

Alcohol consumption and alcohol policy in Estonia 2000–2017 in the context of Baltic and Nordic countries

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Abstract

Introduction and Aims. Alcohol consumption has become a global health threat and there is need for an evidence-based global alcohol policy. This study aimed to describe alcohol consumption in parallel with alcohol policy in 2000–2017 in Estonia in the context of Baltic and Nordic countries. **Design and Methods.** A review of routine statistics concerning alcohol consumption and the pertinent legislation in Estonia was performed. The measures used to assess the effects of alcohol policy were adult (15 and older) pure alcohol per capita consumption (APC) in litres, alcohol outlet densities and opening hours, taxes and the price of alcoholic beverages. **Results.** Adult domestic APC in Estonia increased from 9.3 to 14.8 in 2000–2007 and thereafter decreased to 10.2 in 2016 (10.3 in 2017). Adult APC in Estonia was lower than that in Latvia and Lithuania but higher than that in Nordic countries. Since 2010, beer has been the most prevalent alcoholic beverage in Estonia. The density and opening hours of alcohol retail shops were much higher in Estonia and other Baltic countries than in Nordic countries. The alcohol retail price increased twice from 2006 to 2017 in Estonia, resulting in a double price difference with Latvia. **Discussion and Conclusions.** Evidence-based comprehensive alcohol policy should continue in Estonia. Based on the example of Nordic countries, more attention should be paid to the physical availability of alcohol in Estonia. In terms of economic availability, it is important to focus on the cross-border alcohol trade to achieve improvements in public health. [Pärna K. Alcohol consumption and alcohol policy in Estonia 2000–2017 in the context of Baltic and Nordic countries. *Drug Alcohol Rev* 2020;39:797–804]

Key words: alcohol consumption, alcohol policy, physical availability, economic availability.

Introduction

Evidence-based research has shown that alcohol consumption is associated with mortality [1–3], having a causal impact in approximately 15% of all causes of death in Europe [4]. Heavy drinking has been regarded as an especially important contributor to the high premature mortality rates in central and eastern Europe, particularly in countries of the former Soviet Union [5–8]. The impact of alcohol-related harm differs by beverage type, and particularly spirits, which are more popular in eastern Europe, have stronger effects [9]. Moreover, alcohol-related mortality accounted for 20–30% of the gender gap in life expectancy in eastern Europe [10,11].

The World Health Organization (WHO) global strategy emphasises the importance of alcohol as the cause of damage to health and recognises that an operating alcohol policy should be all-inclusive, intersectoral and consistent [12]. Priority areas for national action in alcohol policy recommendations by the WHO include, among

others, the restriction of physical availability and an increase in excise taxes accompanying a price increase as one of the most effective strategies.

According to the WHO data, adult (15 years and older) alcohol consumption increased from 7.8 to 8.8 L of pure alcohol per year in 1992–1999 in Estonia [13]. At the same time increased alcohol-related mortality [14,15]. Until 2002, changes in alcohol policy were quite minor in Estonia. In 2002, the *Alcohol Act* [16] came into force, followed in 2003 by the *Alcohol, Tobacco, Fuel and Electricity Excise Tax Act* [17]. Since Estonia joined the European Union (EU) in 2004, the government has been obliged to bring alcohol legislation and regulation (e.g. excise duty on alcohol, import and export regulations for alcohol) into line with that of EU. The Estonian Ministry of Social Affairs found that interventions for strengthening alcohol policy, such as an increase in alcohol taxation, wider restrictions of alcohol sales and banning alcohol advertising [18], were the most appropriate. In 2014, a Green Paper on Alcohol Policy [19] was

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published in Estonia, presenting the main areas of activities in accordance with the WHO suggestions.

This paper provides a systematic chronological overview of changes in both alcohol consumption and the selected components of alcohol policy in Estonia in 2000–2017 with a greater focus on the context of alcohol legislation related to physical availability and pricing of alcohol. The alcohol situation in Estonia was compared with that in other Baltic and Nordic countries.

