



World Health
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REGIONAL OFFICE FOR Europe

ALCOHOL POLICY IMPACT CASE STUDY

The effects of alcohol control measures on mortality
and life expectancy in the Russian Federation





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ABSTRACT

Alcohol consumption has long been recognized as one of the main driving factors of mortality in the Russian Federation, especially among men of working age. The introduction of various evidence-based alcohol control measures at the beginning of the 2000s resulted in a decrease in all-cause mortality, with the most pronounced relative changes occurring in causes of death that are causally linked to or closely associated with alcohol consumption. Since 2003, both, alcohol consumption and mortality were declining in parallel. In the period 2003–2018, all-cause mortality decreased by 39% in men and by 36% in women – a trend that was mirrored by an increase in life expectancy. In 2018, Russian life expectancy reached its historic peak, standing at almost 68 years for men and 78 years for women. The experience gathered by the Russian Federation in reducing the burden of disease stemming from alcohol represents a powerful argument that effective alcohol policy is essential to improving the prospects of living long and healthy lives.

KEYWORDS

ALCOHOL DRINKING – prevention and control
ALCOHOL – adverse effects
ALCOHOL POLICY IMPACT
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ABBREVIATIONS

AP	alcoholic psychosis
BAC	blood alcohol concentration
EGAIS	Unified State Automated Information System
GDP	gross domestic product
ICD-10	International Classification of Diseases, 10th revision
MUP	minimum unit price
NCD	noncommunicable disease
RLMS	Russian Longitudinal Monitoring Survey
SBI	screening and brief intervention
SDR	standardized death rate

FOREWORD

Alcohol consumption and its burden remains some of the largest health and societal challenges in the WHO European Region. Every year, just under million people die from alcohol-attributable causes, while many of these deaths are happening at very early ages.

Globally, the WHO European Region and its Member States stand out with the highest level of alcohol per capita consumption, the highest proportion of drinkers and the highest prevalence of heavy episodic drinking. In the European Region one in every 10 deaths are caused by alcohol and dealing with such unfortunate statistics will demand the implementation of more effective and cost-effective alcohol policies. These include, but are not limited to, the WHO recommended 'Best buys' of increasing alcohol taxes, restricting availability of retailed alcohol, and imposing restrictions on alcohol marketing. Such policies comprehend the implementation and enforcement of a wide range of policies described in the WHO Global Strategy to Reduce the Harmful Use of Alcohol, and in the European Action Plan for Reducing the Harmful Use of Alcohol, adopted by all Member States as far back as 2011.

The case of policy implementation and its impact on decreased mortality rates and an increased life expectancy in the Russian Federation, documented further in this analysis, provides a powerful example of success for other countries to reduce the enormous health and economic burdens stemming from alcohol. The staggered implementation of evidence-based alcohol policies over the last decade demonstrates how, with the shift into the right policy response, mortality trends and alcohol harm can be reversed as well as alcohol consumption substantially reduced.

There are many lessons to be taken from the Russian Federation, particularly on the implementation of adequate pricing policies and the reduction of alcohol availability. The report highlights the important fact that the Russian Federation was the first country within WHO European Region to introduce a minimum unit price policy on certain alcoholic beverages – an example that will hopefully be followed by many other Member States. Additionally, the Russian Federation is one of the few countries that adopted a comprehensive night ban on off-premises sales of alcohol as well as a ban on consumption of alcohol in public places, such as parks or recreation areas. Moreover, the Russian Federation was, again, the first country to introduce a fully automated system for tracking not only volumes of produced alcohol, but also retail alcohol sales in real time, recognizing the status of alcohol as a non-ordinary commodity and responding to the challenges of illegal alcohol markets.

Faced with stagnation or even declining trends in life expectancy in some European countries, where alcohol consumption plays a crucial role, the Russian Federation's success story provides an important learning opportunity and a clear example of how it is possible to move faster towards a European Region free of alcohol-attributable harm. Countries have committed to take decisive action on alcohol in the context of several European Region public health policy frameworks ranging from the European Action Plan for Reducing the Harmful use of Alcohol, to the larger ambition enshrined in the related Sustainable Development Goals and its targets. This case study of the Russian Federation confirms that with the right policies and support we can make a real and measurable difference in people's lives. Much progress is still to be taken but the WHO Regional Office for Europe stands ready to support its Member States by fostering collaboration and promoting mutual learning and shared experiences, such as with the Russian Federation.

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EXECUTIVE SUMMARY

The present case study explores and documents the impact that evidence-based alcohol policies can have on long-term trends in alcohol consumption and mortality in the context of a country – the Russian Federation – with high levels of alcohol consumption and alcohol-attributable harm; it also shows how a comprehensive policy response can translate into improvements in life expectancy and health. Spanning a period of almost 30 years, the mixed-methods study examines trends in alcohol consumption, registered disorders due to use of alcohol, all-cause and cause-specific mortality, and implementation of alcohol policy in the country.

The Russian Federation has long been considered one of the heaviest-drinking countries in the world. Its hazardous drinking patterns are associated with some of the highest levels of alcohol-attributable mortality and harm. Alcohol consumption has been established as one of the main contributors to the Russian mortality crisis of the 1990s and 2000s, with epidemiological research suggesting that one in every two men of working age would die prematurely because of alcohol. However, in recent years these trends have been reversed. Since 2003, substantial drops in total adult per capita alcohol consumption – most importantly, in consumption of spirits and unrecorded alcohol – have been observed as a result of staggered implementation of alcohol policies in recent years. Between 2003 and 2016, total per capita consumption decreased by 43%, with a 40% decline in recorded consumption and a 48% decline in unrecorded consumption. A similar downward trend, starting in 2004, was observed in the prevalence of heavy episodic drinking, which declined between 2004 and 2016 from 75% to 48% in men and from 52% to 24% in women – though, for both sexes, these indicators remain among the highest in the WHO European Region. In addition, both prevalence and incidence of disorders due to use of alcohol as registered within the health care system have been decreasing since 2003. Between 2003 and 2017, the prevalence of alcohol dependence (including alcoholic psychoses) in patients registered in state-run treatment services declined by 38%, while the prevalence of harmful use of alcohol dropped by 54% and the prevalence of registered alcoholic psychoses by 64%.

Since 2003, similar developments, mirroring the substantial drops in total adult per capita alcohol consumption, have been observed in mortality trends. Between 2003 and 2018, all-cause mortality dropped by 39% in men and by 36% in women. Almost uniform downward trends were observed in alcohol-attributable mortality as well as in mortality due to causes that are significantly influenced by alcohol, such as transport accidents and violent deaths. Overall, a substantial decline was observed in mortality from cardiovascular diseases and

from external causes, which are the main contributors to all-cause mortality in the Russian Federation. Between 2003 and 2017, mortality due to cardiovascular diseases declined by 48% in men and 51% in women, while mortality due to external causes decreased by 56% in both sexes. Mortality due to causes of death that are 100% alcohol-attributable has also been declining steadily, with rates generally three to four times higher for men than for women. Within the same time period (2003–2017), the most substantial drops were observed in alcohol poisoning mortality, with a 73% decline in men and a 78% decline in women, and in mortality due to alcoholic psychoses, with an 80% drop in men (for women, the numbers are too small to allow meaningful comparison). At the same time, mortality due to alcoholic liver diseases decreased by 22% in men and by 24% in women. Trends in mortality from external causes of death have followed the same pattern, showing a decline since the early 2000s. Thus, between 2003 and 2017, mortality from suicides dropped by 62% in men and by 61% in women; mortality due to homicides by 79% in men and by 78% in women; and mortality from transport accidents by 55% in both sexes.

The Russian Federation has seen large fluctuations both in mortality and in life expectancy since 1990. Life expectancy in men dropped by more than 6 years between 1990 and 1994, reaching its absolute low of 57 years in the recent history of what is now the Russian Federation. However, life expectancy started to climb in 2003 and reached its historic peak in 2018 – almost 68 years for men and 78 years for women. The biggest gains were observed in men: their life expectancy increased by more than 9 years between 2003 and 2018, while female life expectancy increased by 6 years. This narrowed the gender gap to 10 years, which is still, globally, one of the largest gender gaps in life expectancy.

The analysed trends also reveal a strong correlation between alcohol consumption and life expectancy – rising trends in alcohol consumption have been mirrored subsequently by prompt drops in life expectancy.

There are a number of different possible explanations of these documented fluctuations in life expectancy and mortality since 1990, such as social and psychological stress due to abrupt economic changes, nutrition and smoking, as well as deterioration of social and health services. Nevertheless, various studies provide compelling evidence that alcohol has played a central role in these dramatic changes observed over the last 30 years.

The dynamics seen in alcohol consumption levels and drinking patterns, as well as in all-cause and cause-specific mortality, support the view that the downward

trends in both alcohol consumption and mortality were triggered by a series of alcohol policies that were adopted by the government after 2000. These started with measures focused on eliminating the various markets of unrecorded alcohol, including homemade and illegal production, and progressed to measures focused on reducing alcohol misuse and alcohol use disorders, as well as on shifting drinking patterns in the general population towards lower consumption levels.

The history of the implementation of alcohol policies in the Russian Federation is marked by the same fluctuations between periods of active policy response and periods of relative inactivity or nonenforcement. Still, an overall pattern emerges from our policy analysis. Over time, Russian alcohol policies evolved from very basic attempts on the part of the government to reinstate its control over alcohol production and sales and to eliminate unrecorded alcohol production; to comprehensive approaches, taking a long-term view, aimed at reducing harmful drinking and alcohol dependence and the total level of alcohol consumption in the population; to the country's commitment to increasing the life expectancy of its citizens.

After repeal of all Soviet alcohol policies, abolition of the state monopoly on alcohol and liberalization of alcohol production and prices in the early 1990s, the government slowly regained its control over alcohol production and sales, starting with the introduction of Federal Law No. 171 in 1995, which remains the main instrument of alcohol policy to this day. Also in 1995, advertising restrictions on alcohol were introduced, although beer was not recognized as an alcoholic beverage until 2013. After 2000 and the formation of Rosspirtprom, a state-owned distillery enterprise, the Russian alcohol market was substantially reorganized – most importantly, through various measures introduced in 2005/6 to reduce the proportion of unrecorded alcohol.¹⁴ Alcohol policies at that time mainly targeted alcohol production, not individual consumers. In 2009 a national strategy, based on internationally evaluated evidence-based measures, was adopted, with the aim of reducing harmful use of alcohol and alcohol dependence in the general population. Since 2011, the Russian Federation has taken an active part in adopting the WHO's *European Action Plan to Reduce the Harmful Use of Alcohol 2012–2020*, by increasing alcohol excise taxes, raising the minimum unit price (MUP) for vodka and other spirits, and substantially reducing the availability of retailed alcohol. Thus, this new wave of policy measures was now targeting consumers and their individual behaviours. Although some of the measures introduced were temporarily abandoned in 2015, leading to flatterings of decreases in mortality rates (as shown by our analysis), they were subsequently reinstated. The character of the latest policy activities in the field can be understood by the inclusion of alcohol

as a risk factor in a series of legislative acts that aim to promote a healthy lifestyle in the population at national and regional levels, as well as to improve the health system's response to alcohol-related harms as a means of increasing life expectancy.

Alcohol has been determined as one of the main risk factors of and contributors to mortality in the Russian Federation, and our publication provides a clear causal link between the implementation of effective alcohol control policies and a reversal of mortality trends. The analysis, which made use of the most comprehensive data file ever compiled on policy, mortality and alcohol consumption in the Russian Federation, demonstrates a coherent relationship: the higher the intensity of alcohol control policies, the steeper the decrease in mortality. As predicted, the fall in mortality was more marked in men. Thus, the alcohol policy measures adopted in recent decades have produced significant positive results in a country with a very high burden of alcohol-attributable mortality. Moreover, alcohol control policy has had its greatest effect on men, who were most affected by the mortality crisis as a result of their levels and patterns of drinking.

The current case study of the impact of alcohol policy in the Russian Federation further highlights how alcohol policies need to be intersectoral, targeting the alcohol market and the entire alcohol supply chain, the environment, and the health system, as well as individual drinkers, in order to be effective and to avoid unintended consequences. Most importantly, the experience gathered by the Russian Federation demonstrates that implementation of effective and evidence-based measures should not be limited to episodic and short-lived campaigns. This is also evidenced by various examples from the country's rich history.

Despite the impressive achievements of alcohol policy described here, total per capita alcohol consumption in the Russian Federation seems to have stagnated in recent years at the level of 11–12 litres of pure ethanol (on a base of those aged 15 and over); this is still one of the highest consumption levels worldwide, contributing to a substantial burden of disease and premature mortality. Therefore, further reduction of overall alcohol consumption is still needed. Some indicators point to a possible trend reversal if no additional measures are taken to further decrease alcohol consumption at population level. Most importantly, further changes in drinking patterns are urgently needed, especially given the association of heavy episodic drinking with the consumption of spirits – a drinking behaviour that is known to be a major risk factor and determinant of cardiovascular diseases and injury mortality in the Russian Federation, particularly among men. Changing drinking patterns still remains a challenge, especially given the complex interactions between heavy episodic drinking,

consumption of cheap spirits (including alcohol surrogates), and socioeconomic factors.

Better enforcement of existing measures is urgently needed, alongside further implementation of appropriate measures to reduce and eliminate the various illegal and semi-legal markets of unrecorded alcohol in the Russian Federation through appropriate taxation or denaturing of the products concerned. Appropriate pricing policies, together with restrictions on alcohol availability and marketing, are also areas where further steps could be considered. In the area of pricing policy, for example, there is a clear need to ensure annual adjustment of the alcohol tax for inflation, as the effectiveness of price measures will weaken in their effectiveness over time on account of inflation. The introduction of a duty escalator – i.e. an annual increase in alcohol excise duty above inflation – would be the best way to ensure that existing taxation mechanisms remain effective over time. Other pricing policies could also be considered, such as expansion of the MUP regulations, but further study is needed to determine the best model to implement. Another important area where more action is needed is monitoring and surveillance.

Here, expansion of the Unified State Automated Information System (EGAIS) monitoring system of alcohol production and sales would be a useful measure. Finally, specific strategies, such as implementation of the Screening and Brief Intervention approach to tackling harmful alcohol use at primary health care level, are needed to prevent the social and health consequences of alcohol use in individuals with risky levels and patterns of consumption.

The current case study of the Russian Federation highlights the importance of implementing evidence-based alcohol control policies that are guided by scientific evidence and public health priorities, informed by historical experience, and adopted gradually over a longer period of time. The study demonstrates that such policies are effective in reducing alcohol consumption and alcohol-attributable mortality, thus increasing life expectancy. Further strengthening implementation of alcohol control policies will help ensure achievement of the best possible results in preventing diseases and injuries, reducing the burden of disease, and improving the health and well-being of the population of the Russian Federation.

HISTORICAL BACKGROUND



Alcohol policy impact
case study

1. HISTORICAL BACKGROUND

This short historical overview highlights how the appearance of alcohol and, most importantly, vodka in Russian history and culture has been relatively recent, in contrast to the western parts of Europe, where alcohol has been present since antiquity. It further examines the state's relationship to alcohol production and consumption, as well as the evolution of Russian alcohol policy from the medieval period until the new millennium.

1.1 MEDIEVAL PERIOD TO THE 17TH CENTURY

Historically, consumption of alcoholic beverages was not common in Russia. Traditional fermented alcoholic drinks – beer, mead and kvass – were rarely stronger than 2% or 3% in ethanol content, not affordable for the general population, and consumed only during holidays and special festivities, centred around the agricultural calendar.¹ Distilled alcohol from grapes (aqua vitae) was brought to the Russian court in the first half of the 15th century but was used as medicine, not as a beverage.²

The first Russian grain-distilled vodka (“bread wine”) did not contain more than 20% pure alcohol and was taxed and sold exclusively in state-owned taverns to the special police forces of the tsar. The establishment of such taverns under Ivan the Terrible (1547–1584) is believed to be one of the early factors shaping a distinct Russian drinking culture, since alcohol was consumed there episodically and heavily and not as part of a meal, as it was believed that a person could drink more alcohol without food.^{1,3} However, alcohol consumption remained an urban phenomenon, as the taverns existed only in towns and alcohol remained rather expensive.⁴ By the end of the 17th century alcohol taxes had become an important source of state revenues; production and sale of vodka were controlled by state monopoly, and it was also exported to neighbouring countries.

1.2 18TH AND 19TH CENTURIES

Throughout the 18th century policies shifted back and forth between rigorous control of state-owned monopolies on alcohol production and liberal private production and sales. Various different alcohol producers emerged at this time, while state revenues from alcohol sales grew rapidly and alcohol became increasingly affordable for the masses.

During the rule of Peter the Great (1682–1725), the state monopoly was partly replaced by a licensing system in which nobles or merchants (and sometimes whole countries and provinces) could buy the right to produce and sell alcohol for a period of time. At the same time, beer was highly taxed, which affected drinking patterns, as the population turned over time to the consumption of spirits, mainly vodka.⁵ Moreover, the distribution of daily vodka rations for the army and the navy spread vodka

drinking further, as Peter the Great made consumption of vodka mandatory for the armed forces.³

In the 19th century alcohol taxes were gradually raised, and the state-owned taverns closed and were replaced by restaurants, where food was served alongside alcohol. This had a beneficial impact on drinking patterns.⁴ By the end of the century, time limits on the sale of alcoholic beverages were in place. For instance, alcohol sale in the cities was allowed between 07:00 and 22:00. In rural areas alcohol was sold between 10:00 and 22:00 from April to August, and between 10:00 and 20:00 during the rest of the year.⁵ The working class of pre-revolutionary Russia had a pro-sobriety tradition, similar to the labour movements of western European countries.⁶

1.3 20TH CENTURY

At the beginning of the 20th century, alcohol per capita consumption in the Russian Empire was at a far lower level than other European countries. It remained a concern, however, so various measures were introduced to reduce consumption and the alcohol-attributable burden.⁴ A partial prohibition was introduced in 1914 before the First World War to prevent drunkenness among soldiers, and sale of spirits was permitted only in restaurants. Also, production and sale of alcoholic beverages with a strength greater than 12% alcohol were banned.³ As a result, alcohol consumption dropped substantially and the disposable income of the population rose, as reported by surveys conducted at the time. However, a rise in consumption of surrogates, such as cosmetic and medicinal tonics and industrial alcohols and polishes, was documented, as were illegal alcohol sales and contraband.¹ The prohibition remained in place during the October Revolution, the Civil War and the early Soviet years. The new Provisional Government introduced a full prohibition on alcohol sales in 1917, but it was poorly enforced, as the new communist state was in dire need of state revenues coming from alcohol.

1.4 1920s AND 1930s

From 1921/1922, the prohibition was progressively removed; first, sale of beer and wines was allowed, then consumption of strong alcohol for workers with hazardous jobs, and finally production and sale of spirits with an ethanol content of up to 30%.¹ In 1925 the government monopoly on alcohol production was reimposed, with fixed alcohol retail prices, but an increase in home-made alcohol consumption was observed in the following years, against which penal action had little effect.³ The new Soviet government also introduced various disciplinary measures “to fight alcoholism” in the population, such as penalties for public drunkenness and mandatory treatment of people with alcohol use disorders in psychiatric institutions. Alcohol was mainly sold

in specialized wine and liquor stores, while vodka sales on holidays, the days before holidays and payday were prohibited. Furthermore, it was forbidden to sell vodka to minors and already intoxicated people and to conduct any kind of pro-alcohol propaganda.⁵

1.5 1940s TO 1970s

A substantial increase in total alcohol consumption took place after the Second World War; this was stimulated partly by the provision of alcoholic beverages during and after the war and partly by the population's growing purchasing power.³ For instance, during the war the Ministry of Defence handed out a daily ration of 100 g of vodka – the so-called “frontline 100grams” – to frontline soldiers, as well as bonus rations of vodka for those working behind the lines.

In the postwar years, the global trend of rising alcohol consumption in industrial countries was also observed in the Soviet Union, and by 1965 the level of consumption was three times higher than it had been in 1950.³ Also, production and sale of unrecorded alcohol – first and foremost, in the form of home-distilled liquor (so-called “samogon”) – increased during this period, as state policy was less repressive than it had been during the war. Despite the 1958 resolution of the Central Committee of the Communist Party to fight “drunkenness and alcoholism” in the population and a major crackdown on home distilling, in 1960 sales of unrecorded alcohol (5.2 litres per capita) exceeded sales of recorded alcohol (4.6 litres), according to contemporary estimates.⁷ While there is not much literature on the reasons behind this trend in the Soviet Union specifically, one contributory factor may be the move from a six-day to a five-day working week in 1967, together with the occurrence of heavy episodic drinking on men's ordinary working days and in workplaces, and increased drinking by women and young people.³ Also in 1967, the Presidium of the Supreme Council passed a law on the compulsory treatment and labour re-education of those who had alcohol dependence, disturbed public order, or “violated labour discipline or rules of the socialist order”. Their treatment was carried out in specially formed Occupational Therapy Rehabilitation Centres, with the mandated time of stay varying between 6 months and 2 years, depending on the court's decision. Criminal liability was imposed on those who escaped from the facility.

In 1972 the Soviet leadership adopted a second anti-alcohol resolution, which raised the vodka price and limited alcohol sales on workdays before 11:00, as well as prohibiting alcohol sale on Sundays. In 1976 a specialized drug and alcohol abuse treatment service, the so-called narcological service, was created, as well as an intensive care service for treating acute life-threatening conditions, including alcohol poisonings.³ Before that, individuals with alcohol use disorders were treated in

psychiatric institutions. The new narcological network covered the entire Soviet Union, with specialized health centres in the cities and narcological stations in remote areas as well as in large factories and production sites. Patients were registered at the health centres and subsequently monitored for 5 years (after 1988, for 3 years).

