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Research Note: Patterns of Alcohol-Related Mortality in Russia

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Abstract

The level of alcohol consumption in Russia is among the highest in the world and is often associated with a variety of problems in the country. Until recently, however, it was impossible to examine the health and social burdens associated with consumption in Russia due to Soviet secrecy surrounding vital statistics and health data related to alcohol and other topics. This study employed newly available mortality data to describe the demographic, temporal, and spatial patterns of mortality resulting directly from chronic and acute alcohol consumption in the country. The data reveal that in spite of high overall rates of alcohol-related mortality in Russia, levels of mortality vary considerably along these dimensions. Although descriptive in nature, the patterns of alcohol-related mortality in Russia presented here should provide initial observations with which to generate and test hypotheses concerning the causes and consequences of these patterns.

Introduction

The Russian rate of alcohol consumption is among the highest in the world, with annual consumption estimated to be nearly 15 liters per person (Nemtsov, 2000; Treml, 1997). By comparison, rates in the European Union and United States are about 10 and 7 liters per person, respectively (World Advertising Research Center, 2002). Although consumption increased following the dissolution of the Soviet Union, these high levels are not new but have deep historical and cultural roots (McKee, 1999). Unfortunately, scientific studies of alcohol were rare until recently due to Soviet data restrictions, but public policy and anecdotal information from the Soviet era and research during the post-Soviet era reveal alcohol to be associated with a host of problems in Russia, including family disruption (Carlson & Vågerö, 1998), the 1990s mortality crisis[1] (Nemtsov, 2002; Notzon et al., 1998; Shkolnikov & Meslé, 1996), and the very high homicide (Pridemore, 2002) and suicide rates (Pridemore, forthcoming) in the country.

[1]Immediately following the collapse of the Soviet Union, Russia experienced a “mortality crisis.” Mortality rates, mainly for cardiovascular diseases and external causes such as violence and injuries, increased dramatically. This resulted in sharply declining life expectancies, especially for males (e.g., life expectancy for Russian males is still only about 60 years). Among the unique characteristics of this mortality crisis is that, while the very old and very young are usually most at risk under such conditions, it was the relatively young and middle-aged cohort, especially males in their 40s and 50s, that experienced the largest increases in mortality rates.

It is well known that alcohol presents a serious public health threat in many nations (Edwards et al., 1994). In Russia, the mixture of high levels of per capita consumption, a pattern of binge drinking, and a preference for distilled spirits likely means that the public health consequences of alcohol are even more harmful here than elsewhere. Initial evidence appears to support this hypothesis. For example, the World Health Organization (WHO) recently estimated that the proportion of disease and disability attributable to alcohol in Eastern Europe is the highest in the world, accounting for more than one fifth of disability adjusted life years lost for males (World Health Organization, 2002). While several neighboring nations share similar alcohol related problems, Russia appears to have the worst. The hazardous drinking pattern scores developed by Rehm and colleagues (2002), for example, show Russia and Belarus with the highest scores (on a scale of 1 to 4, with 4 being the most hazardous), followed by the Baltic nations and others – including Hungary, Poland, and Ukraine – with scores of 3.

In this paper we describe patterns of alcohol mortality in Russia, tracking patterns among different demographic groups, over time during the last five decades, and geographically throughout the vast nation. We focus only on deaths due directly to chronic or acute consumption, not related behavior such as accidents and violence (see Nemtsov, 2002, for estimates of the burden of consumption on overall mortality in Russia). This short research note is meant to highlight these demographic, temporal, and spatial patterns that (with a few exceptions) have been referred to only generally elsewhere. We hope this discussion will provide initial observations with which to generate hypotheses about the causes and consequences of these various patterns that can be empirically tested.

Data

For much of the Soviet era, mortality data were available only to government statisticians for official use (Andreev, Scherbov, & Willekens, 1995; Shkolnikov & Meslé, 1996). This secrecy ended in the late 1980s, and today mortality data are released annually in various publications. It is important to note, however, that even during the Soviet era there was little pressure to falsify the initial cause of death decision (Wasserman & Värnik, 1998), and thus the underlying data contained reliable estimates in this regard. The work of Meslé, Shkolnikov, Hertrich, and Vallin (1996; see also Meslé, Vallin, Hertrich, Andreev, & Shkolnikov, 2003) has resulted in time-series mortality data, including data on alcohol-related deaths, that are available back to 1956.