Methods

This study was mainly based on official data on adult (15 years and older) alcohol consumption and related harms in Estonia [20,21] which was consistently available since 2000, and on systematic analyses of alcohol-related legislation.

Based on the WHO report [22], total alcohol per capita consumption (APC) was defined as the total (recorded plus estimated unrecorded) alcohol per capita consumption of adults (15 years and older) within a calendar year in litres of pure alcohol, adjusted for tourist consumption.

Data on Estonia

Data concerning adult APC in 2000–2017 were used in Estonia [20,21]. Until 2002, adult APC was based on total legal sales of alcohol in Estonia. The calculation of total domestic APC has accounted for exports by tourists and illegal sales since 2002, consumption by tourists in Estonia since 2006, and alcohol purchased abroad since 2016.

APC by beverage type in 2000–2017 in Estonia consisted of consumption of spirits (containing more than 22% ethanol, e.g. vodka, liquors) and light alcohol (22% ethanol or less), such as beer, light alcoholic beverages (e.g. ciders, long drinks) and wine.

The affordability of alcoholic beverages was based on the quantities of beer or vodka in litres that could possibly be bought with the average net monthly salary in 2002–2017.

Data on the Baltic and Nordic countries

Total APC (sum of recorded and unrecorded APC three-year average, adjusted for tourist consumption)

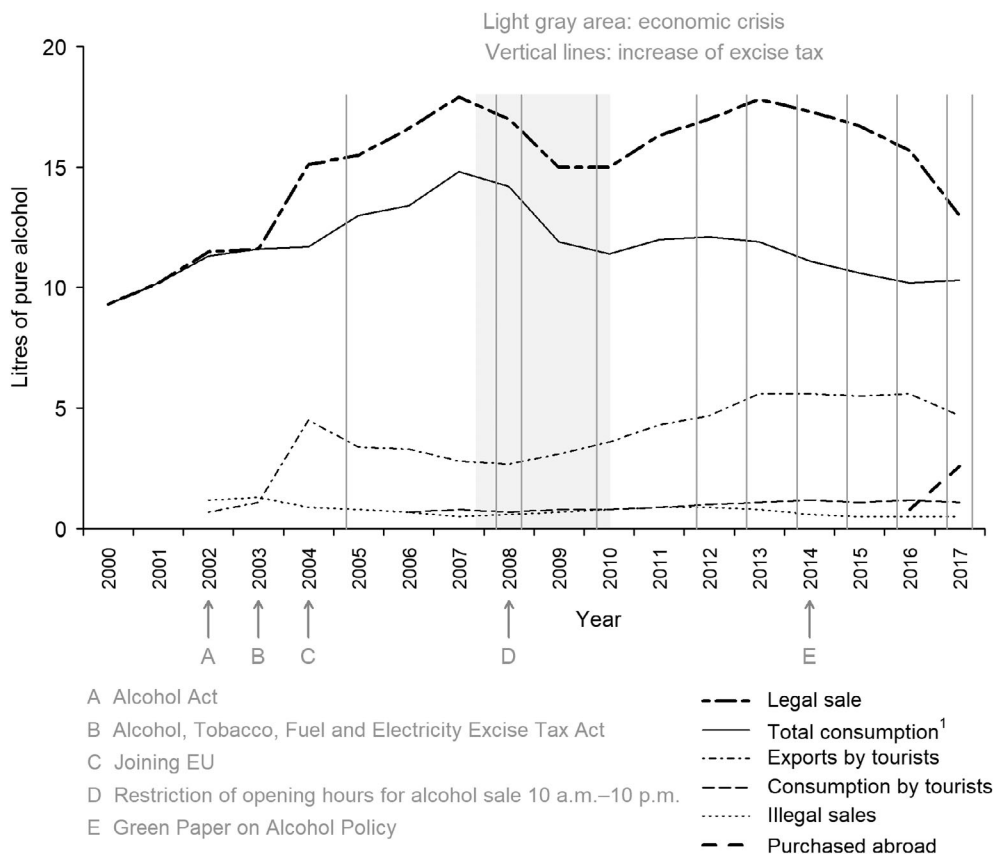


Figure 1. Trends in total alcohol per capita consumption (APC) (15 years and older) in litres of pure alcohol in Estonia, 2000–2017 [20,21].
¹Total (domestic) consumption equals legal sales minus exports by tourists (from 2002) minus consumption by tourists in Estonia (from 2006) plus illegal sales (from 2002) and purchases abroad (from 2016).

was based on data from the Global Information System on Alcohol and Health [23]. APC by beverage type consisted of consumption of spirits, beer, light alcoholic beverages and wine in 2017 [21].

