TRANSMITTAL SLIP	DATE 17 Aug 82

TO: Andy Marshall, D/Net Assessment

ROOM NO.	BUILDING
3A930	Pentagon

REMARKS:

As promised.

FROM: Harry Rowen, C/NIC

ROOM NO.	BUILDING	
7E62	Hqs./CIA	

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DDI- 6664-82

13 August 1982

MEMORANDUM FOR: [redacted] 25X1
Chief, SED

FROM : [redacted] 25X1
SE/M

SUBJECT : Notes on "Some Causes of Rising Mortality in the USSR"

1. My purpose in writing this memo is to evaluate a recent article in Russia magazine by Maksudov (pseudonym), "Some Causes of Rising Mortality in the USSR". The article discusses demographic developments and in particular Soviet successes during the 1950s and early 1960s in raising life expectancy and reducing death rates. Maksudov argues that historical circumstances such as high rates of infant mortality before the revolution, civil war (1918-21) and World War II subjected the population to such a rigorous selection process that the weak were killed off, and the strong survived, thereby lowering mortality rates and raising life expectancy. He contends that mortality has increased since the mid-1960s because the influence of selection has diminished. Death rates which are no longer being artifically restrained have been allowed to rise to their "true level." Maksudov has downplayed--at times ignored--factors other than the Darwinian ones he gives that also explain the rise in mortality rates.

2. Mortality rates in the USSR have been rising for the last 15 years following a long period of decline. The death rate for the population increased by 49 percent from its low point in 1964 of 6.9 per 1,000 to 10.3 per 1,000 in 1981. Life expectancy for men is estimated to have fallen from 66 years in 1965 to 62 in 1980; for women it has remained static at about 74 years. Also the infant mortality rate has increased by more than 35 percent since 1971.

3. The Central Statistical Administration has not released age-specific mortality rates, infant mortality figures, or life expectancy data since the mid-1970s. The Soviets have also withheld publication of 1979 census data on the age distribution of the population, probably betraying their embarrassment over these trends. These omissions in data make research and analysis particularly difficult for Western analysts.

4. Maksudov concentrates his discussion on trends in infant mortality and life expectancy. He neglects to explain the current rise in adult male mortality, particularly for those in their 30s and 40s, due largely to the increase in coronary heart disease, cancer and alcohol-related deaths. However paradoxical it may seem, the general health of the population has been strengthened by the contribution of medicine and improvements in the diet.

5. Infant mortality historically has been high in the USSR although tremendous progress has been made in reducing it. After a long period of decline, infant mortality rates registered a sharp rise between 1971 and 1974. The rate is much higher than in the West and the gap seems to be widening. Infant mortality is currently estimated to be twice that for the U.S. Among the reasons suggested for the recent rise are rising alcoholism among pregnant women, use of abortion as the primary form of birth control, the effect of influenza epidemics on the health of pregnant women, and environmental pollution.

6. Some evidence also suggests that infant mortality may have been much higher in the past than the reported figures showed, so that the recent rise may be somewhat overstated. Birth registration and infant death reporting particularly in the high fertility southern tier republics and in parts of the RSFSR have been incomplete up to the 1970s. Much of the increase in infant mortality could be due to more comprehensive reporting of infant deaths in this region.

7. Maksudov accepts the explanations already discussed, but again reverts to his selection argument. He also blames "deterioration of the quality of the birthing population"--i.e. women weak in childhood, who with medical assistance survived to become mothers, but of genetically weak children! Since these women were born in the 1950s, long after the war ended, it seems specious to assume that their mothers were suffering from malnutrition. Much more to the point in explaining rising infant mortality is the fact that the USSR has a much higher proportion of infants who die from exogenous factors such as infection, prematurity and early childhood diseases as well as birth defects than in the West. Health officials have responded to this increase by calling for the expansion of fetal and infant care centers, earmarking more funds for maternity homes, clinics for children and the like.

8. Maksudov notes that progress made by Western countries in reducing infant deaths caused by endogenous factors has boosted their burden of supporting a growing population of mentally and physically handicapped people who can weaken the "general vitality of the population." Since weak infants in the USSR do not have the same survival rate, Soviet costs in this area are not as high.

9. Maksudov notes that the oldest cohorts in the USSR have always had a high life expectancy, primarily due to high infant mortality and social and military catastrophes which killed off younger cohorts. This seems to be an extreme position since many of those subject to the greatest risks during wartime would have been among the strongest and healthiest in the population. The relative calm since World War II has led to a growth in mortality.

10. Life expectancy at birth of Soviet males as a group has been declining and the gap between men and women now stands at 11 1/2 years. Such a gap exceeded that for all other countries in the world except Gabon, according to United Nations figures. Maksudov fails to explain this gap since females were similarly at risk during the upheavals. He also omits discussion of the more recent contribution of the changing disease pattern and changing life style--notably high intake of sugar and animal fats, cigarette smoking, and heavy alcohol consumption--making coronary heart disease and cancer leading causes of death. The upturn in adult mortality over the last 15 years is in fact primarily a result of coronary heart disease, which accounts for almost all of the increase in total deaths.

25X1

Maksudov

SOME CAUSES OF RISING MORTALITY IN THE USSR

Recently the American press has given much attention to a heated discussion of demographic problems in the Soviet Union. Of special interest is the rise in mortality rates over the last decade. [1] The discussion begun after Christopher Davis and Murray Feshbach published their "detective" work (as one of the participants, Nick Eberstadt, rightly called it) [2] on the trends in Soviet infant mortality in the 1970s. [3] Unfortunately the authors could investigate only the first half of the decade (1970-1975), but this was hardly their fault. After 1975, Soviet demographic statistics avoid mention of infant mortality, or for that matter mortality in any age groups. [4] This silence itself speaks volumes. [5]

This discussion has revealed a great deal. For one thing it became obvious that life expectancy and low mortality are two of the most important criteria for measuring the quality of life of the population. Secondly, these criteria aid Western scholars who attempt to study the character of socialist society. As Eberstadt has stated, a boy in Delhi can expect to live longer than the boy of the same age in the USSR. [6] Not long ago drops in mortality rates and rises in life expectancy served Soviet propaganda as convincing evidence of the superiority of the socialist system. Now the situation has changed, but the politicization of the problem remains and this makes it more difficult to examine the problem. The debate is making it possible for the first time to answer some of the questions involving the life and death of Soviet man. It reveals some disturbing facts: mortality for almost all age groups continues to rise – infant mortality by up to 40% – while life expectancy is falling.

The question, however, still begs an answer: how can it be that a backward society emerging from the Stalinist era just twenty years ago could have overtaken many more developed countries in life expectancy by the 1960s?

First we should try to determine how the country could have attained such a demographic pinnacle. I will try to show that the high life expectancy among the Soviet population in the 50s and 60s was a coincidental result, not of medical or social improvements, but of historical circumstances. The population was subject to rigorous natural selection whereby the weak and the sick died off, leaving the strong to carry on.

The first stage of selection takes place at birth. Infant mortality prior to the revolution reached 30% of live births, up to 50% before age five. Doubtless generally only the healthiest and most vigorous survived.

The second major element in the selection process was the period of the civil war. Starvation and disease carried off many millions; the end of the war not by accident coincides with a sharp decline in mortality.

A third factor was the Second World War which brought with it new terrors of illness and malnutrition – and a higher death rate among all age groups. Once again the end of the war saw a rise in life expectancy.

All of these circumstances were of a temporary nature. The influence of selection gradually diminished and death rates in all groups began to rise in the 60s. It was not a true rise but a return to the "natural" level that had been artificially restrained.

Russia and the USSR

Before turning to the more alarming situation of today, let us look back, first to Russia at the time of the first census of 1897, and then to the Soviet Union in the 1970s.

In Russia, birth control was practically unknown. A family with five children was small, while ten children in a family was not considered particularly unusual; infant mortality was incredibly high.

The birth rate in Russia at that time was close to the physiological limit. [7] The demographic behavior of the Russian *muzhik* at the turn of the century was marked by early marriage and lack of means of birth control. This behavior was dictated by a socio-psychological pattern that had developed in the rural countryside over the course of centuries and depended little on the desires or personal characteristics of individuals. [8] Tradition demanded marriage as early as possible, boys at 18 to 20 years of age, girls at age 16 to 18. Differences in age between spouses were small (in rural communities it was considered disgraceful for a woman to marry an "old" man more than 2 to 3 years her senior). To remain unmarried was a disgrace (35% of women in the 20-24-year age group were unmarried, but only 5% in the 45-49 age bracket). Divorce was a grave sin; adultry and illegitimate children were serious crimes. Interfering with conception was not only a sin but a criminal offence. [9]

Nevertheless, the stereotype did not extend to child care in the modern sense. The well-known writer D.V. Grigorovich wrote, "The most affectionate father, the most caring mother will leave their child in the hands of fate with almost unconscionable carelessness, and not a

thought even for the child's physical development, despite the fact that it is their single most important concern, simply because nothing better ever occurred to them. No sooner is the child out of diapers than he is handed over to his sister, herself no more than 4 or 5 years of age." [10] Average births for a woman at that time was 10 or 11, according to some researchers. The woman was turned into a baby-making machine. [11] The tremendous physiological stress of giving birth was added to the already enormous physical burden of housekeeping and agricultural labor. "The sickly, undernourished, crippled and prematurely wizened and aged figure of the rural woman, with obtuse, depressed and mournful expression . . . ."[12] It is no coincidence that the mortality of middle-aged women in 1897 outstripped that of men. Overall, life expectancy among men and women was about equal and generally low. (See table 1.) The percentage of men over age 60 was about 6.9, about the same as for women, 7. The corresponding figures for 1979 (8.7% and 16.7%) [13] differ almost by a factor of 2. The population was surprisingly young. Children and adolescents (up to age 19) accounted for almost half of the population (in 1979, one third), while the same group accounted for two thirds of the deaths (in 1970, 7%). [14]

