

Adult Health In The Russian Federation: More Than Just A Health Problem

Health problems in this part of the world reverberate throughout society and bode ill for the future.

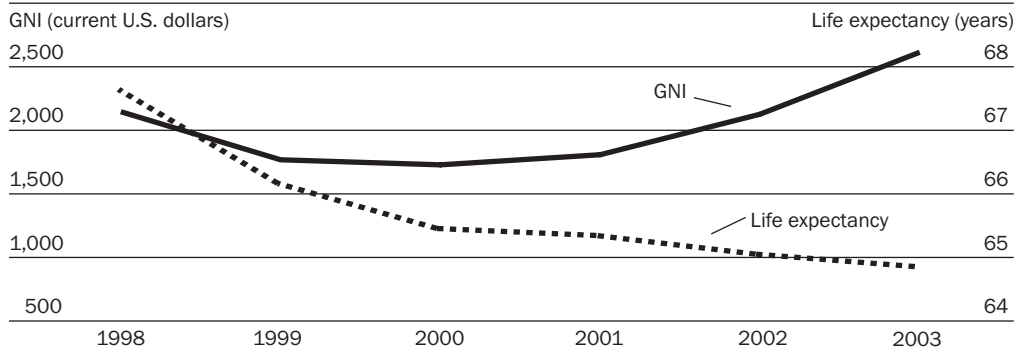
by **Patricio Marquez, Marc Suhrcke, Martin McKee, and Lorenzo Rocco**

ABSTRACT: In this paper we discuss the Russian adult health crisis and its implications. Although some hope that economic growth will trigger improvements in health, we argue that a scenario is more likely in which the unfavorable health status would become a barrier to economic growth. We also show that ill health is negatively affecting the economic well-being of individuals and households. We provide suggestions on interventions to improve health conditions in the Russian Federation, and we show that if health improvements are achieved, this will result in substantial economic gains in the future. [*Health Affairs* 26, no. 4 (2007): 1040–1051; 10.1377/hlthaff.26.4.1040]

THE COUNTRIES OF THE FORMER Soviet Union share, with sub-Saharan Africa, the dubious distinction of declining life expectancy in recent years.¹ In the Russian Federation, female life expectancy (seventy-two years) is close to the level it was in 1955; male life expectancy (fifty-eight years) is four years less than in that year, the same as in Eritrea. Yet the Russian economy has shown strong economic growth since 1998. This growth has been led by mineral and petrochemical extraction, so benefits are unevenly distributed. However, growth in these sectors has slowed, and there is now strong growth in domestic demand, creating a more balanced economy. Sustained high oil and gas prices have let the Russian government accumulate large fiscal surpluses.² Exhibit 1 illustrates the oddity of improving per capita incomes and deteriorating life expectancy. We contend that failure to tackle the low level of health will make rapid economic growth unsustainable.

The Russian health crisis and its determinants have been documented extensively elsewhere.³ This paper builds on that work to link health and the economy,

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EXHIBIT 1**Gross National Income (GNI) And Life Expectancy At Birth In The Russian Federation, 1998–2003**

SOURCE: For GNI, data derived from World Bank, World Development Indicators database, available at http://devdata.worldbank.org/data_query; for life expectancy, data derived from World Health Organization Regional Office for Europe, European Health for All database, available at <http://data.euro.who.int/hfadb>.

NOTES: When calculating GNI in U.S. dollars from GNI reported in national currencies, the World Bank follows the Atlas conversion method, using a three-year average of exchange rates to smooth the effects of transitory exchange-rate fluctuations. The solid line denotes GNI and relates to the left-hand y axis. The dashed line denotes life expectancy and relates to the right-hand y axis.