The longest opening hours of alcohol retail shops per day and week (as of 1 January 2018) and the number of alcohol retail shops per 100 000 inhabitants were used to measure physical availability [21]. The relative price of alcohol per litre of alcoholic beverages was used to measure economic availability.

Results

Total alcohol consumption among the adult population (15 years and older)

In 2000–2017, legal sales of alcohol in Estonia had two increases (Figure 1). The first increase was from 9.3 to 17.9 l of pure alcohol per capita per year in 2000–2007, followed by a decrease. The second increase was from 15.0 to 17.8 in 2010–2013, followed by a decrease to 13.0 L of pure alcohol per capita in 2017. Export by tourists increased in 2004–2013, then stabilised and decreased to 4.7 L of pure alcohol per capita in 2016–2017. Consumption by tourists was stable over the study period, fluctuating between 2 and 4 L of pure alcohol per capita. Illegal sales of alcohol decreased slightly in 2002–2007, stabilised and slightly decreased to 0.5 L of pure alcohol per capita in 2012–2017. Total domestic adult APC increased from 9.3 to 14.8 in 2000–2007, followed by a decrease to 10.2 in 2016 (10.3 in 2017); 0.8 L in 2016 and in 2017, 2.6 L of pure alcohol per capita was bought abroad.

The total adult APC in Estonia was lower than that in Latvia and Lithuania but higher than that in Nordic countries in 2016. Compared to 2010, in 2016, APC was higher in Latvia and Iceland, similar in Lithuania and Sweden, and lower in other countries (Table 1).

Alcohol consumption by beverage type among the adult population (15 years and older)

In Estonia, the consumption of spirits (mainly vodka) increased from 3.2 to 6.7 L of pure alcohol per capita in 2000–2007 and thereafter decreased to 3.6 in 2017 (Figure 2). The consumption of beer increased from 4.4 to 5.3 in 2000–2007 and thereafter slightly decreased. Compared to 2016, the consumption of beer was slightly higher in 2017 (4.2 and 4.3, respectively). Compared to consumption of spirits, since 2010, consumption of beer measured in pure alcohol per capita has been more prevalent in Estonia. The

Table 1. Total alcohol per capita consumption (APC)^a (15 years and older) in litres of pure alcohol in Baltic and Nordic countries [23]

Country	APC ^a (95% confidence interval)		Change of APC
	2010	2016	
Lithuania	15.1 (14.7–15.6)	15.0 (14.6–15.4)	=
Latvia	11.6 (11.2–12.0)	12.9 (12.5–13.3)	↑
Estonia	12.4 (12.1–12.8)	11.6 (11.2–12.0)	↓
Finland	12.6 (12.2–13.0)	10.7 (10.3–11.1)	↓
Denmark	10.9 (10.6–11.2)	10.4 (10.1–10.7)	↓
Sweden	9.5 (9.1–9.8)	9.2 (8.8–9.5)	=
Iceland	7.4 (7.2–7.6)	9.1 (8.8–9.4)	↑
Norway	9.0 (8.7–9.3)	7.5 (7.2–7.0)	↓

^aTotal APC is defined as the total (sum of recorded APC 3-year average and unrecorded APC) amount of alcohol consumed per adult (15 years and older) over a calendar year in litres of pure alcohol. If the number of tourists per year was at least the number of inhabitants, the tourist consumption was also taken into account and was deducted from the country's recorded APC.

consumption of light beverages (e.g. cider, long drinks) increased from 0.6 to 1.8 in 2000–2007 and thereafter decreased to 0.6 in 2017. Wine was the one beverage type whose consumption seems to have increased most consistently since the mid-2000s. Since 2010, consumption of wine measured in litres of pure alcohol per capita has been more prevalent than consumption of light alcoholic beverages.