In these data there are four categories of death due directly to consumption: chronic alcoholism, alcohol psychosis (including encephalopathy and dementia), alcoholic cirrhosis, and alcohol poisonings. For this article, we combined these deaths into a single category, and all “alcohol related” death rates reported here refer to this combined category. Russian recording practices make it important to employ such a combined category. For example, in the West, deaths due to alcohol intoxication are usually recorded in ICD-9 categories 303 (alcohol dependence syndrome) and 305.0 (nondependent use of alcohol) (Notzon et al., 1998). In Russia, however, the majority of these deaths are placed in the alcohol poisoning category (former Soviet code 163, ICD-9 code E860) (Treml, 1997). Further, this poisoning category is overused in Russia since it is also contains many deaths due not only to acute intoxication but also to the long-term effects of chronic alcoholism (Blum & Monnier, 1989; Shkolnikov & Meslé, 1996). As a result, this poisoning category annually contains over 80% of all alcohol-related deaths. The combined category we report here obviously minimizes the effects of these idiosyncratic recording procedures.

In 1993 Russia began a transition to the use of WHO death classifications, but until that time the Russian vital statistics registration system used the Soviet coding scheme to classify cause of death. In 1999 Russia began officially coding deaths using ICD codes, 10th Revision. The

Soviet and then Russian mortality data have been examined extensively since the dissolution of the Soviet Union, and studies by several scholars have resulted in findings that attest to the validity of the Russian mortality data (for example, see discussions by Anderson & Silver, 1997 and Leon et al., 1997).

The time-series data discussed here were provided to us by colleagues and are based upon projects undertaken to reconstruct Russian cause of death data (Meslé et al., 1996; Meslé et al., 2003), and the regional and demographic data were prepared for us by Russian mortality data experts Evgenii Andreev and Nina Andrianova of the Russian Institute for Economic Forecasting (data available from authors). More generally, mortality data are available from several Ministry of Health and State Committee on Statistics (Goskomstat) publications, including the former's annual *Smertnost'naseleniya Rossiiskoi Federatsii*. Finally, all data presented here are for Russia proper (i.e., the Russian Soviet Federated Socialist Republic before 1992 and the Russian Federation 1992 to present), not the Soviet Union.

Demographic Variation

According to mortality data from the Russian Ministry of Health, there were 47,509 alcohol-related (AR) deaths in Russia in 2000, which corresponds to an age-adjusted rate of 33.6 AR deaths per 100,000 persons. Males accounted for 78% of these deaths. The sex-specific age-adjusted AR death rate was 55.4 and 14.7 per 100,000 for males and females, respectively. These data support the arguments of several researchers who suggest that a substantial proportion of excess mortality among working-age males in Russia is attributed to their high rates of alcohol consumption (Shkolnikov & Chervyakov, 2000; Treml, 1997; Walberg, McKee, Shkolnikov, Chenet, & Leon, 1998; Wasserman, Värnik, & Eklund, 1994).

Figure 1 reveals AR mortality to be highest among the 45-54 age group, with the 55-64 age group exhibiting the next highest AR mortality rate. This runs counter to the notion that the young are most at risk (e.g., the rate for the 65-74 group is higher than the 25-34 group). Of course this figure does not include causes of death such as car accidents and other injuries that are often alcohol-related and that might be higher among the young. Further, liver diseases and other ailments resulting from chronic heavy drinking take time to develop, and thus mortality from these causes of death will be higher in older cohorts. Nevertheless, this pattern is an indication that the poisoning category does indeed contain many deaths due to long-term exposure to alcohol (i.e., if they were all truly poisonings, we might expect the death rate from this category to be higher among younger age groups).

Figure 1 also shows age-specific AR mortality rates for men and women. Since men have much higher rates than women, they contribute disproportionately to the overall rate and thus their age patterns are almost identical with overall rates. The age pattern for women is similar to that for men, with the exception that their AR death rates are highest not in the 45-54 age groups but in the 55-64 year-old age groups. This may be due to the fact that Russian women live substantially longer than Russian men and that at this age many women are widowed and/or otherwise less attached to others. Figure 1 also reveals an additional interesting aspect of the distribution of AR deaths among men and women. The ratio of male to female AR deaths in Russia is higher in the 15-24 and 25-34 year-old age groups relative to other ages.[2] This suggests that the relative risk of AR death for men compared to women is greater at younger ages, which may be due partially to true alcohol poisonings, as they are higher among young men.

[2]The male-female ratio for the nine age groups is 2.0 (0-14), 5.0 (15-24), 5.0 (25-34), 4.3 (35-44), 3.7 (45-54), 3.1 (55-64), 3.7 (65-74), 3.8 (75-84), and 4.2 (85+).