Most of the demographic characteristics above were not peculiar to Russia. A well-known demographer wrote, "Russian mortality was generally typical for an agricultural economy lagging behind in hygiene and cultural development. But for its extraordinary high death rate in the lower age groups and its extremely low death rate among the aged, Russia occupies a special place among analogous states." [15]

Another peculiarity in the Russian mortality figures was her greater mortality levels in the cities than in the countryside. Except for children, the rural population (particularly men) lived significantly longer than the urban. The coefficient of mortality between the ages of 40 and 44 for male dwellers in 1897 was 18.7, for males in rural areas, 11.2; for women living in cities the figure was 12.9, while for rural women it was 11.1. Corresponding figures for the 50-54 age group were 28.8, 19, 17.5, and 16.9. And for ages 60-64 they were 47.6, 33.4, 32.1, and 34.1. [16]

Of special interest is the proximity of the indexes for rural men and for rural women (slightly higher for women) as well as the minor difference between the mortality figures for rural as opposed to urban women. Only men going to the cities to work in factories were in a worse position demographically.

Demographically, the USSR today differs greatly from old Russia. People, their relationships, and the demographic stereotype of behavior have changed. Women now have not ten, but one, two, or at most three children (with the exception of Muslim groups) and their children are 10 times less likely to die in infancy.

Later marriages, large gaps between the ages of spouses, large numbers of unmarrieds, divorces, and births out of wedlock – all these have become commonplace occurrences. Birth control, only squeamishly approached by the progressive writers at the turn of the century and which they attributed to the wealthier classes, [17] is now so widely practiced that the USSR has easily held the world record for some time now in absolute and relative numbers of abortions.

Removing from women such overwhelming physical and physiological burdens, plus other social and medical developments, have led to a complete reversal in the mortality figures for men and women. Death rates among women in practically all age groups are lower than for men. Women live longer and outnumber men in the middle ages. [18]

Significant shifts have also occurred in comparisons of mortality between urban and rural populations. Today deaths in almost all age groups are higher in the countryside than in the cities.

The age structure of the population has also changed. The population is older and the number in their working years has increased. The distribution of deaths by age group today is completely different. Almost 90% of the population lives to age 30 (3 times greater than in old Russia) and 40% live past age 70 (6 times greater than before). [19]

But the primary socio-psychological outcome might be considered to be the change in attitude toward children, toward their upbringing, and a sharp decline in infant mortality which, in any case, remains very high in comparison with other countries.

Infant Mortality in the USSR

Let us now briefly consider the study which has laid the groundwork for general discussion of the problem and, not surprisingly, generated a lot of interest. Davis and Feshbach painstakingly compiled data from widely scattered sources. Together with some peripheral data and additional suppositions, they were able to calculate a coefficient for infant mortality in the USSR for 1975 and 1976. Davis and Feshbach, moreover, examined differences in methodology for determining infant mortality in the Soviet Union and the US and then recalculated the Soviet statistics using the Western methodology. [20] This allowed them to compare data on infant deaths in the USSR with worldwide statistics.

In considering the reasons for increases in infant mortality in the USSR, the authors considered the following:

a) changes in numbers of children born in cities and in the countryside occurred in favor of the cities where death rates are lower and therefore could not depress the

overall coefficient of infant deaths;

b) rises in birth rates in the "Muslim" republics with higher infant mortality rates amounted to 1.6% for the period 1970-1976 and could only in small measure be due to the general rise in the rate of deaths among children;

c) the increase in the birth rate from 1.7% in 1969 to 1.84 % in 1976 was too small to influence the rise in deaths;

d) the age of motherhood during the period under review dropped somewhat, which, however, could not have played a significant role;

e) changes in order of births. It is known that deaths are more frequent among first-born than among second births, and higher among second children than among third-born. Over the given period the share of first- and second-born children in the total number of births grew, which would imply a general rise in death rates. Referring to American statistics, Davis and Feshbach demonstrate that this factor also played little part in the rise of USSR mortality rates.

The major reasons for the growth in infant mortality according to Davis and Feshbach are not demographic but social, economic, and medical: more mothers who smoke and drink, more working women, poor health among mothers (according to Davis and Feshbach, serious illness in the mother can increase the probability of death for a newborn child by a factor of ten), more abortions, [21] inadequate medical care during pregnancy, poor nutrition among mothers and their infants, poor housing conditions, more children with genetic defects, a decline in the level of child care at home due to disintegration of families of multiple generations, poor quality of training among medical personnel, epidemics of flu and pneumonia.

A number of other factors could be added here. For example, deterioration of the "quality of the birthing population" – the appearance among mothers of individuals who, weak in childhood, nevertheless survived thanks to modern medicine; decreasing effectiveness of antibiotics in mothers and as passed from mother to child; appearance of new strains of viruses and bacterias; extreme lags in the availability of new, relatively expensive drugs (some, such as rondomycin, sigmamycin, ceparin, etc. have been around for more than ten years, but physicians are forbidden to prescribe them since they can be obtained only in clinics for the elite).

Another serious problem is the contamination of maternity centers and children's health clinics, in particular, with staphylococc. In the opinion of a number of physicians this has become a growing concern in recent years and affects the health of mothers as well as children. The health of children is also adversely affected by the employment of women in hazardous industries. (Research in the USSR has shown that among women working on tractors the probability of their having children with birth defects rises by orders of magnitude.)

Thus, the rise in infant mortality in the USSR is defined by social and medical factors. But the distribution of the increase geographically and by nationality plays a very important role.

From Table 2 it is not difficult to see that overall mortality in the Soviet Union is rising faster than in the RSFSR, the Ukraine, or the Baltic region. It follows then that the rise in the overall coefficient is due primarily to increases in infant mortality in the republics of Central Asia and the Caucasus, whose data is not published. Given the fact that these regions accounted for nearly a third of the births in 1976, one can reconstruct their average coefficient of infant mortality (see Table 3).

The results appear somewhat strange. Death rates in the Asian territories of the USSR (the East) dropped sharply in 1960 (by more than 20%), and it remained stable at a low level for 12 years, after which it rose again over a four-year period by 50%. Both the dramatic rise between 1973 and 1976 and the stable low level between 1960 and 1972 appear suspicious. One could be led to believe that mortality rates in the 60s were underestimated. And in fact, such was the proposition of Gosplan official A. Smirnov in an interview with Western correspondents. [23] Let us assume that these assertions are legitimate, and that the rise in the death rate in the 70s in the Asian areas of the country followed the trends in the Russian republic and the Ukraine (about 10%). This would mean that in 1970-72, infant deaths in these regions amounted to approximately 45 per thousand births, and that the underestimation was about 30%. A derivation of the infant mortality rate using such assumptions is illustrated in Table 4. The result seems fairly convincing. The drastic rise and close correspondence in rates to the figures of Western areas in some years – an artifact unsupported from the medical and social point of view – has disappeared.

A recomputation of the rates for the country as a whole, adjusted for missing data and using the Western methodology, shows that the level of infant mortality in the nation in the 60s and 70s was noticeably higher than has been generally accepted. It never dropped below 30 per thousand. The rise in infant mortality in the 70s was not as sharp as it appeared – amounting to 10-15%. Over the last 10 to 15 years we can see not so much a growth in the rate of infant mortality, but a stabilization, or lack of decline. This is a rather unusual phenomenon, putting the Soviet Union in a special position, since virtually all countries (at least those which keep track of infant death rates) have cut mortality rates among newborns significantly.

Life Expectancy in the USSR and Elsewhere

The reconstruction of infant mortality rates in the USSR on the Western model conducted by Davis and Feshbach has clarified many issues. From Table 5 it is evident that infant deaths in the Soviet Union during the 60s and 70s was noticeably higher than in the developed West. This gap has since widened, not as a consequence of any catastrophic rise in mortality in the USSR, but as a result of dramatic decreases in mortality in the West. The explanation therefore, lies less in any mysterious changes in the Soviet Union, but, on the contrary, in the very lack of any substantial change. Maintenance of health care and a level economic situation should cause a rise in the death rate due to deterioration in the effectiveness of available drugs, changes in the ethnic composition (a more rapid rate of growth in the Muslim populations), as well as a number of other factors.[24]

This is in fact what has occurred. Over the past 20 years, the death rate for the country has not dropped, and not surprisingly. Indeed it would be amazing for a nation with the biggest military industry to allocate enough additional resources for health care and social welfare in order to overtake more industrially developed countries not burdened with such enormous unproductive expenses.[25]

The Soviet Union's position in Table 5 is fairly well defined. Based on the two fundamental demographic indicators of infant mortality and life expectancy, the USSR should not belong in the ranks of developed nations – nor should it have claimed membership 20 years ago despite the arguments of the Soviet propagandists. The Soviet Union occupies a place among the countries of South and Eastern Europe, though she has lost her place as a leader in this group. But is the situation so bad as to give support to a notion of degeneration of the population and demographic catastrophe? The table does not bear this out.

