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The Russian Mortality Crisis: Causes, Policy Responses, Lessons

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Introduction

Policy & Research Papers are primarily directed to policy makers at all levels. They should also be of interest to the educated public and to the academic community. The policy monographs give, in simple non-technical language, a synthetic overview of the main policy implications identified by the Committees and Working Groups. The contents are therefore strictly based on the papers and discussions of these seminars. For ease of reading no specific references to individual papers is given in the text. However the programme of the seminar and a listing of all the papers presented is given at the end of the monograph.

This policy monograph is based on the Workshop 'Human Insecurity Crisis in Russia: Determinants and Policy Response' organized by the Common Security Forum with grant funds provided by the John D. and Catherine T. MacArthur Foundation, the Swedish Ministry of Foreign Affairs, and the International Union for the Scientific Study of Population, and held at the Harvard Center for Population and Development Studies, Cambridge, Massachusetts, April 2 and 3, 1996.

The immediate objective of the workshop Human Insecurity Crisis in Russia: Determinants and Policy Response was to pin down the size and importance of recent mortality increases in Russia and the former Soviet Union, analyze the causes and point to policy responses. The broader purpose was to gain insights into ways that demographic and social science techniques can be brought rapidly to bear on emerging human security crises in societies undergoing sudden, radical transformation. The impetus for the workshop lay in two observations. First, since 1965, and especially since 1989, an unusual, perhaps unprecedented, peacetime rise in mortality has been taking place in Russia and many of the countries that formed the Soviet Union. Second, the drastic changes taking place simultaneously in almost every aspect of life in that region suggest a very wide range of possible - and sometimes contradictory - explanations for the phenomenon.

In 1989, 107 of every 10,000 Russians died. In 1993, death claimed 144 of every 10,000. During that 4-year period, 1.3 million Russians perished over and above the number that would have maintained the death rate at its 1989 level. Demographers call these 'excess' deaths.

Higher death rates mean shorter average life spans. Since 1965, the average life in the Russian Federation has contracted more than 4 years. Outside of war and famine, no other nation in this century has experienced such a shrinking of longevity.

Russian death rates should have been going down all this time. That is what has happened in every other country with a 'developed' mortality distribution. In this distribution, which comes to pass when a country achieves a certain standard of living and completeness of childhood immunization, which most people who die are elderly individuals with chronic illnesses rather than infants with infectious diseases.

Russia and Japan both accomplished this mortality transition in the two decades following the World War II. Today, the average Russian newborn can anticipate only 64 years of life, compared to 79 for Japanese infants. Life expectancy for Russian males is similar to that of males in Pakistan, a country that has not yet conquered childhood epidemics.

Why? What can policy makers do to reverse this rising tide of mortality? What can Russia's experience teach other countries that may one day contemplate radical socioeconomic reforms?

The International Union for the Scientific Study of Population and the Common Security Forum convened Russian and international experts to bring the viewpoints and techniques of all the human sciences to bear on the terrible paradox of Russian mortality. The meeting took place at Harvard University's Center for Population and Development Studies, April 2 and 3, 1996.

The participants were experts in the fields of demography, epidemiology, economy, medical sociology, anthropology, Russian history, political science, international relations and ethics. They first evaluated the available data on Russian mortality to establish as accurately as possible when Russian the rates changed, and by how much. Next they presented hypotheses about the causes of the crisis and assessed how much of the mortality trends each one might explain. The picture that emerged, while still tentative in some respects, featured several clear policy implications and areas for further research.

The Shape of the Disaster

The Russian Statistics Office's (Goskomstat's) records of death counts and the ages of the deceased are generally accurate. When the annual figures are drawn on a graph, they show three distinctive trends in Russian life expectancy since 1965 (Figure). Graph from Shkolnikov paper.

In 1965, the average life expectancy for a Russian newborn exceeded 67 years. This was more time alive than Russians had ever enjoyed before. Sadly, it is also more than they have ever experienced for any extended period since. In that same year, death rates began an initially slow but gradually accelerating increase which trimmed approximately 2 years off average longevity by 1980.

In the second period, from 1980 -1984, the average life span lengthened slightly, altogether about a seventh of a year. Then, in 1985 through 1987, it quickly grew 2.5 years, to slightly longer than its previous maximum in 1965.

The last period, starting in 1988 and continuing at least through 1994 (the last whole year for which data are available) has seen a downward plummet in survival. By 1994, the average Russian life span was only 64 years.

