Mortality Trends in Finland and Latvia since the 1920s

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This article compares the development of mortality in Finland and Latvia from the pre-World War II time to the 1980s. This comparison is particularly interesting, because both the socioeconomic conditions and the levels of mortality were relatively similar in these countries in the 1920s and 1930s. Since the Second World War the economic and social development of Finland has differed from that of Latvia, which was incorporated into the Soviet Union. The differences in mortality trends between Finland and Latvia may thus shed light on the effects of the Soviet regime on mortality.

The detailed analysis of the post-war mortality in Latvia has been virtually impossible until recently. Up to the end of the 1950s there were practically no open publications on mortality. From the beginning of the 1960s to the mid-1970s the statistical yearbook of Latvia published only a few selected indicators of mortality and life expectancy. From the mid-1970s till the mid-1980s the publication of these data stopped altogether. Limited information was included in bulletins and statistical collections that were meant for restricted circulation. The situation changed radically in 1988—1989 when institutions of statistics essentially broadened the scope and content of published data on mortality, including age-specific death rates and mortality by cause of death.

Life expectancy at birth

Systematic time series on the development of life expectancy at birth are not available for Latvia. The data presented in Table 1 and Figure 1 give, however, an overall view of the development since the 1920s. The Estonian trends in life expectancy are included in Figure 1 for comparison.

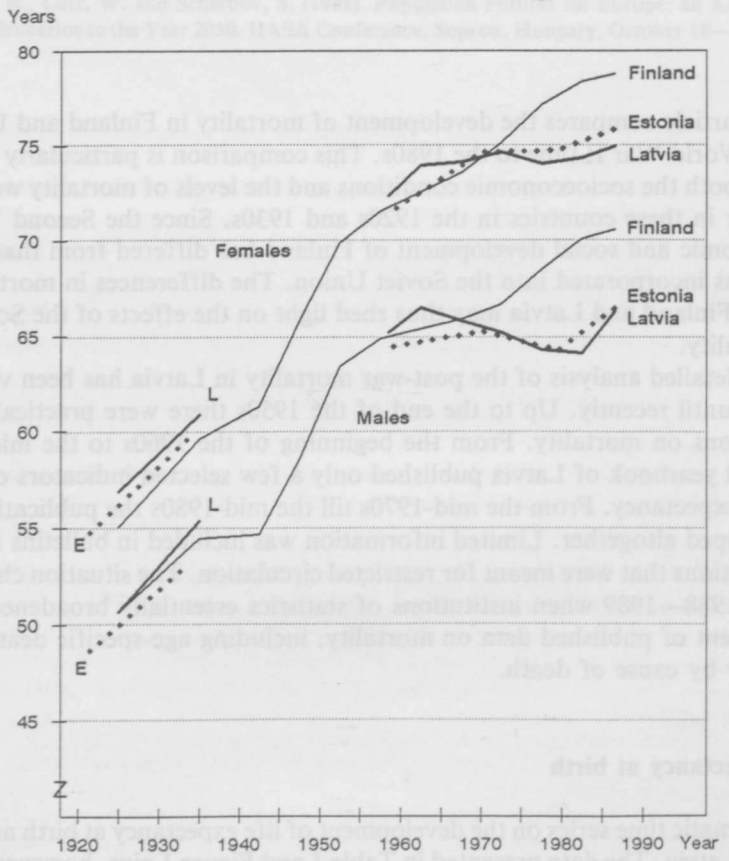
Life expectancy at birth rose rapidly in both Finland and Latvia in the 1920s and 1930s. The female life expectancy was about 1.5 years higher in Latvia than in Finland. The male life expectancy was also higher in Latvia, but the difference between the countries was smaller than for females. This implies that the sex differential in mortality was more marked in Latvia than in Finland in the pre-war period.

Life expectancy was at about the same level in Estonia as in Finland in the 1920s. In Latvia, Estonia, and Finland life expectancy in the 1930s was higher than in several East and South European countries (e.g. Hungary, Poland, Greece, Spain and Italy) and approximately corresponded to the levels in Austria, Belgium, France and Scotland.

The Finnish life tables for five year periods show that the increase of male life expectancy stopped and the increase in female life expectancy slowed down during the Second World War. After the war, from 1945 to the mid-1950s, life expectancy was extended very rapidly.

No data on the development of mortality are available for Latvia (or the other Baltic nations) for the period 1940—1957. The first life tables of the Soviet period

Figure 1. Life expectancy at birth c. 1920—1987 in Finland, Latvia and Estonia, males and females.



