

HIGHLIGHTS ON HEALTH IN CROATIA



Country Highlights give an overview of the health and health-related situation in a given country and compare, where possible, its position in relation with other countries in the WHO European Region. The Highlights have been developed in collaboration with Member States for operational purposes and do not constitute a formal statistical publication. They are based on information provided by Member States and other sources as listed.

CONTENTS

OVERVIEW.....	1
THE COUNTRY AND ITS PEOPLE.....	2
HEALTH STATUS	6
LIFESTYLES.....	18
ENVIRONMENT AND HEALTH	23
HEALTH CARE SYSTEM.....	26
REFERENCES.....	30



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 the WHO European Region as one means of assessing the comparative strengths and weaknesses, what has been achieved so far and what could be improved in the future. The country groups used for comparison are called reference countries and are chosen based on:

- similar health and socioeconomic trends or development; and/or
- geopolitical groups such as the European Union (EU), the newly independent states of the former USSR or the candidate countries for EU accession.

For Croatia, the reference countries are Albania, Bosnia and Herzegovina, Bulgaria, the Czech Republic, Hungary, Poland, Romania, Slovakia, Slovenia and the former Yugoslav Republic of Macedonia.

To make comparisons between countries as valid as possible, data for each indicator have been taken from one common international source (such as WHO, the Organisation for Economic Co-operation and Development, the International Labour Office or EUROSTAT), whenever possible. Nevertheless, other factors such as recording and classification practices and cultural differences can influence the comparability of the data. Unless otherwise mentioned, the source of all data is the health for all statistical database of the WHO Regional Office for Europe. Information on national policies has been obtained from national authorities, including by personal communication with them, and from *Health in Europe 1997 (WHO Regional Office for Europe, 1998)*.

A special case of comparison is when each country is given a rank order. Although useful as a summary measure, ranking can be misleading and should be interpreted with caution, especially if used alone, as the rank is sensitive to small differences in the value of an indicator. Such differences of course occur when latest data are included in the database but may also result from corrections of data points for previous years, according to more recent reports of the Member States or other international data sources. Also, when used to assess trends, ranking can overshadow quite important absolute changes in the level of an individual country. Mostly bar charts (to indicate a country's position versus the reference countries according to the latest data) or line charts (usually to show time trends from 1970 onwards) have been used. Line charts present the trends for all the reference countries and for the EU or another geopolitical group, as appropriate. Only the country in focus and the appropriate group average are highlighted in bold 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 can be recognized more easily. To smooth out fluctuations in annual rates caused by small numbers, 3-year averages have been used, as appropriate. For example, this is the case for maternal mortality for all reference countries.

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

OVERVIEW

A conclusive overall picture of the health indicators in Croatia is difficult to establish. The 1990s have been marked by major political and socioeconomic changes. The difficulties of the transition have been compounded by the devastating damage of 4 years of war. The available health statistics of the war period are difficult to ascertain, at least because the actual population (the denominator in health statistics) *de facto* has been considerably lower than that on the records (*de jure*). This means that the population-based rates are probably underestimated, survey data are not available at this stage and therefore the assessments and the interpretations in this document may need to be revised, at times considerably.

Nevertheless, some overall impressions appear. Based on mortality indicators, the level of health in Croatia is probably better than could be expected given the economic situation and as compared with several reference countries. Consequently, on several health indicators Croatia scores closer to the EU average than a number of reference countries.

However, already before the turbulent 1990s, mortality indicators were improving more slowly than the average level in the EU. This trend was accelerated by the problems of the transition years. Some indicators, such as infant mortality, are good and improving, whereas others such as the mortality and

incidence of cancer, especially lung and breast cancer, show negative trends. After many years of decreasing tuberculosis morbidity, the incidence rate of tuberculosis has been stable for several years and requires additional efforts to establish a downward morbidity trend again. Trichinosis has surged, which suggests that environmental health problems dealt with decades ago have re-emerged, including poor drinking-water quality and food poisoning. Because the number of cases of trichinosis in humans and animals has increased, obligatory trichinelloscopy has been introduced and pest control measures have also been strengthened.

Data on lifestyle risk factors are not continually surveyed, although several studies and programmes are ongoing. The problems related to smoking, alcohol consumption, unhealthy nutrition and other lifestyle factors are being taken up and dealt with seriously.

In health care services, major well intended reforms have been set in motion but the outcome is still uncertain. The legislative basis for more adequate structure and organization, including financing, of health care has been strengthened, but there are problems in improving the primary health care system in terms of equity of access to care and the quality of care.

Thus, several health indicators require more data and close monitoring to ensure comprehensive review and assessment.

THE COUNTRY AND ITS PEOPLE

With the dissolution of the Austro–Hungarian Empire in the First World War, Croatia became part of the Kingdom of Serbs, Croats and Slovenes, renamed Yugoslavia in 1929. After the Second World War, Croatia became a republic within the Yugoslav federation.

Croatia became an independent country when the Yugoslav federation collapsed. The first democratic multi-party elections took place in April 1990. In December 1990 the new Croatian Constitution was promulgated. A May 1991 referendum voted in favour of independence, which was announced in June. Croatia officially declared independence in October 1991 (*European Observatory on Health Care Systems, 1999*).

During the war (1991–1995) in which Croats were involved after national independence, Croatia suffered extensive material damage, especially in the frontier areas in eastern Slavonia, along the border with Bosnia and Herzegovina and the area around Dubrovnik. The State Commission for War Damage Inventory and Assessment estimated that the direct damage (excluding many indirect effects) was US \$27 billion. For example, nearly 10% of the housing stock was destroyed or damaged as well as considerable public service infrastructure (*European Observatory on Health Care Systems, 1999*).

The war had dire consequences on the population in terms of loss of life, disability and suffering: an estimated 8437 people were killed, 32 833 wounded and more than 385 000 were displaced or became refugees (*WHO Regional Office for Europe, 1999a*).

The country is governed by a bicameral parliament, the Sabor, consisting of the House of Representatives and the House of Counties. Representatives are directly elected for a 4-year term. The head of state is the president, who is directly elected for a 5-year term and may be re-elected for a further single term. The president is responsible for the timing of elections and referenda and nominates a prime minister who in turn appoints a government, subject to approval by the House of Representatives. A constitutional court ensures that laws passed by the Sabor conform to the constitution.

Regional and local government is organized on two levels. There are 20 counties plus the City of Zagreb and 420 municipalities in Croatia (*Central Bureau of Statistics, 1998*). The county is the larger territorial unit, consisting of a county assembly, a county head and county administration. Municipalities are smaller, comprising a municipal council and a municipal mayor. County and municipality representatives are elected for 4-year terms.

Table 1. Croatia and the reference countries (1998 or latest available)

	Croatia	Reference countries	Minimum	Maximum
Capital	Zagreb			
Population (in millions)	4.494	111.195	1.920	38.664
• 0–14 years (%)	19.9	21.0	16.5	33.7
• 15–64 years (%)	66.8	69.6	60.4	69.8
• ≥65 years (%)	13.3	12.8	5.9	15.7
Area in km ²	56 500	985 076	20 000	313 000
Density per km ²	80	105	69	131
Urban population (%)	57	66	38	69
Births per 1000 population	12.1	11.3	7.9	18.6
Deaths per 1000 population	11.4	11.6	5.3	14.3
Natural growth rate per 1000 population	0.7	–0.3	–6.4	13.3
GDP per person in US \$ (PPP)	3 972	6 202	2 853	12 629
GDP: gross domestic product; PPP: purchasing power parity				

County and municipal activities are financed principally from the state budget and also from small and variable revenues raised locally.

Croatia is a member of the United Nations and its specialized agencies and the Council of Europe. Croatia is approaching the Partnership for Peace arrangement of NATO and negotiating towards becoming an associated member of the EU. Croatia also awaits admission to the World Trade Organization and the Central European Free Trade Agreement.

Demography

The European Region has reached the final stage of the demographic transition or post-transition stage, except for a few countries that still have relatively high fertility rates. The most important implication of this is the imperative of ensuring healthy aging and a useful role and decent standard of living for elderly people.

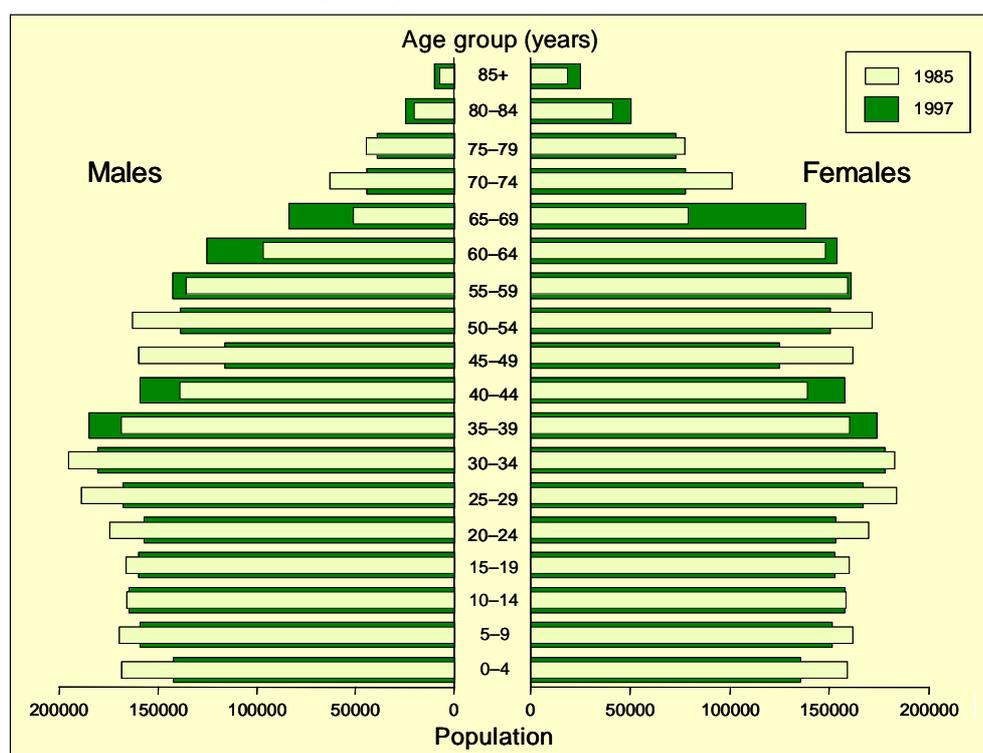
The shape of an age pyramid (Fig. 1) shows the current stage of the demographic transition. In the final stage, the younger age groups become considerably smaller than in

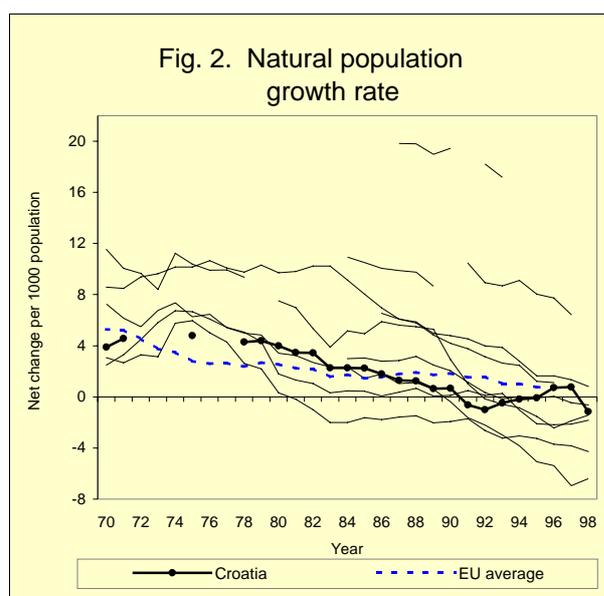
the past. In addition, the historical changes in birth, death and migration rates influence the shape of the age pyramid. It also reflects the size of different birth cohorts, the dependency ratio in the population and the gender balance of the population and indicates the future changes in the age distribution and dependency ratio. Features such as major changes in population structure – including those caused by changes in fertility or mortality – and their effects can be more easily seen when comparing the age pyramids for two different years.