Temporal Patterns

Overall Alcohol-Related Mortality Rates

Figure 2 provides overall and sex-specific alcohol-related death rates in Russia from 1956 to 2002, revealing the tremendous variation during this time. Annual rates rose steadily from 9.2 to 28.2 per 100,000 persons between 1956 and 1980. The economic stagnation associated with much of the Brezhnev era was accompanied by an AR mortality rate that more than doubled between the mid-1960s and early 1980s. Thus the steady decrease between 1980 and 1984 may simply reflect a regression back downward toward the mean after years of increase. The dramatic decreases in the ensuing few years, however, likely represent policy and not statistical artefact. The AR mortality rate more than halved in three years during Gorbachev's anti-alcohol campaign (discussed briefly below). The rate begins to rise again in 1989 in the years leading to the collapse of the Soviet Union, and then radically increases in the early 1990s during and after the dissolution of the Soviet Union. Between 1990 and 1994, AR death rates nearly quadrupled, peaking at almost 50 per 100,000 in 1994. There was then a sharp decrease until 1998 (when Russia experienced another economic collapse), but unfortunately the rate began to increase again in spite of the relative political stability and steadily improving economic conditions since that time.

These patterns point out a few statistical and substantive topics worthy of attention. First, several researchers working independently of each other in the fields of public health, demography, and sociology have confirmed that the tremendous variation in AR deaths and other forms of mortality are not artefacts of record keeping but instead reflect true changes in Russian mortality trends during the last 20 years (Anderson & Silver, 1997; Leon et al., 1997; Wasserman & Värnik, 1998). Second, the sharp decline in the mid- 1980s occurred during an anti-alcohol campaign in the Soviet Union. Recognizing the widespread social problems associated with heavy alcohol consumption in the country, Gorbachev instituted an anti-alcohol campaign in May 1985. The government increased prices and cut production. Although production and consumption of *samogon* (illegal home-distilled spirits) increased, overall consumption decreased sharply in the short run. Along with the decreased consumption came immediate declines in overall (Shkolnikov, Meslé, & Vallin, 1997) and alcohol-related mortality (Nemtsov, 1998), as well as in homicide (Pridemore, 2003a) and suicide (Pridemore & Spivak, 2003). For a host of political and economic reasons, however, the campaign was phased out and became completely defunct by October 1988 (Reitan, 2000; White, 1996). Although an interrupted time-series analysis is necessary to test for a relationship between the anti-alcohol campaign and AR mortality, annual AR mortality rates generally correspond to the stages of this campaign: There was a sudden drop in 1985, when the campaign was in place for about two thirds of the year; another precipitous decline in 1986 as the campaign hit its stride and was in force throughout the entire year; and only small decreases in 1987 and 1988 as the campaign was being phased out.

Third, the dramatic increases of the early and mid- 1990s coincide with the dissolution of the Soviet Union and the ensuing political, economic, social, and ideological changes. This social deregulation was reflected in the increased levels of unemployment, poverty, and divorce during this period, and rates of suicide and homicide (Chamlin, Pridemore, & Cochran, 2005) and other stress-related mortality (e.g., strokes and heart attacks) followed suit (Leon & Shkolnikov, 1998). It is likely that the reductions in social and economic well-being, the erosion of the Soviet social safety network and healthcare services, high levels of unemployment and poverty, decreasing real income, and the anomic conditions accompanying the rapid social changes all played a role in demand for alcohol during this period. This demand was met with increased supply, including greater availability of alcohol and a relative reduction in its cost relative to other products (Reitan, 2000). All of these factors likely contributed to the dramatic increases in alcohol-related mortality following the dissolution of the Soviet Union.

Sex-Specific Alcohol-Related Mortality

Figure 2 also shows annual sex-specific AR death rates. While the male rate nearly quadrupled over the last four decades, the female rate increased even more, rising nearly sixfold from 1956 to 2002. In 1956, the male rate was about 5.3 times higher than the female rate, and by the early 1970s it was 5.8 times higher. This ratio steadily decreased until the mid-1970s and then remained relatively stable until the early 1980s. Sex-specific AR mortality dropped proportionally by similar amounts during the anti-alcohol campaign (i.e., male and female rates decreased 63% and 65%, respectively, between 1984 and 1988).

The increases in alcohol-related mortality in the years immediately following the breakup of the Soviet Union were proportionally greater for Russian women than for men, resulting in a male-female ratio of only 3.5 in 2002. This reduction in the gap between men and women may be due partially to the effects of the transition.[3] Unemployment and the resulting poverty has taken a toll on Russian women, many of whom lost their jobs or are poorly paid because of their traditional location in the workforce. For example, women's peripheral positions (e.g., secretarial jobs) were the first to be cut in tight economic times, and education and healthcare remain heavy employers of women. The latter are still mostly government positions and thus those in them remain grossly underpaid.[4] Finally, during the Soviet era it was easier for single mothers to work because the social welfare system provided for child care and related needs. This extensive welfare system disappeared with the Soviet Union, however, and single mothers now face more difficult conditions, the stresses of which may increase heavy drinking and its damaging effects.