The explanation for these trends must also account for two other distinctive features of Russian mortality in these years. First, men have borne the brunt of the disaster. In 1994, Russian women's life expectancy was 71.1 years, 3.3 years less than it had been at its maximum in 1990. Russian men's life span, in contrast, had contracted nearly 7.5 years from its longest, 64.9 years, attained in 1987. However, it seems very likely that the same exposures or experiences may be killing both women and men, but may be more deadly to men. That is because, in general, the lines tracing life expectancy for men and women across the years 1970 to 1994 change their directions - from falling to rising or vice versa - at approximately the same dates.

The other striking feature of the devolution in Russian survival is the age pattern of excess deaths. In most mortality crises, children and the elderly are hit hardest. In Russia, however, almost all the escalations in death rates have been in the productive ages between 20 and 60. In 1989-1993, for example, more than 50% of the excess deaths among men were of 45- to 60-year-olds, raising the annual risk of death in this age group about 30%. Men 30-45 years old incurred fewer excess deaths. Because their initial death rates were lower, however, their annual risk of death climbed more than 70%. The excess deaths among women, while less numerous, generally affected the same age groups as those among men.

The Russian system for categorizing what people died of differs from the one used by most nations and international organizations. Some studies have indicated that, systems aside, Russian physicians and pathologists who recorded causes of death were frequently inconsistent and inaccurate. Nevertheless, demographers agree that circulatory diseases produced half or more of excess Russian deaths in 1965-1993. They were the immediate causes of 62% and 50% of all female and male deaths in 1965, respectively, rising to 67% and 54% in 1993. Fatal accidents and violence caused approximately another third of the excess deaths from 1965 to the present, with the portion increasing in more recent years. The remainder of the excess deaths are divided among a number of causes - including respiratory disease, cancer, digestive ailments and infection - each of which was responsible for a small portion.

This, then, is the puzzle. The pieces to be assembled include a long-term decline in longevity followed a sharp but short recovery and then a plummet, resulting in a significant overall loss. Also to be fit in are unusual age groups, marked sex differentials and particular causes of death in the excess mortality. An important observation is that the 'negative excess deaths', or deaths averted in the short-term recovery, had the same characteristics as the excess deaths in other periods. That is, those who benefited were primarily working-age men, and the reason was a sag in the rates of cardiovascular disease and injury.

Four theories have been advanced to resolve this puzzle. They implicate the lethal impacts of smoking, alcohol intake, institutional breakdown and restructuring and psychosocial stress.

Smoking

A new estimate blames smoking for 65% of the 1965-1989 difference between Russian and American longevity over the years 1965-1989, as well as 40% of all mortality among middle-aged Russian males. The estimate was obtained by using Russia's annual lung cancer rate as a measure of the population's smoking history. Data from the United States were then used to calculate how such a smoking history would raise death rates from all smoking-related diseases.

The story that emerges from this analysis is as follows: A great many people started smoking during and after World War II (which Russians call their 'Great Patriotic War'). Two decades later, they had been smoking long enough to develop lung cancer and other deadly smoking-related diseases. Thus, in 1965, they began to die in numbers large enough to lower the average life expectancy for the whole Russian population. Smoking increased after 1945, leading to a steady rise in deaths and fall in life expectancy since 1965.

This story is consistent with previous impressions that Russians smoke very heavily, although there are no records of the actual quantities of tobacco consumed. Smoking kills mainly through bronchitis and emphysema, cardiovascular disease and lung cancer. These factors together have produced a majority of Russia's excess deaths. In addition, many more Russian men smoke than women - in 1994, 60% versus 10% - which fits with the fact that men's life expectancy has contracted considerably more than women's.

An advantage of the method used in this analysis to estimate smoking's impact is that the lung cancer rate simultaneously reflects all the aspects of the smoking history that determine death rates. Each of these aspects - how many people have smoked, how much and for how long - is difficult to estimate independently. A disadvantage of the method, however, is that it assumes that smoking affects mortality from causes other than lung cancer to the same degree in Russia as in the United States. This could lead to an overestimate if, for example, insufficient allowance is made for the fact that Russians are generally more prone than Americans to cardiovascular disease.

The most reasonable assumption would be that smoking exerted a continuously negative influence throughout all three of the recent periods of Russian mortality. This would imply that some different, beneficial factor overwhelmed the impact of smoking to produce the short-term recovery in 1985-1986. The final plummet of survival might have happened because this beneficial factor weakened, or because another negative factor came into play and reinforced the deadly yield of smoking, or both.

