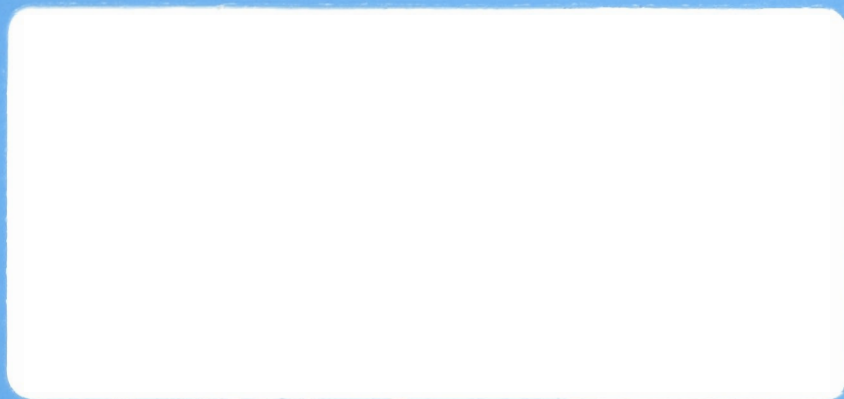




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**DEATH IN TRANSITION:  
THE RISE IN THE DEATH RATE  
IN RUSSIA SINCE 1992**

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## EXECUTIVE SUMMARY

From January 1992 to the first half of 1994 the death rate in Russia rose by over 30 percent, a rise of a magnitude never before seen in an industrialized country without a war or a famine. In 1993 alone the life expectancy of a Russian man fell from 62 to 59.

Some of this extraordinary change is not unexpected. Transition from a command to a market economy has not been good for public health in other countries in Eastern Europe. And many indicators of public health such as infant mortality rates and life expectancy have been in slow decline in Russia since the mid-1960s. However, the rise in the death rates is much greater in Russia than it is elsewhere in Eastern Europe and not just a continuation of earlier trends.

This paper examines the nature and causes of this unprecedented and disastrous increase in mortality using recent (1993-4) data.

Its main findings are that the rise in mortality is:

- Predominantly a rise in male mortality, which was also much higher to begin with. The gap between male and female life expectancy has widened from ten years in 1989 to nearly 14 years in 1993.

- Predominantly a rise in the death rates of the population of working age and not a rise in the death rates of the young or the old.

- Mainly due to diseases of the heart and circulatory system that account for 51 percent of the rise in 1992-3 and deaths from external causes that account for 23 percent of the rise in 1992-3. Alcohol poisoning, suicide and murders put together account for 14 percent of the rise between 1989 and 1993. Deaths from infectious diseases, although increasing, remain a negligible proportion of the total.

- Uniform across the whole Russian Federation.

The paper uses and assesses a wide range of data sources to examine three categories of factors that can explain this rise in death rates: the external environment persons live in, the lifestyle choices they make and the health care system which should intervene to pick them up if something goes wrong.

It argues that the rise in mortality is:

- Related to the dramatic social and economic upheaval caused by transition from the command economy to the market, because this is the only change of comparable size to the rise in mortality.

- Not solely explained by the fall in real average income and consequent inadequate diets or by the disruption of the Russian health care system.

- Largely explained by the loss of economic security and the threat of unemployment, since this makes good sense of the fact that the increase in mortality is occurring among men of older working age from heart diseases and external causes.



## I. INTRODUCTION

Since 1986 Russia has been experiencing a rise in its rate of mortality. Since 1992 this rise has taken on unprecedented proportions for a country at peace and not suffering from famine. The rise has been broad in scope, affecting both sexes, all age groups over 15 and all regions, but particularly affecting men of working age. In 1993 the life expectancy of men at birth fell from 62 to 59 years, a fall of three years in one year.

In itself, rising mortality in Russia may not seem an unexpected phenomenon. First, Russia has been experiencing a gradual decline in many of its health care indicators since 1965, a long-term trend interrupted briefly in the mid-1980s with substantial gains in life expectancy associated with Gorbachev's anti-alcohol campaign. The latest deterioration may thus appear to be the reemergence of a long-term crisis in health, rather than some new and sudden change.

Second, Russia's problems are currently exacerbated by the additional difficulties facing an economy in transition. Falling incomes, the loss of job and home security and the reorganization of the welfare and health care systems might have been expected to have a negative impact on the health of the population, at least in the short term.

However, the nature of what is happening outstrips all expectations. The rise in crude death rates in Russia from 10.7 per 1,000 in 1989 to 15.8 per 1,000 in the first half of 1994 is not only on a different scale from that of the preceding three decades but significantly exceeds anything seen in other transition economies in Central and Eastern Europe.

Unfortunately, Russian demographers and the Russian media dedicate far more attention to the fall in birth rates. This is possibly because Russia's extremely violent history this century has desensitized the Russians to the extraordinary nature of the rise—every second Russian man has met an early, violent death this century. But the international policy community is also at fault. Despite a large presence in Moscow, they continue to turn out reports in 1994 that use no data later than 1992, when the explosive rise in the death rate began. More recent data are available, and we feel that it is a matter of urgency that they be publicized.

The first half of this report looks at what happened, at the facts regarding mortality and morbidity in Russia in recent years, and attempts to break down the figures into as much detail as data allow with respect to age group, sex, region and cause of death. The second half assesses why the rise in mortality rates happened by looking at possible environmental and lifestyle causes of the decline and considering the effectiveness of health interventions.

## **II. WHAT HAPPENED?: MEASURES OF MORTALITY AND MORBIDITY**

In this section we shall identify what is happening in some detail. We shall start by presenting crude death rates and life expectancy, the most important general measures of the death rate. We shall then break down the causes of death by cause, sex and age. This analysis establishes that the death rate has risen most among men of working age, and so we then go on to examine key changes in some causes of death for this group. We shall also consider changes in regional death rates and causes of death and identify a couple of "problem patterns" in regions which have been particularly hard hit. Finally, we shall consider infant mortality and morbidity.

Unfortunately, particularly in view of the fact that the only factor which has moved as suddenly as the death rate since 1994 is the fall in incomes, there are in effect no data on death rates by income group.

### **Crude Death Rates**

The most basic mortality indicator, the crude death rate, has been climbing steadily in Russia since the early 1960s after a gradual postwar fall. From 1984-6 a sudden sharp improvement in the situation was observed. From 1987 the upward trend resumes again, accelerating dramatically since 1992 (Table 1).

To an extent, this long-run trend is nothing other than a reflection of the gradual ageing of the Russian population over the period, as birth rates fall and the first postwar generation reaches retirement age. The average age in Russia rose from 26 for men and 32 for women in 1959 to 33 for men and 38 for women in 1989 (Goskomstat 1993f). Similarly, the proportion of the population over 60 has increased, and the proportion of the population under 20 has decreased. In 1959 only 9 percent of Russians were over 60, while, by 1992, 16.5 percent were over 60.

Some changes in the crude death rate, then, are simply the result of these changes in age structure. As we shall see later, the crude death rate for males rose to 10.7 in 1985-6 from 10.2 in 1980-1, yet in every single age group the death rate in 1985-6 was lower than it had been in 1980-1 (Table 6). Similarly, the overall female death rate increased from 10.2 in 1980-1 to 11.4 in 1992, even though the only group which had actually deteriorated by the end of 1992 was the over-70s (Table 7).



However, by no means all of the additional deaths can be so easily explained away. UNICEF calculates that only 37 percent of the additional deaths recorded between 1989 and 1993 can be put down to changes in population size and structure (UNICEF 1994). In particular, demographic changes do not account for the sudden dramatic increase in deaths after 1992. Of the 349,000 additional male deaths in 1993 over 1992 only 91,000 were due to population growth and ageing, leaving 258,000, or 74 percent, unexplained. Similarly, of 195,000 additional female deaths, 144,000 (again 74 percent) were unexplained by demographic factors.

### **Life Expectancy**

Life expectancy data allow an abstraction from the age structure of the population and therefore give a more accurate picture of changes in excess mortality over time. Table 2 and Figure 1 show changes in the life expectancy at birth for urban and rural males and females.

These figures show a similar pattern for males and females, with one obvious distinction. The male trend is much more exaggerated than the female one at all points. Life expectancy is on its way down from the mid-1960s, stabilizing in the late 1970s and early 80s. The mid-1980s see an extremely sharp recovery to a peak in 1987 that is widely associated with the implementation of Gorbachev's anti-alcohol policy (Shkolnikov et al. 1994). These gains were lost almost as rapidly as they were made. By 1992 male life expectancy was back to its 1982 level of 62 years. This is between nine and 13 years lower than corresponding rates for Europe, the US and Japan. Female life expectancy had fallen to 73.8 years in 1992, which is four-seven years below Western equivalents.

Most startling, however, is the dramatic nosedive male life expectancy appears to have taken between 1992 and 1993, from 62 down to 59 years. This drop, of almost 5 percent in a single year, takes male life expectancy in Russia below the age of retirement for the first time since the war. As Figure 1 illustrates, it also argues against seeing the early 1990s' decline as just the reassertion of a long-run trend after the positive "blip" of the mid-1980s.

Urban and rural trends in male life expectancy are very similar, though rural figures have been consistently lower since the baseline of 1961-2, when there was little difference between the two. The decline to the mid-1970s was much sharper in rural than in urban areas, and the mid-1980s' improvement was also more pronounced, meaning that the gap between rural and urban rates widened considerably in the earlier period and narrowed in

the 1980s. This pattern may be partly explained by earlier provision of health care capacity to urban areas and the subsequent channelling of investment to rural areas to help them match the resources provided in the cities. The catchup period in the 1980s can also be linked to greater levels of alcoholism in rural areas and hence to greater forced improvement under the "dry law".

Female urban and rural life expectancy shows much less difference than the respective figures for males. The widening gap we noted during the 1965-75 period and the narrowing in the mid-1980s are reflected for women, but in much reduced form.

Note that urban rates have far greater weight than rural in the total, since only one-quarter of the population is rural. At the last census in 1989, 26.5 percent of the population was rural and 73.5 percent urban.

### **Causes of Death**

A breakdown of the crude death rate by cause over time immediately displays several marked tendencies (though note that changes in the age structure of the population mean that long-term comparisons of cause of death need to be treated with care). First, causes of death from diseases of the heart and circulatory system show a dramatic and long-run increase from the 1960s. Figures stabilize in the 1980s and then accelerate rapidly in the early 90s. Between 1992 and 1993 the number of people dying from heart- and circulatory-related diseases jumps from 646 deaths per 100,000 population to 760, or over 17 percent. This is in the long-run context of an increase between 1960 and 1970 of over 50 percent and between 1970 and 1980 almost 41 percent. A jump of 17 percent in a single year is clearly a continuation, but also a sharp and disturbing deterioration of this trend. Data for the first half of 1994 show that deaths from heart and circulatory causes continue to increase, now totalling 863 per 100,000, as against 771 for the first half of 1993, an increase of 12 percent (Tables 3 and 4).

The second point of note is the rise in the number of deaths from "external" causes, including poisonings, accidents, murders and suicides. Here, we see a tendency similar to the tendency in deaths from heart and circulation. A steady increase in the 1960s and 70s falls in the 80s, only to pick up again with much greater intensity in the early 90s. Between 1970 and 1980 the increase in deaths from external causes is 33 percent; in the single year 1992-3 the jump is 30 percent. According to the Institute for Socioeconomic Studies of the Population

(Rimachevskaya 1993), more Russians died in 1993 from suicide, murders and alcohol poisoning than did in the entire 11 years of the Afghanistan war. The first half of 1994 saw this indicator continue to increase.

A third point is the apparent resurgence of infectious diseases between 1992 and 1993. Between 1960 and 1990, deaths from infectious diseases fell consistently from 87.3 to a low of 12 per 100,000, where the figure stabilized during the early 1990s. Figures for 1993 suggest a dramatic increase of 36 percent to 17.3. This is only a return to the 1985 level, but signifies a worrying break in trend, reinforced by the data for the first half of 1994.

Deaths from respiratory diseases also show a sharp deterioration after 1992, having improved steadily during the 1980s, increasing by 35 percent from 1992 to 1993 to return to the level of 1985. 1994 data reinforce the impression of a reversal in trend.

Deaths from cancer are unique in displaying a slight and steady increase during the period under consideration, with no noticeable change in the 1990s. The percentage change of 1993 over 1992 is negligible. Within the category of cancers, however, there has been a significant shift, as stomach cancers have declined, and lung cancers have increased.

Table 5 shows the change in the percentage share of deaths by different causes since 1965. The percentage share of heart and circulatory diseases shows a gradual increase from 1960 to a level of more than 50 percent of the total for 1980. This share climbed to a high of 56 percent in 1985 and has been declining slightly ever since (ignoring the unannualized data from the first quarter of 1994). In 1993 it was still the cause of more than one-half of all deaths. In a situation of rapidly escalating overall death rates, then, deaths from heart-related diseases have retained their share in the growing total.

External causes of death are the only other factor to increase their share of the total between 1960 and the late 1980s. They display a sort of double peak, reaching 15 percent of the total in 1980, declining throughout the 1980s and then increasing again from 1990 to 15.8 percent in 1993. Note that in 1993 they replaced cancers as the second leading cause of death. Although their share in the total is still relatively minor, they are responsible for much of the increase in mortality, and since they tend to strike the young disproportionately they have a significant impact on life expectancy.

The share of cancers and neoplasms in the total gradually declines throughout the period, with an interruption between 1985 and 1990. The share of respiratory and infectious diseases declines significantly to 1992 (infectious diseases falling to just 1 percent of the total). However, both show a reverse in trend between 1992 and 1993 to recover a late 1980s level.

### Causes of Death by Gender

Tables 6 and 7 give a more detailed breakdown of causes of death and presents the male and female death rates separately. Tables 8 and 9 show the percentage increases between 1989 and 1993 and 1992 and 1993 and also the percentage of the total increase in mortality explained by each cause for each gender. These tables are consistent with the data in Table 3, using the same main categories of disease.

As trends in gender-specific life expectancy would indicate, the deterioration in the male figures is uniformly worse than that in the female, though female life expectancy, too, has consistently declined. The deterioration for women in deaths from external causes is as bad as that for men between 1992 and 1993, while deaths from alcohol poisoning and murders rise more sharply over this period for women than they do for men.

However, as the second columns for each period show, it is misleading to compare the percentage increases for male and female deaths in this way, as the initial male level for most of the causes in question is so much higher than that for females. These columns tell us in detail exactly how the mysterious rise in mortality is composed. For the period 1989-93, for example, we can see immediately that male deaths are responsible for 65 percent of the total increase. Twenty-seven percent of the total is due to deaths from diseases of the heart and circulatory system among men, and a further 19 percent to these diseases among women. Twenty-two percent is due to rises in deaths from external causes among men, and only 5.5 percent to such rises among women. The first three sets of causes—that is, heart and circulatory diseases among men and women and external causes among men—among them explain 68 percent of the total rise in mortality between 1989 and 1993.

A closer examination of the external causes reveals that alcohol poisoning, unspecified harm, suicide and murder are the leading causes of increased mortality in this category, each explaining between 3 and 5 percent of the total rise. If the male and female figures are considered together, increased deaths from alcohol poisoning alone explain 6 percent of the total increase, and increased murders almost 5 percent.

The data for the period 1992-3 reveal a shift in the distribution of excess mortality. There was a rise in the percentage of additional deaths explained by female deaths from heart and circulatory causes and a fall in the percentage of additional deaths explained by male deaths from external causes. Additional female deaths contributed about 2 percent more to the total increase 1992-3 than over the 1989-93 period as a whole, or 37 percent of total

excess mortality. Since these additional female deaths were from heart and circulatory diseases, female deaths from heart and circulatory causes accounted for 25 percent of total excess mortality in 1992-3, as opposed to 19 percent for the period 1989-93 as a whole. External causes among men explained 19 percent of the 1992-3 increase, as compared with 22 percent for the 1989-93 period as a whole, with suicides and murders falling in significance, while alcohol poisoning and unspecified harm retained their importance.

### **Age-specific Death Rates**

1. **Male Age-specific Death Rates.** There are three patterns to the change in male age-specific death rates (Table 10, Figure 2). Infants under 5 have seen a steady fall in death rates since 1980. Children aged 5 to 10 have seen little change since the early 1980s. The death rates for all other age groups have risen since the mid-1980s.

Previously, age-specific death rates for men had stagnated or risen slightly from the 1960s to the 80s, declined sharply in the mid-1980s and then climbed up again to almost exactly their 1980-1 configuration by 1992. Since 1992 they have been rising much more rapidly than they were in the preceding years.

The most striking result revealed by the age-specific data is that it is not the elderly or the young who have been most affected; it is among the 30-50 age group that the increases in mortality have been most striking. In each pentile of this group the death rates in 1993 were over 70 percent higher than they had been in 1989. The worst affected group was the 35-to-39-year-olds, whose death rate climbed 80 percent in the five years. Deterioration in death rates increases with proximity in age to this group, yielding the "hump"-shaped Figure 3. The extremities of the hump, the younger teenagers (15-19) and the very old (over-65s), have been relatively less affected, registering comparatively small increases of 14 percent and 10 percent in 1993 over 1989. Normally, of course, changes in the absolute numbers of deaths in each age group increase with age. However, rates of increase in mortality have been so much higher among the middle-aged than they have among the old that the highest absolute rise in the number of deaths per 1,000 in an age group in the period 1989-93 was among the 55-59s, followed by the 60-64s, with the oldest group, the over-65s, only registering the third highest absolute increase in their death rate.

The death rate for the under-5s has been marked by gradual but continual improvement throughout the reform period and indeed from the early 1980s. The fall in the



period 1992-3 is particularly impressive given that the infant mortality rate grew in that period. Children under 14 have also been little affected by transition, with the 5-9s registering falls in their age-specific death rates in three and the 10-14s in two out of the four years between 1989 and 1993. Only two older age groups have recorded a fall in their age-specific death rate in any of the years since 1989, both in the relatively mild 1990-1 period.

Death rates for all males over 20 follow broadly the same pattern over the three years 1989-92. They rise most sharply among 25-to-45-year-olds and less with distance from this group. In 1991 the death rate for the over-70s was only 102 percent of that of 1990 compared to a 120 percent rise for the 20-45s. In 1992-93, however, which saw by far the largest rise in any one year, the age-specific death rate increased at about 120 percent for adults under 35 and in the 50-54 age group; 135 percent for adults in the 35-49 and 55-59 groups and doubles or more for previously little affected older groups. So, there seems to have been a small shift in the distribution of excess mortality, with young adults and the young middle-aged worst affected to 1993, and the older middle-aged worst hit in 1993, with the elderly registering additional deaths for the first time in the transition period in 1993. This coincides with the shift post-1992 in the causes of the additional deaths, with younger external deaths declining in importance vis-à-vis older heart and circulation deaths.

Our conclusion is that none of the rise in mortality rates post-1989 can be ascribed to deaths of children, and relatively little of it to an increase in deaths among the elderly or older teenagers, despite a post-1992 rise in their death rates. It is those of working age, particularly the middle-aged, who have been worst hit by the rise in death rates. We shall examine some of these groups in more detail below, since they account for most of the excess mortality since 1989.