The Soviet Union lags behind the US by approximately 5 years in life expectancy, and leads the US by a factor of more than 2 in infant deaths. But there is an almost identical gap between the US and Sweden, and in favor of the latter. The gap between the Soviet Union and the developing world is much larger. In Latin America, for example, infant mortality on average is almost twice as high, and life expectancy lags behind the Soviet Union by nearly 4 years. Africa and Southern Asia, moreover, trail Latin America by more than ten years in expected lifespan, and infant death rates are 2 to 3 times higher. Compared against worldwide levels, then, the shifts in the demographic situation in the USSR do not appear so calamitous; they represent a more or less traditional lag behind the industrialized world. The USSR's "catastrophic" levels will remain for decades only a distant dream for underdeveloped countries.

Life Expectancy in the USSR and in the US in the 20th Century

The Soviet lag appears even less threatening when life expectancy among other age groups is examined. Table 6 shows that Americans between the ages of 10 and 30 can expect to live 3 years longer than their counterparts in the USSR. This would be 5-7% of their expected life spans. For a 40-year-old, the gap narrows to 2 years, and by age 50 to only 1 year. Twenty years ago the comparison would have been similar, but in favor of the USSR.

Curiously, life expectancy for most age groups in the US in 1978 coincides with figures for the USSR in 1958. Over the 20-year period America has risen to the level of the Soviet Union, while the USSR has fallen to the previous US position. There is nothing especially uncommon about the simple fact of a narrowing of life expectancy by 1½ to 2 years. American census statistics covering the 20th century show 21 occurences of shortened life expectancy over a 78-year period, from relatively small changes on the order of 0.2-0.3 in 1963 and 1968, to very large (3.6 in 1928, 3.2 in 1936), not to mention the extraordinary drop of 11.8 years in 1918. An overall rise in life expectancy in the US was punctuated by periods of stagnation and even decreases in expected lifespan (1921-1931, 1933-1943, 1961-1968). The later period is somewhat reminiscent of the situation in the 70s in the USSR. Life expectancy settled at about 70.2 years in the US as a result of a rise in death rates among males in a number of age groups. The life expectancy of males reached 66.8 years in 1959 and hovered about this figure through 1969. Only in 1970 did it begin rising once again. It is worth noting that, as differs from the USSR where the drop in life expectancy was determined in part by a rise in infant mortality, in the US the deterioration in the position of the male population occurred against the backdrop of an improvement in infant death rates, *i.e.*, at the expense of other age groups. Non-white males appeared to be in an especially poor position. Life expectancy among non-white males reaching age 5 in 1959-1961 was 1½ years higher than in 1969-1971. The same applies to 10-15- and 20-year-olds. In the 25-40-year group, the gap narrows to one year, or a half year, and only among men aged 75 years do we notice some progress in life expectancy over the ten-year period.

Neither the lag of several years behind the US, nor the decreases in life expectancy is therefore particularly surprising. Such a situation might be expected in a country that puts all of its resources into the development of heavy industry and the arms race. Such was the case before the revolution and prior to the Second World War. Strange were the shifts in relative rates of mortality between the two great powers, in particular the unexpected zig-zag during the 1950s. At the turn of the century the advantageous position of the US as regards life ex-

pectancy is noted in all age groups under 70, while Russian elderly lived longer. By the end of the 20s-40s differences in mortality in the middle age groups evened out (the US is ahead in ages 40 and above). By the end o of the 50s we see the USSR with a clearly dominant position, which then began to quickly erode (Table 6).

We must note that over the entire period under consideration the Soviet Union maintains an even or better position in life expectancy in the older age groups. The primary reason for this phenomenon is evident.

Dependence of Middle Age Mortality on Levels of Infant Mortality

The extraordinary longevity of older people in Russia at the turn of the century drew the attention of contemporary researchers who pointed to the quiet life of the Russian peasant. [26] But yet another factor played a substantial role – high infant mortality. Nearly half of all babies born died before age five. This severe selection process carried off the weaker segments of the population. The survivors lived longer but made up a smaller share of the total population than in countries with lower rates of infant deaths. We observe a similar phenomenon when comparing white and non-white groups in the US population (Table 7). The white population experiences lower infant mortality and dominates the middle age groups, but their life expectancy beyond 70 years of age is somewhat lower. We see a similar situation when comparing mortality of various groups in the USSR, as for example between Ukrainians and Uzbeks. Death rates in the higher age groups are less among populations with higher rates of infant mortality. In the 0-4 age group, Uzbeks experience death rates 2½ times as high as Ukrainians (13 and 5.1 per thousand); by age 40 the relative mortality rates even out (4.4 per thousand); for groups over 70 years of age, mortality among Uzbeks is noticeably lower at 45.6 per thousand as opposed to 77.5 per thousand for Ukrainians. [27]

An analagous picture is presented when comparing urban and rural populations in the USSR. Up to ages 40-45 mortality is noticeably higher in the countryside than in the cities; but after age 50 the reverse is true. Among those aged 65 to 69 deaths amounted to 29.1 per thousand in urban areas and 24.5 per thousand in rural areas. [28]

So it becomes apparent that the most diverse ethnic and social groups experience an inverse relationship between deaths among infants and among older people. High infant mortality serves as a severe selector, ensuring somewhat higher survivability in older generations. This, in part, helps to confirm the somewhat higher levels of life expectancy in older age groups in the USSR when compared with the US, which we noted earlier. Infant mortality in Russia/the USSR – up until the 1950s – was significantly higher than in America and it is exactly this which in large part helped to assure longevity in the older population.

With the sharp decline in infant mortality in the 1950s, this "advantage" began to disappear, to the point where today the situation is about the same for cohorts up to 25 years of age in both the US and the USSR. But not quite, since the West at the time began in intensive assault on infant mortality.

On the Threshold of a Second Demographic Revolution

As in the past, so today, infant mortality is due to the three primary factors: disease contracted by a child from the environment (infection, colds, intestinal ailments, etc.); traumas arising from the birth process (prematurity, asphyxiation, dislocations); and birth defects, mainly genetic deficiences. Under conditions of high infant mortality and when numbers of deaths among infants approximate deaths in the older age groups, the primary cause of death among newborns was infection. The assault on infant mortality, begun in the developed countries in the 19th century – and in the underdeveloped countries in the middle of the 20th century – led to a sharp drop in deaths among children from causes of the first group. Where the curve describing general mortality once had the shape of "U", it has more recently taken on the shape of a "J" – mortality among infants is now considerably lower than among the oldest generations. A demographic explosion occurred – the first demographic revolution. [29]

It is worth noting the differences between reasons for the drop in infant mortality in the USSR and in the West. [30] In the developed countries it happened gradually; as the culture developed, more attention was paid to the needs of the child and his environment improved. Medical discoveries and general social advancement supported this tendency which then was adopted by the family. In the USSR and in the underdeveloped countries the drop in infant mortality was a result primarily of measures introduced by the state and society (the creation of a health care system, new medications, long maternity leave and the like). Family life, the care of the child and for his environment, changed gradually, and with a substantial lag. Government health care programs (women's clinics, childbirth centers, polyclinics and hospitals) were intended primarily to preserve the health of the child. [31] Thus, advances against the second and third groups of primary causes of deaths among infants overtook efforts on the first. Today the structure of infant mortality in the USSR differs from Western experience in a higher proportion of illnesses of the first category. In the West such diseases as pneumonia seldom lead to

death, while in the Soviet Union they account for a significant share of infant deaths.[32]

This discrepancy grows still larger as a result of efforts against early childhood diseases in recent decades in the West. Whereas in 1950 about 1.1% of newborns died in the first day of birth defects, underdevelopment and other prenatal causes in the US, in 1981 a similar share (1.2%) died during the course of the first year. There was a sharp drop in the mortality of infants from all types of birth defects and genetic illnesses.[33] In Sweden, where mortality today is two times lower than in the US, the decline in deaths from birth defects has been greater still.[34]

Unfortunately, in the majority of instances, preserving the lives of infants suffering from the effects of genetic defect and childbirth trauma does not always result in total cure, and only a fraction are assured a normal future life. Society, therefore, supports a growing number of mentally and physically handicapped individuals.[35] This situation can gradually lead to a decline in the general vitality of the population. The threat of genetic disease is especially serious.

There are more than a thousand known genetic defects which can be transmitted by either father, mother, or both. A number of these conditions have been passed down through many previous generations; others have appeared relatively recently, as a result of mutual alterations caused by unfavorable environmental circumstances, radiation, chemical mutagens, etc.[36] These diseases can be divided into three primary groups: chromosomal dificiencies, genetic blood defects, and metabolic disorders. Some types of genetic illness appear during pregnancy and can lead to spontaneous abortion[37] while others appear as abnormal development of the organism after birth, sometimes well into maturity. According to available data, genetic deficiencies affect no less than 5% of newborns, and the number is growing.[38]

By mentioning all these examples I do not pretend to discovery of, or even research into, a complex modern phenomenon. I merely note its existence. By analogy with the struggle against exogenous disease, we could call this process the second demogrpahic revolution. It presents mankind with complex moral problems which I will not argue here: human life is precious and the saving of an individual child is a blessing. Eugenic selection practiced by the ancient Greeks is not only impossible but is, by outward appearances, beyond the comprehension of our civilization. We must find others means of resolving this issue which comes ever closer to modern man, first in the developed countries, later in the developing world and the USSR.

