



Demographic Research a free, expedited, online journal
of peer-reviewed research and commentary
in the population sciences published by the
Max Planck Institute for Demographic Research
Konrad-Zuse Str. 1, D-18057 Rostock · GERMANY
www.demographic-research.org

DEMOGRAPHIC RESEARCH

VOLUME 10, ARTICLE 12, PAGES 339-354

PUBLISHED 19 JUNE 2004

www.demographic-research.org/Volumes/Vol10/12/

DOI: 10.4054/DemRes.2004.10.12

***A summary of Special Collection 2:
Determinants of Diverging Trends
in Mortality***

Vladimir M. Shkolnikov

*The papers in this special collection were presented at the seminar
"Determinants of Diverging Trends in Mortality", held at MPIDR, Rostock
on 19-21 of June, 2002. The seminar was organized by the Max Planck
Institute for Demographic Research and the Committee on Emerging Health
Trends of the International Union for the Scientific Study of Population.*

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A summary of

**Special Collection 2:
*Determinants of Diverging Trends in Mortality***

Vladimir M. Shkolnikov¹

A summary

Special Collection 2: *Determinants of Diverging Trends in Mortality* is a set of papers stemming from the first seminar of the Committee on Emerging Health Threats (CEHT) of the International Union for the Scientific Study of Population (IUSSP), "Determinants of Diverging Trends of Mortality". The seminar was held in Rostock (Germany) from 19-21 June 2002. The seminar encouraged studies on adverse mortality trends and widening mortality differentials between and within countries.

Thirteen contributions were submitted to the journal *Demographic Research* and went through peer review. They were published, along with an introduction, on 16 April 2004 as the journal's second "special collection" of material on a common topic. This short summary of the collection has been added to Volume 10 in order to include full details of the collection in the current running volume as well. The following pages list the contributions and give direct links where readers may download the material from the *Demographic Research* website. A full list of all papers is also available at: <http://www.demographic-research.org/special/2/>.

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Special Collection 2: Descriptions of contributions
Determinants of Diverging Trends in Mortality

Article 1

Vladimir Shkolnikov

**Introduction to the Special Collection of papers on
"Determinants of diverging trends in mortality"**

This article introduces the Special Collection of papers presented at the first seminar of the Committee on Emerging Health Threats (CEHT) of the International Union for the Scientific Study of Population (IUSSP), "Determinants of Diverging Trends of Mortality". The seminar was held in Rostock (Germany) on 19-21 of June 2002. The seminar encouraged studies on adverse mortality trends and widening mortality differentials between and within countries. The introduction to the collection argues that mortality divergence is a new and significant phenomenon in global population health. It then presents the scientific agenda of the seminar and provides a brief overview of the thirteen studies that constitute the Special Collection.

<http://www.demographic-research.org/special/2/1/>

Article 2

Jacques Vallin

Convergences and divergences in mortality

France Meslé

A new approach of health transition

Abdel Omran's 1971 theory of "Epidemiologic Transition" was the first attempt to account for the extraordinary advances in health care made in industrialized countries since the 18th century. In the framework of the Demographic Transition, it implied a general convergence of life expectancies toward a limit imposed by the new epidemiological features of modern societies. However, important failures, occurred in the past decades (mainly the health crisis in Eastern Europe and AIDS in Africa), seem to have stopped that process of convergence. In fact such failures do not really contradict the theory. The latter is much more ruined by the unexpected dramatic improvement in the field of cardiovascular disease experienced since the seventies, which results in a new step of a more general process. On the basis of the broader concept of "Health Transition" initiated by Julio Frenk et al., the present paper tries to rethink the full process in term of divergence/convergence sequences inferred by successive major changes in health technologies and strategies.

<http://www.demographic-research.org/special/2/2/>

Article 3

France Meslé

Mortality in Central and Eastern Europe

Long-term trends and recent upturns

While, during several decades, unfavourable trends in mortality were quite similar in Central Europe and in the former USSR, in the most recent years, these two parts of Europe are diverging. In most Central European countries, life expectancy is now increasing mainly thanks to a decline in cardiovascular mortality. Conversely, cardiovascular mortality is still increasing in Russia and Ukraine and its negative impact is reinforced by a worsening of violent deaths and infectious mortality. The situation of Baltic countries is still uncertain but it is not impossible that these countries soon resume with sustainable progress in life expectancy.