2. **Female Age-specific Death Rates.** Women's age-specific death rates have deteriorated in a remarkably similar way to those of their male counterparts, although the decline has been both less steep and from a lower starting point (Table 11, Figure 4). The shallower rise is shown by the difference in the overall decline in 1989-93: 144 percent for men and 123 percent for women. The lower starting point is illustrated by the fact that in 1989, with the exception of the over-70s and the under-10s, the female age-specific death rate in each age group was less than one-half that of the male. As with men, it is the 35-39 age group which has suffered the greatest increase in relative terms since 1989, and the 55-59 group which has increased most in absolute terms, making the largest contribution to excess mortality. Again, we find a striking "hump"-shape, when we graph the percentage change in age-specific death

rates (Figure 4), with increased mortality falling with distance from the most affected age group of 35-to-39-year-olds. For instance, as for men, the under-5s have improved since 1989, while, incredibly, the death rate for the over-65s *improved* between 1992 and 1993. As with the males, we note a slight shift in mortality patterns since 1992, with mortality among 55-to-59-year-olds increasing at a faster rate than it does among those slightly older and slightly younger. Unlike for men, however, 1992-3 saw a significant increase in the mortality rate of 20-to-24-year-olds. In summary, female age-specific death rates show us that, as in the case of men, the rise in death rates is hitting those of working age disproportionately.

3. **Causes of Death among Men aged 35-39 and 50-59, 1989-93.** Analysis of age-specific death rates reveals that in both sexes over the period 1989-93 the highest relative increase occurred in the age group 35-39, and the highest absolute increase occurred in the age group 55-59. Since the increase in male deaths explains 65 percent of all excess mortality since 1989, examining the causes of death among men in these two age groups should indicate the causes of death most responsible for the excess mortality.

In 1993 the mortality rate of men aged 35-39 was 180 percent of what it had been in 1989, or 9.4 per 1,000 as opposed to 5.2. The causes of death in 1989, 1992 and 1993 are given per 100,000 in Table 12. The first thing to note is that well over one-half the excess mortality is to be explained by an increase in external causes of death and, in particular, in deaths by alcohol poisoning, suicide, murder and unspecified harm. Although there have been substantial increases in deaths from infectious diseases, respiratory diseases and digestive diseases, the rise due to all of these causes taken together more or less equals the rise due to murders alone and falls short of the rise due to alcohol poisoning alone. The only other substantial cause of excess mortality has been the rise in circulatory diseases, but that amounts to under one-third of the excess mortality caused by external causes. The chief component of excess mortality in the 35-to-39-year-old group is clearly external deaths.

In 1993 the mortality of men aged 55-59 was 150 percent of what it had been in 1989, or 42.5 per 1,000 as opposed to 32.6. Causes of death per 100,000 are given in Table 13. Here a much more significant role is taken by rises in deaths from circulatory causes: these explain 44 percent of the increased mortality between 1989 and 1993. Another one-fifth is explained by the combined effect of infectious, respiratory, digestive and cancerous causes, while about 30 percent of the excess mortality is explained by external causes. However, this falls to 25 percent in the period 1992-3, when the share of respiratory and heart deaths jumps, that is, external causes play a diminishing role in explaining excess mortality post-1992. Within the

category of external causes a smaller share is due to suicides, and a greater share to murders, unspecified harm, alcohol poisoning, alcoholic psychosis and "others".

Thus, external causes are overwhelmingly responsible for increased mortality among men in their late 30s, while the leading factor behind increased death rates among men of the 55-59 age group has been diseases of the heart and circulatory system. External causes of death explain more of the excess mortality for the older age group earlier in the period, but remain of importance since 1992.

### **Regional Death Rates**

Different parts of Russia have different climates, demographic profiles, resources, patterns of pollution and diets. However, although the data (Table 14) reveal substantial interregional variation in the level of the death rate, ranging from 11.8 in the Far East to 17.9 in the North West in 1993, and the data on cause of death reveal similar variation across the regions, death rates in every region have moved uniformly since 1985, rising slightly between 1985 and 1992 and sharply since then. Particularly striking is the way that external death rates more than doubled in every individual region between 1989 and 1992.

Crude death rates in 1985 were substantially lower in Siberia, the North and the Far East, under 10 per 1,000, whereas they were above 12.5 per 1,000 in the Central and North West regions and above 13 per 1,000 in the Central Black Earth region. However, when the data are adjusted to account for the age and sex structure of the regional population, the resulting Standardized Mortality Rates (1989) show that the death rates in the two Siberian regions and the Far East are in fact substantially higher than the all-Russia average.

Although since 1985 death rates have risen everywhere, they have risen at different rates, so that by 1993, for example, the death rate in both the North West (17.9) and the Central (16.6) regions exceeded the death rate in the Central Black Earth (16.3) region. Death rates since 1991 have risen substantially in every region, the rise ranging in size from 60 percent in the Northern region to 24 percent in the North Caucasus. Death rates in 1992-3 rose most sharply in St. Petersburg (28 percent) and least in the North Caucasus (12 percent).

### **Causes of Death by Region**

The causes of death at the regional level reflect the changes noted in causes of death at the

national level. Deaths from cancers have increased, but at a gradual pace. Cancers increased by 10 percent from 1989 to the first quarter of 1994 on average, with the largest increase being 16 percent in the Urals and the smallest being 7 percent in the Central Black Earth and North Caucasus regions.

Deaths from respiratory diseases, at the same time, have grown dramatically and with greater regional variation in the increase. The overall increase has been 64 percent, with the worst hit region being the North West, where respiratory diseases increased by 130 percent, and the least affected being the North Caucasus, where respiratory diseases increased by a comparatively mild 26 percent.

The most explosive rise has been in external deaths, which grew nationally by 271 percent from 1989 to the first quarter of 1994, with a top regional rise of 365 percent in Eastern Siberia and a bottom regional rise of 147 percent in the Central Black Earth region. External deaths skyrocketed in the early 1990s and now seem to be growing more slowly.

The chief cause of death in every region has, however, remained heart and circulatory diseases. Although the rate of growth has been much lower than it has for external or respiratory diseases, heart diseases have remained the cause of death in over 50 percent of cases. The rise has been 51 percent since 1989 and sharper since 1992. In the period to 1992 deaths from heart diseases declined in some regions and only increased at more than 20 percent in one place, the Far East, with a national rise of 8 percent. In the period since 1992 deaths from heart disease have increased by 40 percent, with only the North Caucasus (25 percent) and the Central Black Earth region (35 percent) significantly under the national average, and the top rate being in St. Petersburg (54 percent).

The regional picture is, then, overall quite mixed. Two regions get off relatively lightly. The Central Black Earth region, which was the region with the highest death rate in 1989, has had a comparatively low increase in its death rate since 1989 (32 percent), with underaverage rates of increase from circulatory, respiratory and external causes, and has now been overtaken by the Central and North West regions in the death rate rankings. The North Caucasus has also been less affected by increases in the death rate (25 percent), with increases well below average for heart, respiratory and external causes. Both regions have an above average proportion of rural inhabitants: in 1989 for Russia as a whole 27 percent were rural, while 40 percent of the population in the Central Black Earth region was rural, and 43 percent of the population in the North Caucasus (Goskomstat 1991).

There are two different sorts of regions that have been particularly badly affected. The

first group (North West, Central) has predominantly urban populations slightly older than the national average, and so, although these regions have not had the highest relative increase in death rate, more people are dying in them. Thus, in the North West in 1989, 17.5 percent of the population was over 60, as opposed to 15.4 percent nationally, and 87 percent was urban, as opposed to 74 percent nationally. The second group (Eastern Siberia, Far East, Northern) is composed of tough, frontier regions with young populations. The most serious deterioration in health has occurred in these regions, over 70 percent since 1989. In Eastern Siberia, for instance, an above average rise in the death rate from heart and respiratory diseases has been combined with an explosion in external deaths. Since this is happening in a population much younger than the national average (in 1989, 21 percent were over 50, as opposed to 28 percent nationally) and is particularly due to external deaths, which are younger deaths than are the deaths from other causes, the change in these regions may be even more serious than it is in the first group in terms of potential years of life lost.

The fact that new regions, the Urals and Volgo-Vyatski, are now experiencing the fastest growth in their death rates, from 1993 to the first quarter of 1994, and that St. Petersburg has moved from having the highest rate of increase in 1992-3 to having the lowest in 1993 to the first quarter of 1994 is an indication that the situation remains volatile, and that a constant trend at the national level may conceal regional changes that cancel each other out.

### **Infant Mortality**

The infant mortality rate (IMR) came hurtling down to about 25 per 1,000 live births in the mid-1960s (Figure 5). Since then, the urban IMR has been slowly declining at a decreasing rate, while the rural IMR stagnated at around 25 until 1980 and then gradually fell through the 1980s to 17.7 in 1990, close to the urban 1990 IMR of 16.7. The improvement in the IMR was gradual and small from 1965 to 1990, and by no means unambiguous. In 1975 both urban and rural rates were higher than they had been in 1970 and in 1984; similarly, both the urban and the rural IMR increased. Even the best IMR of 16-17 compares unfavourably with the IMR of 5-10 in Japan, Western Europe and the US.

The main areas of improvement in the 1980s were the rural areas, which improved from 24 to 17.7, and regions with high IMRs (23+ in 1985), such as the North Caucasus and the Far East, where substantial improvements were registered. This, coupled with the absence in any region of an IMR below 14.1, suggests that the improvements in the 1980s were due



to extensive growth, bringing backward districts up to levels achieved elsewhere, rather than to any new advances in the quality of care provided.

Since the low point of 17.6 in 1990, the IMR deteriorated again to reach 20.1 in 1993. The worsening was much steeper in 1992-3 than it had been in the previous two years, so that the 1993 total of 20.1 was over 110 percent of the 1992 total of 18.1. Every cause of death has risen since 1990 (Table 15), but none dramatically. When compared with the situation in 1981, when the IMR was a comparable 20.2, two interesting patterns can be seen. First, through the 1980s there was a decline in deaths from respiratory diseases in particular, but also from infectious diseases and digestive and external causes, which are still less than their 1981 total despite deterioration since 1990. Second, there has been an increase in deaths from perinatal causes and congenital abnormalities through the 1980s and continuing into the 90s. So, the change from 1981 to 1993 can be described as a decline in deaths from respiratory causes at the cost of an increase in deaths from perinatal causes and congenital abnormalities. This change may be due to long-term environmental and neonatological health care problems and suggests that the reasons for the rise in deaths from perinatal causes and congenital abnormalities predate transition, whereas the recent increase in respiratory and external deaths coincide with transition.

It should be noted that it is difficult to know how to treat data on IMR since 1993. Prior to 1993 Russia counted infant deaths differently from international norms. Infants who had no breath but showed other signs of life were treated as still-births, while those under a certain height and weight born before the 28th week of pregnancy and who died within seven days were counted as miscarriages. According to World Health Organization standards, both categories should count as live births, and the net effect in Russia was an underestimation of the IMR by about one-quarter. For instance, still-births in 1992 averaged 8.27 per 1,000 live births, some of whom would have been counted as live births elsewhere. Since 1 January 1993, infant mortality should be counted according to international norms, but this is probably being implemented sporadically, if at all. This makes it difficult to calculate whether increases in the IMR since the beginning of 1993 are due to better reporting or more deaths.

### **Morbidity**

Table 16 shows the change in the incidence of disease in the Russian Federation in the 1980s

and early 90s. The trends are disturbing. All diseases for which data are available were on the increase between the first 11 months of 1992 and the first 11 months of 1993 and also between January 1993 and January 1994. Certain diseases were on the increase throughout the 1980s (diphtheria, whooping cough). Both these accelerate significantly from 1993. Others showed a dip in the mid-1980s and an upturn by 1990 (salmonellosis). Yet others, which seem to have been in stable decline right up until 1992 or even 1993, display sudden and striking reversals in trend. Note the case of German measles, which fell to less than one-third of its 1985 total in 1992. Figures for January 1994 reveal a 180 percent increase in cases since January of the previous year. Measles also fell dramatically throughout the 1980s and appears to be resurfacing significantly since 1992 (an increase of over 300 percent between 1992 and 1993). The increase in cases of syphilis (156 percent January-November 1993 on 1992, 170 percent January 1994 on January 1993) and gonorrhoea (40 percent, 9 percent) is particularly worrying in the light of HIV. However, despite the rapid and accelerating increase in infectious diseases, deaths from infectious diseases have hitherto not increased significantly.

### Summing up

Let us summarize the key developments which stand out from the above analysis.

First, we see a rise in mortality and particularly in *male* mortality since 1986, intensifying after 1992. While female mortality is also deteriorating, male indicators consistently and significantly outdo female indicators in every area examined. Sixty-five percent of excess mortality between 1989 and 1993 was among men.

Second, the age-specific death rates reveal that the rise in mortality is basically due to a rise in the death rates of the population of working age. Since 1989, under-5 death rates have continued to improve, children's death rates have stayed fairly constant, and the death rates of the elderly have been rising more slowly than have those of other adults. The sharpest relative rise is among 35-to-39-year-olds, where the main cause of death is external, and the largest absolute rise has been among the 54-to-59-year-olds, where the proportion of deaths from external causes, although high, is lower than the proportion of deaths from circulatory causes and has been falling since 1992.

Third, all causes of death are on the increase, but those particularly to blame appear to be diseases of the heart and circulatory system, external causes and, to a lesser degree, respiratory diseases. Over the period 1989-93 heart and circulatory diseases explained 44

percent of the total increase in mortality, and external causes 27 percent. Within the category of external causes, alcohol poisoning, suicides and murders all show substantial increases, together explaining 14 percent of the total rise.

Fourth, death rates have risen since 1991 in all regions by 25-60 percent. Every region has seen a rise of over 40 percent, with only two exceptions: the Central Black Earth region, which had the highest death rates and so had less room for expansion, and the North Caucasus, which is an untypical, non-Russian and southern region. We identified two types of particularly badly affected regions: the Central and North West, with older populations and the highest death rates, and Eastern Siberia and the North, with the fastest growth in the death rates in a younger population, with external causes growing particularly quickly.

Finally, the 1980s' decline in infectious diseases has been significantly reversed. While this is barely reflected in the mortality figures, it is in itself a subject for concern.

### III. WHY?

In the first section of this paper we examined the decline in the health status of the Russian population over the last few years. We noted that many mortality and morbidity indicators have been deteriorating steadily since the 1960s, but also that the last two or three years have seen the development of a dramatic and disturbing new trend.

How can we explain this phenomenon? The problem is that there are many possible answers, since so many different factors affect the health of the population in some way: a polluted environment, an ageing population with new health care needs, unhealthy diets, poverty, scarcity of drugs, mistrust of the health system, vodka and cigarettes, the stress of change.

In this section we divide the factors into three broad categories: the external environment within which a person is forced to live, the choices he or she makes about his/her lifestyle, and the health care system, which ideally protects the individual against harm from both these things, and puts him back on his feet when prevention fails. We look for ways in which these factors have changed during the period of economic transition and try to determine which of these changes can be held responsible for the rise in the death rate.

## **The External Environment**

Under this heading, we look at the factors beyond an individual's control. We examine real incomes and food prices, the stress of upheaval and unemployment, and pollution and the environment.

1. **Pollution and the Environment.** There is a variety of different ways in which human activity can generate waste that can affect health. The chain of causality between bad air, water and soil and disease and death is long and complicated, with lags between emission, effect and manifestation as disease. This and the fact that the effects of pollution range from direct poisoning to general debilitation make measurement of the influences difficult.

There is an additional problem in estimating the effect of pollution on health in Russia in particular: the dearth of data. Only with the advent of perestroika were the first statistics on pollution emission published and the problem of pollution openly discussed, so historical statistics have to be inferred. The first official statistics were gathered by Goskomstat in 1985; the first report on the state of the environment in the USSR was only published in 1990 (State Committee for the Preservation of the Environment 1990).

However, common sense and the available statistics point to serious problems in Russia, particularly in areas designed as plant-city combinations such as Kemerovo and Norilsk. That Russia is likely to be a very polluted country can be illustrated by a simple argument. The Soviet Union could be defined as a pollution-maximizing industrial system if three plausible premises are accepted. First, the desired level of technology was heavy industry, so a reasonable proxy for investment attractiveness was the dirtiness of the technology. Second, the main objective of economic policy was growth. Third, growth was defined as quantitative expansion of this sort of heavy industry, the "productive" sector, since there was little incentive for technical progress, and change interfered with planning, which was backward-looking, based on the "achieved level". Moreover, there were implicit incentives to maximize waste, since wages were paid on the basis of output, which was measured as a multiple of raw material inputs, and there were no incentives to introduce cleaner or more efficient technology. And the terror and propaganda system and Russia's vast space, respectively, prevented any public outcry about the level of pollution and helped to hide the problem.

Hence, it seems plausible that pollution has had a major long-term deleterious effect on health. However, we do not think it can be held responsible for much of the present rapid

increase in the death rate for two reasons. First, the volume of pollution varies sharply from region to region, and the rise in death rates has been remarkably uniform across the country.

Second, there is no reason why long-term environmental problems should be suddenly now exploding into a rapid rise in mortality. In fact the situation has, if anything, improved since 1985. While the quality of water treatment and supply systems may be falling as capital repairs are not carried out for lack of cash, the enormous problems caused by large-scale industrial pollutants are on the decline, as so many big plants with outdated, dirty technology are cut back or shut down. The total emission of harmful substances into the air fell from 34 million to 28 million tons between 1990 and 1992 (Table 17). If there were any explanatory connection between the two variables, it would be that less pollution is harmful for your health, and that the death rate will fall if we turn the smokestacks on again.

2. **Falling Incomes and Living Standards.** While the emission of pollutants has not deteriorated dramatically in recent years, living standards have fallen substantially under rapid inflation and the crisis in production. While average incomes have recovered some of their purchasing power since the liberalization of prices in January 1992, they still fall far short of their 1991 level. Furthermore, income inequality is widening rapidly, so that average income levels disguise the growing proportion of the population living below the officially determined subsistence minimum.

- *Real incomes up to 1992.* The precise extent of the fall in real income both during 1991 and after the price shock of January 1992 is disputed, as there are several different measures of the consumer price index. The trend, however, is clear. The analysis below concentrates on relatively conservative data from *Russian Economic Trends* (RET), which matches those used by Natalia Rimachevskaya (Institute for Socioeconomic Studies of the Population 1993) and those cited in the first UNICEF "MONEE Report" (Table 18).

December 1991 is often taken as the baseline for measurement of the fall in real incomes during the transition period. There is evidence to suggest that real wages had already fallen considerably during 1991, nominal wages already lagging behind the price level, although some claim wages kept up (Davis 1993b). Although prices were not liberalized until January 1992, regulated prices were raised several times during 1991, most significantly in April. However, as the second column in Table 18 illustrates, this fall only wiped out the leap in the real wage that took place between 1989 and 1990. The average wage for 1991 was still higher than the average wage for 1988. The average real pension, meanwhile, increased dramatically during 1991 (Table 19), averaging 37 percent more in 1991 than in 1990 and



keeping average incomes in 1991 on a par with the average for 1990 (that is, balancing out the fall in real wages). Here, we take 1989 as a baseline, as this avoids making comparisons with either the high 1990 level of the average wage, or the high 1991 level of the average pension.

- *Real average wages 1992-3.* The CPI rose 3.5-fold with the liberalization of prices in January 1992. By December 1992 it had risen by another 7.5 times. The average real wage fell in January to 57 percent of its 1989 level, and by November it had recovered to only 69 percent of its original value. It should be noted that the December figures are misleadingly high due to the traditional payment of a "13th wage", or end-of-year bonus.

