WORLD HEALTH ORGANIZATION
EUROPE

Highlights on health in Kazakhstan

2005

Highlights on health

Highlights on health give an overview of a country's health status, describing recent data on mortality, morbidity and exposure to key risk factors along with trends over time. The reports link country findings to public health policy considerations developed by the WHO Regional Office for Europe and by other relevant agencies. *Highlights on health* are developed in collaboration with Member States and do not constitute a formal statistical publication.

Each report also compares a country, when possible, to a reference group. This report uses the 25 countries with low child mortality and low or high adult mortality, designated Eur-B+C by WHO, as the reference group. Eur-B+C comprises Albania, Armenia, Azerbaijan, Belarus, Bosnia and Herzegovina, Bulgaria, Estonia, Georgia, Hungary, Kazakhstan, Kyrgyzstan, Latvia, Lithuania, Poland, Republic of Moldova, Romania, Russian Federation, Serbia and Montenegro, Slovakia, Tajikistan, Tajikistan, Turkey, Turkmenistan, Ukraine and Uzbekistan.

To make the comparisons as valid as possible, data, as a rule, are taken from one source to ensure that they have been harmonized in a reasonably consistent way. Unless otherwise noted, the source of data in the reports is the European health for all database of the WHO Regional Office for Europe. Other data and information are referenced accordingly.

Keywords

HEALTH STATUS
BURDEN OF DISEASE
COMPARATIVE STUDY
KAZAKHSTAN

EUR/05/5046415I
http://www.euro.who.int/highlights

Address requests about publications of the WHO Regional Office for Europe to:
Publications
WHO Regional Office for Europe
Scherfigsvej 8
DK-2100 Copenhagen Ø, Denmark
Alternatively, complete an online request form for documentation, health information, or for permission to quote or translate, on the WHO/Europe web site at http://www.euro.who.int/pubrequest.

Contents

Page

Summary: findings and policy considerations 1
Selected demographic and socioeconomic information 3
Population profile 3
Socioeconomic indicators 4
Life expectancy (LE) and healthy life expectancy (HALE) 7
Burden of disease 7
Main conditions 10
Main risk factors 10
Mortality 11
Infant, neonatal and child mortality 11
Maternal mortality 11
Excess mortality 13
Main causes of death 14
References 25
Annexes 27
Annex. Age pyramid 27
Annex. Selected mortality 28
Annex. Mortality data 29
Technical notes 32
Glossary 34

Summary: findings and policy considerations

Life expectancy

WHO estimates that a person born in Kazakhstan in 2003 can expect to live 61 years on average: 67 years if female and 56 years if male. According to these WHO estimates only two other countries in the region have lower female LE than Kazakhstan only one lower male LE. However, the WHO estimate is considerably different from the registration-based official LE of about 65.9 years: 71.5 for females and 60.6 years for males.

As the length of life increases, older people can respond with lifestyle changes that can increase healthy years of life. Correspondingly, health care systems need to shift towards more geriatric care, the prevention and management of chronic diseases and more formal long-term care. Since people are living longer, measures to improve health and prevent disease need to focus on people of working age.

Ageing and employment policies (OECD, 2004)

What are the main risk factors for disability in old age and how can disability be prevented? (Health Evidence Network, 2003a)

Infant mortality

In 2003, the infant mortality rate in Kazakhstan was 15.4 per 1000 live births, considerably better than the Eur-B+C average of 19.9. From 1995 to 2003, infant mortality fell by 80%. Neonatal mortality also fell from 11.7 per 1000 live births in 1995 to 9.3 in 2003, when the Eur-B+C average was 7.3 and the best estimates for the group were around 3–4 deaths per 1000 live births. WHO estimates that under-5 mortality dropped between 1990 and 2003 at an average annual rate of around 1%. The average annual rate of change from 2000 to 2003 for the European Region as a whole was around -3.5% (WHO, 2005).

Antenatal care is one of the most important services in health care. Nevertheless, it can be expensive, and interventions may be excessive, unneeded and unproven. A simplified model of antenatal care, based on evidence of benefit, is available.

Managing newborn problems: a guide for doctors, nurses and midwives (WHO, 2003a)

What is the efficacy/effectiveness of antenatal care? (Health Evidence Network, 2003b)

What is the effectiveness of antenatal care? (Supplement) (Health Evidence Network, 2005)

Maternal mortality

104 maternal deaths were reported in 2003. From 1990 to 2002, the MMR in Kazakhstan fell by only 8% and would have to fall another 73% to reach the MDG target.

More important than reaching the exact Millennium Development Goals for maternal mortality rates is that countries take concrete action to provide women with access to adequate care during pregnancy and childbirth. There are evidence-based initiatives proven to bring down the rates.

The WHO reproductive health library, version 6 (WHO, 2003)

Main causes of death

With minor exceptions, the main mortality rates are higher than the Eur-B+C averages. In 2003, noncommunicable diseases (NCD) accounted for about 85% of all deaths in Kazakhstan, external causes for about 11% and communicable diseases for about 2%, all very similar to the Eur-B+C averages.

CVD were the main group of causes of death in Kazakhstan in 2003, responsible for 57% of overall mortality, equivalent to the Eur-B+C average.

Deaths from tuberculosis increased during the 1990s and began to decrease from 1997.

Preventive care, delivered through a country's primary care system, can reduce all-cause mortality and premature mortality, particularly from CVD.

A strategy to prevent chronic disease in Europe: a focus on public health action: the CINDI vision (WHO Regional Office for Europe, 2004a)

Towards a European strategy on noncommunicable diseases (WHO Regional Office for Europe, 2004b)

What are the advantages and disadvantages of restructuring a health care system to be more focused on primary health care services? (Health Evidence Network, 2004)

Selected demographic and socioeconomic information

Population profile

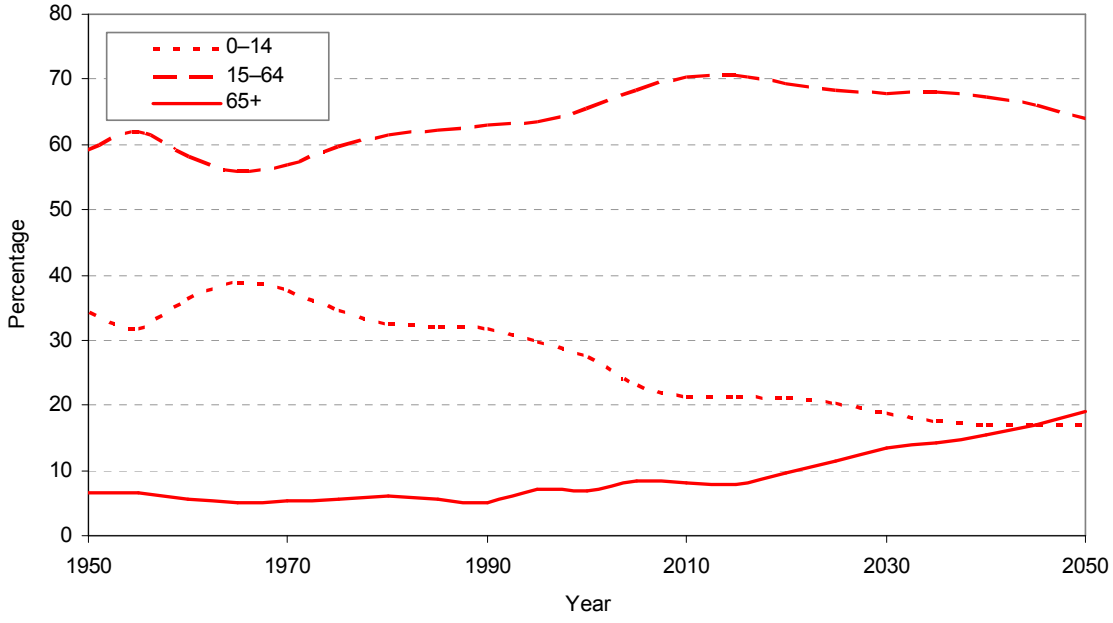
The 2005 resident population of Kazakhstan is estimated at 14.8 million. The population decreased by 0.7% per year from 1995 until 2004. From 1994 to 2003, the total net population loss due to migration was 2.25 million (UNDP, 2004). The country has about 130 ethnic groups including 57% Kazakhs and 27% Russians. Other nationalities, among which Ukrainians (4%) and Germans (2%), make up 16% of the population. Around 56% of the population now live in urban areas. Most ethnic Kazakhs live in rural areas, predominantly in the south, whereas Russians prevail in the industrialized north. The literacy rate is 99.5%. The majority of the population are said to be atheists while the main religions are Sunni Muslim and Russian Orthodox. The official languages are Kazakh and Russian, which is used in everyday business.

The total fertility rate in Kazakhstan was estimated at 2.0 for 2000–2004 (it needs to be above 2.1 to ensure a stable population size). The fertility was relatively high in the past decades and was always higher than the Eur-B+C average, but fell considerably in the 1990 to reach its minimum of 1.8 in 1998–1999. By 2003 the birth rate increased to 16.6 per 1000 population.

The crude death rate of 10.4 per 1,000 population (2003) is below the Eur-B+C average of 12.0 due to the relatively young population. However, it increased by more than two per 1000 in the first half of the 1990s. This increase is similar in magnitude and timing to the Eur-B+C average increase. The mortality rate in Kazakhstan has come closer to the Eur-B+C average.

The relatively high fertility in the previous decades explains why the population structure of Kazakhstan remains relatively young; 25% of the population is 0–14 years (2003), while the Eur-B+C average is 21% and the Eur-A average is 17%. People 65 and over comprise 7.4% of the population (2003), compared to the 11% Eur-B+C average and 16% Eur-A average. The population structure is also a result of emigration, as the average age of Kazakhs is younger than that of other nationalities. Nevertheless, a relatively rapid increase in the older population is projected for Kazakhstan, as for other countries in the region (Annex. Age pyramid*)*.

Percentage of the population aged 0–14, 15–64 and 65+ years, Kazakhstan, 1950 to 2050 (projected)



Source: United Nations (2005).

Selected demographic indicators in Kazakhstan and Eur-B+C
2003 or latest available year

Indicators	Kazakhstan	Eur-B+C		
	Value	Average	Minimum	Maximum
Population (in 1000s)	14909.0	–	–	–
0–14 years (%)	25.4	–	–	–
15–64 years (%)	67.2	–	–	–
65+ years (%)	7.4	–	–	–
Urban population (%)[a]	55.8	63.7	25.0	73.3
Live births (per 1000)	16.6	12.8	8.6	27.1
Natural population growth (per 1000)	6.2	0.8	–7.5	23.0
Net migration (per 1000)	–	1.8	–6.6	2.1

[a] 2002.

Sources: Council of Europe (2005), WHO Regional Office for Europe (2005).

Socioeconomic indicators

Health outcomes are influenced by various factors that operate at individual, household and community levels. Obvious factors are, for example, diet, health behaviour, access to clean water, sanitation and health services. However, underlying health determinants of a socioeconomic nature also play a role in causing vulnerability to health risks. Here, the key factors are income, education and employment. Though moderately correlated and interdependent, each of these three determinants captures distinctive aspects of the socioeconomic background of a population and they are not interchangeable. Various indicators represent the key socioeconomic determinants of health.

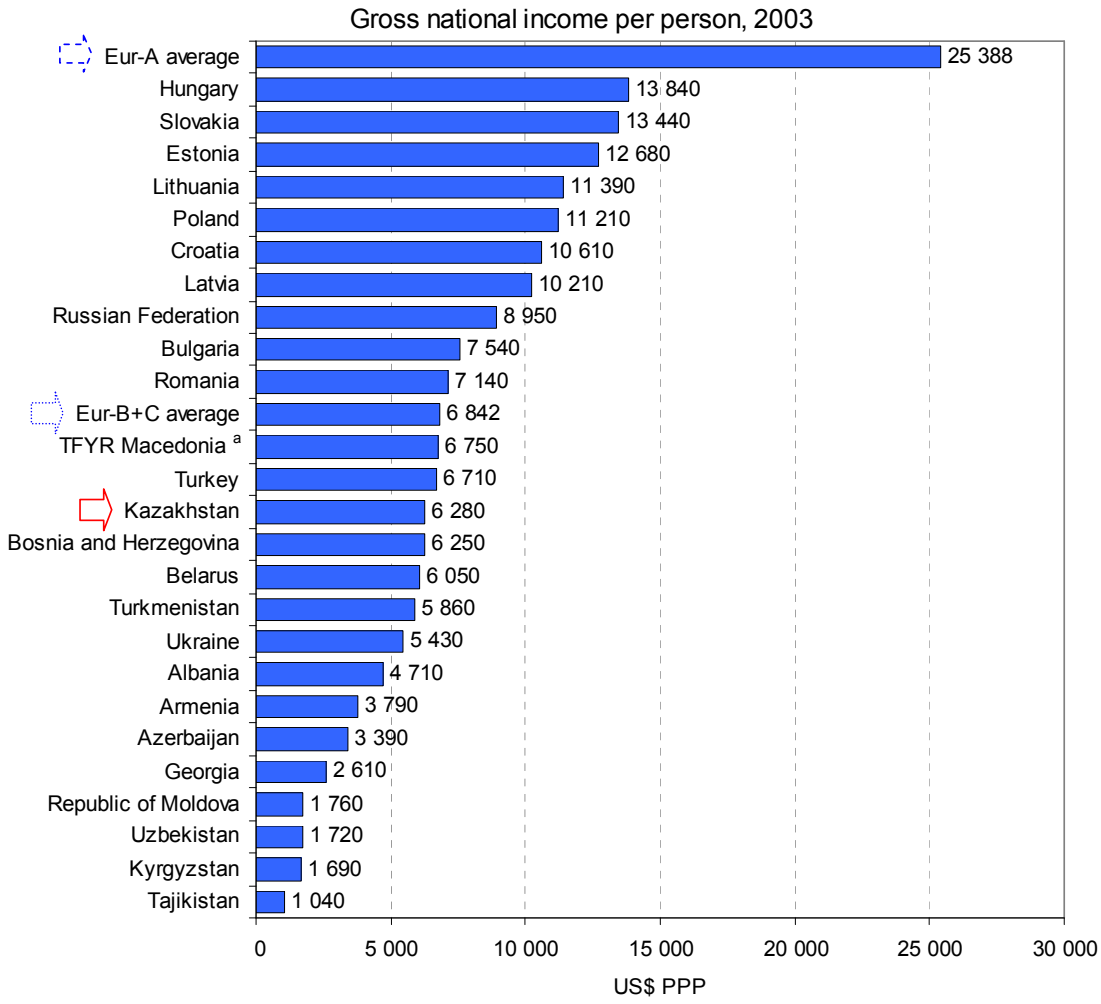
Income: absolute poverty, relative poverty and income distribution

There is an income gradient affecting health: the poor generally suffer worse health and die younger than people with higher incomes. For instance, the latter are better able to afford the goods and services that contribute to health, for example, better food and living conditions.

Most of the countries of the Commonwealth of Independent States (CIS) have seen poverty decline in recent years, owing to the rapid and real recovery of the gross domestic product (GDP) since 1995, when the economic depression in these countries was at its worst. By 1999, real GDP surpassed the levels of 1990. Many health indicators replicated this U-turn curve of economic slump and rebound, although with a time delay, so that around 2000 the health situation in the CIS countries had apparently turned the corner.

Similarly, two distinct stages of human development in CIS were identified in global reports on this issue. The first stage (1990–1995) was characterized by a sharp deterioration in all the main indicators of human development. During the second stage (1996–2002), the indicators were slowly restored.

