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### CONCENTRATION OF WORKING-AGE MALE MORTALITY AMONG MANUAL WORKERS IN URBAN LATVIA AND RUSSIA, 1970-1989

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# CONCENTRATION OF WORKING-AGE MALE MORTALITY AMONG MANUAL WORKERS IN URBAN LATVIA AND RUSSIA, 1970–1989

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**ABSTRACT:** Until recently data on mortality by socioeconomic status were not available for the initial period of mortality increase in the former Soviet Union from 1965 to 1979. Newly discovered data from the Russian State Archive of Economics allow us to close this gap and to compare mortality trends in urban Latvia and several urban areas of Russia with the concentration of rising male mortality among manual workers already found in several eastern European countries. A similar trend appears in these data for rising mortality to concentrate among manual workers over time. Unfavorable trends in the life expectancy of the total population were largely driven by mortality increase among manual workers. Possible determinants of the pattern include a special type of economic growth in the USSR in the 1970s and 1980s associated with dominance of heavy industries and military sector, and low consumer goods' production, high prevalence of hard manual labor, massive rural–urban migrations and poor living conditions of new coming industrial workers, growing psychosocial stress and high prevalence of adverse health behaviors. These characteristics are discussed in the framework of an incomplete modernization and distinct health life styles in state socialist countries.

**Key words:** mortality; Russia; Latvia; Soviet Union; social differences; health crisis

## 1. Background: rising working-age male mortality

Russian mortality began to increase as early as the mid-1960s (Dutton 1979, 1981; Blum and Monnier 1989; Shkolnikov *et al.* 1996) mostly driven by rising death rates of men at working ages (Anderson and Silver 1986). Why did mortality trends, which had featured falling death rates for many decades, reverse at the very moment when the Soviet Union was at the highest point of its military and economic power? How did it happen that during the decades in question, increasing mortality coincided with general economic growth and improvement in people's life standards? Such fundamental questions are still waiting for answers (Shkolnikov *et al.* 1998a,b; Hertzman and Siddiqi 2000; McKee and Shkolnikov 2001); this paper addresses only one aspect of the enigma. We examine how late Soviet-period mortality changes were distributed within the population and consider possible underlying societal factors.

The Soviet Union was not alone in experiencing unfavorable mortality trends in the second half of the twentieth century. Similar processes, though somewhat less pronounced, surfaced in other eastern European countries (Vacek 1969; Okolski and Pulaska 1983; Cooper *et al.* 1984; Valkovics 1984; Compton 1985). Episodes of mortality stagnation and even reversal also took place in other world regions (Moriyama 1964; Soda *et al.* 1968; Klebba 1971; Vallin 1979b; Okubo 1981; Bourgeois-Pichat 1985) a decade or more earlier than the trend appeared in Eastern Europe and the Soviet Union.

Importantly, there is compelling evidence that communist-era increases in male mortality in Hungary and Bulgaria concentrated almost entirely among manual workers (Carlson 1989; Carlson and Tsvetarsky 1992). During the last two decades of the communist system, mortality of manual workers increased steeply, whereas non-manual employees did not experience any considerable deterioration (but also no considerable progress). This finding provides an insight into the nature of the health crisis faced by Eastern European societies. The manual workers or *proletariat* (presented by communist propaganda as 'ruling' and the 'most advanced' societal force) suffered most, while the *intelligentsia* and other non-manual workers showed better resistance under the same macroscopic conditions.

No comparable evidence is available for the former Soviet Union. Soviet mortality statistics began to register education and occupational groups in death certificates only in 1978. Estimates of mortality and life expectancy specific to occupational groups thus were available only for periods around censuses of 1979 and 1989. The end of the 1980s saw a very short-lived but significant improvement in Russian mortality due to Mikhail Gorbachev's anti-alcohol campaign of 1985, so changes in

differential mortality were known only for a very peculiar period of improvement, while they remained hidden for a much longer period from 1965 to 1984 in which mortality deteriorated (Shkolnikov and Leon 2006). Lack of earlier data explains why prior studies were focused on the period after 1979 (Andreev and Dobrovolskaya 1993; Shkolnikov *et al.* 1998a,b). Micro-data studies, based on follow-up of the Russian Lipid Research Clinics cohort since 1975–1977, also could not provide sufficient evidence on the differential mortality in the 1970s (Plavinski *et al.* 2003; Shkolnikov *et al.* 2004).

## 2. Data

In this article we introduce newly discovered data from the Russia State Archive of Economics, produced by the Central Statistical Office of the Soviet Union through a special data collection experiment associated with the all-Soviet population census of 1970. Registration in death certificates of the last place of work and type of position permitted data processing of numbers of deaths by socio-occupational class in several regions of the former Soviet Union shown in Table 1, allowing us to study occupational differences in mortality as far back as 1970 and with very good data quality. Our calculation of mortality rates and life expectancy is based on independent tabulations of population from the Census and death counts by age and group (unlinked data). This method has some potential problems due to possible numerator–denominator biases, in which individual information may differ systematically between Census and death certificates (Vallin 1979a). This bias tends to be most severe when estimating mortality for socio-economic groups at the extremes of the

