

# HIGHLIGHTS ON HEALTH IN BELARUS



Country Highlights give an overview of the health and health-related situation in a particular country and compare, where possible, its position in relation with other countries in WHO's European Region. The Highlights have been developed in collaboration with national experts for operational purposes and do not constitute a formal statistical publication. They are based on information provided by the country itself and obtained from other sources.

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## TECHNICAL NOTES

Highlights on Health provide an overview of the health of a country's population and the main factors related to it. When possible, comparisons are made with other countries in WHO's European Region, as one means of assessing the country's comparative strength and weaknesses. As a rule, data have been taken for this purpose from one common international source; nevertheless, even under these circumstances the comparability of data may be limited owing to differences in national definitions, registration systems, etc. Unless otherwise mentioned, the main source of all data is the "Health for All" (HFA) database of the WHO Regional Office for Europe (issue June 2000).

Where necessary, specific data from national sources are cited in the Highlights.

Two main types of graphical presentation are used in the Highlights to illustrate comparisons between countries:

- line charts, showing the trend in a particular indicator in the country in question (thicker line) compared with reference countries (thin lines);
- bar charts, showing a particular country's ranking compared with reference countries. The latest available data are used (i.e. the last year for which data are available may differ from one country to another). This type of chart is sensitive to small differences in the value of an indicator and should accordingly be interpreted with a certain amount of caution. For instance, a given country's position relative to other countries may change sharply one way or another when more recent data are included.

There are 51 Member States in WHO's European Region. It is not always appropriate to include all these countries in comparisons. For that reason, the charts mentioned above show a limited number of (usually geographically neighbouring) countries, which have certain similarities caused by their historical developments. In this case, comparisons are made with the other 14 countries that were formerly republics of the Soviet Union, with the average for all 15 newly independent states (NIS) formed following the break-up of the USSR, with the average for the five central Asian republics (CAR), and with the average for the 15 countries that are members of the European Union (EU).

Mortality data are the most complete and comparable, and they therefore constitute the main component of international comparisons. However, even in this case there is often some doubt about the completeness of the recording of deaths, especially at very young and old ages, and regarding the accuracy of coding of causes of death.

Unless otherwise stated, the charts are based on mortality rates standardized for the European standard population structure (for further details, see any issue of the *World Health Statistics Annual*). In most cases, so-called "premature mortality" in the age group 0-64 years is used.

In order to ensure comparability, the majority of indicators have been calculated at the WHO Regional Office for Europe (WHO/EURO), using a uniform methodology and software. For that reason, the values of some indicators in the HFA database may differ somewhat from national assessments based on other methods. This is true in particular of indicators such as average life expectancy and maternal mortality.

Only a relatively small amount of the information contained in the HFA database is used in the Highlights. If further data are needed, readers are recommended to make use of the database itself, which can be downloaded from WHO/EURO's web site ([www.who.dk](http://www.who.dk).Country Information).

A list of references and a glossary are given at the end of this Highlight.

## OVERVIEW

In Belarus, like in the neighbouring countries of the Russian Federation and Ukraine, the natural growth rate of the population has fallen steadily since the mid-1980s. As from 1993, the death rate has been higher than the birth rate. The rate of natural population loss has declined since 1996, but the country's population continues to decrease. In 10 years (1986–1997), the birth rate fell by almost half.

The trend in life expectancy is somewhat different from that in most newly independent states (NIS). The sharp improvement in this indicator in 1985–1986, as a result of an anti-alcohol campaign, was replaced by a downward trend that continued until 1995. The rate has since stabilized, while in neighbouring NIS it has begun to rise. In 1998, however, average life expectancy in Belarus was higher than the NIS average. According to preliminary data, life expectancy in Belarus continued to fall in 1999, to 68 years. The gap between male and female life expectancy is widening.

The leading categories of cause of death in Belarus are diseases of the circulatory system and external causes of injury and poisoning. Mortality due to these causes is among the highest in WHO's European Region.

According to available data, the infant mortality rate in Belarus is one of the lowest in the NIS. Maternal mortality is lower than the NIS average, despite an upward trend in recent years. Relative to the population, the number of abortions in the country is one of the highest in the Region.

Trends in mortality from diseases of the circulatory system in general, and from the individual causes found within this group, show the same features as trends in overall mortality: i.e. a gradual increase in the first

half of the 1990s, followed by stabilization at a relatively high level. The rate of premature (0–64 years) mortality due to ischaemic heart disease in Belarus is one of the highest in the Region.

Along with neighbouring NIS, premature mortality due to cancer in Belarus is one of the highest in Europe, despite a downward trend in recent years. At the same time, the overall incidence of cancer (all sites) is increasing. The incidence of thyroid cancer in children has multiplied following the disaster at the Chernobyl nuclear power plant.

The situation with regard to mortality from external causes of injury and poisoning is developing in an extremely unfavourable way. Unlike most other NIS, mortality from these causes has risen steadily since the end of the 1980s. Like in the Russian Federation, alcohol poisoning causes more deaths than road traffic accidents (25 and 18 per 100 000 population, respectively, in 1998).

There are relatively low rates of mortality from infectious and parasitic diseases and diseases of the digestive system.

The incidence of tuberculosis increased substantially between 1993 and 1997 but remains lower than the average for the NIS.

The incidence of syphilis took on epidemic proportions in the period 1993–1996. Although the rate has been falling since 1997, it remains one of the highest in the Region.

Belarus's health care expenditure (as a percentage of its gross domestic product) is higher than the NIS average.

According to available data, the number of hospital beds per 100 000 population is the highest in the NIS and one of the highest in the European Region as a whole.

## THE COUNTRY AND ITS PEOPLE

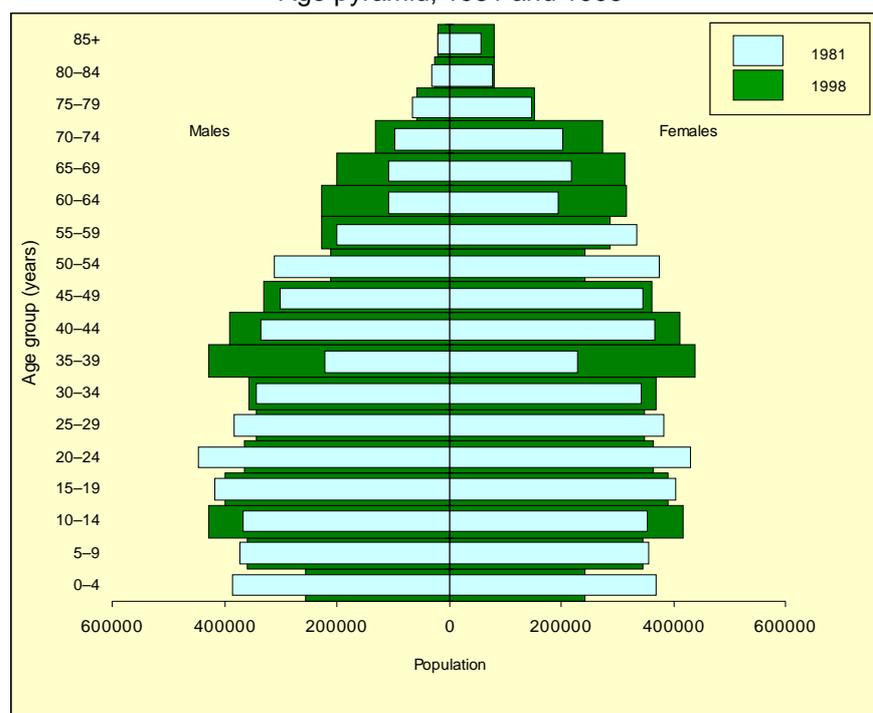
The Republic of Belarus became independent in 1991. The state structure is that of a presidential republic. The President is Alexander Lukashenko. The National Assembly consists of two chambers: the Chamber of Representatives and the Council of the Republic.

Belarus is divided into six administrative regions (*oblasts*) and the capital (Minsk), which has a population of 1.73 million. The *oblasts* comprise 118 rural districts, 102 cities, 110 urban settlements and 1449 rural municipalities.

Basic data on Belarus and the WHO European Region		
	Belarus (1998)	Europe (1997)
Population (millions)	10 275 <sup>a</sup>	
Population aged		
• 0–14 years, %	20.1	20.1
• 15–64 years, %	66.8	66.3
• ≥ 65 years, %	13.1	13.6
Area, km <sup>2</sup>	207 600	
Population density per km <sup>2</sup>	49.1	31
Urban population (%)	73.0	72.7
Births per 1000 population	9.1	11.11
Deaths per 1000 population	13.5	10.94
Natural growth rate per 1000 population	-4.4	0.17
Gross domestic product (GDP) per person in US\$, PPP*	4850 <sup>b</sup>	12 500

\*PPP - purchasing power parity  
<sup>a</sup>1999; <sup>b</sup>1997

Age pyramid, 1981 and 1998



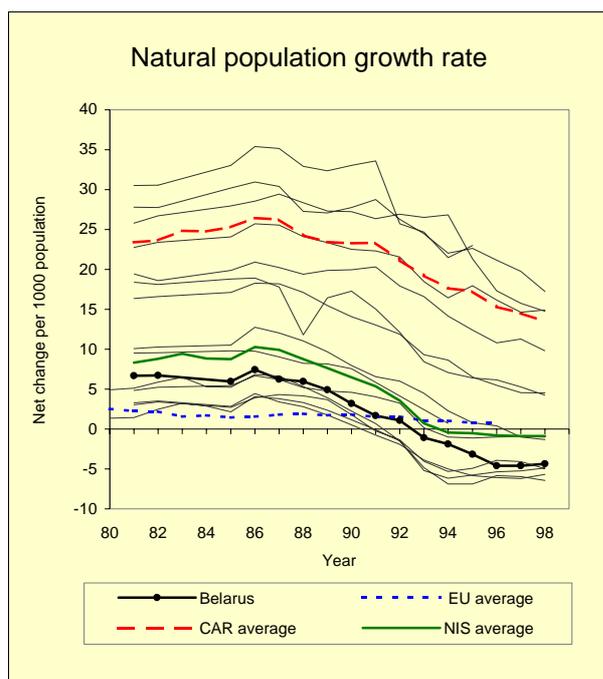
## Demography

In the past decade, the demographic situation in Belarus has been characterized by negative trends. Since 1993, the death rate has exceeded the birth rate. In 1998, the natural population loss reached a level of -4.4 per 1000.

In 1998, the mid-year population of Belarus was 10.2 million. Over the past six years (1993–98), the population of the country has fallen by 128 000 people or 1.2%. A fall in population has been recorded in 83 districts, where 68.4% of the total population live (*UNDP, 1999*).

The main factors responsible for this situation are a falling birth rate against the background of an increase in mortality. The downward trend in the birth rate became pronounced from 1986. By 1997 the rate had almost halved, from 17.1 to 8.8 per 1000 population. In 1998 the birth rate rose slightly, to 9.1 per 1000 population. Between 1980 and 1998, the death rate rose from 9.6 to 13.5 per 1000 population. According to preliminary data, it continued to increase in 1999, reaching a level of 14.1 per 1000 population.

The natural population loss is partly compensated for by a positive migratory balance, like in the Russian Federation.



## Migrant population and ethnic profile

The greatest changes in the intensity and direction of migratory flows in Belarus were seen at the end of the 1980s and the beginning of the 1990s. These changes were occasioned by the break-up of the former Soviet Union and the subsequent social and economic transformations, as well as by the 1986 disaster at the Chernobyl nuclear power plant. At the end of the 1980s the migratory balance was negative, owing to the significant number of emigrants leaving the former Soviet Union in connection with worsening living and environmental conditions. After the break-up of the USSR, there was a substantial rise in the number of ethnic Belarusians returning to their homeland. As a result, 1992 saw the largest preponderance of immigration over emigration. The intensity of migratory flows then diminished considerably, and in 1994–1995 the net migratory balance was negative. In recent years, however, net migration has been positive and increasing (14 700 people in 1997 and 19 900 people in 1998). (*UNDP, 1999, Council of Europe, 1999*).

## Education, language, religion

The literacy rate of the adult population in 1998 was 98.6%. Approximately 60% of the population over the age of 16 years have completed at least secondary education.

The official languages are Belorussian and Russian.

A substantial proportion of the population are atheists. The Orthodox Church has the largest number of adherents. A small proportion of the population are Catholics.