In 2003, the Kazakh per capita gross national income, adjusted for purchasing power parity, was US$ 6280, below the Eur-B+C average. Poverty has declined in recent years, owing to rapid real GDP recovery since 1995, nadir of the economic depression. By 1999 real GDP surpassed the 1990 level. Many demographic and health indicators replicate this curve of economic slump and rebound, although with different timing, so that around 2000 the health situation in the country apparently turned the corner. More generally, the shape of the 1990s economic development curve is common to most of the CIS and frequently determines the shape of the health indicators as well.



[a] The former Yugoslav Republic of Macedonia
Source: World Bank (2005).

People are considered to be in absolute poverty if their incomes are not sufficient to purchase very minimal goods and services. The World Bank currently uses an absolute poverty line of US$ 2.15 and US$ 4.30 income per capita per day to measure poverty in low- and middle-income countries of the WHO European Region (using 1993 international prices adjusted for purchasing power parity). While there is no certainty that the poverty lines measure the same degree of need across countries, the World Bank uses them as a constant to permit comparison. Many countries in the Region calculate their national poverty lines on the basis of a minimum consumption basket selected and priced according to the specific circumstances of the country.

Relative poverty is an indicator of income level below a given proportion (typically 50%) of the average national income. In high-income countries, there are far more pockets of relative poverty than of absolute poverty.

Using the World Bank's recommended benchmarks to measure absolute poverty in Europe, annual household surveys in Kazakhstan in 1988 and 2003 found a jump in poverty. In 1988, 2.2% of the population was living in absolute poverty, on US$ 4.30 or less per person per day while in 1993, the proportion had risen to 58.0%. A 1996 survey found the rate to be 55.4% and in 2001 it was 45.3%. Between 2001 and 2003, there was a dramatic increase in the proportion of the population living on US$ 2.15 or less per day: in 2001, 8.4% of people reported they were in this situation while in 2003, the percentage was 24.9% (World Bank, 2005).

Relative poverty is an indicator of income level below a given proportion (typically 50%) of the average national income. In high-income countries, there are far more pockets of relative poverty than of absolute poverty.

Another measure of relative poverty in terms of income is the Gini index. This presents the extent to which the distribution of income (or, in some cases, consumption expenditure) among individuals or households within an economy deviates from a perfectly equal distribution. A Gini index of 0 represents perfect equality, while an index of 100 implies perfect inequality.

In 2001, the Gini index for Kazakhstan was 31.3. Those for 15 Eur-B+C countries for 2000 to 2002 range from 26.1 for Bosnia and Herzegovina (2001) to 45.6 in the Russian Federation (2000) (World Bank, 2005).

Education

Education tends to enhance an individual's job opportunities. In so doing, it can improve income, which in turn affects health positively. Education can also give more access to knowledge about healthy behaviour and increase the tendency to seek treatment when needed. A lower level of education – independent of individual income – is correlated with the inability to cope with stress, with depression and hostility and with adverse effects on health.

School enrolment is an indicator of access to education. The secondary school net enrolment represents the percentage of the total population of official school age (defined nationally) that is enrolled in secondary schools.

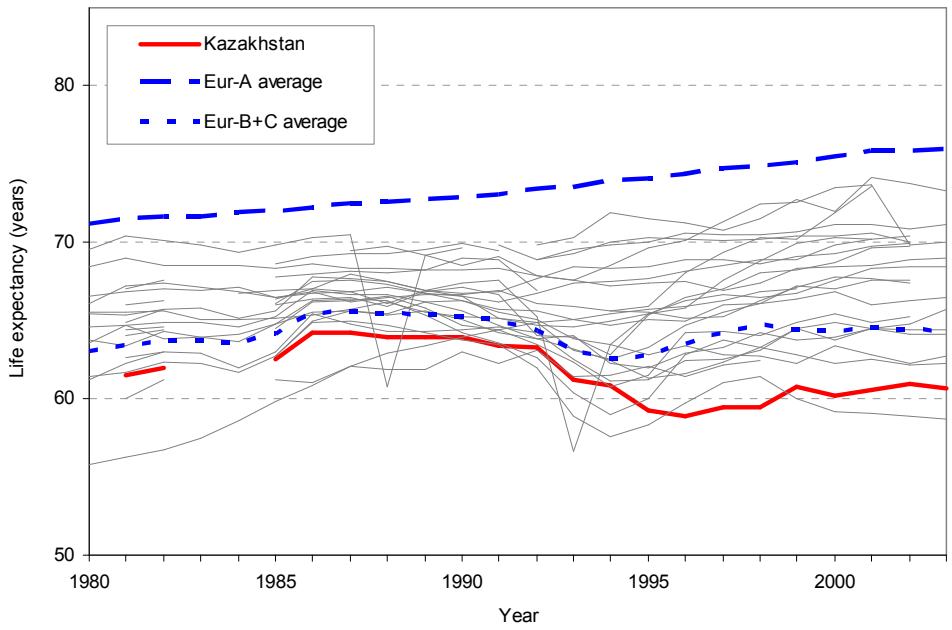
Per cent net secondary school enrolment in Kazakhstan in 2000 was 83.2%, compared to an 81.2% average for Eur-B+C and 88.5% for Eur-A countries. The rate in Kazakhstan rose slightly in 2001 to 84.1% (UNESCO, 2005).

Life expectancy (LE) and healthy life expectancy (HALE)

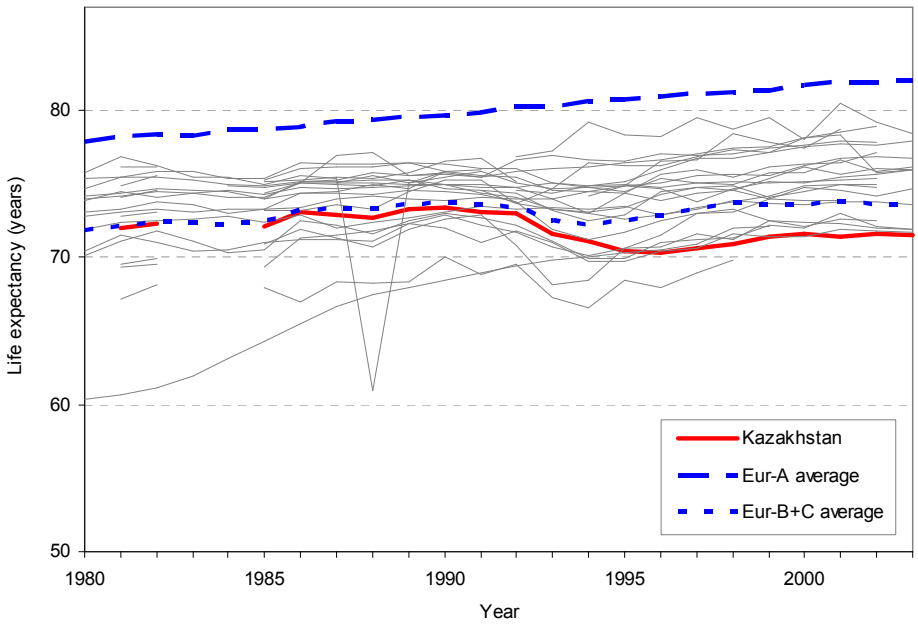
Life expectancy

According to figures compiled by WHO (WHO, 2005) for all Member States to ensure comparability (not necessarily the official national statistics), a person born in Kazakhstan in 2003 can expect to live 61 years on average: 67 years if female and 56 years if male. According to these WHO estimates only two other countries in the region have lower female LE than Kazakhstan and only one has lower male LE. However, the WHO estimate is considerably different from the registration-based official LE of about 65.9 years: 71.5 years for females and 60.6 years for males.

Life expectancy at birth for males,
Kazakhstan, Eur-A and Eur-B+C averages, 1980 to latest available year

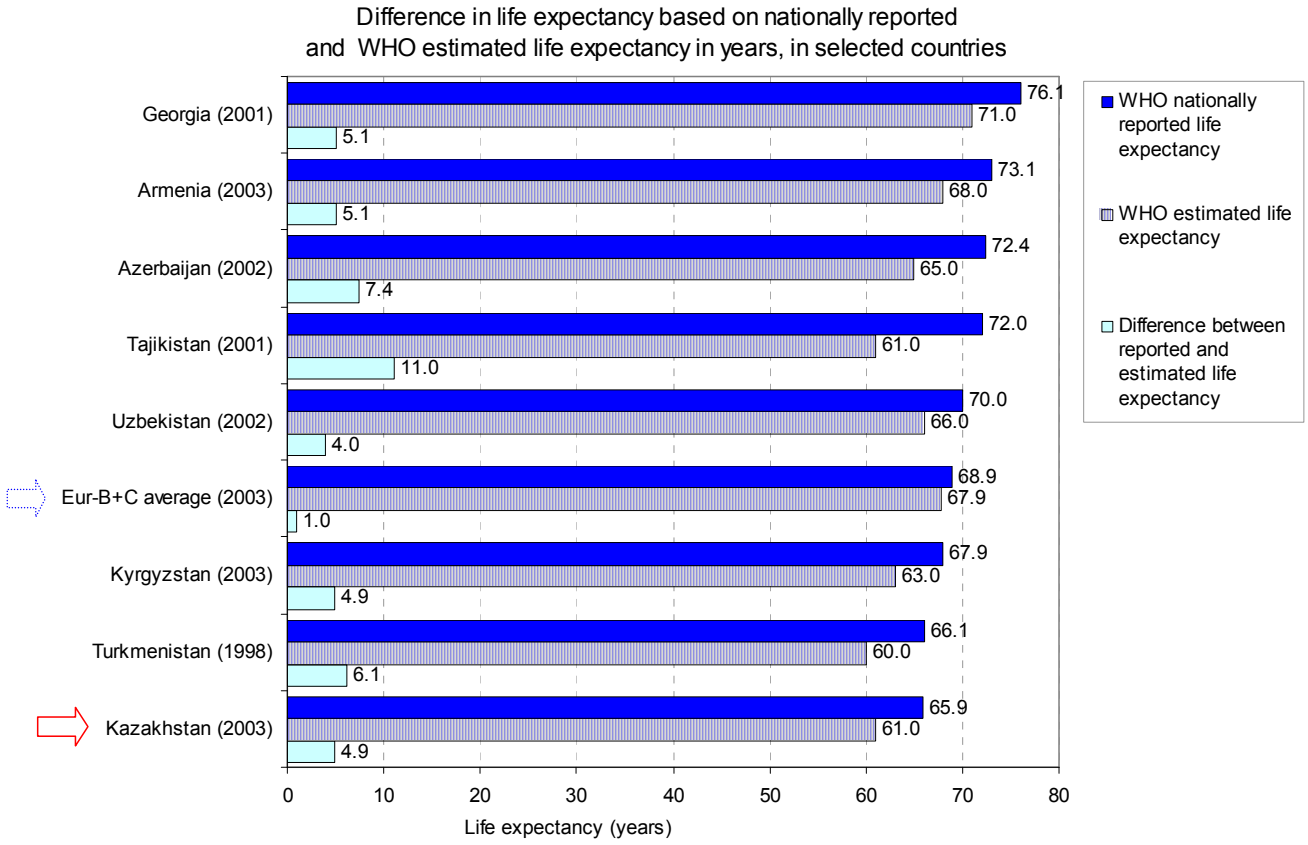


Life expectancy at birth for females,
Kazakhstan, Eur-A and Eur-B+C averages, 1980 to latest available year



On the other hand, comparisons of WHO estimated probability of dying between 15 and 60 years old and official adult mortality show no essential discrepancies, which strongly suggests that the difference between the WHO estimate and the official figure is mostly due to the difference in child mortality. Therefore, it is reasonable to assume that the official adult mortality data are sufficiently complete and they are used almost exclusively in this report, except for the indicators of maternal and early childhood mortality, for which both the official country statistics and the WHO estimates are given (see comparative table). The accuracy of the causes of death coding, however, requires improvement, and is a clearly recognized government objective (President of Kazakhstan, 2004).

LE in Kazakhstan is about three years below the Eur-B+C average of 68.7 years, which is also based on regular mortality registration data. The WHO LE estimate, however, is about seven years below the WHO estimated Eur-B+C LE average (2003). Moreover, it is likely that LE in Kazakhstan is in fact about 18 years below the Eur-A average of 79.0 years. This means that the overall health situation, the rank of the country in international LE comparisons, is less favourable than one would tend to conclude solely on the basis of the official mortality statistics.



Source: WHO Regional Office for Europe (2005); WHO

Historically, official LE had been practically equal to the Eur-B+C average until the early 1990s, but in the following years began to deviate. Most of the current difference from the Eur-B+C average developed around 1995–1996. The LE curves over time for both sexes, however, remarkably closely follow the contours of the respective Eur-B+C averages. It should also be noted that the female-male LE difference is 10.8 years, the second largest in the region following the Russian Federation. The Eur-B+C average is nine years and the Eur-A average is six years.

Generally, LE trends in low and low-middle income countries are strongly associated with GDP indicators. However, while by 1999 real GDP in Kazakhstan had returned to the 1990 level and has grown considerably since then, LE recovered only a little and is stagnating at a level three years below that of 1990. Similar decoupling of LE and GDP trends is observed in the Russian Federation. One possible explanation, among other causes, is that the rapid economic growth is largely fuelled by one sector – exports of natural resources – and the average per capita GDP may need more time and stronger policies to translate into health improvement *(see box)*. In addition, the emigration induced changes in

the composition of the population in terms of education, social competence and culture, etc. probably also play a role.

Life expectancy in Kazakhstan is lower than GDP growth would predict: regional differences may be part of the explanation

It is noteworthy that LE in Kazakhstan is somewhat lower than would be expected on the basis of real GDP levels (US$ 5870 PPP in 2002) which are very close to the Eur-B+C average ($6853 PPP in 2002). Part of the explanation may be that GDP in Kazakhstan is generated largely by exports of natural resources, which in some countries is known to result in large inequalities in the production and consumption of national wealth, access to modern knowledge, services, etc., which all play a role in health development.