**TABLE 1. Areas covered by socio-occupational coding of mortality**

<i>SU Republic</i>	<i>Territory</i>
1. Azerbaijan	As a whole
2. Byelorussia	City Minsk and Minsk region
3. Kazakhstan	City Alma-Ata, Alma-Ata and Karaganda regions
4. Latvia	As a whole
5. Russia	Regions: Leningrad, Ivanovo, Gorky (now Nizhny Novgorod), Voronezh, Volgograd, Kuibyshev (now Samara), Rostov, Perm, Sverdlovsk, Chelyabinsk, Kemerovo, Novosibirsk, Irkutsk, Krasnodar and Primorsky krays, Republics Tatarstan and Bashkortostan
6. Ukraine	Dnepropetrovsk, Donetsk, Kharkov, Lvov, Odessa, Vinnitsa regions
7. Uzbekistan	City Tashkent and Tashkent region

distribution. We have therefore adopted the conservative strategy used by others in this situation (Marmot and McDowall 1986) and concentrated on analyzing mortality differences between broad socio-economic categories such as manual/non-manual rather than more detailed classifications. Using this approach the bias has been shown to be very small (Goldblatt 1989). Unfortunately, since the 1989 census this coding of occupational groups has disappeared again from the death registration forms so we cannot bring the analysis up to the present time.

Not all of these data are equally interesting for research. Quality of the general mortality data in Azerbaijan and Uzbekistan were poor, so estimates of differential mortality could turn out to be even more unreliable. Byelorussia, Kazakhstan and Ukraine are represented by very special regions. In Byelorussia and Kazakhstan these are populations living in a capital city or around it. Another region of Kazakhstan (Karaganda) and the regions of Ukraine are very atypical mining and heavy industry regions with predominantly Russian populations. We focus on urban populations of 17 oblast-level regions of Russia which relatively evenly represent all to a part of the country, and for urban Latvia as a whole (items 4, 5 and 6 only from Table 1). The urban population of Latvia constituted in the 1970–1980s about two-thirds of its total population. The urban population of the 17 Russian regions constituted 36–40 percent of their total population, for men and women, respectively.

Table 2 shows that the urban populations in the 17 studied regions of Russia had slightly better survival experience than the national average in each of the 3 years considered, for both men and women. Only in 1989

**TABLE 2. Life Expectancy at Age 0, 20, 40, 60 in Russia and the 17 studied regions**

Age	Year	Men		Women	
		Russia	17 urban Regions	Russia	17 urban Regions
0	1970	62.9	63.1	73.3	73.5
	1979	61.4	61.5	72.9	73.0
	1989	64.2	64.2	75.5	74.6
20	1970	45.9	46.3	55.7	55.8
	1979	44.2	44.9	55.2	55.3
	1989	46.4	46.6	57.2	56.3
40	1970	29.1	29.3	36.8	36.9
	1979	27.8	27.9	36.3	36.3
	1989	29.2	29.3	38.2	37.2
60	1970	14.7	14.8	19.5	19.6
	1979	14.3	14.4	19.3	19.3
	1989	14.8	14.9	20.8	19.7

See Appendix for sources.

women in the urban regions had lower life expectancy than the national average. However, respective differences in life expectancies were very small. The table also shows clearly that the worsening mortality observed during the 1970s happened for the whole country and for both sexes, and was not peculiar to the study area.

### 3. Special consideration of the non-working population

Since we are concerned with the research literature that has identified a pattern of rising death rates for men in the working ages, we concentrate here on mortality patterns between ages 25 and 59 (most men retired by age 60 during the Soviet period, in both eastern Europe and the Soviet Union, and for women the normal retirement age was even earlier – usually 55). Even when analysis of mortality trends is limited to the working ages, a significant fraction of the population may be excluded from the active labor force and be counted as unemployed, inactive, disability pensioners in working ages, and so on. There are many reasons why working-age persons fall outside the labor force. For women, motherhood and family roles may be an important part of these reasons, but even for men an important share of the working-age population may not be included in the labor force. For example, at ages 20–29 many men (and also women) continue studying at universities and other post-secondary schools. At ages over 50 representatives of certain ‘harmful’ and military professions/occupations are beginning to leave the working force due to early retirement.

In addition, in Eastern Europe during the state socialist period, industrial and other firms were held responsible by the state and the public for the health and survival of their employees. Most firms therefore rationally minimized their risk of adverse evaluation by pensioning off workers at the first sign of any life-threatening illness or disability. For example, over 80 percent of working-age Hungarian men who survived a first heart attack were almost immediately sent home from work permanently on a disability pension, with a considerable reduction in earnings. Only 20 percent of men remained on the job, with or without rehabilitative therapies. By comparison, in the United States at the same period, this ratio was almost exactly reversed with 80 percent of first heart attack survivors returning to work and only 20 percent going home with permanent disability pensions (Carlson 1989).

Naturally, this tendency to pension off any high-risk worker produced rapid expansion of the working-age population with no active employment/occupation in Eastern Europe, and at the same time strongly concentrated the risk of dying among these working-age men outside the

labor force. For this reason, if we consider only actively employed men, death rates in specific occupations actually fell for some parts of the late state socialist period. In other contexts (McMichael 1976) this has been called the 'healthy worker' effect. Earlier research for Hungary and Bulgaria re-assigned all working-age men with disability pensions back into their previous occupations, fully revealing the extent to which death rates in blue-collar occupations in particular rose very rapidly during the whole period (Carlson and Tsvetarsky 1992).

