

**JOURNAL**

of Health Inequalities

# Alcohol and health in Central and Eastern European Union countries – *status quo* and alcohol policy options

Jürgen Rehm<sup>1-9</sup>, Mindaugas Štelemėkas<sup>10,11</sup>, Kawon Victoria Kim<sup>1,2</sup>, Anush Zafar<sup>1</sup>, Shannon Lange<sup>1,3,6</sup><sup>1</sup>Institute for Mental Health Policy Research, Centre for Addiction and Mental Health, Toronto, Ontario, Canada<sup>2</sup>Dalla Lana School of Public Health and Department of Psychiatry, University of Toronto, Toronto, Ontario, Canada<sup>3</sup>Department of Psychiatry, Faculty of Medicine, University of Toronto, Ontario, Canada<sup>4</sup>Center for Interdisciplinary Addiction Research (ZIS), Department of Psychiatry and Psychotherapy, University Medical Center Hamburg-Eppendorf (UKE), Hamburg, Germany<sup>5</sup>Institute of Clinical Psychology and Psychotherapy, Technische Universität Dresden, Germany<sup>6</sup>Campbell Family Mental Health Research Institute, Centre for Addiction and Mental Health, Toronto, Ontario, Canada<sup>7</sup>Faculty of Medicine, Institute of Medical Science, University of Toronto, Ontario, Canada<sup>8</sup>Program on Substance Abuse and World Health Organization Collaboration Center, Public Health Agency of Catalonia, Barcelona, Spain<sup>9</sup>I.M. Sechenov First Moscow State Medical University (Sechenov University), Moscow, Russian Federation<sup>10</sup>Health Research Institute, Faculty of Public Health, Lithuanian University of Health Sciences, Kaunas, Lithuania<sup>11</sup>Department of Preventive Medicine, Faculty of Public Health, Lithuanian University of Health Sciences, Kaunas, Lithuania**ABSTRACT**

The aim of this narrative review is to give an overview of alcohol consumption, attributable health harm, and potential alcohol control policies to reduce this harm in five Central and Eastern European Union countries: Czech Republic, Estonia, Latvia, Lithuania, and Poland. The overall level of alcohol consumption was high, with the two highest-consuming countries in the world being situated in Central and Eastern Europe (Czech Republic, Latvia), and all five of these countries being in the top 15% of World Health Organization member states with respect to consumption. Accordingly, alcohol-attributable health harm was high. Implementation of alcohol control policies could be improved, especially the implementation of pricing policies such as taxation increases. A moderate increase of the tax share on alcohol could result in thousands of lives being saved in Central and Eastern Europe in a single year. As taxation increases not only save lives, but also increase state revenue, the implementation of this alcohol control measure should be made a priority.

**KEY WORDS:** alcohol drinking, mortality, burden of illness, policy.**ADDRESS FOR CORRESPONDENCE:** Jürgen Rehm, 33 Ursula Franklin Street, Toronto, Ontario, Canada, M5S 2S1, phone: (416) 535 8501 x 36173, e-mail: [jtrehm@gmail.com](mailto:jtrehm@gmail.com)Supplementary materials (slides from the conference) are available in Webappendix at the Journal's website: [https://www.termedia.pl/Journal/Journal\\_of\\_Health\\_Inequalities-100](https://www.termedia.pl/Journal/Journal_of_Health_Inequalities-100)**INTRODUCTION**

The World Health Organization (WHO) European Region is characterized by the highest level of alcohol use globally, as measured by alcohol adult (15 years and older) *per capita* consumption (APC) in litres of ethanol

(pure alcohol; see [1, 2]). Associated harm, as measured in alcohol-attributable fractions [3], was also highest in 2016, as evidenced by the last WHO *Global Status Report on Alcohol and Health* [1]. However, there are differences between areas within the region [4]. This contribution

will focus on the Central and Eastern European Union (EU) countries, defined here as being comprised of the Czech Republic (CZE), Estonia (EST), Latvia (LVA), Lithuania (LTU) and Poland (POL). These countries were selected as they arguably constitute the region with the highest APC not only in Europe, but in the world [5]. Our objective is to characterize alcohol use in this region, describe alcohol-attributable harm, as well as potential avenues to reduce this harm.