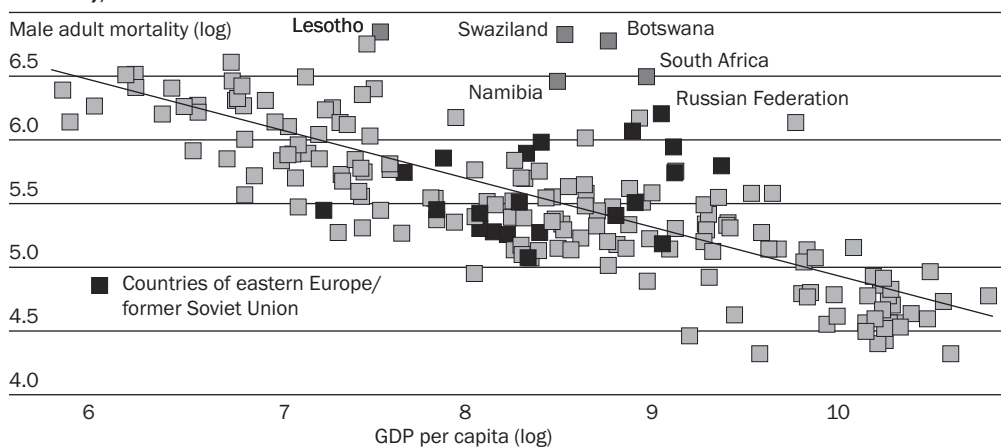
demonstrating that poor health in the Russian Federation imposes sizable costs. We focus on the path from health to the economy, in contrast to most research that has highlighted economic circumstances as determinants, not as consequences, of health. This paper is based on recent work by the authors.⁴

A (Gloomy) Picture Of Adult Health

In the 2006 State-of-the-Nation Address, President Vladimir Putin identified the Russian Federation's demographic decline as the country's biggest problem.⁵ At present levels of mortality, fewer than six out of ten fifteen-year-old Russian males can expect to survive to age sixty, while almost eight out of ten Brazilian or Turkish males and nine out of ten British males that same age can expect to do so.

The well-known association between health and economic development may explain some of these differences. However, Russian male mortality rates are still higher than those of other countries with similar per capita incomes (Exhibit 2). The only countries that are farther above the trend line are countries in Africa that have suffered most from HIV/AIDS.

These observations contrast with the optimistic scenario predicted in the 1950s. Life expectancy in the Soviet Union had improved since the 1930s, as the health system provided basic coverage to a geographically dispersed population while the central planning system enabled rapid construction of physical infrastructure, such as housing and electrification. However, in the mid-1960s, resources were diverted from the social sector to the military-industrial complex.⁶ Death rates began to increase after 1965, particularly at adult ages. By 1980, life expectancy lagged almost eight years behind that in the European Union (EU) coun-

EXHIBIT 2**Male Adult Mortality And Gross Domestic Product (GDP) Per Capita (In International Dollars), 2003**

SOURCE: World Health Organization, National Health Accounts data, available at <http://www.who.int/nha/en>.

NOTE: Adult mortality is the probability of dying between ages 15–60; that is, the probability of a fifteen-year-old dying before reaching age sixty, if subject to current age-specific mortality rates between the ages of fifteen and sixty.

tries. Fluctuations ensued during the 1980s and 1990s, associated with Mikhail Gorbachev's anti-alcohol campaign and the subsequent collapse of the Soviet Union, until the 1998 ruble crisis ushered in a period of sustained decline. Life expectancy at birth at age sixty-six now lags behind that of other G-8 countries by fourteen to sixteen years.

Noncommunicable diseases and injuries (NCDI) were the ten leading causes of death in the Russian Federation in 2002 (Exhibit 3), accounting for almost 70 percent of all deaths. Among the working-age population, cardiovascular diseases, cancer, and injuries accounted for 78 percent of deaths and 15.2 million lost potential life years in 2003.⁷ The World Health Organization (WHO) has estimated Russian mortality attributable to ten leading risk factors (Exhibit 4). The first three—high blood pressure, high cholesterol, and tobacco—are estimated to contribute to more than 75 percent of all deaths.

Recognition is growing that alcohol plays an important role in the Russian Federation's health crisis. Fluctuations in life expectancy since the mid-1980s have been driven by causes of death associated with hazardous drinking.⁸ Ongoing research suggests that the true contribution of alcohol may be even greater than had been suspected.⁹ A critical factor is the widespread availability of surrogate alcoholic beverages.¹⁰ Highly concentrated alcohol is sold as lighter fluid (for fires), window cleaning fluid, and antifreeze; in other Western countries, substitute chemicals serve these purposes. In addition, aftershaves consisting of 96 percent ethanol are sold widely. They are untaxed and therefore inexpensive, and it is well known that they are primarily sold for drinking.

It is important to consider the social conditions underlying these risk factors.