## Economy

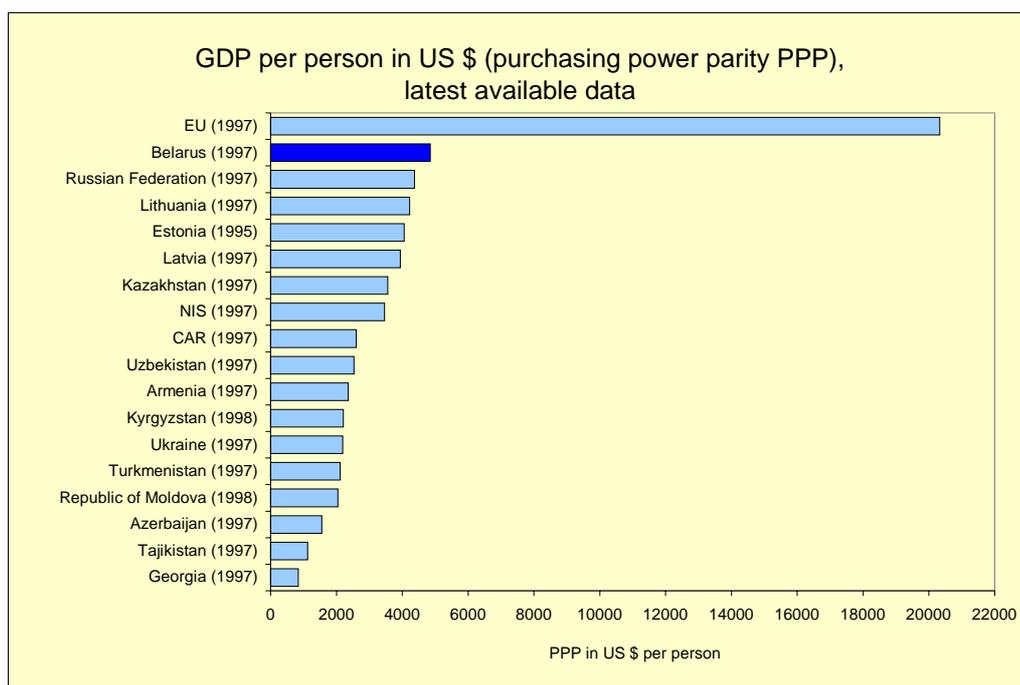
Belarus's economy underwent a deep recession between 1990 and 1995, with a fall in gross domestic product (GDP) of more of than 10% each year in the period 1993–1995.

Nonetheless, the recession proved to be less pronounced than in other former republics of the USSR, owing to favourable conditions for the supply of energy from the Russian Federation and a tough economic policy.

GDP began to rise in 1996. In 1997 GDP growth was 10.4% (8.33% in 1998), largely thanks to the government's monetary and credit policy, which was aimed at increasing the output of goods for export to the Russian Federation.

The 1998 economic crisis in the Russian Federation led to a slowdown in the rate of economic growth in Belarus.

Inflation soared after Belarus declared its independence, reaching 2221% in 1994. It was then brought down to 53% in 1996 but began to rise again in 1997, and the rate of increase quickened at the end of 1998 as a consequence of the economic crisis in the Russian Federation. As a result, consumer price inflation reached a level of 182% in 1998 (*Economist Intelligence Unit, 2000*).



## HEALTH STATUS

The trends in life expectancy (LE) and mortality are somewhat different from the general picture seen in most NIS. While there has been some growth in ALE in most NIS in recent years (1995–1998), in Belarus it has remained unchanged at the 1995 level, although this is somewhat higher than the NIS average. According to preliminary data, it fell by 0.5 years in 1999, to 68 years.

Like in a number of other NIS, the situation in Belarus is characterized by high mortality from cardiovascular diseases and from external causes of injury and poisoning.

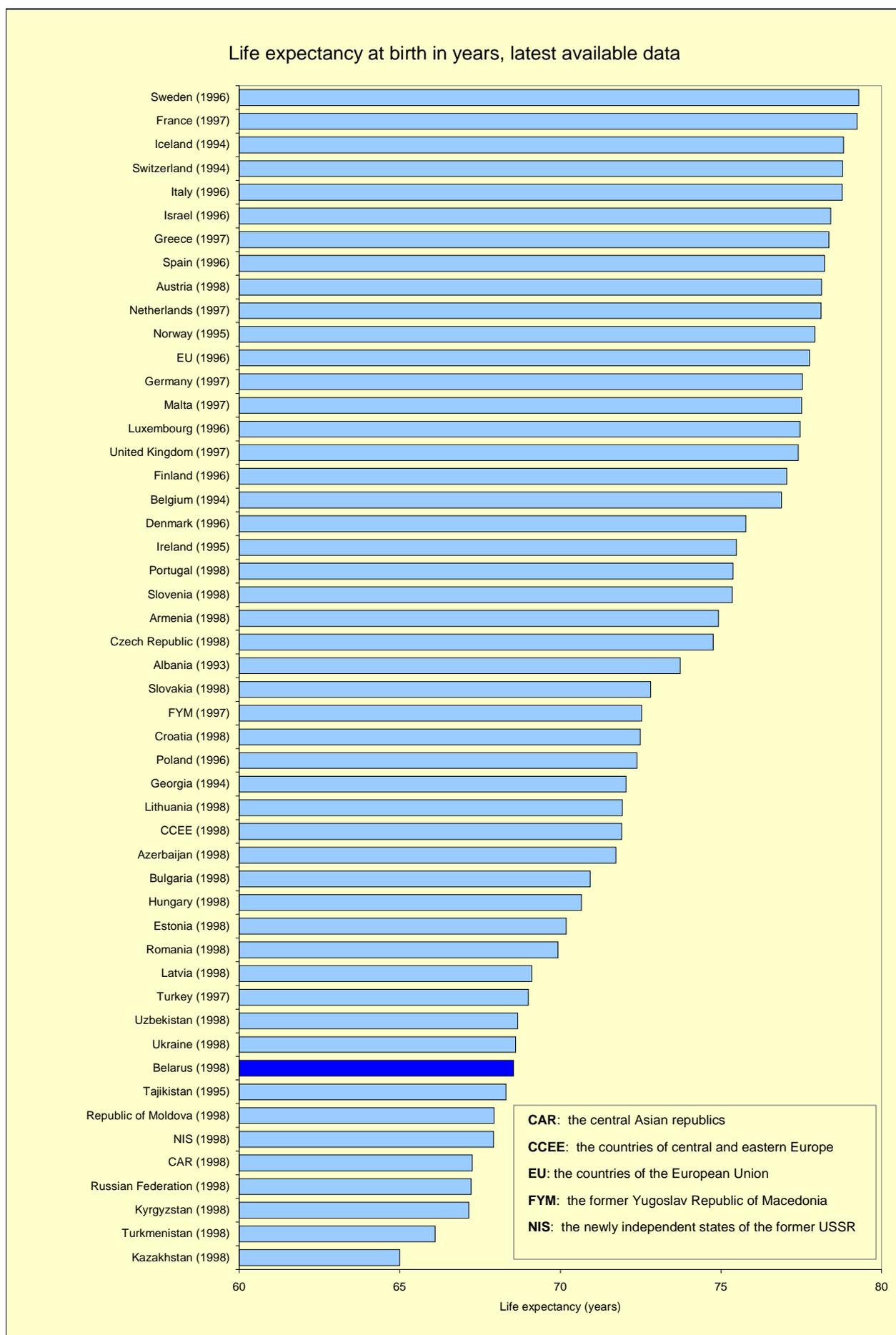
Morbidity rates due to tuberculosis and sexually transmitted infections are substantially higher than the European averages.

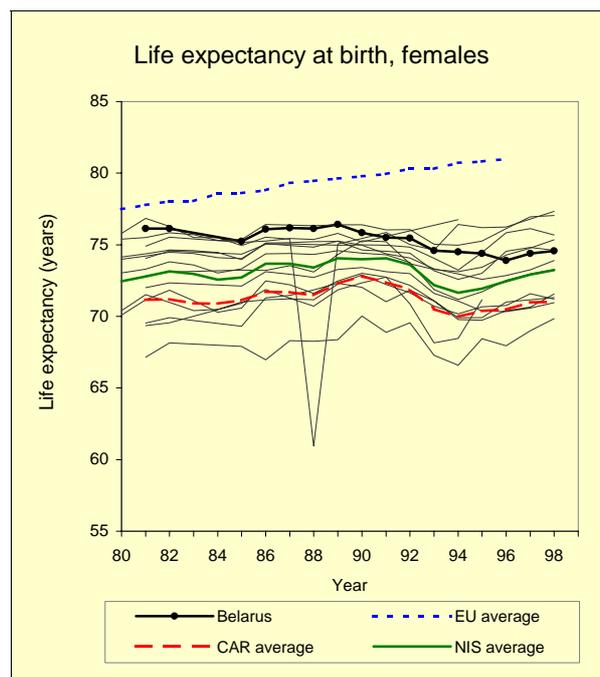
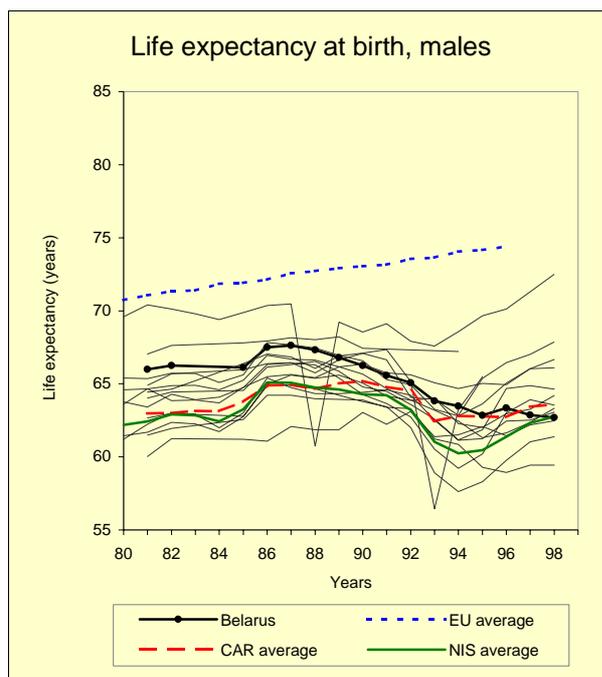
### Life expectancy

Like in most other NIS, LE rose slightly in 1986 as a result of the anti-alcohol campaign in the former USSR but then showed a significant fall (of 3.6 years) between 1988 and 1995. Subsequently (up to 1998), LE remained at 68.5 years, somewhat higher than the NIS average. However, it is substantially lower than life expectancy in EU countries. According to preliminary data, the situation continued to deteriorate in 1999.

While female LE increased slightly between 1997 and 1998 and is substantially higher than the NIS average, male LE fell in the same period, to virtually that average. In the period 1986-1998, the difference in life expectancy between men and women increased from 8.6 to 11.9 years.

Selected health indicators in Belarus and the European Region		
	<b>Belarus (1998)</b>	Europe (1997)
Life expectancy	<b>68.5</b>	73.3
• Men	<b>62.7</b>	69.2
• Women	<b>74.6</b>	77.4
Infant mortality per 1000 live birth	<b>11.2</b>	12.0
Maternal mortality per 100 000 live birth	<b>28.0</b>	19.4
Standardized death rate (SDR) for all causes of death per 100 000 population	<b>1293.9</b>	980.1
SDR for cardiovascular diseases per 100 000 population	<b>653.7</b>	482.7
SDR for malignant neoplasms per 100 000 population	<b>182.5</b>	184.6
SDR for injuries and poisoning per 100 000 population	<b>168.1</b>	86.4
SDR for diseases of the respiratory organs per 100 000 population	<b>64.1</b>	63.5
SDR for diseases of the digestive system per 100 000 population	<b>27.2</b>	39.1
SDR for infectious and parasitic diseases per 100 000 population	<b>10.2</b>	13.8
New cases of tuberculosis per 100 000 population	<b>54.9</b>	39.8 <sup>a</sup>
New cases of syphilis per 100 000 population	<b>127.2<sup>b</sup></b>	74.0 <sup>a</sup>
New cases of AIDS per 100 000 population	<b>0.04</b>	1.94 <sup>a</sup>
<sup>a</sup> 1998; <sup>b</sup> 1999		





### Main causes of death and disease

The premature mortality rate began to rise again in Belarus in 1997–1998, unlike in most other NIS, where it began to fall after peaking in 1994–1995. One of the main reasons for this was the continued rise in mortality from external causes of injury and poisoning after the end of the anti-alcohol campaign in the former USSR. External causes of injury and poisoning are the second most frequent category of causes of death in the structure of premature mortality.

At older ages (65 years and above), it is striking that a high proportion of deaths are in the category “Ill-defined conditions”. This may testify to certain peculiarities in national practice with regard to coding causes of death.