In the present case based on data from urban Latvia and urban Russia, this expansion of the share of working-age men outside the labor force did not occur, so it need not concern us in the way it did in other Eastern European countries. In both groups, the percentages of men by age with neither blue- nor white-collar employment (that is, non-working or outside the labor force) remained virtually constant as shown in Table 3 below.

There is some slight sign of expansion of the non-working population in Latvia toward the end of the studied period. This non-working population corresponds roughly to the population outside the labor force (that is, including men on disability pensions and other non-work statuses). The concept of 'unemployment' was not recognized in state socialist

**TABLE 3. Male expectations of life between exact ages 20 and 60 and occupational structure for 17 regions of urban Russia and urban Latvia**

	<i>Total population</i>	<i>All working</i>	<i>Nonmanual workers</i>	<i>Manual workers</i>	<i>Non-working</i>
Expectations of life (in years)					
Russia					
1970	35.9	36.5	37.3	36.2	27.0
1979	35.4	36.0	37.4	35.5	23.2
1989	36.2	36.7	38.2	36.2	26.5
Latvia					
1970	36.8	37.4	38.0	37.1	26.6
1979	36.2	36.4	37.8	35.8	28.3
1989	36.6	37.0	38.1	36.5	31.0
Proportion of men in economic sectors at ages 20-59 (percent)					
Russia					
1970	100	92.3	23.7	68.6	7.7
1979	100	92.8	22.7	70.1	7.2
1989	100	92.1	22.8	69.3	7.9
Latvia					
1970	100	94.2	29.1	65.1	5.8
1979	100	93.9	28.4	65.5	6.1
1989	100	90.8	26.9	63.9	9.2

economies, and persons who did not want work – according to Soviet regulations could be deported from cities.

Death rates among working-age men outside the labor force were many times higher than for either blue- or white-collar workers, indicating that the men outside the labor force indeed constitute a kind of high-risk residual from the working population. Many of them may have lived with illnesses, injuries and other disabilities as serious risk factors for death. If mortality followed a different trend among these men outside the labor force than for either blue-collar or white-collar workers, some selection effects might be expected even if the overall proportions of workers in each group were not changing significantly.

#### 4. Results: mortality trends in urban Russia

For urban Russia, however, the non-working men in working ages experienced mortality trends that closely followed the trends for manual workers. From 1970 to 1979, death rates among the non-working men rose at all ages, just as they did for manual workers (see Figure 1). If these non-working men had been put into occupations based on their last known employment, the increase for manual workers probably would have been even stronger than was observed. Based on research in other countries, a large share of the non-working population in the working ages probably had blue-collar backgrounds.

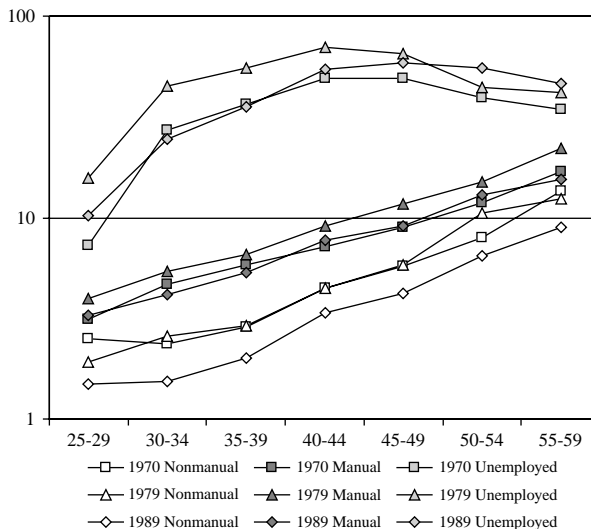
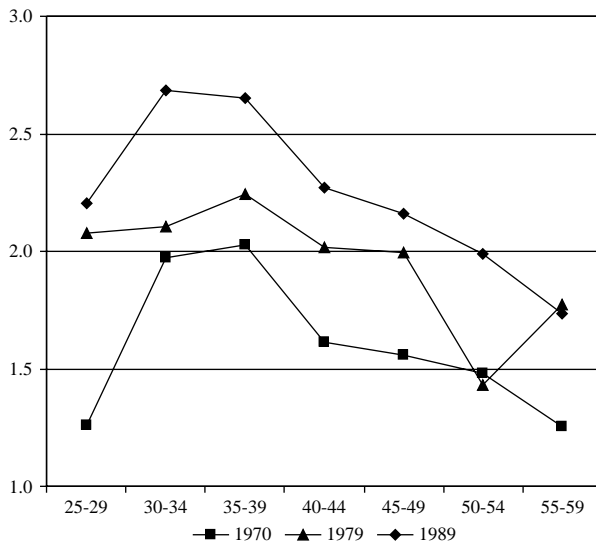


Figure 1. Five-year central mortality rates for men in urban Russia.