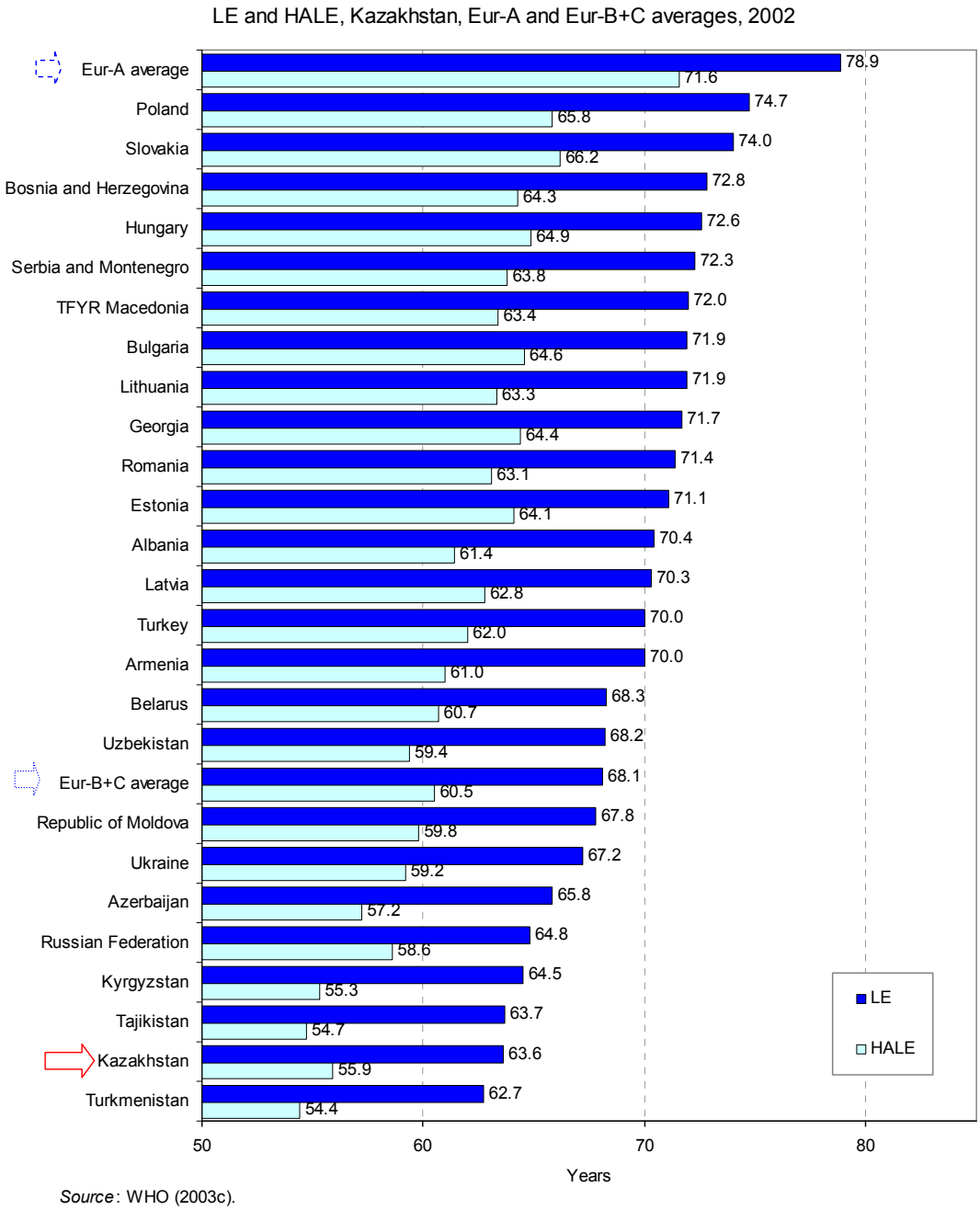
An indication of the regional differences in general health and well-being is provided indirectly by variations in the UNDP Human Development Index (a composite of three dimensions: longevity, knowledge and standard of living) among the regions of Kazakhstan which can be classified into four developmental groups:

1) high (HDI above 0.80 during the last three years) – Atyrau and Mangistau oblasts and the cities of Almaty and Astana;
2) average (HDI between 0.76 and 0.78) – Aktyubinsk, West Kazakhstan, Karaganda and Pavlodar oblasts;
3) below average (HDI about 0.75) – East Kazakhstan, Kostanai and Kyzylorda oblasts;
4) low (HDI between 0.70 and 0.73) – Akmola, Almaty, Jambyl, North Kazakhstan and South Kazakhstan oblasts).

Although specific analyses of the health inequalities in Kazakhstan are required, fundamental variations such as those highlighted above offer entry points for much needed concrete studies of the factors influencing health development in the country.

Healthy life expectancy

In addition to LE, it is increasingly important to know the expected length of life spent in good health. WHO uses a relatively new indicator for this purpose – healthy life expectancy (HALE), subtracting estimated years of life spent with illness and disability from estimated LE. According to WHO estimates for 2002 (2004), Kazakhs have 55.9 healthy years on average (if female 59.3, if male 52.6 years) which is about 15.7 years less than the Eur-A average of 71.6 years and 4.6 years below the Eur-B+C average of 60.5 years. The best achievement in the region is Sweden's 73.3 years (female 74.8, male 71.9). At age 60 years old, healthy life expectancy in Kazakhstan is 12.5 years for females and 9.7 years for males, while in Sweden those estimates are 19.6 and 17.1 years, respectively. The expectation of life years to be spent in less than good health in Kazakhstan is 9.6 years for females and 6.1 years for males, which are close Sweden's respective 7.9 and 6.2 years.



Source: WHO (2003c).

Burden of disease

The burden of disease in a population can be viewed as the gap between current health status and an ideal situation in which everyone lives into old age, free of disease and disability. Causing the gap are premature mortality, disability and certain risk factors that contribute to illness. The analysis that follows elaborates on the burden of disease in the population. The disability-adjusted life-year (DALY) is a summary measure that combines the impact of illness, disability and mortality on population health.

Main conditions

The table shows the top 10 conditions, in descending order, that account for approximately 90% of the burden of disease among males and females in Kazakhstan. Unintentional injuries account for the highest burden of disease among males. Neuropsychiatric disorders rank highest among females and second

among males. Because mortality from neuropsychiatric conditions is minor, disability in daily living comprises the bulk of their burden on the population's health.

Ten leading disability groups as percentages of total DALYs for both sexes in Kazakhstan (2002)

Rank	Males		Females	
	Disability groups	Total DALYs (%)	Disability groups	Total DALYs (%)
1	Unintentional injuries	16.3	Neuropsychiatric conditions	16.7
2	Neuropsychiatric conditions	13.0	Malignant neoplasms	8.6
3	Malignant neoplasms	6.7	Unintentional injuries	7.4
4	Infectious and parasitic diseases	6.0	Respiratory diseases	5.7
5	Digestive diseases	5.1	Digestive diseases	5.5
6	Respiratory diseases	3.9	Musculoskeletal diseases	4.2
7	Respiratory infections	3.8	Infectious and parasitic diseases	3.9
8	Perinatal conditions	3.1	Respiratory infections	3.3
9	Congenital anomalies	2.0	Perinatal conditions	3.2
10	Musculoskeletal diseases	1.9	Maternal conditions	2.2

Source: Background data from WHO (2003c).

Main risk factors

The table shows the top 10 risk factors with their relative contributions, in descending order, to burden of disease in the male and female populations of Kazakhstan. According to DALYs, tobacco and alcohol use places the greatest burden of disease on the Kazakh male population and high blood pressure and high cholesterol on females.

Ten leading risk factors as causes of disease burden measured in DALYs in Kazakhstan (2002)

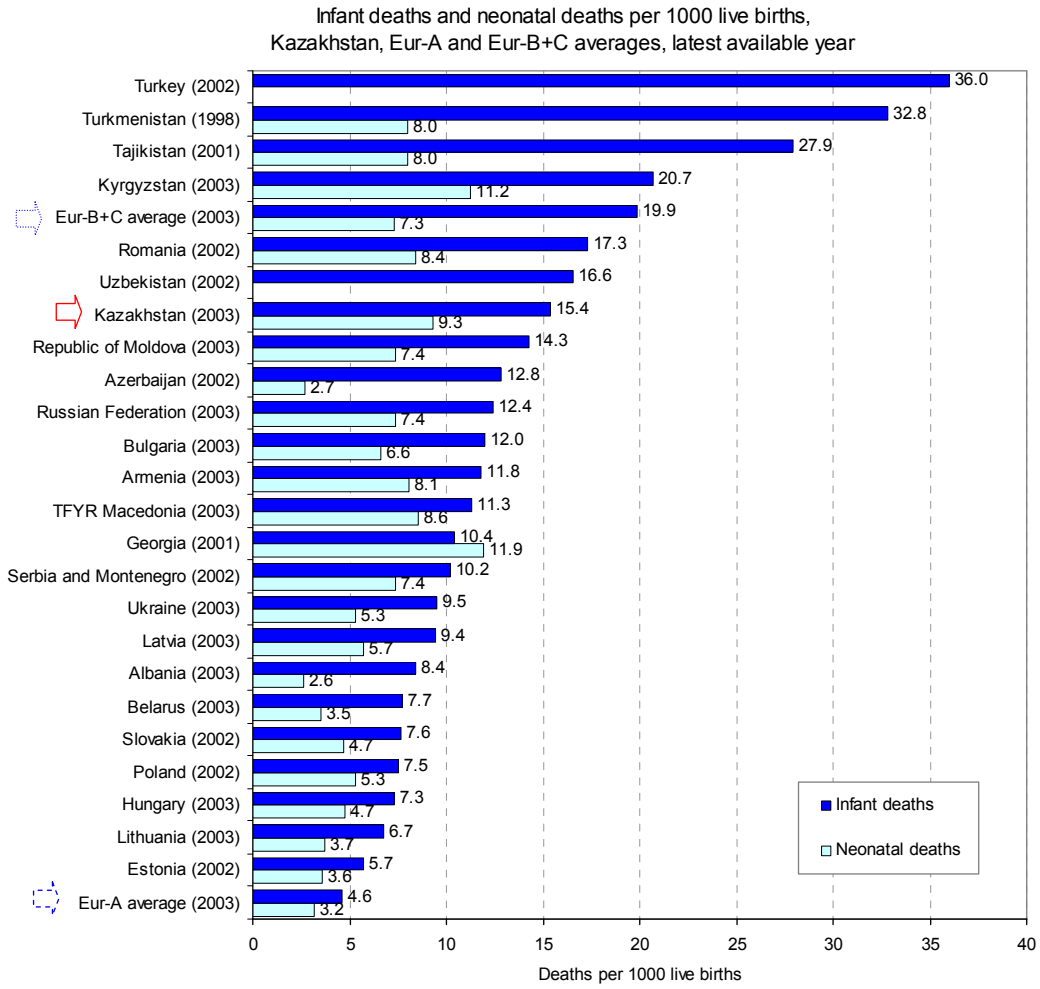
Rank	Males		Females	
	Risk factors	Total DALYs (%)	Risk factors	Total DALYs (%)
1	Tobacco	18.8	High blood pressure	13.2
2	Alcohol	18.6	High cholesterol	9.7
3	High blood pressure	11.6	High BMI	8.9
4	High cholesterol	9.5	Tobacco	6.2
5	High BMI	6.2	Low fruit and vegetable intake	5.3
6	Low fruit and vegetable intake	5.6	Alcohol	5.1
7	Physical inactivity	3.3	Physical inactivity	3.8
8	Illicit drugs	1.8	Indoor smoke from solid fuels	2.2
9	Lead	1.3	Unsafe sex	1.8
10	Indoor smoke from solid fuels	1.2	Lead	1.1

Source: Background data from WHO (2003c).

Mortality

Infant, neonatal and child mortality

In 2003, the infant mortality rate in Kazakhstan was 15.4 per 1000 live births, considerably better than the 19.9 Eur-B+C average. The best achievement in the Eur-B+C group was Lithuania's 6.7. Between 1995 and 2003, infant mortality fell by 80%.



Neonatal mortality also fell from 11.7 (1995) to 9.3 per 1000 live births (2003). In 2003, the Eur-B+C average was 7.3 and the best estimates of the Eur-B+C group were around 3 or 4 per 1000 live births.

As mentioned, in attempt to estimate possible underreporting of mortality data in the official statistics, WHO produces concurrent estimates by systematically analyzing complementary information from various sources and statistical modelling. WHO estimates make use of the best available information but of course remain estimates, taking into account statistical uncertainties. In particular, the lower boundary of uncertainty intervals can be interpreted to mean that official data below the level are likely underreported. The following table compares the official and the WHO estimates for four indicators prone to under-registration.

Comparison of key indicators of child and maternal mortality in Kazakhstan based on nationally reported data and WHO estimates to assure comparability

Indicator	Nationally reported [a]	WHO estimates
Infant mortality per 1000 live births, 1999 (MDG indicator)	20.7	33[b]
Neonatal mortality per 1000 live births, 2000	10.7	32[c]
Under-5 mortality per 1000 live births (MDG indicator)	20	73 (56–90)[c]
Maternal mortality per 100 000 live birth, 2000 (MDG indicator)	61.6	210[c]

[a] WHO Regional Office for Europe (2005); [b] WHO (2004); [c] WHO (2005).

Under-5 mortality in Kazakhstan appears clearly underreported, thus infant and neonatal mortality are also underreported as under-registration occurs mostly for the age under one year.

Nevertheless, WHO estimates that under-5 mortality dropped from 1990 to 2003 at an average annual rate of around 1%. The average annual rate of change from 2000 to 2003 for the European Region as a whole was around -3.5%, which means that the improvement in Kazakhstan is slower than average, although the high level of under-5 mortality usually allows more progress in conditions of resource constraints (WHO, 2005).

Maternal mortality

Maternal mortality rates (MMR) and the Millennium Development Goal (MDG)

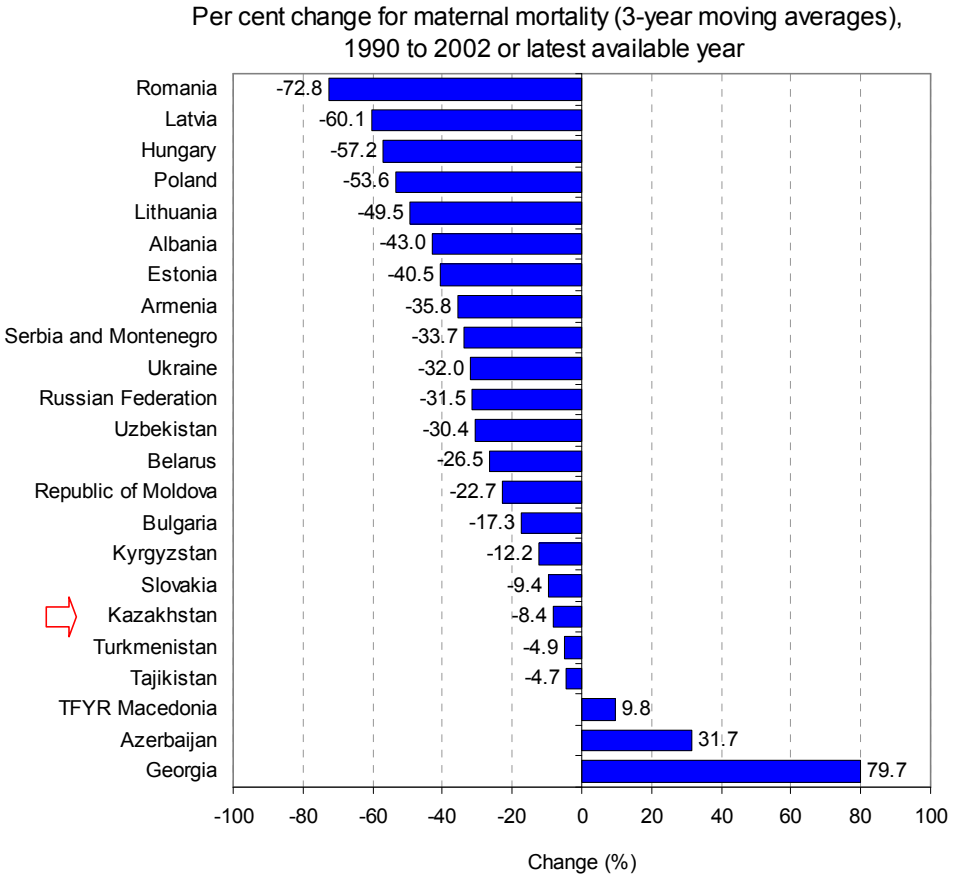
Despite the difficulties in accurately measuring MMR, nationally reported figures are accepted at face value relative to the MDG to improve maternal health – to reduce the MMR by 75% between 1990 and 2015. In some countries, the 2015 target may be equal to or lower than the average current MMR for high income countries in the European Region (the Eur-A 2001 average of five maternal deaths per 100 000 live births). Countries with 2015 targets lower than the current Eur-A average can be judged as having achieved or being likely to achieve the MDG (World Bank, 2004).