Sources: Statistical Yearbooks of Finland, various years; Life tables 1987, Official Stastics of Finland, 1989; Statistical Yearbooks of Latvia, various years, (see Table 2); Katus and Puur (1990).

Table 1. Life expectancy at birth in Finland and Latvia by sex 1921—1989.

Years	Male		Difference	Female		Difference
	Finland	Latvia		Finland	Latvia	
1921—30	50.7	50.7*	0.0	55.1	56.9*	—1.8
1931—40	54.5	55.4**	—0.9	59.6	60.9**	—1.3
1956—60	64.9	65.2***	—0.3	71.6	72.4***	—0.8
1961—65	65.4	66.5	—1.1	72.6	74.0	—1.4
1966—70	65.9	65.8	0.1	73.6	74.2	—0.6
1971—75	66.7	65.2	1.5	75.2	74.7	0.5
1976—80	68.5	64.3	4.2	77.2	74.1	3.1
1981—85	70.1	64.1	6.0	78.4	74.4	4.0
1986—87	70.6	66.3	4.3	78.8	75.0	3.8
1988	70.7	66.3	4.4	78.7	75.1	3.6
1989	..	65.3	..	..	75.2	..

* 1924—25
** 1934—36
*** 1958—59

Note: Five year averages for Latvia were calculated from annual life tables.
Sources: see Figure 1.

were calculated on the basis of the 1959 census. In 1958—59 the Latvian male and female life expectancies were slightly higher than those in Finland. This indicates that the post-war decline of mortality was almost as rapid in Latvia as in Finland. The male and female life expectancies for Estonia were also very close to those for Finland and Latvia in 1958—59. It seems that the first 15—20 years of the Soviet regime did not have a negative effect on the level of the normal civilian mortality in the Baltic countries. The mortality caused directly by the war and the mass repression in the 1940s and the beginning of the 1950s are another question, which cannot be dealt with in this paper.

Male life expectancy in Latvia decreased 2.4 years from 1961—65 to 1981—85. Among females there was a slight increase. In Finland, on the other hand, the extension in life expectancy was rapid: the female life expectancy rose 5.8 years and the male life expectancy 4.7 years from 1961—65 to 1981—85. The current marked difference between Finnish and Latvian mortality is thus almost entirely due to the differences in the trends from the end of the 1960s to the beginning of the 1980s. In the mid-1980s there was no country in Europe where male life expectancy would have been lower than in Latvia and the other Baltic republics (with the exception of a number of republics of the USSR). For females life expectancy was lower only in a few countries of Europe.

From the early 1980s to the late 1980s the development of life expectancy was relatively favorable in Latvia, and the gap between Latvia and Finland increased only slightly for men and decreased slightly for women (Table 1).

Mortality trends by age and sex

This section of the article examines data on infant mortality and age-specific probabilities of death. The probabilities of death were calculated from the Finnish and Latvian life tables for four periods beginning from the 1930s. Life tables covering the same years in both countries are not available and the data used here are, therefore, not strictly comparable.

Table 2. Probabilities of death (per 1,000) in selected age intervals in Finland and Latvia from the 1930s to 1987, males and females.

Males

	Finland					Latvia				
Period*	0	1—14	15—34	35—64	65—74	0	1—14	15—34	35—64	65—74
1935	77	60	112	418	455	94	62	83	370	444
1958	27	13	38	344	459	34	21	51	290	394
1978	8	6	29	292	408	20	13	61	372	425
1987	7	4	27	251	366	14	11	40	339	421

Females

	Finland					Latvia				
Period	0	1—14	15—34	35—64	65—74	0	1—14	15—34	35—64	65—74
1935	63	55	92	282	376	74	57	75	242	325
1958	21	10	17	177	324	26	13	23	159	270
1978	7	3	9	115	217	16	10	17	163	249
1987	5	3	9	103	193	10	7	13	159	246

* 1935: Finland 1931—40, Latvia 1934—36
1958: Finland 1956—60, Latvia 1958—59
1978: Finland 1976—80, Latvia 1978—79
1987: Finland 1987, Latvia 1986—87