<http://www.demographic-research.org/special/2/3/>

Article 4

**Russian mortality beyond vital statistics
Effects of social status and behaviours
on deaths from circulatory disease and
external causes - a case-control study of men
aged 20-55 years in Urdmurtia, 1998-99**

Vladimir Shkolnikov
Valeriy V. Chervyakov
David A. Leon
Martin McKee

Analyses of routine data have established that the extreme mortality fluctuations among young and middle-aged men are the most important single component of both temporal changes in Russian life expectancy at birth and in the gap between male and female life expectancy. It is also responsible for the largest share of the life expectancy gap between Russia and other industrialised countries. A case-control study has been used to identify factors associated with mortality among men aged 20 to 55 in the five major cities of the Udmurt Republic in 1998-99. Men dying from external causes and circulatory disease are taken as cases. Matched controls were selected from men of the same age living in the same neighbourhood of residence. Information about characteristics of cases and controls was obtained by interviewing proxies who were family members or friends of the subjects. After exclusion of those deaths for which proxy informant could not be identified, a total of 205 circulatory disease and 333 external cause cases were included together with the same number of controls. Educational level was significantly associated with mortality from circulatory diseases and external causes in a crude analysis. However, this could largely be explained by adjustment for employment, marital status, smoking and alcohol consumption. Smoking was associated with mortality from circulatory disease (crude OR=2.44, 95% CI 1.36-4.36), this effect being slightly attenuated after adjustment for socio-economic factors and alcohol consumption. Unemployment was associated with a large increase in the risk of death from external causes (crude OR=3.63, 95% CI 2.17-6.08), an effect that was still substantial after adjustment for other variables (adjusted OR=2.52, 95% CI 1.43-4.43). A reported history of periods of heavy drinking was linked to both deaths from circulatory disease (crude OR=4.21, 95% CI 2.35-7.55) and external cause mortality (crude OR=2.65, 95% CI 1.69-4.17). Adjustment for other variables reduced the size of these odds ratios, but they remained strikingly large for circulatory disease (adjusted

OR=3.54, 95% CI 1.76-7.13) and considerable for external causes (adjusted OR 1.75, 95% CI 1.02-3.00). These may be underestimates of the true effects as nearly all of them increased when employment status (which can in part at least be seen as being on the causal pathway) was excluded from the final model. In summary, however, our key finding is that a history of heavy drinking in the recent past is strongly associated with risk of death from circulatory disease. This provides the first individual-level evidence in support of the hypothesis that episodic heavy drinking is key to explaining the heavy burden of circulatory disease mortality among Russian men of working age.

<http://www.demographic-research.org/special/2/4/>

Article 5

Jitka Rychtarikova

**The case of the Czech Republic
Determinants of the recent favourable
turnover in mortality**

Since the collapse of the socialist system at the beginning of the 1990s, the health situation in the Czech Republic has improved more rapidly than in other CEE countries. Mortality from circulatory diseases decreased significantly at higher ages. The recent decline in mortality is likely to be attributable to technical progress in medical treatment and less affected by the change in lifestyle. While the use of cardiovascular drugs and the number of operations of invasive heart-surgery considerably improved, smoking and alcohol consumption have somewhat augmented at the same time. The recent favourable turnover has currently brought the Czech Republic a little closer to the European average.

<http://www.demographic-research.org/special/2/5/>

Article 6

Ellen Nolte

Progress in health care, progress in health?