Traditional interventions to combat smoking are legal regulation, taxation and campaigns to persuade individuals to quit smoking for the sake of their health. The first option would probably not be practical in today's Russia, for many reasons, including the existence of much more urgent priorities for the nation's enfeebled regulatory and enforcement apparatus. High cigarette taxes have had only debatable impact on smoking rates in other countries. Moreover, it is hard to imagine Russian policy makers agreeing to press an issue of such guaranteed unpopularity.

Some large-scale anti-smoking programs have convinced significant proportions of smokers to quit. A person's risk of dying from smoking-related causes drops almost immediately when he or she stops. Therefore, an effective anti-smoking campaign in Russia might improve mortality quickly, although its full benefits will not be seen for some decades. An anti-smoking campaign might be a very good mission to assign to Russia's health care sector, whose personnel include numerous modestly-trained workers. Progress might be slow at first, because Russians do not yet have a culture of physical fitness and health. There are few joggers in Gorky Park.

Alcohol

Mikhail Gorbachev affirmed that Russia had a critical problem with alcohol in 1985, when he ordered limits on liquor production and distribution and instituted other measures to reduce drunkenness. Growing thirst for vodka almost certainly explains some of Russia's decline in life expectancy.

Acute alcohol intoxication impairs mental function, judgement, and self control. The well-known consequences include lethal overdose, accidents, homicide and cardiomyopathy. Deaths due to these causes were responsible for more than a third of the attenuation in survival in Russia since 1965. Alcohol poisoning alone, according to a painstaking reconstruction of Goskomstat's cause-of-death data, accounted for approximately 15% of the excess deaths since 1965. Chronic alcohol abuse also promotes ischemic heart disease and stroke. Chronic liver disease, another consequence of drinking, appears to have grown steadily more prevalent in Russia in the decades since 1965.

A striking observation that seems to implicate alcohol centrally in Russia's mortality crisis is that the 1985-1987 period of short-term recovery in survival started at the same time as Gorbachev's anti-alcohol campaign, and lasted exactly as long. Total alcohol consumption fell an estimated 35% during these years. Much of the growth spurt in life expectancy was due to a drop in the kinds of fatalities that acute alcohol intoxication produces. Moreover, one reading of the demographic evidence suggests that variations in a single factor (or set of factors) caused both the recovery and the reversal (see 'Demographic Mirror or Mirage?').

Some observers doubt that Gorbachev's anti-alcohol campaign could possibly have been effective enough to save so many lives. Nevertheless, the temporal coincidence seems intuitively too neat to be entirely fortuitous. By 1993, Russians were again drinking as much as they had in 1984. By 1994, survival had fallen to what it would have been if the brief rise had never occurred, and life expectancy had shrunk uninterruptedly at its previous gradual rate.

Box 1: Demographic mirror or mirage?

A close reading of Russian mortality trends suggests that whatever reduced deaths in the mid-1980s also created the conditions for the subsequent recouping of deaths. The groups whose life expectancy increased in 1985-1987 were approximately 7 years younger than those who experienced mounting death rates in 1989-1994. In other words, they were the same cohort - people born between, roughly, 1935 and 1975 - who first gained longevity and then lost it back. Moreover, the gain and loss just about cancel each other out, if allowance is made for the overall declining trend in Russian life expectancy since 1965.This mirroring suggests that some factor came into play in the mid-1980s that spared some people who, without it, would have died. When that factor dropped out a few years later, the people who were originally spared died, along with a new group of people who had become vulnerable in the meantime. One hypothesis is that the anti-alcohol campaign was that factor. Some people who could not obtain sufficient liquor to die an alcohol-related death during the campaign did so as soon as it ended, along with others who had reached lethal drinking levels meanwhile.There are counter-arguments to this interpretation, however. The mirroring between the positive mortality trend in 1985-1987 and the subsequent negative trend was not exact. First, the parallel between the frequency of fatal injuries and trends in alcohol consumption has not been as close since 1987 as it was in 1985-1987. Moreover, the part of the population whose life expectancy grew during the anti-alcohol campaign was not the same part that was affected by the subsequent reduction in longevity. Well-to-do people were the beneficiaries, and worse-off-people have been the losers. These observations do not jibe easily with the hypothesis that the resumption of the old drinking habits brought back the old mortality rates.

Other observers question whether Russians have increased their drinking enough to explain very much of their mortality crisis. For the past few years researchers with the Russian Longitudinal Monitoring Survey (RLMS) have been began asking individuals how much they drink. Their results put the average annual adult intake during 1992-1993 at 14.3 litres. This is less than people imbibe in some other European countries. However, Russians have a distinctive style of drinking that may produce particularly severe health effects. Russian drinkers are more likely to binge periodically on vodka, where Frenchmen, for instance, more commonly take a moderate amount of wine each day.