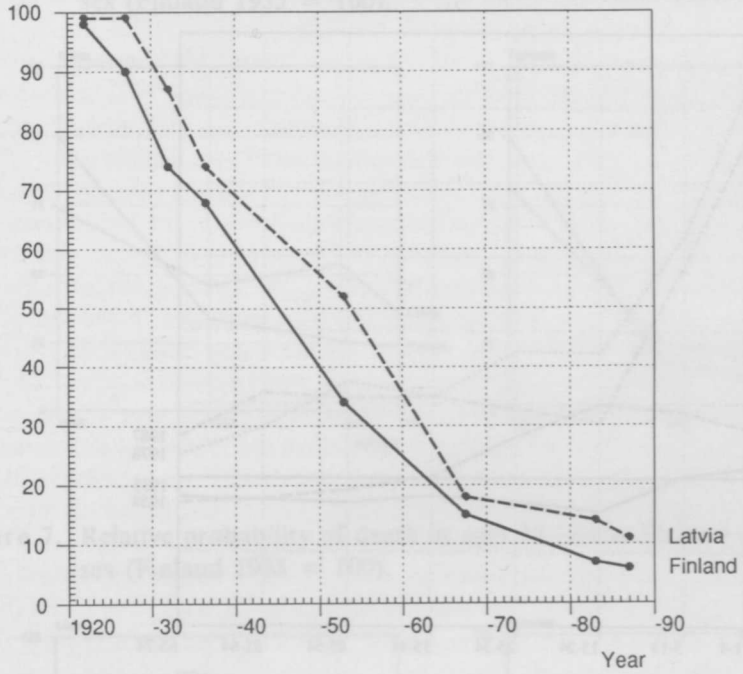
Source: Calculated from: Valsts statistikas parvalde. Menesa biletens. State Committee of Latvia on Statistics, (Monthly Bulletin). 1938. N:2, p. 207;
State Committee of Latvian SSR on Statistics, Tablitsi smertnosti i srednei prodolzhitelnosti zhizni naselenia Latvijskoi SSR 1958—1959 gg. (Life tables of the Latvian SSR population). 1964, Riga;
State Committee of the USSR on Statistics (Goskomstat), Tablitsi smertnosti i ozhidajemoi prodolzhitelnosti zhizni naselenia (Life tables). Moscow, 1989.
Life tables published by the Central Statistical Office of Finland 1931—40, 1956—60, 1976—80 and 1987.

The data on the age-specific probabilities of death are utilized in three ways: Table 2 gives the probabilities of death for selected age intervals. Figures 3 and 4 give the ratios of the Latvian age-specific probabilities of death to those of Finland, and Figures 5—8 show the trends in relative age-specific probabilities of death.

As shown earlier, both the male and the female life expectancies were higher in Latvia than in Finland in the 1930s. The age specific data show that this was due to the lower Latvian mortality in all age groups over 15 years. Infant mortality and the mortality of children under 5 years of age was lower in Finland and there was no difference in the age group 5—14. There was no difference between the countries in infant mortality at the beginning of the 1920s, but since the end of the 1920s infant mortality has been lower in Finland (Figure 2).

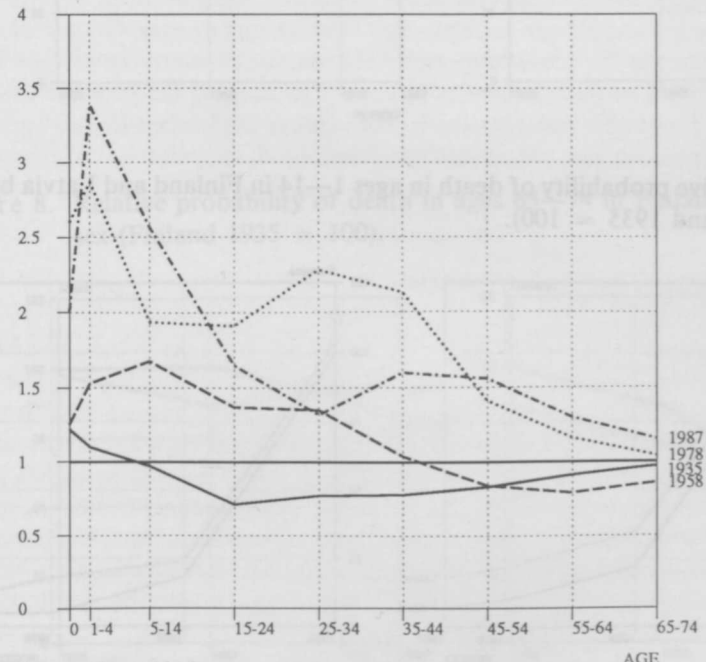
During the period from the 1930s to the end of the 1950s, male and female mortality declined markedly in almost all age groups in both countries. The relative decline was most rapid among children and young adults, and it was more rapid among women then among men. Although these main trends in the 1940s and 1950s were similar in Latvia and Finland, some differences can be observed. The mortality of children and young adults declined more in Finland than in Latvia. On the other hand, the Finnish male death rates in ages over 55 diminished only slightly or not at all, and the Finnish excess mortality increased. In the older female age groups the rate of decline was about the same in both countries, and the death rates in Fin-