## MATERIAL AND METHODS

This narrative review is based on country-validated data on alcohol use, attributable burden, and alcohol control policies from the WHO [1, 5–8].

The modelling of the taxation increase was based on the following three-step procedure [9]:

- step 1 – we increased the tax share to at least 25% for all types of alcoholic beverages and set the price per unit of pure alcohol to be the same across all beverage types;
- step 2 – we applied price elasticities from meta-analyses to estimate consumption changes [9, 10] based on the economic theory that increases in price will lead to decreases in sales and thus consumption;
- step 3 – calculated the deaths averted as a result of the lowered level of alcohol consumption using alcohol-attributable fraction methodology [3].

## RESULTS

### ALCOHOL CONSUMPTION IN CENTRAL AND EASTERN EUROPEAN UNION COUNTRIES

The level of alcohol consumption in Central and Eastern EU countries has been high in recent decades [2, 8]. For 2019, the most recent year with complete data

available, these five countries ranked first (CZE), second (LVA), sixth (LTU), 16<sup>th</sup> (POL) and 26<sup>th</sup> (EST) among the nearly 200 member states of the WHO [6]. As a high proportion of people consume alcohol in all five countries, the countries' rankings for APC per drinker are not that high, but all five countries rank among the top 40% of all WHO member states [1]. As is true for all countries, the proportion of men consuming alcohol was higher than the proportion of women, men had more regular and irregular heavy drinking occasions than women [1], and the life expectancy gap between men and women is among the highest among developed countries [11]; for the link between alcohol and life expectancy in another Eastern European country outside the EU [12].

### ALCOHOL-ATTRIBUTABLE HARM IN CENTRAL AND EASTERN EUROPEAN UNION COUNTRIES

Figure 1 provides an overview of alcohol-attributable mortality in the WHO European Region for 2016 [5, 7]. It presents a clear West-to-East gradient of increasing alcohol-attributable mortality, specifically within the EU, but also in the WHO European Region as whole. The further east the country is, the higher its alcohol-attributable mortality. A similar picture can be observed for burden of disease, as expressed in disability-adjusted life years [7, 13]. Even though the high levels of consumption among the five countries are comparable to other countries in the Western part of the EU, their alcohol-attributable burden is disproportionately high by comparison. This is partly due to the fact that higher relative risks (RRs) have to be used for the Baltic countries when calculating alcohol-attributable fractions, in order to account for the patterns of frequent irregular heavy drinking occasions which tend to be part of a drinking