During the first half of 1993 the real wage steadily increased, from 65 percent of its 1989 level in January to 75 percent in July, but accelerating inflation in the second part of the year outstripped indexation, bringing the level back down again to 69 percent in November.

Note that the data from the Centre for Economic Conjuncture have real wages fluctuating throughout the period at between 30 and 45 percent of a 1991 base. If these data are accurate, the situation facing workers is catastrophic. But even the conservative data indicate considerable loss of income, with wage incomes averaging 66 percent of their 1989 level in 1992 and 69 percent in 1993.

It should also be noted that these data do not reflect the phenomenon of late or non-payment of wages, a problem which was multiplying throughout 1993 (Table 26). As tight monetary policies have increasingly deprived industries of the credits needed to keep them afloat, industries have reacted not with bankruptcy or mass layoffs, but by building up arrears with supplier industries and debts with workers. Fully indexed wages are promised and recorded, but may not actually materialize for a period of months. This phenomenon is difficult to measure, but it must mean that a worker's real income is in reality somewhat lower than the official level. Table 26 shows that in November 1993 wage arrears composed 21 percent of the monthly wage bill.

- *Real average pensions 1992-3.* Figure 6 illustrates the path of the average pension in relation to its 1989 level and to the relative level of the real wage. At the start of 1992 pensions suffered much more from liberalization than did wages, falling to less than 40 percent of their 1989 level by April. But two big indexations in May and November brought them back up to 67 and 71 percent, respectively. On average in 1992 the real pension was 52 percent of its 1989 level, in comparison with a real wage at 66 percent of the 1989 real wage.

In 1993, however, pensions caught up this lag behind the wage level. Throughout 1993

regular indexation ensured that every three months nominal pensions rose by more than enough to compensate for rising prices. While pensioners have been forced to cope with much greater income fluctuations than have wage-earners (clearly reflected in Figure 6), on average in 1993 their income has been a higher proportion of its 1989 level than has the income of wage-earners, namely, 71 percent in comparison to 69 percent. This may be because pensioners have a high turnout at elections and so greater influence with legislators.

It is true, of course, that, as pensioners start with a lower income than do wage-earners, they are more heavily affected by a fall in income, since there are fewer nonessential goods in their consumption baskets that they can afford to throw out. The next section looks at what has happened to the share of food in average expenditure for both workers and pensioners. We will return to look at the proportion of pensioners thought to live in poverty.

- *Food shares.* Table 20 illustrates the changes in consumer expenditure for blue- and white-collar workers and pensioners since price liberalization. As the price of some essential food products has continued to be subsidized, food shares would have fallen if living standards had remained constant. In fact they have risen since 1991. The share of food in the expenditure of blue- and white-collar workers rose from a 37 percent average in 1991 to 47 percent in January, recovering to 39 percent by August. Since then it has fluctuated gently between 40 and 45 percent, though rising to 50 percent in October 1993.

Unfortunately, we do not have a baseline for pensioners, but in contrast to workers, pensioners' food shares, having declined to March 1992, then rose sharply to reach 79 percent in May. At the end of the year there was a marked fall followed by another increase to July.

Interestingly, pensioners' food shares do not always correspond to changes in the real pension. For example, when real pensions were at their lowest (March 1992), food shares were also relatively low (62 percent). When real pensions were at a high in May 1993, food shares were also relatively high (77 percent). The latter may be because pensioners are using their increased pensions to stock up on foodstuffs as insurance against inflation. Similarly, in the first few months of 1992 pensioners may have been relying on stocks built up at the end of 1991.

- *Income distribution.* Average pensions and wages in Russia have fallen considerably from their pre-inflation levels. But this can only tell us so much about the changes faced by individual families, as average income data aggregate increases in wealth and poverty at the two ends of the income spectrum. Income inequality in Russia is widening very rapidly. The percentage of total wealth controlled by the richest 10 percent was 8.7 times greater than that

controlled by the bottom 10 percent at the end of 1992; by the end of 1993 it was already 10.8 times greater. Table 21 shows the percentage of total incomes controlled by the five income pentiles and gives Gini coefficients up to September 1993, with a forecast for March 1994. Table 22 shows changes in the proportions of the population receiving real incomes equivalent to those of the average in 1991, using data from the Centre for Economic Conjuncture that match less detailed data from Rimachevskaya and *Russian Economic Trends*.

From Table 21 it is clear that, while the income share of the second and third pentiles from the top have remained fairly constant since 1991, the share of the bottom two pentiles has decreased, and the share of the top pentile (and in particular the top 5 percent) has increased. This is reflected in a steadily increasing Gini coefficient.

Table 22 shows the growing share of the population earning less than the 1991 equivalent of 150 roubles. The "survival minimum" was calculated as 200 roubles in 1991 and defined as the level of income guaranteeing the provision of a basic selection of goods and services allowing the satisfaction of fundamental human demands. It is said to be calculated on the base of the cost of the average basket of goods bought by a family with an income below 100 roubles in 1989 (Centre for Economic Conjuncture, "Rossia-1994"). Note, however, that this minimum must have been adjusted downward since December 1991, if the figures in Tables 22 and 23 are reliable. According to Table 22, 11.7 percent of the population had an income of less than 200 roubles in December 1991, which tallies with the evidence of Table 23. However, by December 1992, Table 22 claims that 53.1 percent were earning less than the December 1991 equivalent of 200 roubles, while Table 23 only estimates 28.2 percent to be below the subsistence minimum threshold.

The share earning less than the survival minimum had increased from 3.4 percent in 1991 to over 36 percent by the end of 1992, but it has declined significantly since then. It is notable that the proportion of the population earning more than the equivalent of 400 roubles, after falling substantially in January 1992, has continued to decline. It looks as though some of those who were knocked down from the upper three pentiles into the second pentile from the bottom in January 1992 had slipped into the bottom by the end of the year, while some of those left at the top have slipped into the second from the top. Since December 1992 significant movement has taken place from the bottom pentile back into the second from the bottom, and from the second into the third. Note that, if anything, these estimates understate income inequality, as they are based on Goskomstat Budget Survey data which underrepresent both people in the most rapidly developing parts of the economy and people

on the margins of society (Illarionov et al. 1994).

- *The poor.* Table 23 looks at the very bottom end of the income scale. The proportion of people below a calculated "survival minimum" had grown to 57 percent by March 1992 and was still estimated to have been over 35 percent, or a total of 54 million people, in December 1993. A further rise was forecast for the first quarter of 1994. The proportion of the very poorest, judged to be below a stricter "physiological minimum", that is, the level of income required to provide essential food products, sanitation and hygiene, medicine and shelter, was falling, from 7.4 percent in March 1993 to an estimated 2.8 percent in December. A rise was, however, forecast for the first quarter of 1994.

Who is in this category of extremely poor? The results of a joint World Bank/Goskomstat household survey carried out between July and September 1992 are presented in Table 24. Unfortunately, the poverty line in question corresponds to neither the subsistence, nor the physiological minimum, but what appears to be an average of the two. The poverty line which is cited by *Russian Economic Trends* as being the one used for this survey is given for two points in 1993 in Table 23. RET notes that this is the "subsistence minimum" as calculated by the Ministry of Labour.

What is striking about these data is that they reveal almost 50 percent of children to be living below the poverty level, against a national average of 37 percent. In contrast, only 34 percent of female pensioners and just 22 percent of male pensioners fall below the line (male pensioners are less likely to live alone than are female pensioners). A dramatic 72 percent of families with three or more children, and 47 percent with two or more, fall below. These data do, however, ignore economies of scale in multi-member households. Families with an unemployed or disabled member are also at risk.

- *Social transfers to the poor.* In this section we consider the financial safety net available to the very poor: minimum pensions, child benefit and unemployment benefit. Table 19 shows the developments in the minimum pension since December 1991. The minimum pension has been quite well protected with respect to the average wage. In 1992 it did not fall below its 1989 level of 19 percent of the average wage. In 1993 several times it fell as low as 14 percent, but indexation ensured that it picked back up to 25 percent at regular intervals.

Very few pensioners (an estimated 100,000) actually receive this "minimum pension". The actual minimum pension for an individual is the official minimum pension, plus 1 percent for every year worked in excess of 20 (women) or 25 (men), plus an earnings-related supplement received by about 60 percent (Illarionov et al. 1994).

Table 25 shows what has been happening to social assistance to families with children (child benefit) as a percentage of the average monthly wage and helps explain the extent of poverty among families with several children. Benefits for children of all ages fell rapidly after January 1992, becoming almost negligible by September 1993. The decline in child benefits is a result of the fact that they have been approximately linked to the minimum wage, which has been allowed to erode significantly (Table 18). A new system introduced in January 1994 has begun to restore the balance, though the ratio to the average wage has still not reached the level of January 1992.

Unemployment benefit is calculated on the basis of past earnings, but the speed of inflation means that in practice all those receiving unemployment benefit receive the minimum wage. (Complicated qualification requirements mean that not all those not working receive benefit.) In theory this should not yet be a serious input into poverty because of the limited numbers registered as unemployed (Table 27).

In practice, however, the numbers are far greater than those recorded. There are several reasons why. First, it is in the interests of firms to keep workers on extremely low (or no) pay, rather than to lay them off, and, second, those who are laid off do not bother going along to an unemployment office to register. The excess wage tax, calculated on the level of the average wage paid out by a firm, provides a big incentive to firms to keep unneeded workers on. By paying them a minimum wage, they can bring down their total per capita wage bill (Shapiro and Roxburgh 1994). The bureaucracy involved in registering as unemployed and the size of unemployment benefits act as disincentives to effectively unemployed workers to register as such. Furthermore, there are often noncash benefits attached to remaining on the official payrolls of a firm which is not actually paying you anything, such as child care services and subsidized meals. So, though the exact extent of effective unemployment is very difficult to measure, the low figures represented in the table are misleading.

3. **The Relationship between Incomes and Mortality.** The substantial changes in living standards experienced by Russians in recent years must surely be a key factor in explaining changes in health status. In this section we try to find a causal mechanism through which falling incomes may be affecting mortality.

- *Nutrition.* The most obvious causal route is through changes in nutritional status. There are three ways in which the mortality of Russians may be affected by their diets. First, these diets are traditionally very high in fats and meat proteins compared to those in other



countries (Tulchinsky et al. 1993), creating a high exposure to cardiovascular problems. Climbing death rates from heart and circulatory diseases since the 1960s may be in part the result of higher meat consumption as average incomes climbed. Second, Russian diets are short on fresh fruit and vegetables, making for weaker immune systems and greater openness to scurvy and rickets. Third, straightforward insufficiency of food among certain sectors of the population could lead to increased susceptibility to certain diseases or even in the extreme to starvation.

For nutrition to be a good explanation of changes in mortality in recent years, however, we would expect to see dramatic changes in recent food intake. Unfortunately, Goskomstat data on nutrition are inconsistent and thus unreliable. In particular, the data we present in Table 30 are out of line with the averages in Table 28. If we are to believe the data in Table 28, we see overall consumption falling between 1991 and 1992 and then rising again somewhat to 1993. Table 28 shows the changes in the average consumption of basic food products between 1991 and 1993. Bread, potato, egg and fat consumption rises steadily. Consumption of all other products falls between 1991 and 1992. The decline in consumption of sugar and meat may have been a healthy change, though the poorer quality of cheaper meat substituted in low-income diets makes it difficult to judge. However, by 1993 sugar had surpassed its 1991 level, and meat consumption had risen by 11 percent. Egg consumption had risen by 28 percent, and milk by 3 percent. Fruit consumption was also rising, but fish and vegetables remained at the 1992 level.

These average consumption data give no strong reason to predict serious changes in mortality for any of the three reasons above. It may be that diets became (briefly) less fatty and less sweet, while decline in consumption of healthier foods fell somewhat, but not dramatically and not for a long period of time. The average Russian diet between 1991 and 1993 was far from ideal, but it was not so very different from usual as to be able to explain major changes in mortality.

However, as with average income data, overall consumption figures are not particularly useful, except as a general indicator of healthy (or unhealthy) lifestyles. Table 30 gives the last available breakdown of food intake by income group. As mentioned, it is difficult to know how seriously these data can be treated.

Beyond 1992, we can only estimate changes in the food intake of different income groups on the basis of income data. Table 29, which shows food consumption by capita for different income groups in 1991, can be combined with Table 22 to give us a broad indication

of what may have been happening to families' consumption under conditions of falling real incomes. In 1991 we have a total of 3.4 percent of the population in the lowest income division on Table 22. By December 1992 we have over 36 percent of the population in this group. The proportion of the population in the second lowest income group over the same time period similarly grew from 8.3 to 16.7 percent. Simultaneously, the percentage of the population in the top income group fell from 37.3 percent in 1991 to 9.8 percent in December 1992. This dramatic rise in the proportion of the population in the lower income groups suggests that the stable figures for average consumption (if correct) mask growing inequality in consumption between rich and poor. If this is the case, it is possible that higher fat and meat protein consumption among the new rich exists alongside increased malnutrition among the poor.

However, it is important to remember that additional mortality is predominantly affecting not the old or the very young, but people of working age. This makes it more difficult to make a deterioration in diet responsible for the mortality rise, since it does not explain this differential impact of the rise. It is the young and the old who are most likely to suffer from malnutrition, both as they are more likely to live in poor households and as the most vulnerable members of those households, although adults may have higher nutritional requirements than the old and be prepared to give the young priority. It is, moreover, unlikely that malnutrition would have such an immediate impact on mortality.

- *Unemployment, job insecurity and the stress of change.* If increased mortality cannot be conclusively tied to the economic effects of transition via changes in food intake, can there still be a link between the two phenomena? One explanation is that rising death rates are a result of the stress induced by the upheaval of society: the "reflection of a social crisis of the transformation" (Shapiro 1994, see also Ellman 1994). Such an explanation can be generally tied to the loss of purpose and coherence caused by the breakdown of traditional social structures. More specifically, we would like to emphasize the possible impact on health of economic insecurity due to the actual and potential loss of wage-income.

Why should unemployment kill? A job, besides providing an income, provides an individual with a time structure to the day, regularly shared experiences, goals and aims which transcend their own, a status and identity, and an activity (Beale and Nethercott 1985). It is plausible to think that the loss of income and these other functions of work adversely affects the mental and physical health of those made redundant.

Several studies on sections of the British population have confirmed this link (Smith

1992 and references, particularly Beale and Nethercott and Moser et al.). These studies identify four characteristics of the relationship. First, a decline in health status has been recorded from the moment the job is no longer secure and not just from the moment of redundancy (Beale and Nethercott 1985). Second, increased morbidity and mortality is due to an increase in chronic problems, particularly circulatory diseases and lung cancers, and an increase in external deaths, including suicides (Moser et al. 1987). Third, the highest risk groups are men of working age over 40 (Beale and Nethercott 1985). Fourth, there is a rolling ball effect, such that the impact on the individual increases with the extent of unemployment (Moser et al. 1986).

All four of these characteristics fit suggestively with the Russian case. First, as we have pointed out, official unemployment is misleadingly low. Many workers are suffering from part-time layoffs and delays in the payment of wages, but kept on the books because of the tax benefits of a low average wage. More importantly, the threat of mass unemployment hovers ominously. In May 1994 the ZiL truck factory became the first to announce mass layoffs, in which an estimated 20,000 of the 80,000 ZiL workers would lose their jobs during the course of the year. On 14 July the new bankruptcy law was applied for the first time to three firms. There were rumours mid-July 1994 that, by 1995, 2,000 firms would be declared bankrupt and 15 million workers made redundant (*Moscow Times*, 15 and 16 July). Since unemployment appears to be a health risk from the moment it becomes a real threat, it is a risk factor affecting a large and growing percentage of the Russian population.

Second, the excess mortality profiles for unemployment in the British studies and for Russia since 1992 are comparable: particularly sharp rises in external and circulatory causes of death. There has even been a sharp increase in lung cancers, largely hidden in the cancer total, as these have risen as stomach cancers have fallen.

Third, the most affected group in Russia, working-age males over 35, is broadly the group the British studies found to be most at risk after unemployment.

Finally, the multiplied increase in the negative health impact of unemployment with the increase in the volume of unemployment may provide a clue to the unprecedented rise in Russian death rates. The collective shock of looming unemployment is much greater than in recessions in other industrialized countries, because it is affecting a higher proportion of the working population and because it is a traumatic break with expectations formed in a period of fully guaranteed employment and income.

This is, of course, inconclusive, and one must be very wary in Russia, as explained,

when measuring unemployment, let alone trying to quantify the threat of unemployment. Moreover, neither the comparative rise in open unemployment in Eastern Europe to 12-18 percent, nor the long period of high unemployment during the Great Depression were accompanied by comparable rises in mortality.

One possible objection to this account, making the economic insecurity of (potential) loss of wage-income the key explanatory factor, is that it ignores the fact that more women have been made redundant and are more at risk of being the first to lose their jobs. This objection can, we feel, be countered. Women are much more concentrated in areas, such as retailing and banking, that are expanding, and men in the heavy industries most under threat. In addition, Russia is still a very chauvinistic society, in which the woman is solely responsible for domestic duties and the man is the formal "head of the household" with attendant social dignity and position. The unemployed woman loses only half her social role; she retains the full-time task of keeping house and family in order and a meal on the table. When the man loses his job and his income, he, in contrast, loses his function within the family and what he may feel to be the basis of his social position. It is plausible that this prospect affects him much more deeply than it does his wife.

### **Lifestyles**

Part of the reason the unemployment argument examined above is quite convincing in the Russian case is that the diseases likely to be induced by stress coincide so perfectly with those in which Russia has seen such a dramatic increase. In particular, diseases of the heart and circulatory system have shot up, as have deaths from "external causes". The link between stress and deaths from external causes in particular is an indication that it is not possible to draw a distinction between the factors pushed on the individual from the outside and those she chooses for herself; circumstances themselves will have a crucial impact on the decisions people make about the way they live their lives.

In this section, then, we examine those deaths caused directly by individual decisions, but we remember that these decisions can often themselves be traced back to external circumstances which push people toward desperate and self-destructive behaviour.

1. **External Causes.** Two examples of causes of death that are clearly related to choice and lifestyle are alcohol poisoning and violent deaths, such as suicide and murder. Alcohol poisoning among males accounts for almost 5 percent of the increase since 1989, and, while

alcohol poisoning among females is still insignificant in terms of total numbers, in 1993 it claimed almost four times as many lives as it had in 1989. Similarly, suicides rose by 50 percent among men and 20 percent among women over this period, and murder by 150 percent among men and 120 percent among women. (Increased murders explain almost 5 percent of the total rise in mortality 1989-93.)

Deaths from external causes in Russia have always been relatively high. Work by the Centre for Demography and Ecology (Shkolnikov et al. 1994) compares mortality rates from total external causes and individually from poisoning (including alcohol poisoning), road accidents, suicide and murder in Russia, Hungary, France, Japan and England and Wales between 1970 and 1991. For men, Russia's record is strikingly worse than that of the other countries in every area except suicides, for which Hungary has the highest rate. (However, pre-1985 suicide data are not available for Russia.) The number of male deaths from poisonings per 100,000 in Russia falls no lower throughout the period than five times that of its nearest rival (again Hungary) and in 1980 peaks to a level of 60 deaths per 100,000, compared with 5 deaths per 100,000 in Hungary. For murders, Russia's record is also extremely poor. In 1970, murders per 100,000 amounted to 11 in Russia, compared with 1 in Japan, France and England/Wales (no data for Hungary), and by 1979 they had reached 20 compared with 3 in Hungary.