EXHIBIT 3
Deaths And Disability-Adjusted Life-Years (DALYs) Attributable To Ten Leading Diseases And Injuries In The Russian Federation, 2002

Rank	Cause	Total deaths (%)	Rank	Cause	Total DALYs (%)
1	Ischemic heart disease	29.6	1	Ischemic heart disease	13.9
2	Cerebrovascular disease	22.2	2	Cerebrovascular disease	10.0
3	Poisonings	2.8	3	Unipolar depressive disorders	4.0
4	Self-inflicted injuries	2.5	4	Violence	3.7
5	Trachea, bronchus, lung cancers	2.4	5	Self-inflicted injuries	3.3
6	Violence	2.0	6	Road traffic accidents	3.3
7	Road traffic accidents	1.9	7	Poisonings	3.2
8	Stomach cancer	1.9	8	Alcohol use disorders	3.2
9	Colon and rectal cancers	1.6	9	Hearing loss, adult onset	1.9
10	Cirrhosis of the liver	1.6	10	Tuberculosis	1.8

SOURCE: Data derived from the World Health Organization Regional Office for Europe, European Health for All Database, available online at <http://data.euro.who.int/hfadb>.

One proposed factor is the role of social capital—“the institutions, relationships, attitudes and values that govern interactions among people and contribute to economic and social development.”¹¹ Some data from the World Value Survey suggest that the level of at least one important dimension of social capital—trust—is lower in the Russian Federation than elsewhere. Recent work using data from the 2001 Living Standard, Lifestyles, and Health survey provided econometric evidence that in eight Commonwealth of Independent States (CIS) countries taken together (including the Russian Federation), trust and social isolation have a substantial causal impact on individual health outcomes.¹² Finally, analysis of mortality amenable to health care provides evidence of the Russian health system’s widespread failings.¹³

EXHIBIT 4
Deaths And Disability-Adjusted Life-Years (DALYs) Attributable To Ten Leading Risk Factors In The Russian Federation, 2002

Rank	Risk factor	Total deaths (%)	Rank	Risk factor	Total DALYs (%)
1	High blood pressure	36.5	1	Alcohol	16.5
2	High cholesterol	23.0	2	High blood pressure	16.3
3	Tobacco	17.1	3	Tobacco	13.4
4	Low fruit and vegetable intake	12.9	4	High cholesterol	12.3
5	High body mass index	12.5	5	High body mass index	8.5
6	Alcohol	11.9	6	Low fruit and vegetable intake	7.0
7	Physical inactivity	9.0	7	Physical inactivity	4.6
8	Urban outdoor air pollution	1.2	8	Illicit drugs	2.2
9	Lead	1.2	9	Lead	1.1
10	Illicit drugs	0.9	10	Unsafe sex	1.0

SOURCE: Data derived from the World Health Organization Regional Office for Europe, European Health for All Database, available online at <http://data.euro.who.int/hfadb>.

Consequences Of The Health Crisis

The Russian Federation's unprecedented mortality upsurge, coupled with fertility rates that are well below replacement level, has several implications.

■ **Shrinking population.** Since 1990, the Russian population has declined by six million to an estimated 143 million people. The average annual population growth between 1990 and 2003 was -0.3 percent, and continued high mortality and declining fertility are expected to lead to further population decline. The population of the Russian Federation would be seventeen million higher than it is now if age-specific mortality rates had followed the patterns experienced by the fifteen original European Union countries (EU15) since the mid-1960s.¹⁴

■ **Fewer workers.** If these trends persist, the Russian labor force will continue to shrink. A healthy population ages 65-75 could represent a sizable untapped workforce.¹⁵ However, the high burden of ill health among surviving older Russians could limit their contribution.

■ **National security risks.** The demographic and health crisis in the Russian Federation presents many challenges to national security.¹⁶ First, the number of men of conscription age will plunge rapidly in the decades ahead. Second, a growing percentage of the military budget must provide for medical, nutritional, and substance abuse programs for soldiers who are deemed medically unfit. Third, long-term economic growth will depend on large cohorts of healthy and skilled young and middle-aged adults, yet the demands of the armed forces will reduce the available pool. Finally, depopulation of some border areas could have security implications.

Impact On Health Care Costs And The Economy

The contribution of NCDIs to the burden of illness raises two economic questions. First, as many NCDIs require expensive and prolonged medical treatment, to what extent is the Russian health system burdened with their cost? Second, what are the economic consequences of premature mortality, ill health, and disability among Russian working-age adults?¹⁷

■ **High medical treatment costs.** Spending estimates from two regions (Chuvash Republic, an agricultural region, and Kemerovo Oblast, an industrial region) in 2003 were analyzed and extrapolated to the national level. The shares attributable to different diseases were applied to the US\$13 billion that is widely accepted as total health care spending in the country in that year.¹⁸ NCDIs are the Russian Federation's highest-cost conditions. The four most expensive conditions were circulatory system diseases, respiratory diseases, intentional and unintentional injuries, and digestive system diseases. They accounted for more than 50 percent of the country's total health expenditures in 2003.