The age cohorts from 0 to 34 years comprised a smaller proportion of the population in Croatia in 1997 than in 1985. In contrast, the age cohorts from 35 to 44 years and 55 to 69 years, as well as 80 years and older, were larger than in 1985, which indicates the aging of the population.

The natural population growth rate for Croatia (Fig. 2) was higher than the EU rate until 1986. The crude live birth rate decreased from 15 per 1000 in 1978 to 10 per 1000 in 1992, and the natural growth rate became negative in the period 1991–1995. The natural growth rate tended to become positive after the war.

Fig. 1. Age pyramid, 1985 and 1997





However, the fertility rate has fallen under the replacement level in Croatia (1.6 in 1995 and 1.45 in 1998), as in all the reference countries except Albania.

The total population of Croatia declined from 4.786 million in 1991 to 4.494 million in 1998 (6.1%). A major correction was reported in 1996, as compared with 1995, because the principle for estimating population changed from the *de jure* to the *de facto* principle.

Migrant population and ethnic profile

Immigrants and ethnic minorities can have specific patterns of disease and health needs because of cultural, socioeconomic and behavioural factors and exposure to a different environment in their country of origin. Obtaining access to health care that can meet such specific needs and is culturally and linguistically acceptable can also be difficult. Moreover, many immigrants have a higher risk of living in relative poverty and being marginalized in their countries of residence, which can result in reduced health status compared with non-immigrants. Illegal immigrants, in particular, can find it difficult to obtain health care, and following up any care given can be problematic.

According to the last (1991) census, the main ethnic groups in Croatia were Croats (78%) and Serbs (12%) (Turner, 1998). Up-to-date

information on the ethnicity and religious mix is not available since there has been large-scale population movement since the 1991 census. Because of significant migration in the period 1991–1995, the data available for this period may not reflect accurately the real situation.

Social and economic conditions

The relevance of educational attainment to health has been well documented. The literacy rate among the population aged 15 years or older has often been used as an indicator, but this is not very useful in Europe: for example, all reference countries except Albania (there are no recent data for Bosnia and Herzegovina) report a literacy rate of 94% or more. In addition, all the reference countries have universal primary education with almost all children participating. Therefore, the gross enrolment ratio¹ for primary education is also not a very sensitive indicator for detecting differences in educational levels.

There are, however, data on the enrolment ratios in secondary education (such as middle school, high school and vocational and technical schools) and tertiary education (universities and other higher professional schools). In 1997, the gross enrolment ratio in Croatia was 82% for secondary and 28% for tertiary education versus about 90% and 26%, respectively, for the reference countries (UNESCO, 1999).

The war had a devastating impact on the economy. In 1993, the total gross national product (GNP) was 68% of the pre-war level. The country also suffered heavy inflation until monetary reform in 1993. Since then, inflation has been moderate and the national currency stable.

The unemployment rate has been steadily increasing. Most employment is in the industry, commerce, tourism, education and

¹ A gross enrolment ratio for a given level of education is derived by dividing the total enrolment for this level of education, regardless of age, by the population of the age group which according to national regulations, should be enrolled at this level (UNESCO, 1999).

culture, agriculture and forestry sectors, all of which were detrimentally affected by the war.

Although reconstruction of infrastructure, homes, schools and factories is progressing and displaced people are returning, the economy is still poor, with a negative current account balance of US \$1.53 billion and total external debt of US \$6.13 billion. Unemployment is still approximately 17% (1998). One of the major problems is the lack of money. This has also affected health care financing, for which the deficit was an estimated US \$242 million at the end of 1998. However, the real GDP growth was 6.9% and GDP per capita was US \$4877 in 1998. At the end of 1998, inflation was 3.5% (*WHO Regional Office for Europe, 1999a*).

The GDP in Croatia adjusted for purchasing power parity (PPP) reached US \$3972 in 1995. This was one of the lowest levels among the reference countries and only 20% of the average GDP for the EU.

The percentage of people employed in the main sectors of the economy in 1998 is shown in Table 2.

Manufacturing	20.8
Agriculture, hunting and forestry	16.3
Wholesale and retail trade; repair of motor vehicles, motorcycles and personal and household goods	13.6
Transport, storage and communication	7.3
Public administration and defence, compulsory social security	6.9
Other sectors	35.1

HEALTH STATUS

Life expectancy

Life expectancy at birth in Croatia was 72.6 years (68.6 years for men and 76.5 years for women) in 1997 (Fig. 3), which was relatively favourable in the reference countries.

From 1985 to 1997, life expectancy at birth among females increased by 1.3 years (Fig. 4), whereas the increase was almost 2.2 years in the EU. During the same period, life expectancy among males in Croatia increased by 1.0 years (Fig. 5), whereas it increased by almost 2.3 years in the EU. Despite the recent improvement, this takes Croatia back to a difference of some 5 years versus the EU, as compared with about 4 years in the 1970s. For example, in 1971 the life expectancy in Croatia was 65.6 for males and 72.3 for females, versus 68.8 for males and 75.1 for females in the EU (personal communication from the national statistical office).

The gender difference in life expectancy has increased in almost all the reference countries. Although Croatia's gender difference was smaller than that for most of the reference countries in 1997 (7.8 years), it was larger than in the EU (6.7 years) and slightly increasing.

Main causes of death

Comparing the death rates from main causes between countries can indicate how far the observed mortality might be reduced. As almost all the causes underlying the deaths attributed to cardiovascular diseases, cancer and accidents are influenced by collective and individual habits and behaviour, a wide variety of health promotion and prevention measures can bring about changes to reduce health risks and thus disease and premature deaths.

Among the population aged 0–64 years, the main causes of death are cardiovascular diseases and cancer (Table 3). In the EU, every fourth death is caused by cardiovascular diseases and every third death by cancer. In Croatia, the proportion caused by cardiovascular diseases is higher: 29%. At the same time, only 29% of deaths are caused by cancer.

Among the population aged 65 years or older in the EU, cardiovascular diseases cause almost half of all deaths and cancer causes every fourth death. Cardiovascular diseases are also the most frequent cause of death in the reference countries, but they cause a higher proportion of deaths than in the EU. In Croatia 59% of deaths in this age group are caused by cardiovascular diseases – one of the lowest values in the reference group. As in the age group 0–64 years, the proportion of deaths caused by cancer is lower in the reference countries in general than in the EU; the proportion in Croatia is 17%.

Cardiovascular diseases

The standardized death rates (SDRs) for cardiovascular diseases for males aged 0–64 years in the reference countries were generally relatively close to the EU rate in 1970 (Fig. 6). Since then, however, the SDRs of most reference countries have increased, whereas the EU rate has declined. The rates for females have been stable or declining, such as in Croatia (Fig. 7). The SDR in Croatia was among the lowest in the reference countries for both genders in 1985 and is currently declining (Fig. 8).

The SDR for ischaemic heart disease among the EU population aged 0–64 years has been declining since the 1970s, but the decline started much later or the rate has even been increasing in the reference countries (Fig. 9, 10). Croatia's SDR was below the rate for the reference countries in the 1980s, but the rate increased in the 1990s. Between 1985 and 1997, the SDR increased from 40 to 43 per 100 000 while, for example, Slovenia's rate decreased from 41 in 1985 to 28 in 1997. This increase was similar for men and for women.

Croatia's SDR for cerebrovascular diseases in the age group 0–64 years was at the average for the reference countries in the 1980s but was decreasing. However, there was a large jump in 1996 probably caused by the decline in the estimated population (Fig. 11, 12).

Fig. 3. Life expectancy at birth in years, latest available data

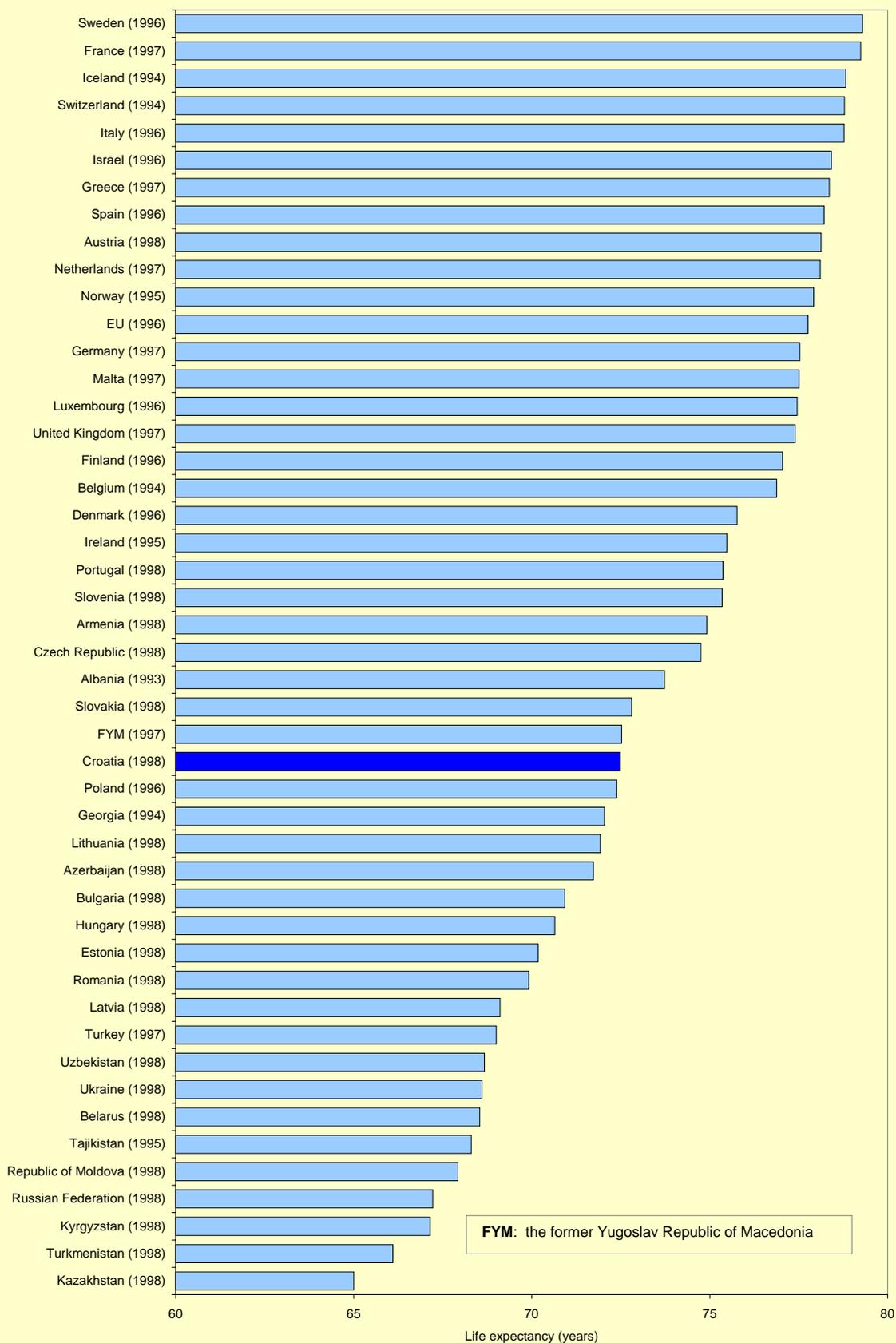


Table 3. Structure of mortality (%) by main causes of death, age groups 0–64 years and ≥65 years

	0–64 years			≥65 years		
	Croatia	Reference countries	EU	Croatia	Reference countries	EU
Cardiovascular diseases	29	33	23	59	66	47
Cancer	29	25	35	17	15	24
External causes, injury and poisoning	15	16	14	3	3	3
Diseases of the respiratory system	2	5	4	4	5	10
Diseases of the digestive system	8	7	6	3	3	4
Other diseases	18	14	18	13	8	13
Total	100	100	100	100	100	100