1.6 1980s

In the second half of the 20th century three different anti-alcohol campaigns were launched, by Khrushchev in 1958, Brezhnev in 1972 and Gorbachev in 1985. Each of these resulted in a substantial increase in alcohol consumption once the campaign was over, as the adopted policies were too short-term in focus and therefore failed to reverse the trends of increasing alcohol consumption.⁵

The third of these campaigns started in 1985 and accompanied a general wave of political changes in the Soviet Union. Initiated as a top-down process by Yegor Ligachev and Mikhail Solomentsov, high-ranking members of the Communist Party of the Soviet Union, and later supported by Mikhail Gorbachev, leader of the Soviet Union, it aimed to promote abstinence in the population as a long-term goal and tried to tackle the issue of homemade distilling.⁸ In the course of the campaign, production of alcoholic beverages was considerably reduced: vineyards and wineries were destroyed, and distilleries and breweries were closed or repurposed for the production of nonalcoholic beverages. Imports of alcoholic beverages were cancelled, alcohol prices raised, and the availability of alcohol heavily restricted; the number of outlets (specialized alcohol shops or store departments) was cut back considerably.⁵ In addition, sales of alcoholic beverages were rationed to no more than two bottles per person and allowed only within restricted hours – namely, working days between 14:00 and 19:00; and the minimum legal drinking age was raised from 18 to 21.⁹

Unsurprisingly, these measures were viewed as too extreme and remained unpopular with the population, which tried to resist the changes in various ways.⁶ From 1986, production of homemade alcohol increased, as did sales of alcohol-based products not intended for human consumption, such as colognes, tonics, polishes and lacquers, which were misused as alcohol surrogates.¹⁰ Although the reduction was partially offset by consumption of homemade beverages and alcohol surrogates, total per capita alcohol consumption was reduced by about 25% between 1985 and 1987, and a rise in life expectancy was observed.⁸

1.7 1990s

The 1985 anti-alcohol campaign is one of the biggest natural experiments in history and was able to save the lives of about 1.2–1.6 million people, according to different estimates.^{11,12} However, its effects were short-lived,

as an unprecedented rise in mortality followed in the 1990s after the dissolution of the Soviet Union.^{13–15}

Most of the campaign's measures were officially repealed in 1990, and with the dissolution of the Soviet Union, the state increasingly loosened its control over alcohol production and sale. From 1992, alcohol prices were no longer fixed and the government monopoly on alcohol production and sale was abolished. In the course of ongoing hyperinflation affecting the Russian rouble, between December 1990 and 1994 the real price of legal alcoholic beverages dropped to about 30% of its previous level, and with markets opening up, large amounts of alcohol were imported into the newly formed Russian Federation.⁸ In this way, rigorous policies that were intended to have long-lasting effects were abandoned within a very short period of time, leaving space for various alcohol markets that were barely regulated at the time. Additional system changes appeared in the treatment of people with alcohol dependence. Reform of the police system in 1991 initiated a gradual reduction of sobering-up stations throughout the 1990s and also saw the abolition of the system of Occupational Therapy Rehabilitation Centres. As a result of the latter, approximately 150 000 individuals with severe forms of alcohol use disorders were released from enforced treatment in 1994, without any other forms of treatment made available to them.³

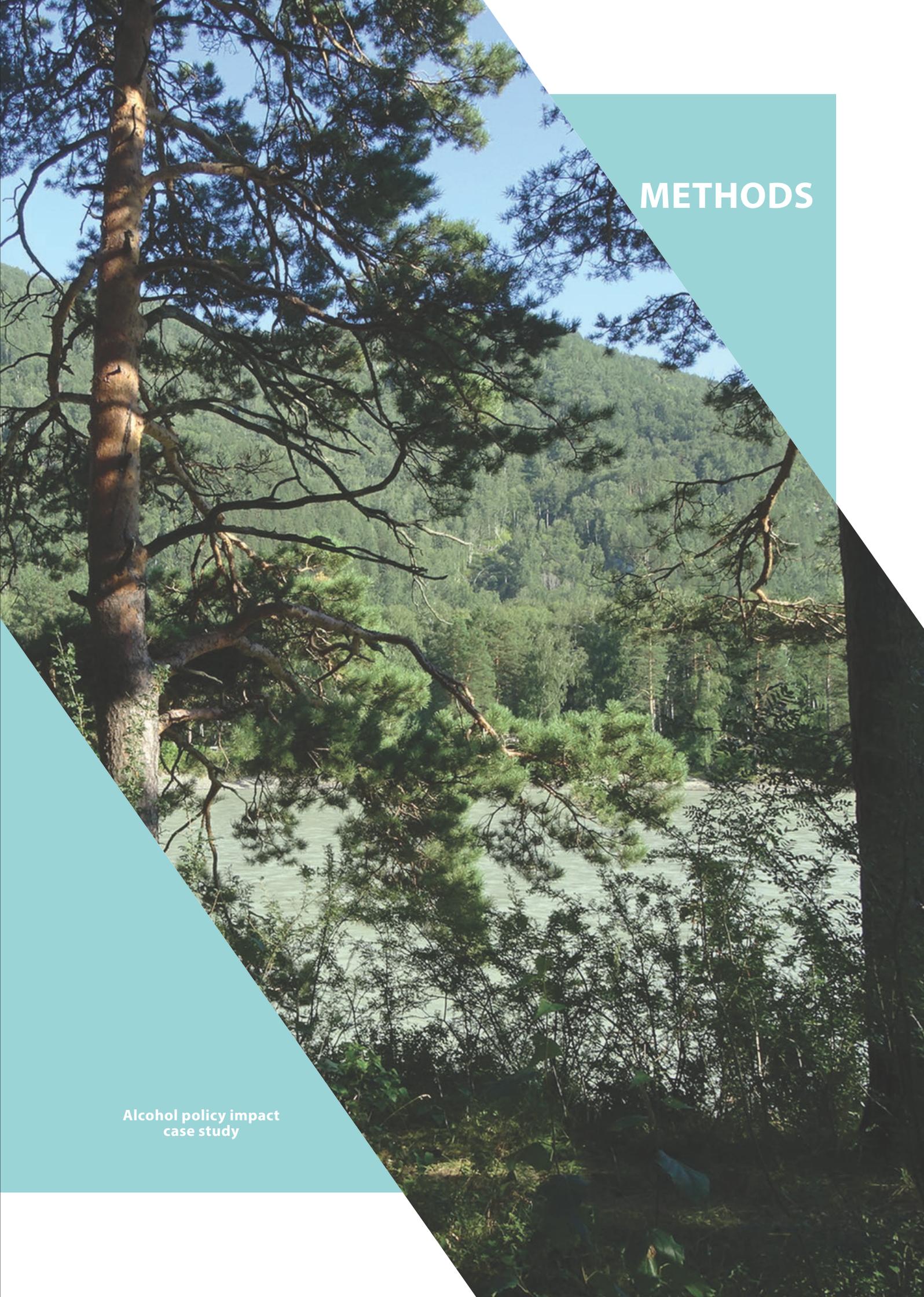
As a result of the rapid economic and institutional changes and, most importantly, the liberalization and privatization of the manufacturing sector, including a complete abandoning of state control over alcohol production and sales, various legal and illegal alcohol markets developed. Subsequently, consumption of both official and illicit alcohol rose steeply, translating into a steep increase in mortality, with a pronounced mortality peak in 1994.^{3,8,16} At this time, Russian men aged 20 would have only a 50% chance of surviving to age 60 (compared with a 90% chance for men born in the United States or Britain).¹³ The enormous burden of ill health at that time certainly reflected other important factors, such as poor nutrition, smoking, social stress and

depression, as well as deterioration of the health system. Nevertheless, alcohol seemed to play a central role, as much smaller changes in mortality were observed in other post-Soviet countries going through similar transition processes.^{13,17,18}

One of the main contributory factors seemed to be the specific hazardous drinking patterns which historically evolved in Russia following the imperial era of the 18th century, when the government started to rely heavily on state revenues from alcohol sales and encouraged the emergence of private distilleries, which made alcohol affordable for poorer parts of the population. The subsequent history of short-lived anti-alcohol campaigns, combined with periods of *laissez-faire* deregulation, political liberalization, and the specific conditions of state socialism in the Soviet Union, seem to have reinforced the distinctive patterns of drinking seen in the modern Russian Federation: irregular heavy drinking episodes, excessive drinking with frequent hangovers, and excessive consumption of spirits, cheap and readily available homemade alcohol, and alcohol surrogates. A specific drinking pattern typically found in the Russian Federation, as well as in some other post-Soviet countries, is the so-called *zapoï*, which can be operationally defined as a period of two or more days of continuous drunkenness and falling out of normal social functioning. As outlined above, these behaviours were in no way part of earlier Russian traditions, just as vodka became a part of Russian history and culture only in the second half of the 18th century, when production of spirits became private.

1.8 EARLY 2000s

The "Russian mortality crisis" remained a serious demographical issue up until the 2000s, and alcohol continued to be one of the main driving forces behind it. Although downward trends were observed in alcohol-attributable mortality after 2003/2004, as they were in the incidence and prevalence rates of alcohol use disorders, in the years 2003–2005 almost half of all deaths in working-age men in a typical Russian city could be attributed to hazardous drinking.¹⁹



METHODS

Alcohol policy impact
case study

2. METHODS

This case study employed mixed methods of trend analysis, narrative review and document analysis. It is based on open-source data published by the Russian Federal State Statistics Service (Rosstat),²⁰ the Center for Demographic Research at the New Economic School,²¹ the National Scientific Centre on Addictions (Serbsky National Research Centre for Social and Forensic Psychiatry),²² and the WHO Global Information System on Alcohol and Health (GISAH).²³ The study also uses data collected in the framework of the WHO Global Survey on Alcohol and Health.²⁴

Data on total per capita alcohol consumption, including unrecorded alcohol and specific beverages, were obtained from the Global status report on alcohol and health, 2018 and a recent modelling study by Manthey and colleagues,^{24,25} both of which are based on the WHO Global Survey on Alcohol and Health.²⁶ Additional information on alcohol consumption trends was taken from the panel data of the Russian Longitudinal Monitoring Survey (RLMS–HSE), which is a nationwide household survey.²⁷

Analysis of trends in all-cause mortality were based on data from the Russian Fertility and Mortality Database (RusFMD),²¹ which were retrieved in the form of sex-specific rates per million for each age group and standardized using the estimated mid-year population of 2018 as a standard – an estimate that was also provided by the database. Data on cause-specific mortality were provided by the Russian Federal State Statistics Service

in the form of absolute numbers and were available only for the period 1990–2017.²⁰ The same agency also provided data on sex-specific life expectancy as well as monthly absolute number of deaths.

Documentation and information on alcohol-related legislation were retrieved from the official website of the Federal Service for Alcohol Market Regulation (Rosalkogolregulirovanie)²⁸ and from the online reference systems at ConsultantPlus and the Garant Service.^{29,30} Additional key literature in the form of Russian and English original articles and literature reviews was hand-searched and included: Grigoriev & Andreev (2015)³¹; Khaltourina & Korotayev (2008, 2015)^{32,33}; Kolosnitsyna et al. (2014)³⁴; Levintova (2007)³⁵; Nemtsov (2011)³; Nemtsov & Razvodovsky (2016)³⁶; Nemtsov & Shelygin (2014)³⁷; Nemtsov, Neufeld & Rehm (2019)³⁸; Neufeld & Rehm (2013, 2018, 2018)^{39–41}; Pridemore et al. (2013, 2013, 2014)^{42–44}; Pshizova & Bublikova (2015)⁴⁵; Radaev (2015)⁴⁶; Razvodovsky (2015)⁴⁷; Skorobogatov (2014)⁴⁸; and Stickley et al. (2009)⁴⁹.

The data were collected and analysed by an international study team of experts based in the WHO European Office for the Prevention and Control of Noncommunicable Diseases (NCDs) in Moscow, Russian Federation. Additionally, expert interviews and consultations were conducted with key stakeholders in the field of prevention and control of health risks due to alcohol consumption in the Russian Federation.

TRENDS IN ALCOHOL CONSUMPTION IN THE RUSSIAN FEDERATION



Alcohol policy impact
case study

3. TRENDS IN ALCOHOL CONSUMPTION IN THE RUSSIAN FEDERATION

As already outlined, high levels of alcohol consumption with a relatively high prevalence of hazardous drinking were observed in the 1990s and the beginning of the 2000s, making the Russian Federation one of the heaviest-drinking countries in Europe, with concomitant levels of premature alcohol-attributable mortality, especially among men.^{11,16,19,49–54} At the same time, levels of alcohol consumption were subject to large fluctuations, especially when compared to other countries of the WHO European Region.

Also, a large proportion of the alcohol that is produced and consumed in the Russian Federation remains unrecorded. Unrecorded alcohol refers to alcohol-containing products that are not recorded in official statistics of sales, production or trade and which are not taxed as beverage alcohol but are nevertheless consumed as such.⁵⁵ In the Russian case, this is a large and heterogeneous group of products, most of which have a high volume of ethanol. Such products include illegally produced, undeclared or smuggled alcohol; counterfeit

alcoholic beverages in replica bottles; homemade alcoholic beverages; and alcoholic products that are misused as alcohol surrogates, such as alcohol-based cosmetic lotions and colognes, medicinal compounds and windscreen washer fluids.^{55–61}

Unrecorded alcohol makes up a third of total alcohol consumed in the Russian Federation.^{24,63} It is estimated that illegal production accounts for about 43% of unrecorded alcohol, homemade production 29%, and surrogate alcohol 22%; the remaining 6% is brought over the border and is therefore not accounted for.⁶⁴ It is worth noting that, compared to other countries of the WHO European Region, the Russian Federation's total alcohol consumption has one of the highest proportions of surrogate alcohol. For further information on unrecorded alcohol consumption in the Russian Federation, see **Box 1**.

Total adult per capita alcohol consumption, comprising both recorded and unrecorded alcohol, increased between 1991 and 1996, with a pronounced rise between

Box 1. Unrecorded alcohol consumption in the Russian Federation

A lot of the existing research in the field has demonstrated that unrecorded alcohol consumption is a relatively mundane phenomenon in the Russian Federation and that different types of unrecorded alcoholic products can be found in different settings and communities.⁵⁵ Moreover, there seems to be a hierarchy among the different types of products that corresponds with their price, the perceived health risks, and the social status of their associated consumers, as well as the level of stigmatization attached to their consumption. For instance, homemade alcohol is considered to be a good alternative to recorded alcohol; it is less stigmatized and consumed by various groups. Alcohol surrogates, on the other hand, are placed at the very bottom of this socioeconomic hierarchy, and their consumption is associated with impoverished individuals with severe forms of alcohol dependence and/or poor mental and physical health, who can no longer afford any other alcoholic products.^{57,64,65} Most of the alcohol surrogates found in the Russian Federation contain high concentrations of ethanol (usually, 60–95% alcohol content), are much cheaper than recorded alcohol, and are more readily available, as the usual restrictions on alcohol sale do not apply to them.^{39,56} Since alcohol surrogates provide a cheap and concentrated source of alcohol, they are popular with the poorest population segments who seek high levels of blood alcohol.⁶⁶ Unsurprisingly, their consumption is associated with

marginalized and severely dependent individuals, and particularly with homeless heavy drinkers. In the Russian Federation, consumption of alcohol surrogates has been persistently linked to extreme binge drinking and heavy drinking patterns, alcohol use disorders,^{64,57,58} and other alcohol-related behaviours predictive of poor health and mortality.^{19,67,68} Among heavy drinkers, consumption of surrogate alcohol is perceived as a social marker for severe forms of alcohol dependence and is considered to represent hitting “rock bottom” in one's drinking trajectory.^{57,58} Moreover, there are several toxicological studies that document a systematic presence of toxic admixtures (e.g. diethyl phthalate, formic acid) in some alcoholic products that are misused as surrogate alcohol and therefore pose an additional threat.^{56,57,60,61,69,70} Deadly alcohol poisonings with surrogate alcohol occur regularly in the Russian Federation. One of the best-known cases is the Irkutsk mass poisoning in 2016/2017, where more than 70 people died after consuming a bath lotion, which was mislabelled as containing ethyl alcohol but turned out to be methanol-based.^{40,71} Although these cases receive a lot of media attention, the main harm of unrecorded alcohol – globally and in the Russian Federation – stems from ethanol and not from other ingredients,⁶⁶ as unrecorded alcohol is almost always cheaper and generally more readily available than recorded alcohol.^{39,60}

1991 and 1994, mainly due to rising consumption of spirits (Fig. 1). This increase was followed by a slight drop in 1996 and a steady rise between 1997 and 2003. With a total consumption of 20.4 litres of alcohol per capita, the Russian Federation had one of the highest levels of alcohol consumption in the world in 2003.

Between 2003 and 2006 a substantial drop was observed, initiating a relatively stable downward trend. As Fig. 1 shows, this long-term trend was caused mainly by a substantial decline in consumption of spirits, as well as of unrecorded alcohol. Between 2006 and 2007 total per capita alcohol consumption slightly increased, but this was mainly due to a rise in beer and wine drinking, while spirit consumption continued to decline, thereby indicating an overall change in Russian drinking patterns. From 2007, consumption of all alcoholic products (including unrecorded alcohol) declined, with a slight increase in wine drinking in the last year for which data were available.

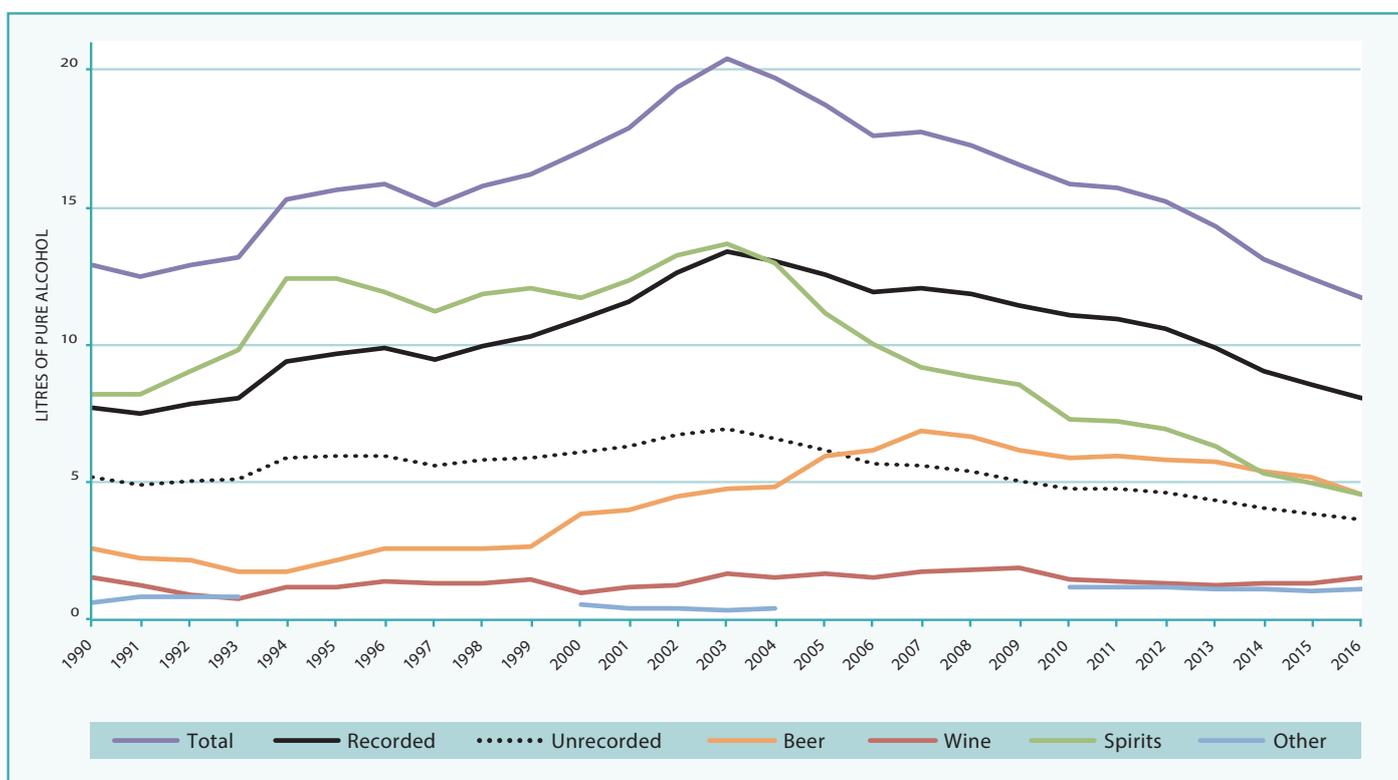
Between 1990 and 2016 total per capita consumption decreased by 9%, with a pronounced change in drinking patterns: while consumption of spirits declined by 45%, beer consumption increased by 78%, with wine fluctuating at around the same level over time.

Overall, recorded alcohol consumption increased by 5% and unrecorded consumption decreased by 30%. In other words, the decrease in total consumption was mainly attributable to substantial declines in consumption of spirits and unrecorded alcohol. Following the pronounced peak in 2003, total alcohol consumption had decreased by 43% by 2016, with a substantial decline in spirits drinking (67%) and consumption of unrecorded alcohol (48%). Within the same period, consumption of lighter alcoholic beverages decreased slightly; wine drinking declined by about 8% and beer drinking by about 4%.

Nonetheless, despite this important success, in 2016 total per capita alcohol consumption for the Russian Federation was estimated at 11.7 litres of pure ethanol (for the population 15+), which is still among the highest levels of consumption worldwide and higher than the WHO European average (9.8 litres).

Levels of alcohol per capita consumption in drinkers only, defined as individuals who have consumed alcohol in the past 12 months, demonstrate that Russian men who drink at all drank as much as 30.5 litres per capita in 2016 (Table 1). For women, this indicator was almost

Fig. 1. Trends in total adult (15+) per capita alcohol consumption in the Russian Federation



Source: Global status report on alcohol and health, 2018;²⁴ Manthey et al. (2019).²⁵

three times lower – 10.5 litres per capita. The amount of alcohol consumed in 2016 is equivalent to 152 bottles of vodka or 1215 bottles of beer (0.5 litre) for men and to 52 bottles of vodka or 418 bottles of beer for women.

As **Table 1** shows, overall the Russian Federation is characterized by a relatively large share of abstainers (both lifetime abstainers and former drinkers) and relatively high levels of alcohol consumption in current drinkers, as well as high prevalence rates of heavy episodic drinking in the population. Heavy episodic drinking is defined by WHO as having drunk at least 60 g or more of pure alcohol on at least one occasion in the past 30 days, which is equivalent to about three bottles of beer or six small shots of vodka per drinking session in the context of the Russian Federation. This pattern of drinking is one of the most important indicators for acute consequences of alcohol use, such as injuries or poisonings. In other words, those who drink a lot, as well as in a hazardous pattern; and the heavier drinkers are more often men.

Downward trends in the prevalence of heavy episodic drinking were observed that were similar to those for total adult per capita alcohol consumption (**Fig. 2**). From 2004, heavy episodic drinking declined in both men

and women, although a slight increase was observed in women for the last year where data were available. While in 2004 about 75% of the adult male population (aged 15 and older) engaged in this hazardous drinking pattern, by 2016 the number had fallen to 48%. A similar proportional drop was observed in women, although at a much lower absolute level, from 52% in 2004 to 24% in 2016. For both sexes, percentages for these indicators were still among the highest among countries in the eastern part of the WHO European Region.

Alongside these positive changes in drinking patterns, the relative proportion of current drinkers in the population has decreased from 69% in 1990 to 58% in 2016. Sex-specific trends in this decline can be seen in **Fig. 3**.