■ **Economic effects.** A summary of the main findings follows. For the entire set of numerical results, see our earlier report.¹⁹

The cost of absenteeism due to ill health. On average, ten days are lost per employee per year because of illness in the Russian Federation; in the EU15 countries, the av-

erage is 7.9 days. Sickness absence incurs the direct cost of sickness benefits paid to absent employees and the indirect cost of lost productivity. The overall cost associated with the reported workdays lost to illness varies between 0.55 percent and 1.37 percent of gross domestic product (GDP, calculated respectively from the average wage rate or from GDP per capita). This is a major impact, given that it excludes the many other ways in which ill health affects the labor market, such as the effects of reduced productivity while remaining on the job.

Impact on labor supply. Ill health also reduces labor supply because jobholders with chronic diseases are more likely than those without a chronic disease to retire early or to lose their jobs and draw state pensions. While a hypothetical Russian male age fifty-five with median income and other average characteristics would normally retire at age fifty-nine, having a chronic illness would lower his expected retirement age by two years.²⁰ Similar results hold for females. Chronic illness, therefore, is an important predictor of premature retirement. The effect is greatest among the poor, who carry a double burden of ill health: They are more likely to suffer from chronic illness, and, once ill, they suffer worse economic consequences than rich people, perpetuating socioeconomic disadvantage.

Impact on labor productivity. Empirical analyses adopting various estimation procedures conclude that poor health in the Russian Federation reduces wages much more than in the Organization for Economic Cooperation and Development (OECD) countries, where poor health affects mainly the number of hours worked. More precisely, from the Russian Longitudinal Monitoring Survey (RLMS) data, people reporting good health earn higher wages than those in poor health, with a 22 percent premium for women and 18 percent for men (when endogeneity of the health proxy is addressed using standard econometric techniques).²¹ The National Survey of Household Welfare and Program Participation (NOBUS) data yield similar results: Men in good health earn about 30 percent more and women 18 percent more than those in worse health.²² Finally, a panel analysis based on the RLMS 2000–2003 rounds confirms that good health status raises the wage rate for males, while not greatly affecting the number of hours worked per week.

Job losses. Alcohol abuse in the Russian Federation greatly increases the probability of being fired.

Impact on the family. The death of a household member affects other members' welfare and behavior in various ways. RLMS data indicate that alcohol consumption per capita increases by about 10 grams per day following the death of an unemployed household member and by about 35 grams if the deceased was employed. The probability of suffering depression increased by 53 percent when controlling for other relevant factors. Chronic illness reduced household incomes, particularly during 1998–2002, when it contributed to an estimated annual loss of 5.6 percent of per capita income.

All of these results proved statistically significant, and where effect size could be assessed, it was considerable.

Policy Implications

■ **Strategies to prevent NCDs.** Elsewhere a wide range of strategies have been adopted to prevent deaths and ill health from NCDs. The overwhelming evidence suggests that an integrated, multisectoral strategy is most effective. The North Karelia Project in Finland demonstrated that this requires both population-based and high-risk prevention strategies.²³ It is now clear from such studies that the timing of effects of risk-factor changes is asymmetrical. Although exposure may take many years to give rise to disease, its removal can achieve rapid reductions.²⁴

The “population strategy” aims to change disease-related lifestyles, environmental factors, and their social and economic determinants in an entire population.²⁵ It includes fiscal measures, such as an increase in tobacco and alcohol taxation; regulatory and legal measures, such as a reduction in the number and opening hours of alcohol sales outlets or a ban on smoking in public places; and social marketing—for example, seeking to denormalize smoking.

The “high-risk strategy” identifies people at high risk of developing selected diseases and takes actions to reduce their disease burden through effective provider-based interventions. Examples include the detection and treatment of hypertension and intensive interventions with problem drinkers.

The implementation of both elements, however, faces major obstacles in the Russian Federation, as discussed below.