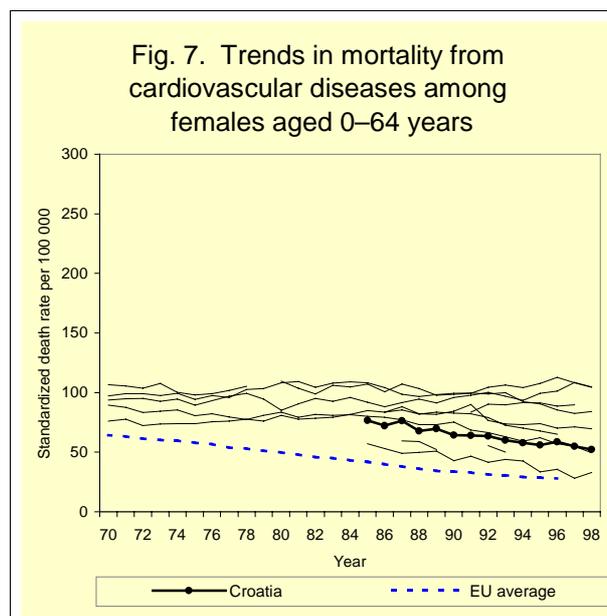
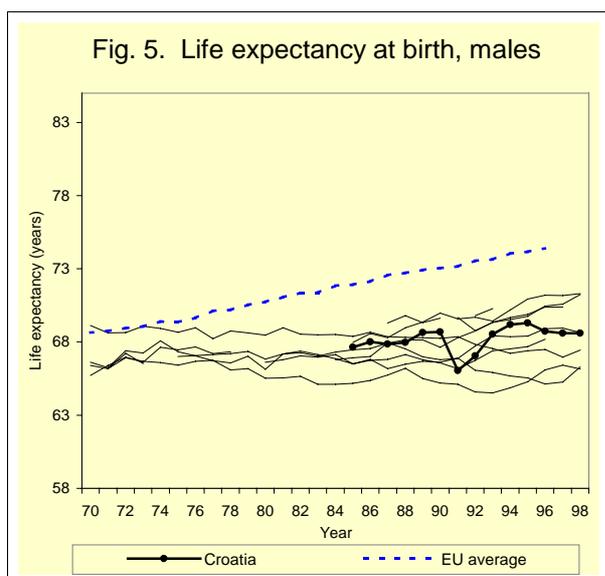
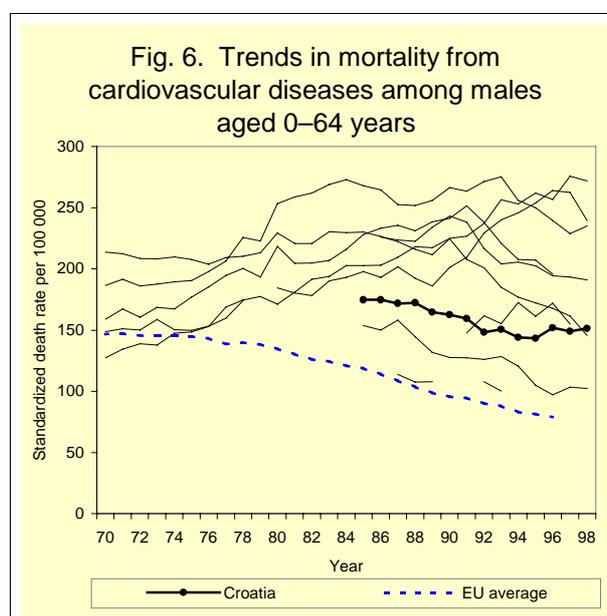
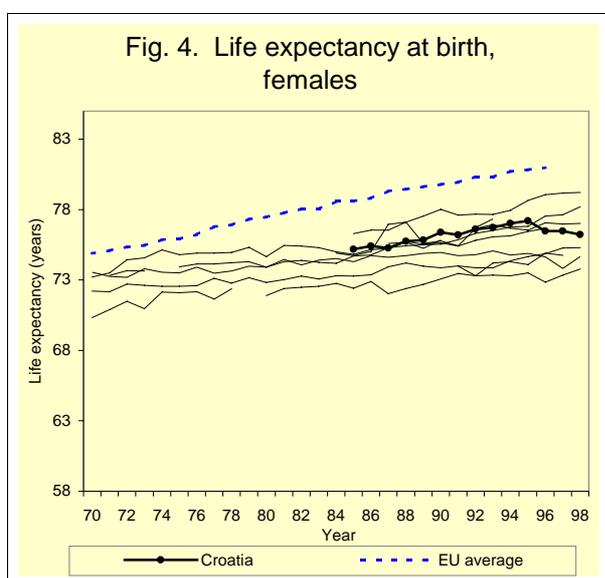
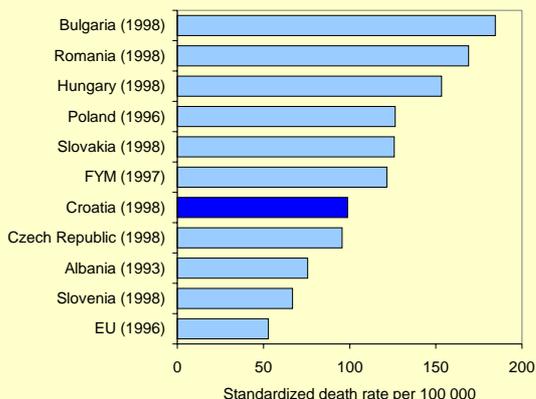


Fig. 8. Mortality from cardiovascular diseases, age 0–64 years, latest available data



FYM: the former Yugoslav Republic of Macedonia

Fig. 11. Trends in mortality from cerebrovascular diseases, age 0–64 years

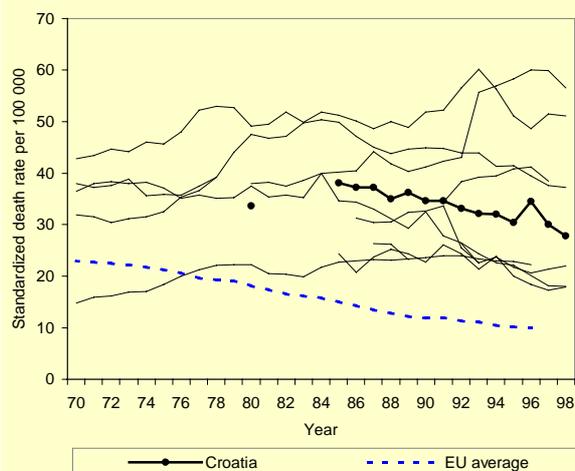
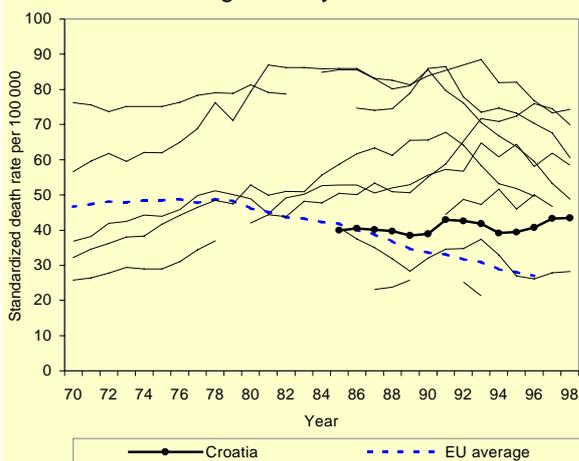
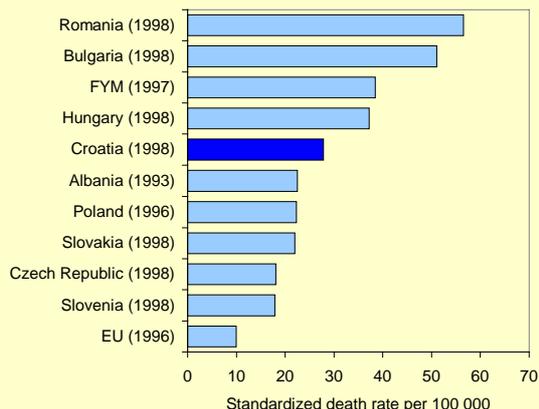


Fig. 9. Trends in mortality from ischaemic heart disease, age 0–64 years



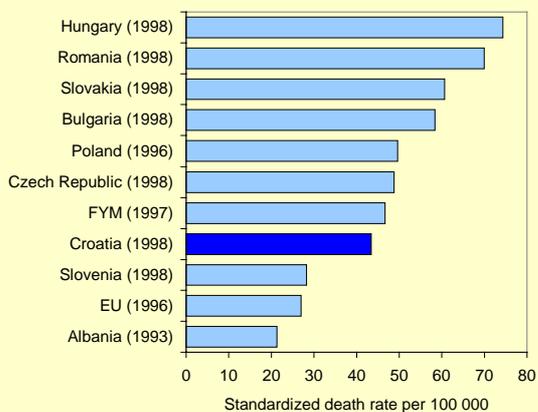
Croatia EU average

Fig. 12. Mortality from cerebrovascular diseases, age 0–64 years, latest available data



FYM: the former Yugoslav Republic of Macedonia

Fig. 10. Mortality from ischaemic heart disease, age 0–64 years, latest available data



FYM: the former Yugoslav Republic of Macedonia

Cancer

This section provides comparative data on total cancer mortality. More detailed data on breast cancer and cervical cancer among women are presented in the section on women's health and data on lung cancer (includes cancer of the trachea, bronchus and lung) in the section on smoking.

The SDR for cancer among people aged 0–64 years in Croatia (Fig. 13, 14) was close to the average for the reference countries in 1997 and has not changed much since 1985, although there is an increasing long-term tendency, at least for men. Several reference countries display increasing trends. The rates for males

in Croatia are about 50% higher than the EU average, while females are at the EU average. In the group aged 65 years and over, there is a clear increasing trend for both genders that is more steep for men. Overall, cancer mortality is increasing, and the average levels for the EU have been surpassed. This unfortunate development is confirmed by the increasing trends in the incidence of cancer and hospital treatment for cancer. Increases in the incidence of lung cancer and breast cancer play a major role here.

Other causes of death

The SDR for infectious and parasitic diseases declined sharply both in the reference countries and in the EU during the 1970s and the early 1980s. After that, the situation stabilized in most countries, but the SDR started to increase in some reference countries. This was not the case in Croatia.