Two figures would permit a precise estimate of the role of alcohol in the decline in Russian life expectancy. They are the percentages of cardiovascular and injury-related deaths that were alcohol-related. Unfortunately, the information necessary for these calculations was not gathered.

In the absence of these data, it is impossible to separate alcohol's impact on death rates from those of some other factors. After all, accidents, murder and suicide readily happen without alcohol. The availability of cars and fuel and the condition of roads, for example, are crucial to the number of traffic fatalities. Some experts believe that violent attacks and suicide have their own internal dynamics, which produce epidemics and lulls. The strength and integrity of law enforcement also make a significant difference to how much violent crime is suppressed or encouraged.

In summary, there is highly suggestive but inconclusive evidence that alcohol caused much of the overall change in Russian death rates during the past 30 years. The minimum influence of alcohol is the surplus mortality due to acute alcohol poisoning, estimated at about one seventh of the total excess. The maximum might reach one third under the very liberal assumption that drinking precipitated 75% of all fatal injuries and 25% of circulatory deaths.

The policy options and drawbacks for reducing alcohol intake in Russia are analogous to those for controlling smoking. An important difference, however, is that anti-alcohol programmes have never achieved the success rates sometimes documented with anti-smoking drives.

Institutional Breakdown and Disarray

In the first 20 years after World War II, the Soviets minimized infectious disease mortality in their country and thereby achieved an epochal leap in life expectancy. In the mid-1960s, the Soviets reweighted their priorities. They began shifting ever-larger shares of their resources away from domestic programmes into military expansion. Paucity of inputs led to a progressive weakening of institutions that finally culminated in economic and social chaos and the collapse of the Soviet Union in the late 1980s.

Since 1991, Russian institutions have been partly the dilapidated remnants of Soviet institutions, partly newly nascent, and uncoordinated. The government's money problems intensified during the changeover from a planned to a supply-and-demand economy. On the one hand, the government ceded into private hands some of its most important income-producing resources, including natural gas deposits totaling half of the world's currently known reserves. In addition, its ability to collect taxes is limited, since citizens and business enterprises can conceal transactions and income with relative ease.

The hypothesis is natural that the mid-1960s policy changes combined with poor economic performance underlie the slippage in life expectancy that started at the same time. Surely, one thinks, it did not just happen that the long-term rise in death rates commenced with the progressive lopping of civilian budgets. Applying this intuition to the developments of the 1990s, the corollary seems inescapable that the final chaotic breakdown of the Soviet Union and subsequent restructuring magnified the mortal impact of crumbling institutions.

The institutional functions whose deterioration would be expected to affect health most directly include delivery of health care, maintenance of a safe physical infrastructure (particularly factories and roads) and the environment, food distribution and law enforcement. The currently available information provides vivid glimpses of how some of these sectors were performing at certain times, and hints of how they might have been doing at others. The still-emerging picture appears consistent with a role for institutional breakdown in surplus mortality from acute causes during the Soviet period, and in both acute and chronic causes in recent years.

Soviet allocations for health care were 6% of their gross domestic product in the mid-1960s, fell to 2-4% in the mid-80s, and were estimated to be 2.3% in 1992. Because gross domestic product was itself falling, the health services received ever-smaller shares of a rapidly shrinking pie. Moreover, only about half of the money spent on health care benefited the general population. The rest went to an elite medical network that served only the best-connected 1%.

Lack of resources put a low cap on standards of medical education. Most Soviet physicians began practising after only 2 years of formal training. An assessment of Russian medical services in the early 1990s reported that a 'shocking' number of doctors could not perform basic medical procedures. Moreover, by the late 1980s hospitals were reporting extreme shortages of essential supplies including sterile needles, gloves, intravenous tubing, dressings, surgical instruments and basic medications. An official survey in the early 1990s found that one hospital in three had no hot water, one in four lacked plumbing and one in seven had no water at all.

Whether or not the recent watershed in Russian social organization has reduced access to the health system or the quality of health care is as yet uncertain. Doctors - always underpaid in the state system but now no longer captive to it - have streamed into private practice. However, Russian doctors have long been routinely demanding payment from patients to supplement their government salaries. In the mid-1990s the RLMS concluded that 15% of Russians could not afford prescribed medications. But the survey did not adjust for income that many Russians keep secret to avoid paying taxes. One worrisome observation is that some Moscow ambulance drivers have used their vehicles to collect taxi fares rather than attending to emergency calls.