However, in some countries, MMR were higher in 2002 than they had been in 1990. Applying the 75% reduction to the 1990 baseline in these countries creates, in some cases, a 2015 MDG target that requires dramatic reductions in MMR before 2015. In these cases, more important than reaching maternal mortality targets is taking concrete action to provide women with access to adequate care during pregnancy and childbirth, initiatives that have proven to bring down MMR.

Maternal mortality is very difficult to ascertain even in countries with very strong registration systems; the level of under-registration in Kazakhstan is difficult to interpret. The reported figure for 2003 was 42 per 100 000 live births, two-thirds of the 1995 value of 57. The 1990 level (baseline for the MDG) is 55.

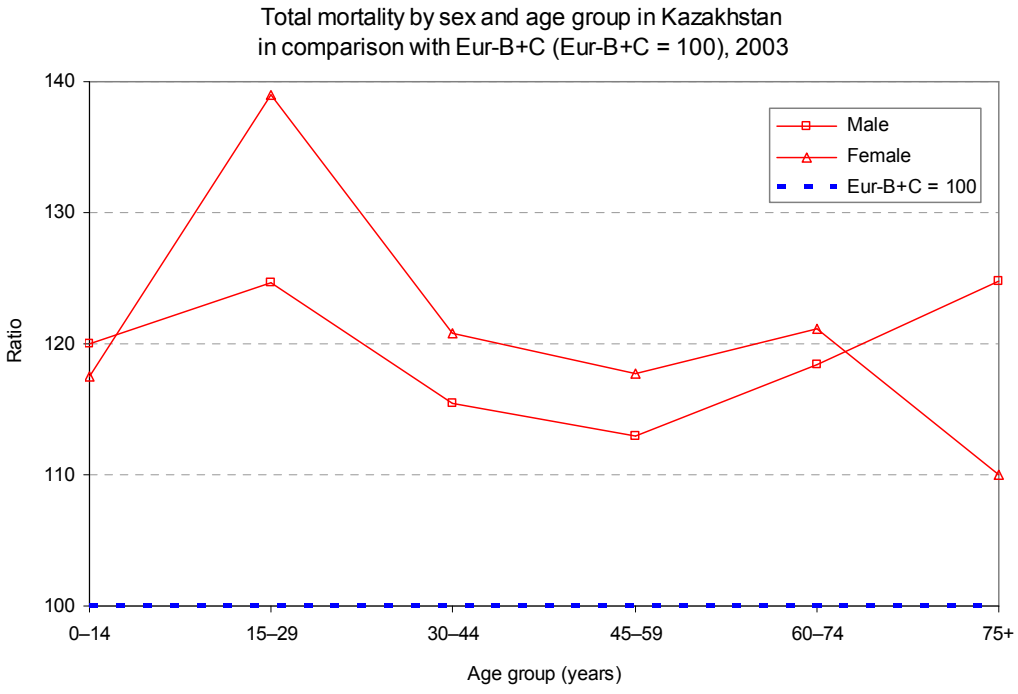
Of the 104 maternal deaths reported in 2003, five were attributed to abortion.

From 1990 to 2002, the MMR in Kazakhstan fell by only 8%, due to an increase in rates from 1990 to a peak in 1999 (69 per 100 000 live births). Between 1999 and 2002, the rate fell by 31%. From the 2002 level, the MMR would have to fall another 73% to reach the MDG target.



Excess mortality

In general, mortality rates in Kazakhstan are about 17% higher than the Eur-B+C average but 2.3 times higher than the Eur-A average.

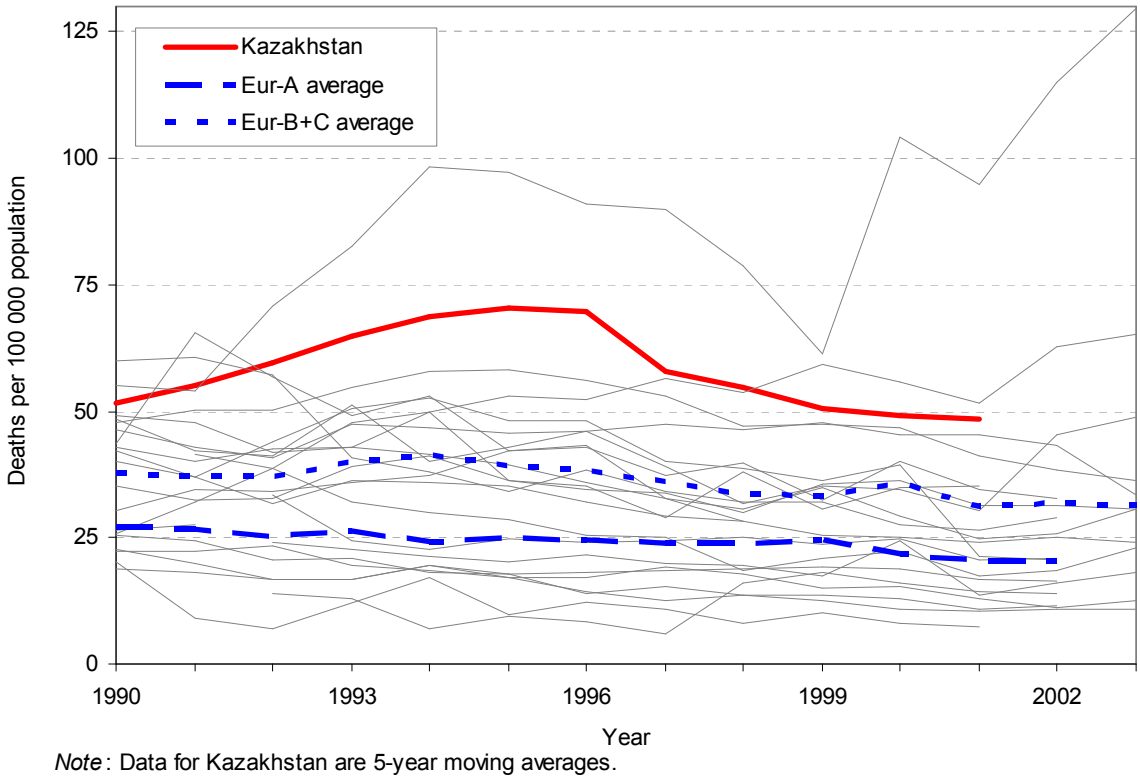


Across all age groups, the highest excess mortality compared to the Eur-B+C averages is not due to external causes (as in the Russian Federation and some other CIS countries) but to respiratory and infectious diseases. Nevertheless, excess mortality from external causes is high. The single most prominent cause of excess mortality is chronic lower respiratory disease. Although this may be a catch-all for other causes of death, a number of unfavourable environmental (use of solid fuels) and behavioural (smoking) factors probably play a major role. Chronic liver disease and cirrhosis are also quite high compared to the Eur-B+C averages, as are suicides, indicating that alcohol consumption is likely high and causing considerable harm to the population's health.

Excess mortality from external causes is about 18% over the Eur-B+C average and four times the Eur-A average. The homicide rate is particularly high.

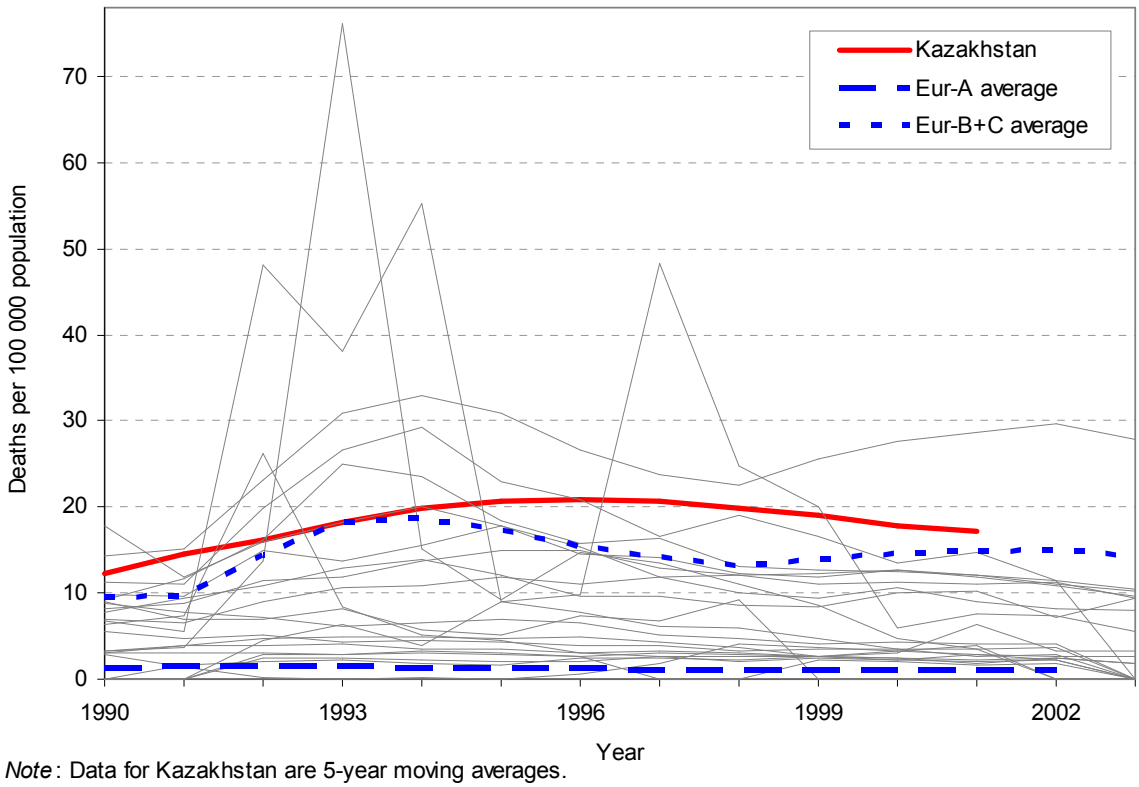
Mortality from cardiovascular diseases (CVD) exceeds the Eur-B+C average by 17%.

SDR for chronic lower respiratory diseases in people of all ages, Kazakhstan, Eur-A and Eur-B+C averages, 1990 to latest available year



Note: Data for Kazakhstan are 5-year moving averages.

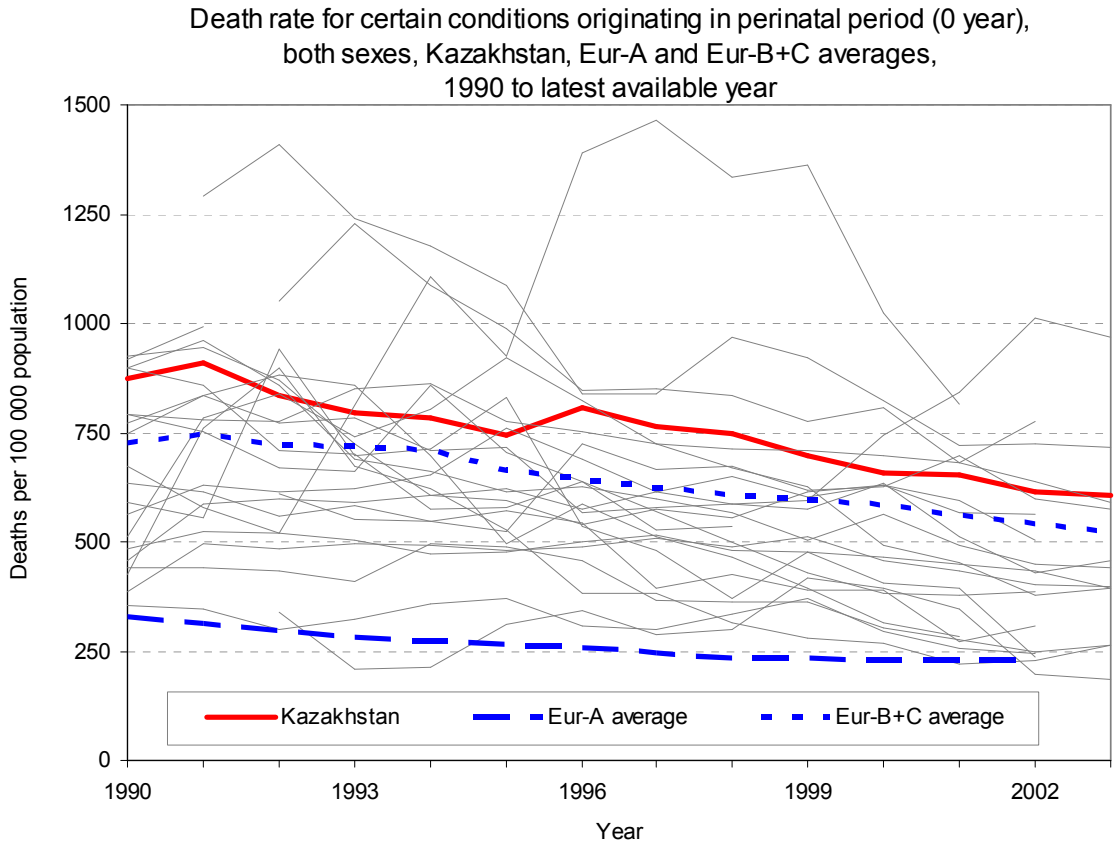
SDR for homicide in people of all ages,
Kazakhstan, Eur-A and Eur-B+C averages, 1990 to latest available year



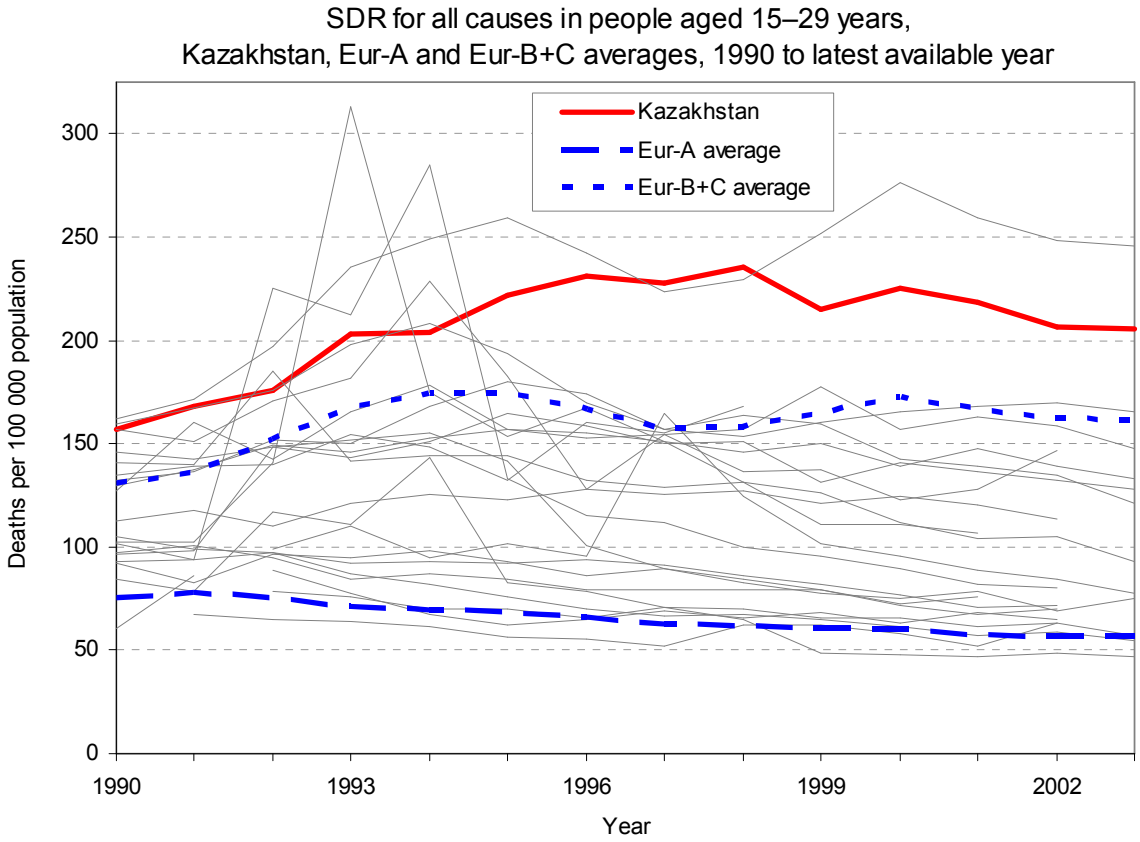
Note: Data for Kazakhstan are 5-year moving averages.