Figure 2. Infant mortality in Finland and Latvia 1920—87.



Source: Valsts statistiska parvalde. Menesa Biletens —40. Nr. 2, pp. 135—136; Latvijas PSR Tautsaimniecibas statistikas parvalde. Statistikas tabulas. —R., 1940, pp. 12, 30; Statistical Yearbooks of Latvia, various years; Statistical Yearbooks of Finland, various years.

Figure 3. Ratio of the age-specific death rates in Latvia to those in Finland c. 1935, 1958, 1978 and 1987, males.



Source: See table 2.

Figure 4. Ratio of the age-specific death rates in Latvia to those in Finland c. 1935, 1958, 1978 and 1987, females.

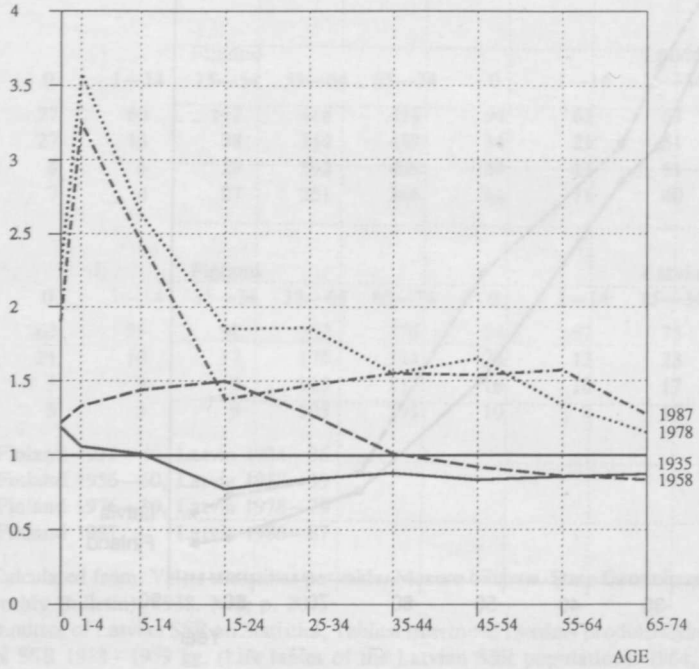


Figure 5. Relative probability of death in ages 1—14 in Finland and Latvia by sex (Finland 1935 = 100).

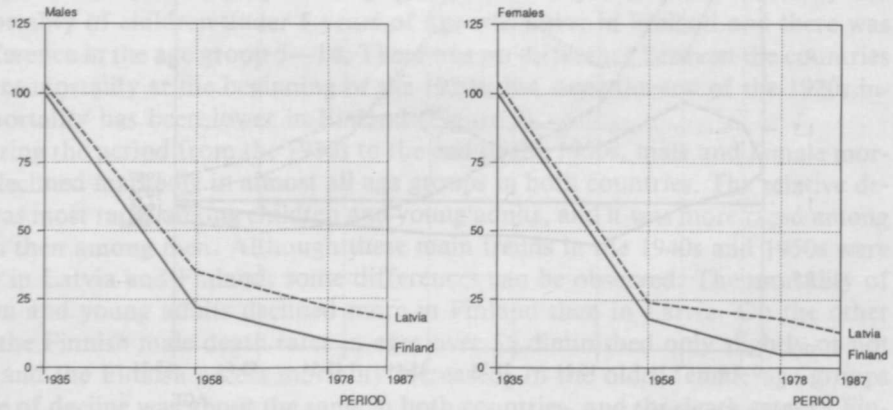


Figure 6. Relative probability of death in ages 15—34 in Finland and Latvia by sex (Finland 1935 = 100).