However, it should be noted that these indicators are based on survey data. Population surveys, and most importantly household surveys, systematically underreport alcohol consumption for various reasons – for instance, because they do not adequately capture individuals with alcohol dependence or because of other known survey biases, such as social desirability or recall bias.⁶⁵ Also, the underestimation of drinking is not uniform across either subgroups of the population or drinking

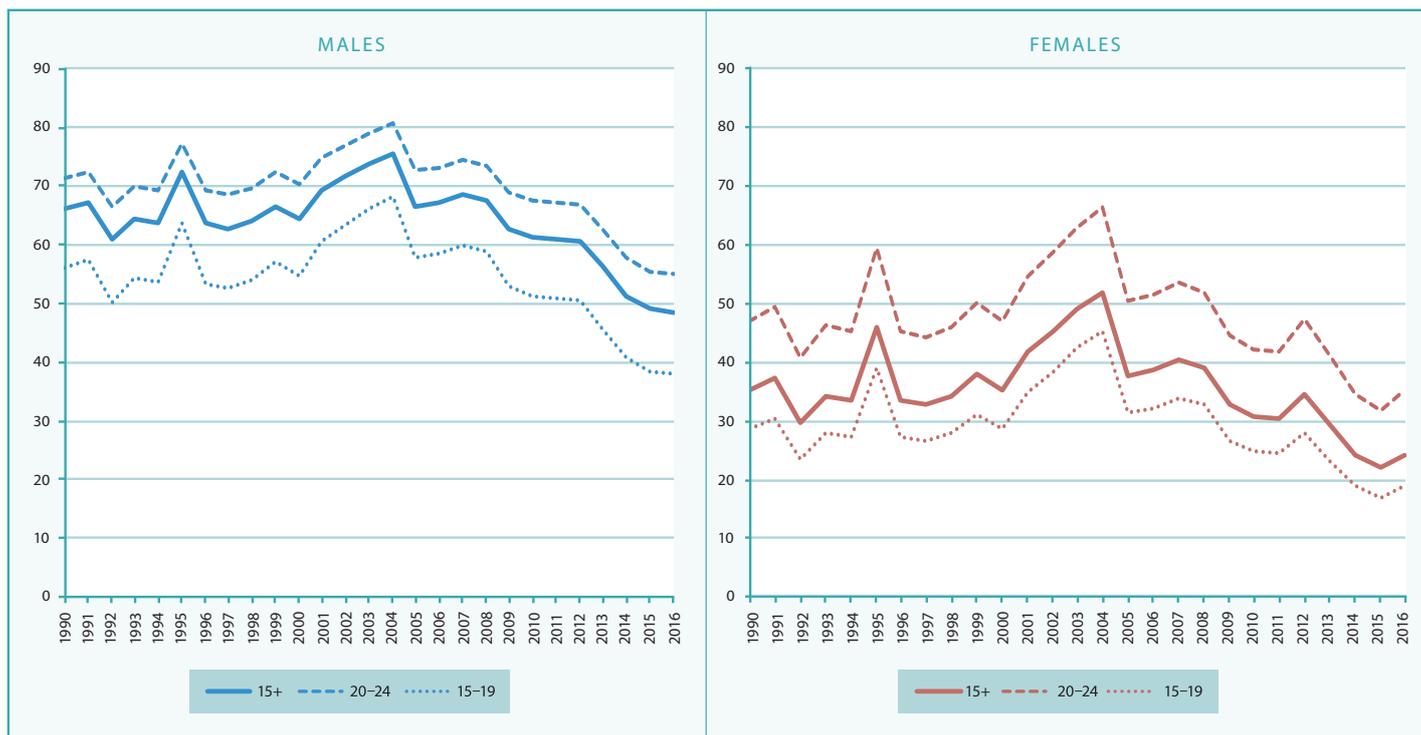
Table 1. Key indicators of alcohol consumption in the Russian Federation

		2005			2010			2016		
		Males	Females	Both sexes	Males	Females	Both sexes	Males	Females	Both sexes
Alcohol per capita consumption, in litres of pure alcohol (15+)	Total ^a	30,2	9,1	18,7	26,1	7,3	15,8	18,7	5,8	11,7
	Recorded	20,2	6,1	12,5	18,2	5,1	11,1	12,9	4	8,1
	Unrecorded	9,9	3	6,2	7,8	2,2	4,7	5,8	1,8	3,6
Total alcohol consumption among drinkers in litres of pure alcohol		39,6	14	26,8	36,2	12,7	24,7	30.5	10,5	20,1
Prevalence of heavy episodic drinking in the population		67%	38%	51%	61%	31%	45%	48%	24%	35%
Prevalence of heavy episodic drinking in drinkers only		87%	59%	73%	85%	54%	70%	79%	44%	61%
Current drinkers		76%	65%	70%	72%	57%	64%	61%	55%	58%
Former drinkers		8%	11%	10%	10%	13%	12%	15%	15%	15%
Lifetime abstainers		16%	24%	20%	17%	29%	24%	24%	30%	27%

^a Total alcohol consumption also includes tourist consumption, which was omitted from this table as it constitutes only a small share.

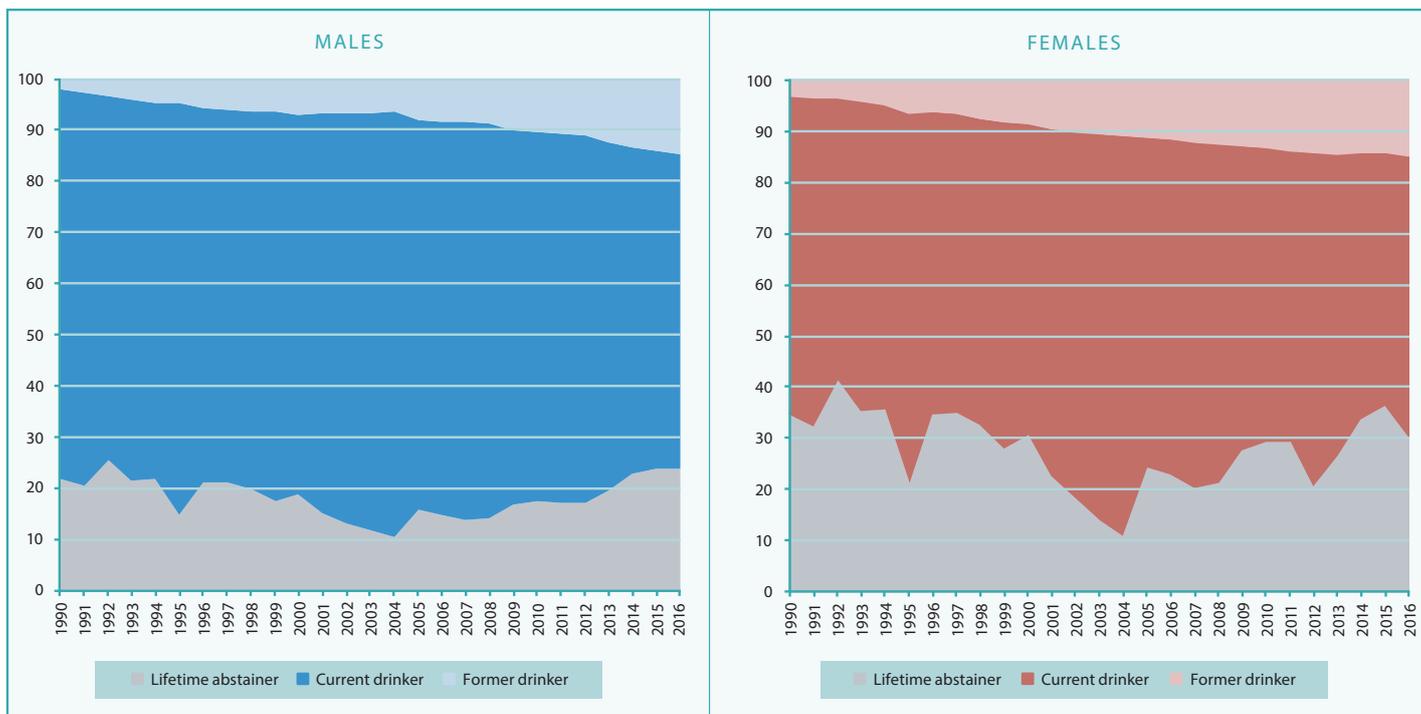
Source: *Global status report on alcohol and health, 2018*; ²⁴ Manthey et al. (2019).²⁵

Fig. 2. Trends in prevalence of heavy episodic drinking (intake of 60 g or more of pure alcohol on at least one occasion in the past 30 days) in the Russian Federation in %



Expressed as a percentage of the population divided into three age groups: all adults aged 15+; young adults aged 15-19; young adults aged 20-24.
 Source: *Global status report on alcohol and health, 2018*;²⁴ Manthey et al. (2019).²⁵

Fig. 3. Trends in the proportions of lifetime abstainers, current drinkers and former drinkers in the Russian Federation^a



^a Expressed as a percentage of all adults aged 15 and over.
 Source: *Global status report on alcohol and health, 2018*;²⁴ Manthey et al. (2019).²⁵

patterns.⁶⁶ For the Russian Federation, existing studies on biological markers of alcohol drinking suggest that survey self-reports particularly underestimate alcohol consumption in women, as well as heavy episodic drinking as a drinking pattern in general.^{67,68} Therefore, the actual proportion of abstainers in the population might be lower than the proportion reported by the surveys.

Trends in the 30-day prevalence of total and beverage-specific alcohol use, using data from the Russian Longitudinal Monitoring Survey,⁶⁹ are presented in Fig. 4.

The individual panel data show a peak in reported total alcohol consumption in 2001 and a prolonged downward trend starting in 2006/2007, with a slight increase in 2015. Beverage-specific trends demonstrate a substantial decline in vodka consumption over the entire period of observation, with a pronounced drop between 2011 and 2012, as well as a long-term decline of samogon consumption starting in 2001. However, samogon consumption has slightly increased again since 2014. A steep increase in beer consumption was observed between 1995 and 2001, followed by a general decline until 2015 and a slight increase in the most recent years. Consumption of wine decreased until 2000, slightly increased for the next 10 years, showed a stable downward trend between 2010 and 2015, and then slight increased over the two most recent years.

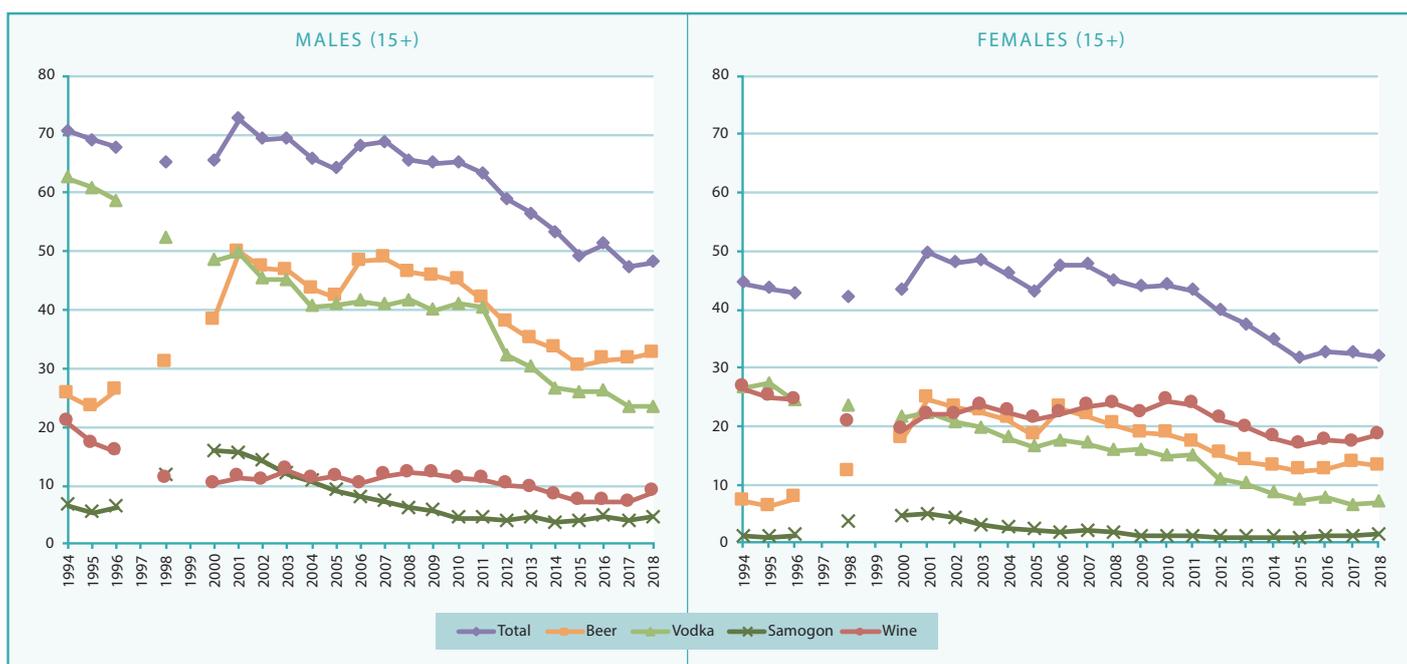
Changes in the individual RLMS panel data correspond to the general trends observed in household surveys of the Federal State Statistics Service, as well as in sales of recorded alcohol.

For the last 15 years a substantial shift in drinking patterns has taken place, as well as a general reduction in total alcohol consumption. The latter is driven mostly by a considerable reduction in the consumption of spirits, as well as of unrecorded alcohol, which in the Russian Federation is mainly strong alcohol from various unrecorded sources.

A reduction in the prevalence of heavy episodic drinking, as well as the switch from spirits to lighter alcoholic beverages, suggests that the Russian Federation is in the process of moving away from the so-called northern European pattern of drinking, characterized by irregular heavy drinking sessions and preference for distilled spirits.^{70,71} This trend is more pronounced in younger people, with the most recent RLMS data suggesting that the observed downward trend in total consumption, as well as consumption of spirits, is largely driven by decreases in alcohol use in the youngest cohorts (those born in and after 1990).⁷² This shift in drinking patterns has been observed in the past in Nordic and eastern European countries such as Sweden, Finland and Poland, where it has led to favourable outcomes in alcohol-attributable harm.²⁴

It is worth noting that self-reported data on drinking frequency and consumption patterns, as captured by the RLMS, are generally consistent with data on official alcohol sales, which confirm the declining trends in total alcohol consumption, heavy episodic drinking and consumption of spirits after 2004.⁷³ Moreover, various public opinion polls conducted by the Russian Public Opinion Research Center (WCIOM) support the trends outlined here. For instance, in 2018, 58% of respondents in a representative sample reported that they were current drinkers, whereas in 2009 the figure was 72%.⁷⁴

Fig. 4 Prevalence of total beverage-specific alcohol use as reported for the past 30 days, for male and female respondents aged 15 and over in %



Source: RLMS-HSE.²⁶

A photograph of a glass of beer on a table. The glass is filled with a golden beer and has condensation on its surface. In the background, a silver fork is visible on a white tablecloth. The image is overlaid with teal geometric shapes in the top right and bottom left corners.

TRENDS IN ALCOHOL USE DISORDERS

Alcohol policy impact
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4. TRENDS IN ALCOHOL USE DISORDERS

For the Russian Federation, no epidemiological studies on the prevalence of alcohol use disorders in the population are available. Still, there are some key indicators that can be used to evaluate trends in alcohol use disorders that are treated by state-run health services. There is a vast network of state-run specialized health services for substance use disorders. This so-called narcology system collects annual treatment data on alcohol and drug use disorders from each region of the country, thereby allowing a detailed analysis of these indicators.²² Narcology is a subspecialty of psychiatric care that specializes in substance use disorders. This specialized health care service is free of charge, but each patient is officially registered within the narcology system according to treatment protocols established by the Ministry of Health.

In the case of an established drug or alcohol use disorder, prolonged monitoring of the patient is imposed. For further details and the implications of narcological monitoring, see **Box 2**. In the following discussion, trends in different disorders due to use of alcohol as registered within the narcology system are discussed.

Moving in parallel with the decreases in alcohol consumption indicators described above, both prevalence and incidence of narcological disorders due to use of alcohol have been decreasing since 2003/2004. From 2003 the prevalence of state-registered alcoholic psychoses and harmful use of alcohol, as well as incidence rates of alcohol dependence, started to decline steadily. Shortly thereafter, in 2004, this was followed by a long-term decline in the prevalence of alcohol dependence, as well as incidence of alcoholic psychoses and harmful use (**Fig. 5**). While prevalence rates were declining steadily,

pronounced drops in the incidence rates of alcohol use disorders (including alcoholic psychoses) were observed for the periods 2003–2007 and 2010–2013.

Between 2000 and 2017 prevalence of alcohol dependence (including alcoholic psychoses) in patients registered in state-run treatment services dropped by 37%, and prevalence of alcoholic psychoses and harmful use of alcohol each declined by 54%. Even steeper declines were observed in incidence rates of alcohol use disorders during the same period; incidence of alcohol dependence (including alcoholic psychoses) dropped by 57%, while incidence of alcoholic psychoses alone dropped by 69% and incidence of harmful use of alcohol by 67%.

As outlined above, the observed trends are in cases that have been recorded in the state-run narcology services; thus they apply only to a special population and should therefore be interpreted with caution. Nevertheless, the data presented provide an important orientation point in discussion of changes in alcohol-attributable harm observed in the Russian Federation. For instance, both prevalence and incidence of alcoholic psychoses can be considered as a very sensitive indicator of changes in alcohol consumption at the population level, since alcoholic psychosis is a completely alcohol-attributable condition caused by prolonged and heavy intake of alcohol, in which affected individuals are hospitalized in the vast majority of cases. Also, the incidence of harmful use of alcohol can be considered as a time-sensitive indicator, as it relates to individuals who are registered for the first time within the system of specialized care and who are mostly youth and young adults who have not yet developed a more serious alcohol use disorder.

Box 2. Specialized health services for substance use disorders in the Russian Federation and official treatment data

There are two types of monitoring procedures for individuals who have been officially registered within the narcology system following an officially established diagnosis of a drug or alcohol use disorder. The first type is preventive monitoring. It is carried out for individuals who reached out for treatment independently, or follows a referral procedure from public organizations, preventive and medical institutions, and other organizations or internal affairs bodies such as the police. As a rule, these individuals tend to use alcohol (and/or other psychoactive substances) in a harmful way, but their consumption patterns are not accompanied by a clinical manifestation of symptoms that would indicate alcohol (or other drug) dependence. These individuals are considered to be a group at risk and can be monitored for up to a year within the narcology system without a diagnosis of alcohol dependence being given. Also, when a person is admitted to the narcological service for the first time, he or she is put under preventive monitoring. In this case, individuals are monitored for a period of one year, during which they are required to make regular visits to the psychiatrist-narcologist of their local outpatient clinic.

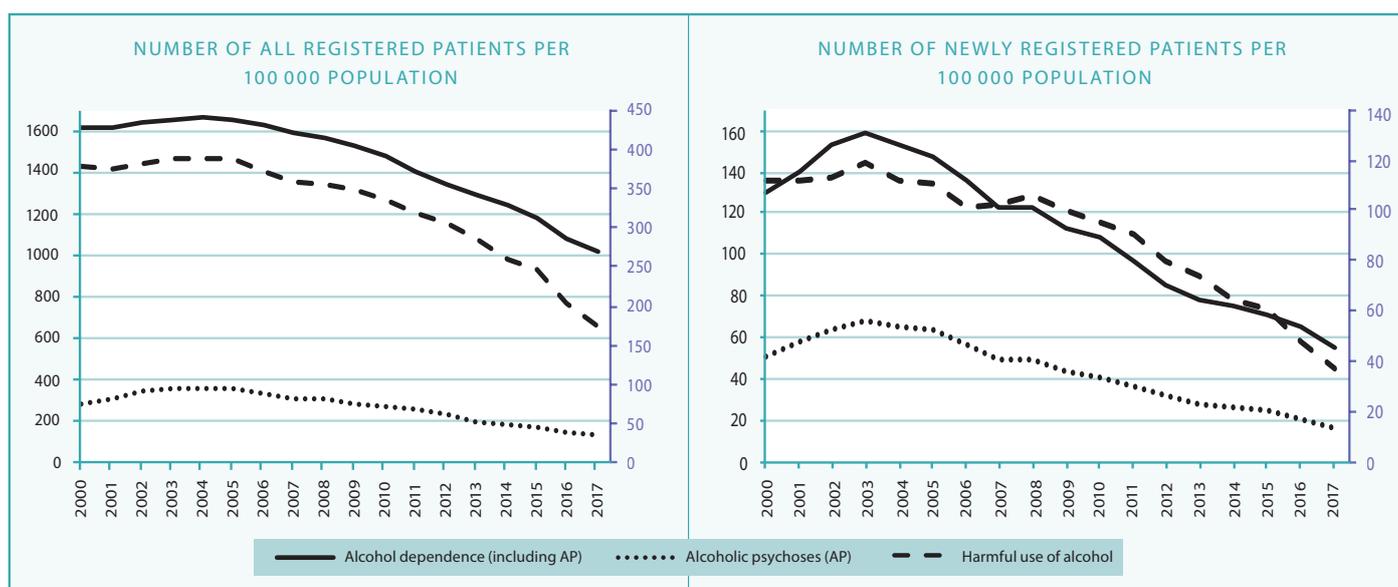
The second type – narcological monitoring – is imposed on individuals who have been admitted to the narcology service repeatedly or who meet the diagnostic criteria of alcohol dependence and/or other drug dependence. This diagnosis can be established in both outpatient and inpatient institutions, but only by a psychiatrist-narcologist. Narcological monitoring is carried out for at least three years and the patient is removed from the state register only when remission is reached and a number of conditions are met: no use of psychoactive substances during the entire monitoring period

(without interruption); regular visits to the local psychiatrist-narcologist; and absence of traces of drugs in the urine following routine checks in the narcology institutions.

Official registration within the state-run narcology system has consequences for individuals beyond mere social stigma. For instance, the official status of “narcological patient” affects employment possibilities; there is a special list of professions, such as pilot, professional driver (e.g. bus, taxi, metro) and heavy-vehicle operator, that cannot be followed while a person is diagnosed and monitored with a substance use disorder within the narcology service. Registration also prohibits work under conditions that are classified as challenging or dangerous and demand an extra level of responsibility – for instance, working at heights or with heavy equipment or working as a security guard for any entity. It may also cause suspension of a driving licence, which may affect employment possibilities in some cases. Narcological registration also prohibits handgun ownership.

Thus, the potentially stigmatizing and punishing process of admission to the narcological system might represent a considerable barrier to specialized care.⁸¹ This barrier is particularly relevant for individuals at earlier stages of their substance use disorder as well as for lower-income individuals. Typically, narcological patients at state-run facilities represent the lowest income groups, who cannot afford any other (anonymous, but costly) treatment. Thus, heavy drinkers try to avoid official registration and the issues it brings with it as long as possible. At the same time, low-income individuals with alcohol use disorders are the main consumer group of cheap surrogate alcohol and exhibit hazardous drinking patterns which are strongly related to mortality.^{19,67}

Fig. 5. Trends in treatment data. All registered narcological patients with different alcohol use disorders per 100 000 population (prevalence, left panel) and newly registered patients (incidence, right panel).



^a Left scale: alcohol dependence (including alcoholic psychoses).

Right scale: harmful use of alcohol and alcoholic psychoses.