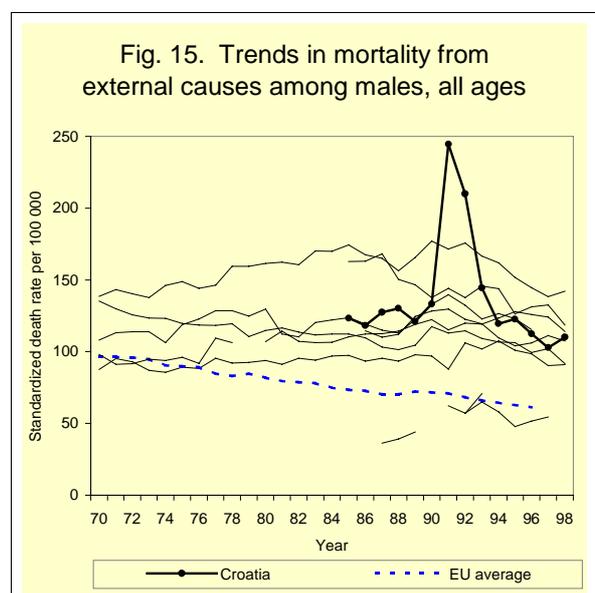
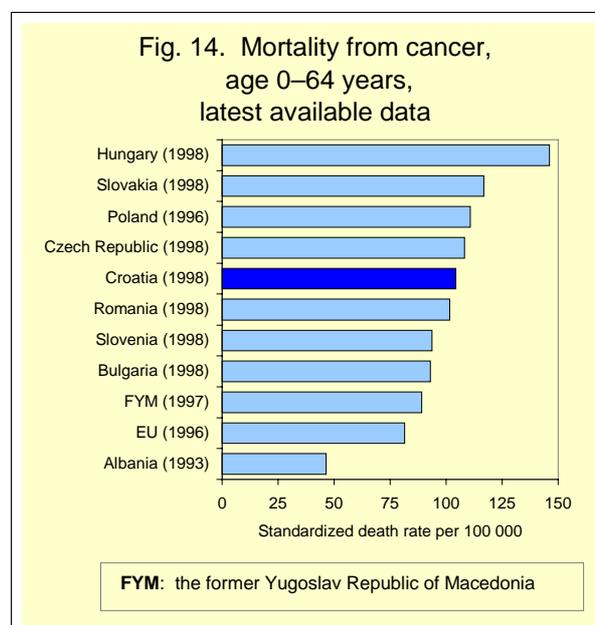
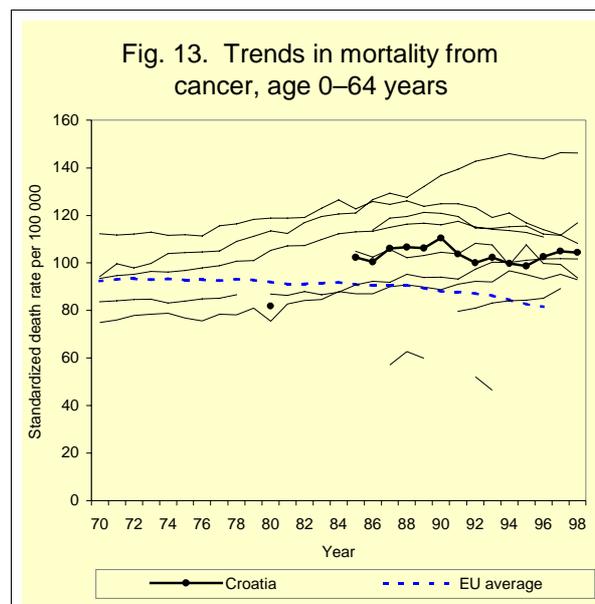
Croatia's SDR for diseases of the respiratory system has increased from its lowest level in 1990. In 1997, Croatia's rate was lower than the EU rate.

The SDR for diseases of the digestive system was above the EU rate in 1997 and has been rather stable. However, the difference between the mortality of males in Croatia and that in the EU is considerably higher than the comparable difference among females.

External causes of death and injuries

External causes of death and injuries covers all deaths caused by accidents, injuries, poisoning and other environmental circumstances or events such as violent acts (homicide) and suicide.

The SDR for external causes, injuries and poisoning for men in Croatia was above the EU rate in the 1980s. Since then, the SDR has decreased in the EU and probably in Croatia as well, but the trend in Croatia is difficult to judge because of the impact of the war and the corrections in the population figures (Fig. 15). Nevertheless, the latest available estimates are favourable.



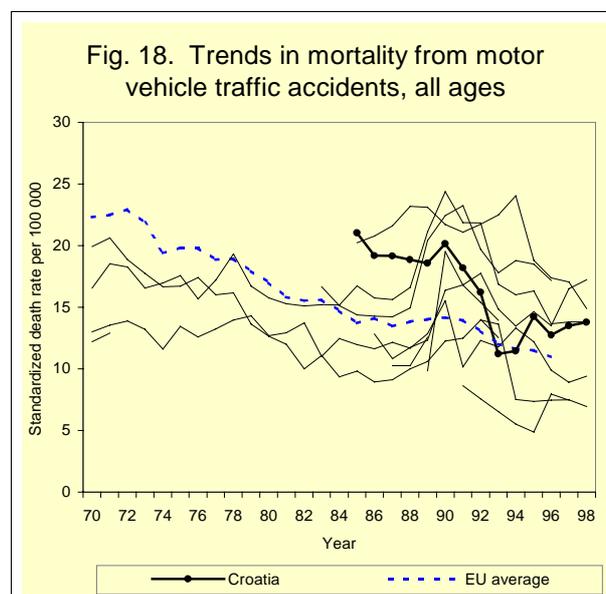
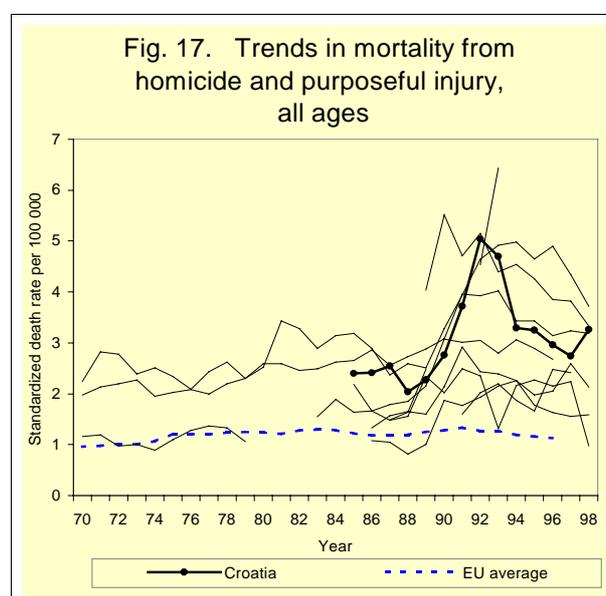
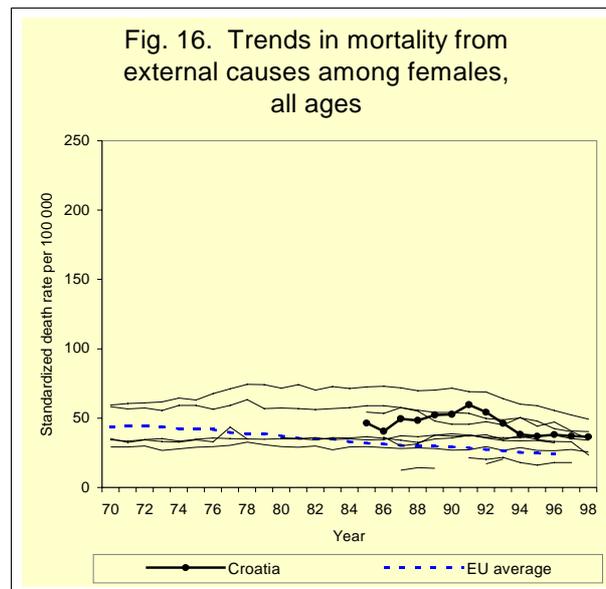
Women have notably lower SDRs for external causes in general. In 1997, the SDR for external causes was almost three times higher for men than for women in Croatia (Fig. 16). In 1985, Croatia's SDR for external causes among women was 45% higher than the EU rate; in 1997 the percentage difference was 55%, because Croatia's rate had declined less than the EU rate. Between 1985 and 1997, the SDR for external causes among females decreased in all reference countries except Croatia (no change) and Albania (an increase).

Croatia's SDR for homicide and purposeful injury exceeded the rate for the EU in the late 1980s (Fig. 17). In the first years of the transition (the early 1990s), the SDRs were increasing in all the reference countries, but the trend has reversed more recently. In Croatia, the war caused a major jump in rates. Croatia's SDR in 1997 was still above the pre-war rate and three times the EU rate.

The SDR for motor vehicle accidents was higher in Croatia than in the EU and in the reference countries in 1985 (Fig. 18). Among females, Croatia had the highest SDR for motor vehicle traffic accidents, but this has changed to the third lowest position among six reference countries. As a result, female mortality from road traffic accidents per 100 000 population (5.59) came down to the EU average (5.54) in 1996. At the same time, male mortality from road traffic accidents remained higher than the EU average, which could be associated with increasing levels of alcohol consumption. Other causes of high traffic accident mortality should be identified, including inadequate access to quality emergency care, increase in psychological stress and inadequate maintenance of motor vehicles.

Mental health

Although mental and psychosocial wellbeing is an important aspect of health-related quality of life, too little information is usually available to allow these very important dimensions of the population's health to be described reliably. Suicide can be used as a surrogate indicator of the overall level of mental health problems.



In Croatia, the overall suicide rate was relatively unchanged in the period 1985–1997, at a level about twice as high as that of the EU (Fig. 19, 20). The rates for males are three times higher than those for females, as in most countries. The incidence of schizophrenia was stable from 1965 to 1990 at about 289 per 100 000 per year (national data).

Infectious diseases

AIDS is caused by the human immunodeficiency virus (HIV), which can be transmitted in three ways: sexual transmission; transfusing infected blood or blood products or using non-sterile injection equipment; or from mother to child. The incubation period between initial HIV infection and developing AIDS is about 10 years or more. The number of notified cases of AIDS is rising in central and eastern Europe, although more people have been diagnosed with AIDS in western and northern Europe.

The incidence of AIDS in Croatia is still very low compared with the EU and varied from 0.2 to 0.4 per 100 000 from 1990 to 1997. In 1998, the incidence of AIDS was 0.4 per 100 000. This was the third highest level among the reference countries, after Romania and Slovenia. The incidence in the EU has decreased sharply because of improved preventive measures as well as medication, which slows down the outbreak of AIDS.

However, the total number of known HIV-seropositive cases grew from 67 in 1990 to 268 in 1999, and currently some 40 new cases are registered annually (national data). The epidemic is not yet explosive in character, but it will predictably continue more intensively. In 1994, about 70% of people with AIDS were homosexual or bisexual, highly promiscuous heterosexuals and intravenous drug addicts, mostly men. Apart from Zagreb, where most of the cases are reported, AIDS was recorded in about 30 other Croatian towns (*Croatian National Institute of Public Health, 1995*).

The incidence of viral hepatitis in Croatia is low and at the EU average. The incidence of syphilis and gonococcal infections is below the EU average and among the lowest in the reference countries.

Tuberculosis is the only infectious disease causing considerable public health problems in Croatia. During the war the declining trend in tuberculosis decelerated, which was mainly ascribable to the massive inflow of refugees. The incidence varies significantly between counties. The tuberculosis incidence for all forms per 100 000 population was 45 in 1997 and ranked third highest among the reference countries after Romania and Bosnia and Herzegovina (Fig. 21). The EU average was 13 per 100 000.

Fig. 19. Trends in mortality from suicide and self-inflicted injury, all ages

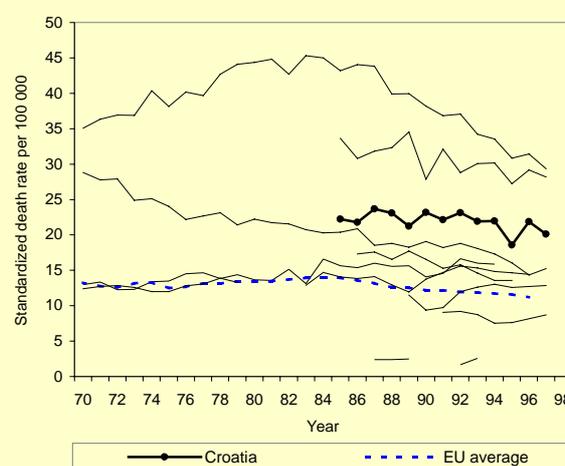
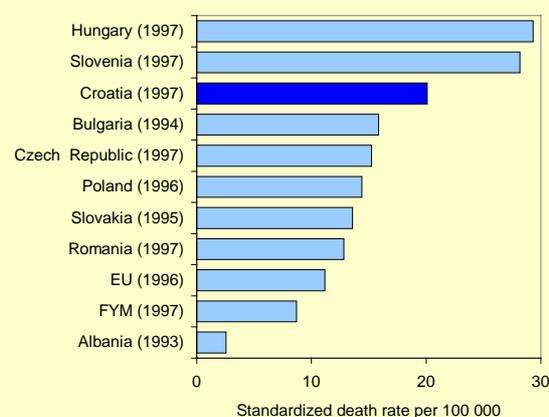


Fig. 20. Mortality from suicide and self-inflicted injury at all ages, latest available data



FYM: the former Yugoslav Republic of Macedonia

Long-term illness and disability

The prevalence of long-term illness and disability is an important indicator of a population's health status and health-related quality of life. However, few data are available on this. Few countries were able to provide data on new cases of impairment and disability, and even these figures may give a misleading picture of the situation because of differences in definitions, data collection methods and national legislation on disease-related benefits.