■ **Is the Russian Federation doing enough to confront the health crisis?**

Over the past three decades, the Soviet health care system lagged behind those of Western countries in health care outcomes.²⁶ The Soviet Union never developed a modern pharmaceutical or medical technology industry, depending on imports from Eastern Europe or South Asia. Soviet medicine was isolated from developments both in the management of specific diseases and, arguably more importantly, in evidence-based medicine. This was partly a result of the physical and linguistic inaccessibility of Western publications. Furthermore, labor was cheap, whereas technology, including pharmaceuticals, was expensive. The consequence was dependence on ineffective physical therapies, such as those using various forms of electromagnetic radiation. Now, modern drugs are available, although patients must pay for them. That means that drugs that should be taken continuously, such as anti-hypertensives, are often taken only when the patient feels unwell. This is undoubtedly a major factor in the high rate of cerebrovascular disease in the Russian Federation.

Health reforms were initiated in Russia during the 1990s to address this situation, mainly focusing on financing and delivery of services.²⁷ However, these have failed to address some fundamental problems in the delivery of health care. There has also been insufficient action to strengthen essential public health functions.

Traditionally, the State Sanitary Epidemiological Surveillance (SanEpid) System concentrated on communicable disease prevention through an environmental approach (for example, enactment of regulations, inspections, and penalties to prevent mainly food- and waterborne diseases and limit environmental pollution

“Many lessons from successful international experiences could be adapted to Russian specificities.”

and workplace hazards). This approach was justified in the past, but changing disease patterns call for new approaches.

Although established structures and ongoing reform efforts could contribute to improve the prevention and control of NCDIs in line with international best practices, progress is hindered by several factors.²⁸

Insufficient coordination of prevention and control activities. The roles and responsibilities for NCDI prevention and control at the federal, regional, and municipal levels, as well as among the national institutes, are not well defined. Coordination is especially important, since anti-NCDI programs require multisector collaboration.

Human resource limitations. Sufficient well-trained health personnel for NCDI prevention and control are lacking.²⁹ Moreover, new approaches to training must take account of the established beliefs and practices of many Russian physicians, which are often at variance with scientific evidence.

Inadequate access to information. Limited English proficiency among Russian health workers and a lack of relevant material in Russian are barriers to adopting evidence-based practices. Materials conveying information must take account of the circumstances within which many Russian health professionals work, with limited equipment and patients who might not be able to afford many drugs.

Perverse incentives. Low wages in the health sector have fueled widespread informal payments to health professionals.³⁰ Although these were common during the Soviet period, the situation has been exacerbated by the greater availability of pharmaceuticals that patients must purchase. This has led to drug company representatives' paying physicians to prescribe their products, resulting in the widespread use of ineffective products.³¹

Limited funding. Because the resources allocated to NCDI prevention activities are low, additional funds or the reallocation of existing funds are required for multisectoral initiatives at the federal, regional, and municipal levels.

Inadequate surveillance capacity and research effort. A surveillance system that tracks trends and reports cases is a key tool for preventing and controlling NCDIs. The Russian Federation needs more capacity for policy formulation and program development, along with related research efforts.

■ **What additional actions can the Russian Federation take?** Prevention and control of NCDIs requires laws, regulations, and enforcement mechanisms to guide the formulation of national policies and strategies and the implementation of programs. Effective implementation will require good communication, strong political and technical leadership, and broad support from myriad stakeholders.

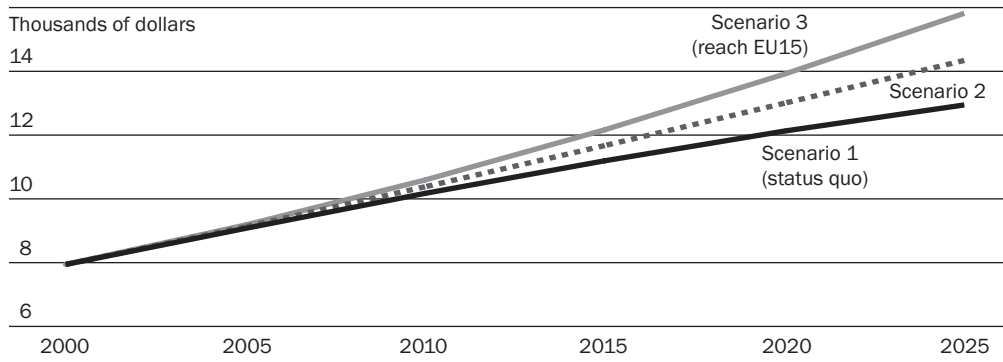
Many lessons from successful international experiences could be adapted to Russian specificities. Because the Russian Federation is one of a handful of coun-

