounts drunk (Mäkelä et al., 2001; Bloomfield et al., 2008). This also appears to be the case in terms of the characteristics of alcohol importers. Although Danes appear to resemble their Nordic neighbours in the likelihood of being an importer, there are few significant socio-demographic predictors of amount imported. Thus, the “egalitarian” distribution of drinking in Denmark appears to extend to alcohol importation behaviour.

In Sweden the characteristics associated with being an importer were: being between 55 and 64 years of age, living in the southern part of the country, having a middle or higher education and/or income as well having risky style of drinking. With regard to the amount imported, the picture is similar with the exception that higher educated people tended to import smaller amounts than the lower educated.

In Finland people living in the south, having higher education or higher income as well as a more risky drinking pattern were more often importers. Older people, those with higher incomes, and those with more risky drinking patterns imported larger amounts. In Norway those living in the Oslo region or on the east coast, having higher education, higher income and those who reported alcohol-related consequences were more often importers. Those who were older, had higher incomes, reported...
more risky drinking patterns or lived in the Oslo region or in the east tended to report higher amounts of imported alcohol.

There are limitations in this research that should be acknowledged. One of them is the fact that we have used survey data to analyse importer behaviour. Surveys are always subject to selection bias. Although our response rates were modest, the population estimates have been acceptable in their respective countries. In Denmark, for instance, alcohol use estimates are comparable to those of surveys with higher response rates (Swedish National Institute of Public Health (FHI), 2005). Nonetheless, certain sub-populations are traditionally under-represented in general population surveys. These include the less privileged and chronic heavy drinkers16. This study may therefore have underestimated private alcohol imports. Another study limitation is that the data come from different national surveys conducted for different purposes and not all questions were completely comparable across countries. We therefore analysed the data separately for each country. Furthermore, we lacked survey data for the middle region of Sweden.

Still, as a whole, this paper offers some definite markers of those who tend to be importers and to import the most. Generally, it appears that the importers are an affluent yet heavy drinking segment of society. Cross-border travelling and buying alcohol stocks for later consumption presupposes the ability to plan ahead and the availability of financial resources. However, in countries other than Denmark, we could show that importers were also more likely to report having alcohol-related consequences. Proximity to the border was also related to the reporting of alcohol problems. Therefore, in addition to already existing generalised efforts to curb alcohol-related problems in society, this information could be helpful for planning future policies specifically on cross-border trade.

Declaration of interest None.
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