Source: Serbsky National Medical Research Centre for Psychiatry and Narcology.²²



TRENDS IN LIFE EXPECTANCY AND MORTALITY

Alcohol policy impact
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5. TRENDS IN LIFE EXPECTANCY AND MORTALITY

5.1 OVERALL TRENDS IN LIFE EXPECTANCY AND ALL-CAUSE MORTALITY

Large fluctuations in mortality and life expectancy have been observed in the Russian Federation since 1990. The magnitude of the changes was larger for men than for women (Fig. 6). For instance, life expectancy in men dropped by more than 6 years between 1990 and 1994, reaching its absolute low of 57 years in the recent history of what is now the Russian Federation. A similar but less marked drop was observed in the same period for women, though at a much higher level – from 74 years to 71 years. This gender gap of 14 years in life expectancy was one of the largest observed worldwide.

For both sexes, life expectancy increased again until 1998, decreased between 1998 and 2003, and then rose again after 2003/2004 at the start of a long-lasting upward trend.

By 2018 Russian life expectancy had reached its historic peak, standing at almost 68 years for men and 78 years for women. The biggest gains were observed in men: their life expectancy increased by more than 9 years between 2003 and 2018, while female life expectancy

increased by 6 years. This narrowed the gender gap to 10 years.

Naturally, the same developments were observed in mortality trends. Between 1990 and 2018, the standardized death rates (SDRs) for all causes and all ages per 100 000 showed large fluctuations; there were pronounced peaks in 1993/1994 and 2002/2003, as shown in Fig. 7, generally coinciding with the fluctuating levels in alcohol consumption.

All-cause mortality slowly increased for both sexes after 1998, but a steady downward trend has been observed since 2002/2003 for women and since 2003 for men. Overall, all-cause mortality dropped between 1990 and 2018 by 21% in men and by 25% in women, while between 2003 and 2018 it fell by 39% in men and by 36% in women.

5.2 TRENDS IN MORTALITY FROM CARDIOVASCULAR DISEASES

There are more than 40 three-digit codes in the International Classification of Diseases, 10th revision (ICD10) that are fully attributable to alcohol, as well as

Fig. 6. Life expectancy at birth in years for males (blue line) and females (red line)



Source: Federal State Statistics Service.²⁰

over 220 disease and injury codes where there is a clear causal link with alcohol; for an overview, see Rehm et al. (2017).⁸² The most important causes of death that account for the largest proportions of all-cause mortality in the WHO European Region are partially attributable to alcohol; these include cardiovascular diseases (e.g. myocardial infarction, stroke, cardiomyopathy), diseases of the digestive system (e.g. gastric ulcer, liver cirrhosis, pancreatitis), cancers (e.g. gastrointestinal cancers, lung cancer, breast cancer in women), and external causes of mortality (e.g. injuries, transport accidents, poisonings).

These close associations and causal links are very well studied for the Russian Federation, especially in the case of cardiovascular mortality^{83–85} and mortality due to external causes, most importantly suicides^{41,86,87} and homicides.^{88–92}

For a more detailed analysis of patterns of mortality, SDRs were retrieved for those categories and codes for which a coherent data series was available. The data were retrieved from the Russian Fertility and Mortality Database.²¹ Further methodological explanations of the cause-specific mortality series for 1990–2017 can be found in **Annex 1**.

Between 1990 and 2017, a substantial decline was observed in cardiovascular disease mortality and mortality from external causes, as well as a considerable decline in mortality due to neoplasms, which are the main contributors to Russian all-cause mortality. For men, mortality due to cardiovascular diseases dropped by 32% within this period, while mortality due to external causes decreased by 27%. In women, even bigger declines were observed: there was a 44% decrease in mortality due to cardiovascular diseases and a 30% decrease in mortality due to external causes. At the same time, mortality due to neoplasms declined by 25% in men and by 15% in women.

From the beginning of the overall downward trend in 2003, cardiovascular disease mortality declined by 48% in men and 51% in women, while mortality due to external causes decreased by 56% for both sexes (**for an overview, see Fig. 8**).

Although alcohol is known to be carcinogenic and to cause cancer of the oral cavity, pharynx, oesophagus, stomach, colon and rectum, as well as breast cancer in females,^{93–95} a population-based reduction in alcohol-attributable cancer rates cannot be expected following declining levels of alcohol consumption within a short period of time, as cancers develop slowly over time. For

Fig. 7. Age-standardized death rates per 100 000 population for men (blue line) and women (red line) for all causes of death



Source: Russian Fertility and Mortality Database.²¹

this reason, the documented population-level reduction in alcohol consumption is not expected to impact on cancer mortality in a time period that is covered by this study.

A more detailed examination of trends in mortality from cardiovascular diseases demonstrates that mortality due to ischaemic heart diseases is the largest contributor to this mortality group, followed by cerebrovascular diseases. As **Fig. 9** shows, trends in both categories followed a similar pattern to trends in alcohol consumption (**Fig. 1 above**): a steep increase and a pronounced peak in 1994, followed by an increase between 1994 and 1998, a gradual increase until 2003, and a prolonged downward trend thereafter. Broadly similar trends are observed for mortality due to myocardial infarction, a subgroup of ischaemic heart diseases.

Mortality due to hypertensive heart disease also increased until 1994, decreased until 1998, and then climbed again until 2010. From 2010, a stable downward trend in hypertensive heart disease mortality is observed for both sexes.

SDRs for all the types of cardiovascular mortality analysed were at a much higher level for men than for women, with the largest relative declines also observed in men.

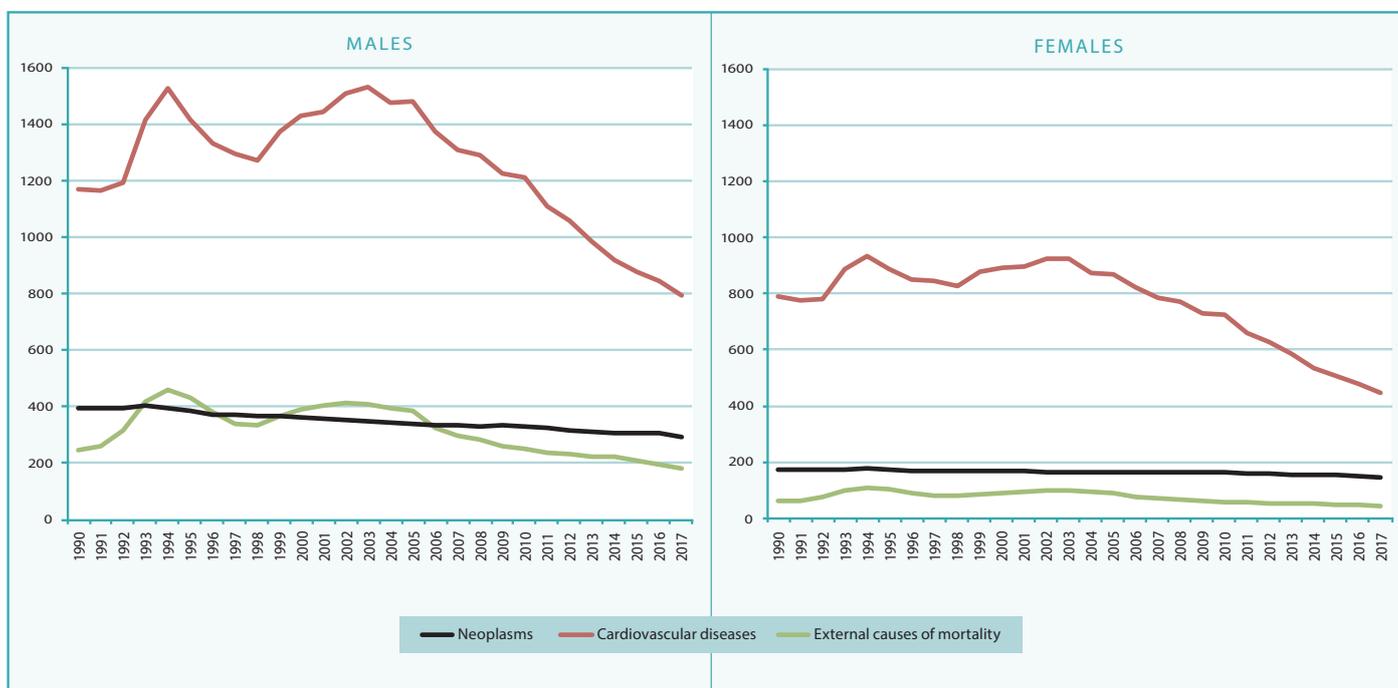
Data for other types of heart diseases such as cardiomyopathies were not available, with the exception of alcoholic cardiomyopathy, which was coded as a separate cause of death after 2006 and demonstrates a downward dynamic as well (see **Fig. 10** below).

5.3 TRENDS IN MORTALITY FROM CAUSES OF DEATH THAT ARE 100% ALCOHOL-ATTRIBUTABLE

Mortality due to causes of death that are 100% alcohol-attributable declined steadily in recent years (**Fig. 10**). Rates were generally 3–4 times higher for men than for women. Fatal alcohol poisonings and deaths due to alcoholic psychoses and alcohol dependence showed the same peaks in 1994/1995 and 2002/2003 as those seen for other causes of death (**Fig. 8 and 9**); they also followed the same trends as alcohol consumption (**Fig. 1**) and both have been declining since then (though no consistent data series for alcohol dependence is available after 2010).

Between 2003 and 2017 the most substantial drops were observed in alcohol poisoning mortality, with a decline of 73% in men and 78% in women. Mortality due to alcoholic psychoses dropped by 80% in men, while the overall numbers for women were too low to allow meaningful comparison over time. SDRs from alcoholic liver disease (alcoholic cirrhosis, hepatitis, fibrosis) increased

Fig. 8. Age-standardized death rates per 100 000 population for males and females for cardiovascular diseases, external causes of death and neoplasms



Source: Federal State Statistics Service.²⁰

between 1990 and 1995, followed by a mild decrease and a steep rise between 1998 and 2005; after that, there were strong fluctuations, with a marked downward trend over the last two years. Between 2003 and 2017 mortality due to alcoholic liver disease declined by 22% in men and 24% in women.

Rates in other 100% alcohol-attributable causes of death that are recorded since 2006 demonstrated inconsistent trends. While alcoholic cardiomyopathy deaths were declining, mortality due to alcohol-induced chronic pancreatitis and degeneration of the nervous system due to alcohol use were fluctuating over time (though indicators remained at approximately the same absolute level). However, as some of these rates varied at a very low level, especially for women, the numbers are too small to allow a comprehensive discussion of trends.

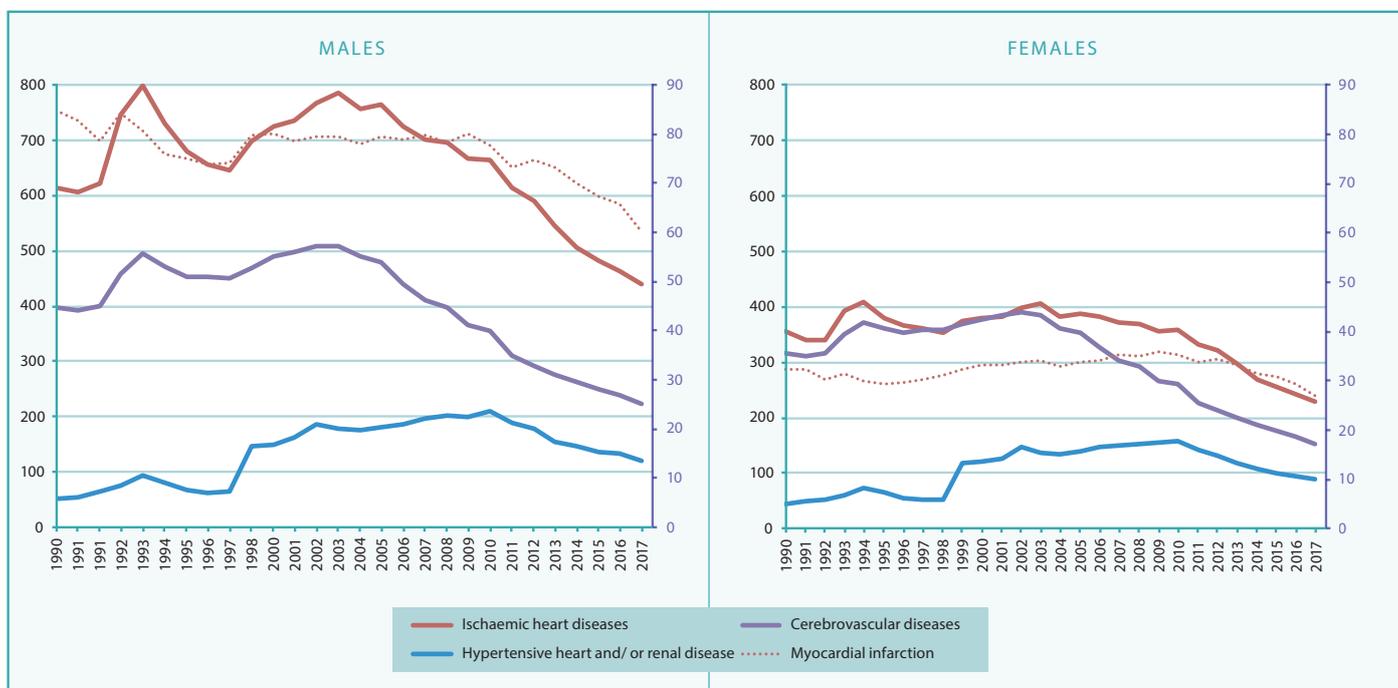
5.4 TRENDS IN MORTALITY FROM EXTERNAL CAUSES OF DEATH

Trends in mortality from external causes of death followed the same pattern as that described above, although in this category the first mortality peak in 1994 was much more pronounced than the second peak in the early 2000s (Fig. 11). SDRs of all the examined causes were several times higher in men than in women.

The most substantial drops in mortality from external causes were observed in causes of deaths that are strongly associated, in the context of the Russian Federation, with alcohol consumption. Between 1990 and 2017 mortality from suicides dropped by 51% in men and by 64% in women; mortality due to homicides dropped by 58% in men and by 57% in women; and mortality from transport accidents dropped by 59% in men and by 47% in women. Decreases were also observed in smaller categories. Mortality due to drowning decreased by 53% and 57%, respectively, in men and women; due to exposure to fire and smoke by 23% and 31%; and due to accidental falls by 9% and 26%. However, mortality due to events of undetermined intent increased during the same time period by 40% in men and by 28% in women. This increase, combined with the steep decline in suicides, suggests that deaths that were previously coded as intentional self-harm were now being shifted into this mortality group.

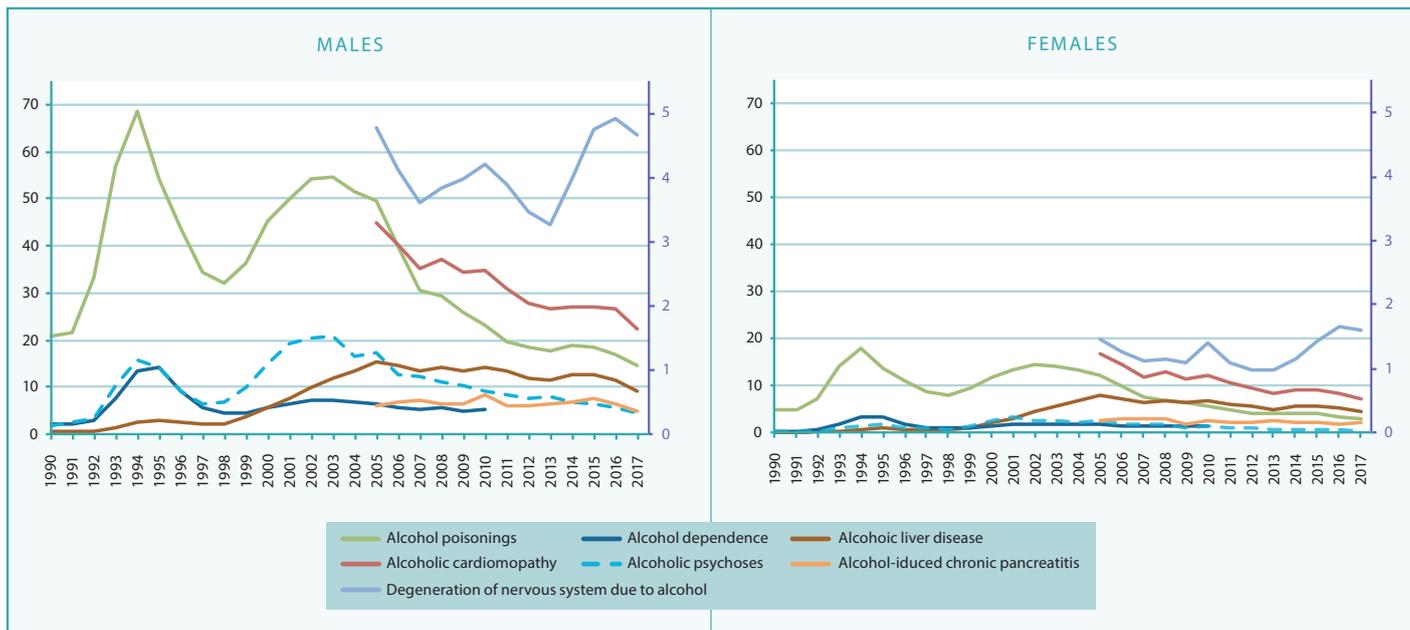
For the time period 2003–2017, mortality from suicides dropped by 62% in men and by 61% in women; mortality due to homicides by 79% in men and by 78% in women; and mortality due to transport accidents by 55% for both sexes.

Fig. 9. Age-standardized death rates per 100 000 population for cardiovascular mortality in the Russian Federation^a



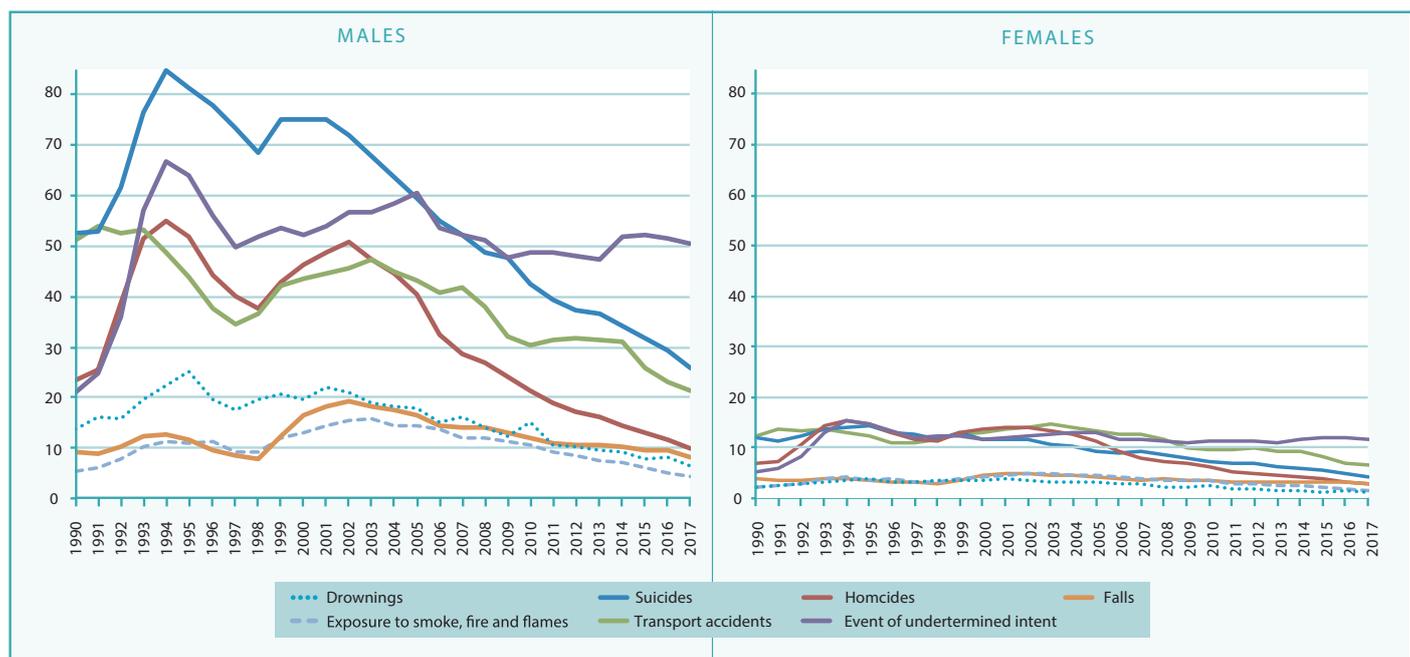
^a Left scale: ischaemic heart disease, cerebrovascular diseases. Right scale: hypertensive heart and/or renal disease, myocardial infarction. Source: Federal State Statistics Service.²⁰

Fig. 10. Age-standardized death rates per 100 000 population for 100% alcohol-attributable mortality^{a,b}



- ^a Left scale: alcohol poisonings, alcoholic liver disease, alcoholic cardiomyopathy. Right scale: alcohol-induced chronic pancreatitis, alcoholic psychoses, alcohol dependence syndrome, degeneration of nervous system due to alcohol use.
 - ^b Data for alcoholic cardiomyopathy, alcohol-induced chronic pancreatitis and degeneration of nervous system due to alcohol use are only available after 2005, while mortality data on alcohol dependence syndrome are available only until 2010.
- Source: Federal State Statistics Service.²⁰

Fig. 11. Age-standardized death rates per 100 000 population for males and females for mortality from external causes



Source: Federal State Statistics Service.²⁰



CONCURRENT TRENDS IN ALCOHOL CONSUMPTION AND MORTALITY

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6. CONCURRENT TRENDS IN ALCOHOL CONSUMPTION AND MORTALITY

Overall, all the examined mortality categories demonstrate substantial declines over time, with relative decreases that are generally greater for men. There are a number of different explanations for these documented fluctuations in life expectancy and mortality since 1990; these hypotheses take into account not only alcohol consumption but also social and psychological stress, environmental pollution, further risk factors such as tobacco smoking and nutrition, and the economic shocks and transformation processes that took place in former Soviet countries, which included the collapse of the centralized health care system.^{13–15,96–99} One holistic explanation that synthesizes evidence from large datasets of routinely collected data and that attempts to account for the multitude of factors is the theory put forward by Shkolnikov and colleagues – for instance, in their 1998 article *Causes of the Russian mortality crisis*¹⁰⁰ – which suggests that psychological stress caused by abrupt and severe economic transition played a major role in the Russian mortality crisis, mediated in part by excessive alcohol consumption and its adverse health effects.