Spatial Patterns

Federal Districts

Russia consists of seven large federal districts, which are divided into 89 administrative regions. The latter are first order administrative units that are analogous to states or provinces. While AR mortality is high throughout most of Russia, there is still considerable regional variation throughout this very large nation, with a distinctive spatial distribution of rates. AR mortality rates range from a low of 15.6 deaths per 100,000 persons in the Northern Caucasus to a high of 43.6 in the Northwestern Federal District. With minor exceptions, the spatial distribution of AR mortality rates follows a similar geographic pattern as other forms of mortality: lower in the south and west (e.g., the Northern Caucasus[5]) and higher in the regions east of the Ural Mountains. The exceptions for AR mortality include higher rates in Northwestern Russia and lower rates in the Far East (23.2 per 100,000).

The pattern of generally increasing mortality rates from west to east is familiar to those doing research on mortality in Russia and is not a period effect of the transition. For example, Shkolnikov (1987) found a strong west to east increase in overall mortality and argued that this was associated with the general level of socioeconomic development throughout the country (see also Walberg et al., 1998). Shkolnikov and Vassin (1994) also argued that alcohol plays an important role in this pattern, especially for external causes of death. Subsequent

[3]This pattern is inconsistent with the results of previous research on other health outcomes and causes of death (e.g., cardiovascular, homicide, suicide, and overall mortality) that show Russian males have paid a higher price in terms of health consequences during the transition (Heleniak, 1995; Kingkade, 1997; Pridemore & Spivak, 2003; Shkolnikov & Meslé, 1996).

[4]These conditions may also help to explain the relatively smaller gap between men and women in middle (relative to other) ages noted above.

[5]The relatively low AR mortality rate in the Northern Caucasus is likely due to the higher proportion of Muslims living in this region. The Islamic culture in the Northern Caucasus is associated with lower levels of alcohol consumption and higher levels of social cohesion and family stability within the region. Along with the religious strictures against alcohol, the culture among these groups may serve to keep AR mortality lower here than in the rest of Russia via social mechanisms such as higher levels of social cohesion and family stability. It is also worth noting that relative to the rest of the country, wine is more popular in this region.

research has not only shown similar geographic patterns for homicide (Pridemore, 2003a) and suicide mortality (Pridemore & Spivak, 2003), but also that regional aggregate levels of heavy drinking are positively and significantly associated with regional levels of homicide (Pridemore, 2002) and suicide (Pridemore, 2004).

Administrative Regions

Figure 3 shows the Russian administrative regions, and the Appendix lists the AR mortality rates for the federal districts and the administrative regions within them. The median regional alcohol-related death rate in 2000 was 35.3 per 100,000, the mean was 35.9, and the standard deviation was 18.1. The lowest rate in 2000 was 3.1 per 100,000 persons in the Jewish Autonomous Oblast, which is located in the Far East. Other low rates include Dagestan (3.3), Tatarstan (8.6), Rostov (8.7), Northern Ossetia (8.9), Bashkortostan (9.4), and Karachai-Cherkessia (10.2). All these regions with comparatively low alcohol-related death rates, except Tatarstan and Bashkortostan, are located in the Northern Caucasus. The highest rate in 2000 was in the Republic of Karelia, located in the Northwestern District, which had 75.2 AR deaths per 100,000 persons. The Republic of Tyva (in the Siberian Federal District) had a rate of 73.4. Tyva also has the highest homicide rate in Russia and a very high suicide rate. Other regions with high AR mortality rates include Tula (70.3), Khakassia (67.6), Perm (67.1), Komi (65.1), and Kaliningrad (64.5). As can be seen in the Appendix, many regions with high AR mortality rates are in the Northwestern or Siberian Federal Districts. Finally, while not part of the present analysis, it is worthwhile noting a different type of spatial variation of alcohol consumption: the rate of consumption in rural regions of Russia is considerably higher than in urban areas (Zaigraev, 2004).

Limitations

There are a few data-related limitations to consider when evaluating the description of these patterns of alcohol-related mortality in Russia. First, the Soviet and Russian mortality data are only recently available. As discussed earlier, several studies have found the Russian mortality data to be reliable. As with any vital statistics registration system, however, continued analysis is necessary. It is ironic, for example, that the measurement of certain forms of mortality in Russia is potentially becoming less reliable than during the Soviet era when the data were classified. The work of Gavrilova and colleagues (2005) and Pridemore (2003b), for example, suggest possible deterioration in the validity of data on violent mortality in recent years, likely due to data falsification. Second, a related issue is that in 1999 Russia switched from using the death classification system that had been in place under the Soviets to the International Classification of Diseases Codes, 10th Revision. It is important to examine if this break in the series had an impact on recording alcohol-related mortality.