A sharp increase in the incidence of cancer of various locations, including thyroid cancer in children, was seen in Belarus in the 1990s. The deteriorating environmental situation in a number of regions in the country, related to the

Structure of mortality (in %) by main cause of death and age group in Belarus (1998), compared with the average for the European Region (1997)				
Cause of death	0–64 years		65 years and above	
	Belarus	Europe	Belarus	Europe
Cardiovascular diseases	<b>36.0</b>	30.7	<b>60.8</b>	59.9
Malignant neoplasms	<b>17.8</b>	22.8	<b>11.5</b>	16.5
Accidents, injury and poisoning	<b>27.4</b>	19.5	<b>2.8</b>	2.6
Diseases of the respiratory system	<b>4.4</b>	5.6	<b>5.3</b>	7.0
Infectious and parasitic diseases	<b>1.6</b>	3.0	<b>0.2</b>	0.5
Diseases of the digestive system	<b>3.2</b>	5.7	<b>1.3</b>	3.0
Ill-defined conditions	<b>2.1</b>	2.7	<b>16.3</b>	4.3
Other diseases	<b>7.5</b>	10.0	<b>1.7</b>	6.1

disaster at the Chernobyl nuclear power plant, should be deemed one of the main reasons for this. Evidently, the same reason explains the high percentage of births with congenital anomalies in Belarus.

Hospital admission rates in Belarus differ somewhat from the average figures for Europe. A substantially higher percentage of hospital admissions in the country are due to diseases of the respiratory organs. On the other hand, there are nearly one third fewer hospital admissions due to cancer than the European average.

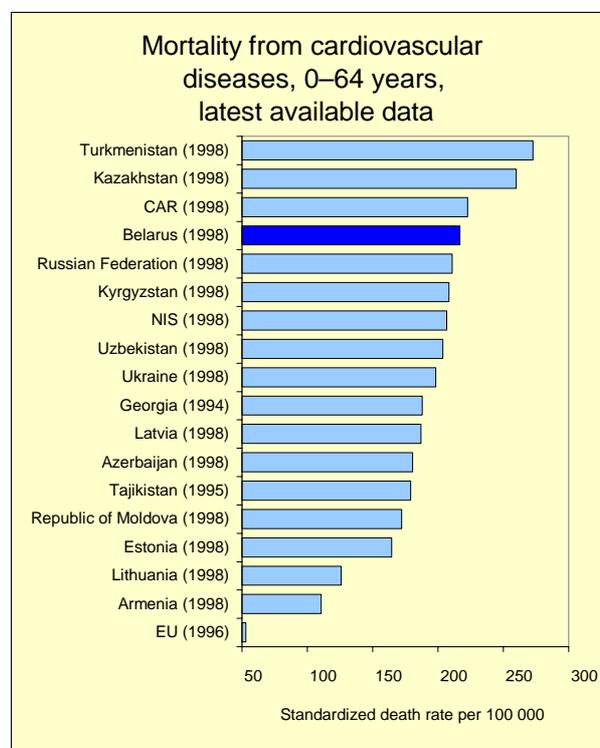
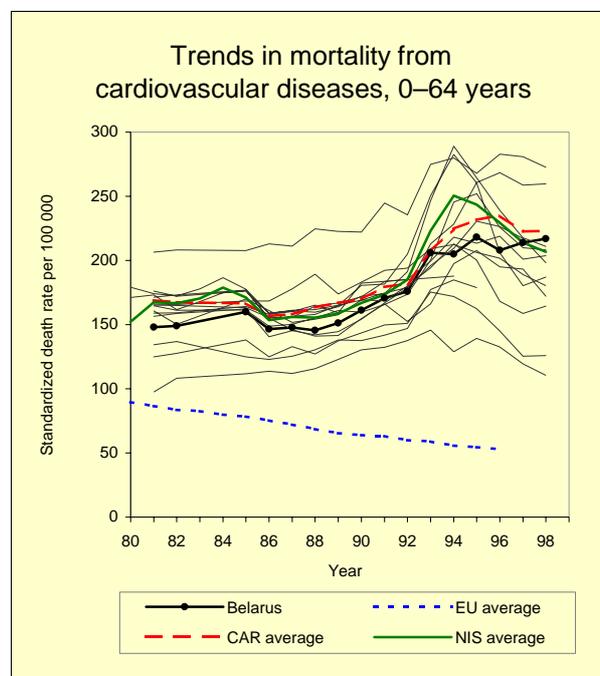
Inpatients by disease category (% of all patients hospitalized)		
Disease category	Belarus (1998)	Europe (1997)
Infectious and parasitic diseases	3.8	3.5
Malignant neoplasms	4.6	6.3
Cardiovascular diseases	13.9	11.7
Diseases of the respiratory system	16.6	10.1
Diseases of the digestive system	10.6	9.7
Injury and poisoning	7.1	8.3
Other diseases	43.4	50.4

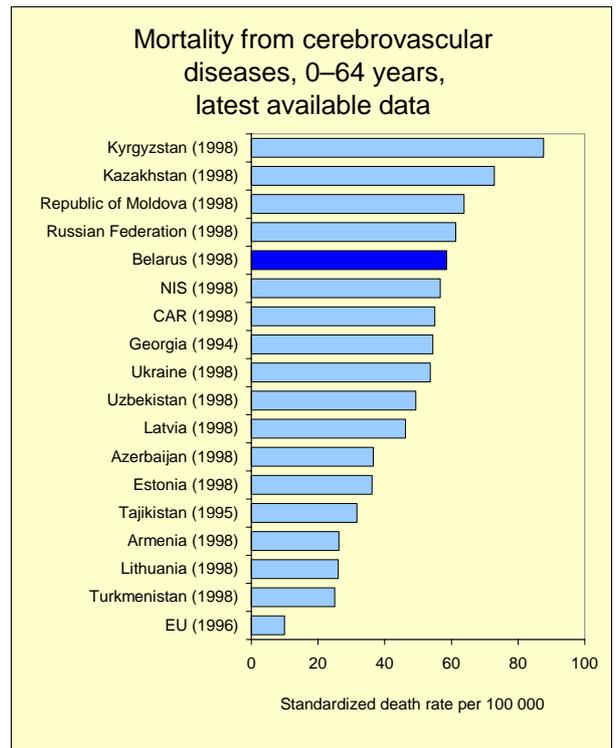
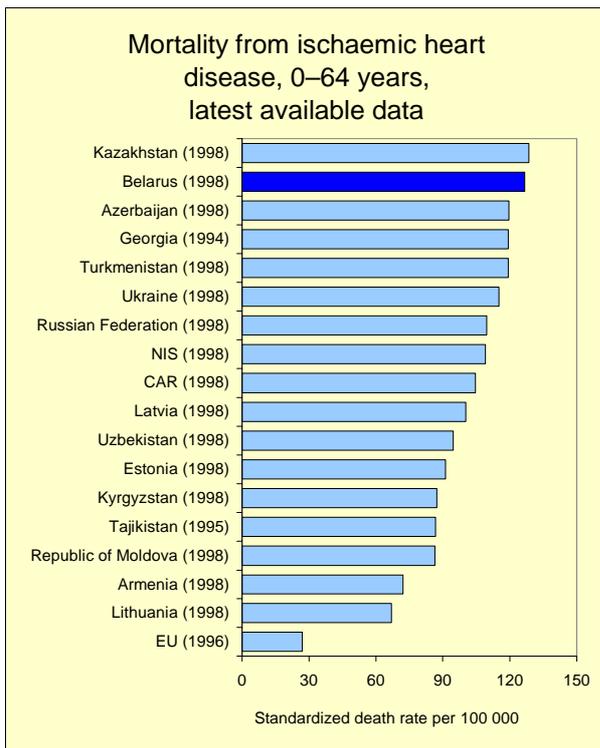
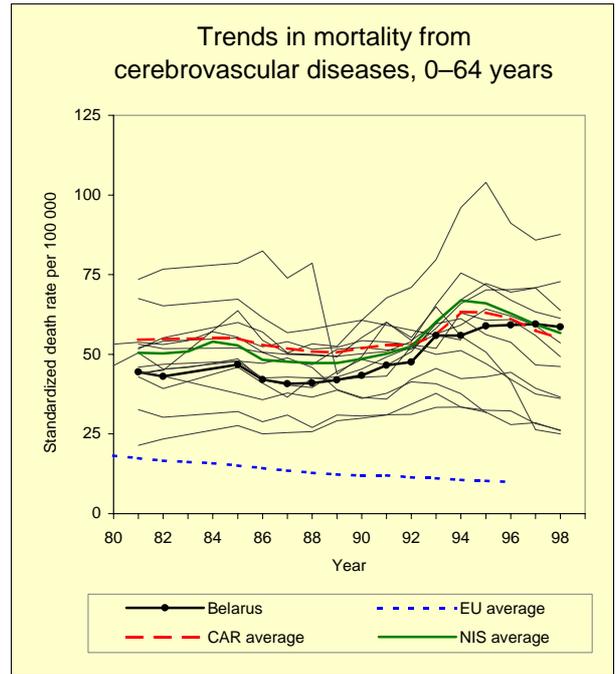
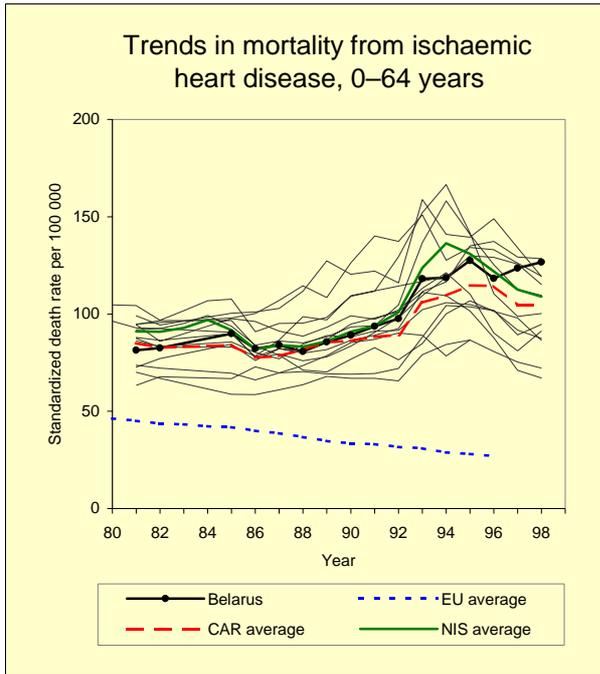
### Cardiovascular diseases

Three periods can be distinguished as regards trends in premature mortality due to cardiovascular diseases (CVD) in Belarus over the past 10 years: first, from 1985 to 1986, a fall in mortality during the anti-alcohol campaign; second, a sharp increase up to 1993; and third, a slower rise as from 1994. Up to 1996, the SDR due to CVD remained lower than the NIS average, but it then rose above it and in 1998 was one of the highest in Europe.

A similar situation is seen for mortality from ischaemic heart disease (IHD). According to the latest available data, the IHD mortality rate in Belarus is one of the highest in WHO's European Region.

As from 1989, the death rate due to cerebrovascular diseases has risen more smoothly than that due to CVD as a whole. Nonetheless, it too rose above the NIS average in 1998.