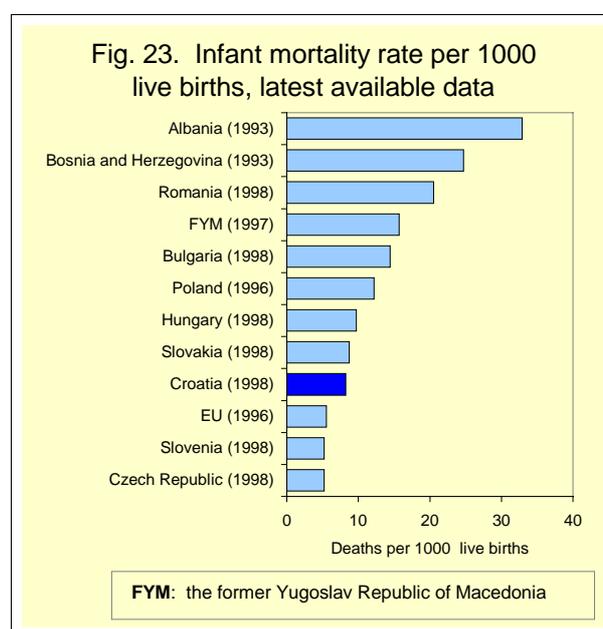
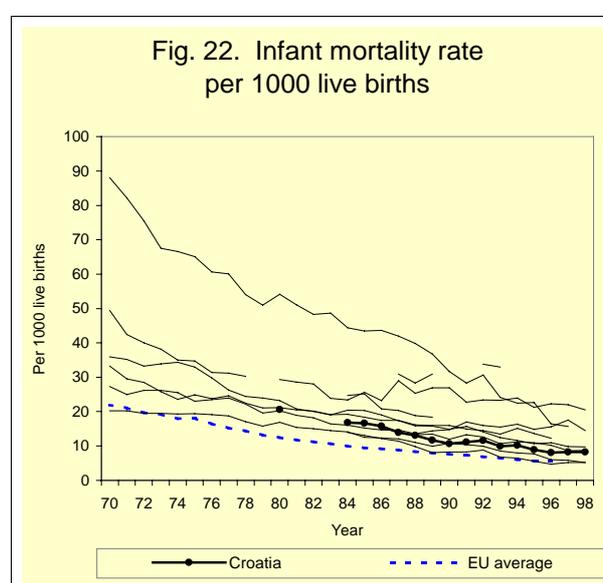
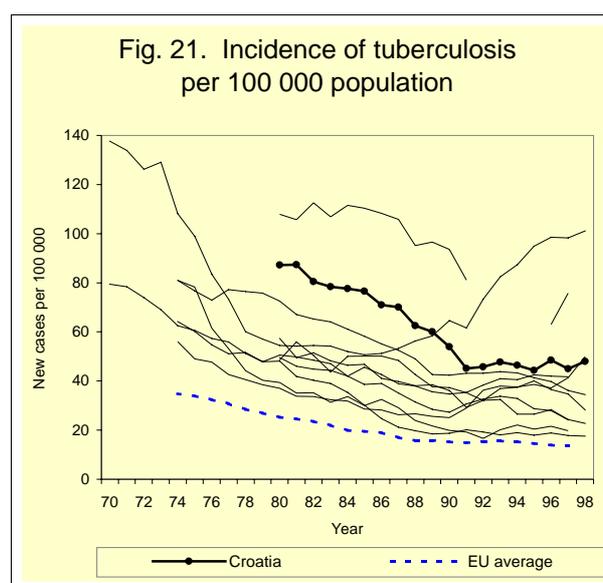
Routine statistics show that, during the years 1990–1997, the number of new disability cases in Croatia increased about three times to 526 cases per 100 000 population in 1997, the second highest among the reference countries. The figure for 1998 was 455. Disability is a considerable economic burden for the community. Only 7.4% of disabled people of working age have regular employment. The rest receive social benefits. The number of these people almost doubled in the period 1985–1998 (to 9667 per 100 000 population).

Health of children and adolescents

Infant mortality rates in most of the reference countries (except Slovenia) are not yet comparable to those in western countries, although they halved in the last decade (Fig. 22, 23). The Croatian rate declined from 16.6 per 1000 live births in 1985 to 8.2 in 1997, which is a major achievement, although still over 40% above the EU average. The long falling trend was briefly halted by war conditions.

The main causes of infant mortality in western Europe are malformations and perinatal conditions, which cause 82% of all infant deaths in the EU. The third most common cause is sudden infant death syndrome (11%), whereas external causes, infectious and parasitic diseases and diseases of the respiratory system are responsible for 2–3% of deaths each.

In Croatia, the main causes of infant mortality are also certain conditions of the perinatal period (55% in 1998) and congenital malformations, deformations and chromosomal anomalies (29% in 1998), causing a total of 84% of all infant deaths in Croatia.



The proportion of children weighing less than 2500 g has often been used to indicate the proportion of newborns at high risk. In the EU, 6.0% of all children had low birth weight. The latest figures for Croatia are better than the EU average and second best among the reference countries.

Children in most reference countries have good immunization coverage. In Croatia, immunization coverage of children against most childhood communicable diseases was consistently high from 1987 to 1997: in 1997 it was 98% for tuberculosis, 92% for poliomyelitis and diphtheria and 91% for measles. Systematic and legally controlled immunization has eradicated poliomyelitis and diphtheria, reduced tetanus to very rare cases (in unvaccinated elderly people) and decreased the morbidity of measles, pertussis and rubella.

The average time a newborn is breastfed in Croatia is 3.45 months. The percentage breastfed less than 1 month is 32.2%; 36.6% are breastfed more than 3 months, 13.5% more than 6 months and 1.6% more than 12 months (*UNICEF Committee of the Republic of Croatia, 1997*).

Various epidemiological studies show that between 7% and 16% of schoolchildren have sideropenic anaemia (haemoglobin threshold value of 120 g/l), which is mostly caused by an insufficient dietary intake of iron.

Children with disabilities and learning difficulties were mostly placed and educated in special schools until the late 1980s. Then the school reform recommended the integration of all children with mild and moderate disabilities into the regular school system. The education of these children had to be organized either in regular classes or in separate classes but at the common school premises. The main difficulty was the shortage of properly educated school staff, especially in the small villages or remote areas. The total number of children attending schools for disabled children was 4846 in 1981/1982, 4751 in 1989/1990 and 4147 in 1996/1997, which indicates the changes in the school system.

Adolescents make efforts to take on adult roles. This transition involves experimentation and imitation, which can make young people

vulnerable to damage to their health. Acute health problems can result from accidents, experiments with drugs, unsafe sex or unwanted pregnancies. In the longer run, adopting an unhealthy lifestyle pattern can lead to chronic degenerative diseases. This is also a transition phase in the life cycle when social insecurity compounded by, for example, unemployment, can lead to mental health problems.

One of the few routinely available indicators for adolescents' sexual health and behaviour is the rate of teenage childbirth, which can reflect social factors as well as access to and use of contraception. The percentage of live births among young women aged 15–19 years has been declining in almost all the reference countries since 1980. In some countries the decrease has been remarkable, up to 84% in Slovenia.

In Croatia 5.4% of all live births in 1997 were to mothers under 20 years of age versus 9.7 in 1985. This is a significant drop, sending Croatia to the second lowest position among the reference countries (Fig. 24). Fig. 25 shows the frequency of all teenage pregnancies, as indicated by the total number of births and legal induced abortions in the reference countries. Croatia has fewer teenage pregnancies than the other reference countries (except for Slovenia): 986 per 100 000 girls aged 10–19 years. In the EU the minimum is 712 (Spain) and the maximum 2488 (United Kingdom) (different years, latest available). Only a few of these pregnancies, however, end by abortion. In 1997, Croatia had 196 abortions per 1000 live births among women under 20 years of age (Fig. 26), similar to the other reference countries, except for Slovenia and Bosnia and Herzegovina, which had many more.

Fig. 24. Percentage of all live births to mothers younger than 20 years

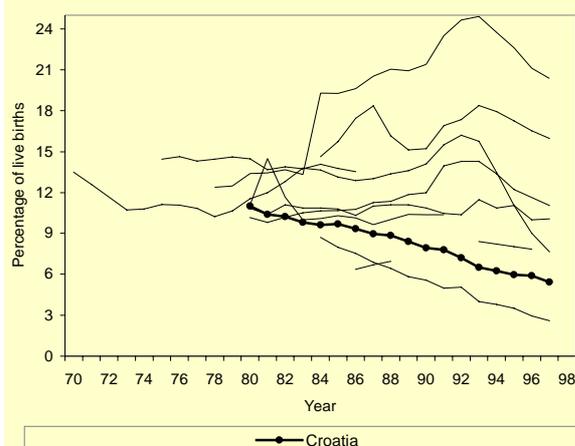


Fig. 25. Teenage pregnancies – number of live births and abortions per 100 000 girls aged 10–19 years, latest available data

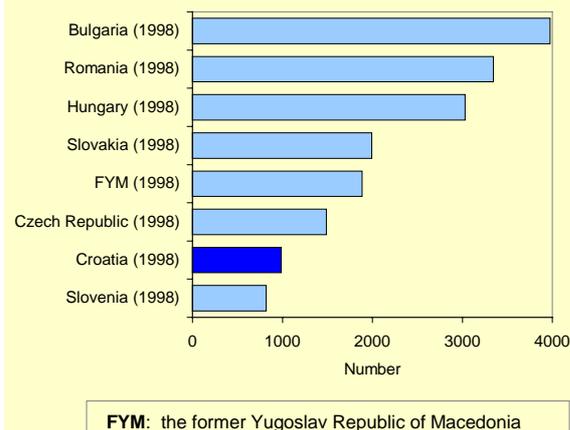
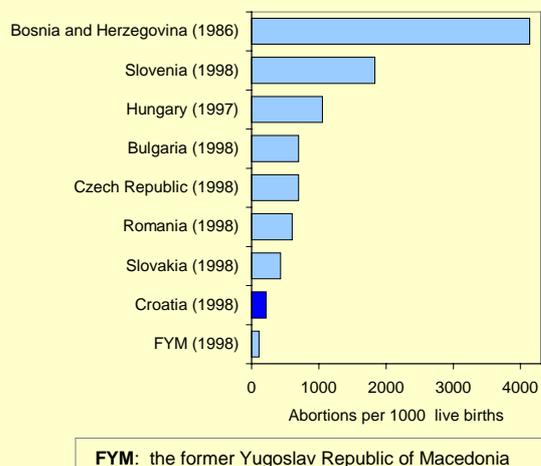


Fig. 26. Abortions per 1000 live births, to mothers younger than 20 years, latest available data



Women's health

Women as a group live longer than men and have lower mortality rates for most causes of death. For example, in Croatia, the SDR for cancer in the group aged 0–64 years was 52% lower among women than among men in 1997. The gender difference in Croatia was even larger for the SDR for diseases of the circulatory system, since the female rate was 63% lower than the male rate. However, women have higher reported rates of morbidity and utilization of health care services (especially around childbirth), and they can be more affected by social welfare policies than men are.

The maternal mortality rate has declined noticeably since the 1980s in almost all reference countries. The rates for Croatia fluctuate substantially because of small numbers (Fig. 27), but the level is close to the EU average.

In the countries of central and eastern Europe and in the newly independent states, induced abortion was a common method of ending pregnancy because modern contraceptives were lacking and not widely accepted culturally. The number of induced abortions was therefore usually much higher than in western European countries. In Croatia the number of abortions per 1000 live births has decreased continuously: from 822 in 1985 to 295 in 1997 (Fig. 28). The reduction was especially steep for the number of abortions in women younger than 20 years.

