

Higher Education and Lower Mortality: Longevity in Russian Academy of Science and Royal Society

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Prior researches have uncovered a large and positive correlation between education and health and mortality. Mortality has been found to be lower in groups with higher socioeconomic status, i.e. in groups with higher education level, higher income, and higher occupational status. Studies on mortality differentials repeatedly show that widening of the relative inequality is combined with a general mortality decline and decreasing absolute inequality. Following these gradients, learned societies should have lower mortality in population and their advantage should decrease with time.

In the present study, we analyze mortality of members of Russian Academy of Science (RAS) and Royal Society (RS). Both these learned societies have a long history and good quality demographic statistics. Our analysis was limited to the period since 1860 for RAS and since 1750 for RS. Number of females in historical data is negligible; therefore they have been excluded from the dataset. The data come from biographic records, which include date of births and death, year of election, membership status and year of change of membership status. The total number of record is 3876 for Russia and 8500 for the UK.

We describe trends in cross-sectional mortality risk at ages 50 and over in the learned societies and total populations across time and trace measures of the mortality inequality. Using a Poisson regression model, we estimate principal effects of fellowships on mortality in Russia and the UK and their temporal change. Our model does not follow precisely all details of the mortality surface, but it provides a clearly interpretable quantification and visualization of the core part of the multivariate mortality variation. Detailed investigations of temporal mortality and mortality inequality help to understand the role of socioeconomic status and theoretically reachable mortality level.

To give a more complete picture of mortality of academicians, we also calculated abridged life tables for each ten-year time periods. Our results show that until 1950s life expectancy at age 50 among Russian academicians fluctuated between 20.4 (95% CI 18.8, 21.7) and 23.1 (21.0, 24.2) years without any evident improvement. In the end of 19th century, life expectancy advantage of academicians was only one year as compared to the general male population. At the same time, life expectancy of the Russian academicians was 1.8 years lower than that for Swedish men. It is possible that this result is influenced by old-age mortality understatement in the general Russian population. Between 1941-1950 and 2001-2006, life expectancy of members of the Academy grew by about 10 years from 22.1 (20.2, 23.2) to 31.9 (29.6, 32.9) years.

Mean age of newly elected members of the Academy has been relatively stable. Throughout the whole period, this indicator was fluctuating around 50-55 years. Thus, aging of the academic community is mainly attributable to the life expectancy increase. As a result, due to simultaneous mortality decline and aging of academicians, the crude death rate among academicians has remained almost unchanged throughout the period (around 25 per 1000). Slightly higher rates were observed at the beginning and at the end of the period of observation only.

Adverse mortality trends among adult Russian males did not affect the academicians. Therefore, opposite mortality trends were observed for all males and the academic elite. The difference in life expectancy at age 50 has increased from 2.4 years in 1951-1960 (24.3 versus 21.9 years) to 13.6 years in 2000-2006 (31.9 versus 18.3 years). However, in general life expectancy of the academicians is lower than one could expect. According to the most recent data, life expectancy of the Russian academicians is about 2 years higher than that for Swedish men and 0.7 year lower than that for highly educated Swedish men with non-manual occupational status. It is difficult to explain why it is so. Unfavorable male mortality situation in Russia is commonly attributed to consequences of adverse health behaviors such as smoking and heavy drinking. However, it is still not clear to what extent this explanation applies to the academic elite of Russia.

Similar trends were found in the UK. Nevertheless, the advantage of fellows of Royal Society in modern time is smaller than in Russia. But in absolute number the mortality of fellows of RS is significantly lower than mortality of their colleagues in Russia and even than highly educated group in Sweden.

Figure 1. Life expectancy at age 50 for Russia, Sweden, and social groups