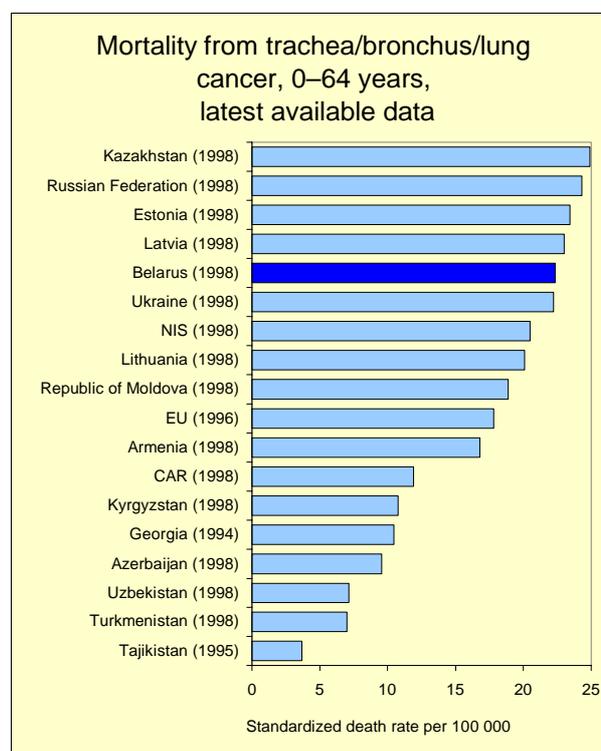
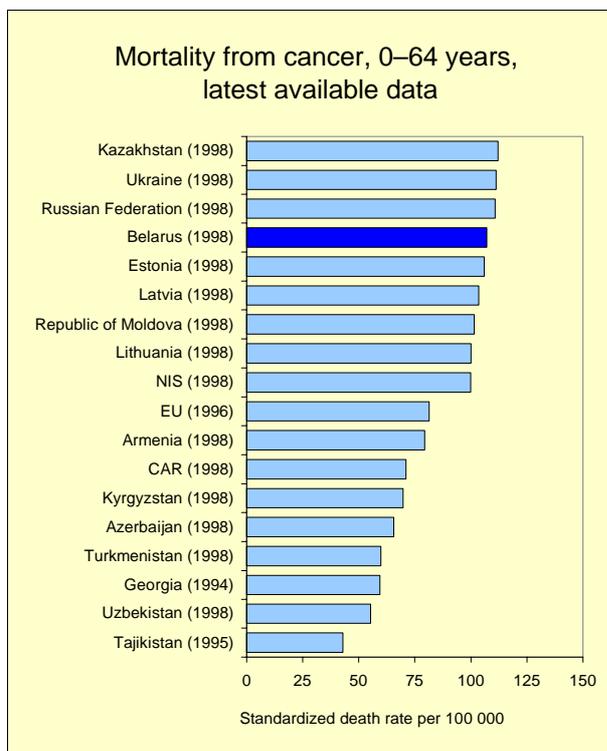
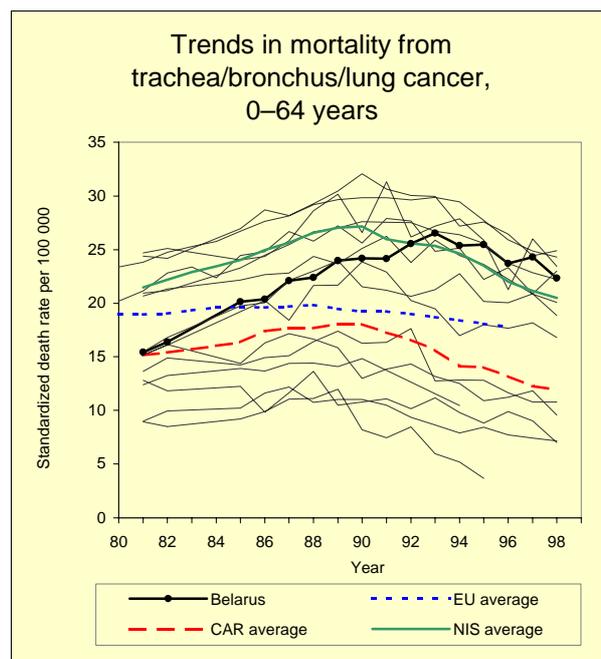
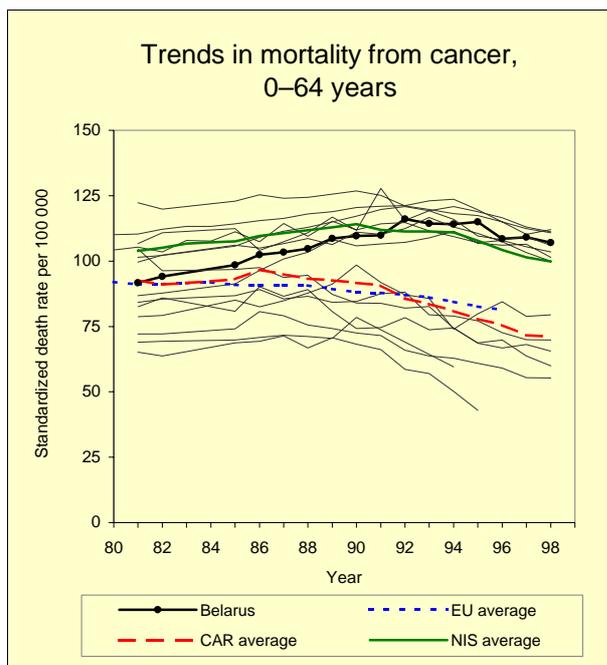


### Malignant neoplasms

The rate of premature mortality due to malignant neoplasms in Belarus, like in neighbouring NIS, is one of the highest in Europe, despite a certain downward trend since 1996. The trend is mainly determined by mortality among men, since female mortality from these causes has remained virtually unchanged in Belarus over the past 20 years.

Male mortality due to lung cancer remains higher than the NIS average and one of the highest in WHO's European Region.

In the past 10 years, the incidence of malignant neoplasms has increased by 35%. This increase has been mainly due to cancer of the lungs, skin and gastro-intestinal tract.



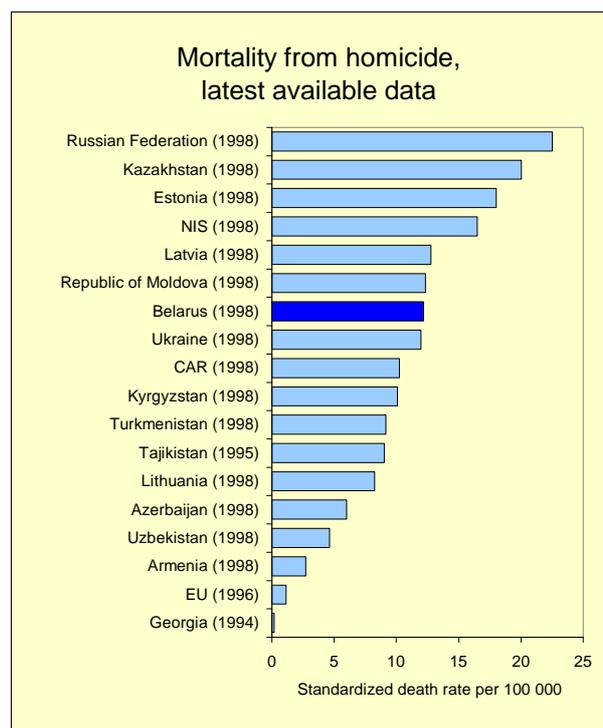
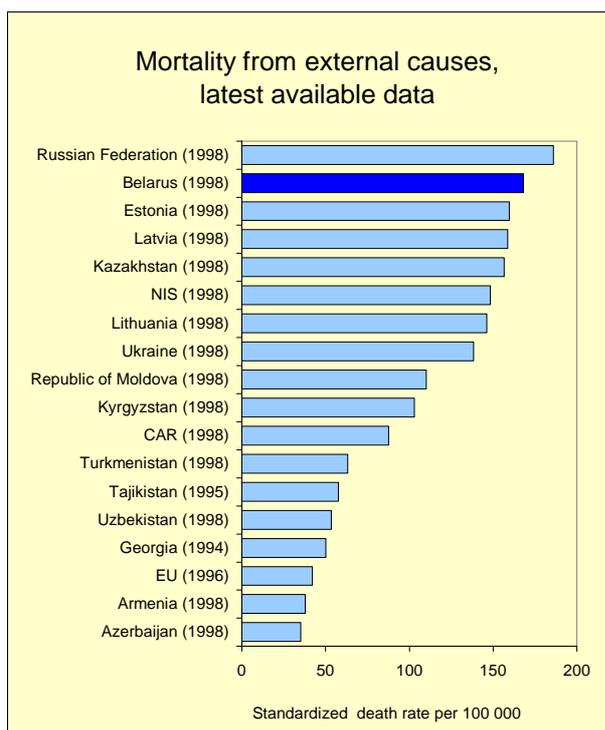
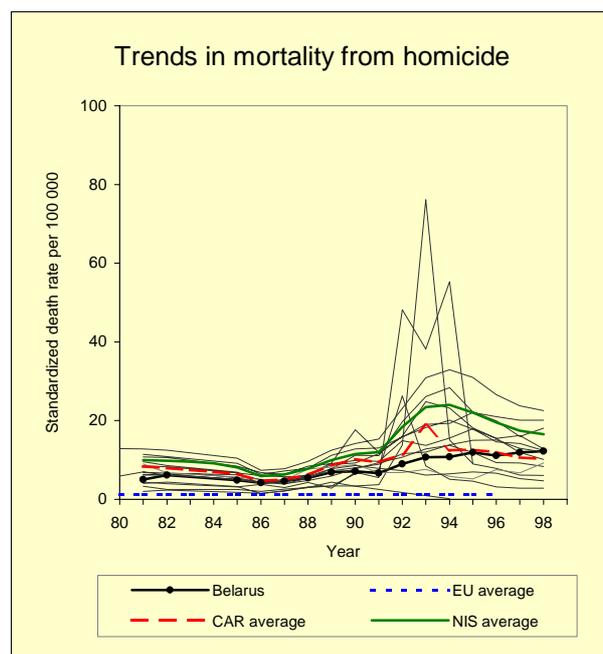
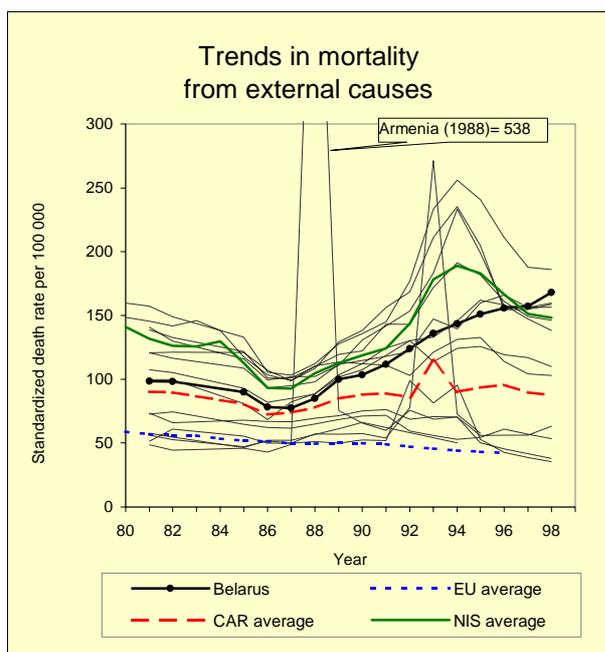
Special mention should be made of the sharp increase in the number of cases of thyroid cancer in children after the disaster at the Chernobyl nuclear power plant (*WHO Liaison Office in Belarus, 1999*).

### Injury and poisoning

The trend in mortality due to external causes of injury and poisoning in Belarus is substantially different from that in most other NIS. After a fall in mortality as a result of the

1985–1986 anti-alcohol campaign there has been a phase of steady growth, whereas in neighbouring NIS this figure began to fall as from 1995. As a result, Belarus has the second highest rate of mortality from these causes in WHO's European Region, exceeded only by the Russian Federation.

The rate of mortality as a result of homicide is lower than the NIS average, but substantially higher than the figure for Europe as a whole and the average for EU countries.



Like in the Russian Federation, alcohol poisoning is responsible for more deaths than road traffic accidents (25 and 18, respectively, per 100 000 population in 1998).

The rate of mortality due to road traffic accidents in Belarus is one of the highest in the Region.

### Mental health

After a sharp rise between 1991 and 1996, mortality due to suicides and self-inflicted injuries has stabilized at one of the highest levels in WHO's European Region. The period from 1993 to 1998 is characterized by a rapid increase in the number of people diagnosed for the first time with disorders related to substance abuse. Morbidity due to alcoholic psychosis, for instance, increased from 5.7 to 32.8 per 100 000 population.