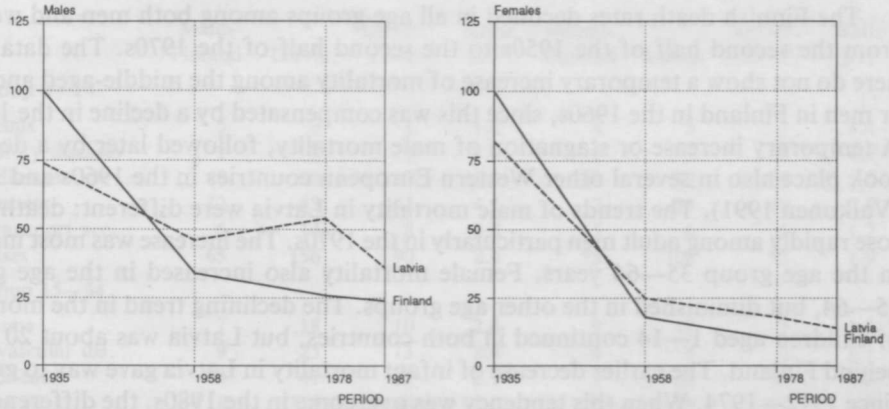


Figure 7. Relative probability of death in ages 35—64 in Finland and Latvia by sex (Finland 1935 = 100).

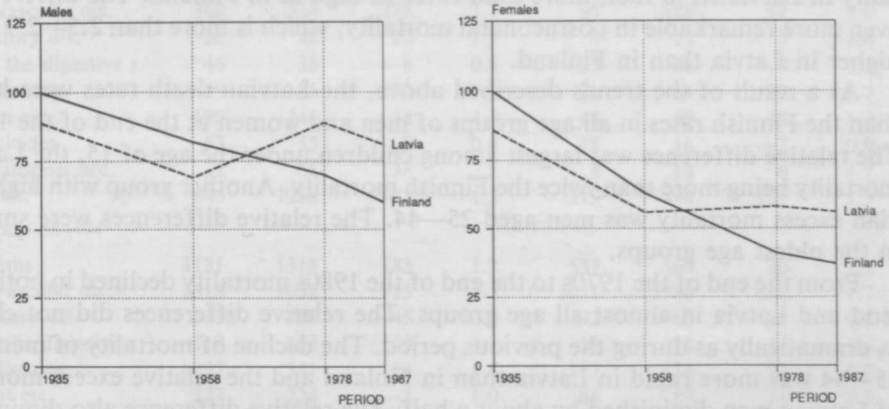
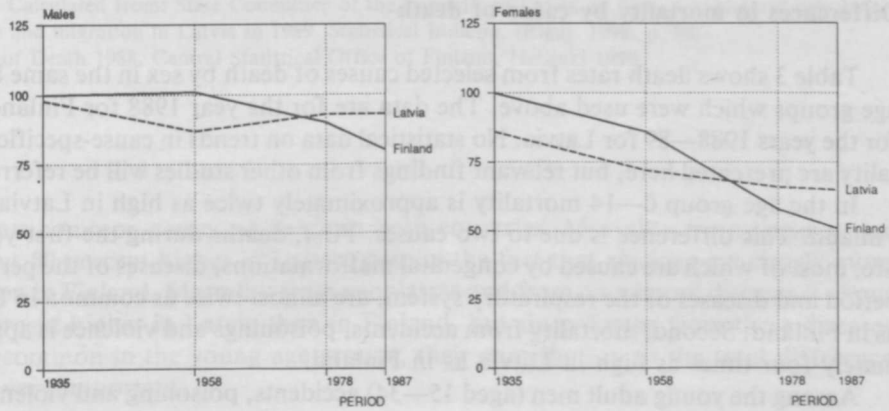


Figure 8. Relative probability of death in ages 65—74 in Finland and Latvia by sex (Finland 1935 = 100).



land remained higher than in Latvia. As a whole, the life expectancies for Finland and Latvia were almost identical at the end of the 1950s, but this similarity concealed marked differences in the age patterns of mortality.