tries that has not yet signed the Framework Convention on Tobacco Control, effective actions on smoking include extension and enforcement of the existing ban on advertising, development and enforcement of policies for smoke-free worksites and public places, and increased taxation. It will also be essential to give special priority to alcohol-related diseases, addressing consumption of both “normal” and surrogate products. For the former, there is considerable evidence for effectiveness of actions targeting supply—in particular, by reducing the number of outlets and the times that they can sell alcohol. There is also compelling evidence that price rises through taxation will be effective. For surrogate alcohols, legislation enacted in 2006 is already reducing supply of aftershaves in some cities, but further action is needed to tackle the increasingly widespread consumption of medicinal tinctures sold by pharmacies. In addition, some simple changes could be made, such as substituting paraffin wax blocks for lighter fluid, using only ethylene glycol as antifreeze, and adding emetic substances to aftershaves. Illegally produced alcohol is more difficult to tackle but could be addressed by rigorous enforcement of existing laws, although the challenges of doing so should not be underestimated, given widespread tolerance by law enforcement officials, coupled with corruption.

Efforts are also required to help regions and municipalities modernize their health care delivery systems, particularly to implement evidence-based care. This will require investment in professional development, appropriate equipment, and effective governance.

■ **The potential economic benefits of mortality reduction.** The potential economic benefit of a reduction in preventable adult mortality in the Russian Federation may be seen by comparing three scenarios.³² The status quo scenario assumes that 2002 levels of adult mortality from NCDs will remain constant until 2025. A more optimistic scenario assumes that policies are adopted that cause a decline in mortality rates from NCDs to the current level in the EU15 countries: an annual reduction of 4.6 percent for NCDs and 6.6 percent for injuries—admittedly an ambitious target. An intermediate scenario assumes policies are adopted that achieve half the improvement in the most optimistic scenario.

Our analysis had three main findings: (1) The static economic benefits (attributing to a year of life the dollar value of GDP per capita) of gradually bringing adult NCDI mortality rates down to EU15 rates by 2025 are estimated to be 3.6–7.1 percent of the 2002 Russian GDP (depending on the assumed future path of GDP). The gains would be higher if morbidity were taken into account. (2) When a broader concept is considered (measured by the value of changes in annual mortality rates using a “value of a statistical life,” as in the work of William Nordhaus), the “welfare” benefits from achieving EU15 rates by 2025 are estimated to be as high as 29 percent of the 2002 Russian GDP.³³ (3) Improving adult health has a substantial positive effect on growth in GDP per capita, given that adult mortality is a fairly reliable predictor of economic growth. Exhibit 5 illustrates the predicted path of GDP per capita under the three scenarios, using the

EXHIBIT 5**Russian Gross Domestic Product (GDP) Per Capita Forecasts, Three Scenarios (Lower Bounds), In 1996 U.S. Constant Dollars, 2000–2025**

SOURCE: World Bank, *Dying Too Young: Addressing Premature Mortality and Ill Health Due to Non-Communicable Diseases and Injuries in the Russian Federation* (Washington: World Bank, 2005; see Note 4 in text).

NOTE: EU15 is the fifteen original European Union countries.

very conservative lower bound of the growth estimates calculated.³⁴ The status quo scenario 1 predicts that GDP per capita grows constantly at the 2000 rate, the one estimated from actual Russian mortality. The gains in GDP per capita for the more favorable scenarios 2 and 3 correspond to the area between their associated lines and that for scenario 1. These benefits increase over time: In 2005, the difference in per capita GDP between the status quo scenario and the most optimistic scenario was only US\$105, but by 2025, this difference would have grown to US\$2,856. Upper-bound predicted paths of GDP per capita suggest that differences between scenarios 3 and 1 would reach US\$324 in 2005 and US\$9,243 in 2025. The true values lie between the lower- and upper-bound estimates.

Concluding Comments

Reducing the burden of NCDIs in the Russian Federation is likely to have a major positive impact not merely on improved health status but also on several economic outcomes. The expected economic benefits are of an order of magnitude that could easily outweigh the cost of the 2006–2007 US\$7 billion National Priority Health Program that is geared to allocate additional money for salary increases, modernization of equipment, and new health facilities.

Measures adopted by the Russian government in February 2007, such as the decision to allocate US\$2.9 billion to tackle socially significant diseases (NCDIs, tuberculosis, HIV/AIDS), coupled with a decision by the Ministry of Health and Social Development (MOHSD) to revise its NDCI strategy, and debates in the Russian Parliament on tobacco and alcohol control measures are causes for optimism. Absent other measures, however, these steps will not correct numerous structural weaknesses in the health system. The Russian health system, dominated by hospitals, outdated guidelines, and poor incentives, should be restructured to be-

come a primary care-based system that emphasizes health promotion, disease prevention, and outcome-based performance incentives.