For women the data are not much more encouraging. While deaths from total external causes are higher in Hungary than in Russia (a reflection of high numbers of suicides and road accidents), Russia outstrips the field again for poisonings and murders. Poisonings reach over 14 per 100,000 in 1980, compared with less than 2 in Hungary, while murders in 1980 in Russia total over 7, compared with less than 2 in Hungary (Hungary again being the closest rival in each case).

What this shows is that violent and alcohol-related deaths are by no means a new phenomenon in a newly liberated Russia. They cannot be linked to the sudden lifting of tight totalitarian controls, as they were very much a part of life under the Soviet regime. On the other hand, a comparison of the data presented by the Centre for Demography and Ecology with more recent data on external deaths does indicate a substantial qualitative change. From 1985 to 1986/7 we see a substantial fall in several of the indicators (poisonings, murders, male suicides) and from 1987 a sharp reversal. If we take only data up to 1991, it is possible to see this deterioration as largely the after-effect of the anti-alcohol campaign: the cancelling out of the mid-1980s' improvement.

Once data from 1992 and 1993 are considered, however, it becomes clear that the deterioration has not stopped with the reassertion of a long-run trend. The death rates from various causes of external deaths, such as murders and poisonings, male and female, jumped from a level comparable to their previous peaks in 1980 to a dramatically higher level. Male murders, for instance, jumped from 25 per 100,000 in 1992 (substantially above the previous 1980 high) to just under 50 per 100,000 by 1993. The overall male death rate from external causes had caught up with its 1980 level by 1992, reaching almost 290 deaths per 100,000. By 1993 it had jumped to 377.

Economic and social reform, then, appears to have had a large and negative impact on mortality from external causes. One notable thing is that these deaths are much higher in the northern and northwestern industrial regions and in Eastern Siberia and the Far East, where life is colder and bleaker and prospects even fewer than in the regions of the South West. Further, alcohol is likely to be a major contributing factor in all deaths from external causes, given the rise in alcohol poisoning and the close relationship in the past between alcohol consumption and deaths from external causes. The Gorbachev anti-alcohol campaign, then, while mocked in the former Soviet Union as a hopeless failure, was beyond doubt largely responsible for the significant fall in the mortality rate in the mid-1980s (see Tarschys 1993).

In addition to the rise in deaths from external causes which can be plausibly linked to consumption of alcohol, deaths directly caused by *alcoholism and alcoholic psychosis* rose substantially between 1989 and 1993 (over 3.5 times for men, 2.6 times for women). The data which we have make it difficult to identify alcohol-related liver and heart diseases over the period in question, but we do know that cirrhosis of the liver rose from 94 deaths per 100,000 in 1988 to 111 deaths in 1992, an 18 percent rise (Goskomstat 1994c).

It is, however, difficult to tie the increase in alcohol-related deaths to an increase in the consumption of alcohol, as consumption of alcohol is very difficult to measure. Data exist only for total sales of alcohol through what until 1989 are called "official outlets" and from 1990 to 1992 "commercial trading enterprises". What these data show is that total sales of alcohol through these outlets fell from a peak of 11.22 litres per head of population over the age of 15 to 4.84 in 1988 (this is the period of the anti-alcohol policy) and then rose slightly over the next few years. In 1992 we actually see a fall in total sales over 1991.

However, first, these figures tell us nothing about consumption of "samogon" (homebrews), which is substantial. Vladimir Trembl estimates, for example, that between 1984

and 1988 samogon consumption rose from 3.39 litres per adult head in 1984 to 4.88 litres in 1988, making up slightly for the fall in official sales (Tarschys 1993). Of course, samogon will generally be stronger and more dangerous than commercial forms of alcohol. It was not unknown during the anti-alcohol campaign for people to drink brake fluid and household detergent.

Second, the figures do not cover consumption of alcohol purchased through unofficial outlets, often smuggled in. It is not clear what is meant by a commercial trading enterprise, but from 1992 it must have become much more difficult to keep track of all the alcohol trade. Thus, while sales data may have been a good indicator of total consumption under the centralized regime of the 1980s, they are less reliable now.

Finally, even if the sales figures given are an accurate indication of total consumption, this tells us nothing about the distribution of consumption. It is compatible with falling total consumption that more people are "binge"-drinking and overdrinking. It may be that there has been a fall in holiday celebration and family drinking offset by a rise in alcoholism. The CPI for alcohol has risen considerably less rapidly than has the CPI for other goods since December 1992 (Goskomstat 1993b), which means that the dangerously heavy drinkers with CPI-indexed wages can now afford to be more dangerous than ever.

2. **Other Lifestyle-related Causes.** Russians are extremely heavy *smokers*. Epidemiologists estimated in the late 1980s that tobacco was an associated cause of death for 40 percent of deaths among middle-aged male Russians and that, of 73 million men, 21 million to 27 million would die from tobacco-related diseases (Tulchinsky et al. 1993). Unfortunately, however, there are no recent data on tobacco consumption. The only data which we have are on production, and these suggest, if anything, an improvement in the smoking situation. Production of "pappirossi", the strong, filterless Russian cigarettes, fell between 1980 and 1985 from 83 billion to 57 billion and then further to 32 billion by 1992 (Goskomstat 1993b). This, of course, says nothing about cigarette consumption. Production of domestic cigarettes rose, though not by enough to compensate, and, more significantly, opening markets have meant an influx of foreign cigarettes. But it is an indication that the cigarettes Russians are smoking now may be doing them less damage than the cigarettes they used to smoke.

On the other hand, lung cancers<sup>1</sup> have risen fairly noticeably for men (34 percent between 1989 and 1993), although only very slightly for women. Cigarette smoking could also be responsible for some of the rise in coronary diseases. However, it is difficult to see why cigarette smoking should suddenly have started increasing sharply over the last few

years. Smoking may be to blame for a part of the long-run deterioration in mortality in Russia, but without evidence on consumption we cannot reach any conclusion on its role in the recent, more disturbing, trend.

As noted in the section on nutrition above, Russian *diets* have traditionally been unhealthy ones, based on too much meat and fat and not enough fruit and vegetables. This may well be a contributing factor in poor health, but it is unlikely to be able to explain the big deteriorations in the recent past.

In Section II we noted a sharp rise in morbidity from both *syphilis and gonorrhoea*. After falling sharply throughout the 1980s syphilis reemerged from 1989 to reach 34 cases per 100,000 by 1993, in comparison to 23 in 1980 (an increase of almost 700 percent between 1989 and 1993). Gonorrhoea, more widely spread, also fell throughout the 1980s and then began to climb, reaching 237 cases per 100,000 in 1993 in comparison to less than 200 in 1980.

While rising morbidity from sexually transmitted diseases cannot be held responsible for any part of the rising mortality rate, it represents an extremely disturbing trend, especially in the light of AIDS, which may soon be following in the footsteps of its less lethal partners. Greater sexual freedom, combined with an almost complete absence of sex education and the lack of reliable and affordable contraceptives, is to blame.

### Health Intervention

The aims of a health care system should be to prevent illness by immunizations, public health campaigns and the like, to cure illnesses and to reduce the pain and preserve the dignity of patients. We shall consider the resources inherited from the Soviet health care system and the changes in transition to see the extent to which the inadequacy of the health care system can be blamed for the rise in the death rate.

1. **The Inherited Health Care System.** The Soviet health care system was developed to provide basic health care for all. Initially, it emphasized mass campaigns to control communicable and infectious diseases using not very trained personnel (Eberstadt 1990). Subsequently, it measured care in terms of beds, buildings and staff provided per capita.

This approach was very successful to about 1965 and saw sharp falls in infant mortality and rises in life expectancy. In the period 1965-85, however, life expectancy and infant mortality failed to improve despite extensive development of the existing system. Thus, the Soviet Union found itself with very high comparative coverage of the population in terms



of beds and doctors per capita and poor comparative health indicators. This suggests an ineffective use of resources.

One plausible theory as to why this was the case is that there was an "epidemiological shift" (Chernichovski et al. 1993) from communicable diseases, which basic health campaigns can prevent, to lifestyle-related, noncommunicable diseases, such as diseases of the heart and respiratory systems, cancers and external deaths. Adequate treatment of these types of disease requires, among other things, a more diversified health care system, public education and investment in modern equipment and training personnel.

Why did the health care system fail to respond to the changing demands made of it? We suggest two reasons. First, command planning tends to need crude inputs such as beds, buildings and staff per capita, since more complicated criteria do not cover all cases and are unadministratable. The consequent system of incentives penalizes any diversion of resources away from maximizing extensive growth to improving quality. Second, health was in the "nonproductive" consumption sphere of the economy and so was given low priority, being financed on the "left-over" principle of financing, that is, getting what was left over after the military and heavy industry had taken their share. Health thus got a comparatively small proportion of GDP, 3.6 percent for health care and physical culture combined from 1970 to 1989 (Rozenfeld 1991), and did not have the money for expensive investment in quality. In 1991 Russia spent 2.6 percent of GDP on health, as opposed to 5.9 percent in the UK, 7.5 percent in Germany and 12.1 percent in the US (Goskomstat 1994e).

2. **Reform.** It has been suggested that poor health indicators, and in particular falling life expectancy and rising age-specific mortality rates as revealed in unreleased Ministry of Health data, were one of the key motivations behind the anti-alcohol campaign and perhaps of perestroika itself. And clearly, if the Soviet system was justified on the basis of its achievements, and these include its massive public health gains between 1930 and 1960, then failure to keep up the improvements, both vis-à-vis "the achieved level" and compared with the advances in public health in the capitalist world, demanded an urgent response. First the information was simply suppressed; infant mortality rates and age-specific mortality rates were deliberately omitted from statistical yearbooks in the 1970s (Davis and Feshbach 1980). Then, a change of policy was tried.

There have been two separate phases to reform (Davis 1993a, Chernichovski et al. 1993). The first, under the Soviet Union, saw local experiments in self-financing and attempts to increase the proportion of Government expenditure allocated to the health care system, but

essentially a maintenance of the centralized extensive growth model. The second, with the end of the Soviet Union, has seen a number of major policy changes which shift decision-making powers away from the Ministry of Health: a switch to medical insurance, a switch to local authority financing, and a massive fall in central imports of drugs. There has also been a number of less intended changes in the second phase: a haemorrhage of personnel, an abrupt halt to capital investment, an absolute decline in the stock of beds and buildings, and a fall in the output of the medical industry.

The key feature of the reforms is that health care is now largely a local responsibility, so changes are going to vary across the country. This suggests that reform changes are not responsible for the mortality rate increase, because of the uniformity of the rise in death rates (unless, of course, all health authorities performed equally poorly).

3. **Financing.** There are two separate sources of confusion in health care finances at the moment. The first is that calculating a budget in a situation of unpredictable and very high inflation is very difficult, since you tend to get figures wrong, and getting them wrong means over- or undershooting by a huge amount. The second is the administrative shift in the source of financing from a Federal to an "oblast" level, which has led to substantial chaos in finances, as well as the problem of making comparisons across different systems. This is illustrated by the fact that a Health Ministry official, on being asked for data on health finances, laughed and said, "nobody knows".

Russian expenditure on health care was officially a very low proportion of GDP, since it was a low proportion of the state budget, and there was no private health sector, though substantial health care provision by enterprises and ministries. Reason and anecdote must lead one to suspect that, in a shortage constrained economy with low-paid medical workers and chronic excess demand, a lot of expenditure on health went unrecorded, that is, households spent a lot of money bribing health sector employees.

From the mid-1980s to the end of the USSR in 1991 the share of the budget spent on health increased from 4.6 percent to 5.4 percent, and health's share of GDP similarly rose from 2.9 percent to 3.5 percent of GDP (Table 31). In 1992 in Russia there was a sharp fall in health's share of GDP, despite a continuing rise in budget allocations for health. A sharp rise in budget expenditures on health in 1993 to 8.3 percent of all expenditure only restored health's share of GDP to its 1987 level. This shows that, even if health is not now a higher priority, and it probably is, other things will be sacrificed to maintain health expenditure above a certain level. Because of the recession and the low tax compliance rates the

Government is both short of money, and, because of the growth of the non-state sector, the budget is a smaller proportion of GDP, while health remains very dependent on budget allocations (Chernichovski et al. 1993). So, one would expect health to be under pressure, even if its share of GDP appears to be increasing. The 1994 Federal budget allocates 3.7 trillion roubles for health expenditure, 5.1 trillion roubles for social insurance and 6.2 trillion for medical insurance, which adds up to 2.67 percent of GDP (Gontmakher and Shavishili 1994). This suggests that health expenditure will total over 10 percent of GDP in 1994, if—a very big and unclear "if"—local authorities pay the three-quarters of health costs they were supposed to have paid in 1993.

Before 1992 on the Ministry of Health System, local authorities paid 75-80 percent of health costs, but these were collected and distributed centrally. From 1992 the local authorities collected and financed the health institutions in their areas directly. So, in 1992 the Federal Government supplied 20 percent of the overall health budget and local administrations 80 percent, and this figure falls in 1993 if the funds for the introduction of medical insurance, a Federal responsibility, are overlooked. By 1993, over 81 percent of wages, 81 percent of social insurance contributions and 85 percent of material expenses were met locally. The effects of this change are unclear. It may reduce bureaucracy and increase local control, but it will make redistribution from rich to poor regions harder, and it may lead to a duplication of investment.

The big shift between 1992 and 1993 was an increase in wages, social insurance contributions and the introduction of medical insurance, all at the expense of material expenses, which fell from 48 to 33 percent of total health costs. This shift in financing reflects the cost of financing reforms and possibly the increase in the bargaining power of the large number of underpaid health sector employees vis-à-vis the local, as opposed to Federal, administration. However, given the abysmally low level of the present health sector wage even by historical standards, the rise in the proportion of the wages in the total health budget and their fall in real terms are a worrying sign that official figures do not reflect the real underfunding. The new system of medical insurance is controversial because it will grant health entitlements on the basis of contributions, thereby affecting the access of those without a history of entitlements who are probably in greatest need, that is, the old, the young and the unemployed.

The other shift in health care financing is the gradual relinquishing by some ministries and enterprises of health care systems they had run for their employees.

4. **Capital.** The Russian health care system essentially consists of hospitals, where the average stay is long, and polyclinics, where outpatients go for advice and treatment. The capacity of the first is measured in beds, and the capacity of the second is measured in visits per patient per shift. The number of beds per 10,000 rose slightly from 130 in 1980 to 139 in 1989, fell back to 135 by 1991 and then fell sharply to 120 by 1993. The total number of polyclinics and hospitals fell sharply from 33,200 in 1992 to 30,800 in 1993. New hospital construction has been very hard hit, with a decline of more than one-half between 1990 and 1992 for both hospitals and polyclinics. The change in the rate of new hospital construction is a good indication of the relative affluence of the local health authority, since it is now the first thing to be sacrificed, given that wages can hardly fall any more. By this measure, the local authorities which are under most pressure at the moment are the North, the North West and Eastern Siberian regions, where construction of total new capacity, that is, beds in hospitals and outpatient capacity at polyclinics, fell in 1992 to 28 percent, 40 percent and 34 percent of the 1991 total, respectively.

However, it seems unlikely that the fall in the health care capital stock and its rate of replenishment is a major reason for the death rate rise, because the system was overcapitalized, so it may just be a sign of more efficient allocation of resources that some institutions are being closed and no new ones being built. This conclusion is reinforced by the example of the North Caucasus, the region least hit by the rise in death rates which is also least well provided for in terms of health care capacity: in 1992 the North Caucasus had capacity for 193 outpatients per 10,000 at polyclinics (lowest) and 116 hospital beds per 10,000 population (second lowest after North West, 115) against a national figure of 131 hospitals beds and capacity for 224 outpatients per shift per 10,000.

A far more serious problem may be posed by the inherited chronic shortage of appropriate equipment. A Goskomstat survey in 1988 found that, for instance, 59.8 percent of hospitals lacked radiotherapy equipment, and 90 percent of polyclinics lacked ultrasonic equipment. The small total number of general beds (4.0 per 10,000 in 1992) suggests a lack of bed flexibility.

5. **Personnel.** The extensive growth model of development meant that Russia was very well endowed with doctors and medical personnel. So, for instance, where in 1980 the UK had 14 doctors and 71 nurses and the US had 23 doctors and 53 nurses, in Russia there were 40 doctors and 114 nurses, all per 10,000. The number of personnel grew slowly through the 1980s to peak in 1989, with 47 doctors and 122 nurses per 10,000. Since then it has declined,

reaching, in 1993, 83 percent of the 1989 total for doctors and 76.7 percent of the total for nurses. The fall has been particularly marked from 1993 to 1994, with, for instance, the all-Russia average of 94 nurses per 10,000 being lower than the average in any one region in 1993. This is a significant fall, although it still leaves Russia relatively well endowed with trained staff.

What has caused this haemorrhage, and who is leaving? The reason may be the greater than average erosion of an already low wage. Before price liberalization in January 1992, health sector employees got 0.8 of the average wage, and after liberalization, which reduced the purchasing power of the average wage by about 40 percent, they got only 0.6 of the average wage: a smaller proportion of a smaller wage. Since liberalization, health and education sector employees have been vying with each other for the lowest wage, their bargaining power in a situation of fiscal crisis impaired by the knowledge that they are too civilized to take to the streets. The most dangerous consequence for the health system is that it is the more enterprising who will leave, when they are needed most to carry out reforms.

6. **Other Problems.** There are two other problems which are affecting the health care system. The first is a shortage of medicines caused by the coincidence of a sharp fall in domestic production with a change in the financing of imports of drugs. This, combined with a reportedly chaotic privatization of the pharmacy system, has led to acute shortages of drugs, particularly in some areas and for some groups. The second is a lack of trust in the health care system. This can be inferred from, for instance, the decline in the proportion of people registering as ill and visiting polyclinics since 1985 despite the large increase in morbidity. This could be part of both a general rejection of old authorities and particular distrust of health authorities. The causes of this mistrust are unclear: maybe good treatment requires you to cultivate a friendship or bribe heavily; maybe people are deterred by fear of infection.

7. **Summary: Is the Health Care System to Blame?** So, to what extent can the health care system be held to blame for the rise in death rates? The first point to note is that, despite the erosion of capital and personnel since 1989, accelerating in 1993, Russia remains well endowed in terms of beds and personnel per capita. A second point is that, although it may be true that the health care system has failed to adapt to the changing health care needs of the population and cannot provide good equipment, the right mix of buildings and people, or an adequate selection of drugs, this is not a problem of the transition, but a problem of past investment. Third, death rates have risen by a less than average amount for the elderly

and have not risen at all for children, with the exception of the IMR, which may be simply the result of changes in counting procedure. As these two vulnerable groups are most sensitive to a decline in health care support, it seems unlikely that the health care system is failing seriously now in a way that it was not failing five years ago. Furthermore, a large proportion of the additional deaths is the result of lifestyle-related factors for which a health care system can offer more advice and backup than cure.

There are two reservations. The first is that the rise in communicable and infectious diseases, which were the diseases the whole system was initially designed to prevent and did manage to prevent until their recent resurgence, can be blamed on the health care system. And, second, the chaos in health care finances and the low morale of the profession may not have their negative impact now, when there is still excess staff and capital, but their cumulative effect may make eventual rebuilding of the system more difficult.