Martin McKee

Patterns of amenable mortality in

Rembrandt D. Scholz

**Central and Eastern Europe before and
after political transition**

This paper examines the potential impact of changes in medical care on changing population health in Lithuania, Hungary and Romania, with west Germany included for comparison. We used the concept of deaths from certain causes that should not occur in the presence of timely and effective health care (amenable mortality) and calculated the contribution of changes in mortality from these conditions to changes in life expectancy between birth and age 75 [e (0-75)] for the periods 1980/81 to 1988 and 1992 to 1997. Temporary life expectancy improved consistently in west Germany (men: 2.7 years, women: 1.6 years). In contrast, gains were relatively small in the other countries, except among Hungarian women, who gained 1.3 years. Romanian men lost 1.3 years. In the 1980s, falling infant mortality made a substantial contribution to improvements in temporary life expectancy in all countries, of about a quarter to half a year. Of this, more than half can be attributed to amenable conditions. At older ages, falling amenable mortality contributed about 40% among those aged over 40 in Germany and, to a lesser extent, Hungary, while causing a loss of life expectancy in Romania. In the 1990s, improvements in infant mortality continued to make substantial contributions to life expectancy in Lithuania and Hungary but had little impact in either Germany or Romania. Among adults, improvements in amenable mortality continued to benefit Hungarians and west Germans. In Lithuania, up to two-thirds of the gain in temporary life expectancy were attributable to falling mortality from ischaemic heart disease whereas medical care otherwise seems to have had a negative impact. Romanian men and women experienced increases in amenable mortality that contributed up to a half of the overall loss of life expectancy. Our findings suggest that during the last 20 years changes in medical care had considerable impact, positively as well as negatively, on changing mortality in selected central and eastern European countries.

<http://www.demographic-research.org/special/2/6/>

Article 7

Martin McKee

Health sector reforms in Central and

Ellen Nolte

Eastern Europe

**How well are health services responding to
changing patterns of health?**

The political and economic transition of the 1990s in the countries of central and eastern Europe has been accompanied by wide ranging health care reform. The initial Soviet model has given way to a variety of forms of health insurance. Yet, as this paper argues, reform has too often been preoccupied with ideological imperatives, such as provider autonomy and the creation of funds separate from government, and has given much less thought to the contribution that health care can make to population health. The paper begins by examining the changing nature of health care. It recalls how the Soviet model was able to provide basic care to dispersed populations at low cost but notes how this is no longer sufficient in the face of an increasingly complex health care environment. This complexity reflects several factors, such as the growth in chronic disease, the emergence of new forms of infectious disease, and the introduction of new treatments requiring integrated delivery systems. It reviews evidence on how the former communist countries failed to keep up with developments in the west from the 1970s onwards, at a time when the complexity of health care was becoming apparent. It continues by setting out a framework for the organisation of health care based on the goal of health gain. This involves a series of activities that can be summarised as active purchasing, and which include assessment of health needs, designing effective packages of care, and monitoring outcomes. It concludes by arguing that a new relationship is needed between the state and the organisations involved in funding and delivering health care, to design a system that will tackle the considerable health needs of the people who live in this region.

<http://www.demographic-research.org/special/2/7/>

Article 8

**US regional and national cause-specific
mortality and trends in income inequality:
descriptive findings**

John Lynch

George Davey Smith

Jim Dunn

Sam Harper

Nancy Ross

Michael Wolfson

We examined the concordance of income inequality trends with 30-year US regional trends in cause-specific mortality and 100-year trends in heart disease and infant mortality. The evidence suggests that any effects of income inequality on population health trends cannot be reduced to simple processes that operate across all contexts and in all time periods. If income inequality does indeed drive population health, it implies that income inequality would have to be linked and de-linked across different time periods, with different exposures to generate the observed heterogeneous trends and levels in the causes of mortality shown here.

<http://www.demographic-research.org/special/2/8/>

Article 9

**Monitoring of trends in socioeconomic
inequalities in mortality
Experiences from a European project**

Anton E. Kunst
Vivian Bos
Paula Santana
Tapani Valkonen
Johan P. Mackenbach
Otto Andersen
Mario Cardano
Giuseppe Costa
Seeromanie Harding
Örjan Hemström
Richard Layte
Enrique Regidor
Alison Reid

This paper presents estimates of changes in socioeconomic inequalities in mortality between the 1980s and the 1990s in nine European countries. The best available evidence shows that relative inequalities in mortality generally widened, while the absolute gap remains about the same. However, the pace of change varied greatly, both between countries and within countries (by age and sex). Additional analyses of specific countries illustrated that data problems can often impede an accurate and detailed assessment of change in inequalities in mortality. These illustrations stressed the importance of evaluating methodological problems, and they point to the urgent need for further development of data sources.