The Finnish death rates declined in all age groups among both men and women from the second half of the 1950s to the second half of the 1970s. The data used here do not show a temporary increase of mortality among the middle-aged and older men in Finland in the 1960s, since this was compensated by a decline in the 1970s. A temporary increase or stagnation of male mortality, followed later by a decline, took place also in several other Western European countries in the 1960s and 1970s (Valkonen 1991). The trends of male mortality in Latvia were different: death rates rose rapidly among adult men particularly in the 1970s. The increase was most marked in the age group 35—64 years. Female mortality also increased in the age group 35—64, but diminished in the other age groups. The declining trend in the mortality of children aged 1—14 continued in both countries, but Latvia was about 20 years behind Finland. The earlier decrease of infant mortality in Latvia gave way to growth since 1972—1974. When this tendency was overcome in the 1980s, the difference between Latvia and Finland remained very large, particularly if we take into account the fact that the method of defining infant mortality in the Soviet Union on the whole and in Latvia, too, differs from the recommendations of WHO. This deviation from the WHO definition artificially lowers infant mortality 10—25 percent. Infant mortality in Latvia is, in fact, more than twice as high as in Finland. The difference is even more remarkable in postneonatal mortality, which is more than 2.5—2.9 times higher in Latvia than in Finland.

As a result of the trends described above, the Latvian death rates were higher than the Finnish rates in all age groups of men and women at the end of the 1970s. The relative difference was largest among children under the age of 15, the Latvian mortality being more than twice the Finnish mortality. Another group with high Latvian excess mortality was men aged 25—44. The relative differences were smallest in the oldest age groups.

From the end of the 1970s to the end of the 1980s mortality declined in both Finland and Latvia in almost all age groups. The relative differences did not change as dramatically as during the previous period. The decline of mortality of men aged 15—44 was more rapid in Latvia than in Finland and the relative excess mortality of Latvian men diminished by about a half. The relative difference also diminished among women in the same age-group. On the other hand, the relative difference increased in the oldest age groups.

Differences in mortality by cause of death

Table 3 shows death rates from selected causes of death by sex in the same broad age groups which were used above. The data are for the year 1988 for Finland and for the years 1988—89 for Latvia. No statistical data on trends in cause-specific mortality are presented here, but relevant findings from other studies will be referred to.

In the age group 0—14 mortality is approximately twice as high in Latvia as in Finland. This difference is due to two causes. First, deaths during the first year of life, most of which are caused by congenital malformations, diseases of the perinatal period and diseases of the respiratory system, are almost twice as common in Latvia as in Finland. Second, mortality from accidents, poisonings and violence is approximately four times as high in Latvia as in Finland.

Among the young adult men (aged 15—34) accidents, poisoning and violence are

Table 3. Age-standardized* mortality (deaths per 100,000) from selected causes of death in Finland (1988) and Latvia (1988—89), and differences and ratios of death rates, by age and sex.

	Males		Differ.	Ratio	Females		Differ.	Ratio
	Finland	Latvia	L—F	L/F	Finland	Latvia	L—F	L/F
Age group 0—14								
Neoplasms	5	6	1	1.2	4	5	1	1.4
Respiratory diseases	1	8	7	7.4	1	6	5	4.2
Other diseases	48	90	42	1.9	43	72	29	1.7
Accident etc.	12	53	41	4.4	7	25	18	3.6
— transport acc.	6	14	8	2.5	5	6	1	1.2
All causes	65	156	90	2.4	55	108	52	1.9
Age group 15—34								
Neoplasms	7	18	10	2.4	9	12	3	1.3
Cardiovascular dis.	9	23	13	2.4	4	4	0	1.1
Other diseases	20	41	21	2.1	9	22	12	2.3
Accident etc.	111	171	60	1.5	22	39	17	1.8
— suicides	51	33	—18	0.6	8	8	1	1.1
— transport acc.	30	74	44	2.5	7	15	8	2.2
All causes	148	252	104	1.7	44	77	33	1.7
Age group 35—64								
Neoplasms	174	318	144	1.8	127	164	37	1.3
Cardiovascular dis.	360	534	175	1.5	95	188	92	2.0
Respiratory dis.	28	48	20	1.7	8	13	5	1.6
Dis. of the digestive s.	46	38	—8	0.8	13	16	4	1.3
Other diseases	49	86	37	1.8	31	54	22	1.7
Accident etc.	190	244	54	1.3	45	60	15	1.3
— suicides	62	55	—7	0.9	18	16	—2	0.9
— transport acc.	25	63	38	2.5	8	13	6	1.7
All causes	846	1268	422	1.5	319	494	175	1.5
Age group 65—74								
Neoplasms	1131	1314	183	1.2	537	566	30	1.1
Cardiovascular dis.	2318	3032	715	1.3	1071	1768	698	1.7
Respiratory dis.	313	268	—45	0.9	92	66	—26	0.7
Dis. of the digestive s.	119	158	39	1.3	58	78	21	1.4
Other diseases	227	341	114	1.5	177	154	—23	0.9
Accident etc.	227	224	—3	1.0	66	87	21	1.3
— suicides	61	55	—5	0.9	17	20	3	1.2
— transport acc.	43	62	19	1.4	16	23	7	1.5
All causes	4335	5337	1003	1.2	2001	2721	720	1.4

* Standard population: the population of Finland in 1988.