#### IV. CONCLUSIONS

The speed and extent of the post-1992 rise in mortality in Russia must be related to the only other dramatic change taking place in Russian society: the social and economic upheaval caused by the transition from the command economy to the market. This upheaval has, among other things, made Russians on average poorer, has adversely affected the health care system and has made employment less secure.

The first two effects of transition—the decline in real average income and the problems of health care—are not fully satisfactory explanations because they have difficulty explaining why particular groups have been most heavily affected.

The group preeminently at risk when real incomes fall is the poor, which includes children and, in a situation of high inflation, the unwaged, hitherto in Russia basically the elderly. But very little of the increase in Russian mortality is due to increased mortality among the young and the elderly. The trends in death rates for the under-15s and the over-60s have seen little change since 1989. The death rate for women over 65 fell between 1992 and 1993, and the death rate for under-5s of both sexes has been steadily improving despite a rise in the infant mortality rate (although this may be because it is only the richer mothers who are choosing to have children now).

The fact that it is not the two most vulnerable groups which account for the rise in death rates also means that this rise is not easily explained simply by a failure of the health care system, since these groups would be the first to suffer if the care system failed to care. The recent resurgence of infectious disease indicates that there are problems in the health care system that may have serious effects in the future, but these problems are not sufficient to explain the current phenomenon.

The recent rise in mortality rates is essentially a rise in the death rates of the population of working age, and especially the males in this group, and this fact makes explanations based on the fall in real incomes and the deterioration of the health care system less compelling. There are, of course, many different contributing factors, but we believe that the best explanation lies in the social and psychological effects of the transition. Anxiety and uncertainty as old structures are dismantled and old securities destroyed have led to sharply increased rates of fatal stress-related diseases, on the one hand, and to violent and self-destructive behaviour, on the other.

In particular, we think that the threat and reality of unemployment, the loss of secure wage-income, are a key causal factor, since these explain why working-age males are most at risk, and why they are dying of external causes and heart disease. This conclusion should be tested by collecting data to compare the mortality rates of groups with different incomes, levels of job security and access to health care.

Unemployment is by no means at its peak in Russia; official unemployment is still extremely low, and the process of closing down the old defunct state industries is only just beginning; the threat of redundancy hovers over much of the Russian workforce. If correct, then, our conclusion is bleak and suggests there is little immediate hope of a diminution of the death rate in Russia.

**Table 1: Crude Death Rates per 1,000 1960-1994**

1960	7.4
1965	7.6
1970	8.7
1975	9.8
1980	11.0
1985	11.3
1986	10.4
1987	10.5
1988	10.7
1989	10.7
1990	11.2
1991	11.4
1992	12.1
1993	14.4
1994	15.8*

Sources: 1960-80 Goskomstat "Yezhegodnik"s 1987-90

1981-89 Rimachevskaya in the Russian Social Science Review 1993 Vol. 34

1990-92 Christopher Davis in "Is Economic Transition..." from "Narodnoe Khozyaistvo Rossiskoi Federatsi 1992" (1992)

1993-94 Goskomstat unpublished data

\* This figure is for the first six months and is not annualized

**Table 2: Life Expectancy at Birth**

	MALES			FEMALES		
	All Men	Urban Men	Rural Men	All Women	Urban Woman	Rural Woman
1961-62	63.8	63.9	63.4	72.4	72.4	72.3
1965-66	64.3	64.6	63.3	73.4	73.1	73.5
1970-71	63.2	63.8	61.8	73.6	73.5	73.4
1975-76	62.3	63.4	58.9	73.0	73.2	72.4
1979-80	61.5	62.3	59.3	73.0	73.1	72.4
1980-81	61.5	62.4	59.3	73.1	73.2	72.5
1981-82	62.0	62.8	59.7	73.5	73.5	72.8
1982-83	62.3	63.1	59.8	73.6	73.7	73.0
1983-84	62.0	62.9	59.4	73.3	73.4	72.7
1984-85	62.3	63.1	59.8	73.3	73.4	72.6
1985-86	63.8	64.5	61.8	74.0	74.0	73.6
1986-87	64.9	65.4	63.2	74.6	74.4	74.4
1987	65.1	65.3	63.2	74.5	74.4	74.6
1988	64.8	65.4	62.7	74.4	74.2	74.4
1989	64.2	64.8	62.6	74.5	74.5	74.2
1990	63.9	64.4	62.0	74.4	74.5	74.2
1991	63.5	64.1	61.8	74.3	74.4	73.9
1992	62.0	62.5	60.7	73.8	73.8	73.5
1993	59.0			72.7		



**Table 3: Crude mortality rates: breakdown by cause (per 100,000 population)**

Cause	1960	1970	1980	1985	1989	1990	1991	1992	1993	1993Q1-2	1994Q1-2	1993 as % 1989	1993 as % 1992	1994 as % 1993
Heart and circulatory system	260.6	412.3	579.5	633.9	599.4	617.4	621.2	646	759.6	771.2	863.2	126.7	117.6	111.9
Cancer	138.4	147.3	163.5	175.5	190	191.8	198	201.8	205.6	206.2	205.8	108.2	101.9	99.8
Respiratory diseases	74.5	87.2	92.1	79.5	58.4	59.3	55.8	57.9	78.1	81.3	87.4	133.7	134.9	107.5
Infectious	87.3	42.6	20.6	17.2	12.7	12.1	12	13.1	17.1	16.5	19	134.6	130.5	115.2
External	85.5	125.4	165	137.6	126.1	133.7	141.6	173	224.5	236.5	216.4	178.0	129.8	109.3
Digestive								32.8	38.1	37.9	41.5		116.2	109.5
Other	92.6	52.8	78.8	88.2	87.4*	102.4	111.4	91*	114.7*	95.2*	150.9*	174.8**	126	
<b>All</b>	<b>738.7</b>	<b>867.6</b>	<b>1099.5</b>	<b>1131.9</b>	<b>1074</b>	<b>1116.7</b>	<b>1140</b>	<b>1215.6</b>	<b>1437.7</b>	<b>1444.8</b>	<b>1584.2</b>	<b>133.9</b>	<b>118.3</b>	<b>109.6</b>

Source (1) 1960-1985 and 1990-91 - from the Federal Ministry of Health of the Russian Federation, quoted in Russia Health Sector Survey, World Bank, Aug. 1993.

Source (2) 1989 and 1992-1994 - Goskomstat unpublished data

\*Calculated as a residue from total crude death rate

1960-91 Digestive diseases included in "other"

[\*\*Digestive added to 1993 "other" for calculation]

**Table 4: Percentage of the Increases in Mortality Explained by Types of Cause**

	1989-93	1992-93	1993-94
Heart and Circulatory System	44.0	51.1	81.8
Cancers	4.3	1.7	1.1
Respiratory Diseases	5.4	9.1	8.7
Infectious	1.2	1.8	1.1
External	27.1	23.2	-3.2
Digestive		2.4	1.2
Other	18.0	10.7	9.2

Source: Calculated from previous table

**Table 5: Percentage Share of Deaths by cause**

Cause	1960	1970	1980	1985	1989	1990	1991	1992	1993	1993Q1-2	1994Q1-2
Heart and circulatory system	35.28	47.52	52.71	56.00	55.81	55.29	54.49	53.14	52.83	53.38	54.49
Cancer	18.74	16.98	14.87	15.50	17.69	17.18	17.37	16.60	14.30	14.27	12.99
Respiratory diseases	10.09	10.05	8.38	7.02	5.44	5.31	4.89	4.76	5.43	5.63	5.52
Infectious	11.82	4.91	1.87	1.52	1.18	1.08	1.05	1.08	1.19	1.14	1.20
External	11.57	14.45	15.01	12.16	11.74	11.97	12.42	14.23	15.62	16.37	13.66
Digestive	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.70	2.65	2.62	2.62
Other	12.54	6.09	7.17	7.79	8.14	9.17	9.77	7.49	7.98	6.59	9.53
All	100	100	100	100	100	100	100	100	100	100	100

Source: Calculated on basis of Table 3

**Table 6: Mortality by Cause of Death - Males 1989-93 (Deaths per 100,000)**

	1989	1990	1991	1992	1993
Intestinal Diseases	1.78	1.35	1.35	1.23	1.64
Tuberculosis all forms	14.31	14.64	15.02	17.37	23.53
<b>Total infectious diseases</b>	<b>20.26</b>	<b>19.55</b>	<b>19.57</b>	<b>21.97</b>	<b>29.13</b>
Cancers of stomach, intestine, digestive system	95.78	98.14	100.14	101.69	92.93
Cancer of lung and respiratory system	84.19	86.23	88.84	90.45	104.16
<b>Total cancers and neoplasms</b>	<b>224.36</b>	<b>230.02</b>	<b>235.54</b>	<b>240.70</b>	<b>247.51</b>
Hypertensive diseases	4.79	6.51	6.29	6.96	8.84
Ischemic heart diseases	269.36	279.91	283.86	304.77	380.75
<b>Total diseases of the circulation system</b>	<b>488.01</b>	<b>510.77</b>	<b>520.01</b>	<b>556.71</b>	<b>687.93</b>
Influenza and pneumonia	14.93	14.31	13.94	17.21	27.54
<b>Total respiratory disease</b>	<b>73.29</b>	<b>75.72</b>	<b>72.44</b>	<b>77.75</b>	<b>104.12</b>
<b>Digestive diseases</b>	<b>30.88</b>	<b>32.17</b>	<b>32.88</b>	<b>38.66</b>	<b>46.52</b>
Diabetes and endocrinal system	4.29	4.53	5.14	5.61	6.68
Anaemia	0.76	0.82	0.83	1.00	1.00
Alcoholic and other psychoses, alcoholism	2.52	3.31	3.52	4.71	9.11
Meningitis, epilepsy, other nervous system	7.95	8.16	8.69	9.46	11.66
Diseases of the reproductive organs	13.02	13.10	13.13	13.84	14.25
Diseases during pregnancy	0.00	0.00	0.00	0.00	0.00
Skin diseases	0.59	0.55	0.56	0.65	0.99
Diseases of the bonemuscle system	0.93	0.91	0.84	1.01	1.15
Inherited anomalies	8.89	8.49	8.16	7.36	7.14
Perinatal deaths	15.07	14.35	12.95	11.48	10.60
Other	10.62	17.72	22.60	30.14	44.51
<b>Total other diseases</b>	<b>64.66</b>	<b>71.95</b>	<b>76.42</b>	<b>85.27</b>	<b>107.10</b>
Motor accidents	47.16	48.63	50.64	49.83	50.09
Alcohol poisoning	15.00	18.47	19.20	30.20	51.01
Other poisoning	12.26	12.70	13.30	15.25	18.47
Accidental drowning	15.33	14.11	16.88	16.04	19.40
Suicide	42.88	43.98	44.54	53.18	66.13
Murder	20.28	23.21	24.94	37.58	49.50
While undergoing treatment	0.38	0.40	0.36	0.42	0.46
Accidental falls	6.57	6.78	7.02	8.10	9.99
Involving fire	3.86	4.48	4.95	6.56	8.48
Suffocation	4.62	4.94	4.55	6.38	9.01
Involving fire-arms	0.57	0.55	0.59	0.83	0.98
Electrocution	3.34	2.92	3.23	3.17	3.32
All others	20.17	21.10	23.76	29.41	39.87
Unspecified harm	15.46	18.57	21.91	32.00	50.07
<b>Total External</b>	<b>207.89</b>	<b>220.84</b>	<b>235.86</b>	<b>288.94</b>	<b>376.78</b>
<b>Total Deaths from all Diseases</b>	<b>1109.34</b>	<b>1161.01</b>	<b>1192.71</b>	<b>1310.01</b>	<b>1599.08</b>

These coefficients were calculated using unpublished data from Goskomstat Russia and population data from UNICEF's statistical files.

The main categories of disease correspond to those in the "Crude Death Rate by Cause" table presented earlier in this paper. The data in the two tables is consistent - male mortality of course has less weight in the total than female because of the population structure.

**Table 7: Mortality by Cause of Death - Females 1989-93 (Deaths per 100,000)**

	1989	1990	1991	1992	1993
Intestinal Diseases	1.28	1.04	0.97	0.89	1.15
Tuberculosis all forms	1.97	1.97	1.98	2.16	2.72
<b>Total infectious diseases</b>	<b>6.13</b>	<b>5.64</b>	<b>5.38</b>	<b>5.32</b>	<b>6.62</b>
Cancers of stomach, intestine, digestive system	75.05	75.79	75.59	75.71	74.62
Cancer of lung and respiratory system	13.56	13.77	13.70	13.96	13.98
<b>Total cancers and neoplasms</b>	<b>161.60</b>	<b>163.86</b>	<b>165.18</b>	<b>168.30</b>	<b>168.09</b>
Hypertensive diseases	7.40	9.42	9.66	9.76	11.65
Ischemic heart diseases	321.93	321.31	312.51	317.22	366.64
<b>Total diseases of the circulation system</b>	<b>702.36</b>	<b>716.10</b>	<b>711.81</b>	<b>727.79</b>	<b>829.91</b>
Influenza and pneumonia	8.65	8.19	7.87	7.43	10.29
<b>Total respiratory disease</b>	<b>45.77</b>	<b>45.37</b>	<b>41.31</b>	<b>40.58</b>	<b>47.22</b>
<b>Digestive diseases</b>	<b>24.90</b>	<b>25.80</b>	<b>25.60</b>	<b>27.72</b>	<b>30.46</b>
Diabetes and endocrinal system	8.45	9.54	10.41	10.99	12.61
Anaemia	0.95	0.88	0.95	1.01	1.11
Alcoholic and other psychosis, alcoholism	1.71	1.90	2.14	2.69	3.78
Meningitis, epilepsy, other nervous system	5.96	6.03	6.55	6.94	8.25
Diseases of the reproductive organs	9.71	10.00	9.85	10.05	10.22
Diseases during pregnancy	1.35	1.20	1.20	1.02	0.90
Skin diseases	0.77	0.76	0.83	0.79	1.06
Diseases of the bonemuscle system	1.86	1.90	1.94	2.05	2.19
Inherited anomalies	6.32	6.03	5.84	5.45	5.11
Perinatal deaths	8.56	7.95	7.07	6.39	6.34
Other	7.28	25.57	39.00	49.33	64.50
<b>Total other diseases</b>	<b>52.93</b>	<b>71.76</b>	<b>85.79</b>	<b>96.71</b>	<b>116.09</b>
Motor accidents	11.84	12.25	13.25	13.01	13.37
Alcohol poisoning	3.38	4.19	4.22	6.61	12.62
Other poisoning	4.26	4.09	4.29	4.45	5.87
Accidental drowning	2.43	2.19	2.59	2.73	3.21
Suicide	10.92	11.15	10.75	11.61	12.86
Murder	5.86	6.50	6.74	9.87	13.49
While undergoing treatment	0.36	0.32	0.32	0.30	0.29
Accidental falls	3.45	3.52	3.05	3.37	3.66
Involving fire	1.80	2.13	2.32	2.81	3.50
Suffocation	1.25	1.29	1.23	1.40	1.88
Involving fire-arms	0.04	0.04	0.03	0.07	0.08
Electrocution	0.42	0.37	0.46	0.39	0.46
All others	5.14	5.33	5.77	7.05	10.02
Unspecified harm	4.18	4.79	5.44	7.75	11.90
<b>Total External</b>	<b>55.35</b>	<b>58.16</b>	<b>60.47</b>	<b>71.42</b>	<b>93.23</b>
<b>Total Deaths from all Diseases</b>	<b>1049.02</b>	<b>1086.69</b>	<b>1095.54</b>	<b>1137.85</b>	<b>1291.62</b>

Source - as previous table

**Table 8: Percentage of the Increase in Total Mortality 1989-93 Explained by Different Causes**

	MALE		FEMALE	
	1993 as a % 1989	% of Total Incr. Explained	1993 as a % 1989	% of Total Incr. Explained
Intestinal Diseases	92.19	-0.017	89.68	-0.020
Tuberculosis all forms	164.39	1.209	138.03	0.110
<b>Total infectious diseases</b>	<b>143.79</b>	<b>1.17</b>	<b>108.07</b>	<b>0.07</b>
Cancers of stomach, intestine, digestive s.	97.03	1.169	99.42	-0.074
Cancer of lung and respiratory system	123.72	1.205	103.10	0.061
<b>Total cancers and neoplasms</b>	<b>110.32</b>	<b>3.19</b>	<b>104.02</b>	<b>0.93</b>
Hypertensive diseases	184.71	0.530	157.37	0.623
Ischemic heart diseases	141.35	14.688	113.89	6.522
<b>Total diseases of the circulation system</b>	<b>140.97</b>	<b>26.37</b>	<b>118.16</b>	<b>18.64</b>
Influenza and pneumonia	184.39	1.649	118.94	0.240
<b>Total respiratory disease</b>	<b>142.07</b>	<b>4.06</b>	<b>103.16</b>	<b>0.21</b>
<b>Digestive diseases</b>	<b>150.62</b>	<b>2.06</b>	<b>122.37</b>	<b>0.81</b>
Diabetes and endocrinal system	155.68	0.314	149.19	0.609
Anaemia	131.17	0.031	116.85	0.023
Alcoholic and other psychoses, alcoholism	360.85	0.857	220.65	0.303
Meningitis, epilepsy, other nervous system	146.59	0.488	138.41	0.336
Diseases of the reproductive organs	109.43	0.170	105.28	0.074
Diseases during pregnancy			66.95	-0.066
Skin diseases	167.80	0.050	137.66	0.040
Diseases of the bonemuscle system	123.71	0.029	117.69	0.048
Inherited anomalies	80.37	-0.219	80.93	-0.178
Perinatal deaths	70.35	-0.568	74.16	-0.326
Other	419.05	4.409	885.96	8.403
<b>Total other diseases</b>	<b>165.63</b>	<b>5.56</b>	<b>219.33</b>	<b>9.27</b>
Motor accidents	106.22	0.421	112.95	0.224
Alcohol poisoning	339.95	4.687	373.90	1.357
Other poisoning	150.58	0.816	137.76	0.236
Accidental drowning	126.58	0.542	132.18	0.114
Suicide	154.24	3.055	117.69	0.282
Murder	244.04	3.810	230.14	1.120
While being cured	123.25	0.012	82.43	-0.009
Accidental falls	151.99	0.449	105.85	0.029
Involving fire	219.68	0.603	194.39	0.250
Suffocation	194.74	0.573	149.99	0.092
Involving fire-arms	172.50	0.054	173.39	0.005
Electrocution	99.22	-0.001	108.23	0.005
All others	197.72	2.576	194.90	0.716
Unspecified harm	323.78	4.506	284.37	1.137
<b>Total External</b>	<b>181.24</b>	<b>22.10</b>	<b>168.44</b>	<b>5.56</b>
<b>Total Deaths from all Diseases</b>	<b>144.15</b>	<b>64.52</b>	<b>123.13</b>	<b>35.48</b>