Between 1979 and 1989, death rates also dropped back for non-working men just as they did for both manual workers and non-manual earners. The only difference between the non-working men and the two actively employed groups appears in the leveling off in death rates for non-working men after about age 40. This undoubtedly represents the arrival of more and more ‘normal’ retirees in the non-working population at older ages, men who are retired simply because they have finished their careers rather than men who are not working due to health problems. The growth of the size of this group (see Table 3) after age 50 dilutes the high mortality level caused by the more atypical risk profile of non-working men at younger ages.

Within the labor force or working population, survival trends for manual and non-manual workers combined to change the relative risks of dying for these two groups. Figure 2 shows these changes in relative risks for the 17 urban areas of Russia. Between 1970 and 1979, the risk of death for manual workers increased, relative to that for non-manual workers. A look back at Figure 1 quickly shows that this happened because the death rates for manual workers rose at virtually all working ages, while death rates for non-manual workers remained almost unchanged. The concentration of the whole mortality increase of working population among manual workers suggests that this pattern, earlier discovered in Hungary and Bulgaria, was probably predominant among European countries of the former communist block.



**Figure 2.** Ratio of manual to nonmanual male workers' death rates in urban Russia.

From 1979 to 1989, Figure 2 shows that the mortality disadvantage of manual workers continued to expand in urban Russia. By 1989, both the age pattern and the level of this disadvantage (death rates two to three times higher for manual workers at the heart of the working ages) look almost identical to patterns noted above for Hungary or Bulgaria. During this second decade, however, the widening gap did not result from rising death rates. Thanks in part to Gorbachev's anti-alcohol campaign in the late 1980s, death rates for all groups of Russian males (even the non-working population) actually fell temporarily. Even during this temporary drop in mortality, however, the gap between manual and non-manual workers continued to grow wider. This happened because for manual workers, death rates fell back from 1979 levels to about the same levels observed in 1970, but at the same time, death rates for non-manual workers actually dropped well *below* the 1970 levels, again expanding the manual workers' survival disadvantage.

## 5. Mortality trends in urban Latvia

Data for the entire urban population of Latvia in this period tell a similar story, but with some important reservations. From 1970 to 1979, as shown in Figure 3, mortality trends by occupational group in Latvia closely mirrored those noted above for Russia. Death rates for non-manual workers increased somewhat at ages above 45 during the decade. Death

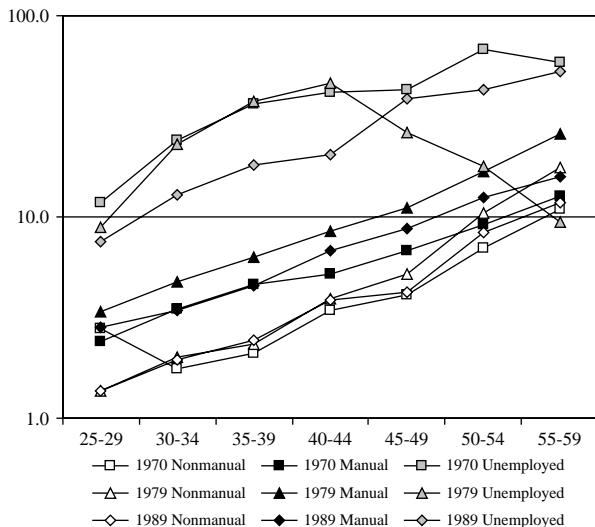


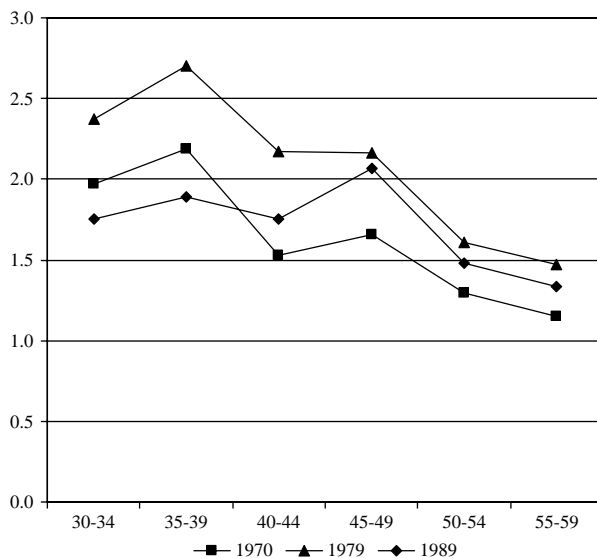
Figure 3. Five-year central mortality rates for men in urban Latvia.

rates for manual workers increased strongly, widening the survival gap between the two groups.

In general, death rates for non-manual workers in Latvia's cities did not vary much over the whole period from 1970 to 1989, providing a nearly constant backdrop for trends in mortality among manual workers. Therefore, while the rising death rates for manual workers of the 1970s produced concentration of mortality among them in the first decade, falling death rates for manual workers in the 1980s reversed the concentration of mortality among them and essentially restored the same pattern that had been seen in 1970 (see Figure 4).

For some reason, the anti-alcohol campaign and other changes related to the temporary improvement in Soviet survival in the late 1980s did not seem to help the non-manual workers in Latvia as much as in Russia. Particularly at the younger working ages, death rates for non-manual workers again remained essentially unchanged, even though death rates for manual workers were dropping.