Various other studies provide compelling evidence that alcohol played a central role in the large mortality fluctuations that have been observed over the last 30 years. While deaths due to cardiovascular diseases account for the largest proportion of all-cause mortality, the greatest relative changes were observed in other alcohol-attributable deaths: alcohol poisonings, alcoholic liver disease, alcoholic psychosis, and violent and accidental deaths.^{16,38,101–103}

A growing body of research indicates that alcohol consumption has played a key role in shaping Russian cardiovascular mortality, with alcohol-induced harm arising not only from high levels of drinking but also from the specific pattern of irregular heavy drinking of concentrated spirits, as well as a combination of chronic and acute alcohol consumption.^{19,83–85,103–107} Moreover, there is evidence that at least some proportion of deaths from cardiovascular disease in the Russian Federation are misclassified deaths that are in fact attributable to acute alcohol poisoning, although this cannot account for the high death rates from cardiovascular disease that have been observed.^{53,85}

Overall, the analysed long-term trends reveal a strong negative correlation between alcohol consumption and life expectancy, meaning that rising trends in alcohol consumption are mirrored subsequently by prompt drops in life expectancy (**Fig. 12**). Pronounced drops in total alcohol consumption – most importantly, consumption of spirits and unrecorded alcohol – and in heavy episodic drinking are observed between 2004 and 2005, corresponding with the drops in all-cause mortality (**Fig. 7**) and in 100% alcohol-attributable mortality (**Fig. 10**) that occurred at that time. This trend reversal occurred against the backdrop of a substantial tax increase of 50% on ethyl alcohol in January 2005 and extensive amendments to Federal Law No. 171, which is the main instrument of Russian alcohol policy. The next chapter will explore how the reversal of these trends in the early 2000s coincided with the implementation of various alcohol control measures.

Fig. 12. Relationship between alcohol consumption and life expectancy^a



^a Left scale: life expectancy in years.

Right scale: total alcohol consumption per capita in litres.

Source: *Global status report on alcohol and health, 2018*,²⁴ Manthey et al. (2019);²⁵ Federal State Statistics Service.²⁰

Adapted from Nemtsov, Neufeld & Rehm (2019).³⁷



ALCOHOL POLICY RESPONSES IN THE RUSSIAN FEDERATION

Alcohol policy impact
case study

7. ALCOHOL POLICY RESPONSES IN THE RUSSIAN FEDERATION

Over recent decades the Russian Federation has adopted various policy measures to reduce alcohol consumption, as well as alcohol-attributable harm and mortality at the population level (for an overview of the main changes introduced since 1990 and for specific measures targeting unrecorded consumption, see **Annexes 2 and 3**). In contrast to previous attempts made in the Soviet era, which were basically extensive but short-termed anti-alcohol campaigns, these policy changes were adopted gradually over a longer period of time, including periods of less intensity in terms of policy action.

7.1 ATTEMPTS TO REGAIN STATE CONTROL OVER ALCOHOL PRODUCTION AND SALES IN THE “TURBULENT 90s”

After repeal of the Gorbachev anti-alcohol campaign in 1990, dissolution of the Soviet Union in 1991, and abolition of the state’s monopoly on alcohol production and retail sale and total liberalization of alcohol prices in 1992, there was virtually no state control over production and distribution of alcohol in the newly formed Russian Federation.³⁷ Additionally, changed legislation and the opening of international borders allowed large imports of alcoholic beverages by various organizations – partly tax-free – which led to a tremendous increase in alcohol consumption. Alongside the plentiful private distilleries that emerged or were privatized during this time and produced alcoholic beverages officially, various illegal or semi-legal markets of unrecorded alcoholic products evolved. The extent of these markets varied widely, ranging from large-scale imports of the industrial alcohol Royal Prima Feinsprit 96% from Germany, to counterfeiting, cross-border smuggling and alcohol tax evasion of differing dimensions, to small-scale private home-brewing and home-distilling of traditional alcoholic beverages.

From 1993, various presidential and government decrees on restoring the state’s monopoly over production and sale of alcoholic products were issued, but these remained largely unenforced. The year 1995 was marked by important changes in alcohol policy. Most importantly, the State Duma adopted Federal Law No. 171 “On State Regulation of Production and Turnover of Ethyl Alcohol, Alcohol and Ethanol-containing Production and Restrictions of Consumption (Drinking) of Alcoholic Products”, which remains to this day the main instrument of Russian alcohol policy. In its initial version, the law was designed to suppress illegal production and distribution of alcohol. It mainly regulated production and sale licences, harmonized the introduced measures on taxation and fraud protection through excise stamps, and imposed punishments for violation and noncompliance.

In the same year, Federal Law No. 108 “On Advertisement” was also introduced, restricting advertising of alcoholic beverages (with the exception of beer) on television and radio. With this new law, commercials for alcoholic products were forbidden between 7:00 and 22:00 and certain other content-related and target audience-oriented conditions imposed. The law was tightened a year later, completely forbidding advertising of spirits on television, though many alcohol producers continued to advertise their trademarks, rather than specific products, in the following years.

In 1996 a government decree introduced a minimum unit price (MUP) for vodka, but the measure remained unenforced for several years. Overall, various decrees were introduced at that time, but they were either not enforced or produced no real impact for various reasons. For instance, alcohol taxes and prices were raised throughout the 1990s, but these measures had little effect because of strong inflation affecting the Russian rouble at that time. Most of the implemented policy measures aimed to re-establish government control over the alcohol production and distribution chain and to tackle illicit alcohol. For instance, between 1994 and 1999 alone, there were four different generations of excise stamps introduced, with increasing levels of counterfeit protection.

7.2 RESTRUCTURING THE ALCOHOL MARKET AFTER 2000

From 2000, a fundamental restructuring of the alcohol market began, with an increasing level of state interventions. One important change in this regard was the formation of Rosspirtprom, a state-owned distillery enterprise which incorporated about 200 distilleries and liquor enterprises, making the state-run business the biggest producer of spirits in the Russian Federation. It is worth noting that government monopolies on production and on off-premise retail sales of alcoholic beverages are considered to be one of the most effective measures to control and reduce alcohol consumption and alcohol-attributable harm at the population level.¹⁰⁸

Also, drink-driving legislation was considerably tightened between 2002 and 2004, and taxes on ethyl alcohol were doubled in 2005. However, the most important legislation was adopted in 2005/2006, when a series of amendments to the main alcohol law, Federal Law No. 171, were passed. The amendments significantly raised the minimum share capital required to be licensed as a producer of ethyl alcohol and spirits, which caused the bankruptcy of various small-scale producers and their subsequent closing or takeover by larger enterprises, including Rosspirtprom.

At the same time, a new monitoring system – the Unified State Automated Information System (EGAIS) – was introduced to collect data on the volumes of alcohol produced and later of alcohol imports. The system allowed greater control over alcohol production and was aimed at reducing illicit alcohol production and improving surveillance over the alcohol market (**Box 3**); more details on this innovative approach to alcohol monitoring are given in **Annex 4**.

Moreover, the amendments introduced new alcohol excise stamps for alcoholic beverages, as well as new restrictions on denaturing additives for nonbeverage alcohol, as further steps to curb unrecorded alcohol consumption. Additionally, regional authorities were ‘granted the right to impose restrictions on selling times for alcoholic beverages containing more than 15% alcohol and to determine the minimum share capital of retail sellers. This has led to various regional scenarios: while some regions have adopted prolonged night bans, others have ignored the new legislation completely. An analysis of regional data revealed positive correlations between alcohol consumption and the number of hours during which alcohol was allowed. In this regard, sales restrictions on evening hours were shown to be more effective in reducing alcohol consumption and sales than restrictions on morning hours.³³ Thus, limiting the hours during which alcohol could be sold was shown to be an effective tool in reducing alcohol consumption, which is relevant especially for regions where heavy episodic drinking is prevalent.

7.3 REDUCING HARMFUL USE OF ALCOHOL AND ALCOHOL USE DISORDERS IN THE GENERAL POPULATION AFTER 2007

From 2007 there was a shift from policy measures targeting processes of alcohol production and distribution to policies more focused on alcohol consumption and changing drinking behaviours. In 2008 the Federal Service for Alcohol Market Regulation was established and granted a mandate to develop and implement state policies in the field of production and turnover of ethyl alcohol and alcoholic beverages. Subsequently, the monitoring system EGAIS was put under the direction of the Federal Service, which decided to develop and deploy it for retail sales of alcoholic beverages (including beer) and to monitor the whole supply chain.

In 2009 the Civic Chamber of the Russian Federation published an analytical report on the consequences of alcohol misuse in the population and suggested a set of evidence-based countermeasures.¹⁰⁹ Based on the report, the Russian government presented a strategy paper, *The concept of state policy on reducing the extent of alcohol abuse and the prevention of alcoholism among the population of the Russian Federation for the period up to 2020*.¹¹⁰ As key measures, the report, and subsequently the strategy paper, proposed increasing prices and limiting the availability of retail alcohol, alongside proposals to change drinking patterns and promote healthy lifestyles, as well as to strengthen prevention and provide early interventions in the health care system.

Box 3. EGAIS

EGAIS is a monitoring system that was introduced in the Russian Federation in January 2006, initially for the purpose of collecting data on the volumes of ethyl alcohol produced, including the use of raw materials and leftovers. Producers of alcohol were obliged to purchase the necessary equipment and to report online on the volumes produced. The main idea behind this innovation was to ensure that accounting for the production of ethyl alcohol was complete and accurate, in order to gain more government control over the production process and to reduce and ultimately eliminate production of illicit alcohol.

In 2012 transport companies and carriers of ethyl alcohol with a strength of over 25% had to be registered within the system; in 2013 and 2014 it was expanded in a stepwise manner to include producers of beer. In 2016 EGAIS was implemented for the wholesale and retail sale of alcoholic beverages, including alcohol imports and on-premises sales of alcohol. Retailers of alcohol were required to comply with the requirements of the system and to equip their outlets with a special cash register for alcoholic beverages. Participants in the alcohol market were obliged to report on production, purchase and sale of alcoholic products.

Alcoholic beverages, with the exception of beer, are now required to display two different QR (Quick Response) codes on their containers, which have to be scanned in sales outlets. The first code contains information on excise duty; the second code is the individual identifier within EGAIS, which reports to the database the type, name and manufacturer of the alcoholic beverage, date of application for the barcode, name of the organization to which the barcode was assigned and the date of assignment, alcohol content of the alcoholic products, and volume of the container.

In this way, the system serves several different purposes at the same time. First, it gives end consumers information about the origin of purchased products; second, it ensures enforcement of current alcohol legislation and collects very precise data on the alcohol market; and finally, it ensures collection of alcohol tax, partially through the pressure the system puts on producers of unrecorded alcohol. EGAIS is a unique surveillance system that collects data at an unprecedented level of detail, as it traces the pathway of every single bottle from producer to carrier, seller and end consumer.

From 2010, the proposed evidence-based measures were implemented in a stepwise manner: first, in 2010, with an increase in minimum prices for vodka; then, in 2011–2012, with restrictions on locations where alcohol could be sold and public places where alcohol could be consumed; and finally, in 2012, with the introduction of a federal ban on alcohol sales between 23:00 and 08:00. At the same time, the regions retained the right to impose longer time restrictions on alcohol sales. Also, from 2011, the MUP for spirits with an ethyl alcohol content of more than 28% was raised gradually each year, with the exception of 2015, when vodka prices were temporarily decreased and the MUP for other spirits frozen.

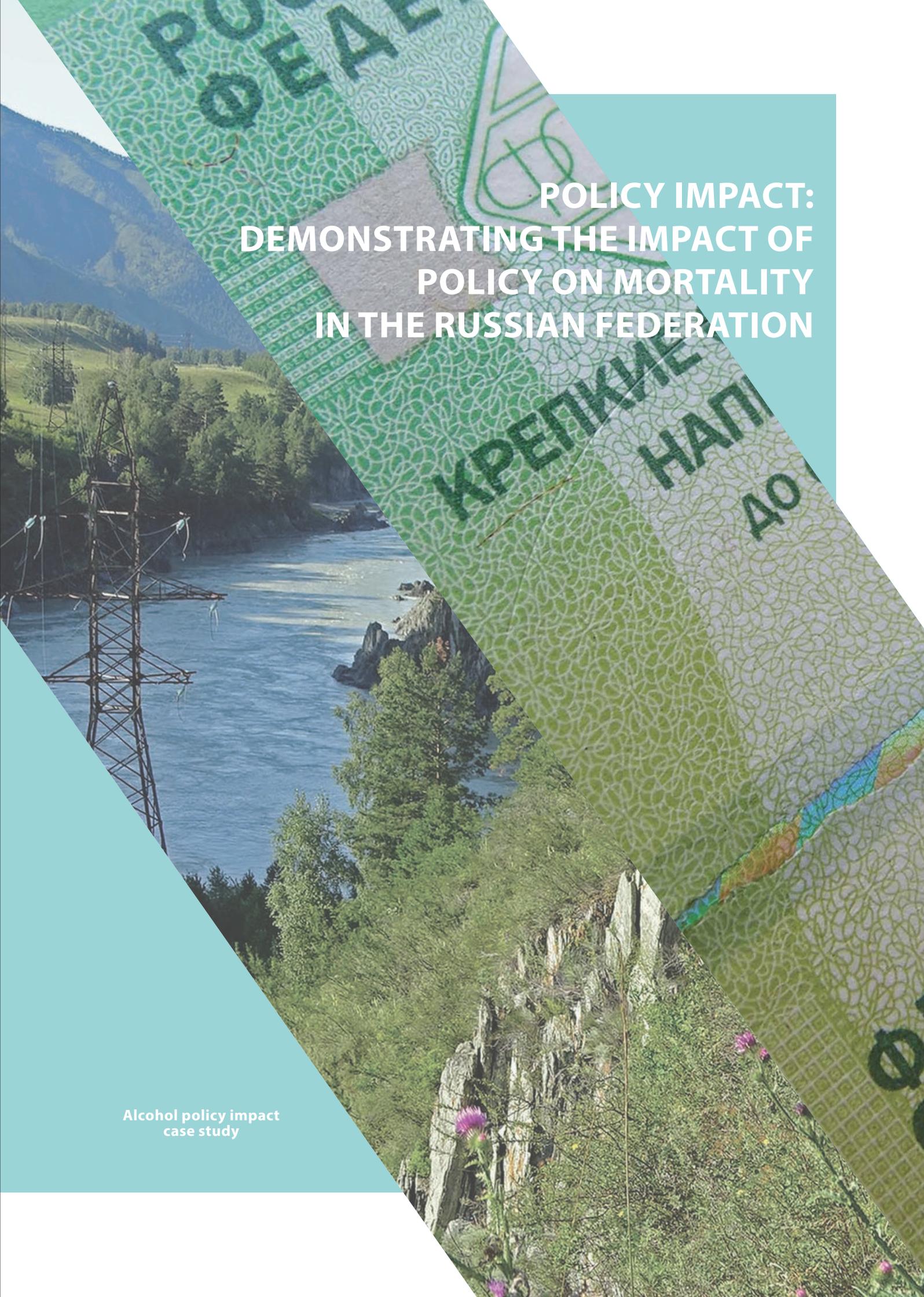
In a broader context, in the same years, 2009–2010, the Russian Federation adopted a package of new strategic documents on the reduction of smoking and on healthy nutrition, in addition to certain reforms of the health care system. Therefore, these years can be seen as an important watershed not only for alcohol policy but for health policy and health care in general, preparing the way for the healthy lifestyle strategies and projects of the next policy phase.

7.4 FOCUSING ON HEALTHY LIFESTYLES AND REDUCING MORTALITY FROM NCDs AFTER 2014

While the 2010–2020 long-term strategy was intended to reduce harmful use of alcohol and to prevent

alcohol use disorders in the population, the aim of recent legislation in the Russian Federation has been to achieve a general reduction in alcohol consumption, as part of the development of healthy lifestyles and prevention of NCDs – first and foremost, diseases of the circulatory system. In 2017 the national priority project “Formation of a Healthy Lifestyle” was launched, with increases in the proportion of citizens committed to healthy lifestyles set as goals to be achieved by 2020 and 2025. In 2018 a series of presidential decrees was issued to facilitate implementation of the priority project, which focused not only on alcohol consumption but also on tobacco use, nutrition and physical activity.

Additional measures against counterfeit and surrogate alcohol were also taken after the Irkutsk incident in 2016/2017, in which about 120 people were poisoned with surrogate alcohol that contained methanol instead of ethanol, more than 70 of whom died as a consequence.⁷¹ New legislation in 2017 introduced higher penalties for producers of counterfeit alcohol, up to imprisonment if the counterfeit product had caused death or serious health damage.³⁹ Also, sale of certain alcoholic products that are often misused as surrogate alcohol was temporarily forbidden in 2017–2018,⁴⁰ and permanent legislation was introduced in December 2018.¹¹¹



**POLICY IMPACT:
DEMONSTRATING THE IMPACT OF
POLICY ON MORTALITY
IN THE RUSSIAN FEDERATION**

Alcohol policy impact
case study

8. POLICY IMPACT: DEMONSTRATING THE IMPACT OF POLICY MEASURES ON MORTALITY IN THE RUSSIAN FEDERATION

The close association between alcohol consumption and mortality in the Russian Federation has been shown repeatedly in several studies using different methodologies. Alcohol has thus been established as one of the main risk factors and contributors to Russian mortality – most importantly, mortality of the working-age population.^{11,19,37,53,106,112,113}

As a consequence, not only a close association between effective alcohol control policies and mortality would be expected, but also a causal link. To test this relationship, periods with different intensity of alcohol policies (**Table 2**) were determined a priori, and an interrupted time series analysis was conducted to test whether the intensity of alcohol policies was associated with different trends in mortality (**Fig. 13**).

As **Fig. 13** shows, at times of no or less intense political activity, the mortality rates for both sexes increased. Periods with more intense policy action were marked by decreasing mortality rates. For example, during periods when stricter pricing policies and limitations on availability of alcohol were introduced, mortality rates saw a steeper decrease than during periods when other measures were taken. As predicted, the observed changes were stronger for men than for women.

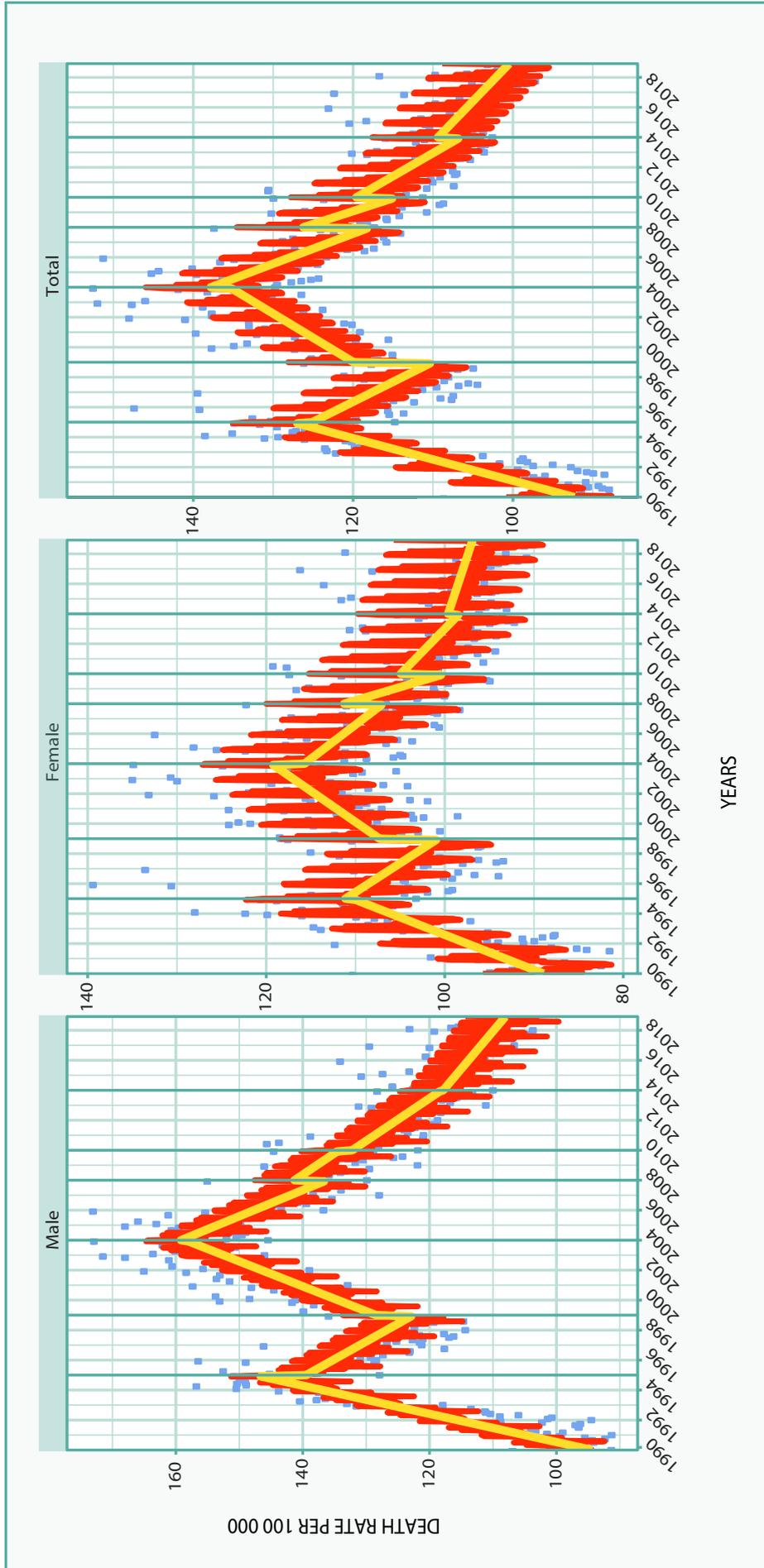
The analyses performed clearly demonstrate the impact of alcohol control policies on all-cause mortality for the Russian Federation and hence on the increase in life expectancy. As is evident from the data (**Table 2; Fig. 13 and 14**), alcohol control policies or the lack thereof were crucial in shaping alcohol consumption as well as mortality at the population level.

Although both alcohol consumption and all-cause mortality had already started to decline by 2003, prior to the very intense phase of newly introduced alcohol policies in the period 2004–2007, the parallel trends of the three outlined dimensions (males, females, total alcohol consumption) are nevertheless impressive.

These declines might also be attributable to the long-term effects of previous measures. Further analyses are therefore needed to differentiate the relative effects of single policy measures. Clearly, a measure such as a ban on alcohol advertising will act from its original implementation until it is revoked, producing a lasting effect and thus having an impact on all periods thereafter (assuming it is enforced with the same intensity). Other measures, such as tax increases and MUP, will weaken in their effectiveness over time on account of inflation, unless they are already adjusted for inflation in the initial law. All these considerations are necessary to draw a detailed picture of the impact of different alcohol control policy measures in the Russian Federation. However, this was beyond the scope of the present case study.