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The views expressed in this paper are those of the authors and do not necessarily reflect the position of their institutions.

NOTES

1. A.J. McMichael et al., "Mortality Trends and Setbacks: Global Convergence or Divergence?" *Lancet* 363, no. 9415 (2004): 1155–1159.
2. World Bank Moscow Office, Economics Unit, "Russia Economic Report," 2006, http://ns.worldbank.org.ru/files/rer/RER_12.1_eng.pdf (accessed 1 December 2006).
3. V.M. Shkolnikov et al., "Mortality Reversal in Russia: The Story So Far," *Hygeia Internationalis* 4, no. 1 (2004): 29–80.
4. World Bank, *Dying Too Young: Addressing Premature Mortality and Ill Health Due to Non-Communicable Diseases and Injuries in the Russian Federation*, 2005, <http://siteresources.worldbank.org/INTECA/Resources/DTY-Final.pdf> (accessed 3 April 2007).
5. V. Putin, "State-of-the-Nation Address," Moscow, 10 May 2006.
6. E.M. Andreev, M. McKee, and V.M. Shkolnikov, "Health Expectancy in the Russian Federation: A New Perspective on the Health Divide in Europe," *Bulletin of the World Health Organization* 81, no. 11 (2003): 778–787.
7. R.G. Oganov and G.Y. Maslennikova, "Cardiovascular Disease Mortality in the Russian Federation during the Second Half of the Twentieth Century," *CVD Prevention* 2, no. 1 (1999): 37–43.
8. D.A. Leon et al., "Huge Variation in Russian Mortality Rates 1984–94: Artefact, Alcohol, or What?" *Lancet* 350, no. 9075 (1997): 383–388.
9. D.A. Leon et al., "Hazardous Alcohol Drinking and Premature Mortality in Russia (the Izhevsk Family Study): A Population-Based Case-Control Study," *Lancet* (forthcoming).
10. M. McKee et al., "The Composition of Surrogate Alcohols Consumed in Russia," *Alcoholism, Clinical, and Experimental Research* 29, no. 10 (2005): 1884–1888.
11. C. Grootaert and T. Van Bastelaer, "Understanding and Measuring Social Capital: A Synthesis of Findings and Recommendations from the Social Capital Initiative," Social Capital Initiative Working Paper no. 56 (Washington: World Bank, 2001).
12. B. d'Hombres et al., "Does Social Capital Determine Health? Evidence from Eight Transition Countries," Paper presented at the United Nations University (UNU) World Institute for Development Economics Research (WIDER) conference, "Advancing Health Equity," Helsinki, Finland, 29–30 September 2006, <http://www.wider.unu.edu/conference/conference-2006-2/conference-2006-2-papers/suhrcke-010906.pdf> (accessed 3 April 2007).
13. E.M. Andreev et al., "The Evolving Pattern of Avoidable Mortality in Russia," *International Journal of Epidemiology* 32, no. 3 (2003): 437–446.
14. E.M. Andreev, "Demographic Consequences of Mortality Reversal in Russia" (Paper prepared for the Twenty-fifth International Union for the Scientific Study of Population (IUSSP) International Population Conference, Section 36: "Demographic and Socio-Economic Consequences of Adverse Mortality and Health Trends," Tours, France, 18 July 2005).
15. P.F. Drucker, *Management Challenges for the Twenty-first Century* (Burlington, Mass.: Butterworth-Heinemann, 1999).
16. J. Twigg, "National Security Implications of Russia's Health and Demographic Crisis," PONARS Policy Memo no. 360 (Richmond, Va.: Program on New Approaches to Russian Security, 2005), 1–5.
17. For an earlier consideration of some economic dimension of the costs associated with cardiovascular disease mortality in Russia and selected other low- and middle-income countries, see S. Leeder et al., *A Race Against Time: The Challenge of Cardiovascular Disease in Developing Countries* (New York: Earth Institute, Columbia University, 2004).
18. E. Frid, "Health Care Costs in the Russian Federation" (Background assessment prepared for the World Bank, Moscow, Russia, March 2005).
19. World Bank, *Dying Too Young*. A more complete description of the derivation of the data is available in a