Comparative analyses of variations of mortality by age and sex, and possibly other socioeconomic variables, can provide more specific insights into the country's excess mortality. One should keep in mind that the mortality crisis in the CIS countries peaked around 1994 or 1995 (in the aftermath of the collapse of the Soviet Union) and, therefore, the trends of the period 1995 – 2003 are generally more favourable than those for the period 1990–2003.

Kazakh mortality in the 0–14 age group (180 per 100 000 in 2003) is about 20% higher than the Eur-B+C average of 152 and more than three times higher than the Eur-A average of 49. It has improved by 3.7% vis-à-vis the 1995 level, similar to the Eur-B+C average improvement of 3.8%. The improvement is practically comprehensive across all causes of death and by sex. Perinatal mortality remains a serious problem, however; the rates are improving but are still above the Eur-B+C average.



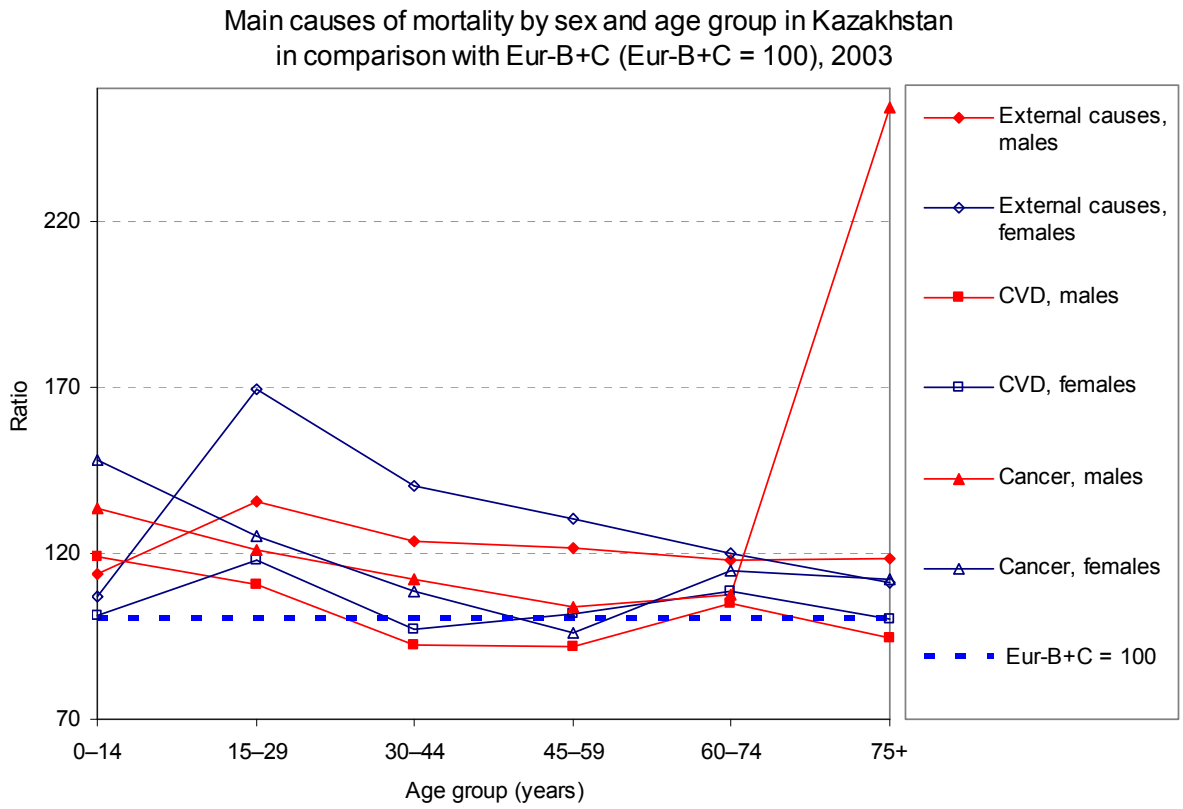
Mortality in the 15–29 age group (206 per 100 000) is one quarter higher than the otherwise high Eur-B+C average of 161. The excess mortality over the Eur-B+C average for this age group is due mainly to external causes, in particular suicides and accidental poisoning, but also to infectious diseases. High CVD mortality is a problem in this age group, although it may be partly due to misclassified alcohol-related deaths. Since 1995 total excess mortality has improved, but progress has not been even across all causes of death and the levels remain higher than in 1990. This is a pattern common to many Eur-B+C countries, particularly in the CIS.



In the 30–44 age group, the situation is similar to the above but excess mortality due to external causes and CVD compared to the Eur-A average is greater. Improvements since 1995 are somewhat less than in the Eur-B+C group on average. The increasing trend in mortality from digestive diseases is a cause for concern. Mortality in the 45–59 age group is most close to the Eur-B+C averages, but increased considerably from 1990 to 1996 and has not improved much since. CVD are particularly high. The most outstanding observation in the 60–74 age group is that mortality from respiratory disease is nearly twice as high as the Eur-B+C average. This may be caused by current coding practices but also a sign of quality problems in the health services; the same is true for digestive diseases. In the over 74 age group, mortality is higher than the Eur-B+C average, particularly for men, mainly due to CVD, respiratory diseases and external causes. The rates improved from the mid-1990s until 2000, but more recently have reverted, for both females and males.

Main causes of death

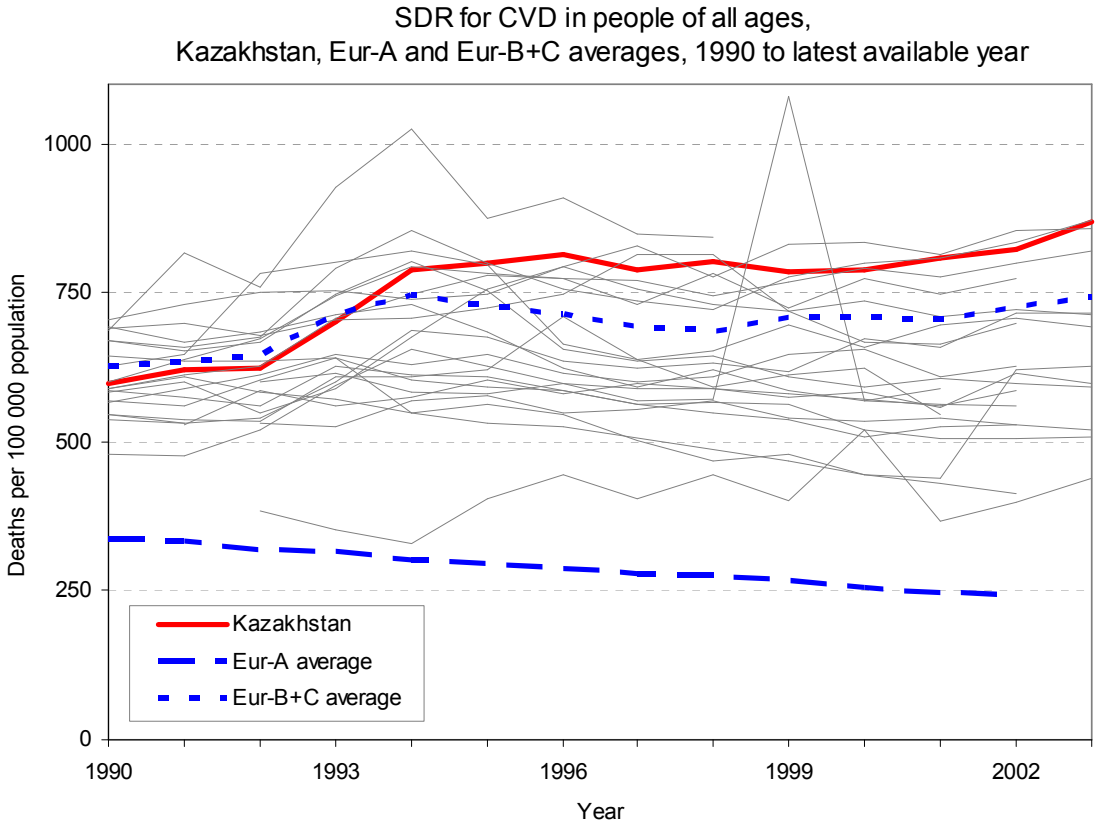
With minor exceptions, mortality from the mortality rates main causes of death in all major age groups are higher than the respective Eur-B+C average rates.



In 2003, noncommunicable diseases (NCD) accounted for about 85% of all deaths in Kazakhstan, external causes for about 11%, communicable diseases for about 2% and the rest are due to ill-defined conditions. All these are very similar to the Eur-B+C averages but Kazakhstan is above the Eur-A average for external causes and below it for NCD. In rates per 100 000 population, however, NCD mortality in Kazakhstan is more than twice the Eur-A average.

CVD

CVD were the main causes of death in Kazakhstan in 2003, responsible for 57% of overall mortality, equal to the Eur-B+C average and 2.5 times the Eur-A average. Half of all CVD mortality is due to ischaemic heart disease, and a little more than one third is attributed to cerebrovascular diseases. Overall, CVD are about 2.5 times more frequent cause of death in the Republic of Kazakhstan than in the Eur A group on average and also above the Eur B+C average. The rates are lower than the Eur-B+C average for the middle-age groups but higher for the younger groups. Most importantly, since 1990 the rates have increased by about 45% and continue rising.

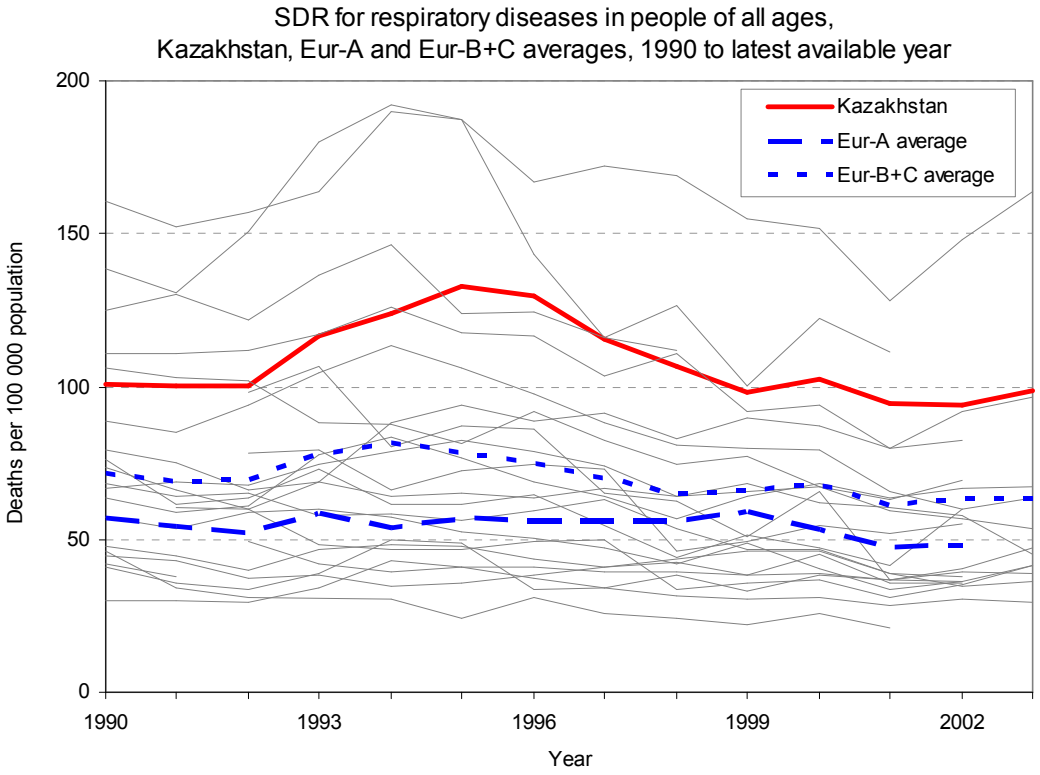


Cancer

Cancer mortality is more equally distributed across the Region. The rates in Kazakhstan are slightly above the Eur-B+C average and close to the Eur-A average. However, as in other CIS countries with high mortality from other causes than cancer, the proportion of cancer deaths comprise about 12% of total mortality in Kazakhstan, compared to a 28% Eur-A average, and since 1990 the rate has been steadily decreasing.

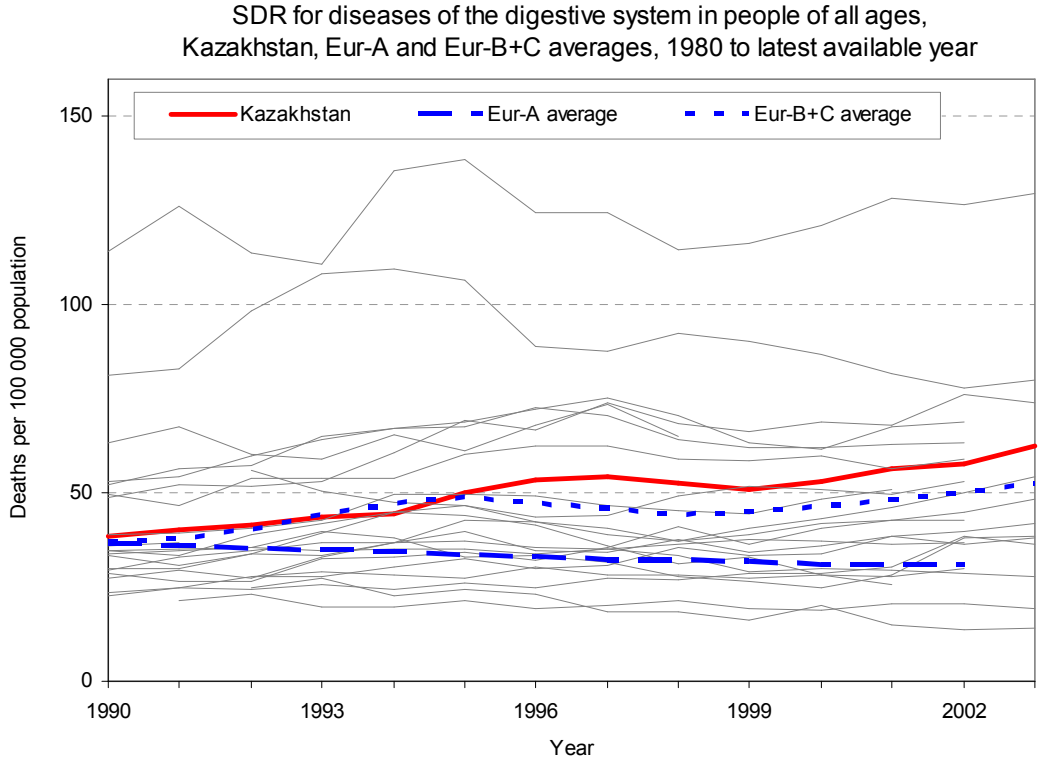
Respiratory diseases

Respiratory diseases accounted for about 6.4% of total mortality in Kazakhstan in 2003, above the Eur-B+C average. The rate per 100,000 population, however, is about 50% higher than the Eur-B+C average and two times the Eur-A average.