In 2017, based on recorded adult APC, beer was the most consumed beverage in Estonia, Finland, Norway and Iceland. Wine was most consumed in Sweden and Denmark, while in Latvia, vodka was the most consumed, and in Lithuania, vodka and beer consumption were at the same level [21].

Physical availability of alcohol

Number of alcohol retail shops. At the start of 2018, Estonia had more than 200 registered retail shops selling all types of alcohol per 100 000 people, which was slightly higher than the figure in Latvia. In Lithuania, there were more than 300 registered shops per 100 000, while in Nordic countries, the equivalent numbers were far lower at less than 100 per 100 000 inhabitants (Figure 3a). Compared to Sweden, in Estonia, the number of retail shops selling alcohol per 100 000 inhabitants was more than three times higher. The overwhelming majority of the population (83%) in Estonia lived 10 min drive to the nearest alcohol retail sale outlet [21]. While in the Baltic countries, the number of retail shops selling strong alcohol per

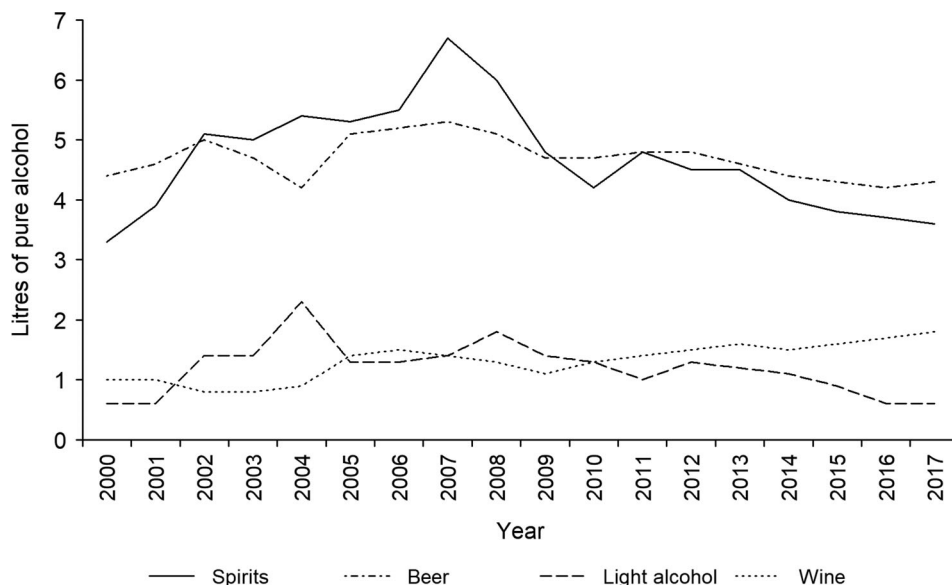


Figure 2. Alcohol consumption by beverage type in Estonia, 1996–2017 (pure alcohol in litres per capita per year) [20,21].

100 000 inhabitants was approximately the same as that selling all types of alcoholic beverages, in Nordic countries, far fewer shops per 100 000 sold strong alcohol (Figure 3b).

Alcohol retail shop opening hours. Since 2008 in Estonia, there has been an enforced restriction of off-premise sales of alcoholic beverages from 10 am to 10 pm [17], while there are currently no time restrictions on the sale of alcohol at the catering venues.

Alcohol can be sold during longer opening hours in the Baltic countries, especially in Latvia and Estonia, than in Nordic countries. Alcohol shops can be open daily from 8 am to 10 pm (in total, 98 h per week) in Latvia and from 10 am to 10 pm (84 h per week) in Estonia. In Lithuania, since 2018, alcohol shops have been permitted to sell alcohol from Monday to Saturday from 10 am to 8 pm and on Sunday from 10 am to 3 pm (65 h per week).