The Law on the Right to Freely Decide about Giving Birth stipulates the rights and duties of citizens with regard to preventing unwanted conception, terminating the unwanted pregnancy as well as treatment for those who, because of health reasons, cannot fulfil their wish to have children. To enable the citizens to exercise their right to family planning, guidance centres and other forms of help are offered.

The protection of maternity is one of the basic principles of the Constitution. Article 62 stipulates that the state protects maternity, while the law regulates the rights concerning delivery, maternity and care for children. Article 47 of the Law on Labour Relations provides for maternity leave (180 days uninterrupted) during pregnancy, delivery and

care for the child. After this maternity leave ends, one of the parents is entitled to work half time or to use additional maternity leave until the child reaches 1 year of age. During that time, parents have the right to compensation for salary lost.

Sexually transmitted diseases are more difficult to diagnose in women (many sexually transmitted diseases occur without recognizable symptoms in women) and they suffer more severe sequelae than men. The frequency of “classical” sexually transmitted diseases (gonorrhoea, syphilis and chancroid) has steadily declined in Croatia and their incidence is far below the EU average, but new bacterial and viral syndromes associated with *Chlamydia trachomatis*, the human herpesvirus, the human papillomavirus and HIV have become prominent in the reference countries. These agents are often more difficult to identify, treat and control and can cause serious complications, often resulting in chronic ill health, disability, infertility or death.

In Croatia, the death rates from cardiovascular diseases for women younger than 65 years fell by 28% from 1985 to 1997. The same indicator for ischaemic heart disease increased by 12%.

Mortality from breast cancer increased from 1985 to 1996 (Fig. 29), but the rate was more than 10% lower than the EU average. Mortality from cervical cancer (Fig. 30) decreased by 13% over the same period to 3.5 per 100 000 population in 1997, giving Croatia the second lowest rate among the reference countries (above Albania). However, the rate is still high compared with the EU countries. Early sexual activity, multiple partners, cigarette smoking and a rise in human papillomavirus infection should all be considered risk factors. Problems with early detection and adequate treatment probably contribute to higher mortality levels.

Recommendations regarding the Papanicolaou test exist and are provided by the National Health Insurance Institute (once annually for women of reproductive age or younger if sexually active, regardless of social class). The

primary health care service in Croatia carried out 340 957 tests in 1998.

Violence against women has received limited attention as a public health issue. Data on the incidence and type of such violence are lacking. The SDR for homicide and purposeful injury among women can be used as a surrogate indicator. In Croatia, the rates were disturbed by the war and fluctuate significantly, but are probably at the pre-war level, whereas the rates for most reference countries increased. However, Croatia’s rates are about twice as high as the EU average.

Fig. 27. Maternal mortality per 100 000 live births

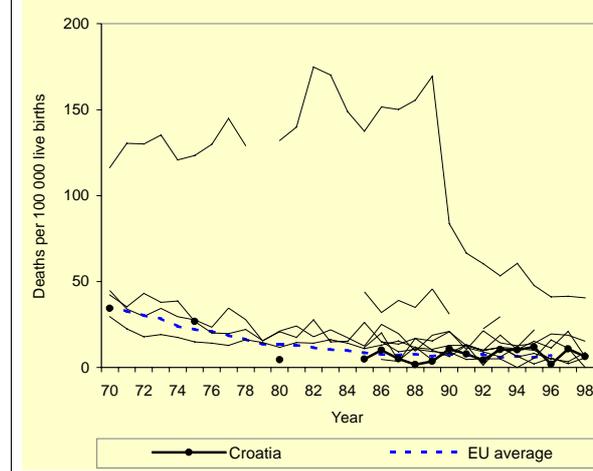


Fig. 28. Number of abortions per 1000 live births

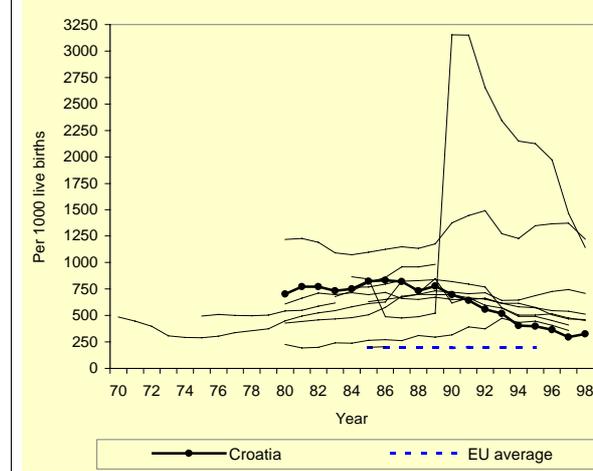


Fig. 29. Trends in mortality from breast cancer among females aged 0–64 years

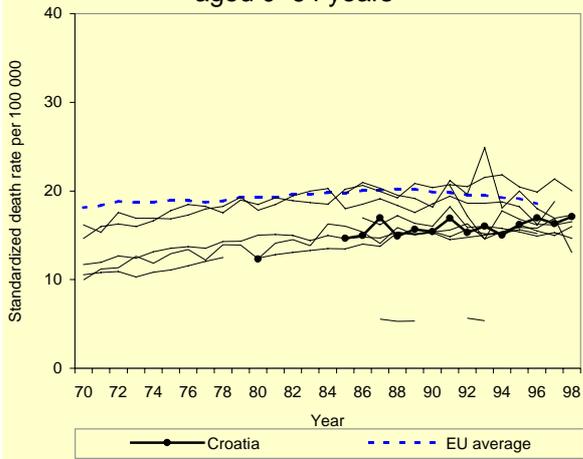
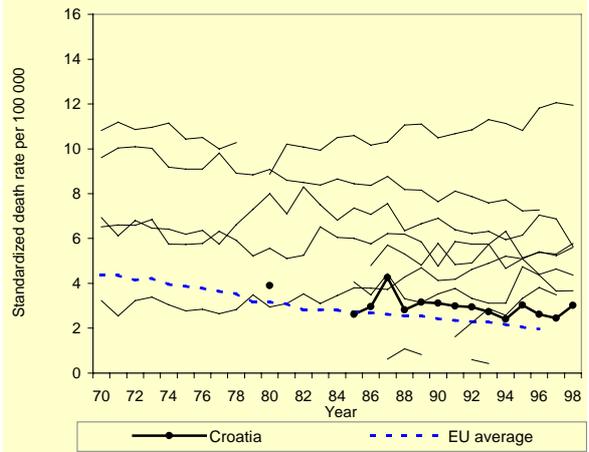


Fig. 30. Trends in mortality from cancer of the cervix among females aged 0–64 years



LIFESTYLES

Among the factors (including genetics and the physical and social environments) influencing health, behaviour substantially affects the health and wellbeing of each individual and the population. Lifestyle patterns such as nutritional habits, physical activity and smoking or heavy alcohol consumption together with the prevalence of such risk factors as elevated blood pressure, high serum cholesterol or overweight influence premature mortality, especially from cardiovascular diseases and cancer. These diseases are the main causes of death in Europe. Unhealthy behaviour also contributes to a wide range of other chronic illnesses and thus affects the quality of life in general.

Lifestyle, however, is also influenced by behavioural patterns common to a person's social group and by more general socioeconomic conditions. Evidence is growing that, at least in most western European countries, improvements in lifestyles have largely been confined to the more socially and economically privileged population groups, who are better placed to adopt health-promoting changes in behaviour (*WHO Regional Office for Europe, 1993, 1999b*).

Tobacco consumption

The cigarette sales per capita in Croatia fell slightly during the war, and have grown steadily since. In 1997, the consumption of 2318 cigarettes per person in Croatia based on sales figures was far above the EU average of 1580 cigarettes. These figures underestimate the real consumption, as unregistered imports (smuggling) probably caters for a significant share of the actual consumption.

Studies show that those who smoke as adults have generally started to do so by the age of 18 years. Knowledge of trends in the uptake of smoking among teenagers is therefore important for policy-makers.

The European School Survey Project on Alcohol and other Drugs (ESPAD) has regularly surveyed smoking habits among 15-year-olds in the past decade. About 70% of the people

15 years old in Croatia have tried smoking cigarettes, with only a slight difference between boys and girls. Daily smoking (at least one cigarette per day) included 32% of the boys and 27% of the girls, and more than 20 cigarettes per day covered 6% of the boys and 5% of the girls. The age at first use of cigarettes was different for boys and girls; 21% of the boys have tried their first cigarette before reaching 11 years of age, whereas the majority of the girls have tried it at the age of 14 years.

According to the preliminary report of the First Croatian Health Project (Subproject: Health Promotion), 33% of adults smoke. More than 40% of male smokers and less than 20% of female smokers consume more than 20 cigarettes daily. Male smokers from the continental part of the country consume more cigarettes than those from the coastal regions. No such regional differences were observed among female smokers. The intensity of smoking among women tends to increase significantly between 30 and 39 years of age and peaks at 40–49 years, followed by a decrease in older age. Male smokers usually smoke as many as 11–20 cigarettes daily when they begin to smoke. As their age progresses, they consume either progressively more or considerably less cigarettes. Most younger male smokers are medium-intensity smokers, whereas most of the elderly male smokers could be divided into high- and low-intensity smokers. These results imply significant differences between the patterns of smoking among men and women.

The mortality from lung cancer can be used to estimate the trends and positions of countries in relation to smoking. In the 1980s, Croatia's SDR for this cause among men ranked in the middle of the values displayed by the reference countries and well above the EU rate. In the 1990s, the SDR in Croatia has probably remained rather stable (fluctuation is great, but the latest data are at the pre-war level), whereas several reference countries and the EU average had a decreasing trend (Fig. 31). Croatia's SDR for lung cancer was still below the rate for several reference

countries but 45% higher than the EU rate in 1997.

Among women in Croatia, the SDR for lung cancer has been near the average for the reference countries and that of the EU in the 1980s and the 1990s (Fig. 32). Similar to most countries in the European Region, the trend in Croatia is also increasing. Although these rising trends reflect exposure dated decades ago, they are consistent with survey data from other countries that show increasing smoking prevalence, especially among younger women. The negative health effects related to tobacco smoking are therefore likely to increase in Croatia in the next decade, from already high levels, and determined effort is required to control the epidemic by means of the policies and programmes that have shown results in other countries.

Alcohol consumption

In Croatia, as in Bulgaria, Poland and Slovakia, the registered consumption of alcoholic beverages has declined since 1984. Consumption has increased in the other reference countries.

The annual alcohol consumption in Croatia in 1990 was less than half the EU average. This indicator (1990) was higher than the EU average in only three reference countries (the Czech Republic, Hungary and Slovenia).