A telling indicator of longstanding flaws in the health system is the reemergence of epidemic diphtheria since 1990. Many of the stricken individuals have been older children and adults, who ipso facto were not properly immunized as infants. Moreover, diphtheria cases have increased steadily, and they quadrupled from 1992 to 1993. This suggests that once started, the problem of missed or failed immunizations expanded.

Such a faltering health system might very well lose substantial and increasing percentages of patients who would have been saved in better times. In Russia, the patients most affected must have been those needing acute care. That is because Soviet health care at its best never exerted any significant control over chronic diseases. As a result, patients with chronic conditions lost little or nothing when it broke down.

Turning to the physical infrastructure, there are no hard data to establish the precise circumstances that led to Russians' escalating risks of accidental injury and death since 1965. The Chernobyl explosion and fire, together with other less dramatic incidents reported in the press, suggest that fatalities resulting from faulty infrastructure may have been frequent, and perhaps increasing throughout these decades. In contrast, despite Chernobyl, it

appears that health effects environmental degradation, while tragic in some locales, could never have raised the whole population's death rates.

With respect to the potential impact of food distribution on excess deaths in Russia, the evidence is very mixed. Widespread gross malnutrition never occurred (the population had only a little less to eat in the late 1980s compared to 1970). Nevertheless, fresh fruits and vegetables became progressively scarcer. People who cannot obtain adequate amounts of the vitamins and other micronutrients contained in these foods develop higher risks for circulatory and other chronic illnesses. In 1994, the RLMS found that nearly 40% of Russian diets were deficient in micronutrients.

Between 1989 and 1994, the percentage of income that Russians spent on food jumped from one quarter to one half. In other countries, such a high 'food portion' - which leaves less money for other necessities - has almost always been associated with increased levels of protein-calorie malnutrition. However, some nutritionists think that in Russia, higher food prices have actually resulted in a generally healthier diet. Unable to afford red meat and fatty cuts, the population seems to be eating more grains instead.

Finally, law enforcement cracked in the post-Soviet restructuring. Demoralized, inefficient and corrupt police lost control of crime, where they did not actually commit it. This is one reason why homicides doubled between 1989 and 1993.

Consistent with the sex and age distributions of excess Russian deaths, institutional factors would likely have predominantly affected working-age men. Despite ideological equality between the sexes, the Soviet government promoted traditional breadwinner-homemaker roles for men and women. As a result, men would have had the greatest exposure to the dangerously frayed holes and edges of the infrastructure.

There is a separate trove of empirical evidence linking institutional breakdown to excess deaths in the period of restructuring. Comparisons with other former-Soviet countries in Eastern Europe demonstrate a pattern of lower death rates in countries that are further along in their restructuring, and higher rates in Russia and other lagging countries. Although they strictly apply only to the period of plummeting survival since 1989, these comparisons lend some additional credence to the idea that less extreme but mounting institutional disarray might have cost lives in previous periods, too. However, the cross-national comparisons are not entirely consistent about these relationships (see Box 2: 'What Do Cross-National Comparisons Tell?').

Putting together the entire scenario, deterioration of four key Soviet sectors might have fed Russia's 1965-1989 ascent of mortality due to acute causes, particularly injuries. On the other hand, foundering institutions and sinking living conditions obviously cannot account for Russia's survival gains of the mid-1980s. Some other explanation must be found, too, for the chronic disease component of waxing mortality up until roughly the mid-1980s. Thus, the data suggest that institutional decay was behind less than half of the survival losses during the period of long-term mortality increase

Institutional enfeeblement and restructuring has likely played an enhanced role in the steep acceleration of mortality since the late 1980s. This is the period in which economic and social disorder arrived at a critical mass. It is also roughly when dietary impoverishment and other risks originating in the 1960s would have begun adding a new layer of excess chronic disease deaths.

Policy makers have many choices for addressing the institutional components of the mortality crisis. The information available so far does not settle the question of which sector is most important to fix first. Given the growing homicide rate, however, building a police force that truly assures the security of persons and property claims a high priority. Obviously, as is true everywhere, the physical infrastructure needs some repairs urgently and others eventually. More adequate pensions for elderly individuals who have no other source of income has the potential to extend many lives, even though this group has not been deeply gouged by rising mortality.