In all Nordic countries, alcohol shops (alcohol monopoly retail shops) are closed on Sundays [21]. In Finland, alcohol shops are open from 9 am to 8 pm on

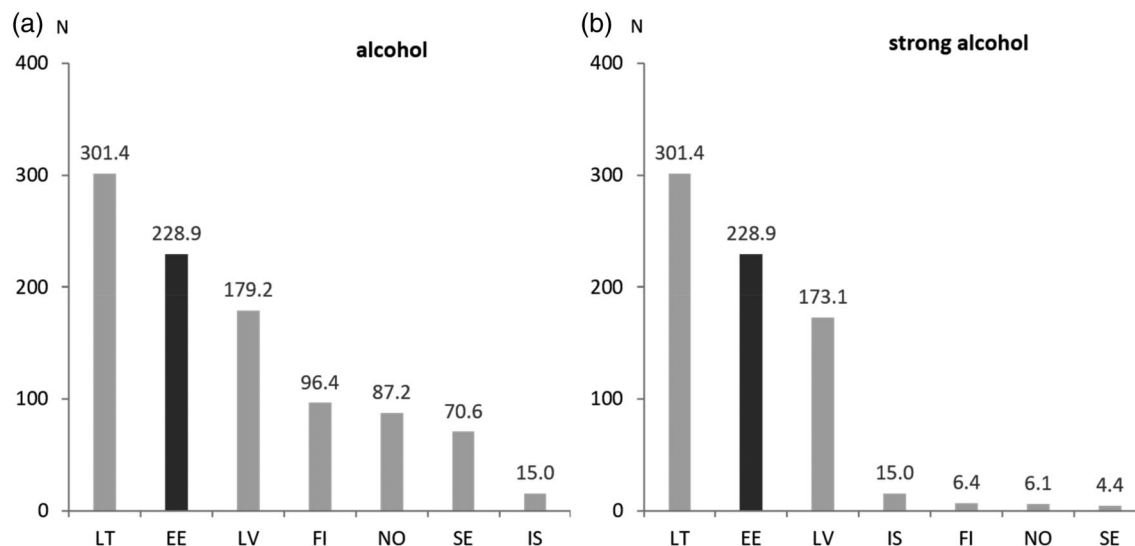


Figure 3. Total number of registered retail shops (as of 01.01.2018) selling (a) all types of alcoholic beverages and (b) strong alcoholic beverages per 100 000 inhabitants in Baltic and Nordic countries [21]. EE, Estonia; FI, Finland; IS, Iceland; LT, Lithuania; LV, Latvia; NO, Norway; SE, Sweden.

weekdays and from 9 am to 6 pm on Saturdays (64 h per week). In Iceland and Sweden, alcohol shops are open from 10 am to 8 pm on weekdays and, respectively, from 11 am to 6 pm and from 10 am to 3 pm on Saturdays (57 h per week in Iceland and 55 in Sweden). In Norway, alcohol shops are open from 10 am to 6 pm on weekdays and from 9 am to 3 pm on Saturdays.

Economic availability of alcohol

In 2005–2017, the increase of alcohol tax took place in more than 10 occasions in Estonia (Figure 1) [20,21]. Excise tax on alcoholic beverages, except wine, increased by 5% in 2005 and by 10% and 20% in 2008 [17]. In 2009, VAT increased from 18% to 20% [24], and in 2010, excise tax on alcoholic beverages increased by 10% [17]. In 2012–2014, the collection of excise taxes grew steadily by 5% per year. The excise duty in 2015 and 2016 rose by 15% each year, with the highest rate rise for strong alcohol. In 2017, excise rate rises occurred twice a year [21]. The average retail price of beer increased steadily from €1.16 per litre in 2006 to €2.70 per litre in 2017, and that of spirits (mainly vodka) increased from €7.66 to €17.70, respectively [20,21]. Compared to Latvia, at the beginning of 2018, the retail price of a 0.5-L bottle of vodka was, on average, 1.6 times higher, and that of 24 × 0.33 L of boxed beer was approximately twice as high in Estonia [25].