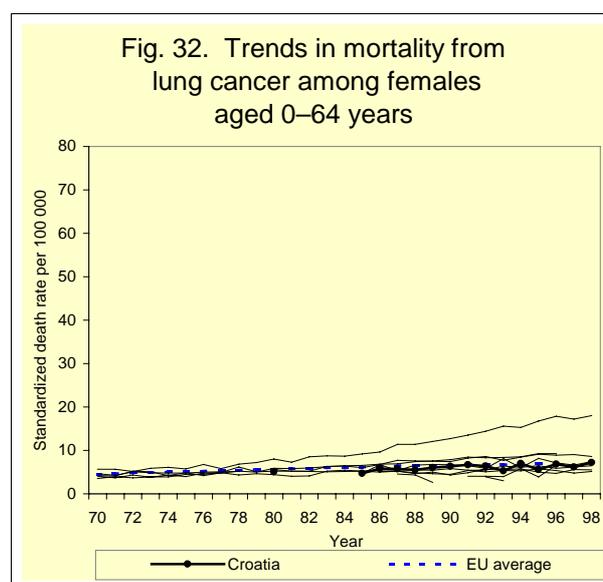
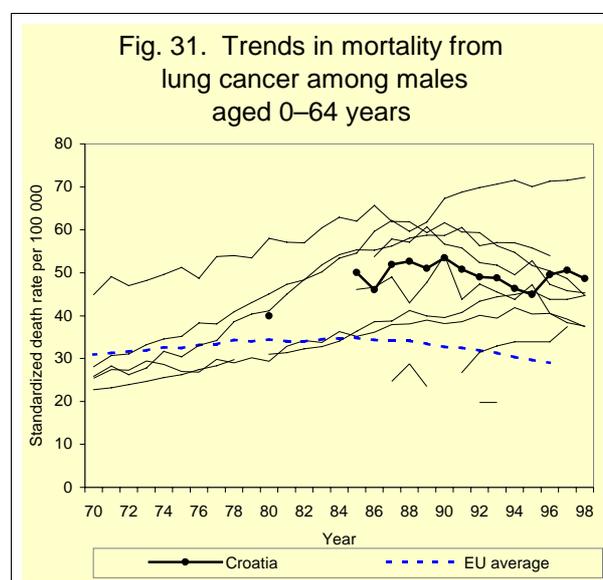
According to the 1998 household budget survey in Croatia, alcohol consumption provides 1.9% of the daily energy intake. Annual consumption of alcoholic beverages per person was as follows: spirits 1.4 litres; wine 13.3 litres; and beer 21.0 litres.

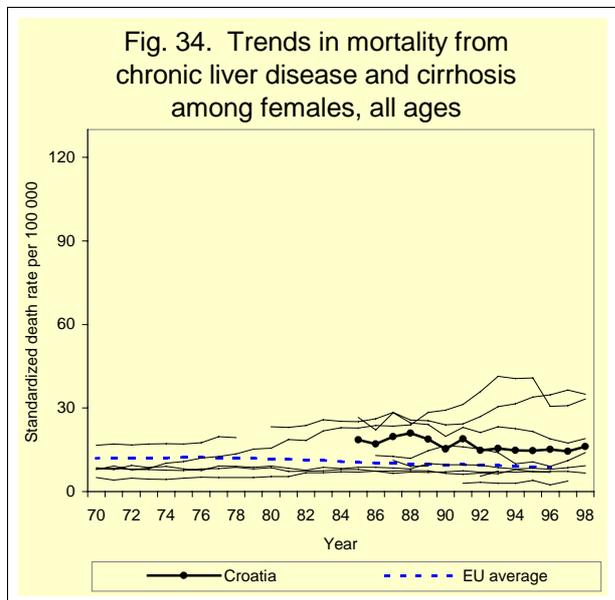
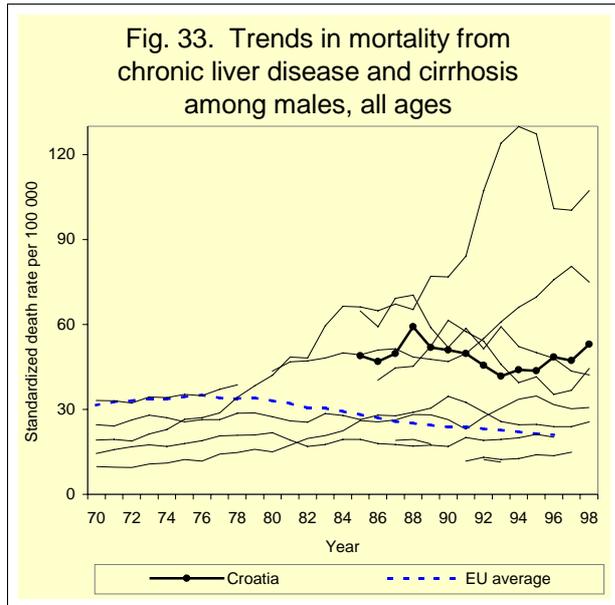
However, presenting accurate information on alcohol consumption for any country requires accounting for both recorded and unrecorded consumption. Information on unrecorded consumption is not available for Croatia. Estimates of unrecorded consumption in some other reference countries and the indirect evidence presented here suggest that the levels of alcohol consumption in Croatia are likely to be much higher than the recorded levels.

Several legislative acts in Croatia and national documents are related to controlling alcohol-related harm, including ones related to occupational safety and health, road traffic safety, food and consumer product safety and a national strategy for controlling drug abuse.

In 1997, the proportion of total road traffic accidents involving alcohol was 43%, which is more than twice as high as the EU average.

Although the rates of death from cirrhosis and other chronic liver diseases have decreased slightly in Croatia during the last decade, the rates have been considerably higher than the EU average for both men and women (Fig. 33, 34).





Illicit drug use

Comparable data on drug use are rare. In general, the reference countries have reported increased drug use in the 1990s, even though the level is still lower than in the EU.

The available data on first admissions to drug treatment centres per 100 000 since 1980 showed a stable trend up to 1994, followed by a sharp rise during 1995–1996 (from 4 to 36 first admissions per 100 000). Until 1994, the Drug Addicts Register in Croatia included only cases receiving hospital care for psychoactive drugs. The type of drug addict treatment and addict referral were changed in 1995 when, in addition to such inpatient care,

Croatia also began registering drug addicts who received outpatient care. This accounts for the increase in the number of drug addicts per 100 000 population but could be indirect evidence of wider consumption of illicit drugs in Croatia.

According to the European School Survey Project on Alcohol and other Drugs (ESPAD) study, 9% of the population 15–16 years of age use marijuana or hashish (the average is 12% for the 22 ESPAD countries). The use of any drug other than marijuana or hashish is not very common in Croatia. Many of the students in Croatia use inhalants (13%). The use of tranquillizers or sedatives without a physician's prescription is 8%, which is the average percentage in the 22 ESPAD countries. The proportion who reported the use of pills in combination with alcohol is lower than the average in these countries (6% versus 9%).

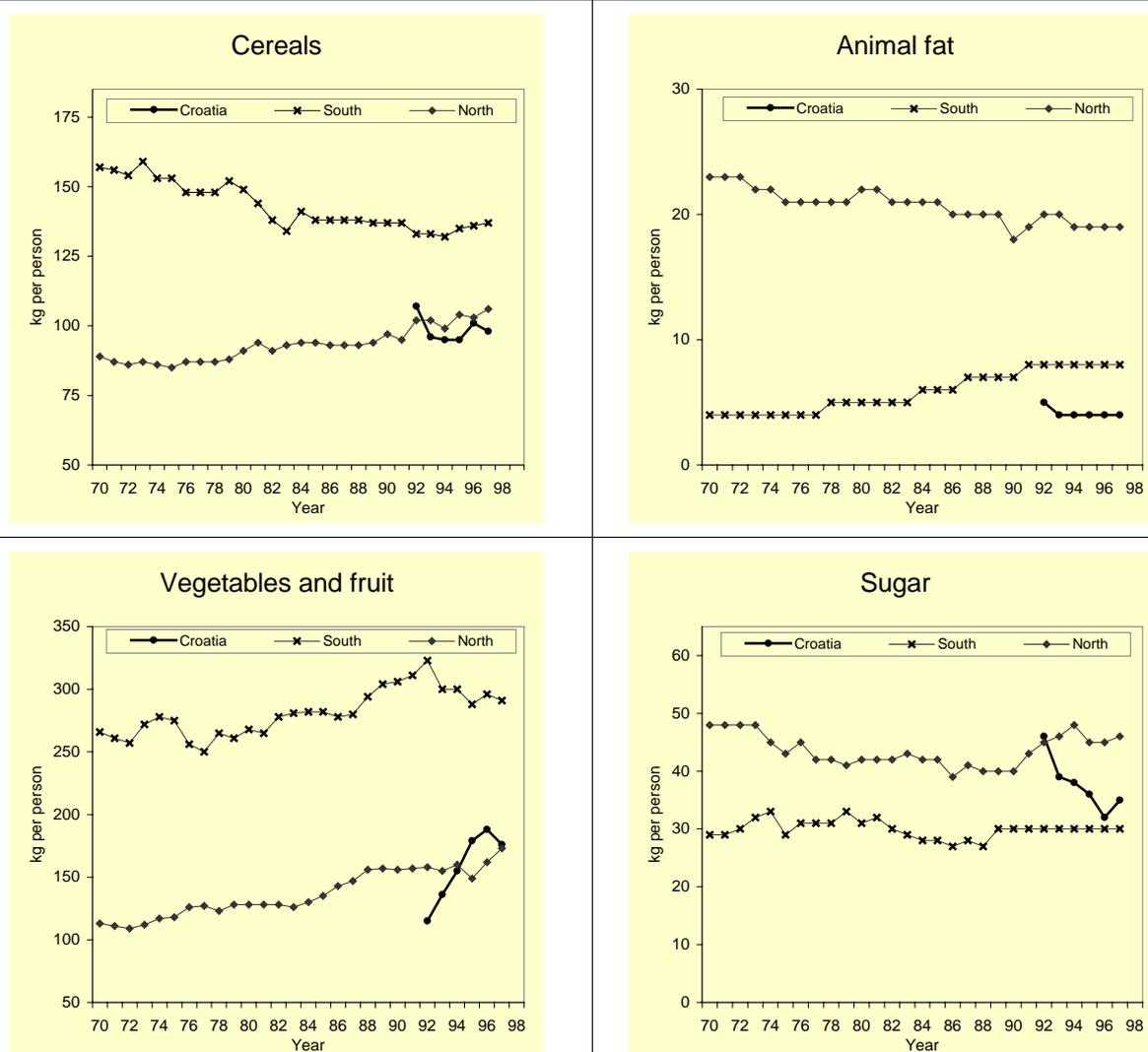
Nutrition

Nutritional habits are rooted in cultural traditions and food production. Nevertheless, in recent decades changes have occurred with increasing globalization, as food markets have opened up, transport has become more rapid and more efficient techniques for conserving food have been developed. These factors together with increased mobility and increases in purchasing power are some of the reasons why the historically different nutrition patterns in Europe appear to converge.

The historical differences in western Europe between the northern and southern dietary patterns are confirmed by national food balance sheets (data relating to the amount of food available within each country) collected since the 1960s by the Food and Agriculture Organization of the United Nations. Typical for northern Europe is a high availability of saturated fat accompanied by a low availability of fruit and vegetables. In contrast, in southern Europe, the diet consists of high quantities of fruit and vegetables and low quantities of saturated fat.

The data of the Food and Agriculture Organization of the United Nations suggest that Croatia (Fig. 35) follows the pattern for southern Europe concerning animal fat but that

Fig. 35. Food consumption patterns, 1970–1997



South: population-weighted average for Greece, Italy, Portugal and Spain.

North: population-weighted average for Denmark, Finland, Iceland, Norway and Sweden.

The increase in international trade accelerated in 1994, when food was incorporated into international free trade agreements (the GATT Uruguay Round). This process has affected the national food statistics, which became less reliable, making international comparisons more difficult since 1994.

the availability of cereals and of fruit and vegetables appears to be low. However, homegrown fruit and vegetables are probably not recorded in these data. The actual intake should be verified by dietary intake surveys.

Recent data on the prevalence of hypertension from the preliminary report (not yet published) of the First Croatian Health Project (Subproject: Health Promotion) indicate that the prevalence of hypertension is 20.7% among men and 16.3% among women. The

same report indicated that 56% of the population older than 18 years is overweight.

A priority aim of health promotion in Croatia is achieving a healthier lifestyle at the population level with continual reduction of the prevalence of some risk factors for cardiovascular diseases and sexually transmitted diseases, which will reduce morbidity, mortality and disability. The specific objectives are:

- reducing the smoking prevalence in the population;
- achieving healthier eating habits by reducing the intake of salt, refined carbohydrates and fat, especially animal fat, while increasing the intake of micronutrients;
- promoting regular physical activity (especially walking at least 14 km weekly for exercise among sedentary people); and
- increasing the knowledge of the general population on preventing sexually transmitted diseases and encouraging responsible sexual behaviour.