The problem appears less serious in the Soviet Union than in the West because of higher levels of infant mortality (two times higher than in America, four times higher than in Sweden). But, as noted above, the USSR is undertaking serious efforts to decrease mortality due to birth defects and early childhood diseases.

Thus, the determined assault on infant mortality in the Western countries developed over recent decades has cut mortality primarily from genetic deficiency. It is possible that this process could lead to some decline in the overall vitality of each succeeding generation. Some deterioration in the genetic fund of the population could also result. The Soviet Union must also confront these issues, albeit with a lag.

Trends in Mortality Following the Revolution

As we have already seen, mortality in Russia remained at a very high level. The drop at the turn of the century was slight and affected primarily infants and the younger age groups (Table 8). In several age categories for males there was even some growth in death rates.

The First World War similarly had little effect. Mortality over the period 1914-1917 remained at the prewar level, falling only slightly as a result of a decline in the birth rate. (Remember that childhood mortality at the time comprised a high proportion of population losses.)

The civil war that followed changed completely the demographic situation in the country. Famine, typhus epidemics and Spanish influenza[39] carried off many millions.[40] The country emerged from the war exhausted, depleted, weakened, and (paradoxically) having a sharply reduced death rate. This surprising fact is demonstrated in Table 8. Virtually all age groups in 1926-1927 demonstrated greater robustness (by 20-30%). How could this happen?

For Soviet authors there is nothing strange here: brilliant successes in medicine and social welfare on the part of the Soviet state. This conclusion, however, does not hold up under scrutiny. All the fundamental measures undertaken (training thousands of doctors, creation of a network of medical and childcare facilities, mass innoculations hospital expansions and the like) were carried out between 1926 and 1939. A glance at Table 8 leaves one with a feeling of bewilderment of how little effect all these efforts had (mortality rates in 1926 and 1939 were virtually identical). The drop in mortality occurred all at once and not in 1926, but somewhat earlier. The urban census of 1923 showed an improvement in life expectancy. For example, in Leningrad, of 100,000 males, 55,091 had reached age 20 in 1910-1911, 69,673 had reached age 20 in 1923, and 69,770 in 1926-1927. For females the corresponding figures are 59,926; 73,033; and 72,973.[41]

Denying the miraculous effects of the newly organized Soviet institutions, we are forced to search for other explanations for the vitality of the Soviet population in

1923 and succeeding years. Out of demographic cataclysm the population emerged renewed, and this is no metaphor. The sharp decline in mortality in 1923-1926 is more readily explained by the preceding catastrophe. Naturally, the popular notion that mass epidemics and famine weakens a population is legitimate. But it should be added that, statistically, disease carried off the weaker population, or those "who should have died" during the post-war years, but because of a deterioration in the living conditions, they perished prematurely. In addition, heightened immunity generally follows massive epidemics – most significant with many childhood diseases.

Finally, it should not be forgotten that a complete restructuring of the system for compiling mortality rates took place during the period. Civil registration replaced parish records. It is not impossible that a discrepancy could arise between church records and those of a state official concerning the birth of a living or stillborn infant. Moreover, the population did not immediately adapt itself to the civil procedures for recording deaths, seeing nothing particularly significant in the requirement. Death rates from a variety of social causes also dropped (such as alcoholism, venereal disease, etc.). [42]

All of these factors (greater losses among a weakened population, greater immunity, poor registration) were temporary in nature and should have gradually disappeared. Mortality should have begun to increase somewhat. This was not the case (Table 8), apparently due to the broad health and social measures undertaken in the 1930s, due to population movements to the cities where death rates were substantially lower than in the countryside at the time. The famine of 1932-1933 and the losses of rural population during deportations, for some areas could have accounted for a greater "natural" selection. Considering all these factors, variations between morality tables for 1939 and 1926 appear small. [43]

Thus, the mortality rate before the revolution was significant and was declining, except infant mortality, very slowly. During the civil war many millions of people perished, first of all the weak and ill. This increased the statistical viability of those who survived. As a result, mortality rates in all age cohorts dropped greatly in 1923-26.

During the succeeding pre-war years, shifts in mortality were insignificant despite sweeping health care and social programs. It is possible that the stability was due to the effect of two conflicting trends: a return of the death rate to previous "normal" levels, and a decline in mortality as a result of better medical care.

Prior to the Second World War, life expectancy in age groups over 40 was close to the level in the West.

Almost immediately after the war, in 1946-50, the mortality rate reached the level of that of the developed nations and further decline in the rate during subsequent years took place mainly because of a decrease in infant mortality. The rate of the latter 80 per thousand in 1950, and became only 41 in 1958.

Unfortunately, there are no reliable data on infant mortality in 1946. It is known that as a result of sulfa drugs, it decreased somewhat in 1944-45 compared to 1943, [44] which was 80% higher than in the last pre-war year, 1940. But new drugs and medical care at the end of the war were mostly for the urban population. Therefore, it might be assumed that actual infant mortality in 1946 was close to the pre-war rate. This is supported by the data on infant mortality in Leningrad: it was 119 per thousand in 1946, in contrast to 144 per thousand in 1939. [45] One should not think that high infant mortality in 1946 was a consequence of the weakening of the Leningrad population during the blockade. The author from whom our data is obtained emphasizes that all basic measurements of newborn in 1946 were of pre-war proportions. [46] Because of the central position of Leningrad, and the blockade in the immediate past, it received a larger share of the new drugs in comparison with rural areas. Therefore, applying the decline in infant mortality in Leningrad in 1939-46 to the whole country, we would not exaggerate the result. From what has been said, it follows that the infant mortality rate in 1946 was approximately 140 per thousand.

Hence, although the overall mortality rate for the whole population was relatively low in 1946, infant mortality remained rather high. Let us try to eliminate infant mortality from the computation (Table 9). We observe that the mortality rate of those 1 year old and older in 1946 was virtually stable and in 1958 was insignificantly lower – 17%. Apparently this decline was distributed unevenly among age cohorts, and the biggest drop was in the 1-5-year age group. (A process analogous to infant mortality should have taken place within this group.) Taking this fact into account, one may assert that mortality by age goups in 1958-59 reflects the level of mortality achieved in 1946, except for those 0-4 years old. The level is shown in Table 8. Compared with that of 1938-39, infant mortality was 5-7 % lower in 1958-59; mortality of middle-aged cohorts was half the previous level; and that of the elderly (over 50 years old) was 2/3 the previous level.

This huge jump was the second, and for most of the age cohorts, the last significant decline in mortality of the Soviet population. [47]

Thus, in the middle of the century, the Soviet mortality rate declined sharply. For the elderly cohorts, it was caused by brutal selection during the war, and therefore coincides with its ending. For children, the decline in mortality had been taking place gradually from the end of the 1940s till the beginning of the 1960s, and followed the introduction of sulfa drugs and antibiotics.

Tendencies of Change in Mortality of the Soviet Population in the 1960s and 1970s

Changes in mortality have been already considered in the literature. Up to the middle of the 1960s, mortality continued to decline (Table 10), and then mortality of the senior cohorts grows slowly. The changes in mortality of males and females are substantially different. For males under 30, the tendency is down; for those over 30, the growth is stabilized with small fluctuations.[48] Mortality of those 45-49 years old, that is, born during the civil war, has increased considerably. Mortality of females continued to decline (Table 10).

A noticeable rise in mortality of those over 30 began in the middle of the 1960s. People of these cohorts were born before 1928 and more or less sustained the selection of high infant mortality, of the last war, and, some of them, of the civil war. But during the following 15 years, the machinery of this selection began to weaken. The "normal," natural level of mortality, which would have existed if these cohorts had not endured the catastrophes of the previous period, started to restore itself. Soviet medicine in the 1960s and 1970s did not have enough revolutionary developments (something comparable to the introduction of antibiotics) which could make us for this restoration of mortality. Various measures merely smoothed this growth.[49]

Growth in male and female mortality is taking place with different intensities, but one should not forget that male and female losses were also very different during the previous period. The difference in male and female mortality became bigger throughout the twentieth century, and by the end of the 1970s was of huge magnitude. Today, the difference in age at death is almost 11 years. In most of the developed countries, the gap is 6-7 years, and in the developing countries, it is 2-3 years. In the USSR the inequality of the sexes in life expectancy is to a large extent social in character. For example, in cohorts of 20-40-year-olds, where mortality is relatively low, it is determined by social, rather than medical, factors (occupational injuries, alcoholism, crime); thus, male and female mortality rates have opposite tendencies. The former is growing, the latter is falling or is stable. This, without a doubt, indicates that certain social conditions in the country are unfavorable.

That growth in mortality of these age cohorts has, to a significant extent, a social character is supported also by the fact that this tendency is more evident in rural rather than urban areas. In the countryside, mortality of all age cohorts of 50 and under is higher than in cities, and is growing faster. Many authors think that the introduction of modern techniques, and especially chemicals (fertilizers), into rural life plays a substantial role. It leads to growth of occupational hazards and gradual poisoning of the human organism throughout the environment.[50]

Children and youth – up to 20 years of age – have not passed through the catastrophic war period, and the tendency of their mortality reflects real medical a and social conditions of the Soviet populace. During the last two decades, mortality of this generation declined noticeably (for females more, males less). A large part of the decline corresponds to the first half of the 1960s when medicines came into widespread use. The consequent period is characterized by a highly stable mortality rate, with small fluctuations (Table 10).