Also, various other factors had some influence on the documented mortality trends over time. During the analysed period, the Russian Federation was experiencing substantial fluctuations in GDP: steady growth from 1999 until the 2008 global economic crisis; a period of growth between 2009 and 2013; and then another from 2016, following recovery from the Russian financial crisis. The population's access to health care has also improved over time. For instance, access to high-tech cardiovascular revascularization procedures for treatment of acute myocardial infarction has improved considerably in recent years, as part of the country's response to high rates of cardiovascular mortality. Furthermore, the policy concepts discussed above on the development of healthy lifestyles in the population were addressing other risk factors, such as nutrition and tobacco. In the case of the latter, it is worth mentioning that the Russian Federation adopted a very comprehensive tobacco control law in 2013, which increased taxes, limited availability, and provided for smoke-free public places and recreational areas. Although tobacco smoking has a longer-lasting impact on population mortality than alcohol, the adopted measures might also have played a role in the discussed trends.

Fig. 13. Association between the a priori defined periods with different levels of policy intensity and mortality rates, as modelled in the interrupted time series analysis^a



^a Observed (blue), fitted (red) and deseasonalized fitted (gold) plots of final models for women, men and total population on all-cause mortality (crude death rate per 100 000 population).
Source: Federal State Statistics Service.²⁰

Table 2. Policy timeline, assumed intensity of measures, and changes in mortality rates

Time period	Hypotheses	Empirical results for trends in mortality and interpretation (in bold)
<p>1990–1994</p> <p>1990 Hours of sale for alcohol are extended, repealing previous restrictions on physical availability of retailed alcohol that were introduced as part of the Gorbachev anti-alcohol campaign in 1985.</p> <p>1992 Abolition of the Soviet state monopoly on alcoholic products and state price regulation; real price of alcohol decreases. Period of decreasing gross domestic product (GDP).</p>	<p>No or ineffective measures; loosening of measures that existed in the Soviet Union.</p>	<p>Serves as baseline for the interrupted time series model, characterized by significantly increasing mortality trends for all three dependent variables (women, men, total mortality rates per 100 000).</p> <p>Inactivity was associated with a marked increase in mortality rates, twice as pronounced in men as in women.</p>
<p>1995–1998</p> <p>1995 Federal Law No. 171 on alcohol (licensing of producers and sellers, limits on imports, ban on sale of spirits in kiosks).</p> <p>1995 Federal Law No. 108 on advertising: restrictions on alcohol advertisement.</p> <p>1995 Introduction of excise stamps.</p> <p>1996 Introduction of special anti-counterfeit stamps.</p> <p>1997 Sale of alcoholic beverages with an alcohol content > 12% is forbidden in kiosks and smaller retail outlets.</p> <p>1997 New excise stamps.</p> <p>1998 Further restrictions on alcohol advertisement; new excise stamps. Through entire period GDP decrease levelled off.</p>	<p>Intense activity; implementation of evidence-based alcohol policies.</p>	<p>Mortality rates decreased significantly for all three dependent variables, twice as much for men (–1.2 per 100 000 per year) as for women (–0.6 per 100 000 per year).</p> <p>Introduction of intense, evidence-based alcohol policy measures contributed to a reversal in mortality trends; as predicted, with higher effects for men than for women.</p>
<p>1999–2003</p> <p>2000 Introduction of excise stamps imported from CIS (Commonwealth of Independent States) countries.</p> <p>2000 Formation of Rosspirtprom, a state-owned distillery enterprise with about 60% market share.</p> <p>2003 Increasing the maximum permissible blood alcohol concentration (BAC) from 0.2 ppm to 0.5 ppm.</p> <p>2003 MUP for vodka is introduced (not adjusted for inflation for the next years). Through entire period, increases in GDP.</p>	<p>No or few evidence-based alcohol measures, but restructuring of the alcohol market takes place. Loosening of drink-driving legislation.</p>	<p>As expected, no significant differences between the increases in reference period and this period. Overall, mortality rates reach their peak at the end of this period and the year thereafter.</p> <p>Inactivity in or worsening of alcohol policy legislation, which could immediately impact on mortality, led to an adverse trend reversal: mortality rates increase again.</p>
<p>2004–2007</p> <p>2004 Further restrictions on beer advertising and introduction of health warnings; penalties for drink-driving increased.</p> <p>2005 50% tax increase on ethyl alcohol; restrictions on beer sales and consumption.</p> <p>2006 Introduction of mandatory denaturing agents; new excise stamps; the EGALS system for alcohol producers; regional restrictions on time of alcohol sales; restrictions on alcohol advertisement; special requirements for alcohol producers to obtain licences.</p> <p>2007 Sale of alcoholic beverages over the internet is forbidden. Legislation on some unrecorded alcohol is loosened again. Through entire period, increases in GDP.</p>	<p>Very intense activity; introduction of various evidence-based measures, mainly targeting unrecorded alcohol.</p>	<p>Mortality rates decreased significantly for all three dependent variables, again more than twice as much for men (–1.4 per 100 000 per year) as for women (–0.5 per 100 000 per year).</p> <p>Introduction of intense evidence-based alcohol control policies contributed to another trend reversal in mortality rates, this time causing marked decreases in mortality rates for men and women; as predicted, stronger in men.</p>

<p>2008–2009</p> <p>2008 Lowering of maximum permissible BAC from 0.5 ppm to 0.3 ppm.</p> <p>2009 Formation of the Federal Service for Alcohol Market Regulation, with mandate to develop alcohol policy and responsibility for implementing EGAIS.</p> <p>2009 Publishing of long-term strategy paper to reduce alcohol consumption, alcohol-related harm and alcohol dependence at the population level (for the period 2010–2020). Global economic crises; decrease in GDP.</p>	<p>Lower intensity of action, but continuation of measures from 2004–2007.</p>	<p>Mortality rates decreased significantly for all three dependent variables, but no marked difference between men and women.</p> <p>Mortality rates continued to decrease; however, no new impact of alcohol control policies. As predicted, mortality decreases were much less sex-specific.</p>
<p>2010–2013</p> <p>2010 Zero BAC tolerance introduced.</p> <p>2010 Gradual increase in excise taxes on alcoholic beverages at a pace exceeding inflation.</p> <p>2010 MUP for vodka is raised and a long-term strategy for increasing MUP for spirits (>28% alcohol content) and beverage ethanol is adopted (effective from January 2011).</p> <p>2011 Nationwide time restrictions for off-premises alcohol sales (night ban 23:00–08:00); regions can have longer bans; further restrictions on alcohol advertising. Restrictions on certain locations where alcohol can be sold and consumed (e.g. public transport, stadiums).</p> <p>2012 Further restrictions on locations of alcohol sale and ban on public consumption; new excise stamps; ban on alcohol advertising on the internet.</p> <p>2013 Beer is officially recognized as an alcoholic beverage; sale of beer at night and in kiosks is prohibited.</p> <p>Increase in GDP over entire period.</p>	<p>Very intense activity; introduction of various evidence-based measures, mainly targeting availability and affordability (pricing measures) of alcohol.</p>	<p>Mortality rates decreased significantly for all three dependent variables, again more than twice as much for men (–1.2 per 100 000 per year) as for women (–0.5 per 100 000 per year).</p> <p>Introduction of new intense evidence-based alcohol control measures contributed to decrease in sex-specific mortality rates.</p>
<p>2014–2018</p> <p>2014 Advertising of beer is allowed during sports competitions.</p> <p>2015 Advertising of domestic wine is allowed again (certain conditions apply).</p> <p>2015 MUP for vodka is not raised but decreased.</p> <p>2015 Alcohol excise tax is frozen.</p>	<p>Lower-intensity policies and loosening of previous policies (MUP long-term strategy abandoned).</p>	
<p>2016 MUP for vodka is raised again, but at a lower level compared to 2013; MUP for sparkling wine is introduced.</p> <p>2016 Implementation of EGAIS for wholesale and retail sales.</p> <p>2017–2018 Temporary ban on sale of nonbeverage alcoholic products (surrogates); permanent ban on products with an alcohol volume >28% (in 2018).</p> <p>2018 Anti-counterfeit legislation is introduced.</p> <p>2018 Increase of the maximum permissible BAC while driving to 0.3 ppm.</p> <p>2016–2018 MUP for spirits and sparkling wine, as well as excise tax on all alcoholic beverages, is raised again, but the real-price rise is lower than for the 2010–2013 period. Decrease in GDP between 2013 and 2016; increase in GDP since 2016.</p>	<p>Further introduction of measures, mainly targeting unrecorded alcohol. MUP long-term strategy reinstated.</p>	<p>Continued decreases in mortality rates, albeit a bit slower overall, for all three dependent variables; again, more than twice as much for men (–1.1 per 100 000 per year) as for women (–0.4 per 100 000 per year).</p> <p>Introduction of mixed, but overall positive, alcohol control policies were associated with an overall flattening of decreases in mortality rates.</p>

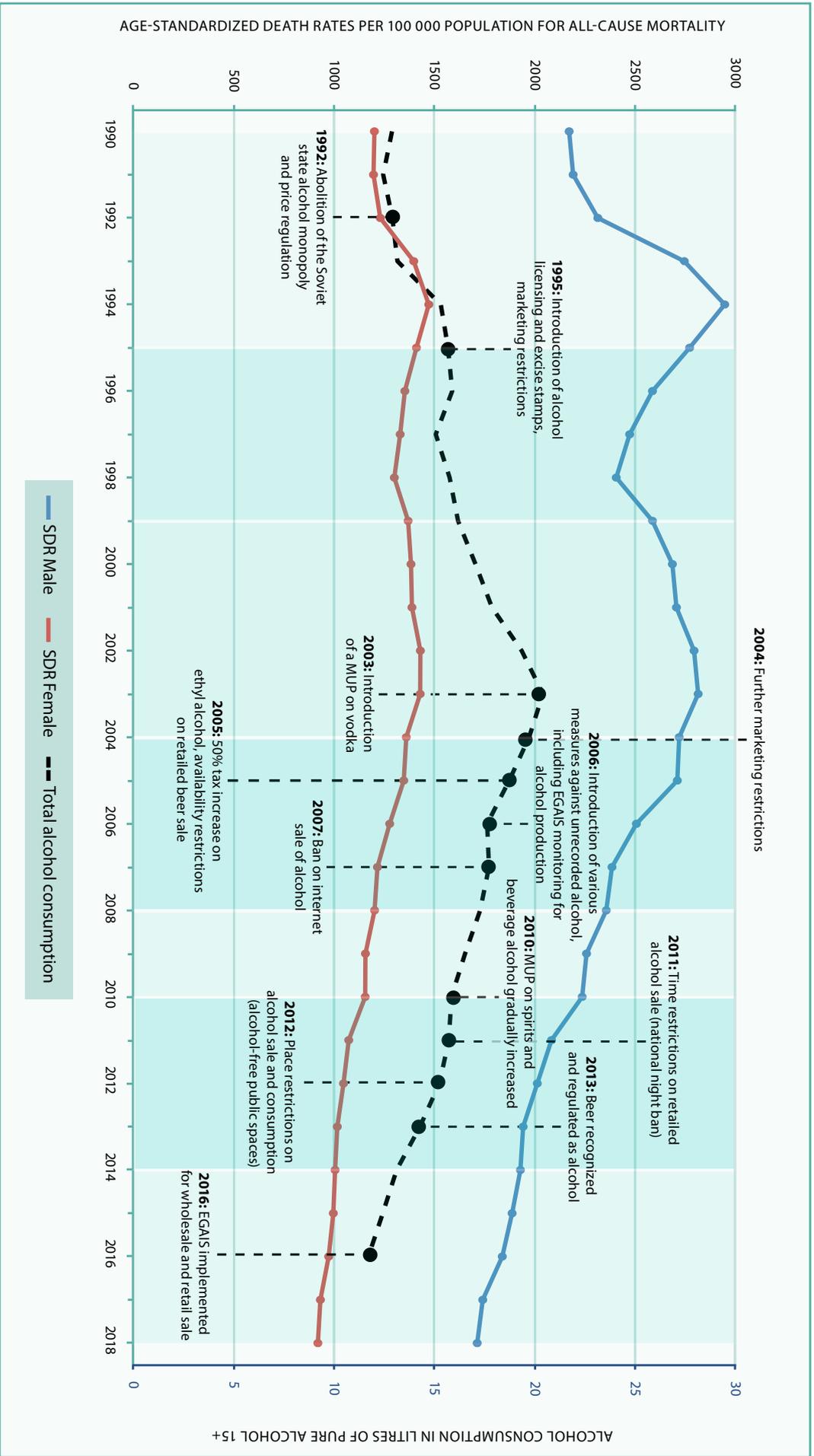


Fig. 14. Effect of important alcohol control measures in the Russian Federation on total alcohol consumption and all-cause mortality in men and women^a

^a Left scale: all-cause mortality.
 Right scale: total alcohol consumption.
 Source: *Global status report on alcohol and health, 2018*,²⁴ Manthey et al. (2019);²⁵ Federal State Statistics Service.²⁰
 For the overview of different policy measures and their intensity, please see the policy timeline in Table 2

LESSONS LEARNED, FUTURE CHALLENGES AND THE WAY FORWARD



Alcohol policy impact
case study

9. LESSONS LEARNED, FUTURE CHALLENGES AND THE WAY FORWARD

9.1 LESSONS LEARNED

The example of the Russian Federation shows how a country with one of the highest levels of alcohol consumption and alcohol-attributable harm in the world was able to reverse mortality trends to a considerable degree by implementing a strategy, sustained over the course of the last two decades, of reducing alcohol-attributable harm through a series of effective and evidence-based alcohol control policies. In this regard, the Russian Federation is undoubtedly the most prominent case of a country from the eastern part of the WHO European Region that put serious effort into reducing hazardous drinking at the population level and changing overall drinking patterns. Other outstanding examples of successful policy responses in the reduction of alcohol consumption and alcohol-attributable harm in the Region are the Baltic countries Estonia and Lithuania.^{117,118}

International experience shows that the strongest and most cost-effective strategies to reduce alcohol-attributable harm include measures aimed at reduction of the affordability of alcohol, such as taxation and alcohol price increases, restrictions on the physical availability of alcohol and on alcohol marketing, and drink-driving countermeasures, as well as brief interventions with at-risk drinkers and treatment of individuals with alcohol use disorders.¹⁰⁸ In the unique case of the Russian Federation, all of the above-mentioned strategies were implemented over time and had a positive impact on drinking and mortality patterns.

It is worth noting that these policies were driven by several different government agencies, including those with financial interests, such as the Federal Service for Alcohol Market Regulation and Rosspirtprom. This demonstrates the need for alliances of different government bodies to take on the task of reducing alcohol-attributable mortality and the resulting loss in productivity, ranging from the Ministry of Health to the Ministries of Economic Development and Finance. In this way, the case of the Russian Federation further highlights the extent to which alcohol policies need to be intersectoral and to target the alcohol market and the entire alcohol supply chain, the drinking environment and social context and the health system, as well as individual drinkers, in order to be effective and to avoid unintended consequences.

As the sustained measures against unrecorded alcohol show, it is crucial to eliminate all possible loopholes in the legislative base that would allow a restructuring of the unrecorded alcohol market rather than its elimination.⁴⁰ The important socioeconomic role of unrecorded alcohol should not be underestimated, especially when

it comes to increasing alcohol taxes and, subsequently, prices. One of the arguments often brought forward, especially by the alcohol industry, is that considerable price increases and restrictions on times and locations of retail alcohol sales might stimulate consumption of unrecorded alcohol.¹¹⁹ In the case of the Russian Federation, no such tendency was observed. On the contrary, available data demonstrated a general decline in consumption of both recorded alcoholic drinks and homemade unrecorded alcohol.^{33,45,120} One important exception might be the study of Skorobogatov (2014),⁴⁷ which suggests that the night ban on alcohol sales affected different consumer groups in different ways: unemployed individuals did partly substitute homemade samogon for vodka following the sales restrictions, whereas no such substitution effect was found in employed individuals, whose samogon consumption decreased. Also, unemployed individuals were more likely to be regular drinkers and to consume spirits and other alcoholic beverages in higher quantities, pointing to the potential influence of drinking patterns and possible alcohol use problems. Such findings call for additional studies, which would collect data on drinking patterns in the most vulnerable population segments and suggest policy measures and strategies tailored to meet their high-risk behaviours and needs. In the final analysis, the Russian Federation's fight against consumption of unrecorded alcohol – most importantly, alcohol from illicit sources – is not yet over, as a considerable proportion of the alcohol consumed remains unrecorded.²⁴

Good implementation and enforcement of the laws once they have been adopted is crucial, not only in relation to unrecorded alcohol. For instance, the experience with expansion of the EGAIS system into retail sales of alcoholic beverages and the stepwise increase in penalties and fines for drink-driving offences demonstrates the importance of effective systems to monitor the alcohol market and of strong enforcement – even if these are often hard to assess and measure.

Most importantly, the experience gathered by the Russian Federation demonstrates that implementation of effective and evidence-based measures should not be limited to episodic and short-lived campaigns. This had already been shown by the country's rich history, but the experience since 1990 has provided new and dramatic support for this.

In fact, the adoption of alcohol policies over a longer period of time might have initiated an important shift in the public perception of alcohol, denormalizing to some degree not only excessive and harmful alcohol

consumption, but also alcohol consumption as such. Restrictions on alcohol marketing, on consumption of alcohol in public places and during special events, and on hours of sale and on places where alcohol can be sold are all powerful tools in creating and fostering the common perception and norm that alcohol is not an ordinary commodity. The experience of the Russian Federation shows how this change in attitude came about slowly, alongside the changing legislative framework.

National opinion polls on alcohol demonstrate that the implemented policy measures slowly but steadily gained greater public support in the course of the last decade; this is true both of more popular measures, such as promoting a healthy, sober lifestyle (supported by 39% of the population in 2005 and by 54% in 2018) and of the least popular measures, such as alcohol price increases (supported by 13% in 2005 and by 21% in 2018). Support for raising the national legal minimum age for purchasing alcohol from 18 to 21 remained at the same level of about 55–60% over the years, while support for restricting alcohol sales in the morning rose from 25% to 37%. On the other hand, approval of a total ban on any kind of alcohol advertising dwindled from 55% to 49%. Also, the proportion of people who believe that all types of alcohol negatively affect health to some degree fell substantially from 80% in 2017 to 55% in 2018, highlighting the need for a clearly communicated public health position on this question.⁸⁰ However, given that there were some changes in methodology, these public polls are difficult to interpret over time.¹²¹

The documented evolution of public opinions and attitudes towards alcohol policy corresponds to patterns found in many other countries, highlighting the fact that shifts in public opinion and legislative changes can reinforce each other. The current state of research shows that “lighter” and more popular measures, such as education and information campaigns and other kinds of intervention at the level of the individual, are not very successful if there is no corresponding legal framework at the level of public policy and health to support the introduction of less popular measures, such as increases in alcohol prices.¹⁰⁸ The changes in the Russian Federation discussed above suggest that at least some of the policies that were adopted gained more support over time as compared to policies that were discussed as an option but were not yet in place. This corresponds to similar experiences in other countries in the field of tobacco policies – for instance, the fact that more people believe that second-hand smoke is harmful following enactment of smoking bans.¹²²

9.2 FUTURE CHALLENGES AND THE WAY FORWARD

Despite the important achievements of alcohol policy described above, total alcohol consumption in the

Russian Federation seems to have stagnated in recent years at the level of about 11–12 litres of pure ethanol per capita. This is still one of the highest consumption levels worldwide and contributes to a substantial burden of disease and premature mortality. Meanwhile, there are some worrying signs in relation to mortality and life expectancy indicators, and the positive trends that have been observed seem to be flattening out in the most recent years.

One of the reasons for this may be the Russian Federation's decision to suspend, after 2015, indexing of excise taxes on alcoholic beverages, which had meant that they kept pace with inflation; this suspension resulted in an increase in affordability of alcoholic beverages over time. Other possible factors may be the temporary abandonment of raising MUPs on spirits (there was even a decrease for vodka in 2015) and a loosening of restrictions on advertising beer and wine in 2014. Appropriate pricing policies, alongside restrictions on alcohol availability and marketing, are areas where further steps could be considered in order to achieve a further reduction in overall alcohol consumption. In the area of pricing policies, for example, there is a clear need to ensure that the alcohol tax is adjusted annually for inflation, which is not currently the case in the Russian Federation. The introduction of a duty escalator, bringing an annual increase in alcohol excise duty above inflation, would be the best way to ensure that the existing taxation mechanisms remain effective over time. Other pricing policies could also be considered, such as expansion of the MUP regulations, but more studies on the best model to implement would be advisable.

Further reduction in heavy episodic drinking – most urgently, of spirits – seems to be a priority, as this drinking behaviour is a major risk factor for and determinant of mortality due to cardiovascular diseases and injury in the Russian Federation.^{123,124} As previously discussed, the Russian Federation has experienced a steady downward trend in cardiovascular mortality since 2005. The most pronounced drops were observed for men in the 15–54 age group in the years 2005–2006 and 2011–2012,¹²⁵ periods of time in which significant alcohol control measures were implemented: the introduction of important anti-counterfeit and surrogate measures in 2006, national restrictions on retail hours of sale for alcohol in 2011, and increases in alcohol MUPs from 2010. However, cardiovascular mortality remained the major cause of all deaths in the Russian Federation, accounting for 55% of all-death mortality in 2017.¹²⁶ Further changes in drinking patterns remain a challenge, especially given the complex interactions between heavy episodic drinking (including the hazardous drinking pattern of *zapoi*), consumption of cheap alcohol surrogates and socioeconomic factors.

Enforcement issues have frequently been reported, specifically in relation to illegal sales of alcohol – for instance, sales of smuggled or counterfeit alcohol, sale of untaxed alcoholic products via vending machines, kiosks or the internet, and violations of the ban on sales of alcoholic beverages at night.^{39,58,127,128} Better enforcement of existing measures is urgently needed, along with continued implementation of appropriate measures to further decrease and eliminate the various illegal and semi-legal markets of unrecorded alcohol in the Russian Federation. For instance, the Federal Service for the Oversight of Consumer Protection and Welfare (Rosпотребнадзор) issued several temporary bans on the sale of non-beverage alcoholic products, following the mass methanol poisoning with cosmetic lotions in the Siberian city of Irkutsk in December 2016 and January 2017.⁷¹ As various public health experts have suggested, appropriate taxation or denaturing of these products would be a better long-term solution than a temporary ban. In line with this criticism, in 2018 a ban was imposed on retail sale of alcoholic nonbeverage products with an ethyl alcohol content of more than 28% at a price below the established MUP for alcoholic beverages. However, the legislation can still be seen as inconsistent, as neither medicinal compounds are covered by the new policy, nor alcoholic nonbeverage products with an ethyl alcohol content of 28% or less. Adequate taxation and expanding EGAIS monitoring to cover all products that contain non-denatured ethanol are potential measures to address this gap.

Another important area where more action is needed is monitoring and surveillance of alcohol consumption and alcohol-attributable harms. Here, expansion of EGAIS to cover all alcoholic beverages and other alcoholic products, including cosmetic alcohols and medicinal compounds that are still misused as surrogate alcohol, would be a useful strategy serving several purposes simultaneously. Better monitoring and enforcement, using EGAIS as a tool of modern surveillance, has the potential to reduce the share of the market taken by illegal cross-border sales of alcohol – a particularly pressing current challenge in the recently formed Eurasian Economic Union, to which the Russian Federation belongs.