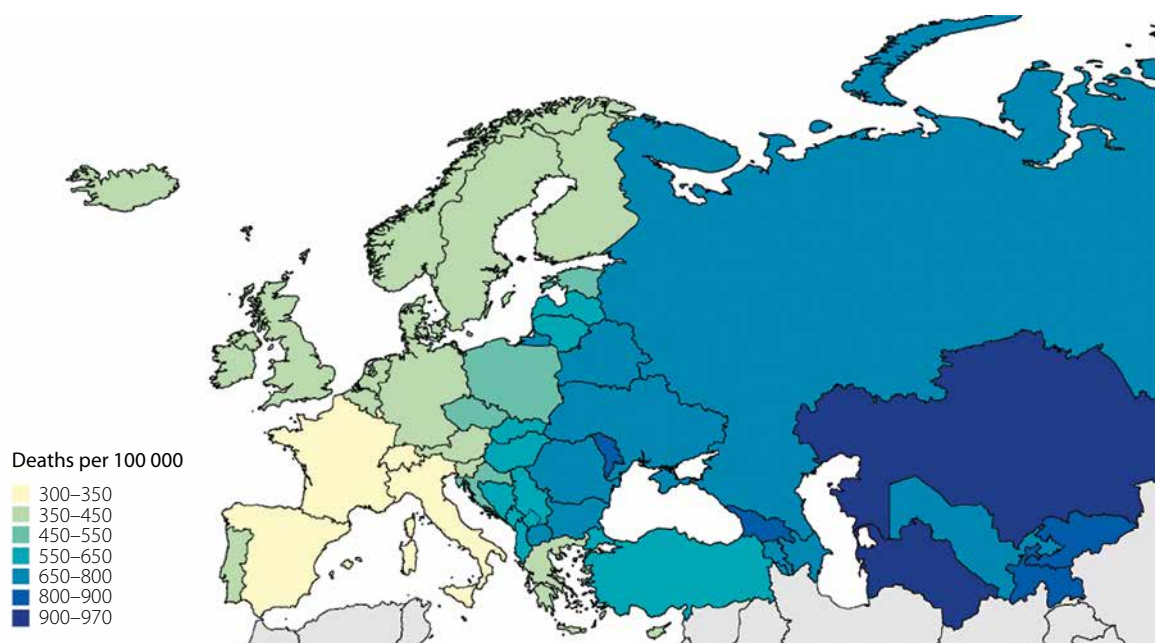


FIGURE 1. Age-standardized mortality rate per 100,000 population attributable to alcohol use in the WHO European Region [7]

tradition common for post-Soviet countries especially, although not restricted to Russia [14].

### ALCOHOL CONTROL POLICY

Given the high alcohol-attributable mortality and burden of disease in the world [15], interventions to reduce this burden have become paramount. The most effective and cost-effective interventions are the so-called “best buys”—i.e. taxation increases, availability restrictions and bans on advertisement and marketing [16, 17]. Unfortunately, even though the effectiveness and cost-effectiveness of these interventions have been established in hundreds of studies, they have not been leveraged by decision-makers [18]. Financial measures, such as increases in excise taxation, have been especially underutilized in the WHO European Region [7], presumably because politicians fear that such measures will be unpopular in the general population.

As a recent study from WHO [9] has shown, the tax share, i.e., the proportion of off-premise alcohol prices that is a result of excise tax, is low. The median values for the WHO European Region are 10.8% for beer, 0.8% for wine, and 30.6% for spirits [9]. Thus, while the share of tax for tobacco in the region is close to 75%, as recommended by the WHO [19], the tax shares for alcoholic beverages are very low.

As a result, as one of six signature initiatives of the WHO European Region, the Regional Director’s Advisory Council on Noncommunicable Diseases decided to increase the tax share in alcoholic beverage prices and to establish a WHO-recommended minimum level of tax share for the Region [20]. In addition, to reduce the likelihood that heavy drinkers simply switch beverage types, the minimum tax share would be implemented in such a way that every unit of alcohol should cost the same price, independent of the beverage type.

If this initiative were to be implemented in the five Central and Eastern EU countries considered here, thousands of alcohol-attributable deaths could be averted (for calculation details see [9]). Table 1 provides the number of deaths, by broad cause of death categories, that could be averted annually with the implementation of such an initiative (for categories used and RRs used see [21], and [15], respectively). Interestingly, CVD and the “other” category, mainly consisting of deaths due to alcohol use disorders, represent the most important categories [8].

### DISCUSSION

Similar to increases in tobacco taxation, increases in alcohol taxation have been shown to result in substantial mortality reductions [22, 23]. Furthermore, as demonstrated repeatedly in the past, increases in taxation of alcohol and tobacco are linked to increases in state revenue [24]; for an example in one of the Baltic countries, see [25]. An often-used argument against raising taxes has been that consumption of unrecorded alcohol would consequently increase. However, a recent review has shown that there has been no consistent association between tax increases and increases in unrecorded alcohol consumption [26]. Moreover, there are several well-established and effective alcohol control policies to reduce unrecorded consumption [26, 27]. Increases in alcohol excise taxation for the improvement of health have found broad support from the general population (e.g. [28, 29]), even though there is a lack of studies exploring the exact antecedent conditions necessary for such support. Thus, there is little rationale to oppose increased alcohol taxation in Central and Eastern EU countries, where there are high levels of consumption and alcohol-attributable disease and mortality burden.