Finally, although we have combined all of the causes of death due directly to alcohol, the alcohol poisoning category composes the vast majority of all alcohol-related deaths in Russia. While binge drinking of distilled spirits, as well as consumption of unregulated *samogon* and alcohol substitutes, leads to an inordinately high number of real alcohol poisoning deaths in Russia, it is also not uncommon to use this cause of death category to record other alcohol-related diseases that are not truly acute in nature (Shkolnikov & Meslé, 1996). This is why we have used all the categories combined, especially since the use of the poisoning category for deaths other than real poisonings likely varies by region or over time. It will be interesting to see if the shift to the use of the ICD codes mentioned above will result in a decline in the use of the poisoning category.

Conclusion

The description of these patterns shows that despite high overall rates of consumption in Russia, there were (1) wide swings in AR mortality over time (though within the context of generally increasing rates during the last five decades), (2) considerable differences in age- and sex-specific rates (the latter of which were differentially affected over time), and (3) significant geographic differences in rates throughout the very large country.

Perhaps just as important as the level of consumption in Russia is what and how Russians drink (Pridemore, 2002). Vodka comprises around three quarters of the alcohol consumed in the country (Nemtsov, 2000; Treml, 1997), and survey data show that about one third of Russian males binge drink at least once per month (Bobak, McKee, Rose, & Marmot, 1999). The deadly combination of (1) heavy episodic drinking, (2) a preference for distilled spirits, and (3) frequent consumption of alcohol substitutes and illegally produced alcohol (the quality of which is unregulated) results in a very high level of mortality from alcohol poisoning in the country. In the decade that it has been possible to carry out research in the country following the disintegration of the Soviet Union, alcohol also has been increasingly linked to a number of social and health problems, including rates of homicide and suicide that are among the highest in the world, the mortality crisis, and heart disease (McKee & Britton, 1998). Nemtsov (2002) estimates that currently alcohol is directly or indirectly responsible for nearly one third of all deaths in Russia.

While it is true that the problems associated with alcohol consumption in Russia are not new, the issue is now exacerbated by both increased demand – as a result of the ongoing anomic conditions created by the social, economic, and political transition – and increased supply (and ubiquitous advertising) as domestic and international companies vie for a share of the large Russian alcohol market. Further, many have argued that the Russian government's recent shift to providing cash payments in lieu of in-kind benefits and price controls on such things as medicine, transportation, and utilities will likely have detrimental social effects, including increased rates of alcohol consumption. Recent research also reveals that the strength of education and marriage as protective factors against alcohol consumption is dissipating in Russia (Malyutina, Bobak, Kurilovitch, Nikitin, & Marmot, 2004), which appears to support the contention of scholars who suggest that increases in consumption during the transition were greatest among those who lost the most in terms of economic and social status (Carlson & Vågerä, 1998).

While this research note is descriptive in nature, it specifically addresses an issue only tangentially discussed by many scholars. Detailing the demographic, spatial, and temporal variation of alcohol-related mortality in the country should generate hypotheses about how heavy drinking is associated with other factors, thus leading to further analyses of how these patterns covary with the possible causes and consequences of heavy drinking in Russia.

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Appendix

Crude Alcohol-Related Mortality Rates per 100,000 Persons in Russian Federal Districts and Administrative Regions, 2000