**Table 9: Percentage of the Increase in Total Mortality 1992-93 Explained by Different Causes**

	MALE		FEMALE	
	1993 as a % 1992	Incr. Explained	1993 as a % 1992	Incr. Explained
Intestinal Diseases	132.83	0.086	129.78	0.063
Tuberculosis all forms	135.47	1.314	125.58	0.133
<b>Total infectious diseases</b>	<b>132.61</b>	<b>1.53</b>	<b>124.55</b>	<b>0.31</b>
Cancers of stomach, intestine, digestive s.	102.42	0.591	98.56	-0.229
Cancer of lung and respiratory system	102.74	0.586	100.18	0.012
<b>Total cancers and neoplasms</b>	<b>102.83</b>	<b>1.60</b>	<b>99.87</b>	<b>0.02</b>
Hypertensive diseases	126.94	0.401	119.34	0.455
Ischemic heart diseases	124.93	16.262	115.58	11.945
<b>Total diseases of the circulation system</b>	<b>123.57</b>	<b>28.11</b>	<b>114.03</b>	<b>24.71</b>
Influenza and pneumonia	159.96	2.192	138.58	0.688
<b>Total respiratory disease</b>	<b>133.91</b>	<b>5.62</b>	<b>116.36</b>	<b>1.60</b>
<b>Digestive diseases</b>	<b>120.32</b>	<b>1.69</b>	<b>109.89</b>	<b>0.67</b>
Diabetes and endocrinal system	119.09	0.230	114.67	0.390
Anaemia	99.80	0.000	109.89	0.024
Alcoholic and other psychoses, alcoholism	193.41	0.933	140.45	0.261
Meningitis, epilepsy, other nervous system	123.24	0.471	118.95	0.317
Diseases of the reproductive organs	102.99	0.097	101.72	0.046
Diseases during pregnancy			88.42	-0.028
Skin diseases	151.31	0.071	134.70	0.065
Diseases of the bonemuscle system	114.32	0.031	106.84	0.034
Inherited anomalies	97.05	-0.041	93.89	-0.077
Perinatal deaths	92.33	-0.178	99.28	-0.008
Other	147.66	3.056	130.76	3.647
<b>Total other diseases</b>	<b>125.60</b>	<b>4.67</b>	<b>1335.50</b>	<b>4.67</b>
Motor accidents	100.52	0.090	102.77	0.092
Alcohol poisoning	168.88	4.416	190.97	1.439
Other poisoning	121.10	0.690	131.91	0.342
Accidental drowning	120.97	0.722	117.62	0.116
Suicide	124.36	2.774	110.77	0.303
Murder	131.71	2.544	136.68	0.869
While being cured	110.21	0.009	99.24	0.000
Accidental falls	123.35	0.405	108.34	0.069
Involving fire	129.28	0.411	124.81	0.168
Suffocation	141.19	0.560	133.97	0.114
Involving fire-arms	118.30	0.033	111.01	0.002
Electrocution	104.61	0.033	116.67	0.016
All others	135.59	2.231	142.06	0.712
Unspecified harm	156.49	3.840	153.64	1.004
<b>Total External</b>	<b>130.40</b>	<b>18.76</b>	<b>130.55</b>	<b>5.24</b>
<b>Total Deaths from all Diseases</b>	<b>122.07</b>	<b>61.98</b>	<b>113.51</b>	<b>37.23</b>

**Table 10: Male Age-Specific Death Rates in the Russian Federation, 1980-93**

Table 10: Male Age-Specific Death Rates in the Russian Federation, 1980-93											
Age Group	(deaths per 1000 in the given age group)							% change		% change 1992 -1993	Absolute change 1989-1993
	1980-81	1985-86	1989	1990	1991	1992	1993	1989 - 1993			
0 to 4	6.5	6	4.8	4.4	4.4	4.3	4.2	87.5	97.7	-0.6	
5 to 9	0.8	0.7	0.72	0.7	0.8	0.73	0.71	98.6	97.3	-0.01	
10 to 14	0.7	0.6	0.61	0.6	0.7	0.67	0.7	114.8	104.5	0.09	
15 to 19	1.80	1.4	1.54	1.6	1.7	1.81	2.11	137.0	116.6	0.57	
20 to 24	3.2	2.5	2.6	2.6	2.7	3.2	3.77	145.0	117.8	1.17	
25 to 29	4.3	3	3.3	3.3	3.5	4.2	4.97	150.6	118.3	1.67	
30 to 34	5.4	3.9	4	4.3	4.5	5.5	6.82	170.5	124.0	2.82	
35 to 39	7.9	5	5.2	5.6	5.9	7.1	9.38	180.4	132.1	4.18	
40 to 44	9.8	8.1	7.1	7.6	8	9.8	15.53	174.7			
45 to 49	13.70	10.7	11	11.7	11.6	13.5	15.53	151.4			
40 to 49			8.89			11.46	15.53	148.0	135.5	6.64	
50 to 54	17.9	16.2	15.2	16.1	16.5	19.4	23.02	130.3	118.7	7.82	
55 to 59	24.70	22.7	22.6	23.4	23.3	25.3	33.44	110.3	132.2	10.84	
60 to 64	35.5	32.8	32.6	34.2	34.6	36.9	42.49		115.1	9.89	
65 to 69	48.80	48	45.3	46.6	47.3	49.4	na	144.1			
70 and over	100.9	97.6	100	103.6	104	105.7	na				
65 and over			80.5			80.81	88.79		109.9	8.29	
All ages	10.2	10.7	11.1	11.6	11.9	13.1	15.99		122.1	4.89	

Source: (1) 1993 and totals for 5-20 years olds in 1989 and 1992 calculated to two decimal places from Goskomstat age-specific death totals / statistical files pops.  
(2) 1981-81, 1985-86, 1990, 1991,1992 in Gomkomstat, Sotsialnoe Razbitiye Rossiskou Federatsii, Moscow 1993

Unfortunately, the lack of population figures for men aged 40-45 and 65-69, two of the most seriously affected age-groups, makes disaggregated calculation impossible.

Source: (1) 1993 and totals for 5-20 years olds in 1989 and 1992 calculated to two decimal places from Goskomstat age-specific death totals / statistical files pops.

(2) 1981-81, 1985-86, 1990, 1991, 1992 in Goskomstat, Sotsialnoe Razvitiye Rossiskou Federatsii, Moscow 1993

Unfortunately the lack of population figures for men aged 40-45 and 65-69, two of the most seriously affected age-groups, makes disaggregated calculation impossible.

**Table 11: Female Age-specific death rates 1980-1993**

Age group (deaths per 1000 in the given age group)	1980-81	1985-86	1989	1990	1991	1992	1993	% change 1989-1993	% change 1992-1993	Absolute change 1989-1993
0 to 4	4.9	4.4	3.44	3.3	3.2	3.1	3.24	94.2	104.5	-0.2
5 to 9	0.5	0.4	0.4	0.4	0.4	0.395	0.42	105.0	106.3	0.02
10 to 14	0.4	0.3	0.32	0.3	0.3	0.34	0.37	115.6	108.8	0.05
15 to 19	0.6	0.5	0.65	0.6	0.7	0.72	0.79	121.5	109.7	0.14
20 to 24	0.8	0.6	0.69	0.7	0.7	0.8	0.98	142.0	122.5	0.29
25 to 29	1	0.8	0.77	0.8	0.9	1	1.13	146.8	113.0	0.36
30 to 34	1.3	1.1	1.02	1.1	1.1	1.3	1.55	152.0	119.2	0.53
35 to 39	2.1	1.6	1.52	1.6	1.6	1.9	2.39	157.2	125.8	0.87
40 to 44	2.8	2.6	2.46	2.4	2.5	2.8				
45 to 49	4.4	3.6	3.29	3.8	3.8	4.2				
40 to 49			2.89			3.43	4.46	154.3	130.0	1.57
50 to 54	6.2	5.9	5.46	5.4	5.5	6.1	7.16	131.1	117.4	1.7
55 to 59	9.3	8.8	8.18	8.6	8.6	9.1	11.35	138.8	124.7	3.17
60 to 64	14.4	13.8	13.23	13.5	13.6	14.4	15.87	120.0	110.2	2.64
65 to 69	22.1	22.7	22.88	22	22	22.5				
65 and over			28.58			30.57	30.36	106.2	99.3	1.78
70 and over	70.2	70.6	73.41	77.9	78.1	79.6				0
All ages	10.2	10.7	10.49	10.9	11	11.4	12.92	123.2	113.3	2.43

Source: (1) for 1980-81, 1985-86, 1990, 1991, 1992, Sotsialnoe Razvitiie Rossiiskoi Federatsii v 1992 gody, Moscow 1993

(2) for 1989, 1993 and 5-20 year olds to 2 decimal places in 1992, Goskomstat death totals/statistical files populations



**Table 12: Causes of Death among Men Aged 35-39 1989-1993**

	<b>1989</b>	<b>1992</b>	<b>1993</b>	<b>1993 as % 1989</b>	<b>1993 as % 1992</b>
Intestinal Diseases	0.19	0.26	0.63	332.3	240.6
Tuberculosis all forms	19.74	23.90	31.10	157.5	130.1
<b>Total infectious diseases</b>	<b>21.65</b>	<b>26.05</b>	<b>34.17</b>	<b>157.8</b>	<b>131.2</b>
Cancers of stomach, intestine, digestive system	19.95	17.94	19.66	98.6	109.6
Cancers of lung and respiratory system	9.83	9.62	10.64	108.3	110.6
<b>Total cancers and neoplasms</b>	<b>46.22</b>	<b>43.67</b>	<b>47.26</b>	<b>102.3</b>	<b>108.2</b>
Hypertensive diseases	1.56	2.68	2.93	187.4	109.5
Ishemicheskaya heart diseases	63.97	80.86	106.04	165.8	131.1
<b>Total diseases of the circulation system</b>	<b>103.42</b>	<b>133.52</b>	<b>179.16</b>	<b>173.2</b>	<b>134.2</b>
Influenza and pneumonia and ORZ	4.98		19.32	387.8	
<b>Total respiratory disease</b>	<b>11.22</b>	<b>15.74</b>	<b>30.35</b>	<b>270.5</b>	<b>192.8</b>
<b>Digestive diseases</b>	<b>16.03</b>	<b>23.30</b>	<b>33.70</b>	<b>210.2</b>	<b>144.7</b>
Diabetes and endocrinal system	2.58				
Anaemia	0.53				
Alcoholic and other psychosis, alcoholism, toksikomania	2.80	5.76	11.92	425.6	207.0
Meningitis, epilepsy, other nervous system	6.67	7.81	11.03	165.5	141.2
Diseases of the reproductive organs	5.84				
Diseases during pregnancy	0.00				
Diseases of the bonemuscle system	0.82				
Inherited anomalies	0.93				
Perinatal deaths	0.00				
Other	10.81				
Motor accidents	63.11	66.69	67.81	107.4	101.7
Alcohol poisoning	26.34	54.31	86.17	327.1	158.7
Other poisoning	16.41	20.24	24.09	146.8	119.0
Accidental drowning	20.58	20.57	25.51	123.9	124.0
Suicide	62.37	77.62	97.70	156.6	125.9
Murder	35.77	46.04	82.09	229.5	178.3
While being cured	0.27		0.53	193.3	
Accidental falls	8.59		13.37	155.6	
Involving fire	4.57		10.81	236.4	
Mechanical suffocation	5.12		11.16	217.9	
Involving fire-arms	0.57		1.32	232.9	
Electrocution	5.19		3.90	75.1	
All others	27.56		52.67	191.1	
Unspecified harm	22.68		69.94	308.4	
<b>Total External</b>	<b>299.14</b>	<b>423.61</b>	<b>547.05</b>	<b>182.9</b>	<b>129.1</b>
<b>Total Mortality</b>	<b>529.18</b>	<b>710.91</b>	<b>938.45</b>	<b>177.3</b>	<b>132.0</b>

Source: Goskomstat

**Table 13: Causes of Death among Men Aged 55-59 between 1989 and 1993**

	1989	1992	1993	1993 as % 1989	1993 as % 1992
Intestinal Diseases	0.70	0.84	2.00	286.2	238.6
Tuberculosis all forms	35.46	41.24	58.97	166.3	143.0
<b>Total infectious diseases</b>	<b>40.48</b>	<b>46.68</b>	<b>66.33</b>	<b>163.9</b>	<b>142.1</b>
Cancers of stomach, intestine, digestive system	275.27	288.47	301.94	109.7	104.7
Cancers of lung and respiratory system	298.49	304.68	313.89	105.2	103.0
<b>Total cancers and neoplasms</b>	<b>674.89</b>	<b>705.55</b>	<b>733.17</b>	<b>108.6</b>	<b>103.9</b>
Hypertensive diseases	14.06	18.27	26.25	186.7	143.7
Ishemicheskaya heart diseases	542.18	646.10	870.11	160.5	134.7
<b>Total diseases of the circulation system</b>	<b>899.17</b>	<b>1057.83</b>	<b>1400.03</b>	<b>155.7</b>	<b>132.3</b>
Influenza and pneumonia and ORZ	21.29		65.44	307.4	
<b>Total respiratory disease</b>	<b>147.15</b>	<b>160.64</b>	<b>234.06</b>	<b>159.1</b>	<b>145.7</b>
<b>Digestive diseases</b>	<b>77.34</b>	<b>97.89</b>	<b>122.75</b>	<b>158.7</b>	<b>125.4</b>
Diabetes and endocrinal system	9.06				
Anaemia	1.45				
Alcoholic and other psychosis, alcoholism, toksikomania	5.32	10.35	22.31	419.2	215.6
Meningitis, epilepsy, other nervous system	12.18	14.74	20.08	164.9	136.2
Diseases of the reproductive organs	21.10				
Diseases during pregnancy	0.00				
Diseases of the bonemuscle system	2.07				
Inherited anomalies	0.99				
Perinatal deaths	0.00				
Other	19.14				
Motor accidents	48.23	56.50	60.83	126.1	107.7
Alcohol poisoning	33.39	64.71	114.61	343.3	177.1
Other poisoning	22.47	29.36	37.39	166.4	127.3
Accidental drowning	12.28	16.56	21.44	174.6	129.5
Suicide	70.46	87.49	116.17	164.9	132.8
Murder	17.93	38.84	56.22	313.6	144.7
While being cured	0.97		1.06	109.1	
Accidental falls	8.90		17.83	200.4	
Involving fire	5.97		16.53	277.0	
Mechanical suffocation	8.92		20.81	233.1	
Involving fire-arms	0.19		0.47	251.0	
Electrocution	2.77		3.58	129.4	
All others	29.19		71.50	244.9	
Unspecified harm	22.96		89.67	390.6	
<b>Total External</b>	<b>284.62</b>	<b>438.70</b>	<b>628.11</b>	<b>220.7</b>	<b>143.2</b>
<b>Total Mortality</b>	<b>2194.96</b>	<b>2614.19</b>	<b>3343.69</b>	<b>152.3</b>	<b>127.9</b>

Source: Goskomstat

**Table 14: Death rate by region, per 1000**

	1985	1991	1992	1993	1993 Q1-2	1994 Q1-2	% change 1991-93	% change first half 1993-94	% change 1991-94
North	9.6	9.2	10.8	13.3	13.2	14.8	123.2	112.1	160.9
N-W	12.9	13	14.2	17.9	17.7	18.7	126.1	105.6	143.8
incl St. P.	12.2	12.5	13.5	17.4	17.2	17.3	128.9	100.6	138.4
Central	12.8	13.1	14	16.6	16.5	18.4	118.6	111.5	140.5
incl. Moscow	12.1	12.9	13.7	16.5	16.3	17.4	120.4	106.7	134.9
Volgo-Vyatski	12.4	11.8	12.5	14.6	14.5	16.5	116.8	113.8	139.8
C. Black Earth	13.6	14.1	14.3	16.3	16.7	18	114.0	107.8	127.7
Volgian	11.1	11.1	11.6	13.4	13.4	15.1	115.5	112.7	136.0
N. Caucasus	11.1	11.4	11.7	13.1	13.6	13.5	112	99.3	118.4
Urals	11	10.7	11.7	13.8	13.8	15.6	118	113.0	145.8
W. Siberia	10.1	9.9	10.7	13.0	13.0	14.5	121.5	111.5	146.5
E. Siberia	9.6	9.7	10.7	13.0	13.1	14.5	121.5	110.7	149.5
Far East	8.4	8.6	9.6	11.8	12	12.6	122.9	105.0	146.5
Kaliningrad	9.2	10	11.1	13.4	13.6	15.6	120.7	114.7	156.0
National	11.3	11.4	12.2	14.4	14.4	15.8	118.0	109.7	138.6

Source: 1985, 1991, 1992 in Meditsinskiy Otsluzhivaniye Naseleniya Rossiyskoy Federatsii, Goskomstat 1993

Black/whitespots: 1985 Pskov 16, Iver 15.5; Magadan 5.2, Murmansk 6.3, 1992: Pskov 16.6; Magadan 7.8.

Worst change: Magadan (+2.6), Leningradskaya oblast (+2.1), Kemerovskaya (=1.7)

1993 and 1994Q1: Goskomstat unpublished statistics

**Table 15: Infant mortality by Cause (per 1000 live births)**

Cause	1981	1985	1989	1990	1991	1992	1993	1993 Q1-2	1994 Q1-2	1993 as % 1989	1993 as % 1992	'94 Q1-2 as % '93 Q1-2
Respiratory diseases	6.61	4.82	2.88	2.51	2.75	2.66	3.18	3.01	2.76	110.4	119.5	91.69
Perinatal cause	5.97	7.77	7.89	8.12	8.11	8.05	8.75	8.58	8.95	110.9	108.7	104.31
Infectious	3.34	2.4	1.53	1.35	1.26	1.17	1.47	1.21	1.25	96.1	125.6	103.31
Congenital anomalies	3.25	3.67	3.75	3.75	3.94	3.86	4.05	3.87	4.18	108.0	104.9	108.01
External	1.06	0.9	0.74	0.72	0.79	0.85	0.98	0.95	0.90	132.4	115.3	94.74
Digestive	0.35	0.21	n/a	n/a	n/a	0.14	0.17				121.4	
Other	0.42	0.36	1.9*	1.18	1.25*	1.32*	1.45*				109.8	
All causes	20.23	19.56	18.1	17.6	18.1	18.05	20.05	19.14	19.52	110.8	111.1	101.99

Source: 1992-94 Goskomstat unpublished data

\*Calculated as a residue

1989, 1990, 1991 calculated from total deaths by cause and live births in Russia Statistical Files: slightly high rates

1981, 1985 from Goskomstat Social Development of the Russian Federation 1992 -same trends as other figures, but low

**Table 16: Incidence of selected illnesses per 100,000 in the Russian Federation**

	1980	1985	1989	1990	1991	1992	1993	1993 Q1-2	1994 Q1-2	1993 as % 1990	1993 as % '94 Q1-2 as % '93 Q1-2
Severe Intestinal Infections	675	772	658	534	547	464	515.2*			96	111
Typhoid Fever	2.6	1.8	0.8	0.6	0.3	0.4	0.6	0.8	1.5	100	150
Other Salmonellosis	42.5	24.5	70.8	70.4	74.2	80.1	68.2	47.7	49	97	85
Scarlet Fever	107	132		83.6	58.1	42.7	51	36.8	46.6	61	119
Diphtheria	0.2	0.8		0.8	1.3	2.6	10.3	3.7	12.1	1288	396
Whooping Cough	4.9	28.8		16.9	20.8	16.2	26.4	10.5	23.7	156	163
Tetanus	0.1	0.07		0.06	0.05	0.06	0.1			167	167
Poliomyelitis	0.01	0.01		0.01	0.01	0.01	0.003			30	30
Measles	145	130		12.4	13.8	12.5	50.1			404	401
German Measles		302			148	98		120.2	285		237.1
Severe Respiratory Diseases	22075	24528		22906	22930	17881	19798.5			86	111
Influenza	4839	5784		3719	4823	2935	3721.1			100	127
Viral Hepatitis	255	227	192.9	227	192	136	132.8	78.5	86.1	59	98
Meningitis	7.3	8.4		4.5	4	3.5	3.6	3	3.5	80	103
Pediculosis	x	x		204	206	227	218.2			107	96
Syphilis	23	9.8	4.3	5.3	7.2	13.4	34.3*	18.5	45.7	647	256
Gonorrhoea	196.6	148.1		128	128.6	169.6	237.4*			185	140
Tuberculosis	47.4	45.2	37.6	34.2	34	35.8	44.75*	27.3	30.6	131	125
Total Illnesses (per 1000)				651.2	667.5	615.6	1089.4			167	177

Sources: 1980, 1985, 1990-2 from Goskomstat "Sotsial'noye Razvitiye Rossiyskoye Federatsii v 1992 godu", Moscow 1993 pp 195,198-9

1989 from Christopher Davis "The Pharmaceutical Industry...", sourced Goskomstat "Okhrana Zdorov'ya v SSSR", 1990,

"Narodnoe Khozaystvo Rossiyskoy Federatsii 1992", 1992, and "Strany-Chleny SNG: Statisticheskii Ezhegodnik" 1992

(CD's figures for 1990 and 1991 correspond to those used above.)