Another strong reservation must be noted regarding the Latvian mortality data for occupational groups. Unlike all other trend lines for urban populations in Russia and Latvia, the age pattern of death rates for non-working Latvian men in 1979 shows some serious error or irregular influence. Figure 3 shows that after age 40, reported death rates for non-working men fall sharply and linearly, so that by ages 55–59 these non-working men in 1979 appear to have death rates lower than either manual



**Figure 4.** Ratio of Manual to nonmanual male workers' death rates in urban Latvia.

or non-manual workers in any of the years observed. This result simply cannot be true of the actual non-working male population of urban Latvia in that year. We do not have an explanation for this irregularity in the data at present, but we also do not think that it causes serious problems for our results. The two logical reasons for this strange result would be misclassification of some deaths of non-working men (reporting them as working in manual or non-manual occupations instead), or over-estimation of the non-working population at risk of dying (counting some manual or non-manual workers as non-working). The latter possibility seems implausible in light of Table 1, since in 1979 the proportions of non-working men at ages 40 and older are the same as in 1970. Therefore, misclassification of deaths of non-working men is the most plausible reason for the observed large distortion. This means that mortality of non-manual and manual workers in 1979 could be overestimated. Correction of either possibility would reduce observed death rates for manual and/or non-manual workers in 1979. This potentially could explain why for non-manual workers in Latvia, unlike Russia, death rates at ages 45+ have slightly increased between 1970 and 1979. However, unless ALL of the distortion were contained within one or the other occupational group, the correction would not reverse any of our conclusions about the survival gap by occupations.

## 6. Changes in life expectancy

Table 3 aggregates differential changes in age-specific mortality in Urban Latvia and Russia and allows observing principal features of mortality by socio-occupational status and calendar period. We look here at temporary life expectancies within the range of ages between exact ages 20 and 60. When interpreting the table, one should remember that the latter aggregate measures reflect period mortality risk, rather than survival or length of life of real birth cohorts. One should also take into account that the Latvian figures of 1979, especially for the non-working group, are somewhat biased due to data problems mentioned above.

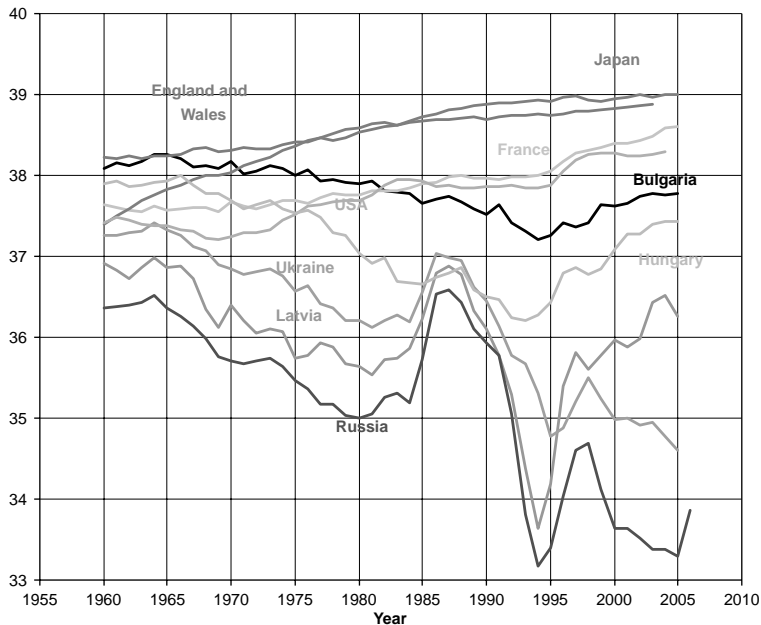
The table confirms sustained extremely high mortality in the selective group of non-working men. Indeed, for both countries and all years, except for Latvia in 1989, the life expectancies (20–59) in this group suggest a loss of years of life ranging from 1 or 2 years (for non-manual workers) to 10–15 years (for men outside the labor force) out of a maximum of 40 years. Life expectancy (20–59) of manual workers in Russia decreased between 1970 and 1979 and then increased by 1989 to about the level of 1970. A similar pattern is observed in Latvia with a higher initial value of longevity in 1970 and also its slightly higher level in

1989 as compared to Russia. Life expectancy advantage of the Latvian manual workers over the Russian ones is at minimum in 1979 and 1989. In Russia life expectancy (20–59) of non-manual workers remains almost unchanged between 1970 and 1979 and very slightly decreases in Latvia.

Figure 5 compares male life expectancy (20–59) of the whole population in Russia and Latvia to other east and west European countries. The two countries show a similar trend between 1970 and 1989, which is very different from some other east European and especially from west European countries. The level of life expectancy for Latvia and Russia based on the Human Mortality Database shown in Figure 5 is slightly lower than the level shown in Table 3 based on our sample. This is probably due to the fact that the sample comes from urban areas.