Source: Calculated from: State Committee of the Republic of Latvia on Statistics. Natural population changes and migration in Latvia in 1989. Statistical Bulletin. (Riga). 1990. p. 88;
Causes of Death 1988, Central Statistical Office of Finland, Helsinki 1990.

the most common causes of death in both countries. Mortality from these causes is about 50 percent higher in Latvia, despite the fact that suicides are clearly more common in Finland. Mortality from neoplasms and from circulatory diseases is about 140 percent higher in Latvia than in Finland, but since deaths from these diseases are uncommon in the young age groups, their contribution to the total difference is not very important.

In both countries female mortality in the age group 15—34 is only about one-third of the male mortality. Half of the difference in total mortality between Latvia and Finland is due to mortality from accidents etc. and the other half is due to mortality from diseases.

About 40 percent of the difference in total mortality among men aged 35—64 is due to differences in mortality from cardiovascular diseases. In Finland mortality from cardiovascular diseases was high already in the 1950s and it continued to increase from the mid-1950s to the mid-1960s (Pyörälä and Valkonen 1981). The current 50 percent excess mortality in Latvia compared to Finland is due to the different trends in the 1970s and 1980s. In Finland mortality from cardiovascular diseases decreased considerably, whereas it increased in Latvia. The development in Finland was similar to that in several other developed countries, whereas Latvia followed the pattern of countries in East Europe.

Cancer mortality is 80 percent higher among the middle-aged men in Latvia than in Finland. About one-third of the total mortality difference is due to this cause. Smoking habits, through their influence on lung cancer, are probably one of the causes of the difference in cancer mortality. Smoking habits may also be relevant in explaining the 70 percent difference in mortality from respiratory diseases.

In accidents, poisonings and violence the Latvian excess mortality among the middle-aged men is about 30 percent. Suicide mortality, which is included in this group of causes of death, is smaller in Latvia than in Finland. If suicides are excluded, the Latvian excess mortality rises to 50 percent. Mortality from transport accidents is 150 percent higher in Latvia.

Among middle-aged women more than half of the total Latvian excess mortality is due to cardiovascular diseases. Neoplasms account for about one-fifth of the difference, but the Latvia/Finland ratio in mortality from neoplasms is markedly lower than among men. Suicide mortality is slightly lower but mortality from accidents higher in Latvia.

The total mortality of men aged 65—74 is about 20 percent higher in Latvia than in Finland. The relative difference is thus much smaller than among middle-aged men. The Latvia/Finland mortality ratios are lower in the older than in the younger age groups for all causes of death. In neoplasms the relative excess mortality of Latvians declines especially much with increasing age and in respiratory diseases older male mortality is higher in Finland. This may indicate that differences is smoking habits between Latvia and Finland may be less favorable for Finland in the older age groups.

The high mortality from cardiovascular diseases in Latvia is the most striking finding in the death rates for women aged 64—74. Almost the whole 40 percent excess in total mortality compared to Finland is due to cardiovascular diseases.

Conclusions

The main interest in carrying out this study was to assess to what extent and in which way being part of the Soviet Union has influenced the mortality in Latvia. The comparison of the trends in mortality in Finland and Latvia is thus used as a quasi-experiment, based on the assumption that the development in Latvia would have been roughly similar to that in Finland, if Latvia had remained independent. Strictly taken this assumption is, of course, too simplistic: all the differences in the trends and patterns of mortality after the Second World War are certainly not due to the fact that Latvia was incorporated into the Soviet Union. The assumption gives,

however, a framework for the following tentative attempt to summarize and interpret the fragmented findings.

In the period between the World Wars, the mortality of Finnish infants and children declined more rapidly than that of Latvian infants and children. This may have resulted from the strong efforts to develop antenatal and maternal care in Finland. This emphasis on the health of infants and children is one of the factors explaining the very low infant mortality in Finland in later times.