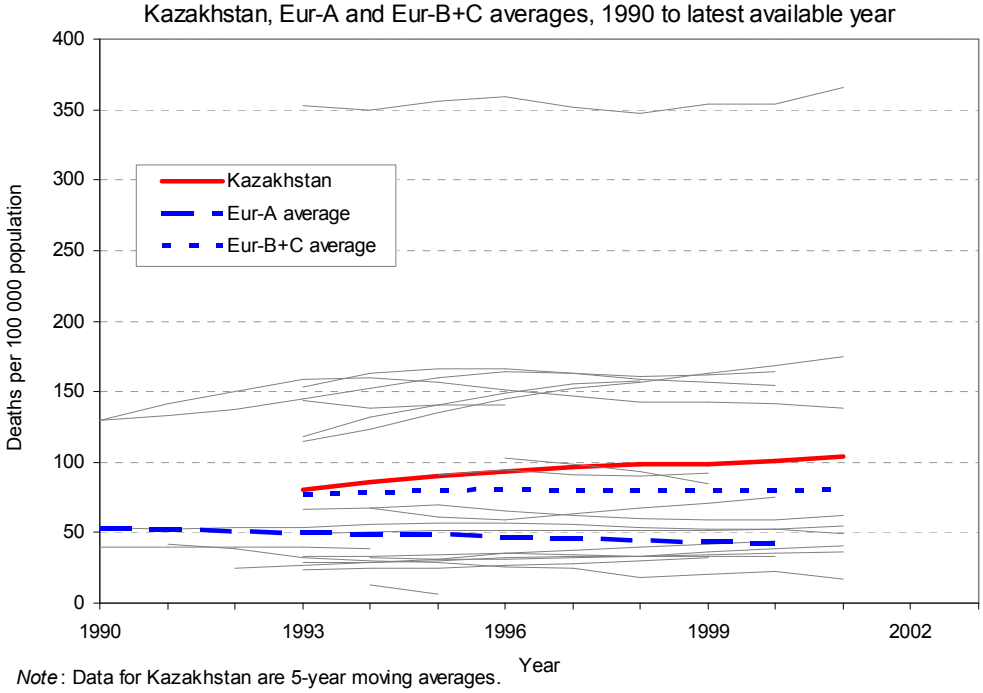


Digestive diseases

Mortality from digestive diseases has dropped steadily in Eur-A over the last 20 years but has increased considerably in Eur-B+C since 1990 and even more so in Kazakhstan. By 2003, the rate was clearly higher than the Eur-B+C average and twice as high as the Eur-A average. As already mentioned, a considerable part of the problem is the excess mortality from chronic liver disease and cirrhosis.



SDR for chronic liver disease and cirrhosis in people aged 60–74 years, Kazakhstan, Eur-A and Eur-B+C averages, 1990 to latest available year

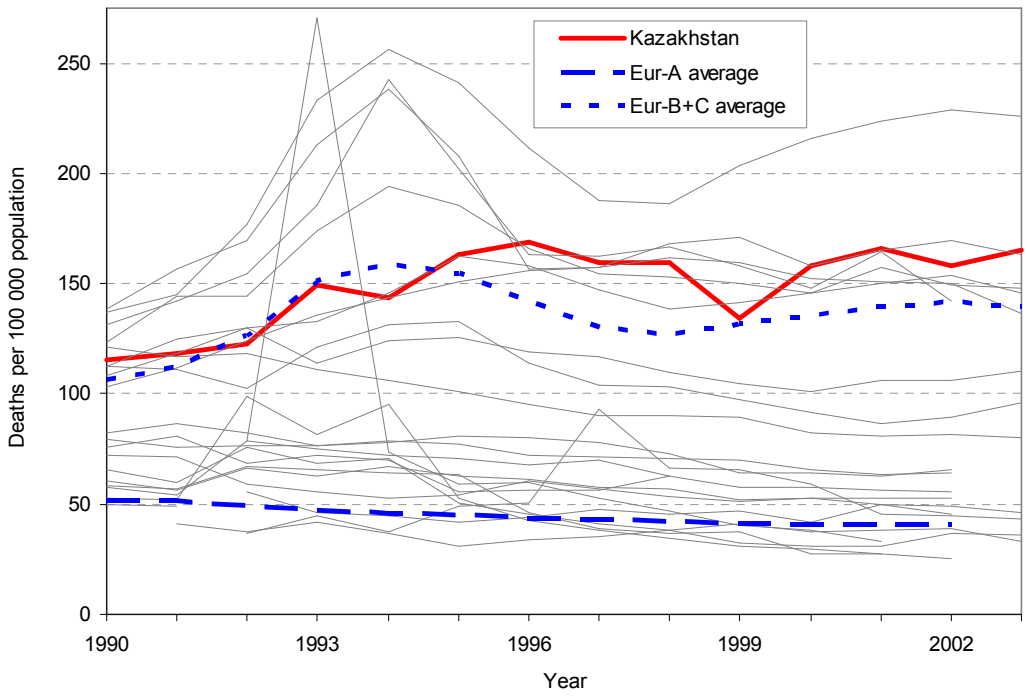


Note: Data for Kazakhstan are 5-year moving averages.

External causes

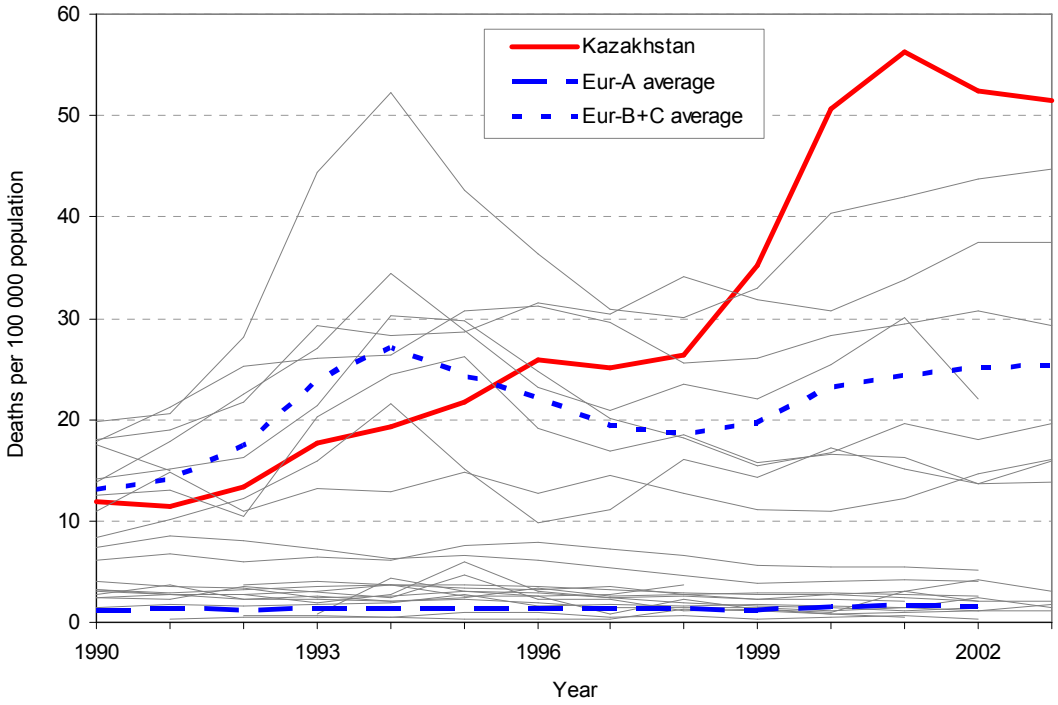
External causes of injury and poisoning include unintentional injuries (transport injury, poisoning, injury due to falls, fires and drowning and other) as well as intentional injuries (self-inflicted injuries, injuries due to violence and war and other). Overall external causes were responsible for 165 deaths per 100,000 population in Kazakhstan in 2003 while the Eur-B+C average was 140 and the Eur-A average 40.

SDR for external causes of injury and poisoning in people of all ages, Kazakhstan, Eur-A and Eur-B+C averages, 1980 to latest available year

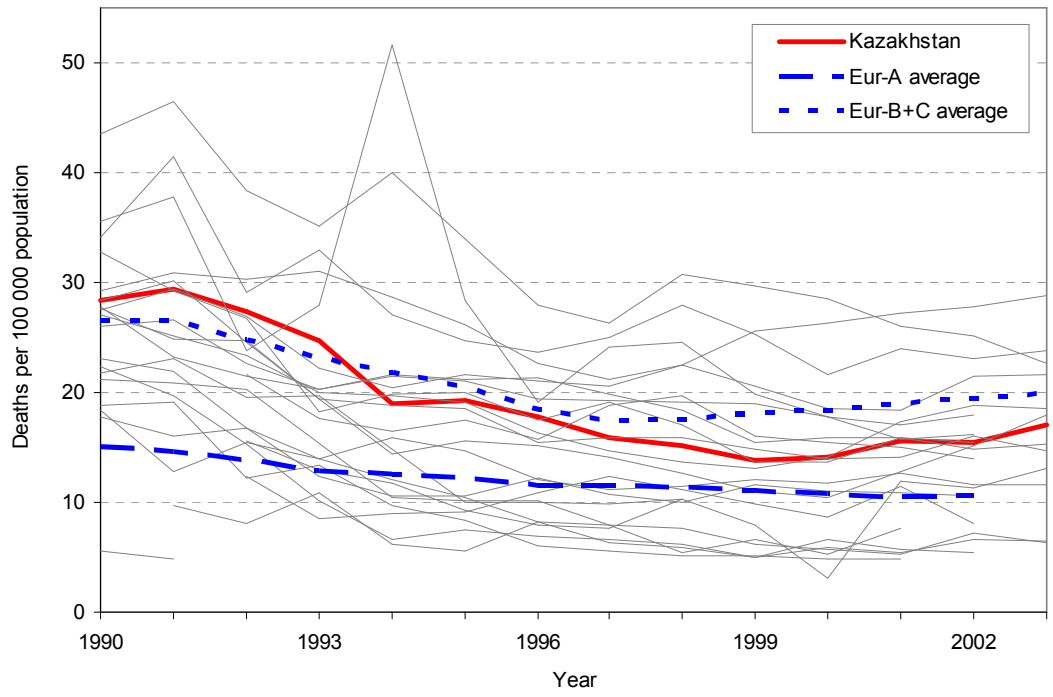


The rates clearly increased from 1990 to 1996 and, unfortunately, there has been no real improvement in recent years. An interesting observation requiring explanation is that the mortality trends for transport accidents and accidental poisoning (largely due to acute alcohol poisoning) seem to be moving in opposite directions.

SDR for accidental poisoning in people of all ages,
Kazakhstan, Eur-A and Eur-B+C averages, 1980 to latest available year

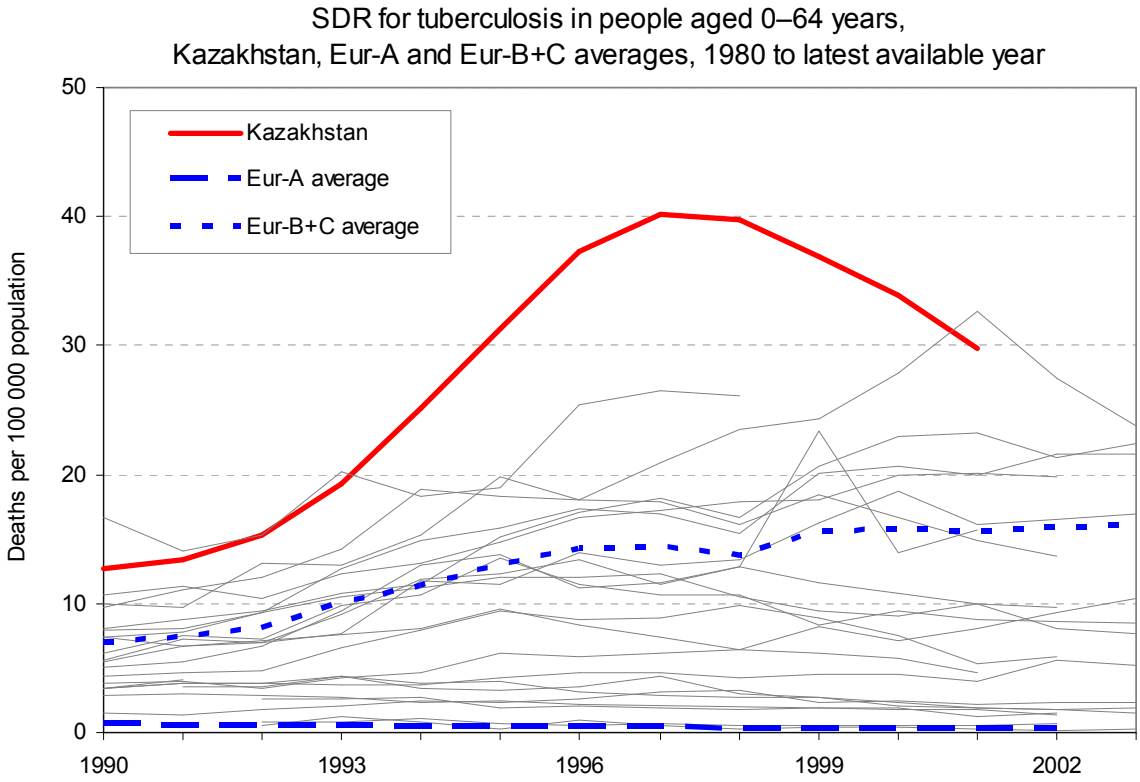


SDR for transport accidents in people of all ages,
Kazakhstan, Eur-A and Eur-B+C averages, 1980 to latest available year



Tuberculosis

Deaths from tuberculosis increased from 1990 and began to decrease again from 1997.



Note: Data for Kazakhstan are 5-year moving averages.

References

Council of Europe (2005). *Recent demographic developments in Europe 2004*. Strasbourg, Council of Europe.

Health Evidence Network (2003a). *What are the main risk factors for disability in old age and how can disability be prevented?* Copenhagen, WHO Regional Office for Europe (http://www.euro.who.int/HEN/Syntheses/20030820_1, accessed 11 October 2005).

Health Evidence Network (2003b). *What is the efficacy/effectiveness of antenatal care?* Copenhagen, WHO Regional Office for Europe (http://www.euro.who.int/HEN/Syntheses/20030820_1, accessed 11 October 2005).

Health Evidence Network (2004). *What are the advantages and disadvantages of restructuring a health care system to be more focused on primary health care services?* Copenhagen, WHO Regional Office for Europe (http://www.euro.who.int/HEN/Syntheses/20030820_1, accessed 11 October 2005).

Health Evidence Network (2005). *What is the effectiveness of antenatal care? (Supplement)* Copenhagen, WHO Regional Office for Europe (http://www.euro.who.int/HEN/Syntheses/20030820_1, accessed 15 January 2006).

ILO (2005). Key indicators of the labour market database [web site]. Geneva, International Labour Organization (http://www.ilo.org/public/english/employment/strat/kilm/index.htm, accessed 29 November 2005).

