

Life expectancy in Russia: consequences of the long-term reversal and components of the recent improvement

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Over the 1950s and the early 1960s, the life expectancy of the Russian population was rapidly growing. By 1964, life expectancy in Russia was close to the advanced countries. It was even slightly higher than that in Finland. However, from the mid-1960s to the early 2000s, the life expectancy reversal in Russia contrasted to the worldwide progress. While the world's average length of life was increasing by 0.31 year per calendar year, in Russia it was *decreasing* by 0.11 year per calendar year. In the lowest mortality national populations, the highest (best practice) life expectancy was increasing by about one-fourth of a year per calendar year.

The Russian health crisis began in 1965 and lasted four decades. It can be divided into two halve-time sub-periods with a different character of changes: the gradual deterioration from 1965 to 1984 and the great mortality fluctuations in 1985-2004. In the first period, life expectancy depended on the diminishing role of improvement in mortality of infants and children and by deterioration in mortality from circulatory and other chronic diseases and external causes among the working-age population. The literature pointed at socio-psychological effects of the oppressive communist regime, growing alcoholization and high level of male smoking, and insufficiency of the health care system in addressing the new health challenges at adult ages. The period of great fluctuations was opened in May 1985 by the ambitious anti-alcohol campaign. It resulted in an abrupt life expectancy increase in 1985-87 that was still relatively high in 1991. In 1992-94 and 1999-2003, the disintegration of the Soviet Union, painful economic shocks in the poorly governed environment together with rapid return and further spread of alcohol-related harm led to mortality explosions. The latter were fuelled by alcohol-related and external causes and premature CVD death. Rapid life expectancy falls of the 1990s were unprecedented in absence of war, major epidemic or natural disaster.

As a result, Russia entered the mid-2000s with the life expectancy of 65 years that was about 14 years lower compared to most of the developed countries. In the Russian life table of 2004, probability of dying before age 65 for those who were alive at age 15 was equal to 0.57 for men

and 0.24 for women (vs. 0.15 and 0.09 in Finland). The Russian mortality pattern was also characterized by a low level of life compression and high dispersion of ages at death. The lifetime losses per average death (e-dagger) was 15.5 and 12.5 years for men and women, respectively (vs. 10.7 and 9.9 years in Finland, respectively).

Using a counterfactual approach, we estimated population dynamics in Russia over the period 1965-2005 corresponding to hypothetical scenarios of mortality change. The first scenario corresponds to constant mortality fixed at the level of 1964. The second scenario assumes mortality reduction equivalent to the one observed in Finland in 1965-2004. Our estimates show the population growth in Russia would be much steeper if the long-term mortality increase was eliminated.

In Russia, the continuous life expectancy increase began only in 2004-5 (later than in other post-Soviet countries). Because of this and of the particularly high starting level of mortality in 2004, Russia is still lagging behind other parts of the former USSR. The greatest life expectancy gains and the highest life expectancy level in 2017 were achieved by Estonia, where the health improvement started already in 1998. However, from 2005 to 2017 the annual rate of life expectancy improvement in Russia was higher than that in the other countries.

Since 2005, the gross mortality excess in Russia at ages 15 to 65 has been substantially reduced. Russia has also made moderate progress at ages 65 to 80 which was more visible after 2010 and was more characteristic for women than for men. The growing importance of mortality reduction at old ages as a component of the life expectancy is a new feature for Russia. This tendency makes a principal difference from earlier life expectancy changes which were mostly driven by ages 15 to 65.

Our analysis of causes of death is restricted to five principal groups: external and alcohol-related; medically amenable; circulatory except amenable; cancers except amenable; and residual causes. In 2005-17, the maximal proportional reduction occurred in mortality from the external and alcohol-related causes followed by the circulatory diseases. Mortality from non-amenable cancers has decreased much less.

In terms of causes of death, the structures of mortality decrease in Russia is similar to the one in Estonia. Russia generally follows Estonia with a lag of 8-10 years. In Estonia, reduction of cardiovascular and amenable mortality is somewhat greater than that in Russia. In Estonia, these causes constitute larger components of the life expectancy increase compared to Russia. At the same time, cancer mortality is higher in Estonia than in Russia.

In Russia, growing understatement of mortality at ages 85+ and the steep increase in mortality from senility and from ill-defined causes complicates the analysis.

Finally, we discuss important factors of health improvement in Russia such as alcohol, economic growth and living standards, health care system, smoking, and other health risks.