Refurbishing the health care system is not a promising way to redress the survival losses of recent decades. However, a more effective health system may be crucial for death rates in the future. Mending the net of childhood immunization should be a top concern. Similarly, improving the supply of micronutrient-rich foods, perhaps through supplementation, could have significant long-term impacts. Continuing research will clarify priorities for institutional reform and strengthening. Meanwhile, a prerequisite for effective action is that the government obtain sufficient money to carry out large initiatives. The means might include more efficient tax collection or reclaiming valuable resources that have slipped through its hands.

Box 2: What do cross-national comparisons tell?

Inflation in Eastern Europe at the climax of the Soviet economic debacle was less severe than what some Latin American countries experienced during the same decade. The subsequent economic and social restructuring in Russia has not caused a great deal more unemployment and poverty than reforms effected by Argentina and Brazil, among other countries. Nevertheless, the former Soviet Union is the only area in the world where life expectancy has fallen over a protracted period during the past 50 years.This suggests that some extra factor has been at work in the former-Soviet countries. One hypothesis is they have been shocked more profoundly because the changeover from Communism revoked more fundamental ideals and assumptions than did structural adjustments in the other countries. If so, Russia, as the center of the Communist world, might be expected to have the most extreme reaction of all.Within the former Soviet Union, too, the radical changeover to free markets has not produced the same deadly effects in all countries. Life expectancy has shrunk drastically in Russia, Latvia, and Estonia while blossoming in Poland, the Czech Republic, and Slovakia. In the Balkan countries, it has contracted, but more slowly than in Russia.Economics may explain some of this. In general, former Soviet states that are currently enjoying better mortality were in better shape when they started restructuring, and have recovered stability more rapidly. They also, in many cases, increased social expenditures to ease the impact of the transition on some exposed sectors of the population. The Polish government, increased pensions from 53% of the average wage in 1989 to 86% in 1992. During those same years, Russian pensions dropped from 30% of the average wage to 23%. Based on these observations, some economists argue that the best course for Russia is to push ahead faster with its restructuring. Such a course may be perfectly apt.However, these economic differences cannot be the entire explanation for the mortality differentials in the former Soviet states. The former German Democratic Republic is a striking counter-example. One of the best-running Soviet economies before the breakup, the GDR has received massive economic and technical aid from the Federal Republic of Germany. Nevertheless, survival has declined.

Psychosocial Stress

People develop stress reactions when they feel they cannot control vital areas of their lives. For example, a seminal study of stress demonstrated that workers were more likely to suffer heart attacks if they were under high pressure to produce and had little control over the means of production.

Stress induces physiological changes that increase the risk of heart attack and stroke, and may lower resistance to infectious disease. Stress-related psychological pressure provokes some individuals to seek relief in drinking alcohol and smoking cigarettes. With or without alcohol, stress incites dangerous behaviour - inattentive, impulsive, violent, desperate, and criminal. In short, stress contributes to all the causes of death that have laid the course of Russian mortality since 1965.

Some commentators think Soviet society was inherently exceptionally stress-inducing. According to their theory, Soviet ideology discouraged individuals from developing self-reliance, instead training them to look to the government for their basic needs. Inculcated passivity and dependency are stress-producing in themselves, and they compound helplessness when situations worsen. This theory is plausible, but testing it scientifically would be very complicated.

Whatever Russia's endemic pitch of stress, one can easily imagine that the nation's history during the past 30 years challenged many individuals' coping capacities. Stress would amplify the deleterious health effects of all the adverse institutional failures cited in the previous section. For example, without stress, food shortages can be linked to poor health only in the population segment that does not obtain adequate nutrients. But with stress, food shortages can also sicken and kill people through worry - even if they are eating enough to thrive.

In Russia, the conditions for stress have been maximal since the late 1980s. The reason is that stress is a product of the speed of change, as well as its magnitude. As everyone knows, Russia's transformation during the past 10 years was abrupt and earth-shaking.

These changes are worth reviewing briefly, to emphasize the strong grounds for the stress hypothesis. After perestroika and glasnost, Russians could see for themselves what was going on in other parts of their own country and throughout the world. The revelations must have had surprising and disorienting aspects even for those who had always been sceptical of Soviet ideology. A new Constitution was written, and the ruling political party for 70 years was banned for a time from political activity.

The meaning of work and even of life changed as the leadership reversed its super-collectivist ideas of 70 years to promote individual and small-group aspirations, performance and responsibility. Where the government that had always told people it would supply their food, housing and medical care, it now told them they must fend for themselves. A daily challenge under the Soviets was finding something to buy with one's money. Since the restructuring, the challenge has been acquiring enough money to buy the goods that have become relatively plentiful. The dissolution of the Soviet Union radically changed Russia's relationships with its neighbouring countries, sparking massive migrations.