Region	Rate
Northwestern Federal District	43.6
Arkhangelsk Oblast	45.4
Kaliningrad Oblast	64.5
Leningrad Oblast	45.4
Karelia	75.2
Komi	65.1
Murmansk Oblast	18.7
Novgorod Oblast	42.3
Pskov Oblast	43.4
City of Saint Petersburg	35.5
Vologda Oblast	35.5
Central Federal District	36.5
Belgorod Oblast	25.6
Bryansk Oblast	33.8
Ivanovo Oblast	38.6
Kaluga Oblast	47.5
Kostroma Oblast	59.2
Kursk Oblast	16.4
Lipetsk Oblast	34.1
City of Moscow	16.2
Moscow Oblast	45.3
Oryol Oblast	47.8
Ryazan Oblast	43.7
Smolensk Oblast	44.8
Tambov Oblast	47.7
Tver Oblast	60.3
Tula Oblast	70.3
Vladimir Oblast	47.0
Voronezh Oblast	13.0
Yaroslavl Oblast	61.8
Northern Caucasus Federal District	15.6
Adygeya	22.3
Astrakhan Oblast	28.4
Chechnya	---
Dagestan	3.3
Ingushetia	---
Kabardino-Balkaria	13.0
Kalmykia	12.7
Karachay-Cherkessia	10.2
Krasnodar	22.7
Northern Ossetia	8.8
Stavropol	13.9
Rostov Oblast	43.7
Volgograd Oblast	22.4
Volga Federal District	34.0
Bashkortostan	9.3
Chuvashia	35.0
Kirov Oblast	60.3
Marii El	41.4
Mordovia	17.0
Nizhnii Novgorod Oblast	40.6
Orenburg Oblast	46.7
Penza Oblast	54.9
Perm Oblast	67.1
Samara Oblast	29.6
Saratov Oblast	33.9
Tatarstan	8.6
Udmurtia	39.8
Ulyanovsk Oblast	27.0
Urals Federal District	32.3
Kurgan Oblast	37.0
Sverdlovsk Oblast	41.9
Tyumen Oblast	17.4
Chelyabinsk Oblast	32.1
Siberian Federal District	38.6
Altai (Republic)	58.2
Altai region	20.5
Buryatia	41.4
Chita Oblast	52.0
Irkutsk Oblast	37.5
Khakassia	67.6
Kemerevo Oblast	49.7

Region	Rate
Krasnoyarsk	52.9
Novosibirsk Oblast	26.0
Omsk Oblast	27.3
Tomsk Oblast	21.7
Tuva	73.4
Far East Federal District	23.2
Amur Oblast	41.6
Jewish Autonomous Oblast	3.1
Kamchatka Oblast	39.3
Khabarovsk	11.5
Magadan Oblast	34.3
Chukot Autonomous Okrug	35.1
Primorye	19.6
Sakha	19.1
Sakhalin Oblast	31.9

References

Anderson, BA.; Silver, BD. Issues of data quality in assessing mortality trends and levels in the New Independent States. In: Bobadilla, JL.; Costello, CA.; Mitchell, F., editors. Premature death in the New Independent States. National Academy Press; Washington, DC: 1997. p. 120-155.

Andreev, E.; Scherbov, S.; Willekens, F. Sources of information on the population of Russia. University of Groningen Press; Groningen, The Netherlands: 1995.

Blum A, Monnier A. Recent mortality trends in the USSR: New evidence. Population Studies 1989;43:211–241.

Bobak M, McKee M, Rose R, Marmot M. Alcohol consumption in a national sample of the Russian population. Addiction 1999;94:857–866. [PubMed: 10665075]

Carlson P, Vågerö D. The social pattern of heavy drinking in Russia during the transition: Evidence from Taganrog 1993. European Journal of Public Health 1998;8:280–285.

Chamlin, MB.; Pridemore, WA.; Cochran, JK. An interrupted time series analysis of Durkheim's social deregulation thesis: The case of the Russian Federation; Paper presented at the meeting of the International Union for Scientific Study of Population; Tours, France. 2005.

Edwards, G.; Anderson, P.; Babor, TF.; Casswell, S.; Ferrence, R.; Giesbrecth, N.; Godfrey, C.; Holder, HD.; Lemmens, P.; Mäkelä, K.; Midanik, LT.; Norström, T.; Österberg, E.; Romelsjö, A.; Room, R.; Simpura, J.; Skog, O-J. Alcohol policy and the public good. Oxford University Press; Oxford: 1994.

Gavrilova, NS.; Semyonova, VG.; Evdokushkina, GN.; Ivanova, AE.; Gavrilov, LA. Problems with mortality data in Russia; Paper presented to the annual meeting of the Population Association of America; Philadelphia. 2005.

Heleniak T. Economic transition and demographic change in Russia, 1989-1995. Post-Soviet Geography 1995;36:446–458. [PubMed: 12347001]

Kingkade, WW. Population trends: Russia. United States Bureau of the Census; Washington, DC: 1997.