### Infectious diseases

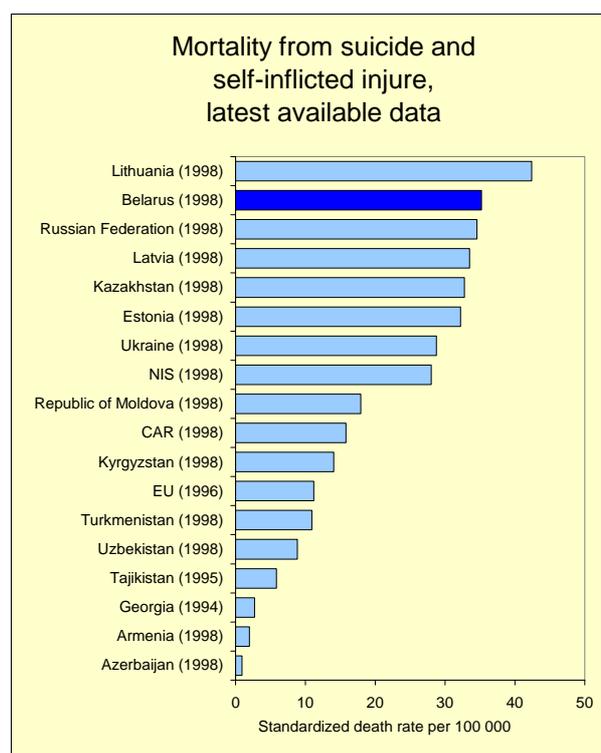
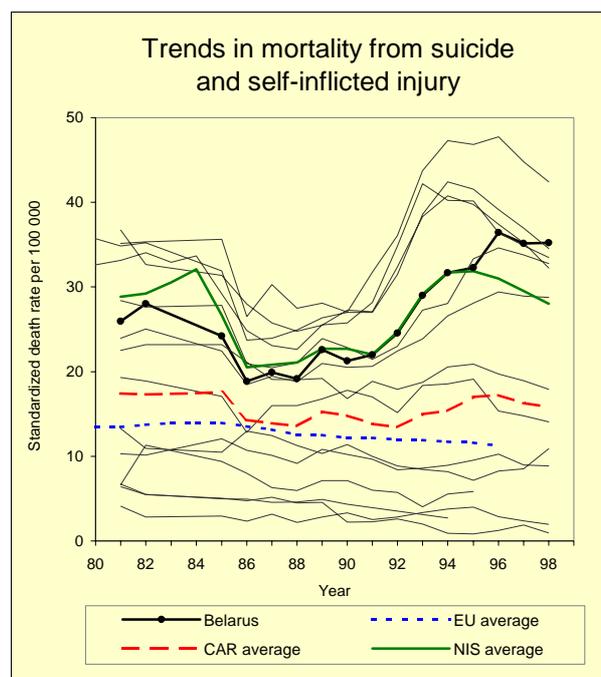
The death rate due to parasitic and infectious diseases in Belarus has long been one of the lowest in the NIS.

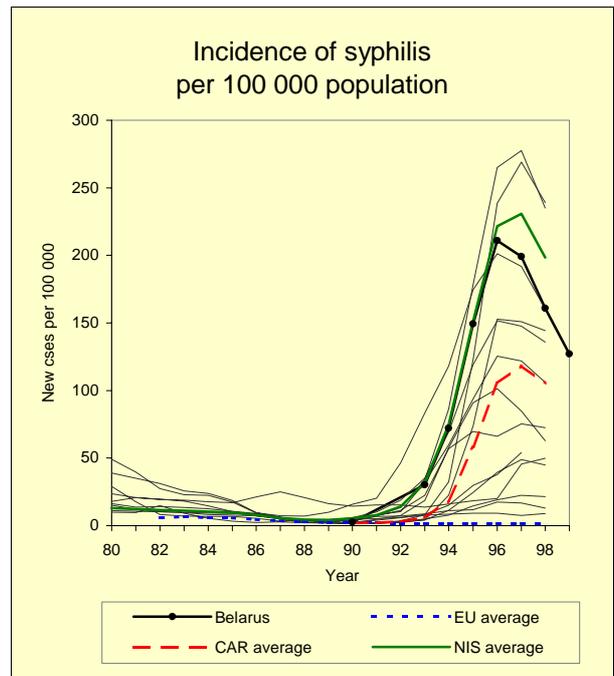
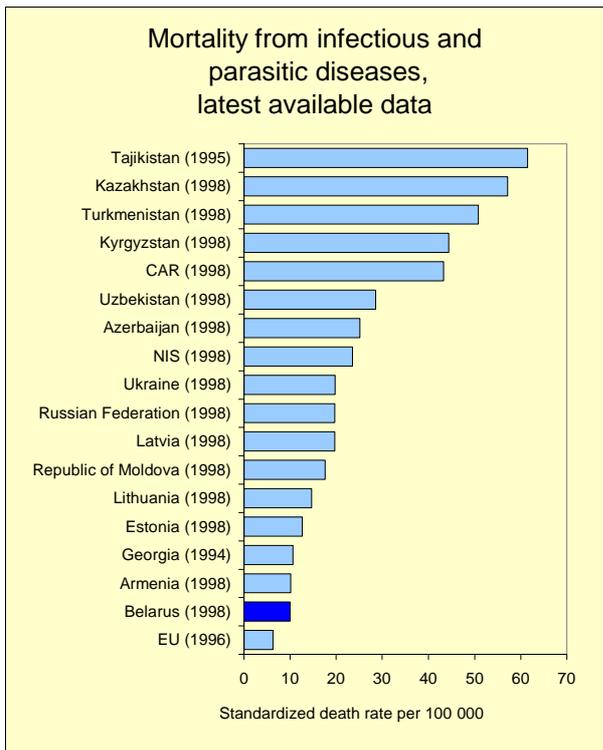
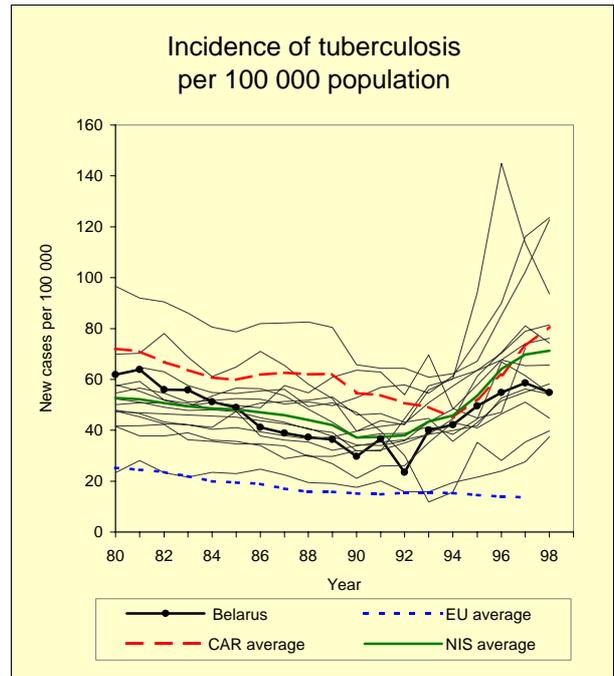
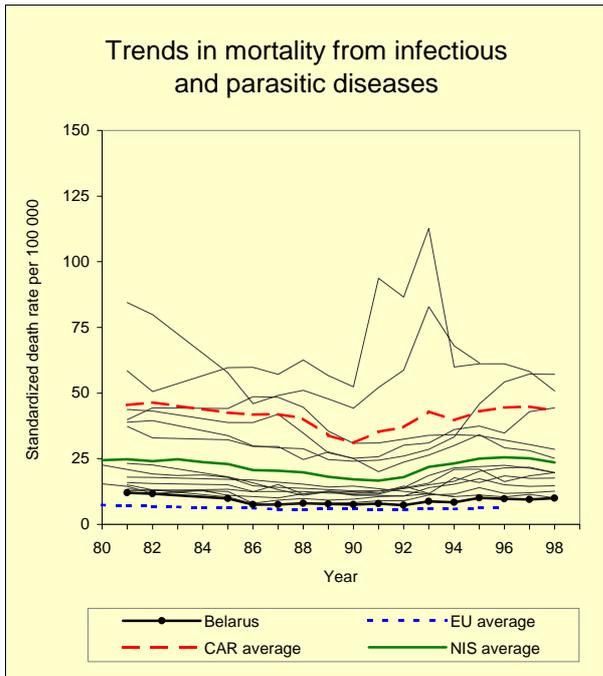
After a long period of downward movement (between 1980 and 1992), the incidence of tuberculosis has risen substantially but remains lower than the NIS average. In 1998, a slight reduction in tuberculosis incidence was recorded.

As from 1993, the rate of increase in the incidence of syphilis has assumed threatening proportions in Belarus, like in a number of other NIS. The acute nature of the epidemiological situation is evidenced by the increase in the incidence of syphilis among children, with a 10.8-fold increase (from 0.6 to 6.5 per 100 000) between 1993 and 1997. Since 1997, however, the incidence of syphilis has been falling.

Up to 1996, Belarus was a country with a low prevalence of HIV infection. From 1996 the number of HIV-infected people began to rise sharply, and in 1998 it had reached 2341.

In 1998, four clinically diagnosed cases of AIDS were registered.

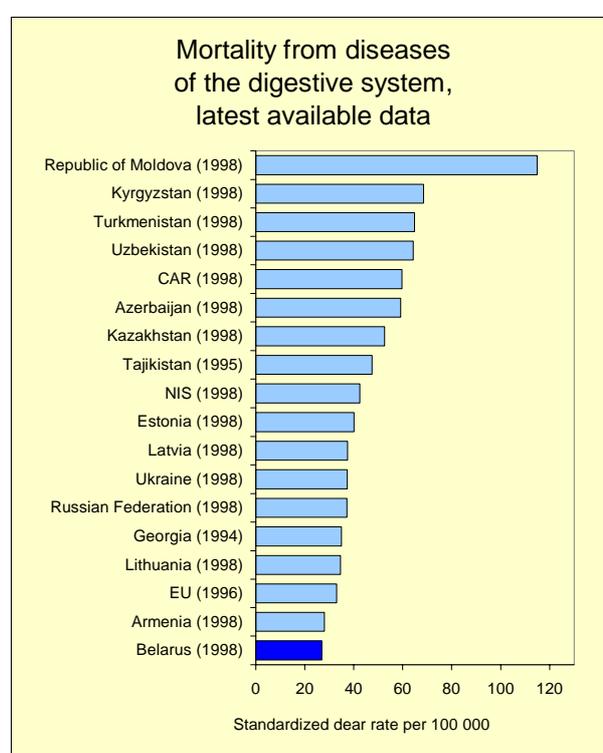
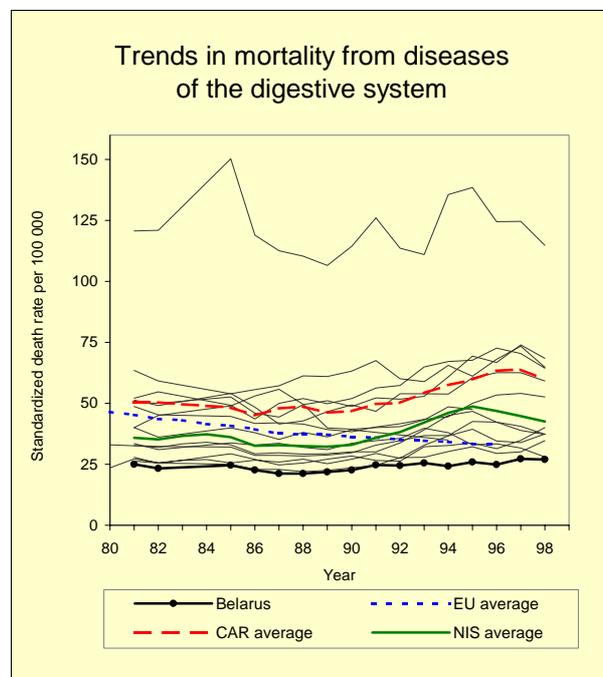
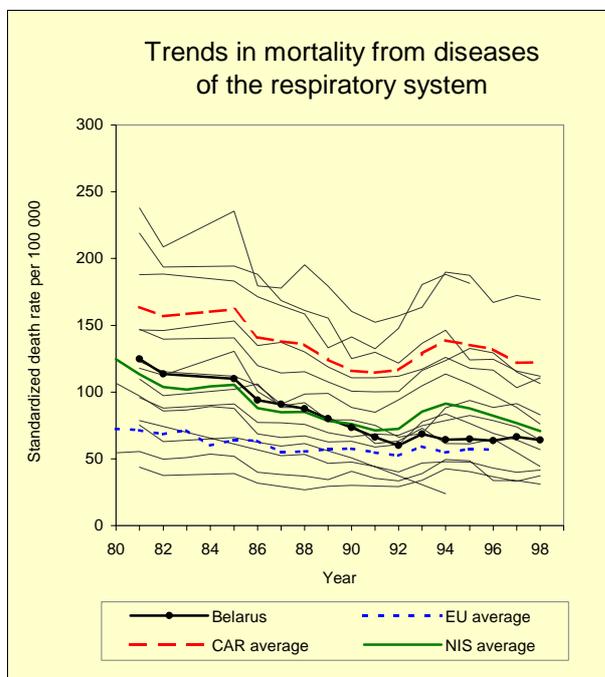




**Other diseases**

Compared with the average for Europe as a whole, Belarus does not have a high mortality rate for diseases of the respiratory organs. It is lower than the NIS figure and only slightly above the average for EU countries.

Mortality due to disease of the digestive system has remained the lowest in the NIS since 1980, and in 1998 it was one of the lowest in the European Region as a whole.