Finally, specific strategies directed at high-risk factors are needed to reduce the risks of developing alcohol use disorders. For instance, a low age of drinking initiation has been highlighted as an important risk factor for developing hazardous alcohol use and alcohol use disorders. Therefore, strict regulation and enforcement

of a national legal minimum age for off-premise and on-premise sales of alcoholic beverages is an important countermeasure. Another effective strategy is the screening and brief intervention (SBI) approach, which was developed to reduce alcohol consumption to lower risk levels and to deliver early interventions for individuals at risk of developing substance use disorders. In the Russian Federation, there are a number of barriers at the primary health care level that impede provision of interventions for people who drink alcohol with harmful consequences.^{129,130} This problem is not unique to the Russian Federation, but the structure of the Russian health care system is such that any kind of treatment for alcohol use disorders, including harmful use of alcohol, can be provided only by specialized narcology services, with all their inherent structural and social barriers (described in **Box 2** above). Adaptation of the SBI model to the framework of the Russian health care system offers the prospect of bridging the gap between primary and specialized health care and raising awareness of alcohol-related harm at the level of primary health care providers. In this regard, the Russian Federation can again be seen to be setting an example to be followed by others, as it is one of the first countries in the eastern part of the WHO European Region to adapt the SBI approach to the specific challenges of the local system.

Overall, strengthening the responsiveness of the health care system can be seen as the natural next step for a country that has already introduced various measures in the areas of the “best buys” policies.²⁴ In this way, the system can further support changes in patterns of consumption, lower hazardous drinking, and thereby reduce the burden of harm and disease stemming from alcohol at the population level.

This case study focusing on the impact of alcohol policy in the Russian Federation highlights the importance of implementing evidence-based alcohol control policies that are guided by scientific evidence and of setting public health priorities that are informed by historical experience and adopted gradually over a relatively long period of time. This study shows that such policies have been effective in reducing alcohol consumption and alcohol-attributable mortality, thereby leading to substantial increases in life expectancy. Further strengthening implementation of these policies will help ensure that the best possible results in preventing diseases and injuries are achieved, thus reducing the burden of disease and improving the health and well-being of the population of the Russian Federation.



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ANNEX 1

DESCRIPTION OF AVAILABLE MORTALITY DATA IN THE RUSSIAN FEDERATION

The mortality analyses provided in the current case study cover a time period of almost 30 years, during which substantial changes have taken place in the Russian Federation, including changes in mortality registration and coding. Until 1998 there were several Soviet classification systems still in use. From 1999 a Russian Abridged Classification based on the 10th revision of the International Classification of Diseases (ICD-10) was adopted, which has since been modified several times. The abridged version does not feature separate, detailed data for each three-digit ICD-10 code and summarizes various items into aggregated categories, which makes nuanced trend analysis of cause-specific mortality very difficult and in some cases impossible.

The Russian Fertility and Mortality Database,¹ which was the source for a more thorough analysis of causes of death, features detailed data on various ICD-10 codes and aggregated categories, which allows trends to be examined. The database also contains codes for 100% alcohol-attributable causes of death for certain periods:

from 2006, data on alcoholic cardiomyopathy, alcohol-induced chronic pancreatitis and degeneration of the nervous system due to alcohol use are collected separately, and from 2011 there are separate codes for alcoholic polyneuropathy, alcoholic myopathy, alcoholic gastritis and fetal alcohol syndrome. However, data on the latter remain fragmented or are not available in sufficient quantity to allow proper interpretation. Moreover, certain previously aggregated categories are coded in greater detail after 2006/2011, making reconstruction difficult.

All of the above-mentioned changes produced distortions in time series for numerous causes of death and required a reconstruction of a coherent data series. This makes interpretation of trends for the analysed time period difficult, as it is not clear how far the observed trends fully reflect actual changes in mortality patterns. Further methodological details on the reconstruction of a coherent cause-specific mortality series can be found in Danilova (2018).²

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All websites were accessed on 4 September 2019.

ANNEX 2

OVERVIEW OF ALCOHOL CONTROL MEASURES, 1990–2018

1990–1994 PERIOD OF LOOSENING STATE CONTROL: EXISTING ALCOHOL POLICIES ARE REPEALED, NO NEW POLICIES ARE INTRODUCED

1990

Previous time restrictions on the sale of alcoholic beverages imposed by the Gorbachev anti-alcohol campaign are repealed.

1992

Prices on alcoholic beverages are no longer fixed by the government and the state monopoly on the production and sale of alcohol is abolished.

1994

The Soviet network of occupational therapy rehabilitation centres is liquidated; about 150 000 individuals are released from forced treatment without any alternative forms of treatment being offered.

1993–1996

Various organizations use special presidential decrees for tax deduction in order to import large volumes of alcoholic beverages without paying import duties.

1995–2007 RESTRUCTURING AND REGULATION OF THE ALCOHOL MARKET: ALCOHOL CONTROL POLICIES TARGET THE ALCOHOL MARKET

1995

Introduction of Federal Law No. 171 “On State Regulation of Production and Turnover of Ethyl Alcohol, Alcohol and Ethanol-containing Production and Restrictions of Consumption (Drinking) of Alcoholic Products”, the main instrument of alcohol policy, defining the main provisions of alcohol production and alcohol sale.

1998

Further marketing restrictions on spirits

2000

Formation of the Russian Federation’s state-owned alcohol enterprise Rosspirtprom, with the subordination of 200 distilleries and liquor enterprises; one of its main aims is to decrease the proportion of unrecorded alcohol on the market.

2000–2003

Introduction of various generations of excise stamps.

2003

The maximum permissible blood alcohol concentration (BAC) level for drivers is increased from 0.02% to 0.05%.

2004

Penalties for drink-driving are increased.

2004

Advertising restrictions on beer are introduced.

2004/5

Alcohol excise taxes are increased by 50%.

2005/6

Introduction of new alcohol excise stamps, which are harder to falsify, and use of the old stamps is forbidden.

2006

The Unified State Automated Information System (EGAIS) is introduced, which is a new monitoring system to collect data on the volumes of alcohol produced, including use of raw materials and leftovers, as well as on imports of alcoholic beverages.

2005/6

Minimum share capital of producers of ethyl alcohol and spirits is significantly increased.

2006

New obligatory denaturing additives (gasoline, kerosene, crotonaldehyde and denatonium benzoate) are introduced; usage of the previously used ineffective denaturing additives is forbidden to prevent misuse of surrogate alcohol.

2005/6

As a result of EGAIS and the increased minimum share capital regulation, small producers of alcohol, who are more often engaged in the production of undeclared/counterfeit alcoholic products, are pushed out of the market.

2006

New restrictions on alcohol advertising are imposed, especially on billboards in public spaces.

2006

Regional authorities are given the right to impose restrictions on hours of off-premises sales of alcoholic beverages containing more than 15% alcohol and to determine the minimum share capital for retail sellers.

2007

A list of alcohol-containing perfumery and cosmetic products is approved, which are exempted from Federal Law No. 171 on alcohol regulation and thus from taxation and EGAIS monitoring; this allows misuse of these products as surrogate alcohol.

2007–2013 FORMATION OF A LONG-TERM STRATEGY TO REDUCE HARMFUL USE OF ALCOHOL: ALCOHOL CONTROL POLICIES TARGET THE INDIVIDUAL CONSUMER

2007

Formation of the public association Centre for Development of a National Alcohol Policy, which advocates for legislative measures to reduce the overall level of alcohol consumption in the population.

2008

Formation of the Federal Service for Alcohol Market Regulation (Rosalkogolregulirovanie), with a mandate to develop state policies in the field of production and turnover of ethyl alcohol and alcoholic beverages and the right to control the implementation of alcohol policies.

2008

The maximum permissible BAC level for drivers is lowered from 0.05% to 0.03%.

2009

EGAIS is redirected to the Federal Service for Alcohol Market Regulation, which decides to additionally develop and deploy it for the retail sale of alcoholic beverages (including beer) in order to monitor the whole supply chain.

2009

Penalties for drink-driving are harshly increased, especially for cases that result in the injury or death of another person.

2009

The Civic Chamber of the Russian Federation publishes a report on the consequences of alcohol misuse in the population and suggests evidence-based countermeasures.

2009

The Russian government presents a strategy paper to reduce harmful use of alcohol/alcohol-related harm and to prevent alcoholism at population level for the period 2010–2020. Reducing the availability of alcohol and raising prices are suggested as the main measures, alongside suggestions to change drinking patterns, promotion of a healthy lifestyle and early interventions.

2010

Zero BAC tolerance for drivers is adopted.

2010

Minimum prices of spirits and beverage ethyl alcohol increase gradually from 2010 (with the exception of 2015, when prices fell temporarily).

2011/12

Restrictions are imposed on alcohol sale locations, as well as on spaces where alcohol consumption is allowed.

2011

A federal ban on off-premises sales of alcoholic beverages between 23:00 and 08:00 is introduced; regions are allowed to enforce longer bans.

2012

A ban on beer sales in kiosks is introduced.

2013

Beer is recognized as an alcoholic beverage subject to Federal Law No. 171.

2013

Fines and penalties for drink-driving are increased.

2014–2018 DEVELOPMENT OF HEALTHY LIFESTYLES IN THE POPULATION: ALCOHOL CONTROL POLICIES BECOME PART OF A NATIONAL PLAN TO REDUCE MORTALITY FROM NONCOMMUNICABLE DISEASES (NCDs)

2014

The national programme “Health Development” is approved by a government decree, setting the foundations for a system of monitoring harmful use of alcohol and promoting healthy lifestyles in the population at national and regional levels.

2014

Formation of the Governmental Commission for Raising Competitiveness of and Regulating the Alcohol Market. A task force is established within this commission.

2015

Penalties for drink-drivers who are repeat offenders are increased.

2015

The action plan (roadmap) to stabilize the situation amid competing developments on the alcohol market is approved.

2016

A minimum unit price on sparkling wine is introduced.

2016

An expert advisory group of WHO representatives, international consultants and leading Russian experts develops a train-the-trainer toolkit for delivering screening and brief intervention for hazardous and harmful alcohol use in the Russian Federation. The development of the toolkit is the beginning of an international effort to implement the WHO Screening and Brief Intervention for alcohol strategy in the Russian Federation.

2017

The Ministry of Health publishes a draft of the inter-departmental Strategy for the Formation of a Healthy Lifestyle, Prevention and Control of Noncommunicable Diseases for the Period up to 2025, which takes into account evidence-based WHO recommendations and guidelines to prevent and control NCDs. The documents state that the current alcohol control measures are insufficient and calls for additional actions: to further raise alcohol prices, to reduce availability of alcoholic beverages by limiting places and hours of sale, and to limit alcohol advertising, especially among children and young people.

2017

The national priority project "Formation of a Healthy Lifestyle" is launched. The key goal of the project is to produce a stepwise increase in the proportion of

citizens committed to a healthy lifestyle to 50% by 2020 and to 60% by 2025.

2018

The presidential decree "On National Purposes and Strategic Development Challenges of the Russian Federation until 2024" is issued to facilitate the achievement of the development goals for the Russian Federation for the period up to 2024, including in the field of public health. The aim is to increase life expectancy to 78 years by 2024 and to 80 years by 2030, as well as the proportion of citizens leading a healthy lifestyle and systematically engaging in physical activities and sports.

2018

The maximum BAC level for drivers is again set at the level of 0.03%, taking into account measurement errors occurring in the field.

ANNEX 3

OVERVIEW OF SPECIFIC MEASURES TARGETING UNRECORDED ALCOHOL, 1995–2018

1995

Introduction of Federal Law No. 171, the main instrument of Russian alcohol policy, which regulates licensing of producers and sellers of alcohol.

1995–2000

Introduction of various generations of anti-counterfeit excise stamps.

2000

Ban on the use of methanol in the production of windshield washer fluids to prevent fatal poisonings as the consequence of misuse as surrogate alcohol.

2006

Introduction of new alcohol excise stamps, which are harder to falsify; use of old stamps is forbidden.

2006

The Unified State Automated Information System (EGAIS) is introduced – a new monitoring system to collect data on the volumes of produced alcohol, including use of raw materials and the existence of leftovers, as well as on imports of alcohol.

2005/6

As a result of EGAIS and the increased required capital regulation, small producers of alcohol – more often engaged in the production of undeclared/counterfeit alcoholic products – are pushed out of the market.

2005/6

Required capital of producers of ethyl alcohol and spirits is significantly increased, with new amendments made to Federal Law No. 171.

2006

New obligatory denaturing additives (gasoline, kerosene, crotonaldehyde and denatonium benzoate) are introduced; usage of previously used ineffective denaturing additives is forbidden to deter misuse of surrogate alcohol.

2007

A list of perfumery and cosmetic products, sale of which is not regulated by Federal Law No. 171, is adopted. This regulation exempts certain types of cosmetics from taxation and EGAIS monitoring, which allows further misuse of cheap alcohol-based cosmetics as surrogate alcohol.

2014

Penalties for the sale of counterfeit alcohol and its smuggling are increased through a specially adopted federal law on countering trafficking of counterfeit goods, alcohol and tobacco.

2014

(effective from 2016) Criminal and administrative sanctions for violations relating to the production and transfer of alcohol and alcoholic products are strengthened,

and a specific criminal penalty for manufacturing and distributing counterfeit excise duty stamps is introduced. The same law introduces harsher penalties for involving a minor in consuming alcohol.

2014

A provision is adopted that medicinal compounds containing ethyl alcohol must be stored and monitored according to a special record-keeping system; however, they still fall outside the scope of EGAIS.

2016

The EGAIS system is extended to cover the wholesale trade and retail sale of alcoholic beverages.

2016

A mass poisoning with methanol-containing surrogate alcohol (a bath lotion) occurs in the Siberian city of Irkutsk; local authorities declare a state of emergency. The Federal Service for the Oversight of Consumer Protection and Welfare (Rospotrebnadzor) issues a 30-day-long ban on sales of alcohol-containing liquids not intended for human consumption.

2017

The articles “Illicit production and/or turnover of ethyl alcohol, alcohol and alcohol-containing products” and “Illegal retail sale of alcohol and alcohol-containing food products” are added to the Criminal Code of the Russian Federation, introducing harsh penalties for illegal alcohol production and for forging of alcohol excise stamps and for selling and using counterfeit stamps. Punishments range from fines to imprisonment, depending on the severity of the offense and the harm caused to others.

2017

The sale of alcohol-containing cosmetic products through vending machines, as well as distribution of information and advertisement by sellers of alcoholic products on the internet, are prohibited.

2017/18

The Federal Service for the Oversight of Consumer Protection and Welfare and the Ministry of Health investigate the Irkutsk poisoning; the temporary ban on the sale of alcohol-based products is extended several times, although it does not cover the sale of colognes and perfumes.

2018

Retail sale of alcohol-based non-food products with an ethyl alcohol content of more than 28% at below the established minimum price of alcoholic beverages is prohibited, thus eliminating the economic incentive to produce, sell and buy nonbeverage alcoholic products that can be misused as surrogate alcohol.

ANNEX 4

THE UNIFIED STATE AUTOMATED INFORMATION SYSTEM (EGAIS)

The Unified State Automated Information System (EGAIS) is a monitoring system, introduced in the Russian Federation in January 2006, whose initial purpose was to collect data on the volumes of ethyl alcohol produced, including the use of raw materials and leftovers.

Producers of alcohol were obliged to purchase the necessary equipment and report online on the volumes produced. The main idea behind this innovation was to ensure the completeness and accuracy of accounting for the production of ethyl alcohol, in order to gain more government control over the production process and to reduce and ultimately eliminate production of illicit alcohol. This approach allowed a comparison to be made between the officially produced alcohol volumes and the official sales of alcoholic beverages; this revealed that more alcoholic beverages were sold in the country than were officially produced and imported.

Despite initial technical problems and delays in implementation, EGAIS was updated and extended in its coverage over time. In 2009 EGAIS was handed over to the newly formed Federal Service for Alcohol Market Regulation (Rosalkogolregulirovanie), which has developed the system further and employed it to its full potential.

In 2012 transport companies and carriers of ethyl alcohol with a strength of over 25% had to be registered within the system; in 2013 and 2014 it was expanded in a stepwise manner to producers of beer. In 2016 EGAIS was extended to cover the wholesale and retail sale of alcoholic beverages, including imports and on-premises sales of alcohol. Retailers of alcohol were bound to comply with the requirements of the system and to equip their outlets with a special cash register for alcoholic beverages. Participants in the alcohol market were obliged to report on production, purchase and sales of alcoholic products.

Alcoholic beverages, with the exception of beer, are now required to feature two different QR (Quick Response) codes on their containers, which have to be scanned in sales outlets. The first code contains information on the excise stamp, either for domestically produced alcoholic beverages or for imported alcoholic beverages; this information is not forwarded to the EGAIS system. The second QR code is the individual

identifier within EGAIS, which reports the following information to the database: type, name and manufacturer of the alcoholic beverage; date of application for the barcode; name of the organization to which the barcode was assigned and the date of assignment; the alcohol content of the alcoholic product; and the volume of the container. The QR code is scanned by the cashier at the specially equipped scanner, which has a special programme that sends the information to the servers of the Federal Service for Alcohol Market Regulation to be checked. Once the server has confirmed that the product was produced and is being sold legally by a licensed producer and retailer, it is released to the buyer. In addition, as this information is processed online and in real time, the system provides an important mechanism for enforcing existing time limitations on alcohol sales in the Russian Federation: the night ban on alcohol sales means that no alcoholic beverages can be processed by local cashier registers between 23:00 and 08:00.

In this way, the system serves several different purposes at the same time. First, it gives end consumers information about the origin of purchased products and protects them from fraud and the potential danger of unlicensed alcohol. Second, it ensures enforcement of existing alcohol laws and collects very precise data on the alcohol market. Finally, it ensures that alcohol tax is collected, in part through pressure exerted on producers of unrecorded alcohol.

EGAIS is a unique surveillance system that collects data at an unprecedented level of detail, as it traces the pathway of every single bottle from producer to carrier, seller and end consumer. The same principle of tracing goods and ensuring their quality and collection of tax was picked up by stakeholders in several other areas. For instance, a similar monitoring system was introduced in 2019 for tobacco products, and a stepwise introduction is planned for other goods, such as perfume, clothing and medicinal products.

By 2024 the Russian Federation and other countries of the Eurasian Economic Union are planning to introduce a unified system of monitoring all goods as per International Organization for Standardization 9001, Clause 7.5.3: "Identification and traceability".

ANNEX 5

DESCRIPTION OF THE STATISTICAL MODEL FOR THE INTERRUPTED TIME SERIES ANALYSIS

To demonstrate the causal link between the implementation of alcohol policies and all-cause mortality, an interrupted time series analysis was conducted, testing the following hypotheses.

- (1) Compared to a baseline of no alcohol control policy activities, where consumption and mortality rates increased (1990–1994), periods with effective alcohol control provided a trend reversal.
- (2) The more intensive the alcohol control policies were, the steeper the downward trend in mortality rates was.
- (3) The effects of alcohol control policies are expected to impact mortality in men more than in women, given the higher level of consumption and more harmful pattern of drinking in men.

STATISTICAL MODEL

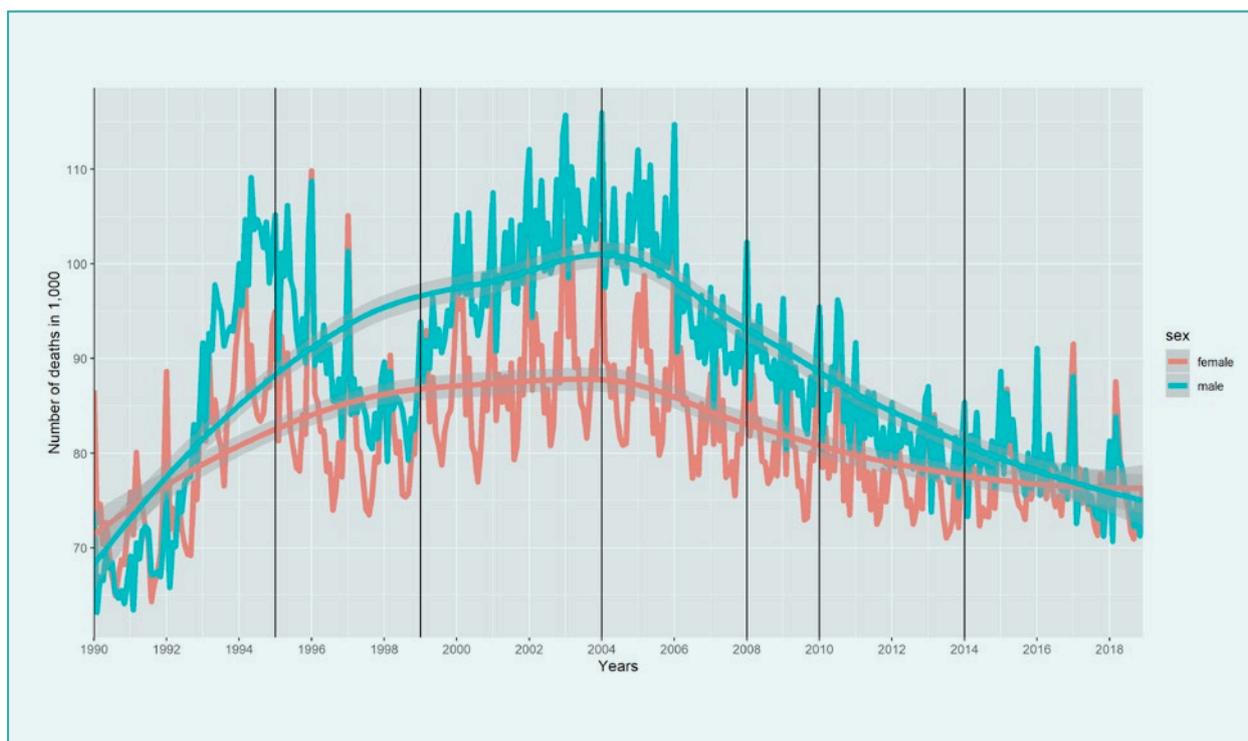
For the interrupted time series analysis, absolute numbers of deaths per month, as well as absolute population size per year, for the period 1990–2018 were provided by the Russian Federal State Statistics Service³, which is responsible for collecting data on vital statistics, carrying out population censuses, and providing population estimates.

The main dependent variables were sex-specific; total monthly crude mortality rates per 100 000 from January 1990 to December 2018 were derived from the following variables:

- all-cause mortality
- population.