OECD (2004). *Ageing and employment policies*. Paris, Organisation for Economic Co-operation and Development (http://www.oecd.org/document/37/0,2340,en_2649_201185_32019685_1_1_1_1,00.html, accessed 14 November 2005).

Office of the President of Kazakhstan (2004). *National program of health sector reform and development in Kazakhstan for 2005–2010.* (Edict of the President of Kazakhstan, No. 1438 of 13 September). Almaty, Office of the President of Kazakhstan, 2004.

UNDP (2004). *Human Development Report, Kazakhstan 2004. Education for all: the key goal for a new millennium.* Almaty, United Nations Development Programme **(**UNDP) Kazakhstan. (http://www.undp.kz/library_of_publications/files/3983-17714.pdf, accessed 21 February 2006).

UNESCO Institute for Statistics (2005). Country/Regional profiles [web site]. Montreal, UNESCO Institute for Statistics (http://www.uis.unesco.org/profiles/selectCountry_en.aspx, accessed 2 December 2005).

United Nations (2005). World population prospects: the 2004 revision population database [database online]. New York, United Nations (http://esa.un.org/unpp/index.asp?panel=1, accessed 28 September 2005).

WHO (2003a). *Managing newborn problems: a guide for doctors, nurses and midwives*. Geneva, World Health Organization (http://www.who.int/reproductive-health/publications/mnp/mnp.pdf, accessed 13 October 2005).

WHO (2003b). *The WHO reproductive health library, version 6*. Geneva, World Health Organization (http://www.who.int/reproductive-health/rhl/index.html, accessed 11 October 2005).

WHO (2003c). *The world health report 2003 – Shaping the future.* Geneva, World Health Organization (http://www.who.int/whr/2003/en, accessed 11 October 2005).

WHO (2004). *The world health report 2004 – Changing history*. Geneva, World Health Organization (http://www.who.int/whr/2004/en, accessed 11 October 2005).

WHO (2005). *The world health report 2005 – Make every mother and child count*. Geneva, World Health Organization (http://www.who.int/whr/2005/en, accessed 11 October 2005).

WHO Regional Office for Europe (2002). *The European health report 2002*. Copenhagen, WHO Regional Office for Europe: 156 (http://www.euro.who.int/europeanhealthreport, accessed 11 October 2005).

WHO Regional Office for Europe (2004a). *A strategy to prevent chronic disease in Europe: a focus on public health action: the CINDI vision*. Copenhagen, WHO Regional Office for Europe (http://www.euro.who.int/document/e83057.pdf, accessed 11 October 2005).

WHO Regional Office for Europe (2004b). *Towards a European strategy on noncommunicable diseases*. Copenhagen, WHO Regional Office for Europe (http://www.euro.who.int/document/rc54/edoc08.pdf, accessed 11 October 2005).

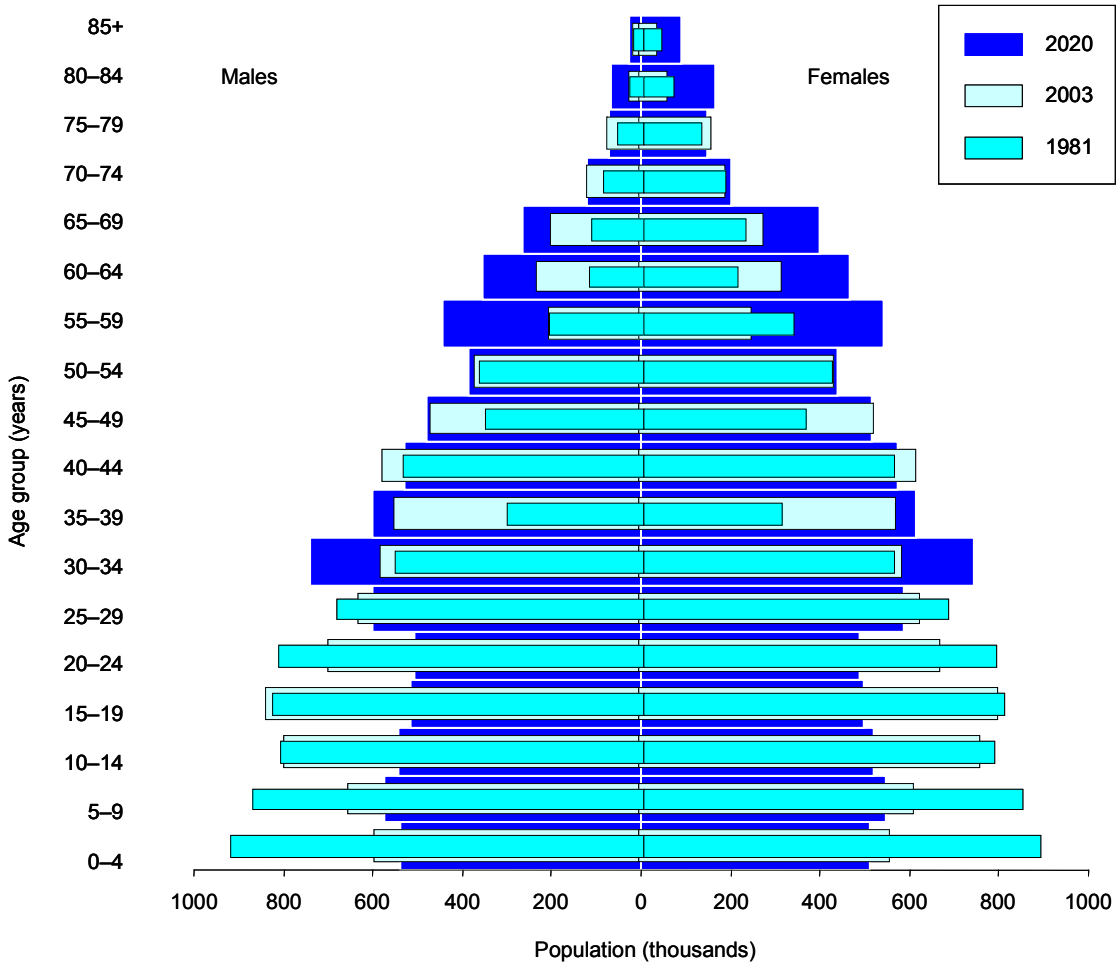
WHO Regional Office for Europe (2005). European health for all database (HFA-DB) [online database]. Copenhagen, WHO Regional Office for Europe (http://www.euro.who.int/hfadb, accessed 20 January 2005).

World Bank (2004). *The Millennium Development Goals in Europe and Central Asia*. Washington, DC, World Bank.

World Bank (2005). *World development indicators 2005*. Washington, DC, World Bank (http://devdata.worldbank.org/wdi2005/home.htm, accessed 28 September 2005).

Annexes

Annex. Age pyramid



Sources: WHO Regional Office for Europe (2005) and United Nations (2005).

Annex. Selected mortality

Selected mortality in Kazakhstan compared with Eur-B+C averages

Condition	SDR per 100 000		Excess mortality in Kazakhstan (%)	Total deaths in Kazakhstan (%)	Total deaths in Eur-B+C (%)	Eur-A average	Excess Kazakhstan to Eur-A (%)	Total deaths in Eur-A (%)
	Kazakhstan (2003)	Eur-B+C average (2003)						
Selected non-communicable conditions	1225.3	1044.9	17.3	79.8	79.6	533.8	129.5	82.4
Cardiovascular diseases	867.9	741.8	17.0	56.6	56.5	243.4	256.6	37.6
Ischaemic heart disease	448.3	362.7	23.6	29.2	27.6	95.9	367.5	14.8
Cerebrovascular diseases	241.3	221.7	8.8	15.7	16.9	61.1	294.9	9.4
Diseases of pulmonary circulation and other heart disease	75.8	68.9	10.0	4.9	5.3	56.6	33.9	8.7
Malignant neoplasms	179.8	172.0	4.5	11.7	13.1	181.5	-0.9	28.0
Trachea/bronchus/lung cancer	35.7	33.9	5.3	2.3	2.6	37.1	-3.8	5.7
Female breast cancer	20.0	22.1	–9.5	1.3	1.7	27.0	-25.9	4.2
Colon/rectal/anal cancer	14.8	19.0	–22.1	1.0	1.4	20.7	-28.5	3.2
Prostate	9.3	14.3	–35.0	0.6	1.1	25.1	-62.9	3.9
Respiratory diseases	98.7	63.1	56.4	6.4	4.8	47.8	106.5	7.4
Chronic lower respiratory diseases	58.6	31.2	87.8	3.8	2.4	20.2	190.1	3.1
Pneumonia	26.4	23.6	11.9	1.7	1.8	16.2	63.0	2.5
Digestive diseases	62.6	52.3	19.7	4.1	4.0	30.8	103.2	4.8
Chronic liver disease and cirrhosis	39.4	32.0	23.1	2.6	2.4	12.6	212.7	1.9
Neuropsychiatric disorders	16.3	15.7	3.8	1.1	1.2	30.3	-46.2	4.7
Communicable conditions	32.7	20.8	57.2	2.1	1.6	8.4	289.3	1.3
AIDS/HIV	0.0	0.8	–100.0	0.0	0.1	1.1	-100.0	0.2
External causes	165.2	139.6	18.3	10.8	10.6	40.3	309.9	6.2
Unintentional	117.1	102.2	14.6	7.6	7.8	28.7	308.0	4.4
Road traffic injuries	11.7	14.7	–20.4	0.8	1.1	9.9	18.2	1.5
Falls	2.9	7.5	–61.3	0.2	0.6	6.1	-52.5	0.9
Intentional	48.0	37.4	28.3	3.1	2.9	11.6	313.8	1.8
Self-inflicted (suicide)	31.5	23.2	35.8	2.1	1.8	10.6	197.2	1.6
Violence (homicide)	16.5	14.2	16.2	1.1	1.1	1.0	1550.0	0.2
Ill-defined conditions	57.6	64.0	–10.0	3.8	4.9	20.9	175.6	3.2
All causes	1534.6	1312.2	16.9	100.0	100.0	647.8	136.9	100.0

Annex. Mortality data

Table 1. Selected mortality for the group 0–14 years by sex in Kazakhstan and Eur-B+C: SDR per 100 000 population and percentage changes from 1995 to latest available year

Causes of death	Sex	Kazakhstan (2003)		Eur-A (2002)		Eur-B+C (2003)	
		Rate	Change (%)	Average	Change (%)	Average	Change (%)
All causes	Both	180.4	–5.0	49.4	–2.4	151.7	–3.8
	M	204.6	–5.0	55.3	–2.5	170.5	–3.9
	F	154.9	–5.0	43.3	–2.4	131.9	–3.8
Infectious and parasitic diseases	M	9.9	–10.0	1.4	–1.1	10.9	–7.0
	F	10.1	–9.2	1.1	–3.0	9.5	–6.6
Intestinal infectious diseases	M	2.9	–11.4	0.2	–0.7	5.1	–8.2
	F	3.5	–10.8	0.1	–7.3	4.7	–7.9
Malignant neoplasms	M	6.1	0.9	3.3	–1.8	5.1	–1.9
	F	4.3	–2.3	2.6	–1.8	4.2	–1.9
Cardiovascular diseases	M	3.7	–0.5	1.4	–3.1	3.3	1.1
	F	2.8	–2.9	1.3	–2.5	2.6	0.1
Respiratory diseases	M	40.9	–7.4	1.4	–4.3	35.9	–5.0
	F	32.8	–7.6	1.0	–4.2	30.7	–5.0
Pneumonia	M	28.6	–7.5	0.5	–6.0	20.9	–4.9
	F	24.0	–7.4	0.4	–5.1	17.9	–4.7
Certain conditions originating in perinatal period	M	715.5	–2.7	255.3	–2.1	607.6	–2.7
	F	491.8	–1.7	202.3	–1.6	427.5	–2.7
Congenital malformations & chromosomal abnormalities	M	32.6	–1.3	11.6	–2.9	24.2	–2.8
	F	26.8	–1.1	10.0	–3.3	21.0	–2.6
Ill-defined causes	M	5.1	–0.8	5.0	–3.9	5.6	–0.6
	F	2.8	–4.3	3.4	–4.2	4.6	–1.0
External causes of injury & poisoning	M	38.6	–3.4	7.0	–4.0	29.0	–3.4
	F	26.7	–2.7	4.6	–3.2	18.1	–3.1
Road traffic injuries	M	4.7	–3.1	2.5	–4.5	4.7	–2.6
	F	3.6	–0.1	1.7	–4.8	3.0	–1.6

Table 2. Selected mortality for the group 15–29 years by sex in Kazakhstan and Eur-B+C: SDR per 100 000 population and percentage changes from 1995 to latest available year

Causes of death	Sex	Kazakhstan (2003)		Eur-A (2002)		Eur-B+C (2003)	
		Rate	Change (%)	Average	Change (%)	Average	Change (%)
All causes	Both	205.9	–0.9	56.0	–2.3	161.0	–0.9
	M	301.1	–0.7	82.0	–2.3	241.7	–1.0
	F	109.8	–0.9	29.3	–2.2	79.0	–0.6
Infectious and parasitic diseases	M	23.1	–5.0	1.2	1.5	12.3	3.0
	F	11.7	1.0	0.8	1.9	5.1	2.5
Malignant neoplasms	M	9.7	0.0	6.2	–1.0	8.8	–1.9
	F	9.1	–1.5	4.7	–1.4	7.7	–1.9
Cardiovascular diseases	M	23.8	1.3	4.1	–2.4	17.6	0.0
	F	12.3	–1.1	2.3	–2.0	7.3	–0.9
Respiratory diseases	M	8.5	–4.6	1.4	–3.6	6.9	0.2
	F	5.3	–5.8	0.9	–2.7	3.8	–1.1
Digestive diseases	M	9.3	4.3	0.9	–3.5	8.0	3.0
	F	4.8	1.5	0.5	–3.8	3.7	3.1
Ill-defined causes	M	10.5	6.3	4.0	–3.1	11.6	7.1
	F	3.7	6.8	1.4	–1.3	3.3	5.8
External causes	M	196.9	–0.3	58.3	–1.4	162.4	–1.6
	F	46.3	1.0	14.4	–1.6	36.9	–0.2
Road traffic injuries	M	19.1	–2.3	28.5	–1.3	27.8	–1.5
	F	4.5	–1.8	7.3	–1.4	8.0	0.3
Accidental drowning	M	15.3	–1.0	1.3	–2.2	10.8	–3.9
	F	3.0	1.7	0.2	–2.1	1.9	–2.2
Accidental poisoning	M	36.1	19.6	2.8	0.0	19.1	3.3
	F	10.5	17.2	0.7	0.8	4.4	2.5
Self-inflicted (suicide)	M	57.1	1.6	12.7	–1.8	36.8	0.0
	F	11.0	0.8	3.1	–2.2	5.8	–1.3

Table 3. Selected mortality for the group 30–44 years by sex in Kazakhstan and Eur-B+C: SDR per 100 000 population and percentage changes from 1995 to latest available year