## Disability

According to available data for the period 1993-1998, the disability rate has been falling steadily but, like in neighbouring NIS, it is still one of the highest in the European Region. On the whole, the figures for disability and the number of people receiving disability allowances are close to the NIS averages.

## Health of children and adolescents

Infant mortality increased slightly after 1990 but has been falling since 1995. The infant mortality rate in Belarus is one of the lowest in the NIS. In 1998 it was 11.2 per 1000 live births, which is lower than most NIS. The WHO-recommended definition of "live birth" has been used in medical establishments in Belarus since 1993. However, we have no information on whether this is being applied when births are registered by the government's statistical services, whose data are also used to calculate infant mortality.

In the age structure of infant mortality, up to 60% of all deaths are among neonates, of whom more than 65% die in the first week of life (the early neonatal period).

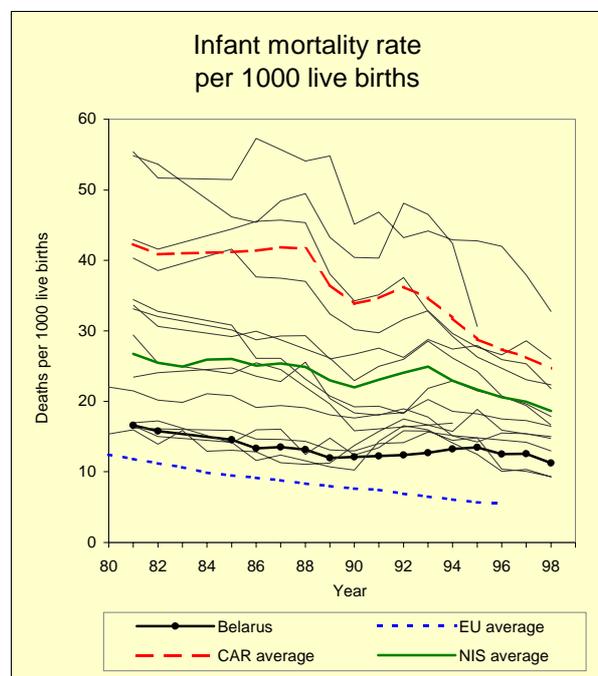
In the structure of child morbidity, diseases of the respiratory organs are in first place, with 71.4%, followed by infectious and parasitic diseases (6.7%), diseases of the nervous system and sense organs (5.1%), injuries and poisoning (4.3%), diseases of the skin and subcutaneous tissue (3.9%) and diseases of the digestive system (3.0%).

A special mention should be made of the high proportion of congenital defects in Belarus (several times higher than in other countries). This may be partly explained by differences in diagnostic and registration practices.

After the disaster at the Chernobyl nuclear power plant, the incidence of thyroid cancer in children increased approximately 50-fold.

In 1998, the immunization coverage rate in children under one year of age against

diphtheria, tuberculosis and tetanus was 98.2%; against measles it was 97.4%, against pertussis 96.7% and against poliomyelitis 97.3%.

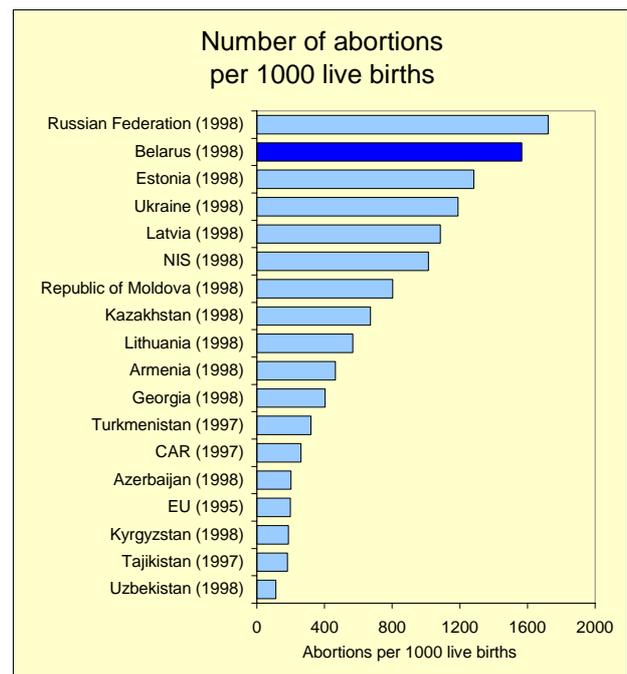
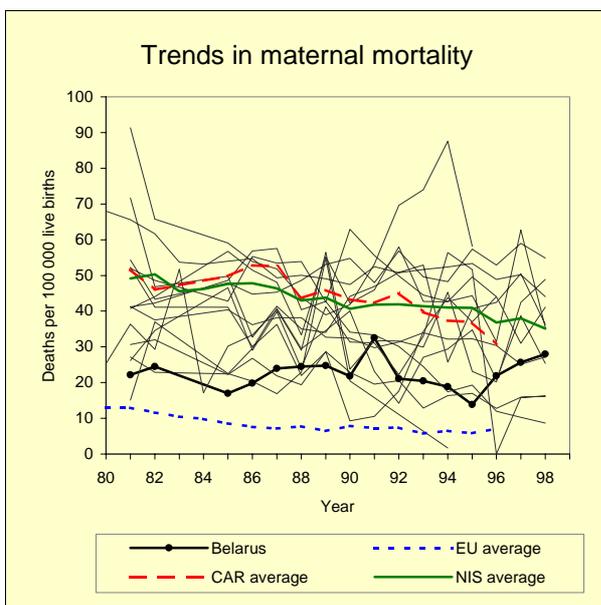
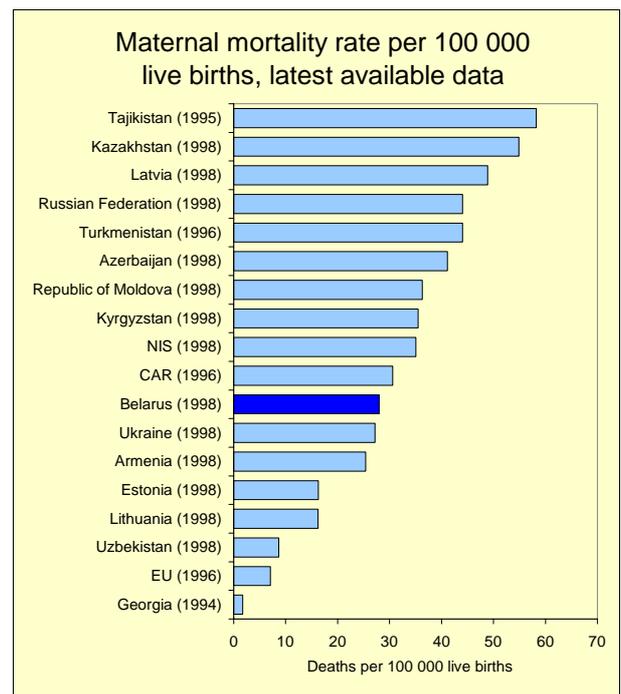
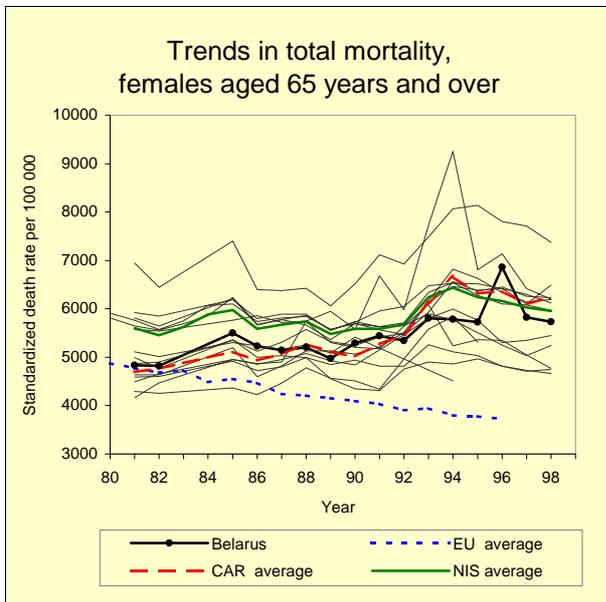


**Women's health**

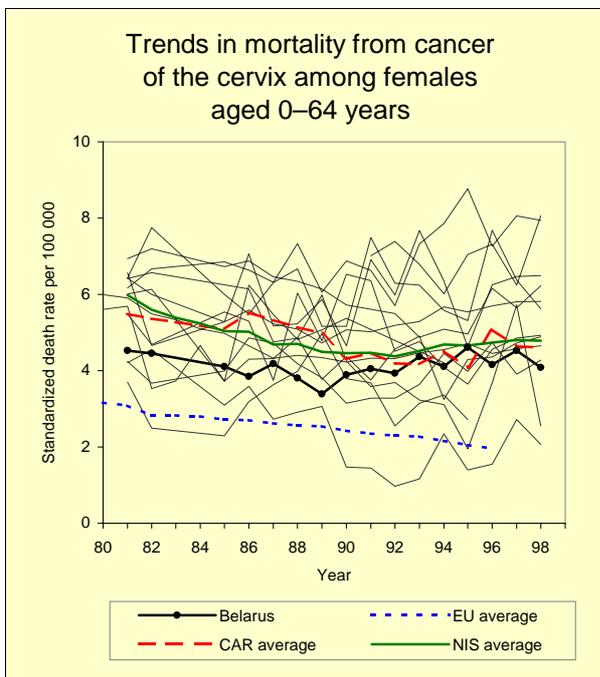
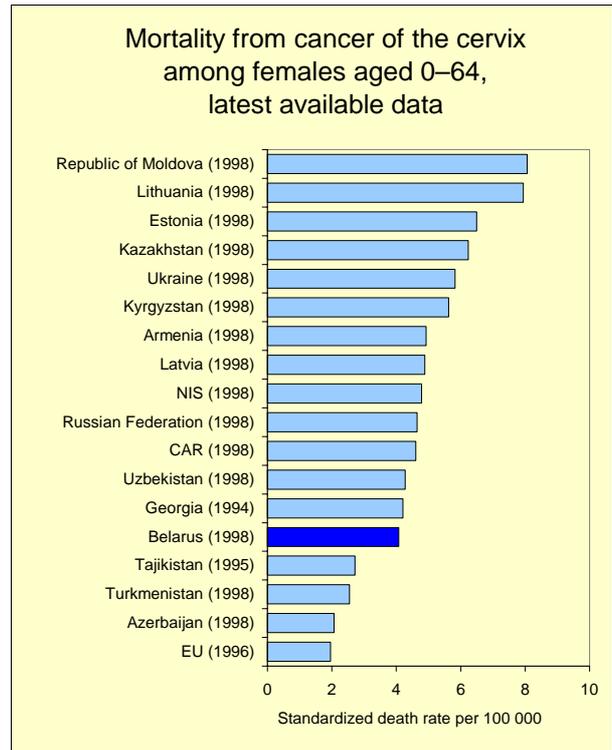
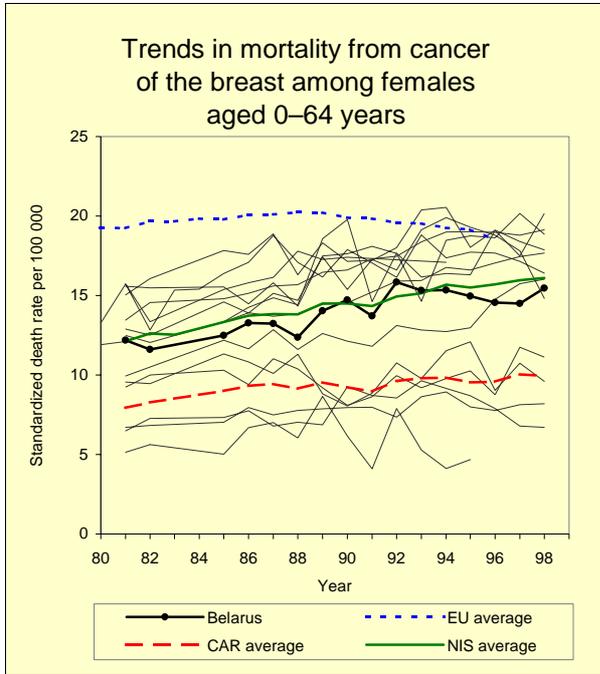
In Belarus women outlive men by almost 12 years and have lower mortality due to the main causes of death. There was a sharp “upsurge” in mortality among elderly women (65 years and above) in 1996, the nature of which is unclear. In 1997–1998 female mortality fell slightly, while male mortality continued to rise. This was mainly related to a reduction in female mortality from cardiovascular diseases and diseases of the respiratory system. In addition, female mortality from external causes of injury and poisoning has risen significantly less than male mortality from the same causes.