As indicated before, the recent evidence from Lithuania also indicates that a significant increase in excise tax may not only reduce all-cause mortality, but also contribute to

**TABLE 1.** Number of deaths averted annually in Central and Eastern European Union countries if a minimum tax share on alcoholic beverage prices of 25%, and consistent taxing of ethanol, irrespective of beverage type, were implemented (based on the year 2019)

	Infectious diseases	Cancers	CVD	GID	Injuries	Other	Total deaths averted
Czech Republic	33	132	141	92	18	105	522
	(9–60)	(104–169)	(103–411)	(75–126)	(11–27)	(53–173)	(456–817)
Estonia	2	7	34	6	1	30	81
	(1–3)	(6–9)	(15–66)	(5–9)	(1–2)	(2–60)	(46–129)
Lithuania	5	15	40	16	4	38	117
	(3–8)	(11–19)	(9–110)	(13–22)	(2–6)	(0–83)	(72–200)
Latvia	4	12	82	9	3	37	147
	(2–6)	(9–16)	(23–174)	(8–13)	(2–5)	(0–83)	(75–246)
Poland	53	230	431	155	30	449	1,348
	(16–92)	(179–295)	(124–895)	(123–211)	(19–46)	(5–966)	(810–2,120)

CVD – cardiovascular diseases, GID – gastrointestinal diseases

increased tax revenue, which suggests that there may not be a sudden switch to illegal alcohol or cross-border shopping even in the free movement areas of the EU [26, 29].

While this contribution concentrated on alcohol excise taxes as they are the most underutilized “best buy” alcohol control policy, decreases of availability and implementation of a marketing ban will, of course, also help reduce alcohol-attributable burden. The full effects of a marketing ban may only be seen in the long run, however, as some of its effects come about as a result of a reduced exposure to advertising during adolescence [30].

## CONCLUSIONS

Central and Eastern EU countries have high levels of alcohol consumption and, as a consequence, high levels of alcohol-attributable harm. However, effective alcohol control policies, such as increased taxation, exist and should be utilized to reduce this burden. An increase in alcohol taxation promises to result not only in public health gains but also in increased state revenues. It is hoped that the new WHO European Region signature initiative to increase the share of tax for alcoholic beverages will lead to higher implementation rates of higher levels of alcohol taxation.

## ACKNOWLEDGEMENT

Research reported in this publication was supported by the (U.S.) National Institute on Alcohol Abuse and Alcoholism of the National Institutes of Health (NIAAA), grant number 1R01AA028224. This research was conducted as part of the project ‘Evaluation of the impact of alcohol control policies on morbidity and mortality in Lithuania and other Baltic states’ and I would like to thank the whole team for their input to wider discussions in generating the research reported in this paper. Content is the responsibility of the authors and does not reflect official positions of NIAAA or the National Institutes of Health. JR was additionally supported by funding from the Canadian Institutes of Health Research, Institute of Neurosciences, and Mental Health and Addiction (CRISM Ontario Node grant no. SMN-13950).

The authors would like to thank Ms. Astrid Otto for copy-editing and referencing the text.

## DISCLOSURE

The authors report no conflict of interest.