- technical appendix, online at <http://content.healthaffairs.org/cgi/content/full/26/4/1040/DC1>.
20. The other characteristics of this hypothetical individual are that he is married, has one child, has a high school diploma, was born in the Russian Federation, and is living in an urban area.
 21. The Russian Longitudinal Monitoring Survey (RLMS) is a series of nationally representative surveys designed to monitor the effects of Russian reforms on the health and economic welfare of households and individuals in the Russian Federation. Data have been collected since 1992 on an almost annual basis. See the RLMS home page, <http://www.cpc.unc.edu/rlms>.
 22. The National Survey of Household Welfare and Program Participation (NOBUS) has so far only been held once in 2003. With a sample of about 44,500 households, it is representative both nationally and for forty-six larger subjects of the Russian Federation. It captures differing aspects of household welfare and focuses on household access to social services. It has been produced by the Federal State Statistics Service, Moscow.
 23. P. Puska et al., eds., *The North Karelia Project: Twenty Year Results and Experiences* (Helsinki: National Public Health Institute, 1995).
 24. *Ibid.* The North Karelia Project in Finland shows that major changes in mortality from NCDs can be achieved through dietary changes; increased physical activity; and reduced smoking, serum cholesterol, and blood pressure. Coronary heart disease (CHD) in adults age sixty-five and younger fell by about 73 percent between 1970 and 1995. In a recent ten-year period, mortality from CHD declined by about 8 percent a year. Mortality from lung cancer declined more than 70 percent, mostly owing to consistent declines in the proportion of men who smoked (from 52 percent in 1972 to 31 percent in 1997). Data on the risk factors from ischemic heart disease and mortality suggest that the changes in the main coronary risk factors (serum cholesterol concentration, blood pressure, and smoking) can explain most of the decline in mortality from that disease. As a result of targeting important high-risk factors for NCDs, all causes of mortality in North Karelia declined by about 45 percent during 1970–95. In the 1980s, these favorable changes began to develop all over Finland, improving life expectancy by seven years for men and six for women. The largest decline in age-specific mortality was reaped by those ages 35–44: Men in this age group saw an 87 percent decline in mortality from CHD between 1971 and 1995. Men ages 35–64 saw age-adjusted mortality rates decline from about 700 per 100,000 population in 1971 to about 110 per 100,000 in 2001. This rate for all of Finland among men in the same age group was about 470 per 100,000 and fell 75 percent. These improvements in life expectancy are correlated with sizable declines in the amount of saturated fats consumed, coming mainly from milk products and fatty meat (saturated fat consumption dropped from about 50 grams per day in 1972 to about 15 grams per day in 1992) and major reductions in blood cholesterol levels (from about 7 mmol per liter in 1972 to about 5.6 mmol per liter in 1997).
 25. G. Rose, *The Strategy of Preventive Medicine* (Oxford, U.K.: Oxford University Press, 1992).
 26. Andreev et al., “The Evolving Pattern of Avoidable Mortality in Russia.”
 27. E. Tragakes and S. Lessof, *Health Care Systems in Transition, Russia* (Copenhagen: European Observatory on Health Systems and Policies, 2003).
 28. Opinions expressed during World Bank–sponsored senior policy seminars on public health and disease control for Russian Federation Government officials and representatives of international and bilateral agencies held in Moscow in 2002–2003.
 29. M. McKee, “A Decade of Experience in Eastern Europe,” in *Leadership and Management for Improving Global Health*, ed. W. Foege, R. Black, and N. Daulaire (New York: Jossey Bass/John Wiley and Sons, 2005), 167–186.
 30. D. Balabanova et al., “Health Service Utilization in the Former Soviet Union: Evidence from Eight Countries,” *Health Services Research* 39, no. 6, Part 2 (2004): 1927–1950.
 31. K. Danishevski, “Maternal Health Care in Russia: Understanding Clinical Practice in an Information Poor Setting” (Ph.D. thesis, University of London, 2006).
 32. Details can be found in World Bank, *Dying Too Young*.
 33. W.D. Nordhaus, “The Health of Nations: The Contribution of Improved Health to Living Standards,” NBER Working Paper no. 8818 (Cambridge, Mass.: National Bureau of Economic Research, 2003).
 34. The predictions are based on a parsimonious empirical growth regression model for a worldwide sample of countries from 1960 to 2000, in five-year intervals. Explanatory variables are the initial GDP per capita, the degree of openness of the economy, the fertility rate, and the adult mortality rate. We produced ordinary least squares and country fixed-effects estimates. This is a deliberately simple approach that illustrates the orders of magnitude that could be involved.