The maternal mortality rate showed an upward trend between 1996 and 1998, but at 28 per 100 000 live births it is still lower than the NIS average. It fell to 20.4 per 100 000 live births in 1999, according to preliminary data.

The abortion rate has been falling slightly and in 1998 it was 1566 per 1000 live births. Of the countries in WHO's European Region, only the Russian Federation has a higher figure for this indicator.



Female reproductive health is not improving in Belarus. In the past five years, the incidence of cardiovascular, renal and thyroid diseases in pregnant women has increased by 16% (*WHO Liaison Office in Belarus, 1999*).

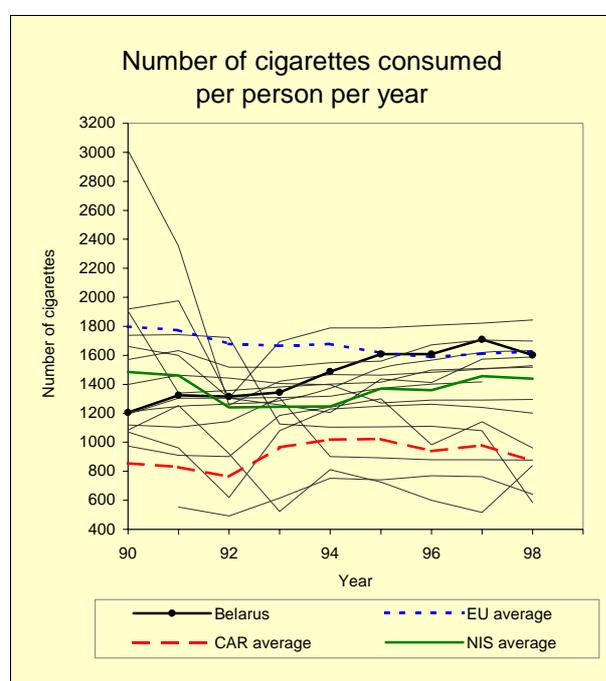


## LIFESTYLES

### Tobacco consumption

In 1998, lung cancer mortality (an indirect indicator of smoking prevalence) and per capital annual consumption of cigarettes in Belarus were close to the average for the European Region.

According to available data, the prevalence of smoking in Belarus in 1998 was 54.9% among men and 4.6% among women. In total, 26.6% of the population aged over 15 years are regular smokers



### Alcohol consumption

Belarus is one of the countries with medium levels of per capita alcohol consumption. In 1998 registered consumption was 8.6 litres of pure alcohol per person, almost double the level seen at the end of the anti-alcohol campaign (4.4 litres in 1987). In view of the growing number of cases of alcoholic psychosis and, in particular, the continuous rise in male mortality from external causes of injury and poisoning, it may be asserted that excessive alcohol consumption is a serious problem for Belarus.

### Illicit drug use

Opium is the most frequently used drug in Belarus. In 1994, 73% of all drug abusers used morphine-like drugs. The incidence of drug abuse increased 1.8 fold in the period from 1987 to 1994. Young people under 19 years old make up 4.6% of all registered drug abusers (*WHO Regional Office for Europe, 1997*).

### Nutrition

According to FAO data, average daily calorie consumption per head (2828 kCal in 1998) was close to the average for the NIS.

Like in other NIS, socioeconomic difficulties have caused a reduction in the consumption of meat, fish, eggs, fresh vegetables and fruit. This has led to shortfalls in the intake of trace elements, protein and energy that are significant in terms of public health.

### Overweight

Excess weight is one of the main risk factors for developing cardiovascular diseases. A survey of the male population of Belarus (aged 25–64 years) has found a high prevalence (66%) of overweight (body mass index  $\geq 25$ ) (*CINDI, 1999*).

### Blood pressure and blood cholesterol levels

Arterial hypertension and a high serum cholesterol level are among the main controllable risk factors for developing cardiovascular diseases. The prevalence of hypertension (BP  $> 160/95$  mm Hg) among men surveyed in 1985 was approximately 30%.

The prevalence of a high level of cholesterol (total cholesterol  $\geq 250$  mg %) in men of the same age group was 35.7% (*CINDI, 1999*).

## ENVIRONMENT AND HEALTH

### Air quality

As a result of the downturn in industrial production in Belarus, like in most other NIS, there has been a fall in emissions into the atmosphere in recent years. In 1998, total emissions from stationary and mobile sources amounted to some 1.8 million tonnes, or 175 kg per inhabitant and 8.6 tonnes per km<sup>2</sup>. The level of air pollution has fallen by almost 50% since 1990. Air quality in cities and industrial centres has been improved by implementing environmental protection measures both in industrial enterprises, power plants and community facilities, where emissions have been reduced by almost half in the period under review, and in transport (a 1.6-fold reduction). Nonetheless, from the standpoint of air pollution in major cities, the public health situation remains tense.

Tens of thousands of people in cities live within health protection zones around industrial plants and are subject to the direct effects of emissions from factories. Forty thousand people live in such conditions in Minsk alone, while approximately 19 000 do so in Brest *oblast*.

The transboundary movement of pollutants makes a substantial contribution to air pollution in the country. In 1998, for instance, emissions of sulphates (recalculated as sulphur) amounted to some 72 800 tonnes, or 7.1 kg per inhabitant and 350 kg per km<sup>2</sup>. Corresponding figures for nitrogen oxides (recalculated as nitrogen) were 163 600 tonnes, or 15.9 kg per inhabitant and 788 kg per km<sup>2</sup>.

Transboundary sources account for significantly more air pollution in Belarus than do local sources. In 1994, 301 000 tonnes of sulphur fell on Belarus, of which 43 000 tonnes (14%) were from sources in the country; similarly, of the 114 300 tonnes of nitrogen oxides received, 7 200 tonnes (or 6%) were from national sources.

Like in many other NIS, the system for monitoring air pollution in Belarus does not fully meet modern requirements. For instance, when determining levels of particulate matter, the fraction of dust measuring less than 10 micrometers (PM10) is not measured, although this seems to make the largest contribution to the formation of bronchial and lung disease (*NEHAP, 1999*).

### Water management and sanitation

The water supplied to the urban population in Belarus comes mainly from underground sources. The quality of water from surface sources is lower, in health terms, owing to high levels of pollutants as a result of discharges of insufficiently treated and untreated sewage from populated localities and individual plants. In 1998, for instance, 4.5% of samples of water from underground sources did not meet hygiene standards with regard to bacteriological indicators, while the corresponding figure for surface sources was 32.5%.

In many areas, water protection measures are inadequately carried out: regulations providing for the establishment of strict protection zones are not being complied with at a considerable number (14%) of water intake sites. About 80% of communal water supply systems do not have the necessary purification equipment (mainly for the removal of iron and for disinfection).

As a result, 4.3% of samples of piped water did not meet bacteriological standards in 1998, and 27.9% failed to comply with chemical standards. The technical condition of the water supply system in many rural districts is unsatisfactory. Some 37% of rural piped water supply systems do not meet sanitary requirements and, as a result, 7.9% of samples from these systems do not comply with microbiological standards.

Each year, some 70 million m<sup>3</sup> of polluted sewage are discharged into rivers and water sources. As much as 50-60% of the total inflow of biogenic organic substances and petroleum products into water sources is due to meltwater and rainwater leaching of pollutants from urbanized and agricultural areas. Unacceptably large amounts of heavy metals (copper, nickel, chrome, etc.) are found in natural waters. More than half of the 400 000 wells used as drinking water supplies in rural areas contain nitrates and other harmful substances in quantities that exceed permissible levels. In 1998, 32.4% of samples of well water did not meet sanitary requirements in terms of bacteriological indicators, while 49.7% failed to do so with regard to chemical indicators (*NEHAP, 1999*).

### **Waste and soil**

Each year, some 2 million tonnes of solid waste accumulate in surface waste dumps in Belarus. Of the 20 million tonnes of industrial waste produced each year, only 16% is recycled as a secondary raw material. As a rule, most of the rest (78%) accumulates on factory sites; by 1997, there were 651.9 million tonnes of waste there.

Consumer waste includes unclaimed and out-of-date pesticides stored on farms and in associations (for the purchase of agricultural chemicals (“Sel’khozkhimija”). They amount to 1600 tonnes. There is currently a trend towards a considerable reduction in the use of pesticides, owing to the adverse financial position of farms and the impossibility of purchasing expensive imported preparations.

According to data from the Public Health and Epidemiological Surveillance Service, as a result of the poor organization of waste collection and disposal, and environmental pollution by industrial plants and motor vehicles, up to 9.7% of soil samples from populated sites in areas affected by plants and highways (and 5.4% of samples in populated areas) contain raised concentrations of heavy metals. Some 4.4% of soil samples in populated areas contain helminths, while 7.8% show increased microbial pollution (*NEHAP, 1999*).

### **Radioactive pollution**

The radiation situation in Belarus is caused by technogenic, disaster-related and natural sources of ionizing radiation. The main sources of artificial radionuclides in the surface layer of the atmosphere are emissions from nuclear power plants and radioactive substances lifted up by the wind from surface soil polluted as a result of the Chernobyl disaster. In the country as a whole, 45 600 km<sup>2</sup> or 23% of the total area are polluted with caesium 137 to a level of more than 37.0 kBq/m<sup>2</sup>.

Maximum permissible levels of radionuclides in food products are exceeded in milk products (5.1%) and forest products (mushrooms 9.7%, stone fruit 13.8%).

A significant increase has been seen in the incidence of thyroid cancer. Whereas only isolated cases of this condition were registered in children before the Chernobyl disaster, 333 children aged under 14 years fell ill in the period 1986–1994.

### **Occupational health and safety**

The problems of ensuring safe working conditions for workers have become more acute in recent years, and the necessary solutions are not being found in the new industrial relationships.

Working conditions are assessed as unsatisfactory in 21% of the country’s workplaces. The largest numbers of such workplaces are in Mogilev (44.5%), Vitebsk (27.6%), Grodny (26%) and Brest (23.7%) *oblasts*.

Despite the fall in the number of industrial manufacturing entities, there has been no reduction in the number of workers with unsatisfactory working conditions. Twenty-eight per cent of the total workforce work under both harmful and hazardous conditions (32.7% in industry, 19.6% in transport, and 18.9% in construction). In a number of mechanical engineering firms, up to 85% of machines and equipment are worn out and ventilation systems are not operating effectively. As a result, workplace levels of

dust, gas, noise and vibration are many times higher than the permissible values.

In Minsk, for instance, some 60% of the workplaces surveyed in 1998 did not meet the requirements set out in sanitary regulations and standards.

In total in 1998, the results of laboratory investigations and monitoring tests in industrial enterprises showed that the following proportions of workplaces did not meet sanitary requirements: gas levels – 18.9%; dust concentrations – 33.6%; noise – 56.2%; vibration – 25.1%; microclimate – 18.6%; and lighting – 25.5%.

According to data from the Public Health and Epidemiological Surveillance Service, more than 30% of the agricultural workforce are working under unsatisfactory conditions.

In 1998, 323 cases of occupational disease were recorded in the country (1997 – 334 cases; 1996 – 309 cases). The incidence of

occupational morbidity was 0.82 per 10 000 workers in 1998 (0.84 in 1997, 0.76 in 1996).

The most frequent occupational diseases are cochlear neuritis (48.6%), dust-induced bronchitis (18.6%) and pneumoconiosis (11.8%).

Twenty-four per cent of cases of occupational morbidity are in women, 76% in men.

Occupational morbidity in Belarus may be under-detected and under-diagnosed. The occupational health service is also under-developed. Thus 84.9% of diagnoses are established by the National Centre for Occupational Health, while similar centres at regional (*oblast*) level and health care establishments account for only 7.1% and 8.0%, respectively. As a result, it is mainly chronic forms of pathology (97.4%) with a high level of prolonged disability (56.5%) that are registered as occupational diseases.

## HEALTH CARE SYSTEM

### Health system reform

The health system in Belarus is operating under difficult socioeconomic conditions. The health status of the population calls for appropriate and urgent measures to ensure that high priority is given to health care development, more rational use is made of resources and a development strategy is laid down.

Reform of the national health system is to be carried out in two phases.