## References

1. World Health Organization. Global status report on alcohol and health 2018. World Health Organization, Geneva, Switzerland, 2018. Available from: [https://www.who.int/substance\\_abuse/publications/global\\_alcohol\\_report/en/](https://www.who.int/substance_abuse/publications/global_alcohol_report/en/) (accessed: 28 October 2021).
2. Manthey J, Shield KD, Rylett M, et al. Global alcohol exposure between 1990 and 2017 and forecasts until 2030: a modelling study. *Lancet* 2019; 393(10190): 2493-2502.
3. Rehm J, Kehoe T, Gmel G, et al. Statistical modeling of volume of alcohol exposure for epidemiological studies of population health: the US example. *Popul Health Metr* 2010; 8: 3.
4. Rehm J, Manthey J, Shield KD, Ferreira-Borges C. Trends in substance use and in the attributable burden of disease and mortality in the WHO European Region, 2010–2016. *Eur J Public Health* 2019; 29(4): 723-728.
5. WHO Regional Office for Europe. Status report on alcohol consumption, harm and policy responses in 30 European countries. WHO European Region, Copenhagen, Denmark 2019. Available from: [https://www.euro.who.int/\\_\\_data/assets/pdf\\_file/0019/411418/Alcohol-consumption-harm-policy-responses-30-European-countries-2019.pdf](https://www.euro.who.int/__data/assets/pdf_file/0019/411418/Alcohol-consumption-harm-policy-responses-30-European-countries-2019.pdf) (accessed: 28 October 2021).
6. World Health Organization. World Health Statistics 2021: Monitoring Health for the SDGs, sustainable development goals. WHO, Geneva, Switzerland, 2021. Available from: <https://apps.who.int/iris/bitstream/handle/10665/342703/9789240027053-eng.pdf> (accessed: 28 October 2021).
7. World Health Organization. Making the European Region SAFER: developments in alcohol control policies, 2010–2019 (2021). WHO, Denmark, Copenhagen, 2021. Available from: <https://www.euro.who.int/en/health-topics/disease-prevention/alcohol-use/publications/2021/making-the-european-region-safer-developments-in-alcohol-control-policies,-20102019-2021> (accessed: 28 October 2021).
8. Shield KD, Rylett M, Rehm J. Public health successes and missed opportunities. Trends in alcohol consumption and attributable mortality in the WHO European Region, 1990–2014. WHO European Region, Copenhagen 2016.
9. Neufeld M, Rovira P, Ferreira-Borges C, et al. The current structure and level of alcohol taxation in the WHO European Region. How many lives can be saved by introducing a minimum tax share in retail prices? *Lancet Reg Health Eur* 2021 (in press).
10. Kilian C, Rovira P, Neufeld M, et al. Modelling the impact of increased alcohol taxation on alcohol-attributable cancers in the WHO European Region. *Lancet Reg Health Eur* 2021; 11: 100225.
11. OECD Data. Life expectancy at birth. Paris: OECD, 2021. Available from: <https://data.oecd.org/healthstat/life-expectancy-at-birth.htm> (accessed: 29 October 2021).
12. Nemtsov A, Neufeld M, Rehm J. Are trends in alcohol consumption and cause-specific mortality in Russia between 1990 and 2017 the result of alcohol policy measures? *J Stud Alcohol Drugs* 2019; 80(5): 489-98.
13. World Health Organization. Disability-adjusted life years (DALYs). Geneva, Switzerland 2021. Available from: <https://www.who.int/data/gho/indicator-metadata-registry/imr-details/158> (accessed: 21 October 2021).
14. Shield KD, Rehm J. Russia-specific relative risks and their effects on the estimated alcohol-attributable burden of disease. *BMC Public Health* 2015; 15: 482.
15. Shield K, Manthey J, Rylett M, et al. National, regional, and global burdens of disease from 2000 to 2016 attributable to