Centralized economic planning gave way to a mixture of socialist leftovers, ad hoc capitalism, and organized crime. Nominally zero unemployment in the last year of the Communist system converted to rates variously estimated at 8% and 13% in 1994. According to official figures, average real income fell nearly two thirds between 1990 and 1995. The economy was so unstable that from 1991 to 1995 the average Russian income rose 900 times, from 865 to 782,000 roubles - but spending power still dropped 50% because prices rose 1,800 times. The Russian Academy of Sciences estimated that the poverty level jumped from almost nil in 1990 to 50% in 1995.

Another potential new impetus for stress in this period derived from the fact that inability to cope can be relative as well as absolute. To understand this, recall that within every society, wealth generally equates with prestige and autonomy. Those who have less wealth often feel humiliated and critically vulnerable, even if they do not experience any objectively life-threatening deprivations. And the greater the disparities in income, the stronger these feelings. As a result, income distribution - the difference between the highest and lowest incomes - correlates strongly with differences in life expectancy among well-off countries.

Under Communism, Russian income disparities were narrow compared to other developed countries. In 1989, the best-off 20% of Russian households had an average income 26% higher than the that of the worst-off 20%. The inception of free-market practices changed money flows dramatically, and by 1994, the top fifth in income were enjoying a 41% advantage over their compatriots in the bottom pentile. Indoctrinated with the egalitarian ideal of Communism, Russians might be particularly sensitive to such contrasts.

Russians talk often and poignantly about their despair resulting from the extraordinary developments since 1989. Voter surveys prior to the recent national elections found that even among those who voted for Yeltsin and his platform of continued reform, a third felt they had been significantly better off in the 1980s. In light of all this, it is easy to suppose that high levels of stress might be widespread in Russia, and perhaps widely lethal. Empirical evidence exists to support this hypothesis.

Social demographers demonstrated a statistical relationship between an 'index of psychosocial stress' and the average death rate in formerly-Soviet Eastern Europe from 1989 to 1994. The 'index' consisted of the combination of the average price index, rate of inflation and percentage of workers who had been unemployed for 1 year or longer. Each one-unit increase in the index was associated with 1.2 additional deaths per 1,000 population per year. Increases of such magnitude would be very significant, since death rates generally ranged between 10 and 20 deaths per 1,000 people per year.

The demographers' finding strictly applies only to formerly-Soviet Eastern Europe as a whole. The extent to which their psychosocial stress index fits with what has happened in each individual country within the region needs to be examined using data from that particular place. In Russia, the fact that most surplus mortality has occurred among working-age men accords very well.

The link between unemployment-related stress and mortality is borne out by the high concentration of excess deaths among Russian men 45 to 59 years of age. This age group appears to have especially precarious employment status. A stark statistic reveals the devaluation of older workers' skills in today's economy: in 1993, young workers starting first jobs actually received average salaries equal to those of employees with 15 years' experience. In Russia as elsewhere, the middle-aged are often considered too old to retrain for new positions. While having the greatest job insecurity, the middle-aged may also stand to lose the most if they become unemployed. Unlike younger men, they usually have established families and mature financial commitments. They cannot collect retirement pensions until age 55.

The factors causing stress need to be elucidated more to account for some of the Russian data. One important outstanding question is why younger adults between 30 and 40 years of age have the fastest rising death rates despite their advantages in the labour market. Also ripe for investigation is the seeming paradox that women's survival has not plummeted nearly as far as men's, even though surveys show that women have no more confidence in the future and feel more socially marginal. Various considerations might reconcile these data. For example, perhaps younger adults are more psychologically distressed than the middle-aged by the sacrifice of Communism's moral certainties. Maybe women's biology is relatively proof against stress, or women are more accustomed than men to having low social status and prospects.

The best-defined, most economical and effective policies to alleviate mortality through easing stress will be made possible by a thorough understanding of which population groups are experiencing the most stress and why. Based on current knowledge, policy options for alleviating stress-related mortality include interventions aimed at general economic improvement and generating a social net for anxiety-ridden middle-aged workers. There is a pressing need to determine if stress is the lever pushing up younger adult mortality, and if so, ways to loosen its grip.

Key insights into the dynamics of stress in Russia are beginning to emerge from the RLMS. When Russians of all ages and economic groups were asked to rate their confidence in the future, two thirds professed low or very low hopes. When respondents were asked to rank their sense of social well-being, educational level was the most important criterion for satisfaction, outstripping income.