In the first phase (1998–2002), it is planned to:

- ensure that development of the health sector is given high priority, and make health care bodies and establishments more responsible and economically independent;
- by coordinating the work of all government bodies, halt the deterioration in indicators of people's health status and protect them from an increase in socially dangerous diseases;
- increase health sector funding to 7.5% of GDP over a five-year period;
- ensure that health care establishments operate in a stable manner and that medical care is accessible;
- finish drawing up the legislative and regulatory basis for health care in the country;
- restructure inpatient care;
- ensure development of a network of day inpatient centres in hospitals and outpatient/polyclinic facilities;
- standardize medical care;
- solve the problems of delivery of medical care at the appropriate level (district, regional, national) and concentration of the latest medical technology;
- ensure the social protection of medical personnel in terms of levels of pay (relative to the median salary in the national economy).

In the second phase (2003–2007), attention will be focused on completing the restructuring of the sector, carrying out targeted and comprehensive programmes, ensuring that general practitioners form the basis for the delivery of primary health care, further developing national centres for the provision of highly specialized medical care, building up a unified information system, and developing the private sector (*WHO Liaison Office in Belarus, 1999*).

Health care resources and their utilization in Belarus, compared with European averages		
	Belarus (1998)	Europe (1997)
Hospital beds per 100 000 population	1241.7	812.0
Physicians per 100 000 population	443.1	343.4
Hospital admissions per 100 population	29.0	18.7
Average hospital stay, days	14.6	12.7
Health care expenditure as a percentage of GDP	4.7	6.0

### Health care expenditure and health system funding

In order to improve health system funding, the Ministry of Health has identified the following measures:

- carry out targeted health care programmes, to focus resources on key problems;
- support tariffs to cover the expenditure required to deliver medical care to the population;
- develop mechanisms for reducing administrative costs, improve the funding of rehabilitatory measures, and strengthen the economic involvement of insured people while simultaneously introducing an overall policy on insurance;

- develop the system of voluntary medical insurance;
- introduce a preferential tax regime for non-profitmaking organizations;
- grant exemption from taxation for the resources of individuals and legal entities that are directed towards meeting health care needs;
- introduce a system of standards for assessing expenditure on treatment of each disease group (*WHO Liaison Office in Belarus, 1999*).

Health care expenditure in Belarus in 1998 amounted to 4.7% of GDP, which is higher than the NIS average but lower than that for EU countries.

### Outpatient services

The average number of outpatient visits per person (including to doctors at first aid posts and in casualty departments) has increased since 1993 and in 1998 was 11.8, one of the highest figures in the European Region.

### Inpatient services

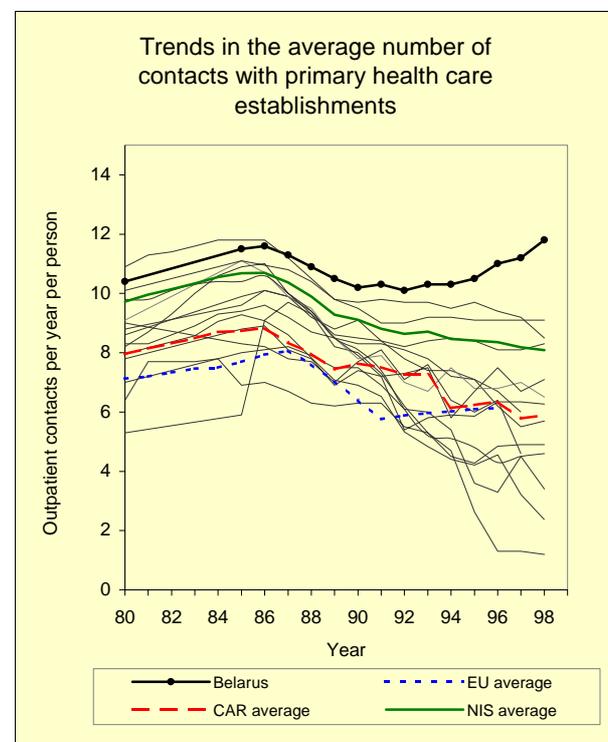
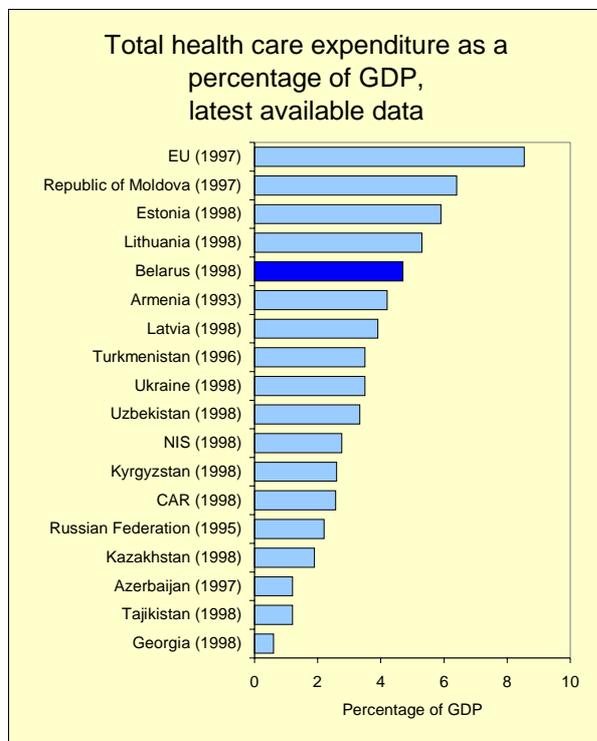
The hospital bed rate in Belarus has remained roughly the same for a number of years (1242 beds per 100 000 population in 1998). Belarus has the highest hospital bed rate in the NIS and one of the highest in the Region.

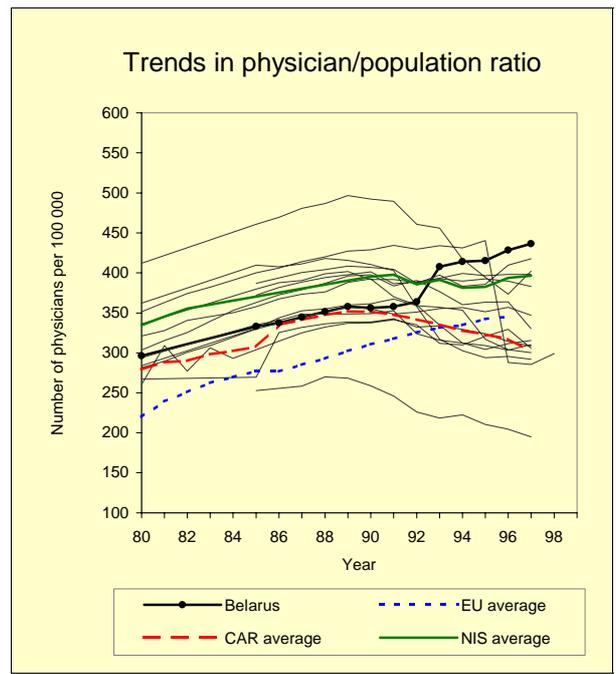
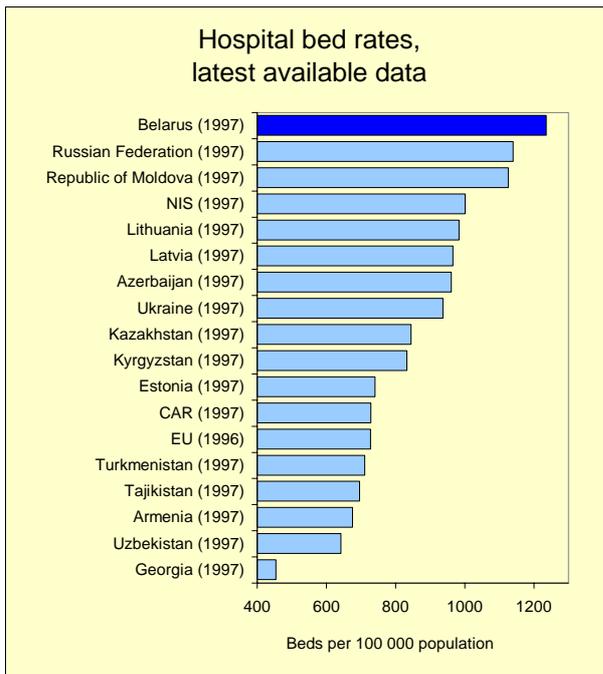
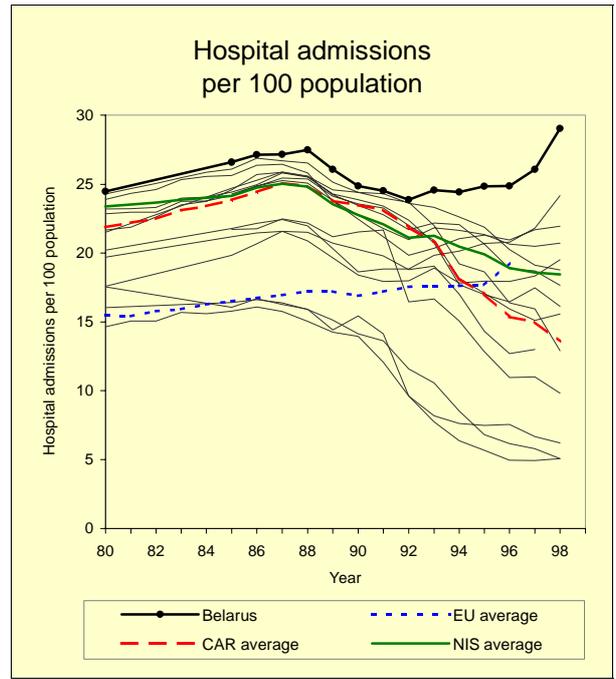
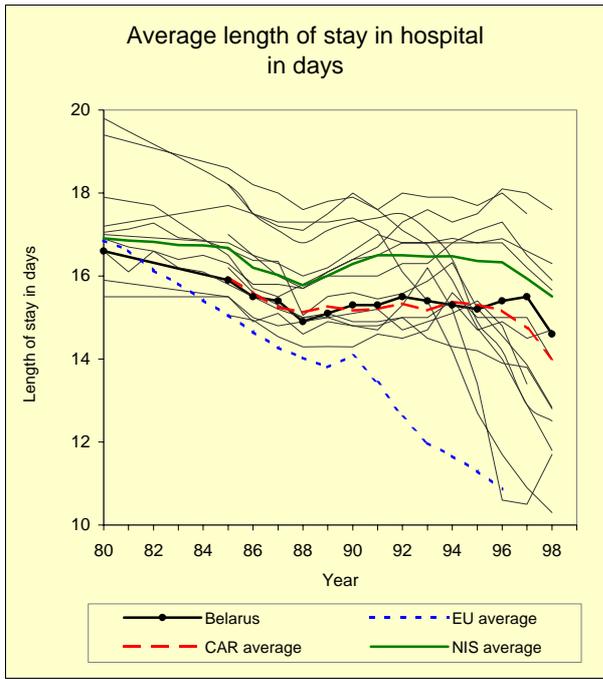
Inpatient admissions rose sharply in 1997–1998 (to 29.0 per 100 people in 1998), one of the highest figures in WHO's European Region.

The average length of hospital stay is somewhat lower than the NIS average. In 1998, it fell sharply, to 14.6 days.

### Medical personnel

According to available data, the physician/population ratio (443 per 100 000 in 1998) is higher than in other NIS and one of the highest in the European Region as a whole. In addition, this figure is showing a clear upward trend. However, the level of this indicator depends to a significant degree on differences in the statistical definitions of the number of physicians used in other countries.





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## GLOSSARY

**Incidence rate:** the number of new cases of a disease occurring in a population per 100 000 people during a specified period (usually 1 year).

**Infant mortality rate:** the yearly number of deaths of children aged less than 1 year per 1000 live births.

**Life expectancy at birth:** an estimate of the average number of years a newborn child can expect to live provided that the prevailing age-specific patterns of mortality at the time of birth were to stay the same throughout the child's life.

**Prevalence rate:** the total number of people in a population who have a disease or any other attribute at a given time or during a specified period per 100 000 of that population.

**Purchasing power parity (PPP):** a standardized measure of the purchasing power of a country's currency, based on a comparison of the number of units of that currency required to purchase the same representative basket of goods and services in a reference country and its currency (usually US dollars) The EU uses the purchasing power standard to measure this.

**Standardized death rate (SDR):** a death rate (usually per 100 000 population) adjusted to the age structure of a standard European population.

**Total fertility rate:** the average number of children that would be born alive per woman during her lifetime if she were to bear children at each age in accordance with prevailing age-specific birth rates.

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### KEYWORDS:

HEALTH STATUS, LIFESTYLE, ENVIRONMENTAL HEALTH, DELIVERY OF HEALTH CARE, COMPARATIVE STUDY, BELARUS.

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