High infant mortality gives heightened viability for a certain period to children of subsequent cohorts. Therefore, child mortality (1-9 years) in the USSR is not high compared with that of other countries.

Thus, during the 1970s, there was smooth growth of mortality in all those age cohorts which had passed through the severe selection of the catastrophic years. The normal level was restored, and this coincides with given medical and social conditions. Child mortality declined or stayed at a stable level. Infant mortality has increased somewhat recently.

Conclusions

1. Infant mortality in the USSR has always been at a rather high level – not less than 3% of newborns. During the last 15 years, stabilization of infant mortality, and even some growth – especially in Asian – is observed. Probably in part this can be explained by improvements in recording mortality. The lack of reduction in infant mortality over the long term is a specific peculiarity of the USSR in contrast to other countries. Another world record of the USSR is its number of abortions – about 5 million a year. The Third World's achievement in demography is, indisputably, the gap in life expectancy of females and males (the lifespan of males is 62 years, and of females, 73 years).
2. In life expectancy and infant mortality, the Soviet Union has never been among developed countries, but was between them and the underdeveloped countries. Nowadays, the lag behind the industrial world has increased somewhat, but it is not catastrophic. – about 10% of newborns' life expectancy, and 1-2% of that of the elder cohorts.
3. The specific peculiarity of the country has always been the high life expectancy of the oldest cohorts. It is explained by high infant mortality, which serves as a cruel selector of the viable individuals. An analogous picture can be observed when comparing different ethnic and social populations in various countries.
4. High infant mortality does not serve as a guarantee against the growth of inherited diseases and genetic defects. These phenomena are threatening the USSR, but possibly less so that the West.

5. Changes in the basic tendencies of mortality of the Soviet populace in the century were determined by powerful, non-accidental selection, when the country was passing through terrible social and military catastrophe. Life expectancy increased by quantum jumps immediately after the civil war in 1923-26, and after World War II in 1946.

Hunger and disease carried off many millions in the civil war, and made the generations which underwent these terrible experiences more viable. The situation repeated itself during World War II.

The generations sifted by these catastrophes were smaller numerically, but were distinguished by the middle of the 1950s by their greater viability. This temporary and peculiar situation gave the impression, in the USSR and in the West, of high life expectancy of the Soviet populace, in comparison with that of the Western countries.

6. Gradual removal of the "margin of saftey," which sprang up during the catastrophes, led to the growth of mortality in the 1960s and 1970s. More precisely, it led to the restoration of the "natural" level of mortality. This process is going on unevenly in rural and urban areas, with males and females, and among different ethnic groups in the Soviet Union. It is going on under complex, contradictory conditions, so that side by side with various measures of the health care system, social and living conditions of Soviet citizens are worsening.

Mortality in the USSR in the Year 2000

The mortality rate of elderly people during the rest of this century and part of the next will grow. This is mainly because the normal level of mortality, which was artificially reduced by catastrophes, will be restored. Another even more lasting tendency will be the gradual replacement of the generations which went through the severe selection of infant mortality by the generations which did not endure it in their childhood. This process will lead to the leveling off of low mortality of the elder cohorts in rural areas, and of Muslims, to the level of mortality of city dwellers and of Slavs. (Actually, in more remote territories, the present rate will rise above that of those who have better medical and social conditions.)

This apparently is already going on, or is just about to start, and will continue for 30-40 years until the "selected" generations give way to the younger ones, born after World War II under conditions of generally sharply reduced child mortality. It seems that the country's present infant mortality rate, 3-4% of newborns, is not such a powerful selection factor of more viable infants, and its impact will not affect the general mortality rate for many decades.

The middle-aged cohorts' mortality, which is determined to a great extent by social reasons, will emerge from the press of selection earlier than the elder cohorts. For them, this process will be completed, seemingly, during the next decade. After this, the life expectancy of these cohorts will be determined by economic and political conditions. I would like to hope that these conditions will be favorable. Most likely, the mortality of these groups will stabilize at a somewhat higher level than now, and at the beginning of the next century will start to decline little by little. Gradual change in the ethnic structure of these cohorts – the growth of the numbers of Muslims – will be an unfavorable circumstance in this regard.

Infant mortality, to all appearances, has stopped growing and will soon stabilize, then will start to decrease. The ground for such an assertion is a world-wide tendency – and the USSR, so far, has rather steadily repeated, although with a lag, all the basic movements of the West. No substantial medical discoveries of measures will be needed to reduce the impact of mortality from external causes (such as influenza - pneumonia). This will happen step by step because of the general rise in the culture of the population, and raising of the more remote territories to a level existing already in some regions. In the same direction, reduction of the birthrate in the country as a whole and in its various parts will work, also. An infant mortality rate of about 15 per thousand seems probable to the end of the century.

On the whole, life expectancy of the population will increase a little (to 70-71 years), and for a long time will be at the same level. That of the West, meanwhile, will cross the threshold of 75-76 years, and life expectancy of some countries of Asia and South America will come close to the Soviet level.

The latter will be, at the same time, at the threshold of the new century and of the second demographic revolution.

At approximately the same time, by the very end of this millenium will occur another important demographic event – stabilization of world population. Birth and death rates will level off, then the number of people will gradually decrease. Probably this will be of great interest: newspapers will print articles about a demographic catastrophe; but maybe this problem will not be considered of serious interest.

[1] I consider here only one aspect of the issue: the general trends in mortality in the USSR in peacetime. The cataclysms of 1918-22, 1932-38, and 1939-53 which resulted in massive losses of population deserve independent study, to which I expect to return at another time.

[2] Nick Eberstadt, "The Health Crisis in the USSR," *The New York Review of Books*, February 19, 1981.

Table 1

PROBABILITY OF DEATH WITHIN A YEAR
(per 1,000)

Age	1896-1897		1968-1971	
	M	F	M	F
0	298	259	27.8	21.8
5	20.4	20.2	0.94	0.69
10	6.84	6.48	0.67	0.45
15	4.57	5.29	0.97	0.47
20	6.63	6.7	2.08	0.75
25	7.47	7.91	2.91	0.91
30	7.89	8.62	3.89	1.19
35	9.31	9.94	4.91	1.67
40	11.2	11.2	6.36	2.18
45	14.8	13.4	8.42	3.26
50	18.8	16.5	11.3	4.76
55	25.4	23.9	16.2	6.79
60	32.6	33.1	23.2	9.81
65	48.7	50.3	34.9	26.7
70	67.7	66.6	48.6	50.4
75	87.9	85.2	73.6	82.7
80	112	112	107	124
Life Expectancy (in years)	31	33	64	74

Sources: Tsentral'noe Statisticheskoe Upravlenie Pri Sovete Ministrov SSSR, *Itogy vsesoyuznoi perepisi naseleniia 1959 goda (Results of the USSR Population Census of 1959)*, Moscow, 1962, p. 258.
TsSU SSSR, *Naseleniye SSSR 1973; Statisticheskii sbornik (Population of the USSR in 1973; A Statistical Compilation)*, Moscow, Statistika, 1975, p. 139.
Vestnik Statistiki (Herald of Statistics), Moscow, 1974, No. 2, p. 95.

[3] Christopher Davis and Murray Feshbach, *Rising Infant Mortality in the USSR in the 1970s*, The US Bureau of Census, Series P-95, No. 74, Sept. 1980.

[4] In the Comecon handbook, the figure for infant mortality in the USSR was originally displaced at first by an elipsis. In later years the entry for the Soviet Union was omitted altogether. (See *Statisticheskiy Ezhegodnik Stran-Chlenov Soveta Ekonomicheskoi Vzaimopomoshchi* for 1975-80, sections "Infant mortality" and "Average life expectancy.") (Statistics Yearbook Comecon 1975-80)

[5] The lack of data appears still more threatening because of the history of such grave silences in the USSR. Demographic statistics (in particular, data on births, deaths, and population) disappeared from print at the start of the 30s. The Soviet Union is certainly not alone among the Socialist countries in discontinuing publication when the data begins to look unpleasant. The Comecon yearbooks present a rather curious picture. Bulgaria provides life expectancy figures for three-year intervals but updates the information only when it demonstrates progress. The 1977 issue presents data for 1969-71. Cuba has not altered its data since 1970. Soviet data were frozen in 1971-72. But the record belongs to Mongolia. Having achieved a life expectancy of 65 years in 1964-65, they have not seen fit to part company with good news and so have simply repeated the figure in all successive yearbooks.

[6] Nick Eberstadt, "Replies," *The New York Review of Books*, Nov. 5, 1981.

[7] Rashin, A.G., *Naselenie Rossii za sto let 1811-1913 (The Population of Russia from 1811 to 1913)*, Moscow, 1956, p. 32.

[8] Mironov, B.N., in *Brachnost', Rozhdaemost', Smertnost', v Rossii i SSSR (Marriage, Birth, and Death in Russia and the USSR)*, Moscow, 1977, pp. 83-104.

[9] "Under our criminal code, persons found guilty of criminal abortion are subject to loss of all civil rights, and exile to the remotest regions of Siberia." *Entsiklopedicheskii slovar' Brokgauza i Efrona (Encyclopaedia)*, under "Vykidysh" (miscarriage), vol. VIIa, 1892, p. 511.