### 7. Discussion

This study offers the first analysis of social mortality differences in the Soviet Union in the initial period of mortality increase in the 1970s. We compare mortality trends in urban Latvia and urban areas of Russia and confirm that the overall mortality increase in the 1970s is concentrated among manual workers. Non-manual employees did not experience



**Figure 5.** Male life expectancy between exact ages 20 and 60.

considerable changes. As expected the non-working population shows much higher mortality than manual and non-manual workers, but the change over time follows the pattern experienced by the two active groups. The non-working population showed high mortality because of two reasons. First, according to the Soviets law, all persons who were able to work were obliged to work. Article 209 in the criminal codes of the Russian Federation and other former Soviet Republics included the forceful placement or deportation of non-working persons. Second, persons who were ill for a long period (more than 3 months) were discharged and started to receive a disability pension instead of temporary sick leave benefit. This pension was significantly smaller than sick leave benefit. These two reasons combined show that at age 30–49 only disabled persons did not work and the majority of the non-working population was disabled.

Concerning the mortality gap between manual and non-manual workers we show that the mortality ratio increased from 1970 to 1979 in both countries because almost all deterioration happened in the group of manual workers. For the second decade from 1979 to 1989 we detect differences between Russia and Latvia: In spite of the overall falling mortality between 1979 and 1989 the social ratio continued to increase in Russia because mortality decreased much more for non-manual workers than for manual workers. In Latvia the ratio decreased between 1979 and 1989 to almost the same level as in 1970.

Considering the beginning of the health and mortality crisis in the Soviet Union, it is still not clear why mortality for working age people began to increase in the 1960–1970s. It is a crisis that has been witnessed for about four decades, so a search for the basic determinants, the short-term factors and the social distribution is still an important research question.

Since this crisis is a distinct feature of (former) state socialist countries the determinants are probably related to the special socio-economic development in countries under state socialist control compared to Western Europe. It is puzzling that the mortality increase started in a period where the socialist economy was growing fast and the educational level of the population and the living standard was improving. This coincidence challenges the understanding that mortality crisis reflect economic crisis and therefore invites us to look first at the social circumstances of the economic development in the initial phase.

The economic development of state socialist countries is characterized by the dominance of heavy industries and military sector and low consumer goods' production (Williams 2006). The atrophy of the service sector compared to Western European countries implied the prevalence of hard manual labor. This was not only the result of an economic rationale

but the socialist ideology perceived the industrial worker as the ideal of the proletariat that has to be produced and promoted. Ironically, this ideological interest and political strategy to integrate the working class into the avant-garde of communist progression did not create better living conditions for this part of the population. On the contrary, the forced change of the economic structure by central planning led to massive rural–urban migration, from agriculture to industry. For these new urban workers housing provision, food supplies and health care was not sufficient which resulted in adverse general health conditions (Williams 2006), additionally worsened by social disorganization and anomie in the new urban environment. Stressful living conditions due to disruption of traditional social structures led to unhealthy and risky behavior patterns (Cornia and Paniccia 2000), particularly for men with low education and little social support. This reasoning is supported by the pattern of causes of death which mainly consists of cardiovascular disease, deaths related to smoking, and liver cirrhosis (McKee and Shkolnikov 2001). Rising death rates that coincide with economic growth suggest that it is rather social conditions caused by the forced economic change than economic hardship as such that causes the observed health deterioration. At least for the beginning of the state socialist health crisis the exodus from agriculture and the subsequent social changes described above can explain the health deterioration and mortality increase for men in working ages concentrated among manual workers. But for explaining the ongoing health decline after the initial phase of migration and economic transition was over, we need a more general theoretical framework that could explain the exceptional coincidence of economic growth and mortality increase.

### 7.1. Modernization

We want to propose the process of modernization as the first part of such a framework (see Beck *et al.* 1994; Cockerham 1999). It is a socioeconomic and cultural trend that also influences the structural conditions for and the development of life–styles regarding health (Roos *et al.* 1996; Palosuo 2003). From a Western point of view modernization is a transition into ‘civil’ societies, a process that comes along with increasing welfare, participatory democracy (Lane 2006), mass media and individualization. The concept of modernization has only rarely been applied to Soviet societies (Lane 2006; see also Field 1976) and it is not clear to what extent socialist countries followed this trajectory towards modern societies (Palosuo 2003). On the one hand the level of industrialization, urbanization, housing and education was improving just as in Western societies. On the other hand, the formation of a civil society with increasing

autonomy of the individual was hampered by state-socialism in which social regulation came mainly from the state level or, as a substitute for its dysfunctions, from pre-modern, traditional networks and even feudal structures of patronage (Palosuo 2003). Malia (1994) even claims that in Soviet countries there was rather a regime than a society. The 'incomplete modernization' (Lane 2006) that has also been termed the 'third way' or 'conservative modernization' (Vishnevskij 1998) was state-led (Lane 2006), which may be an explanation for the social development and important aspects of a welfare system in state-socialist countries lacking behind the economic development which was fostered by the official socialist strategy.

A major characteristic of the socialist society is that the state and the collective were of higher value than the individual (Cockerham 2002). Unlike it could be expected in a society with a strong emphasis on collectivism, many people tried to escape from public and state dominated organizations and their repressive regulations. Instead they concentrated on the family as one of the last private refuge in the socialist society (Rose 1995, 2000). The mixture of a dominant and omnipresent state that offered free health care and a lack of motivation to care for one's own health resulted in a passive and irresponsible attitude toward health promotion (Shkolnikov and Meslé 1996; Shkolnikov and Malkov 2000; Cockerham 2002). These considerations ask for another sociological concept that allows understanding the determinants of individual health behavior.

