IUSSP Workshop on The Revolution of Life Expectancy

Rostock, Germany, 12-14 May 2010

Organized by the IUSSP Scientific Panel on Social and Biological Determinants of Longevity

Workshop Report

The IUSSP Scientific Panel on Social and Biological Determinants of Longevity organized a research workshop on "The Revolution of Life Expectancy" from 12 to 14 May 2010, in Rostock, Germany, at the Max Planck Institute for Demographic Research (MPIDR), with financial support from MPIDR.

A group of experts were invited to consider four main questions: Why did life expectancy start to persistently rise in Scandinavia? Why did it start there early in the 19th century? Why did it spread to other countries later? Why has life expectancy in the best-practice country continued to rise linearly since 1840?

A total of 13 research papers were presented at the workshop. The 13 papers were very broad ranging, including empirical research on historical populations, comparative studies, and methodological works.

In the first session of the seminar, significant attention was given to the variability of human longevity and the impact of early-life events on later-life mortality. Discussion highlighted that in an analysis of trends of mortality over time it is relevant to include alternative measures of longevity to further understand the dynamic of longevity. The modal age at death is seldom proposed as a measure to study longevity. It is a measure of central tendency, as the mean age at death or life expectancy, that supplements with information on the "center" of the distribution of deaths. The variance of the distribution of ages at death is also informative because changes in the shape of this distribution reflect changes in the age pattern of mortality improvement which, in turn, may reflect the action of selective survival. Regarding the relative importance of period and cohort components on elderly mortality, results on Swedish and Italian populations showed that variation in adult and old age mortality is largely determined by period conditions, and the importance of cohorts' early life conditions is modest. Research on historical Quebec shows that season of birth significantly affects mortality. However, the effects are conditional on later life circumstances. Furthermore, new and innovative methods were presented to visualize mortality change simultaneously over age and time and to measure the age of onset of mortality deceleration.

The workshop continued with presentations focusing on historical German populations. It was shown that some regions closely matched the development of life expectancy in Denmark and Sweden in both level and trend, as in the case of the Grand Duchy of Mecklenburg-Schwerin. This expands the area to be included among the leaders of the modern rise in life expectancy. However, other German regions did not follow the Scandinavian trend.

Another key-theme addressed at the workshop was about how improvements in mortality started in the Nineteenth century at different ages in different places. It was shown that in Scandinavia and other parts of the world, death rates were reduced at all ages, not just infancy or childhood. This finding is consistent with the hypothesis that improvements were due to a general reduction in deaths from infectious diseases.

Lastly, experts discussed the well-known Oeppen-Vaupel straight line of maximum female life expectancies showing that the highest life expectancy observed in a given year increased linearly from 1840 to 2000. It was shown that the original Oeppen-Vaupel straight line must be divided into several segments characterized by different slopes and that each segment corresponds to a major advance in the health transition. The main key to the future lies not in knowing whether the observed straight line can be extrapolated but in anticipating the next major health improvement that will lead to an additional increase in life expectancy.