The quantities of beer and vodka that could be bought on an average net monthly salary in Estonia sharply increased in 2002–2007 and thereafter decreased to 2012. For beer, there was a new increase in 2012–2016 and a decrease in 2016–2017, and for vodka, there was a new increase in 2012–2014 and a decrease in 2014–2017 (Figure 4).

Discussion

The availability of detailed and harmonised official statistics on alcohol between 2000 and 2017 allowed to identify relationships between adult alcohol consumption and selected anti-alcohol policies in Estonia. This study primarily focused on the effect of policy measures targeting the physical and economic availability of alcohol on alcohol consumption in Estonia in the context of Baltic and Nordic countries. The study did not consider other WHO priority areas for national action in alcohol policy (e.g. drink-driving policies and countermeasures) or more specific measures, including restriction of alcohol advertisements, guidance for

retailers based on the control of alcohol sale to minors and drunk people, and restrictions on the display of alcoholic beverages in grocery shops as these data was not consistently available for two last decades.

Before interpreting modern changes and patterns of alcohol consumption in Estonia, the specific historical context should be considered. The domination of strong alcoholic beverages in the Baltic countries is at least partially attributable to the legacy of drinking patterns originating from the Russian Empire and Soviet period [5]. In 1994–2007, alcohol consumption [26,27] and alcohol-related mortality (e.g. alcohol psychosis, alcohol liver cirrhosis, accidental poisoning by alcohol) [14,15] increased steadily. Despite recent progress in Estonia, adult APC in all Baltic countries remains among the highest in the world. According to the data for the year 2016, Lithuania shows a higher level of adult APC than Estonia and Latvia, which present similar figures [22]. At the same time, after regaining independence in 1991, life expectancy at birth in Estonia has shown consistent improvement since 1994 [28].

Measuring alcohol consumption in post-Soviet countries is a challenging task because of the prevalence of illegal and homemade alcohol. Importantly, Estonian statistics on the domestic APC also include estimates of illegal sales, consumption and export of alcohol by tourists (mainly from neighbouring Finland and other Nordic countries) and alcohol purchased abroad (mainly in Latvia).

According to the official Estonian statistics for 2000–2017, the legal sales of alcohol went through contradictory changes. During the first period between 2000 and 2007, legal consumption almost doubled. Then, there was a slight decrease during 2007–2010, followed by a new increase during 2010–2013. Starting in 2013, sales decreased, showing the steepest drop from 2016 to 2017. These inconsistent changes in the legal sales of alcohol can be partially explained by economic trends. During the economic boom of the 2000s, Estonia saw a rapid economic growth, reaching an increase in GDP of 7% per year, on average [29]. This economically favourable period accompanied by a substantial rise in salaries was interrupted by severe economic crisis leading to a drastic fall (almost –14%) in GDP per capita, from € 12 353 in 2008 to € 10 600 in 2009, and an increase in the unemployment rate, from 4.6 in 2007 to 16.7 in 2010 [28]. Thanks to radical austerity measures, the economic crisis was quite short-lived: economic growth returned again in 2010, and the unemployment rate started to decrease in 2011. Without a doubt, these contradictory economic changes had at least some direct and indirect impact (in addition to excise taxes and other measures) on the affordability of alcohol. However, this relationship