[10] Grigorovich, D.V., *Izbrannye Proizvedeniia (Selected Writings)*, Moscow, 1959, p. 87.

[11] Zhbankov, D.N., in *Vrach*, 1889, No. 13, p. 309.

[12] Shingarev, A.I., in *Meditsinskaia Beseda*, 1889, No. 9, p. 25.

[13] *Pervaia Vseobshchaia Perepis' Naseleniia Rossiskoi Imperii 1897 (First General Census of Population of the Russian Empire in 1897)*, 89 vols (1899-1905).

[14] Compiled from census data.

[15] Novosel'skii, S.A.. *Smertnost' i prodolzhitel'nost' zhizni v Rossii (Mortality and Expectation of Life in Russia)*, Petrograd, 1916, p. 179.

[16] Bednyi, M.S., *Prodolzhitel'nost' zhizni v Gorodakh i Selakh (Life Expectancy in Cities and the Countryside)*, Moscow Statistika, 1976, p. 40-41. The recording of deaths in the countryside was not good, which could distort the data.

Table 2

INFANT MORTALITY RATE, USSR AND BY REPUBLIC: 1968 TO 1976
(Number of deaths per 1,000 live births)

Republics	1968	1969	1970	1971	1972	1973	1974	1975	1976
USSR official data	26.4	25.8	24.7	22.9	24.7	26.4	27.9	29.4*	31.1*
acc. to Western method.	30.2	29.5	28.3	26.2	28.3	30.2	31.9	33.6	35.6
Slavic Republics									
RSFSR	25.0	25.0	23.0	21.0	22.0	22.0	23.0	24.0	NA
Ukraine	18.6	18.4	17.3	16.2	17.4	17.4	NA	NA	NA
Belorussia	20.0	19.0	19.0	16.0	16.0	17.0	17.0	NA	NA
Baltic Republics									
Estonia	18.3	16.9	17.8	17.6	15.8	15.8	17.6	NA	NA
Latvia	19.0	18.0	18.0	16.0	16.0	16.0	19.0	NA	NA
Lithuania	19.9	20.7	19.3	14.8	17.4	18.1	19.4	NA	NA
Transcaucasian Republics									
Armenia	26.0	NA	NA	NA	NA	NA	NA	NA	NA
Azerbaydzhan	38.0	NA	NA	NA	NA	NA	NA	NA	NA
Georgia	28.7	NA	NA	NA	NA	NA	NA	NA	NA
Central Asian Republics and Kazakhstan									
Kazakhstan	26.5	NA	NA	NA	NA	NA	NA	NA	NA
Kirgiziya	NA	NA	NA	NA	NA	NA	NA	NA	NA
Tadzhikistan	NA	NA	NA	NA	NA	NA	NA	NA	NA
Uzbekistan	NA	NA	NA	NA	NA	NA	NA	NA	NA
Non-Reported Republics **									
Turkmenistan	NA	NA	NA	NA	NA	NA	NA	NA	NA
Moldavia	NA	NA	NA	NA	NA	NA	NA	NA	NA

NA – not available * Estimated.

** Infant mortality rates for Turkmenistan and Moldavia have never been published. Rates for all other 13 republics are available for only 2 years during the period 1958-1976. For these 2 years, 1960 and 1967, an estimate for the two republics, in combined form, was made by a residual method.

This table does not include indirect data from the literature. It is known, for example, that infant mortality among Uzbeks in 1973-74 was 2½ times higher than among Ukrainians.[23]

Table 3

COMPUTATION OF INFANT MORTALITY RATES IN THE USSR

Year	Share of the newborn children, percent				Infant mortality rates			
	USSR	RSFSR	West	East	USSR	RSFSR	West	East
1959	100	53	27	20	40.6	41	36	46
1960	100	52	26	22	35.3	37	31	36
1965	100	47	26	27	27.2	27	21	34
1970	100	45	27	28	24.7	23	18	34
1971	100	45	27	28	22,9	21	16	33
1972	100	45	27	28	24.7	23	17	35
1973	100	45	26	29	26.4	22	17	42
1974	100	45	26	29	27.9	23	18	44
1975	100	45	26	29	29.4	24	18	48
1976	100	45	25	30	31.1	24	18	53

West – includes the Ukraine, Belorussia, the Baltic republics, Moldavia, and Georgia. East – includes Central Asia, Kazakhstan, Armenia, and Azerbaydzhan. This division follows that of Davis and Feshbach. In addition to materials cited by these authors, I have used TsSU SSSR, *Naseleniye SSSR 1973; Statisticheky sbornik (Population of the USSR in 1973; A Statistical Compilation)*. Moscow, Statistika, 1975, pp. 69-83 on birth rates in different regions.

[17] "... Science has provided the wealthier classes with dozens of means of aborting a fetus ... The evil is already widespread, spreads daily even more widely, and soon will encompass all women of the upper classes." Tolstoy, L.N., *Collected Works*, Moscow, vol. 25, 1937, p. 408.

[18] The differences between numbers of males and females first appeared during the cataclysms of revolution, war, and Stalinism when males perished in greater numbers.

[19] Compiled from census data.

[20] Soviet medical statistics do not include births earlier than 28 weeks following conception, less than 1 kilogram in weight or 35 centimeters in length, if the newborn dies within 7 days of birth. Davis and Feshbach studied data of the US National Institutes of Health for 1960 (when infant mortality stood at 25.1 per 1000 and births numbered 4.258 million, approximating the levels in the USSR in 1968) and determined that the group excluded from Soviet statistics on live births amounted to 14.4% of infant deaths in the US (0.36% of newborns). Davis and Feshbach adjusted data for 1959-1976 proportional to the infant mortality rate.

The number of such births is presumably more closely related to birth rates than to infant death rates. In this case the adjustment to the Soviet figures would be 0.36% per year which would produce a variance from Davis and Feshbach of 10 to 20%.

Adjusting Soviet data on numbers of deaths among premature newborns from US statistics (due to a lack of such statistics from the USSR) can be somewhat risky. There are significant differences between the two countries in the composition of infant mortality rates and abortion rates; relationships among first, second, and third births for individual mothers; maternal health; and obstetrical science. The discrepancies can have a substantial effect on differences in pre-term birth rates.

Table 4

AN EVALUATION OF DEATH RATES AMONG NEWBORNS IN THE USSR WITH ADJUSTMENTS

Year	Infant Mortality Rate				
	According to Soviet Methodology				According to Western methodology, USSR
	USSR (official)	East (est.)	With corrections for incompleteness of data		
			East	USSR	
1	2	3	4	5	6
1959	40.6	46	61	44	48
1960	35.3	36	48	38	42
1965	27.2	34	45	30	34
1970	24.7	34	45	28	32
1971	22.9	33	44	26	30
1972	24.7	35	46	28	32
1973	26.4	42	47	28	32
1974	27.9	44	48	29	33
1975	29.4	48	49	30	34
1976	31.1	53	53	31	35

Table 5

INFANT MORTALITY AND LIFE EXPECTANCY

Country	Infant deaths per 1000 births (numbers are rounded)			Life expectancy (years)		
	1960	1970	1977	1960	1970	1977
Industrial Countries,	28	17	12	69	72	73
incl.: Sweden	17	11	8	72	74	75
US	26	20	15	70	71	73
W. Ger.	34	24	17	69	70	72
South Europe	56	37	32	65	69	70
incl.: Greece	40	30	23	68	71	73
Yugoslav.	88	56	35	62	68	69
Portugal	78	58	39	62	68	69
Soc. Countries	47	31	23	67	70	70
Hungary	48	36	26	67	69	70
Rumania	76	49	31	64	69	70
USSR	42	32	35	68	70	68
Latin America	95	71	58	56	61	64
Far East	60	50	41	53	58	61
Mid. East				46	51	54
S. Asia				43	47	49
Africa				40	44	47

This table has been compiled from *World Tables*, the second edition (1980). Published for the World Bank by the Johns Hopkins University Press. Some of the data cited is less than precise, but it gives rather accurate impressions of the global demographic situation. Only the data for the USSR is adjusted.

Table 6

AVERAGE ADDITIONAL LIFE EXPECTANCY FOR VARIOUS AGE GROUPS

Age	1897 Russia	1900 USA	1927 USSR	1929 USA	1939 USSR	1939 USA	1958 USSR	1958 USA	1971 USSR	1971 USA	1975 USSR	1978 USA
0	32	49	44	61	47	64	69	69	70	71	68	73
10	49	51	54	56	56	59	63	62	62	63	61	65
20	41	43	45	47	47	49	54	52	53	54	52	55
30	34	35	38	39	39	41	45	43	44	44	43	46
40	27	28	30	30	31	32	36	34	35	35	34	36
50	20	21	23	23	24	24	27	25	26	26	26	28
60	14	15	16	16	17	16	19	17	19	19	18	19
70	10	7	10	10	11*	10	13*	11	12	12	12	13
80	7	5	6	6	7	6	8	7	7	7	7	8
85	6	4	5	4	5	4	6	5	5	5	5	6

Sources: TsSu SSSR, *Naselenye SSSR 1973; Statistichesky sbornik (Population of the USSR in 1973; A Statistical Compilation)*, Moscow, Statistika, 1975, p. 139. *Vital Statistics of the United States*, Vol. II, Section 5, "Life Tables," US Department of Health and Human Services, Public Health Service. Data rounded to whole numbers. Data cited is for the given years, and for the surrounding period (e.g., 1986-1978, 1969-71).