In the light of the data on infant mortality and age-specific mortality, it may be assumed that the health of the children born in the 1920s and 1930s was better in Finland than in Latvia, whereas the Latvian cohorts born before 1920 were healthier. The state of health in childhood seems to have caused a cohort effect, that can be seen in the differences of age-specific death rates clearly in the 1950s, and to some extent still in the 1970s and 1980s: in the cohorts born before 1920 the Latvian death rates compare more favorably with the Finnish death rates than in the cohorts born later. The more rapid increase in the Finnish life expectancy since the 1930s may be partly caused by this cohort effect although the negative development of cardiovascular mortality in Finland in the 1950s and 1960s had an opposite effect. A part of the difference in mortality trends seems thus be unrelated to the difference in the political status of the two countries after World War II.

In addition to the possible cohort effect described above, the development of mortality in the two populations has been influenced by period effects, which have been partly similar and partly different. In both populations the levels of mortality declined rapidly after the Second World War and in the 1950s. Both countries went through a period of rapid industrialization during this period. They also went through the same phase of the epidemiological transition. The main cause of the rapid increase of life expectancy was the decrease in infant mortality and in the incidence and fatality of infectious diseases, brought about by improvements in the level of living, nutrition, hygienic conditions, development of medical prevention and care, and other factors.

During this period from 1930s to the end of the 1950s the decline of mortality was not quite as rapid in Latvia as in Finland. This difference may be interpreted as the first sign of the negative effects of the new socio-political system. As a whole, the differences in the mortality of the two countries were, however, relatively small at the end of the 1950s.

The assumed negative effects of the Soviet regime have mainly manifested during the period from the late 1960s to about 1985. Most of the current difference between Finland and Latvia developed during this period. Data on the other Baltic republics, as well as on many Eastern European countries, show similar trends.

After the start of the perestroika period an improvement of the mortality situation took place. The campaign against alcoholism, which culminated in 1985—87, undoubtedly contributed to a fall of mortality from accidents, injuries and poisoning. This effect was, however, temporary and the growth of life expectancy has stopped.

In the light of the data presented here, the most important problem in understanding the effects of the Soviet regime on mortality is what happened in the period of stagnation from the late 1960s to 1985.

The data on cause-specific mortality show that mortality from accidents and related causes was high in all age groups and particularly among children in Latvia at the end of the 1980s although some decrease had taken place during the perestroika period. Although alcoholism probably accounts for a part of this excess, it indicates that the administration was passive and inefficient in protecting the population from ac-

cidents in traffic, at work and at home. This inefficiency seems to explain part of the total high mortality in Latvia.

The most important factor leading to the rapid increase of the mortality differential between Latvia and Finland since 1970 was the difference in the trends in mortality from cardiovascular diseases. It is difficult to assess the specific effect of the social and economic policies of the Soviet regime on this development. Male mortality from ischaemic heart disease rose rapidly in Finland from about 1955 to 1965 and there was some increase among women, too. Similar increases took place in several »western» developed countries at about the same time causing a stagnation in the rise of male life expectancy. After this period mortality from cardiovascular diseases has decreased in Finland and several other »western» developed countries, whereas there has been a rapid increase in the eastern European countries.

The causes of the different trends in cardiovascular diseases are not known and our understandinag of the causes of international variation in the levels and trends in cardiovascular mortality is very limited. It is, therefore, not possible to assess to what extent the increase and high levels of cardiovascular mortality in eastern Europe including Latvia are, specifically, due to the social and economic policies of these countries and to what extent to other factors.

For example, a possible hypothesis is that an increase in cardiovascular mortality could be due to changes in diet connected with rising levels of living. An increase in the incidence of ischaemic heart disease could take place during the phase of economic development when the shortage of food ends and no longer limits the amount of food consumed by the majority of population. This phase was perhaps experienced in Finland in the 1950s, but not until two decades later in eastern Europe.

Mortality from accidents and from cardiovascular diseases are two groups of causes of death contributing to the higher mortality of Latvia as compared to Finland. In addition, the data presented above show an excess Latvian mortality in almost all causes of death including infant mortality and mortality from other than cardiovascular diseases. This high general level of mortality is, undoubtedly, directly or indirectly due to the social and economic policy that was carried out within the framework of the Soviet Union. These policies included the mass repressions in the 1940s and the beginning of the 1950s, low economic efficiency leading to bad working and housing conditions and a deterioration of the ecological situation. These social policies also caused the fall of the prestige of health in the general system of social values and caused problems and qualitative weaknesses in the health care system.

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