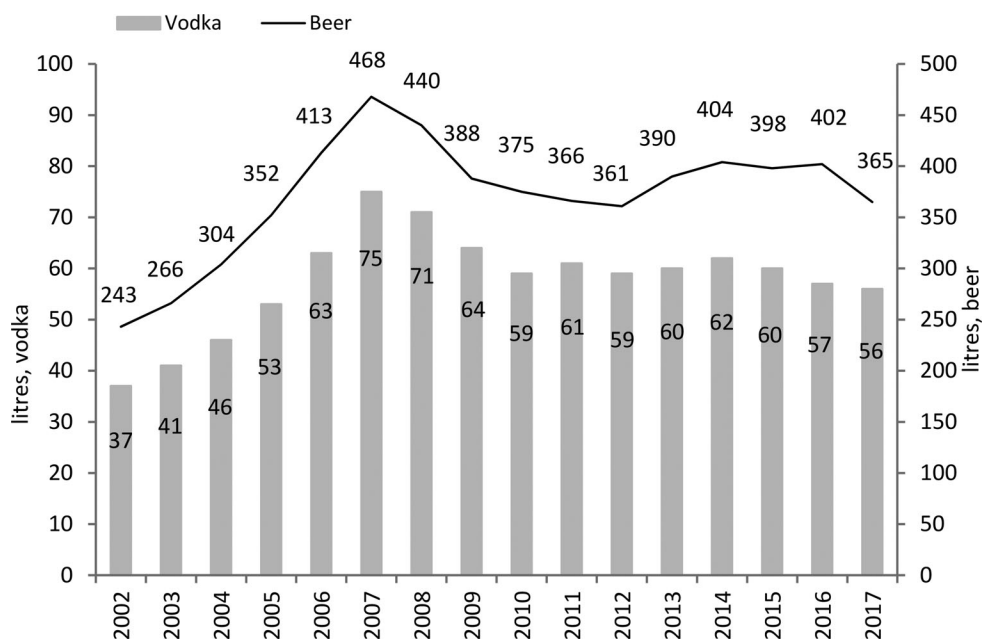


Figure 4. Quantities of beer or vodka (litres) that can be bought with the average net monthly salary 2002–2017. Average monthly wage divided by retail price (annual average price) of 1 L of domestic beer or vodka [21].

became weaker after 2013 following notable increases in excise duty and domestic prices of alcohol. Although this has led to notable decreases in the legal sales of alcohol, the total adult domestic APC remained at roughly the same level, and alcohol exports by tourists (mainly Finnish) has decreased in recent years in Estonia. This could be explained by the increased Estonian-Latvian border trade, which tripled from 2016 to 2017 because of sharp increases in alcohol prices in recent years in Estonia and increasing price differences between the neighbouring countries, followed by increasing consumption in Estonia of alcohol bought in Latvia. Moreover, although adult domestic APC has decreased since 2007 in Estonia, one of the goals of the Green Paper on Alcohol Policy to stabilise alcohol consumption under 8 L of pure alcohol per capita per annum has not yet been reached [19]. Illegal alcohol sales were almost stable over the study period, with a slight decrease in the beginning of the study period and in recent years. The first decrease might be associated with methanol mass poisoning in the western part of Estonia in 2001 caused by illegal spirits containing 50–100% methanol, which could have made people more cautious about illegal alcohol [30]. The second decline might be explained again by the fact that relatively cheap alcohol bought across the Latvian border may have recently reduced the need for the purchase of illegal alcohol as well as non-alcoholic beverages, which might be contaminated with toxic substances. However, the WHO global strategy sees interventions concerning illegal alcohol as a

complement to other interventions to reduce the harmful use of legal alcohol [22].

In 2000–2017, there were important changes in alcohol consumption by type of beverage in Estonia, especially since 2007. For example, the consumption of light alcohol was a relatively new and very rapidly spreading phenomenon, which became increasingly popular in the early 2000s [27]. Importantly, the period 2007–2017 saw substantial decreases in the consumption of strong and light alcoholic beverages. At the same time, there was no systematic reduction in the consumption of beer, and the consumption of wine was slightly increasing. The year 2010 also marks a change in the ranking of the most popular alcoholic beverage, with beer overtaking strong alcohol. This is an important transition from a health perspective, as spirits consumption is most strongly related to negative health impact [9] and alcohol-related mortality [14,15]. In Nordic countries, strong alcohol had already lost dominance by the 1960s [31]. According to recent data, strong alcohol is still the most popular beverage in Latvia, while beer and vodka represent similar shares in Lithuania [21].

A large body of literature has established that alcohol consumption can be affected by restrictions of the hours and days of alcohol purchasing and the number of outlets where alcohol may be purchased [31,32]. The statistics on the number of outlets selling alcohol revealed important cross-country differences, to a large extent corresponding to the differences in the levels of alcohol consumption in Baltic and Nordic countries.