* *Narodonaselenie stran mira (Population of the World)*, Moscow, 1978, p. 178. The figures are lower: 10 years in 1939, 11 in 1958. Apparently the author (M.S. Bedny) considers the mortality tables for 1939 and 1959 insufficiently precise in the higher age groups.

Table 7

LIFE EXPECTANCY OF AMERICANS
(years)

Age	Whites				Non-whites			
	Males		Females		Males		Females	
	1978	1900	1978	1900	1978	1900	1978	1900
0	70.2	48.2	77.8	51.1	65.0	32.5	73.6	35.0
40	33.6	27.7	39.9	29.2	30.4	23.1	37.0	24.4
70	11.1	9.0	14.8	9.6	11.6	9.3	14.8	9.6
85	5.3	3.8	6.7	4.1	7.8	4.0	9.9	5.1

Vital Statistics of the United States, Vol. II, Section 5, "Life Tables," US Department of Health and Human Services, Public Health Service, 1978, pp. 5-13.

[21] Davis and Feshbach cite Western research on abortions in the USSR. According to these data, 16.5 million abortions were performed in 1966, or 6 abortions per woman. The data appear to be weakly supported and somewhat inflated. Abortion statistics in the USSR are kept secret, but among informed medical specialists in Moscow, abortion in recent times have stabilized at about 5 million annually. A. Smirnov, in an interview with Western journalists stated that the number of abortions closely approximates the number of births, which corresponds to our own data. (*Christian Science Monitor*, June 4, 1981.)

It should be kept in mind that 5 million would be a record in both absolute and relative terms, a record held for many years now by the Soviet Union. (By comparison, the US recorded 1.157 million abortions in 1978.) The World Almanac and Book of Facts 1982, N.Y., 1982, p. 961.

[22] Tsentral'noe Statisticheskoe Upravlenie (TsSU) pri Sovete Ministrov Uzbekskoi SSR. *Narodnoye Khoziaistvo Uzbekskoi SSR v 1974 godu; statisticheskii ezhegodnik (The National Economy of the Uzbekistan SSR in 1974; A Statistical Yearbook).* Tashkent, 1975, p. 12.

[23] *The Christian Science Monitor*, June 4, 1981.

[24] The population's standard of living cannot be considered particularly stable. Some factors have evidently taken a turn for the worse, affecting the rise in mortality in the process. Among them are changes in working and living conditions; a lowering of physical demands and the consequent weakening of the human organism ; changes in nutrition (increasing use of preservatives and food additives, deterioration of variety and quality of food products, occasional overeating); environmental pollution (air, soil, water); increasing use of chemicals in agriculture; more intense working conditions (automation, exposure to harmful chemicals, greater psychological stress, injuries on the job); increasing numbers of women in the industrial labor force; degradation in health among older generations as a result of higher survival rates in prior years among weaker children; weakening of social structures (alcoholism, crime).

Some researchers have pointed to the growth in the incidence of diseases and cancer as current trends (S. Kazenov in *Prodolzhitel'nost' Zhizni [Expectation of Life]*, Moscow, 1974, p.34.)

Table 8

MORTALITY BY AGE COHORTS
(per thousand)

Age	1896--1897	1907--1908	1926--1927	1938--1939	1958--1959
0–1	375	290	174	167	41
0–4	133	119	78.9	75.8	11.9
5–9	12.9	10.7	7.3	5.5	1.1
10–14	5.4	5.4	3.1	2.6	0.8
15–19	5.8	5.7	3.7	3.4	1.3
20–24	7.6	7.6	5.5	4.4	1.8
25–29	8.2	8.3	6.1	4.7	2.2
30–34	8.7	8.6	6.3	5.4	2.6
35–39	10.3	10.3	7.5	6.8	3.1
40–44	11.8	11.7	9.0	8.1	4.0
45–49	15.7	15.6	10.9	10.2	5.4
50–54	18.5	18.3	14.0	13.8	7.9
55–59	29.5	29.0	18.1	17.1	11.2
60–64	34.5	34.0	24.7	24.5	17.1
65–69	61.6	62.0	36.5	35.0	25.2
Over 70	89.0	90.0	79.5	78.9	63.8
All population	32.4	28.4	20.3	17.4	7.4

Sources: *Narodonaseleniyè Stran Mira (Population of the World)*, Moscow, 1978, p. 176. *Smertnost' i Prodolzhitel'nost' Zhizni Naseleniya SSSR, 1926-1927, Tablitsy Smertnosti (Mortality and Longevity of the Population of the USSR, Life Tables, 1926-1927*, Moscow, 1930.

Table 9

MORTALITY RATE OF THOSE 1 YEAR AND OLDER, MILLIONS

year	Population average for the year except newborns	Born	Died, total of those	younger than 1 year	older than 1 year	Mortality rate of those 1 year old and older, %
1958	201	5.240	1.490	0.212	1.278	0.64
1950	175	4.805	1.745	0.395	1.350	0.77
1946	166 *	4.022	1.836	0.563	1.273	0.77
1940	189	6.096	3.520	1.148	2.372	1.26

Source: *Naseleniye SSSR 1973 (Population of the USSR in 1973)*, Moscow, 1975, pp. 7, 69, 141.
* Calculated from 1950 using birthrates for 1946-49 (published in *Zhenshchiny v SSSR [Women in the USSR]*, Moscow, 1975, p. 101) and with average mortality during 1946-50 of 1%.

Table 10

CHANGE IN MORTALITY RATE, 1960 - 1980

Age	1958-1959		1964-1965		1971-1972		1974		1979 *	
	Males	Fem.	Males	Fem.	Males	Fem.	Males	Fem.	Males	Fem.
0–4	12.6	10.8	7.7	6.5	7.5	6.0	8.5	6.8	8.7	7.0
5–9	1.3	0.9	0.9	0.7	0.8	0.5	0.8	0.5	0.8	0.5
10–14	1.0	0.7	0.7	0.5	0.6	0.4	0.6	0.4	0.7	0.4
15–19	1.7	1.0	1.3	0.6	1.4	0.6	1.4	0.6	1.5	0.6
20–24	2.4	1.3	2.1	1.0	2.5	0.8	2.5	0.8	2.7	0.8
25–29	3.0	1.5	2.8	1.1	3.3	1.0	3.1	0.9	3.7	1.0
30–34	3.6	1.7	3.7	1.4	4.3	1.3	4.4	1.4	4.6	1.4
35–39	4.5	2.2	4.6	1.9	5.6	1.9	5.4	1.8	6.7	2.0
40–44	6.0	3.0	5.7	2.5	7.3	2.6	7.4	2.6	8.4	2.7
45–49	8.1	3.9	7.5	3.5	9.6	3.7	9.7	3.7	11.8	4.2
50–54	12.2	5.6	11.9	5.4	13.6	5.8	13.9	5.8	15.6	6.1
55–59	18.2	8.3	16.5	7.4	19.2	7.9	19.5	8.2	22.3	8.9
60–64	26.1	12.8	26.2	12.6	28.3	12.6	28.7	12.6	32.1	13.8
65–69	36.2	21.3	36.0	18.9	40.5	20.2	40.9	20.2	45.2	21.6
ст. 70	77.6	60.5	–	–	–	–	90.5	66.7	91.8	79.4
	8.0	7.0	7.6	6.7	9.0	7.8	9.3	8.2	10.1	8.9

Sources: *Narodonaseleniye Stran Mira (Population of the World)*, Moscow, 1978, p. 172. *Vestnik Statistiki (Herald of Statistics)*, Moscow, 1975, No. 12; 1976, No. 11.
All numbers above the double line pertain to those born after the revolution. All numbers above the single line pertain the those born after WW II.
* Estimate.

Without doubt such diseases contribute to a growing number of deaths. Where is in 1960 they accounted for 51% of all deaths, in 1970 they contributed 62%. (Yu. P. Lisitsyn, *Sotsial'naia Gigiena i Organizatsiia Zdravookhraneniia [Social Hygeine and Organization of Health Services]*, Moscow, 1973, p. 182.) The spread of such diseases is apparently related primarily to changes in population structure as well as improved diagnosis. M.V. Kurman (*Aktual'nye voprosy demografii [Actual Questions of Demography]* Moscow, 1976, p. 74.) believes that mortality increases in the older age groups are due to just these factors, while the rise among males generally is due primarily to social factors.

[25] It appears that the state as a totalitarian machine has little interest in significantly prolonging the lives of its subjects, particularly the chronically ill and the elderly. Naturally no one would publicly support such an inhuman proposition. Nevertheless, the country's health care system is oriented more toward the working population. Pensioners as a rule are unwelcome in hospitals, they have difficulty obtaining scarce drugs or admission to sanatoria. Upon retirement, middle-ranking officials lose their health care privileges, including access to specialized clinics hospitals.

[26] Mendeleev, D.K., *K poznaniiu Rossii (Toward the Understanding of Russia)*, St. Petersburg, 1906. Novosel'sky, S.A., *Smertnost' i Prodolzhitelnost' Zhizni v Rossii (Mortality and Expectation of Life in Russia)*, Petrograd, 1916. A large number of those who lived longer – and subsequently the low mortality rate of elderly people – can be explained in part by illiteracy of the population, which often rounded ages upward.