<http://www.demographic-research.org/special/2/9/>

Article 10

Cause-specific contributions to black-white differences in male mortality from 1960 to 1995

Irma T. Elo
Greg L. Drevenstedt

Between 1960 and 1995 the black-white difference in male life expectancy in the United States increased from 6.7 years to 8.2 years. To provide insights into why mortality trends have been more adverse for black men than for white men, we investigate which causes of death were principally responsible for changes in the black-white difference in male mortality at ages 15-64 between 1960 and 1995. We find that black-white differences in male mortality varied substantially during this period. The gap increased in the 1960s, declined in the 1970s, and widened in the 1980s-early 1990s. Our findings reveal considerable variation in black-white disparities by cause of death and by age, as well as changes in the relative importance of various causes of death to the black-white male mortality disparity over time. The results suggest that consequences of black-white differences in socioeconomic status, access to quality health care, living conditions, and residential segregation vary by cause of death.

<http://www.demographic-research.org/special/2/10/>

Article 11

Emmanuelle Cambois

**Occupational and educational differentials
in mortality in French elderly people
Magnitude and trends over recent decades**

Mortality follow-up of two census samples allowed an estimate of socio-economic differentials in mortality for old men, using occupational classes and levels of education reported by individuals when they were active. The study shows persisting mortality differentials after 60 years of age. Over the 1960-65 and 1990-95 periods mortality differentials remained constant between non-manual upper classes and manual workers, while differentials have increased between the upper classes and the least skilled manual workers. Educational status has an impact on the mortality risks, independently from occupational status; the magnitude of its impact slightly changed over time. Level of education partly explains occupational differentials in mortality. The study shows that a differentiated increase in the average level of education can impact on trends in occupational differentials in mortality.

<http://www.demographic-research.org/special/2/11/>

Article 12

Increasing excess mortality among non-married elderly people in developed countries

Tapani Valkonen
Pekka Martikainen
Jenni Blomgren

This article analyses changes in marital status differences in mortality from approximately 1970 to 1995 among men and women aged 65-74 in ten developed countries (Belgium, Canada, Denmark, England and Wales, Finland, France, Japan, Netherlands, Norway, and Sweden). Data were obtained from the United Nations Demographic Yearbooks and national statistical sources. According to the results there has been a trend towards increasing excess mortality among single men compared to married men and single, divorced and widowed women compared to married women in most western European countries and Canada in the 1980s and 1990s. This has been brought about by a more rapid decline in mortality among married persons and a slower decline or even an increase among non-married persons. In Japan the excess mortality of non-married men and women decreased.

<http://www.demographic-research.org/special/2/12/>

Article 13

Socio-economic inequalities in mortality and health in the developing world

Alberto Minujin
Enrique Delamonica

Trends in child mortality disparities show that within country inequities have remained constant in some countries and worsened in most of the other ones. Only three countries, with relatively small populations which comprise less than 2 per cent of our sample, were able to achieve both a reduction in disparity and improvements (or no decline) in national average U5MR. The evolution of nutrition and DPT3 immunisation seems more promising.

<http://www.demographic-research.org/special/2/13/>

Article 14

Narayan Sastry

Urbanization, development and under-five mortality differentials by place of residence in São Paulo, Brazil, 1970-1991

In this paper, I examine differentials in under-five mortality for the state of São Paulo, Brazil, between urban and rural areas and by location within urban areas over a 21-year period between 1970 and 1991. I also investigate economic inequalities in under-five mortality for urban areas. During the period 1970-1991, much of the infant and child mortality transition unfolded in São Paulo. I investigate whether these improvements in mortality were accompanied by narrowing differentials by place of residence and declining economic inequalities in mortality. I draw on microdata from Brazilian censuses conducted in 1970, 1980, and 1991.

<http://www.demographic-research.org/special/2/14/>