Conclusions

Throughout the past 3 decades, mortality Russia has spiralled upward in a way never before seen outside of war and famine. Today, death rates in Russia are comparable to those in developing countries, even though the age and sex distribution of deaths conforms to that of developed countries. Demographic and social science research have identified four major factors that have made potentially major contributions to this extraordinary and tragic situation.

Well-reasoned arguments based on lung cancer rates suggest that smoking may have caused as much as 60% of the 4-year truncation of the average Russian life span since 1965. A careful reconstruction of the cause-of-death data from Russia leads to an estimate that increasingly frequent alcohol poisonings accounted for as much as 15-20% of the excess deaths since 1965. Alcohol's complete toll would include additional deaths due to circulatory disease, cirrhosis of the liver, accidents and drunken killings.

Institutional breakdown and restructuring are also potentially critical causes of mortality trends in Russia - particularly the drastic tumble of the past 7 years. The evidence for these hypotheses lies in the strikingly close temporal parallels between aspects of the deepening socioeconomic crisis and accelerating death rates. Moreover, with some exceptions, former-Soviet countries in Eastern Europe tend to have longer life expectancy in proportion to the strength of their reconstituted economies.

Epidemiologic explanations such as smoking and alcohol are relatively simple to formulate and test, because they kill by means - such as lung cancer - that are more or less specific, well-defined, and easily recognisable. Socioeconomic explanations such as institutional breakdown and psychosocial stress are more complex, because these factors' lethal effects are often nonspecific and contributory rather than solely determinative. For example, it is impossible to sort out how much stress contributes to an individual's heart attack, and how much is due to genetic predispositions, behavioural factors such as diet, etc.

Socioeconomic explanations nevertheless have particular salience for explaining Russia's mortality crisis. They confirm the intuition that the unprecedented nature of the crisis argues for a unique cause by locating its sources in Russia's singular history and recent dramatic transformation. Economies and governments rise and fall; but the sudden collapse of an entire way of thinking and moral perspective is rare. Moreover, stress can provide a common explanation for the shrinking Russia's life expectancy and the simultaneous bottoming-out of her birth rate. Each distinctive in itself, these two trends are all the more so when considered together.

Tallied together, the estimated impacts of the four causes account for even more excess mortality than has actually occurred in Russia. One reason is that they overlap and reinforce each other. Stress, in particular, may both exacerbate and be exacerbated by both adverse socioeconomic developments and alcoholism. In addition, the impact estimate for each cause has considerable play in it.

Further research can sort out these precise relationships. A series of interviews with as few as 100 families of deceased individuals might sharply focus the emphasis of subsequent investigations. Case-control studies of the correspondences between socioeconomic variables and specific mortal outcomes - for example, unemployment and homicide - are inexpensive and might be very revealing. A great deal of as-yet unanalyzed data from the LMS are now widely available on the World Wide Web (through the University of North Carolina at Chapel Hill).

Policy makers need not wait, however, for the fruits of studies before taking action to reverse the terrible decline in Russian life expectancy. All four causes are already well-supported and clearly implicate certain interventions. The policy issue is not what to do, but where to start. The answer will depend on available resources, and which of the doable interventions offers the best hope of good results.

Policy decisions relating to the current mortality crisis should not be isolated from consideration of larger contexts including Russian health in the longer term. Smoking and drinking undoubtedly kill a great many Russians. They need to be addressed whether or not they have become significantly bigger killers in recent years. Gaps in immunization need to be found and filled even though they have not yet influenced mortality much, because they have dire potential to do so in the future.

A police force capable of providing security for citizens and businesses is essential tout court. Establishing a more efficient economy may automatically suppress much institutional- and stress-related mortality. As things work out, the shock and stress of the transition may wear off. Indeed, the Russian public has not yet evinced much concern over their worsening survival. They have experienced much higher death rates and recovered quickly three times in this century. The Bolshevik revolution and civil wars, Stalin's collectivisation and famine in the 1930s, and the Great Patriotic War each took 10 full years off average life expectancy. And every time, the population recovered its pre-disaster size within 7 years.

What, finally, does the Russian mortality crisis tell us? A neoliberal economic viewpoint maintains that it is an object lesson on Soviet ways of doing things and on the deleterious effects of corruption. A sociological perspective believes that it a warning against pushing any nation into radical economic changes without adequately considering its culture.

Human Insecurity Crisis in Russia: Determinants and Policy Response

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Policy and ethical implications: Brian Hehir; Chair, Emma Rothschild

Conclusion: Research priorities; Allan Hill and Lincoln Chen

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