The fact that those in the elder cohorts exaggerate their ages is evidenced by inaccurate unreliable correlations within these cohorts. For example, in England in 1901 there were 9,538 people over 90 years old, or 3.96% of the number of those over 60. Those 100 years old and older were 0.06% of all those over 60. For Russia, these numbers were 15.16% and 1.82%. *Smertnost' i Prodolzhitelnost' Zhizni Naseleniia SSSR, 1926-1927, Tablitsy Smertnosti (Mortality and Longevity of the Population of the USSR, Life Tables, 1926-1927*, Moscow, 1930.

[27] Footnote 22, Op. Cit.

[28] *Vestnik statistiki (Herald of Statistics)*, Moscow, 1973, No. 12, p. 79.

[29] In the USSR mortality rates still have a U-form. Infant mortality is more or less equal to the mortality of those 65-70 years old (in the US, 40-45 years old). All consequences of the first demographic revolution, achieved my modern medicine, developed in the West and spread around the world, are not quite clear today. The social structure of mankind turned out to be unprepared for the tempestuous growth of the population. Lack of energy, food, and other resources, adequate living space, and many other problems, became obvious. And while the rich West has gotten out of these difficulties (actually it was not into them because the birthrate was reduced in time), the East and the South have a long, difficult path to travel.

[30] Differences in matrimony in Eastern and Western Europe had a great impact on birth rate and infant mortality. In the eighteenth and nineteenth centuries, late marriages were characteristic in the West, and there were relatively fewer of them. But the psychological pattern of Eastern Europe demanded early marriages. England is an example of the Western pattern. The proportion of unmarried women in 1900 was: 20-24 years old: 73%; 25-29 years old: 42%; 45-49 years old: 15%. (Hajnal, John in Glass, D.V. and Eversley, D.E.C. *Population in History*, London, 1965.) In the European part of Russia, according to the census of 1897, the proportion of unmarried women was: 20-29: 23%; 40-49 years old: 5%.

It should also be said that the Western European pattern included a noticeable reduction in the birth rate as a result of some measures in the family (Coale, Ansley J. in *Fertility and Family Planning*, Ann Arbor, 1969.) In Russia, at the beginning of the century, the birthrate was close to the biological limits.

[31] Workers in and the administrators of maternity hospitals are interested in reducing indicators of stillbirths. Therefore they try to restore the breathing of a newborn, if necessary, for a long time. If it is not done during the first five minutes, brain damage is highly likely. I am not going to judge what doctors should do in such cases; I do not know what is being done in the West. But I simply notice that in the USSR, despite rather high infant mortality, the number of traumas in infants who survive is rather high.

[32] A third of infant mortality in the USSR is due to pneumonia, but in the US it is only 4% (Davis and Feshbach, *Rising Infant* . . . Sept. 1980.)

[33] The correction suggested by Davis and Feshbach demonstrates how substantially infant mortality went down and what it consists of. Almost 15% of all newborns who died during their first year were underdeveloped, were born prematurely, or were of low birth weight (three times less than normal). After 1960 infant mortality in the US was halved; it seems that the proportion of insufficiently developed infants is now higher among both those who die during their first year and those who live.

[34] Inherited defects and infant disease took, in 1920, 2.92% of all newborns in Sweden; today mortality from all causes is 0.8% (Preston, S., Keyfits, N., Schoen, R., *Causes of Death. Life Tables for Nation Populations*, New York, 1972, pp. 652-58). Certainly a number of diseases of various types (for example, septic diseases) decreased, but on the other hand, analysts note that the pathology of pregnancy and labor is increasing. This seemingly is linked to the growth of the proportion of first children among newborns and with the growth and intensity of pathogenic factors. These, in turn, are determined by the development of modern technology, changes in the professional stature of working women, expanding overuse of strong medicines (antibiotics, soporifics, smoking, narcotics, alcoholism, pollution, radioactivity, age of mothers, etc. (Shaburov, K. Yu. in *Prodolzhitel'nost' Zhizni: Analiz i Modelirovaniye*, Moscow, 1979, p. 36.)

[35] In the course of this discussion one strange misconception appeared. Davis and Feshbach and, after them, Eberstadt, wrote about the growth of inherited diseases in the USSR, quoting a samizdat book by B. Komarov (Komarov, Boris (pseud.), *Unichtozheniye prirody: obostryeniye ekologicheskogo krizisa v SSSR [The Destruction of Nature: The Intensification of the Ecological Crisis in the USSR]* Posev-Verlag, Frankfurt/Main, 1978.)

Komarov took these data from a well-known Soviet genetic specialist academician Dubinin. He had no Soviet data (there was almost no such research in the USSR, and if there was any, the results are kept secret). Dubinin writes that according to the information of Western scientists, the number of children affected by this problem was published in the scientific magazine *Protection of Nature*. On this magazine is stamped "For office use only." The fact of the restriction says a lot by itself.)

[36] Nowadays there are not only negative, but also positive tendencies in the spread of inherited diseases. In particular, higher migration decreased the number of marriages among relatives, which had led to more genetic diseases. Still, researchers note that the decline in the birth rate has cancelled the positive effect of migration, and in a number of rural localities, the proportion of marriages among cousins is high. (Sutler, J. in *Fertility and Family Planning*, Ann Arbor, 1969, p. 293.)

[37] The frequency of recorded spontaneous abortions is, on the average, 15-20% of the number of pregnancies diagnosed. Moreover, some of these abortions go unnoticed during the earliest stage (*Lektsii po Meditsinskoi Genetike [Lectures on Medical Genetics]*, Moscow, 1974, p. 160.)

[38] *Narodonaseleniye Stran Mira (Population of the World)*, Moscow, 1978, p. 184; Friedland, I.G., *Gigiena Zhenskogo Truda (Hygiene of Women's Labor)*, Leningrad, 1975, p. 16.

[39] Spanish flu led to a jump in the mortality rate in the world: for example, to a record decline in life expectancy in the United States for 12 years in 1918. But, certainly, in the hungry countryside, without a health care system, its effect was much more terrible.

[40] Population losses in catastrophic periods deserve serious independent consideration. By moving the 1926 census results back to 1913, one can estimate the losses to be about 10 million. Heavy losses of females of various ages prove that it was mainly sanitary losses.

[41] Kaminskii, L.S., *Meditsinskaia i Demograficheskaia Statistika (Medical and Demographic Statistics)*, Moscow, 1974, p. 128. The number of Petrograd-Leningrad inhabitants per doctor was as follows: in 1911 – 700; in 1923 – 875; in 1926 – 400. The professional skills of pre-revolutionary doctors and those who were taught during the civil war were, of course, rather different. By 1926, a lot of hospitals, other health centers, day nurseries and kindergartens were created, but they could not provide a significant curative effect.

[42] In 1922-13, 35 people in Petrograd per 100,000 population died from alcoholism, but in 1923, it was 1.6; in 1926, 10.9; and in 1928, 25.9 (Kaminskii, cited above, p. 134). Losses from other social causes such as gangsterism increased (Novoselskii, S.A., *Demografiia i Statistika (Demography and Statistics)*, Moscow, 1978, p. 113).

[43] Many authors note that the tables of 1939 pertain to the whole country (and tables of 1926 to the European part), and are more precise, and see in this the reason for a small difference. They suggest that the decline in mortality in the European areas was offset by addition of the data from the Asian territories where mortality was higher. One should take into account that outside European Russia, recording of deaths was done very badly. This is still true. There is considerable underrecording of mortality in Asian territories, which could lead to some understating of the rates for 1939.

[44] *Yestestvennoye Dvizheniye Naseleniya Sovremennogo Mira (Natural Movement of the Population of the Contemporary World)*, Moscow, 1974.

[45] Sifman, R.I. in *Prodolzhitel'nost' Zhizni: Analiz i Modelirovaniye (Life Expectancy: Analysis and Simulation)*, Moscow, 1979, pp. 50-59.

[46] *Ibid.*, p. 251.

[47] In 1946, life expectancy of those 5 years and older was about 67 years in the USSR. It was higher than in the US at that time.

[48] The fluctuations in mortality rate are determined partially by a noticeable heterogeneity of life of various age cohorts. For example, the group of 20-24-year-olds in 1958-1959 consists of those born before the war, when infant mortality was significant; in 1964-65, it consisted of the scanty generation born during the war; in 1971-72, it consisted of the first postwar generation, when infant mortality was rather high; in 1979, it consisted of the relatively populous post-Stalin generation, with relatively low infant mortality (having been cured by antibiotics). No doubt the differences of "life experience" should affect the mortality of these cohorts.

[49] One can get the impression from what has been said that the introduction of modern medical care complexes in the 1950s and 1960s played no role in the USSR. This is not so. It is precisely because of medical achievements that the manifold reduction of child mortality (0-9 years) should be explained. Medical achievements played a very important role for other age groups as well, however – it led not to a reduction of the mortality rate, but it prevented its increase. Mortality would have grown, gradually returning to the 1939 level, without the artificial reduction in it brought about by modern medical care. Medicine also reduced the mortality rate of some age cohorts in 1958-65.

[50] Bednyi, M.S., *Prodolzhitel'nost' Zhizni v Gorodakh i Poselkakh (Life Expectancy in Cities and the Countryside)*, Moscow, 1976, p. 49.