Leon DA, Chenet L, Shkolnikov VM, Zakharov S, Shapiro J, Rakhmanova G, Vassin S, McKee M. Huge variation in Russian mortality rates, 1984-94: Artefact, alcohol, or what? Lancet 1997;350:383–388. [PubMed: 9259651]

Leon DA, Shkolnikov VM. Social stress and the Russian mortality crisis. Journal of the American Medical Association 1998;279:790–791. [PubMed: 9508158]

Malyutina S, Bobak M, Kurilovitch S, Nikitin Y, Marmot M. Trends in alcohol intake by education and marital status in an urban population in Russia between the mid 80s and the mid 90s. Alcohol and Alcoholism 2004;39:64–69. [PubMed: 14691077]

McKee M. Alcohol in Russia. Alcohol and Alcoholism 1999;34:824–829. [PubMed: 10659717]

McKee M, Britton A. The positive relationship between alcohol and heart disease in Eastern Europe: Potential physiological mechanisms. Journal of the Royal Society of Medicine 1998;91:402–407. [PubMed: 9816353]

Meslé, F.; Shkolnikov, VM.; Hertrich, V.; Vallin, J. Tendances récentes de la mortalité par cause en Russie, 1965-1994 [Recent trends in mortality by cause in Russia, 1965-1994. Institut National D'études Démographiques; Paris: 1996.

Meslé, F.; Vallin, J.; Hertrich, V.; Andreev, E.; Shkolnikov, VM. Causes of death in Russia: assessing trends since the 50s. In: Kotowska, I.; Jozwiak, J., editors. Population of Central and Eastern Europe: Challenges and opportunities. Statistical Publishing Establishment; Warsaw, Poland: 2003. p. 389-414.

Nemtsov AV. Alcohol-related harm and alcohol consumption in Moscow before, during, and after a major alcohol campaign. Addiction 1998;93:1501–1510. [PubMed: 9926554]

Nemtsov AV. Estimation of total alcohol consumption in Russia, 1980-1994. Drug and Alcohol Dependence 2000;58:133–142. [PubMed: 10669064]

Nemtsov AV. Alcohol-related human losses in Russia in the 1980s and 1990s. Addiction 2002;97:1413–1425. [PubMed: 12410782]

Notzon F, Komarov YM, Ermakov SP, Sempos CT, Marks JS, Sempos EV. Causes of declining life expectancy in Russia. Journal of the American Medical Association 1998;289:793–800. [PubMed: 9508159]

Pridemore WA. Vodka and violence: Alcohol consumption and homicide rates in Russia. American Journal of Public Health 2002;92:1921–1930. [PubMed: 12453810]

Pridemore WA. Demographic, temporal, and spatial patterns of homicide rates in Russia. European Sociological Review 2003a;19:41–59.

Pridemore WA. Measuring homicide in Russia: A comparison of estimates from the crime and vital statistics reporting systems. Social Science and Medicine 2003b;57:1343–1354. [PubMed: 12927465]

Pridemore WA. Heavy drinking and suicide mortality in Russia. Social Forces. Forthcoming

Pridemore WA, Spivak AL. Patterns of suicide mortality in Russia. Suicide and Life-Threatening Behavior 2003;33:132–150. [PubMed: 12882415]

Rehm, J.; Room, R.; Monteiro, M.; Gmel, G.; Graham, K.; Rehn, C.; Sempos, CT.; Frick, U.; Jernigan, D. Alcohol as a risk factor for burden of disease. In: Ezzati, M.; Lopez, AD.; Rodgers, A.; Murray, CJL., editors. Comparative quantification of health risks: Global and regional burden of disease due to selected major risk factors. World Health Organization; Geneva: 2002.

Reitan TC. Does alcohol matter? Public health in Russia and the Baltic countries before, during, and after the transition. Contemporary Drug Problems 2000;27:511–560.

Shkolnikov VM. Geograficheskie faktori prodolzhitelnosti [Geographical factors of length of life]. Izvestiya AN USSR, Geographical Series 1987;3:225–240.

Shkolnikov, VM.; Chervyakov, VV. Politika po kontrolyu krisisnoi smertnosti v Rossii v perekhodnii period (Policies for the control of the mortality crisis in Russia during the transition). United Nations Development Programme; Moscow: 2000.

Shkolnikov, V.; Meslé, F. The Russian epidemiological crisis as mirrored by mortality trends. In: Da Vanzo, J., editor. Russia's demographic “crisis”. Rand; Santa Monica, CA: 1996. p. 113-162.

Shkolnikov, VM.; Meslé, F.; Vallin, J. Recent trends in life expectancy and causes of death in Russia, 1970-1993. In: Bobadilla, JL.; Costello, CA.; Mitchell, F., editors. Premature death in the New Independent States. National Academy Press; Washington, DC: 1997. p. 34-65.

Shkolnikov, VM.; Vassin, S. Spatial differences in life expectancy in European Russia in the 1980s. In: Lutz, W.; Scherbov, S.; Volkov, A., editors. Demographic trends and patterns in the Soviet Union before 1992. Routledge; London: 1994. p. 379-402.

Treml, VG. Soviet and Russian statistics on alcohol consumption and abuse. In: Bobadilla, JL.; Costello, CA.; Mitchell, F., editors. Premature death in the New Independent States. National Academy Press; Washington, DC: 1997. p. 220-238.