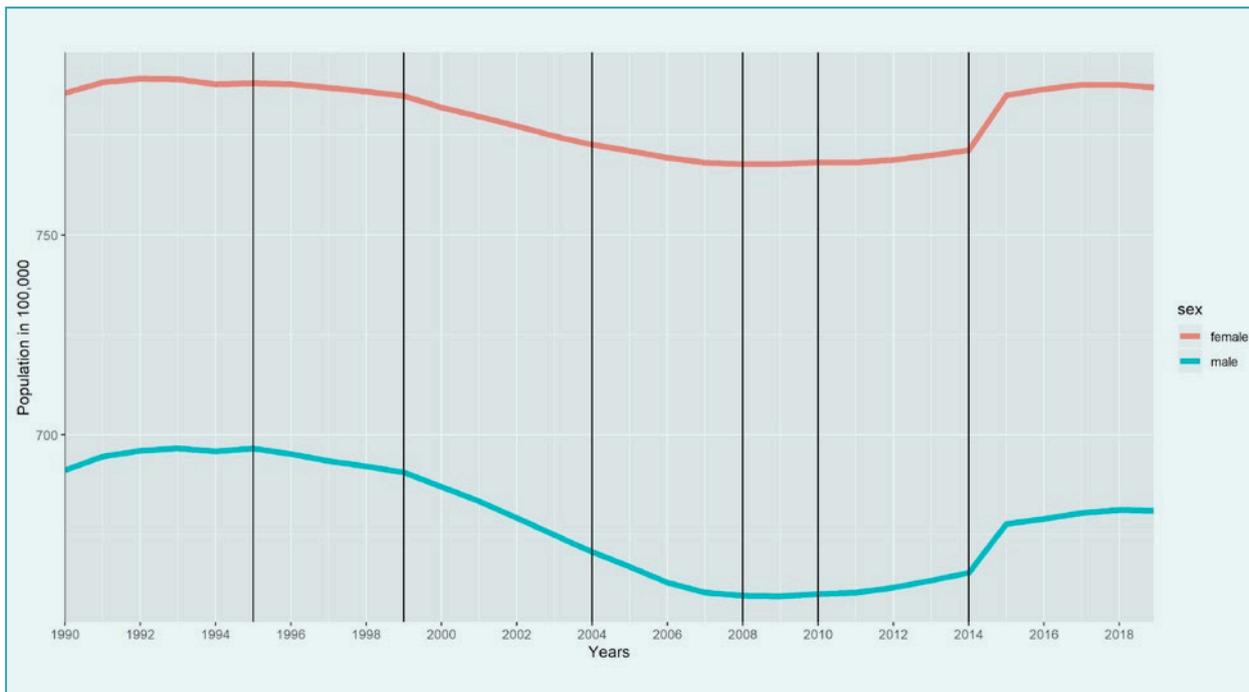
Fig. A5.1 and A5.2 give the mortality and population trends over the period of interest; Fig. A5.3 gives the trends of the crude mortality rates.

Fig. A5.1.



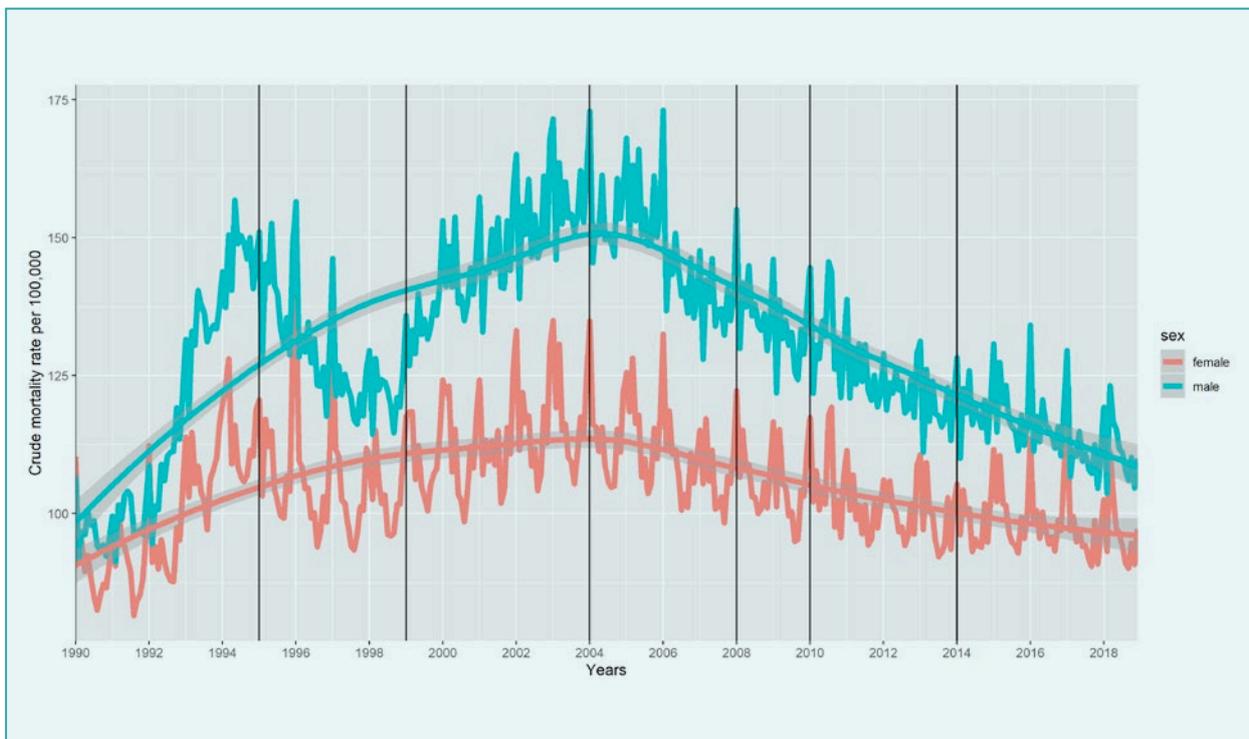
Plot of raw mortality data for all months with locally weighted smoothing (LOESS) fit (vertical lines show the periods analysed distinguished by different policy intensity – see main text)

Fig. A5.2. Population trend of the Russian Federation, 1990–2018



(vertical lines show the periods analysed distinguished by different policy intensity – see main text)

Fig. A5.3.



Plot of crude mortality rates for all months with locally weighted smoothing (LOESS) fit (vertical lines show the periods analysed distinguished by different policy intensity – see main text)

For these composite dependent variables, the distribution was first examined, both visually and with quantile-quantile (Q-Q) plots (Fig. A5.4 and A5.5).

Second, where necessary, simple models accounting for autocorrelation and possible seasonal effects were fitted, as recommended by Beard and colleagues.⁴ Using general additive models with the “mgcv” package,⁵ cubic cycles were included to adjust for seasonal (i.e. annual)

effects and investigated auto-correlation function (ACF) and partial auto-correlation function (pACF) plots of normalized residuals to identify possible autocorrelation in the time series (Fig. A5.6 and A5.7). Autocorrelation was corrected for by adding Auto regressive (AR) and Moving average (MA) terms in the correlation structure of the model. Selection of best-fitting models was achieved using likelihood-ratio tests comparing models adjusted for autocorrelation with non-adjusted models.

Fig. A5.4. Histograms of crude mortality rates

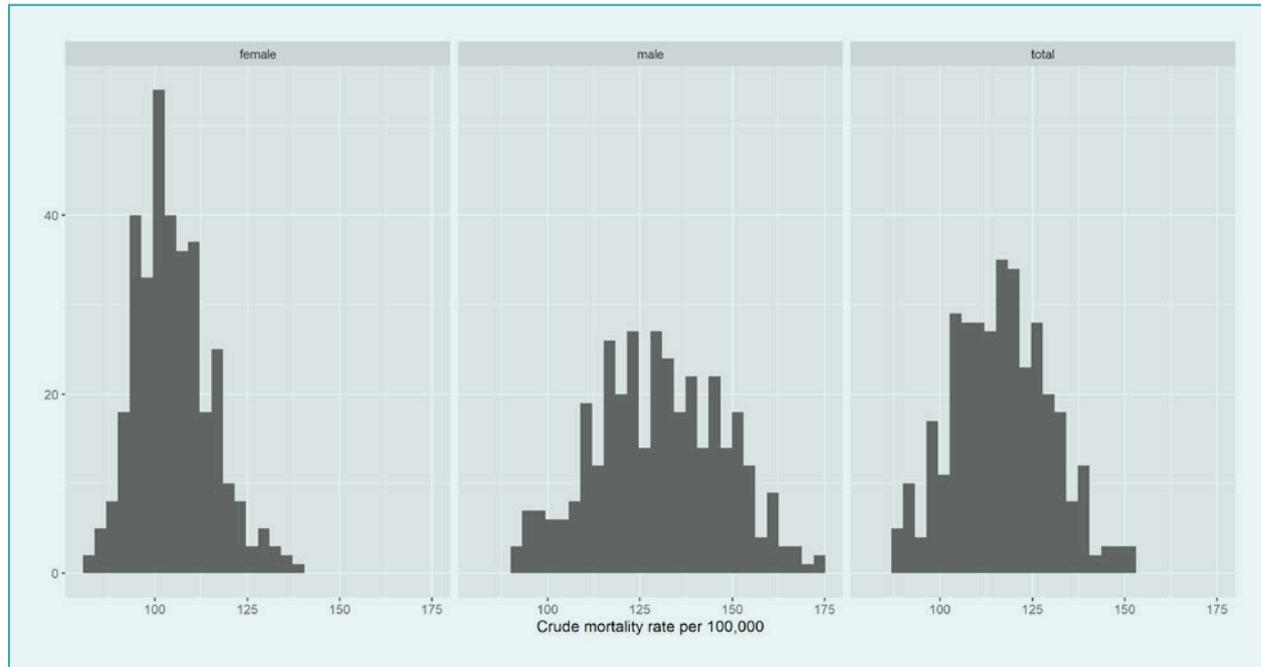
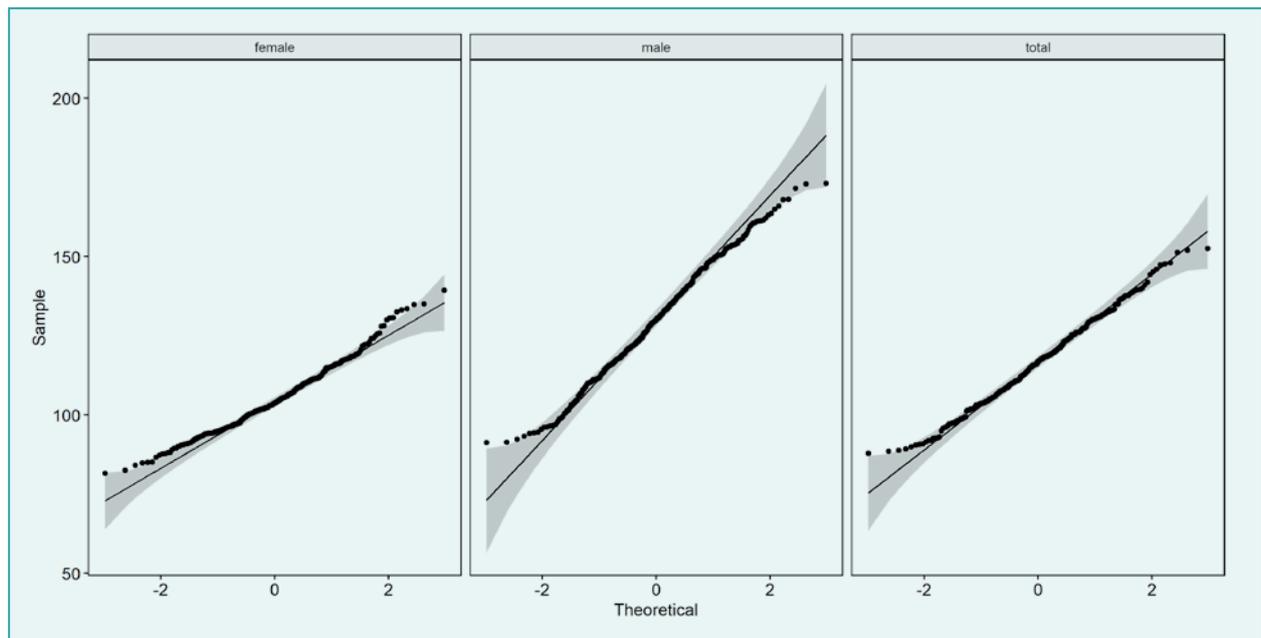


Fig. A5.5. Q-Q plots



Based on these simple models accounting for seasonality and autocorrelation, the impact of the implemented alcohol control policies was evaluated by estimating level (immediate effects) and slope (sustained effects) changes of seven distinct periods, which were defined a priori. The models included both “level change” and “slope change” variables. The “level change” variable was entered as a dummy variable, coded with 1 within and with 0 outside the respective period. For the “slope

change” variable, each month was coded with 0, if it fell outside the respective period, and with increasing integers, if it fell within the respective period (e.g. 1 ... 48 for the years 1995–1998). These models included cumulative months (representing the slope of the first period) and GDP as covariates.

The regression equation can be written as follows:

$$g(y) = t + f(m) + sc_2 + l_2 + \dots + sc_7 + l_7 + gdp$$

With:

$g(y)$ = link function for crude mortality rate

t = 1 ... 348 (cumulative months)

$f(m)$ = cubic cycles of 12 months with k knots

sc_2 = slope change in period 2 (1995–1998), remaining years 0

l_2 = level change in period 2 with 1 for all years 1995–1998, remaining years 0

sc_7 = slope change in period 7 (2014–2018), remaining years 0

l_7 = level change in period 7 with 1 for all years 2014–2018, remaining years 0

gdp = annual GDP (PPP) per capita of the Russian Federation.

All analyses were performed with R version 3.6.1.⁶ Table A5.1. shows the results, the interpretation and

discussion can be found in the main text (effects and standard errors in parantheses).

Fig. A5.6. Plots of seasonal adjustment of final models for Females, Males and total population

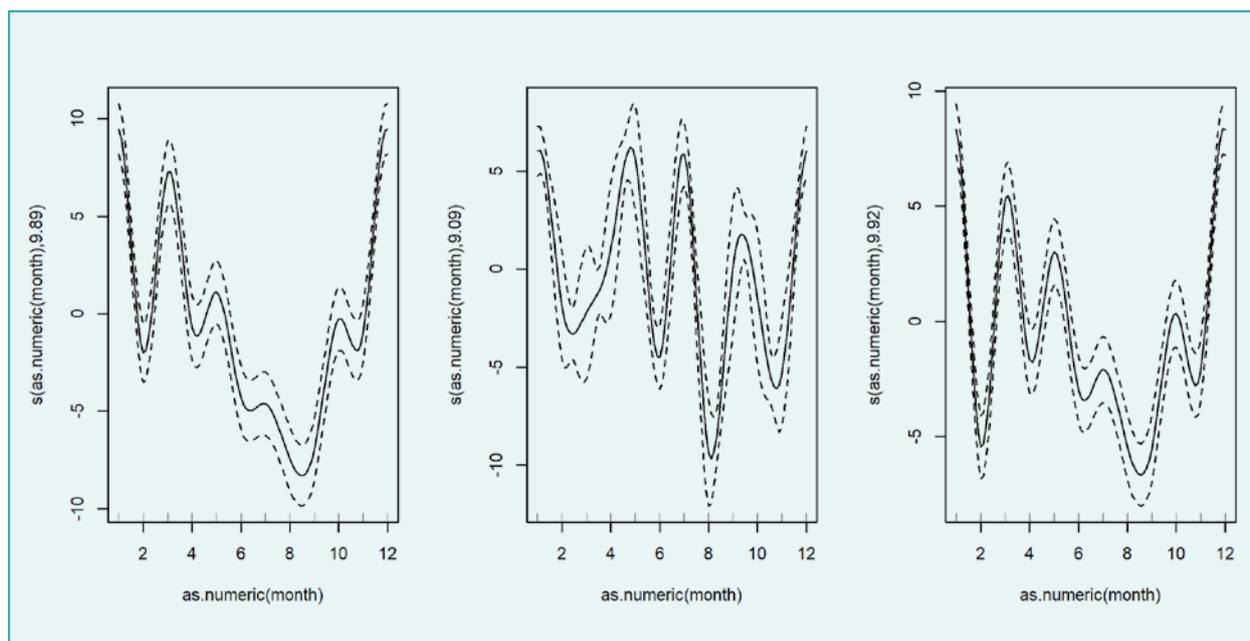
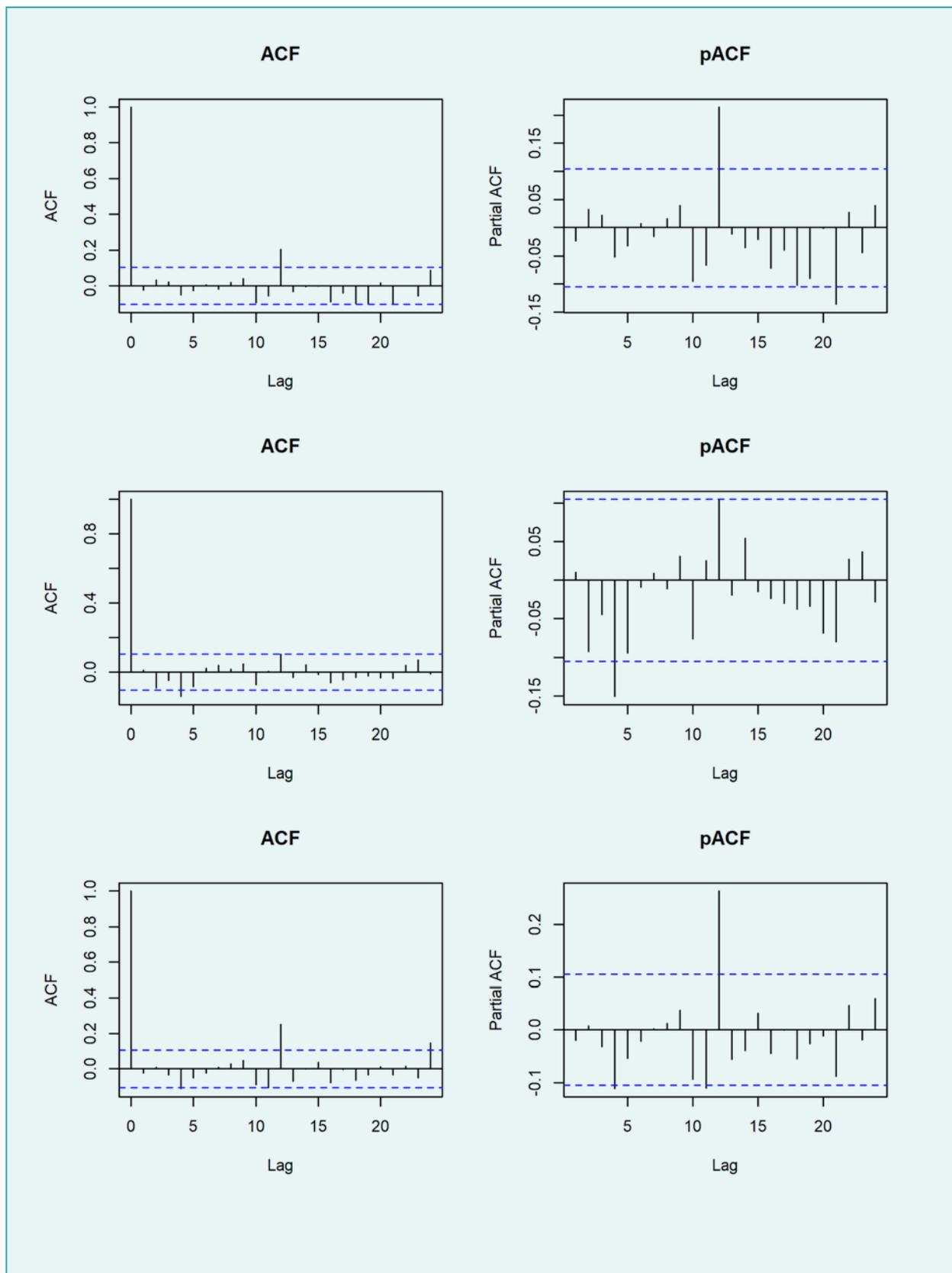


Table A5.1. Result overview of the different models

	Dependent variable: mortality rate		
	Females	Males	total
X(Intercept)	101.608***	87.530	90.627***
	(16.151)	(113.676)	(16.915)
Xmonths 1990–1994	0.357***	0.886***	0.588***
	(0.120)	(0.320)	(0.182)
XI_2	-2.200	-5.194	-1.271
	(2.373)	(3.592)	(3.505)
sc 1995–1998	-0.573***	-1.238***	-0.901***
	(0.126)	(0.471)	(0.283)
XI_3	-21.743***	-60.406***	-35.363**
	(6.533)	(22.751)	(13.906)
sc 1999–2003	-0.155	-0.385	-0.329
	(0.180)	(0.457)	(0.274)
XI_4	-30.104*	-83.781*	-52.455**
	(16.795)	(43.412)	(26.561)
sc 2004–2007	-0.540**	-1.365***	-1.003***
	(0.217)	(0.490)	(0.301)
XI_5	-49.235*	-145.382**	-92.369**
	(27.636)	(60.248)	(37.916)
sc 2008–2009	-0.828***	-1.178**	-1.070***
	(0.184)	(0.592)	(0.351)
XI_6	-63.612**	-176.126***	-113.401***
	(29.323)	(67.738)	(41.563)
sc 2010–2013	-0.493***	-1.179**	-0.859***
	(0.169)	(0.479)	(0.274)
XI_7	-84.695**	-233.780***	-152.067***
	(36.555)	(83.635)	(51.061)
sc 2014–2018	-0.403***	-1.052**	-0.739***
	(0.151)	(0.450)	(0.249)
gdp	-0.813	0.369	0.067
	(0.791)	(0.698)	(0.763)
Observations	348	348	348
Log likelihood	-1,022.901	-969.310	-1,010.459
Akaike inf. crit.	2,081.801	1,984.620	2,062.918
Bayesian inf. crit.	2,150.348	2,072.207	2,142.889
Note:	*p**p***p<0.01		

Fig. A5.7. ACF and pACF plots of final models for Females, Males and total population (in rows)



3. Federal State Statistics Service (Federal'naja sluzhba gosudarstvennoj statistiki) (Rosstat) (<http://www.gks.ru>).
4. Beard E, Marsden J, Brown J, Tombor I, Stapleton J, Michie S et al. Understanding and using time series analyses in addiction research. *Addiction*. 2019.

5. Wood SN. *Generalized additive models: an introduction with R*, 2nd edition. Boca Raton (FL): CRC Press; 2017.
6. R Core Team. *A language and environment for statistical computing*. Vienna: R Foundation for Statistical Computing; 2018 (<https://www.R-project.org>).

All websites were accessed on 4 September 2019.

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The World Health Organization (WHO) is a specialized agency of the United Nations created in 1948 with the primary responsibility for international health matters and public health. The WHO Regional Office for Europe is one of six regional offices throughout the world, each with its own programme geared to the particular health conditions of the countries it serves.

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