Lithuania remained a clear leader in both consumption level and number of outlets per capita, whereas Estonia and Latvia showed similar figures. However, compared to Nordic countries, the number of retail shops selling alcohol per 100 000 inhabitants in Estonia was two to three times higher than the figures in Finland, Norway and Sweden and even 15 times higher than that in Iceland. This can be explained by the state monopoly for selling strong alcohol in Nordic countries. Obviously, this contributes to alcohol control by enabling better control of the number of outlets and hours of sale.

Previous research has also confirmed that there is an inverse relationship between the tax or relative price of alcoholic beverages and alcohol consumption [33], alcohol-related harm [34] and indices of excessive drinking [12,35]. Already in the 20th century, the Nordic countries had carried out alcohol policies with high taxes as a central component [31]. An increase in the price of alcohol reduces the purchasing power of the household and thus can affect its alcohol consumption [36,37]. Additionally, an increase in the excise duty for alcohol during 2005–2017 contributed to the corresponding rise in the price of alcohol in Estonia. This was particularly notable during 2015–2017, leading to a jump in the price and decreasing affordability of alcohol. From 2016 to 2017, the retail price of alcoholic beverages grew by 9–10%, while average net wages grew only by 6.7%.

As stated above, it is important to note that in recent years, the decrease in adult domestic APC consumption in Estonia was not pronounced because of a compensating effect of radical increase in the amount of alcohol bought abroad. The cross-border trade in alcohol between Latvia and Estonia increased by three times from 2016 to 2017, as Estonia maintained much higher alcohol retail prices (at least 30% for strong alcohol and 50% for beer) than neighbouring Latvia. Cross-border purchases of alcohol have been particularly active because of a less restrictive excise policy, leading to the establishment of stores and warehouses with affordable price selections for alcohol directly along the border in Latvia. This situation is similar to the cross-border alcohol trade between Estonia and Finland in 2004 after Estonia joined the EU, when the prices in Estonia were much lower (e.g. prices for cheap vodka were merely one-fifth and for beer one-third of the Finnish prices in 2004) [38].

According to the sales figures of the Estonian Breweries Association, in the first 6 months of 2018, approximately 80% more beer and 3.4 times more low-alcohol beverages were sold on the Latvian border than during the same period in the previous year [39]. Alcohol producers in Estonia raised the concern that maintaining such cross-border trade would lead to a total loss of € 100 million unpaid as value-added tax to the budget in

Estonia [39]. In 2018, with the aim to respond to those concerns and stop further decline of the internal market, the Estonian government initiated and adopted a bill of amendments cancelling the alcohol excise duty rises planned for 2019 and 2020. In reality, the new Estonian government, appointed in spring 2019, decided to cut excise tax rates on both light alcohol and spirits by 25% from July 2019 to halt and reverse the cross-border alcohol trade in Latvia. Latvia responded to this with a 15% cut in the price of spirits as a matter of urgency beginning in August 2019 [40]. Such changes based on uncoordinated alcohol policy between neighbouring countries may become an important obstacle for achieving further progress in decreasing alcohol consumption and alcohol-related harm in Estonia.

Conclusion

Adult domestic APC has decreased since 2007 but remained steady in 2016–2017 in Estonia. As decreasing per capita alcohol consumption has been shown to reduce alcohol-related harm, restricting the physical and economic availability of take-away alcohol would be expected to result in improvements to public health. Based on the example of Nordic countries, more attention should be paid to the physical availability of alcohol in Estonia. Although the price of alcohol via excise duty rates is just one tool of alcohol policy, it will be important for all Baltic countries in line with Nordic countries to discuss the tax on alcohol together to follow cross-border trade and the price of alcohol to ensure the effectiveness of this strategy in improving public health.

Future research should continue to follow alcohol consumption and changes in alcohol policy, focusing on all aspects of the consistent implementation of comprehensive alcohol policy in Estonia.

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Conflict of Interest

The authors have no conflicts of interest.

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