Walberg P, McKee M, Shkolnikov VM, Chenet L, Leon DA. Economic change, crime, and mortality crisis in Russia: Regional analysis. British Medical Journal 1998;317:312–318. [PubMed: 9685275]

Wasserman D, Värnik A. Reliability of statistics on violent death and suicide in the former USSR, 1970-1990. Acta Psychiatrica Scandinavica 1998;394(Supplement):34–41.

Wasserman D, Värnik A, Eklund G. Male suicides and alcohol consumption in the former USSR. Acta Psychiatrica Scandinavica 1994;89:306–313. [PubMed: 8067268]

White, S. Russia goes dry: Alcohol, state, and society. Cambridge University Press; Cambridge, England: 1996.

World Advertising Research Center. World drink trends. Produktschap voor Gedistilleerde Dranken; Schiedam, The Netherlands: 2002.

World Health Organization. World health report for 2002. Author; Geneva: 2002.

Zaigraev, G. The Russian model of noncommercial alcohol consumption. In: Haworth, A.; Simpson, R., editors. Moonshine markets. Brunner Routledge; New York: 2004. p. 211-234.

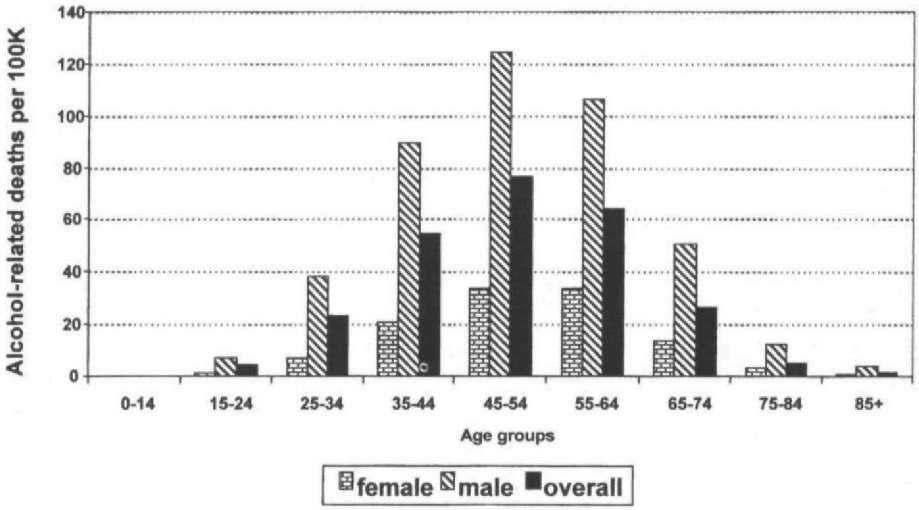

Figure 1.
Sex- and Age-Specific Alcohol-Related Deaths per 100,000 Persons in Russia, 2000

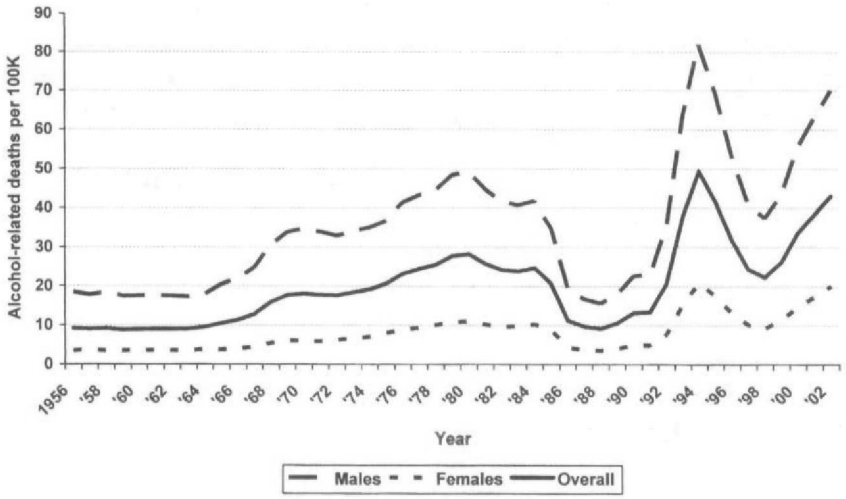

Figure 2.
Overall and Sex-Specific Combined Alcohol-Related Death Rates per 100,000 Persons in Russia, 1956-2002

SOURCE: UNIVERSITY OF TEXAS, PERRY-CASTANEDA LIBRARY MAP COLLECTION

Figure 3.
Map of Russiaan Administrative Regions