- alcohol use: a comparative risk assessment study. *Lancet Public Health* 2020; 5(1): E51-E61.
16. Chisholm D, Moro D, Bertram M, et al. Are the “best buys” for alcohol control still valid? An update on the comparative cost-effectiveness of alcohol control strategies at the global level. *J Stud Alcohol Drugs* 2018; 79(4): 514-522.
  17. Babor TF, Casswell S, Graham K, et al. *Alcohol: No ordinary commodity. Research and Public Policy*, 3rd ed. UK Oxford University Press, Oxford 2022 (forthcoming).
  18. Rehm J, Casswell S, Manthey J, Robin R, Shield KD. Reducing the harmful use of alcohol: have international targets been met? *Eur J Risk Regulation* 2021; 12(2): 530-541.
  19. World Health Organization Regional Office for Europe. *Tobacco: Taxation*. Denmark, Copenhagen: WHO; 2021. Available from: <https://www.euro.who.int/en/health-topics/disease-prevention/tobacco/publications/key-policy-documents/who-framework-convention-on-tobacco-control-who-ftp/key-areas-of-tobacco-control-policy/taxation> (accessed: 29 October 2021).
  20. World Health Organization Regional Office for Europe. *Second meeting of the Regional Director’s Advisory Council on Innovation for Noncommunicable Diseases (2021)*. WHO, Denmark, Copenhagen, 2021. Available from: <https://www.euro.who.int/en/health-topics/health-policy/european-programme-of-work/who-regional-director-for-europes-advisory-council-on-innovation-for-noncommunicable-diseases/second-meeting-of-the-regional-directors-advisory-council-on-innovation-for-noncommunicable-diseases-2021> (accessed: 29 October 2021).
  21. Rehm J, Gmel Sr GE, Gmel G, et al. The relationship between different dimensions of alcohol use and the burden of disease – an update. *Addiction* 2017; 112(6): 968-1001.
  22. Wagenaar AC, Tobler AL, Komro KA. Effects of alcohol tax and price policies on morbidity and mortality: a systematic review. *Am J Public Health* 2010; 100(11): 2270-2278.
  23. Stelemekas M, Manthey J, Badaras R, et al. Alcohol control policy measures and all-cause mortality in Lithuania: an interrupted time-series analysis. *Addiction* 2021; 116(10): 2673-2684.
  24. The Task Force on Fiscal Policy for Health. *Health Taxes to Save Lives: Employing Effective Excise Taxes on Tobacco, Alcohol, and Sugary Beverages* New York: Bloomberg Philanthropies; 2019. Available from: <https://www.bbhub.io/dotorg/sites/2/2019/04/Health-Taxes-to-Save-Lives.pdf> (accessed: 28 October 2021).
  25. Nordic Alcohol and Drug Policy Network (NordAN). *Nordic Baltic Region: Alcohol and Drug Report – Lithuania Pricing 2021*. Available from: <https://www.nordicalcohol.org/lithuania-pricing> (accessed: 28 October 2021).
  26. Rehm J, Neufeld M, Room R, et al. The impact of alcohol taxation changes on unrecorded alcohol consumption: a review and recommendations. *Int J Drug Policy* 2021; 103420.
  27. Lachenmeier DW, Neufeld M, Rehm J. The Impact of unrecorded alcohol use on health: what do we know in 2020? *J Stud Alcohol Drugs* 2021; 82(1): 28-41.
  28. Kim KH, Kang E, Yun YH. Public support for health taxes and media regulation of harmful products in South Korea. *BMC Public Health* 2019; 19(1): 665.
  29. Lithuanian Tobacco and Alcohol Control Coalition (NTAKK). *An appeal of the NGOs to the Lithuanian Government and Parliament to maintain current alcohol control policies [Lietuvos nevyriausybines organizacijos kreipėsi į LRV ir Seimą dėl alkoholio kontrolės politikos tęstinumo]* Vilnius: NTAKK; 2020. Available from: <https://www.ntakk.lt/lietuvos-neyriausy-bines-organizacijos-kreipesi-i-lrv-ir-seima-del-alkoholio-kontrolės-politikos-testinumo/> (accessed: 29 October 2021).
  30. Sargent JD, Babor TF. The relationship between exposure to alcohol marketing and underage drinking is causal. *J Stud Alcohol Drugs* 2020; (Suppl 19): 113-124.

#### AUTHORS' CONTRIBUTIONS

JR prepared the concept of the paper and wrote a first draft. All authors helped collecting the data as part of the NIAAA project *Evaluation of the impact of alcohol control policies on morbidity and mortality in Lithuania and other Baltic states*. JR, MS, and SL obtained financial support. All authors critically revised and approved of the final manuscript.