1993 and 1994Q1 unpublished data from the Ministry of Health, Administration of Medical Statistics except asterisks, which are from

Goskomstat Russia "Ekonomicheskoi Obzor: Sotsialno-Ekonomicheskoye Polozheniye Rossiyskoy Federatsii 1993", Moscow 1994

Jan 1994 from Goskomstat Russia: "Statisticheskii Press-Bulleten No. 3", Moscow 1994

First half 1994 and 1993 from Sotsialno-Ekonomicheskoe Polozhenie Rossii Jan-July 1994, Goskomstat, Moscow 1994

\*=Annualized on the basis of January-November figures

NB. The diseases listed are only a selection of the total, not a complete breakdown.

**Table 17: Emission and Control of Harmful Substances into the Air from Industrial Sources**

	1985	1990	1991	1992
Emission, in million tonnes	42.3	34.1	31.8	28.2
Neutralisation of harmful substances:				
in million tonnes	122.4	116.9	111.8	94.9
as a % of total emissions	74	77	78	77

Source: p.287 in Sotsialnoe Razvitiye Rossiiskoi Federatsii, Goskomstat 1993.

**Table 18: Average and Minimum Wages (Roubles per month)**

	Average Wage	Real Average Wage Index (1989=100)	Minimum Wage	Minimum Wage % Average Wage	Real Average Minimum Wage Index (1989=100)
1985	201	85.3	70	35	110
1986	208	86.3	70	34	108
1987	216	88.9	70	32	107
1988	235	96.6	70	30	107
1989	259	100.0	70	27	100
1990	297	109.4	70	24	95
1991	516	97.4	130	25	91
1992	6011	65.8	714	12	29
1993	58346	69.2	5962	10	26
1992 Jan	1438	57.3	342	24	50
Feb	2004	57.3	342	17	36
March	2726	59.8	342	13	28
April	3024	54.7	342	11	23
May	3672	59.8	900	25	54
June	5067	69.2	900	18	46
July	5452	67.5	900	17	41
Aug	5870	66.7	900	15	38
Sept	7379	74.4	900	12	34
Oct	8853	72.6	900	10	27
Nov	10576	69.2	900	9	22
Dec	16071	83.8	900	6	17
1993 Jan	15690	65.0	900	6	14
Feb	18672	62.4	2250	12	28
March	23559	65.0	2250	10	23
April	30562	70.9	4275	14	37
May	37505	73.5	4275	11	31
June	47371	77.8	4275	9	26
July	55995	75.2	7740	14	38
Aug	65400	70.1	7740	12	31
Sept	80900	70.1	7740	10	25
Oct	93000	67.5	7740	8	21
Nov	101495	63.2	7740	8	18
Dec	140650	77.8	14620	10	30

Source: Russian Economic Trends, Vol. 2 No. 4

**Table 19: Average and Minimum Pensions (Roubles per month)**

	Average Pension	Real Average Pension		Average Pension as % Average Wage	Minimum Pension as % Average Wage
		Index (1989=100)	Minimum Pension		
1985	75	93.0	50	37	25
1986	77	93.9		37	
1987	80	96.7		37	
1988	83	99.4		35	
1989	87	100	50	34	19
1990	102	109.4	70	34	24
1991	266	149.0	161	52	31
1992	1613	52.2	1102	27	18
1993	20536	71.2	11328	35	19
1992 Jan	438	50.6	342	30	24
Feb	638	53.9	542	32	27
March	638	40.4	542	23	20
April	738	38.6	642	24	21
May	1383	66.8	900	38	25
June	1383	54.9	900	27	18
July	1383	49.6	900	25	17
Aug	1803	60.8	1320	31	22
Sept	1803	52.5	1320	24	18
Oct	1803	42.7	1320	20	15
Nov	3672	71.2	2250	35	21
Dec	3672	56.7	2250	23	14
1993 Jan	3672	44.0	2250	23	14
Feb	7869	77.1	4275	42	23
March	7869	63.1	4275	33	18
April	7869	54.2	4275	26	14
May	15744	90.8	8122	42	22
June	15744	75.5	8122	33	17
July	15744	61.8	8122	28	15
Aug	29705	92.8	14620	45	22
Sept	29705	76.3	14620	37	18
Oct	29705	63.5	14620	32	15
Nov	41405	74.4	26320	40	26
Dec	41405	66.4	26320	29	19

Source: Russian Economic Trends, Vol. 2 No. 4

**Table 20: The Structure of Consumers' Expenditure:  
Percentage of Expenditure on Different Types of Good**

Blue and White Collar Workers		Pensioners				
All		All	Food	Non-food	Alcohol	Services
1991 average						
100	37.3					
100	33.7					
December 1992						
100	47.4	100	71.3	15.8	5.2	7.7
100	45.8	100	73.8	12.3	7.2	6.8
100	41.9	100	62.1	19	5.8	13
100	41.9	100	69.1	7.2	5	18.6
100	43.6	100	77.8	9.8	4.8	7.6
100	43.4	100	79.8	7.6	5.9	6.7
100	38.4	100	78.7	10.2	6	5.1
100	39.1	100	81.0	7.4	6.7	5
100	44.8	100	80.0	10.9	4.9	4.2
100	44.8	100	77.9	12.6	3.5	6
100	44.5	100	81.0	9.2	5.7	4.1
100	43.9	100	77.9	9.2	7.6	5.4
1993						
100	46.3	100	73.7	7.5	5.7	13.1
100	45.6	100	64.9	8.8	10.1	16.2
100	41.0	100	67.8	22.9	4.3	5
100	43.3	100	68.2	24.4	2.7	4.7
100	41.8	100	76.6	13.6	4.5	5.3
100	41.7	100	77.8	10.6	4.9	6.7
100	41.5	100	81.0	11.8	2.7	4.5
100	39.3	100	74.8	17.2	3.7	4.4
100	43.1	100	77.2	16.8	2.5	3.6
100	50.3	100	69.3	24.5	1.7	4.5
100	46.0	100	70.7	18.8	5.1	5.4
100	45.2	100	71.6	14.9	3.2	10.4

Source: Russian Economic Trends Vol 2 No 4



**Table 21: Distribution of Nominal Incomes among groups of the pop'n with different material wealth (%)**

Income Pentiles	1991	Mar-92	Sep-92	Mar-93	Sep-93	March 94 (forecast)
I (lower)	9.4	8.5	7.2	7.6	7	6.4
II	14	13.4	12.3	12.3	11.6	11.3
III	17.9	18.2	17	16.8	16	16.1
IV	22.8	22.4	23.2	22.8	22	22.8
V (higher)	35.9	37.5	40.3	40.5	43.4	43.4
(including top 5%)	12.7			15.9	18.9	17.7
GINI	0.256	0.278	0.319	0.316	0.344	0.354

Source: Institute for Socio-Economic Studies of the Population: "The Socio-Demographic Situation in Russia", Moscow 1994  
March 1994 Forecast and figures for top 5% from the Centre for Economic Conjunctionure

**Table 22: Changes in distribution of population by income 1991-Nov 93 (1991 prices)**

	1991	Jan-92	Aug-92	Nov-92	Dec-92	Mar-93	Nov-93
To 150 roubles	3.4	15	26	26.6	36.4	30.4	23.9
150-200	8.3	23.5	20	18.2	16.7	18.9	15.6
201-300	26.4	36	26.7	30	18.9	27.5	32.2
301-400	24.6	13.7	16.6	17.1	18.2	15	19.1
400+	37.3	11.8	10.7	8.1	9.8	8.2	9.2
Total	100	100	100	100	100	100	100

Source: Institute for Socio-Economic Studies of the population: "The Socio-Demographic Situation in Russia 1993", Moscow 1994.

**Table 23: Percentage of People Below Various Subsistence Minimums 1991-94**

	1991	1992		1993		1994
	(Monthly av.)	March	December	March	Dec (est.)	March (forecast)
Survival minimum (Rs/capita)	200	1400	5700	10700	62000	98000
Physiological minimum (Rs/cap)	110	800	2900	5400	21000	33500
No. of people below SM (mn)	17	85	42	57	54	59
Percentage of total pop. below SM	11.7	57.0	28.2	38.4	36.2	40.2
No. of pple below PM (mn)	1.4	28	7	11	4	5
Percentage of total pop. below PM	1.0	19.0	4.8	7.4	2.8	3.6
Ministry of Labour SM (Rs/cap)				8069	42800	
Percentage of total pop				35	27	

Source: Centre for Economic Conjunctionure "Rossia 1994", Moscow 1994 except Ministry of Labour Subsistence Minimum  
from Russian Economic Trends Vol 2 No 4

**Table 24: Percentage of individuals living below the poverty level (July - September 1992)\***

<i>Total Population</i>	37	<i>Families with:</i>	
Children 0-6	46	3 or more children	72
Children 7-15	47	2 or more children	47
Young adults	36	1 child	34
Females 31-54	35	a single parent	55
Males 31-60	34	an unemployed member	45
Females 55+	34	a disabled member	45
Males 60+	22	an elderly person	31

\*These are the results of a World bank/Goskomstat survey household survey of July-September 1992, quoted in Russian Economic Trends Vol.2 No. 4.

The definition of "poverty used is the Ministry of Labour's subsistence minimum (see Table above)

It seems to be the half-way point between the subsistence and physiological minimums

There were 0.8 million families with 3 or more children; 2.4 million families with 2 or more.

**Table 25: Child Benefit as % of monthly wage**

	Child<1.5	1.5 - 6 yrs	6 - 16 yrs	6-16 sing. moth.
Jan-92	14.2	10.7	5.9	11.9
Aug-92	8.5	6.8	3.8	7.7
Dec-92	6.2	5	2.8	5.6
Jun-93	8.6	2.9	1.4	3.2
Sep-93	1.5	1.2	0.6	1.4
Jan-94	10.1	7.1	6	9.1

Source: Institute for Socio-Economic Studies of the Population, from Goskomstat

A new system of benefits was introduced in Jan. 1994

**Table 26: Total Wage Arrears in Industry, Construction and Agriculture**

	Total Wage Arrears, end of period (R. bn) Dec 92 prices	Increase in Wage Arrears (R. bn)	Level of Wage Arrears as a percentage of monthly Wage Bill
Dec-92	29		
Jan-93	34	15	7
Feb	33	9	7
Mar	34	12	7
Apr	23	-13	4
May	38	50	7
June	58	82	10
July	46	-6	8
Aug	554	88	9
Sept	64	117	12
Oct	81	202	16
Nov	102	266	21
Dec	82	-74	

Source: Russian Economic Trends Vol.2 No.4

**Table 27: Unemployment (thousands)**

End Period	"Out of Employment"*	Registered Unemployed	Receiving Benefit
Jul-91	351	16	2
Aug	383	25	4
Sept	421	35	6
Oct	474	51	8
Nov	504	64	10
Dec	469	62	12
Jan-92	485	69	18
Feb	554	93	33
Mar	616	118	53
Apr	696	151	74
May	743	177	89
Jun	779	203	108
July	843	248	140
Aug	888	303	173
Sept	921	367	219
Oct	982	442	267
Nov	1011	518	317
Dec	982	578	371
Jan-93	1029	628	411
Feb	1080	692	461
Mar	1097	732	497
Apr	1101	751	514
May	1070	740	499
Jun	1003	717	471
July	989	717	459
Aug	979	714	456
Sept	969	706	449
Oct	994	728	462
Nov	1056	779	506
Dec	1085	835	550

\*This is a measure of the number of unemployed job-seekers registered at the employment exchanges. There are no qualifying conditions. To register as unemployed certain restrictive conditions apply.

Source: Russian Economic Trends, Vol.2 No.4

**Table 28: Consumption of basic food products - average per capita**

	1991	1992	1993	1993 as % 1991	1993 as % 1992
Meat and meat products	68.3	57.9	61.2	94	106
Milk and milk products	348	294.2	318	91	108
Eggs (individual)	229	243	254	111	105
Fish and fish products	14.1	11.5	11.5	83	100
Sugar and sweets	29.1	26.4	32.6	112	124
Vegetables and melons	86.4	78	78	90	100
Fruit and berries	34.5	29.3	34.2	99	117
Bread products	100.6	103.9	110.4	110	106
Potatoes	98.1	106.6	116.7	119	110
Oil and fats	6.2	6.7	8.1	131	121

Source: The Institute of Socio-Economic Studies of the Population, "Sotsio-Demographicheskoye Polozheniye v Rossii 1993", Moscow 1993.

**Table 29: Annual Food Consumption per capita 1991 by families with different aggregate incomes**

	Aggregate monthly per capita income (Rs)				
	Below 150	150.1-200	200.1-400	400.1-500	500+
Meat and meat products	49.9	46.8	58.3	70	83.4
Milk and milk products	268	314	318	567	406
Eggs (individual)	175	189	189	237	272
Fish and seafood	7.2	10.6	10.6	15.6	18.4
Sugar and confectionery	21.3	23.2	23.2	29.9	33.1
Oil and fats	2.9	3.3	3.3	3.7	4.3
Potatoes	102	83	83	99	117
Vegetables and melons	66	71	71	90	109
Bread and farinaceous	106	95	95	97	110
Fruit and berries	18.8	24.3	24.3	38.6	45.1
<b>Income Gp as % pop'n</b>	<b>3.4</b>	<b>8.3</b>	<b>51</b>	<b>16.4</b>	<b>20.9</b>

Source: Andrei Danilin, Goskomstat

**Table 30: Total Consumption per Capita Q2 1992 (Kg/cap/quarter)**

	Monthly Family Income in Roubles					
	<750	750-1000	1000-1500	1500-2000	2000-2500	2500-3000
Meat and meat products	2.12	3.74	5.7	8.13	9.57	11.08
Milk and milk products	11.33	21.51	34.04	44.63	50.99	58.08
Eggs (individual)	9.25	20.74	28.71	39.6	44.7	53.88
Fish and seafood	0.87	1.39	1.86	2.33	2.68	2.87
Sugar and confectionery	4.34	5.38	6.07	6.88	8.03	9.02
Oil and fats	0.74	0.86	1.09	1.24	1.34	1.42
Potatoes	2.43	3.15	4.4	5.33	6.62	6.72
Veg and melons	1.87	3.06	4.35	5.6	6.69	7.32
Bread and farinaceous	28.15	31.27	30.03	26.62	24.93	24.57
Fruit and berries	0.59	0.97	1.26	1.7	1.99	2.34
<b>Income Gp as % of pop'n</b>	<b>11.9</b>	<b>10</b>	<b>21.7</b>	<b>16.8</b>	<b>12.3</b>	<b>8.6</b>

Source: "Budgets of Workers and Farmworkers Q2 1992" (Goskomstat Bureau of Family Budget Statistics 1993)

**Table 31: Health Budget Expenditure in the Russian Federation, 1992-3**

	1992Tot	1992Fed	1992Loc	1993Tot	1993Fed	1993Loc
Health Expenditure, in bl current rouble	341.2	67.4	273.8	1407.9	355.1	1052.8
including wages	128.5	30.6	97.9	593.1	114.9	478.2
including social insurance contribution	48.8	11.6	37.2	225.3	43.7	181.7
including material expenses	163.9	25.2	138.7	463.1	70.1	392.9
including fund for introduction of med	na	na	na	126.4	126.4	0
Health expenditure per capita, in 1000	2.3			9.5		
Health share of total state budget	6.2	1.7	16.8	8.3	3	20.3
Health share of GDP	2.3			3.1		

Source: Chris Davies, The Pharmaceutical industry in the USSR, p.191 (from Byudzhethnoe Poslanie na God 1992, 1993, EBRD (1993))

**Table 32: Health sector wages as a proportion of the average wage**

1991Q1	0.76
1991Q2	0.89
1991Q3	0.77
1991Q4	0.8
1992Q1	0.6
1992Q2	0.68
1992Q3	0.71
1992Q4	0.62
1993Q1	0.71
1993Q2	0.89
1993Q3	0.72
1993Q4	0.66

Source: in Russian Economic Trends 1994, ch.4

**Table 33: 1993 Monthly GDP and consolidated expenditure on health in billion r**

	Health	GDP	% of GDP
Jan	92	4208	2.19
Feb	138	5384	2.56
March	207	6733	3.07
April	232	7616	3.05
May	280	8549	3.28
June	391	9297	4.21
July	393	12813	3.07
August	466	14977	3.11
September	619	17912	3.46
October	684	19330	3.54
November	821	22517	3.65
December	1065	30500	3.49

**Table 34: Indicators of Health Care Performance**

**Hospital registrations and Cures**

	1985	1990	1991	1992	1993
Registered as ill, 1000 people	33969.4	32962	31638.8	30418.5	31602.6
Reg per 1000 population		223	214	205	213
including 14 and unders	6601	6253.1	6131.1	5570.8	
including under 1s	1325.8	1183.7	1159.5	1022.1	
No. of the ill who died, 1000 people	362.2	377.6	372.4	382.3	422.2
including 14 and unders	52.8	38.5	36	32.9	
including under 1s	41.5	30.4	28	25.4	
including under 1s in the first 24 hours at hospital	11.9	9.3	8.8	7.6	
including as a % of all under 1s who die	29	31	24	25	
including those in labour, mother or child, individuals	851	693	880	610	
including deaths from causes other than birth	158	130	320	480	