Causes of death	Sex	Kazakhstan (2003)		Eur-A (2002)		Eur-B+C (2003)	
		Rate	Change (%)	Average	Change (%)	Average	Change (%)
All causes	Both	526.7	0.0	120.3	–2.5	453.8	–0.7
	M	808.5	–0.1	161.6	–2.6	700.0	–0.8
	F	260.5	0.5	78.5	–2.1	215.6	–0.2
Malignant neoplasms	M	37.1	–3.6	27.6	–2.3	40.2	–2.8
	F	42.7	–1.3	31.3	–2.0	43.8	–1.4
Trachea/bronchus/lung cancer	M	7.3	–3.4	5.0	–3.4	7.3	–4.2
	F	2.1	–1.8	2.8	–0.6	2.2	–1.0
Female breast cancer							
	F	9.3	0.0	10.0	–2.6	10.0	–2.3
Cardiovascular diseases	M	195.8	0.7	26.1	–2.5	158.6	–0.4
	F	63.5	0.7	10.4	–2.1	45.3	0.0
Ischaemic heart disease	M	85.1	–2.2	11.8	–3.1	73.7	–2.2
	F	17.1	–2.1	2.4	–2.7	14.4	–1.3
Cerebrovascular diseases	M	37.6	3.7	4.4	–3.2	24.6	–0.4
	F	16.8	2.3	3.6	–2.5	10.6	–1.3
Respiratory diseases	M	41.1	0.4	3.9	–3.5	34.3	0.9
	F	14.9	0.5	2.2	–2.0	9.8	0.8
Digestive diseases	M	55.8	7.4	12.6	–2.4	50.2	1.4
	F	22.7	9.4	5.4	–1.7	19.4	4.1
External causes	M	336.3	–0.5	58.8	–1.2	299.5	–1.9
	F	63.9	–0.2	15.1	–1.8	58.9	–1.0
Road traffic injuries	M	26.8	–2.9	16.0	–0.5	31.4	–1.7
	F	6.0	–3.5	3.9	–2.0	7.1	–0.5
Self-inflicted (suicide)	M	78.4	0.2	21.2	–1.5	54.9	–2.4
	F	9.3	–0.5	5.8	–2.2	7.9	–2.5

Table 4. Selected mortality for the group 45–59 years by sex in Kazakhstan and Eur-B+C: SDR per 100 000 population and percentage changes from 1995 to latest available year

Causes of death	Sex	Kazakhstan (2003)		Eur-A (2002)		Eur-B+C (2003)	
		Rate	Change (%)	Average	Change (%)	Average	Change (%)
All causes	Both	1465.8	–0.6	435.6	–1.3	1294.9	–0.6
	M	2238.2	–0.2	580.1	–1.4	1981.7	–0.6
	F	822.8	–0.8	293.3	–1.0	698.9	–0.5
Malignant neoplasms	M	296.2	–3.1	218.2	–1.2	323.2	–1.9
	F	188.9	–0.6	155.0	–1.0	186.1	–0.5
Trachea/bronchus/lung cancer	M	96.9	–3.7	65.9	–1.5	101.4	–2.9
	F	14.4	0.1	21.8	3.4	15.4	1.0
Female breast cancer							
	F	40.5	1.5	44.0	–2.2	45.3	0.1
Cardiovascular diseases	M	964.3	0.8	156.4	–2.6	793.1	–0.1
	F	354.8	–1.0	50.9	–2.5	271.7	–0.6
Ischaemic heart disease	M	495.5	–0.9	86.2	–3.3	435.3	–0.7
	F	125.0	–2.3	17.8	–3.4	111.1	–0.6
Cerebrovascular diseases	M	220.6	0.9	23.7	–2.6	168.6	–0.9
	F	125.5	–1.1	14.5	–2.1	88.4	–1.4
Respiratory diseases	M	144.7	–2.6	20.3	–1.7	108.7	–1.4
	F	38.4	–2.6	10.2	–1.3	24.5	–0.7
Digestive diseases	M	157.3	4.9	49.6	–0.8	129.7	0.7
	F	64.6	3.0	20.3	–0.7	57.3	1.9
External causes	M	424.6	–0.1	62.8	–1.0	409.2	–0.9
	F	85.5	–2.2	20.9	–0.9	89.1	–1.1
Road traffic injuries	M	22.2	–2.7	13.0	–1.3	28.5	–1.8
	F	5.6	–3.7	4.1	–2.1	7.5	–1.4
Self-inflicted (suicide)	M	80.0	–2.0	23.1	–1.1	68.1	–2.4
	F	11.2	–3.7	8.5	–1.2	10.2	–3.4

Table 5. Selected mortality for the group 60–74 years by sex in Kazakhstan and Eur-B+C: SDR per 100 000 population and percentage changes from 1995 to latest available year

Causes of death	Sex	Kazakhstan (2003)		Eur-A (2002)		Eur-B+C (2003)	
		Rate	Change (%)	Average	Change (%)	Average	Change (%)
All causes	Both	4066.5	0.2	1570.9	–1.9	3411.7	–0.1
	M	5917.1	0.2	2156.9	–2.1	4996.4	0.1
	F	2832.8	–0.2	1069.2	–1.9	2339.0	–0.6
Malignant neoplasms	M	1049.3	–1.7	851.3	–1.4	1002.5	–0.8
	F	476.1	–1.4	439.8	–1.1	438.9	–0.7
Trachea/bronchus/lung cancer	M	332.7	–2.0	261.8	–1.9	321.7	–1.5
	F	40.3	–2.6	59.0	0.2	37.1	–1.4
Female breast cancer							
	F	54.9	0.9	79.7	–1.6	68.7	1.3
Cardiovascular diseases	M	3416.2	1.4	744.9	–3.6	2903.0	0.6
	F	1812.0	0.5	335.7	–3.9	1507.8	–0.3
Ischaemic heart disease	M	1824.8	0.5	381.3	–4.2	1582.2	1.2
	F	866.6	0.2	133.5	–4.6	731.4	0.5
Cerebrovascular diseases	M	927.4	0.7	143.3	–3.7	833.7	0.2
	F	589.5	–0.5	86.7	–4.1	528.9	–0.8
Respiratory diseases	M	521.0	–2.9	144.0	–3.5	303.0	–2.4
	F	138.6	–3.4	62.5	–2.4	68.6	–3.6
Digestive diseases	M	253.6	2.1	111.6	–1.6	193.0	0.1
	F	131.8	1.1	54.1	–1.7	94.2	0.2
External causes	M	344.5	0.6	79.3	–1.4	320.0	1.0
	F	101.9	–0.3	32.1	–2.1	88.7	–0.5
Road traffic injuries	M	19.4	–3.3	14.8	–3.0	24.3	–1.5
	F	7.2	–2.4	5.9	–3.4	9.5	–1.0
Self-inflicted (suicide)	M	69.7	–1.8	24.5	–1.6	60.5	–0.8
	F	14.2	–1.9	8.7	–2.6	12.7	–3.1

Table 6. Selected mortality for the group 75+ years by sex in Kazakhstan and Eur-B+C: SDR per 100 000 population and percentage changes from 1995 to latest available year

Causes of death	Sex	Kazakhstan (2003)		Eur-A (2002)		Eur-B+C (2003)	
		Rate	Change (%)	Average	Change (%)	Average	Change (%)
All causes	Both	13999.5	1.5	8059.6	–1.0	12338.8	0.0
	M	18509.5	1.5	9832.0	–1.1	14838.0	0.1
	F	12559.8	1.4	7112.5	–0.9	11421.7	0.0
Malignant neoplasms	M	1407.8	–0.5	2231.1	–0.4	1489.3	1.2
	F	723.5	0.0	1136.2	–0.4	721.7	0.8
Trachea/bronchus/lung cancer	M	320.5	0.5	457.1	–0.7	323.5	1.0
	F	60.5	0.2	102.7	1.5	55.6	0.5
Female breast cancer							
	F	81.3	6.6	159.6	–0.4	92.0	3.1
Cardiovascular diseases	M	12125.9	1.0	4356.2	–2.1	10221.2	0.4
	F	9799.4	1.5	3577.9	–1.9	8805.6	0.4
Ischaemic heart disease	M	6932.2	1.6	1708.0	–2.2	4925.6	1.4
	F	5285.2	2.1	1150.0	–2.2	4028.6	1.2
Cerebrovascular diseases	M	2976.9	–0.9	1119.8	–2.5	3004.4	0.7
	F	2797.6	0.1	1026.9	–2.4	2967.6	0.5
Respiratory diseases	M	1500.0	–1.8	1156.5	–2.4	824.1	–2.1
	F	547.5	–2.5	591.9	–2.1	302.3	–3.2
Digestive diseases	M	360.8	4.6	340.3	–1.1	270.4	0.3
	F	197.1	1.6	279.8	–0.4	175.0	1.1
External causes	M	1535.6	18.6	275.0	–0.6	604.2	0.1
	F	193.7	6.2	187.8	–1.2	172.4	–1.2
Road traffic injuries	M	68.3	7.4	28.1	–2.2	34.6	–3.1
	F	7.0	–5.3	10.0	–3.1	14.7	–1.7
Self-inflicted (suicide)	M	129.5	1.3	49.5	–1.6	86.6	–1.1
	F	26.2	–2.0	11.8	–3.2	22.4	–1.9

Technical notes

Calculation of averages

Averages for the reference group, when based on data in the European health for all database of the WHO Regional Office for Europe, are weighted by population. Some countries with insufficient data may be excluded from the calculation of averages. Otherwise, for data from other sources, simple averages have been calculated where required.

To smooth out fluctuations in annual rates caused by small numbers, three-year averages have been used, as appropriate. For example, maternal mortality, usually a small number, has three-year moving averages calculated for all countries. When extreme fluctuations are known to be due to population anomalies, data have been deleted, as appropriate.

Data sources

To make the comparisons as valid as possible, data for each indicator have, as a rule, been taken from one source to ensure that they have been harmonized in a reasonably consistent way. Unless otherwise noted, the source of data for figures and tables in this report is the January 2005 version of the European health for all database of the WHO Regional Office for Europe. The health for all database acknowledges the various primary sources of the data.

In cases where current census data for national population are unavailable, coupled with ongoing migrations of people in and out of countries, UN estimates or provisional figures supplied by the country are used to approximate national population. Such population figures create uncertainty in standardized death rates.

Disease coding

Case ascertainment, recording and classification practices (using the ninth and tenth revisions of the International Statistical Classification of Diseases and Related Health Problems: ICD-9 and ICD-10, respectively), along with culture and language, can influence data and therefore comparability across countries.

Healthy life expectancy (HALE) and disability-adjusted life-years (DALYs)

HALE and DALYs are summary measures of population health that combine information on mortality and non-fatal health outcomes to represent population health in a single number. They complement mortality indicators by estimating the relative contributions of different causes to overall loss of health in populations.

DALYs are based on cause-of-death information for each WHO region and on regional assessments of the epidemiology of major disabling conditions. The regional estimates have been disaggregated to Member State level for the highlights reports.

National estimates of HALE are based on the life tables for each Member State, population representative sample surveys assessing physical and cognitive disability and general health status, and on detailed information on the epidemiology of major disabling conditions in each country.

More explanation is provided in the statistical annex and explanatory notes of *The world health report 2003*[1].

Limitations of national-level data

National-level averages, particularly when they indicate relatively good positions or trends in health status, as is the case in most developed countries, hide pockets of problems. Unless the health status of a small population is so dramatically different from the norm that it influences a national indicator, health risks and poorer health outcomes for small groups will only become evident through subnational data.

Reference groups for comparison

When possible, international comparisons are used as one means of assessing a country's comparative strengths and weaknesses and to provide a summary assessment of what has been achieved so far and

[1] WHO (2003). *The world health report 2003 – Shaping the future.* Geneva, World Health Organization (http://www.who.int/whr/2003/en, accessed 10 June 2005).

what could be improved in the future. Differences between countries and average values allow the formulation of hypotheses of causation or imply links or remedies that encourage further investigation.

The country groups[1] used for comparison are called reference groups and comprise:

- countries with similar health and socioeconomic trends or development; and/or
- geopolitical groups.

The 27 countries with very low child mortality and very low adult mortality are designated Eur-A by WHO. Eur-A comprises Andorra, Austria, Belgium, Croatia, Cyprus, the Czech Republic, Denmark, Finland, France, Germany, Greece, Iceland, Ireland, Israel, Italy, Luxembourg, Malta, Monaco, the Netherlands, Norway, Portugal, San Marino, Slovenia, Spain, Sweden, Switzerland and the United Kingdom. However, data for most indicators are unavailable for two of the 27 countries: Andorra and Monaco. Therefore, unless otherwise indicated, Eur-A and averages for Eur-A refer to the 25 countries for which data are available.

The 25 countries with low child mortality and low or high adult mortality are designated Eur-B+C by WHO. Eur-B+C comprises Albania, Armenia, Azerbaijan, Belarus, Bosnia and Herzegovina, Bulgaria, Estonia, Georgia, Hungary, Kazakhstan, Kyrgyzstan, Latvia, Lithuania, Poland, Republic of Moldova, Romania, Russian Federation, Serbia and Montenegro, Slovakia, Tajikistan, Tajikistan, Turkey, Turkmenistan, Ukraine, and Uzbekistan. Unless otherwise indicated, Eur-B+C and averages for Eur-B+C refer to these countries.

Comparisons should preferably refer to the same point in time, but the countries' latest available data are not all for the same year. This should be kept in mind as a country's position may change when more up-to-date data become available.

Graphs have usually been used to show time trends from 1980 onwards. These graphs present the trends for all the reference countries as appropriate. Only the country in focus and the group average are highlighted and identified in the legend. This enables the country's trends to be followed in relation to those of all the reference countries, and performance in relation to observable clusters and/or the main trend or average to be recognized more easily.

[1] WHO (2004). *The world health report 2004 – Changing history*. Geneva, World Health Organization (http://www.who.int/whr/2004/en, accessed 26 August 2004.

Glossary

Causes of death	ICD-10 code
Cerebrovascular diseases	I60–I69
Chronic liver disease and cirrhosis	K70, K73, K74, K76
Chronic obstructive pulmonary disease	J40–J47
Colon/rectal/anal cancer	C18–C21
Diseases of pulmonary circulation and other heart disease	I26–I51
Falls	W00–W19
Female breast cancer	C50
Ischaemic heart disease	I20–I25
Pneumonia	J12–J18
Prostate cancer	C61
Neuropsychiatric disorders	F00–99, G00–99, H00–95
Road traffic injuries	V02–V04, V09, V12–V14, V19–V79, V82–V87, V89
Self-inflicted (suicide)	X60–X84
Trachea/bronchus/lung cancer	C33–C34
Violence	X85–Y09

Technical terminology

Disability-adjusted life-year (DALY)	The DALY combines in one measure the time lived with disability and the time lost due to premature mortality. One DALY can be thought of as one lost year of healthy life.
GINI index	Measures inequality over the entire distribution of income or consumption. A value of 0 represents perfect equality; a value of 100, perfect inequality. Low levels in the WHO European Region range from 23 to 25; high levels range from 35 to 36.[1]
Healthy life expectancy (HALE)	HALE summarizes total life expectancy into equivalent years of full health by taking account of years lived in less than full health due to diseases and injuries.
Income poverty line (50% of median income)	The percentage of the population living below a specified poverty line: in this case, with less than 50% of median income.
Life expectancy at birth	The average number of years a newborn infant would live if prevailing patterns of mortality at the time of birth were to continue throughout the child's life.
Natural population growth	The birth rate less the death rate
Neuropsychiatric conditions	Mental, neurological and substance use disorders
Population growth	(The birth rate less the death rate) + (immigration less emigration)
Standardized death rate (SDR)	The age-standardized death rate calculated using the direct method: that is, it represents what the crude rate would have been if the population had the same age distribution as the standard European population.

[1]WHO Regional Office for Europe (2002). *The European health report 2002*. Copenhagen, WHO Regional Office for Europe:156 (http://www.euro.who.int/europeanhealthreport, accessed 28 May 2004).