## 7.2. Health lifestyles

Increasing mortality and declining health in the Soviet Union was observed from 1965 to 1984 (Shkolnikov and Leon 2006), but the economic decline started after the increase of mortality: in the late 1960 socialist economies 'lost dynamism' (Siegrist 2000) but the economic crisis only started in the late 1970s. Again this shows that social and not economic problems are the origin of the East European health crisis. As claimed above the social problems have to do with a lack of institutions of civil society and decreasing social cohesion (Okolski 1992). The consequences have been described in detail in the literature as alienation, anomie and psychosocial stress (Palosuo 2003), a lack of coping strategies and reward, disappointment, hopelessness and risky behavior (Cockerham 1999; Siegrist 2000) which can not all be discussed in detail here. A useful summarizing classification of these problems by Siegrist (2000) names three functions of successful self-regulation and essential for human well-being: the sense of self-efficacy, self-esteem and self-integration. The



concept of health lifestyles can help to explain how this lack of essential psychosocial resources can translate in concrete health relevant factors and health damaging behavior. Many studies attribute major importance to health lifestyles for the explanation of health decline in former socialist countries (Janěková and Hnilicová 1992; Kulin and Skakkeback 1995; Adevi *et al.* 1997; Cockerham 1997, 1999, 2000, 2002; Ginter 1997; Ostrowka 2001). 'Health lifestyles are collective patterns of health-related behavior based on choices from options available to people according to their life chances' (Cockerham 2002). This definition reflects Max Weber's concept of lifestyles claiming that life choices are constrained by life chances both sides interacting dialectically. Life choices can also be termed 'agency' and life chances represent the social structure, i.e., the social position of an individual in society.

For Pierre Bourdieu lifestyles represent the dimension of practice in which the economic and cultural constraints are objectified into behaviors and objects (Bourdieu 1982; see also Hoffmann 2008). He claims a systematic relationship between the objective living conditions (economic and cultural resources) and lifestyles. According to Bourdieu, this relationship is not strictly causal or absolutely necessary, but he calls it 'structural causality of a network of factors' (Bourdieu 1982).

That health is a relevant dimension in lifestyles can be seen by the simple observation that many individual health lifestyles are either generally positive or negative (Cockerham 2005). Positive health behaviors are clustered along two dimensions: promoting wellness and avoiding risk (*ibid.*)

To conclude, although the state provided health care services, and in spite of the good educational level and material situation, many Russians, especially manual working men, engaged in health damaging behavior. The proposed main reasons are: (1) a lack of integration because in the socialist society there was over-regulation on the level of the collective but, due to the incomplete modernization, there were no institutions of a civil society; and (2) a lack of the individual feeling of autonomy and responsibility for one's health status given the low value of individual welfare in general. However, our reflections on health relevant lifestyles must remain theoretical because with the data in our study we cannot operationalize life style factors to prove the pathway from social status or living conditions to health behavior.

To the extent that in the 1980s the Soviet economy was not as successful as before compared to Western Europe, the persisting high mortality in this decade is less surprising because economic problems in the last decade of the Soviet system do account for a part of the health crisis. More and more resources were shifted from the social sector to the

military-industrial sector to keep the illusion of prosperity and power in the Cold War (McKee 2006).

An important factor for the mortality development in Eastern Europe in the 1980 is Mikhail Gorbachev's anti-alcohol campaign of 1985 mentioned above. It decreased mortality in Russia substantially, resulting in a short-term increase of life expectancy in Russia in the following years. The sharp mortality increase in the early 1990s coincided with a return to high alcohol consumption and with political and an economic collapse of the Soviet state socialist system.

For evaluating the social hypothesis for mortality changes our analysis of social mortality differences in two different countries before and during the anti-alcohol campaign is especially useful. We find that in the 1980s the mortality gap between manual and non-manual workers increased in Russia and decreased in Latvia. The gap in Russia increased because the better educated profited even more from the campaign than the less educated. The gap in Latvia decreased because only the manual workers experienced a substantial mortality decrease. These findings suggest two things: first, Latvia was less influenced by the anti-alcohol campaign and, second, in Latvia the lower educated reacted more than the higher educated, while in Russia the higher educated reacted more. It is difficult to explain why this difference occurs, maybe because Latvian heavy drinkers used less of alternative alcohols such as home-made moonshine or alcohol-containing substances (cheap aftershaves, etc.). Because of that they could have been more influenced by a campaign that also included the pricing and the distribution system of the legal alcohol. Of course it is also possible that we still lack a third variable that would explain why different social groups in Latvia and Russia reacted differently on Gorbachev's campaign.

Until recently, there was very little information available about changes in social differentials in mortality in countries, where mortality has been increasing. When we compare the change of social mortality differences in exceptional regions like Russia with increasing mortality to regions with decreasing mortality like Western Europe, we find increasing mortality ratio between upper and lower social classes in both regions. This means that overall mortality improvements favor upper classes disproportionately, while overall mortality deterioration affects lower classes disproportionately. This is not surprising when we think of social status as a marker for the ability to get and to use the necessary resources to adjust to new situations (Hoffmann 2008). Given the close nexus between class and health the same logic applies to resources needed to maintain good health.