Source: in Meditsinski Obslyshivanie Haselenie. Goskomstat 1992, p. 175

Source: 1993 from Ministry of Health

**Medical Visits per capita: polyclinics**

1980	10.1
1985	11.1
1989	9.9
1993	9.2

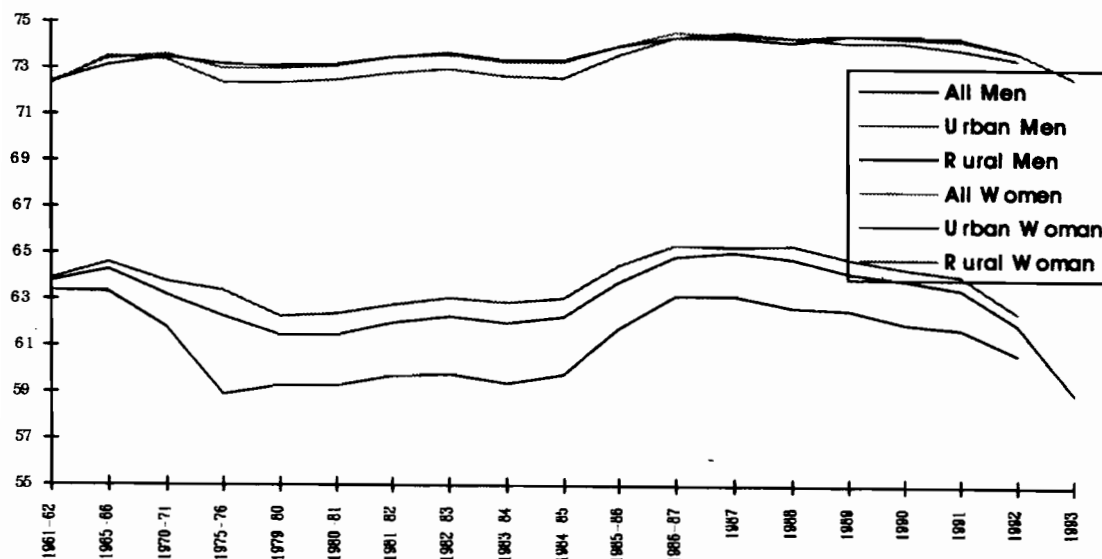
Source: WBRHSS, p.26, 1993 from Ministry of Health

**Hospital use**

	1985	1989	1993
Beds (000)	1937.9	2047.3	
Beds per 1000	13.5	13.9	
No. of Patients	36462	36739	
Average stay	17	16.2	16.4
Occupancy rate	0.88	0.81	0.82
Admissions per 100	25.2	24.9	
Inpatient days per capita	4.3	4	

Source: World Bank, Russia Health Sector Survey, p.31, 1993 from Ministry of Health

Figure 1: Life Expectancy 1961-93

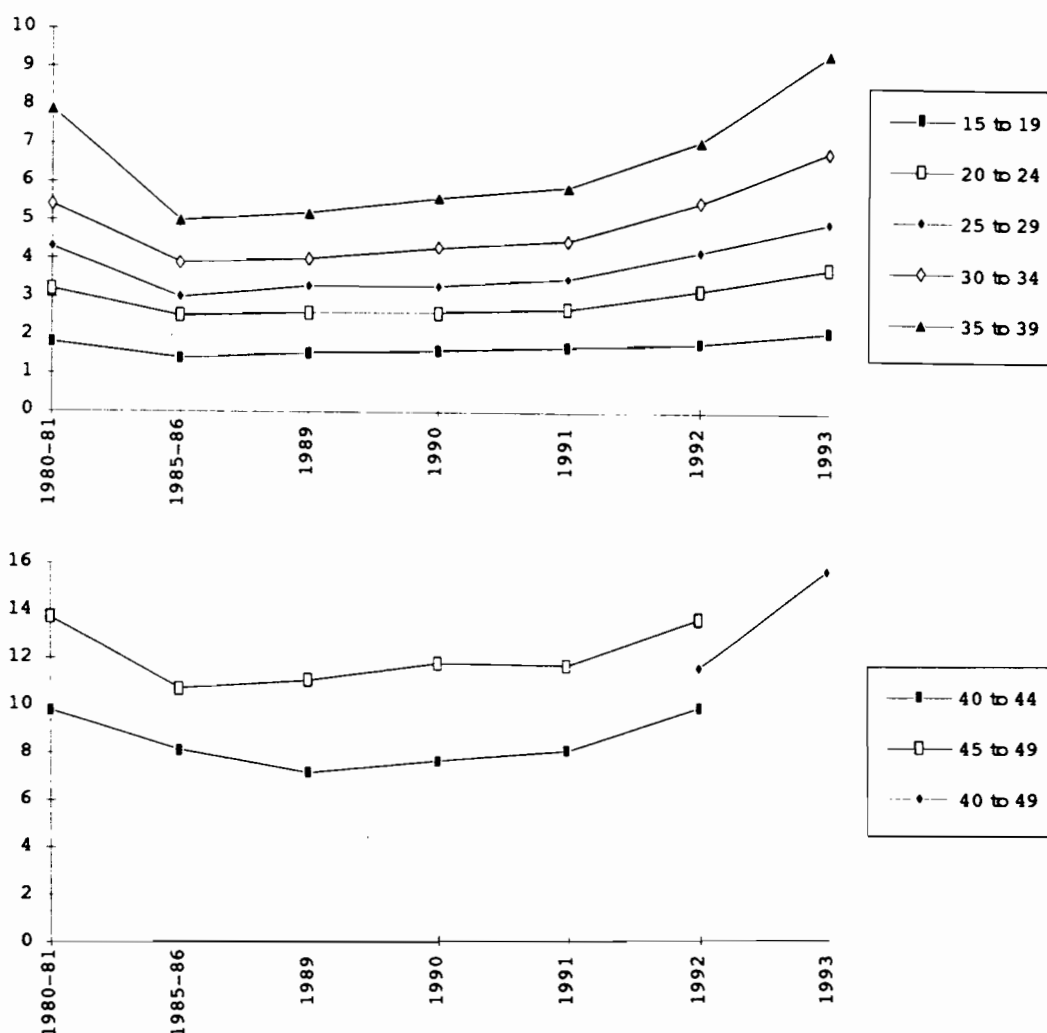


1961-91: Evrasia: *Naseleniye Rossii* 4(12) 1993 (Moscow 1993)

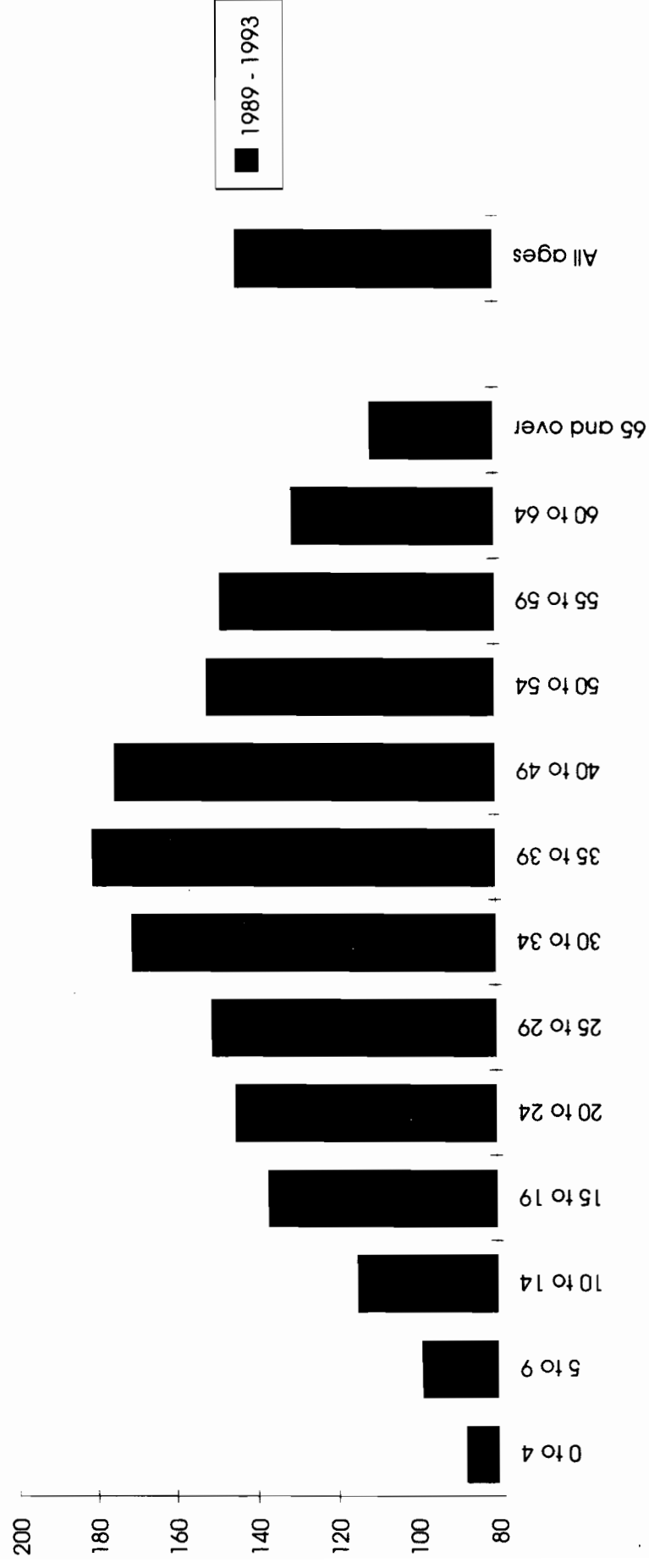
1992: Institute of Socio-Economic Problems of the Population: *Sotsialno-Demograficheskaya Situatsia v Rossii* 1993 (Moscow 1993)

1993: Korolyev and Brui "On Mortality among the Population of Working Age" in *Zdravookhranenie Rossiiskoi Federatsii* 1994/2 (Goskomstat preliminary data)

Figure 2: Male Age-Specific Death Rates for Adults 15-64



**Figure 3: Percentage Change in male age specific death rates 1989-1993**





**Figure 4: Percentage change in female age-specific death rates 1989-93**

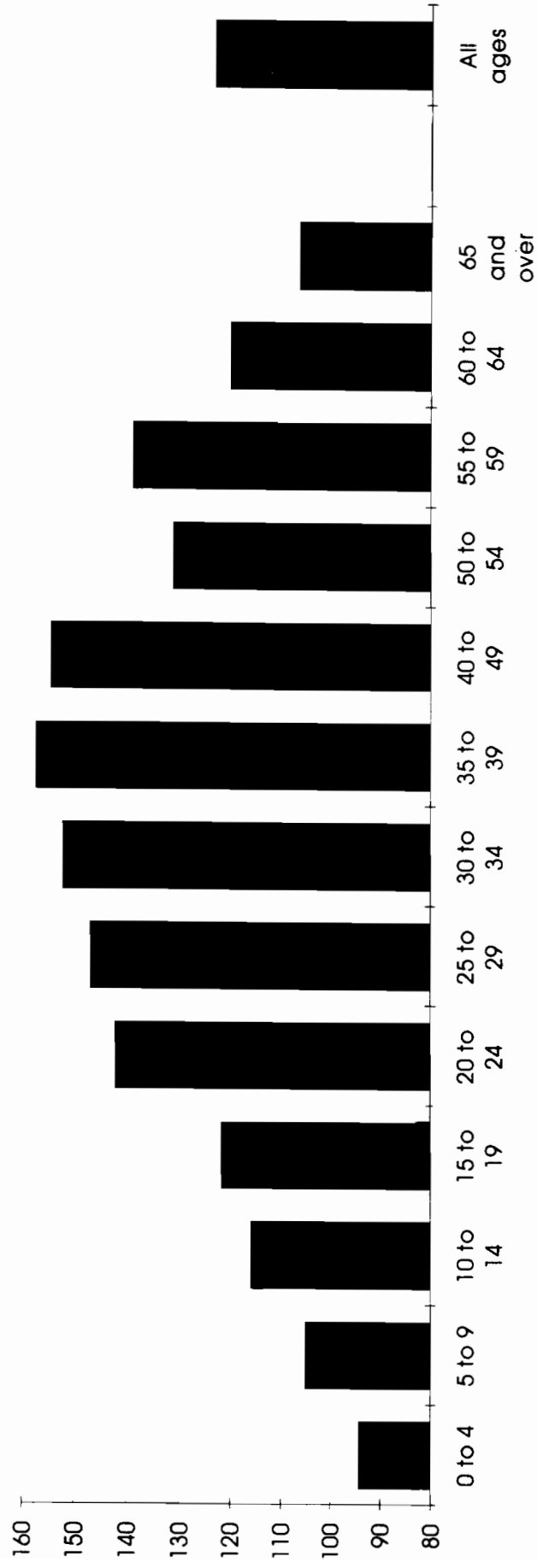


Figure 5: Infant Mortality Rate 1960-1994

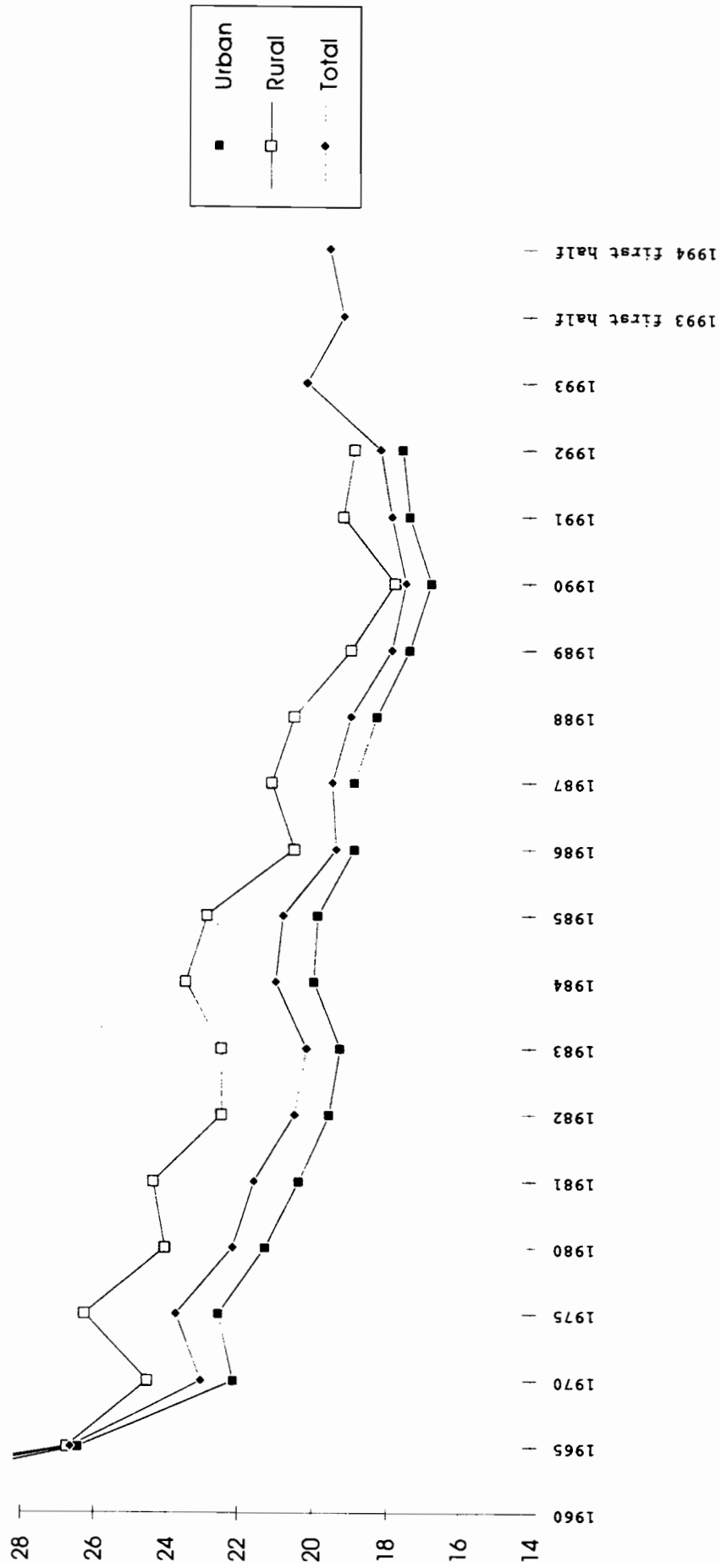
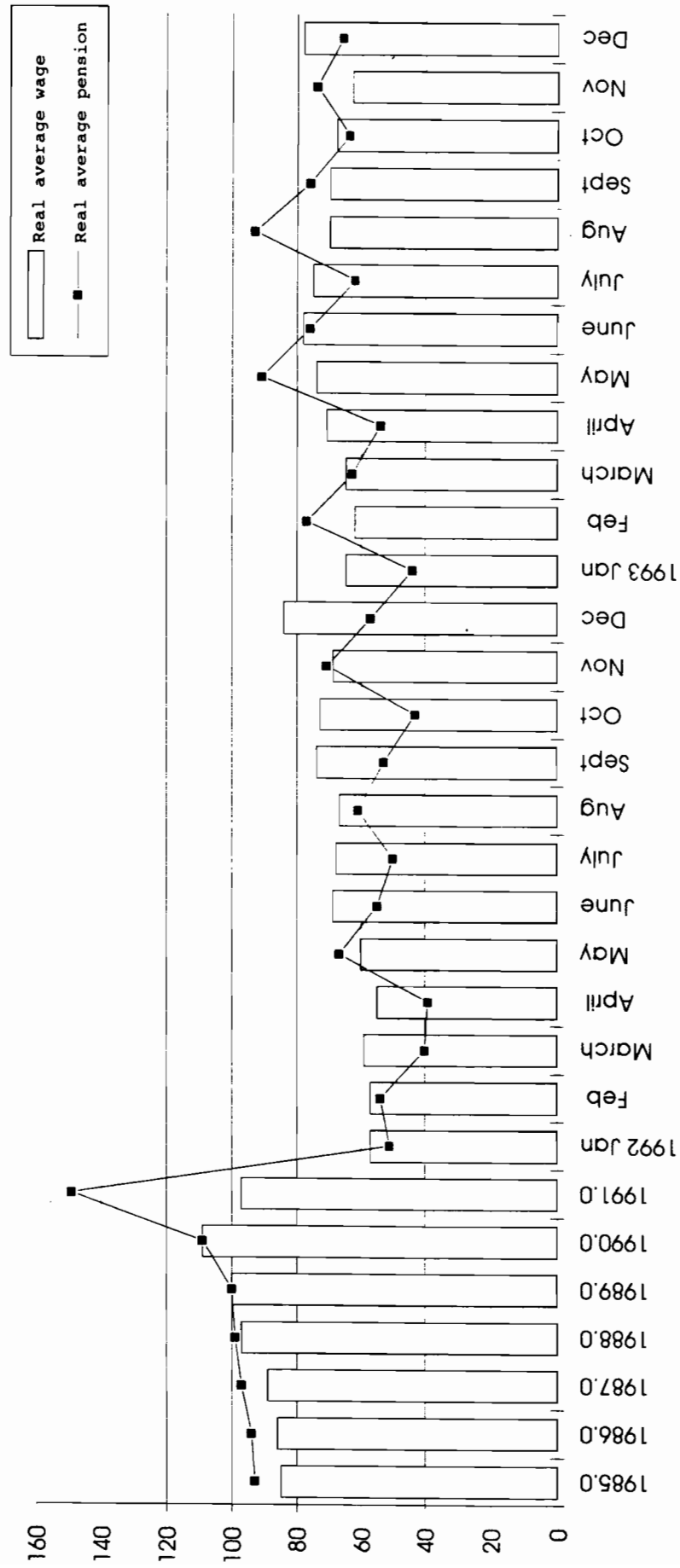


Fig. 6: Real Wages and Pensions 1985-93 (1989=100)



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