It is known that occupational status depends on educational level. High educated employees usually are non-manual employees, low educated persons centralize in the group of manual workers or non working. In the

countries we are studying, and in almost all countries in the world, the educational population structure has been improving over time. This improvement in education was not translated into a change of the occupational structure between 1970 and 1989, as can be seen in Table 3. However, we hypothesize that the improved educational structure has contributed positively to the overall trend in mortality, and that without this increased education, the mortality trend would have been even worse (Shkolnikov *et al.* 2006).

Table 4 shows the results of the decomposition of changes in life expectancy between age 20 and 60. First, it can be seen that the negative trend in life expectancy in both countries between 1970 and 1979 is largely due to mortality increase among blue collar workers. Second, the numbers that show the impact of changes in occupational structure are more difficult to interpret: the results suggest that the decrease of the percentage of employed persons had a negative impact on overall life expectancy in Latvia between 1979 and 1989 while the slight increase of employed persons had a positive impact in Russia the decade before (see Table 3 for the occupational structure). However, we believe that the small numbers of non-working persons lead to unreliable and fluctuating results that can not be further interpreted here. Third, the decomposition does not show that the ratio between blue and white collar workers had a large impact on the overall mortality trend. As mentioned above this is probably due to the fact that we are only measuring occupation and not education, which may have had a positive impact.

**TABLE 4. Decomposition of changes in 'life expectancy between exact ages 20 and 60 for men**

		<i>Latvia</i>		<i>Russia</i>	
		1970–1979	1979–1989	1970–1979	1979–1989
	Total changes	– 1.37	0.7	– 1.12	1.4
Due to changes in mortality of	- White-collar workers	– 0.26	0.21	0.01	0.32
	- Blue-collar workers	– 1.95	1.23	– 0.87	0.99
	- Non working	0.86	– 0.31	– 0.52	0.1
Due to changes in occupational structure of them:		– 0.01	– 0.44	0.26	– 0.01
	- Percent employed	0.03	– 0.41	0.27	0.03
	- Percent blue-collar workers in employed	– 0.04	– 0.03	– 0.01	– 0.04

For the increase of the social mortality ratio shown in the result section we have to consider the following: to the extent that the group of manual workers, or the less educated group, becomes smaller it also becomes more extreme and more disadvantaged compared to the average of the population. This points to the distinction between absolute and relative social status: in a hypothetical situation where all persons would get more education or income, the relative social status of those who only get a little more can deteriorate. This may partly explain why the social mortality ratio is persistent or increasing even under different overall mortality regimes (improving or deteriorating). However, the example of Latvia in the 1980s shows that there are exceptions to this rule and there are differences between countries in the Eastern block: the social mortality ratio was decreasing in Latvia in the 1980s because the lower status group profited disproportionately from the positive trend.

Some new results point at further international differences during the transition period in the 1990s: for the Czech Republic, it was shown that educational differences in mortality have increased only moderately between 1980 and 1995–1999 (Blazek and Dzurova 2000; Rychtaïková 2004). However, a significant widening of the educational gap in mortality rates between 1989 and 1999 was found in Hungary (Klinger 2001) and in Lithuania (Shkolnikov *et al.* 2007). Finally, an enormous widening of the educational differences in life expectancy between 1988–1989 and 1999–2000 was found in Estonia, where mortality increased in lower educated groups (Leinsalu *et al.* 2003). Not only within a society but also in an international comparison there seem to be distinct groups of winners and losers of the transition. The differentiation among former state socialist countries becomes more relevant in the 1990s when international political and economic differences increased. Further research on these different trajectories and on the nexus to mortality development can provide new insight into the origins and the future of the Eastern European Health crisis.

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**Appendix: data sources**

The 1970 and 1979 data were copied from the original documents stored in the Russian State Archive on Economics (RGAE).

*The 1970 data sources:*

RGAE, Fund 1562, List 47, Archive Unit 1443, 1445; RGAE, List 336, Archive Units 4795, 4890.

*The 1979 data sources:*

Fund 1562, List 62, Archive Unit 1683; List 336, Archive Unit 6805, pp. 81, 88, 101, 108; Archive Unit 6801, pp. 84, 92, 105, 112, Archive Unit 6798, pp. 84, 92, 105, 112, Archive Unit 6792, pp. 85, 93, 106, 114, Archive Unit 6789, pp. 84, 92, 105, 112, Archive Unit 6790, pp. 85, 93, 106, 113; Archive Unit 6773, pp. 85, 93, 106, 114, Archive Unit 6775, pp. 84, 91, 104, 111; Archive Unit 6791, pp. 83, 90, 103, 110, Archive Unit 6788, pp. 85, 93, 106, 114, Archive Unit 6814, pp. 85, 92, 105, 112; Archive Unit 6818, pp. 85, 93, 106, 114, Archive Unit 6822, pp. 85, 93, 106, 114; Archive Unit 6826, pp. 85, 93, 106, 114, Archive Unit 6839, pp. 85, 93, 106, 114, Archive Unit 6849, pp. 85, 93, 106, 113, Archive Unit 6835, pp. 84, 92, 105, 112, Archive Unit 6851, pp. 83, 90, 103, 110.

*The 1989 data sources:*

Original data printouts of the Goskomstat of the Russian Federation.

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