ENVIRONMENT AND HEALTH

Environmental conditions affect humans through short-term and long-term exposure to noxious factors. In the long term the main objective is to promote sustainable development compatible with good health. Short-term environmental protection means avoiding or at least reducing potentially harmful situations, bearing in mind that people are not exposed equally to adverse environmental conditions and not all people and social groups are equally vulnerable to them. Thus, children, pregnant women, elderly people and ill people are more likely to be affected by polluted air or contaminated food. Also, specific population groups tend to experience more adverse environmental conditions. Low income, for instance, is often associated with exposure to environmental hazards at work (noxious substances and risk of accidents) and poor housing conditions (such as crowding, air pollution and noise). These situations may affect health and wellbeing either directly or indirectly by causing discomfort and stress, giving rise to unhealthy coping behaviour such as the use of intoxicating drugs or heavy drinking.

The increased recognition of the importance of the effects of the environment on health and the need for intersectoral action at all levels has been demonstrated by the development and implementation by nearly all European countries of national environment and health action plans. In Croatia, the Ministry of Health coordinated the development of the national environment and health action plan (*Ministry of Health, 1999*). The National Health Council adopted the plan in May 1999. The following sections draw extensively on this plan.

Microbial foodborne diseases

The number of microbial foodborne outbreaks and the number of people who have suffered from these diseases can be used to indicate the quality of food and its production, even though some of the observed variation can be caused by differences in definitions and data-collection methods.

Croatia had 6481 registered cases of food poisoning in 1996 versus 8727 in 1995 and 9084 in 1994. Although the number of registered cases has been reduced somewhat in the last few years, the overall trend is increasing. Some 43 455 non-random food samples were microbiologically examined in 1996, and 9.6% were declared not fit for human consumption. The most common agents were bacteria of the *Salmonella* genus, *Clostridium perfringens*, *Campylobacter* and *Staphylococcus aureus*. The infestations provoked by parasites in food were mostly caused by *Trichinella spiralis*.

Food poisoning caused by *Salmonella* is usually provoked by insufficient thermal processing of originally contaminated food, whereas food poisoning caused by *Trichinella* is usually provoked by poor technology and a lack of control over pork and products made by small manufacturers and at home.

Air quality

Based on parallel measurements made in 1996 and 1997, air pollution in the city of Zagreb did not exceed the national guidelines for particulate matter or for sulfur dioxide at one measuring station. At other measuring stations, however, the guideline values were exceeded in both years, including for heavy metals and ozone.

Road traffic currently represents the greatest air pollution problem for Croatia. Air pollution caused by traffic is especially present in areas with a high population density. The percentage of vehicles with catalytic converters installed is still low in Croatia.

Water quality

Croatia has clearly defined water monitoring programmes. The sampling schedule is according to the amounts of water produced or population equivalents and includes different sampling points, such as at the source, raw water, water treatment facility, reservoirs and the water supply network. The programme is

part of the Drinking Water Safety Regulation drawn up in harmony with the EU legislation on drinking-water (*European Communities, 1998*). There are certain implementation problems because county budgets are low and sometimes the professional knowledge and skills of staff are limited. There are directives for intensified water sampling campaigns and extra analytical parameters in places with increased contamination risks.

Specific pollution is monitored either related to some incident or based on a specific request. Surface waters are controlled on the entire territory of Croatia, but the quality is uneven. The quality of groundwater is regularly surveyed only in existing wells within public systems for drinking-water supply or in the framework of irrigation systems.

In 1996, 22 395 drinking-water samples were inspected from the water supply systems, and 7.6% did not comply with national quality standards.

The inspection found noncompliance in 43% of the samples in the individual water supply facilities (private wells). Although such facilities are not subject to public health supervision, the data are important since 27% of Croatia's population use drinking-water from such facilities.

From 1990 to 1995, 27 waterborne epidemics were recorded. However, waterborne diseases are under reasonable control in Croatia through generally good sanitary standards, well organized water supply systems as well as special preventive efforts. Nevertheless, preventing waterborne gastrointestinal infections in diverse forms and caused by various agents will probably be an important part of the future work of public health services.

In 1996, 5722 samples of seawater taken from public beaches were analysed, of which 10% did not comply with the European Union directive on bathing water (*European Communities, 1976*), mostly because untreated urban wastewater was released into the sea. In general, coastal seawater was in worse condition than seawater around the islands, which was much cleaner.

Also in 1996, 3580 samples of swimming pool water were analysed, of which 32% did not comply with the standards for water for recreational purposes; 227 samples were taken from lakes and gravel pits used for swimming, of which 11% did not comply with the standards.

Waste

There is no continuous programme of soil pollution surveillance in Croatia, and data on this subject are therefore very limited.

Housing

Housing conditions affect people's health and wellbeing, but the health situation of homeless people is especially critical. They often suffer from health problems typically associated with poverty, including malnutrition, infectious diseases and psychosocial stress caused by solitude and insecurity, and they may also be more vulnerable to health problems than the rest of the population. Nevertheless, there are no reliable data on homelessness in the reference countries.

The war forced over 700 000 people to leave their homes and become refugees. Approximately 200 000 buildings, mainly residential, were razed or damaged. In the meantime, many of the buildings were either reconstructed or are currently undergoing reconstruction.

Newly constructed flats intended for disabled war veterans ensure housing conditions to meet physical disability.

There is a project to expand the government housing fund to solve housing problems for people who do not own a flat. To this end, favourable long-term loans for housing construction have been planned.

Improvement of housing conditions involves widening the water supply network to include apartments without drinking-water in the system, extending the sewerage system and introducing modernized heating systems, in particular using natural gas.

Noise

The level of noise is rarely measured routinely. In the city of Zagreb noise from three sources is measured regularly: traffic noise; noise from stationary sources (such as industry and power stations); and noise from entertainment, manufacturing and handicrafts.

These measurements show that the noise situation in most parts of the city of Zagreb is not satisfactory. Noise created by city traffic represents a particular problem.

HEALTH CARE SYSTEM

Institutional structures and resources

Croatia has a long tradition of organized health care. Between the First and Second World Wars, certain groups of workers were insured by health insurance organizations that also had their own health care providers. In general, health services were oriented towards individuals who could pay for health care, and there was a public system for the control of communicable diseases and public hygiene (*European Observatory on Health Care Systems, 1999*).

In 1945, compulsory state health insurance was introduced covering most of the population, financed from income-related contributions and from the state budget.

The Constitution of 1974 set up local associations, which were to plan, collect and distribute financial resources and also organize health services. Legislation was enacted to consolidate the large units, known as medical centres, which administered health services in their area. However, the hospitals secured most of the funds, and community management was not compatible with the large medical organizations. Private medical (but not dental) practices were reduced to very few in number.

By the end of the 1980s, Croatia's health care system was organized through a network of primary health care centres and medical centres (which embraced primary, secondary and tertiary health care), university hospitals, special hospitals for chronic diseases and seven public health institutes. The result was an extremely liberal but unsatisfactory system because of high costs. However, preventive health care measures were traditionally implemented for high-risk groups of the population (mothers, infants, preschool children, schoolchildren and workers).

The 1993 Health Care Act included commitments to universal coverage, universal accessibility, acceptability, affordability, continuity of care, free choice of physician and provision through a mixed (public and private) system. The legislation also emphasized the importance of health promotion and disease prevention. Health care was to be developed through a planned approach to health care

delivery at three levels (primary, secondary and tertiary). Health care was regarded as primarily the responsibility of government, but citizens were also urged to look after their own health.

The social ownership of health facilities has been replaced with state ownership, county ownership and private ownership. The state owns large tertiary care teaching hospitals and specialist institutes. Counties own health centres and most general and specialist hospitals. Physicians increasingly provide primary care under contract with an insurance fund. Primary health care is still organized on a multi-specialty basis, but is gradually moving towards a family physician system.

The financial organization of health care through a key third-party payer (the Croatian Health Insurance Institute) is new.

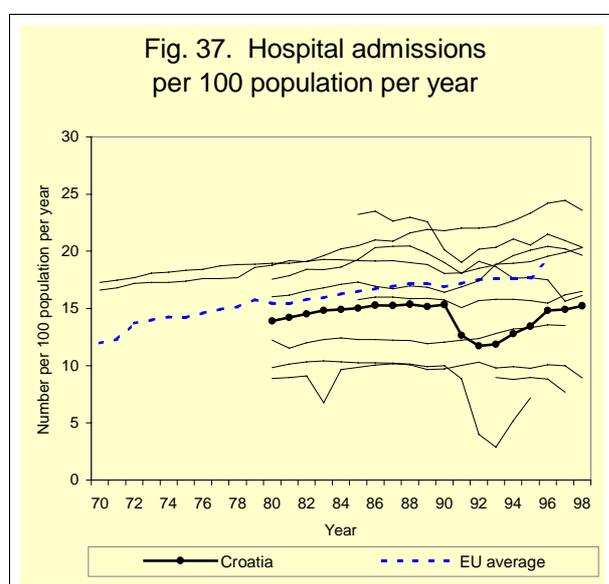
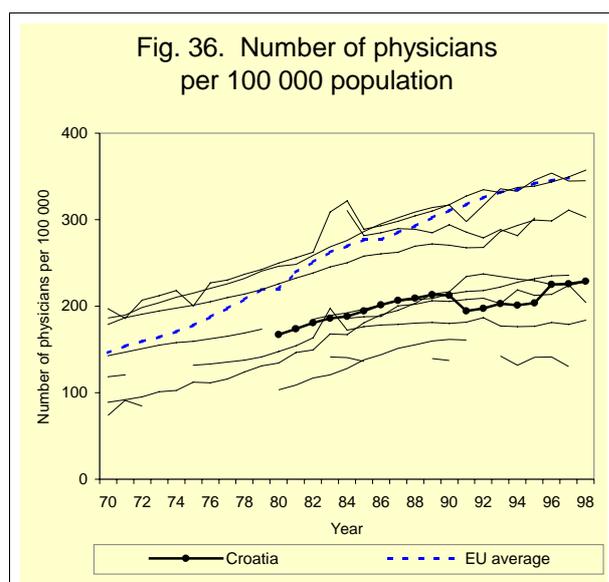
The number of physicians per 100 000 population increased by one third between 1980 and 1997 (from 167 physicians per 100 000 in 1980 to 229 in 1998) but is still lower than that of EU average (346) and most of the reference countries (Fig. 36, Table 4). The number of dentists has grown similarly (62 dentists per 100 000 population – second among nine reference countries in 1996). The number of pharmacists has increased slightly, and the number of nurses remained almost the same in the period 1985–1995. The number of midwives declined during the same time. That is why the ratio of physicians to nurses in Croatia (1.96) is much lower than that in EU countries.

The number of hospital beds started to decline in the 1990s to a level below the EU average. The change is probably related more to economic constraints than to improved efficiency given the admittedly insufficient levels of medical equipment and supplies, although the medical staff is trying to overcome these obstacles. Hospital admission rates are lower than in the EU and in several reference countries (Fig. 37). In some areas, such as cardiovascular diseases, there are statistical reasons to assume that needs are not met.

In 1998, 55% of all physicians were women; Croatia had 1695 general practitioners and 6931 specialist physicians.

Table 4. Health care resources and utilization in Croatia and in the reference countries (1998 or latest available)

	Croatia	Reference countries	Minimum	Maximum
Hospital beds per 100 000 population	606	690	305	862
Physicians per 100 000 population	229	249	130	357
Hospital admissions per 100 population	15.2	15.8	7.2	23.6
Average length of hospital stay in days	12.6	10.7	7.9	13.9
Total health care expenditure as a percentage of GDP	9.0	5.2	2.6	9.0



Health care reforms

The main intentions of health care reform have been to improve the health status of the population, replace the fragmented health insurance system, privatize some primary

health care facilities, reinforce primary health care and health promotion and address the considerable variation in access to health care. In addition, the intention has been to bring health care more in line with that in western Europe while remaining sensitive to national circumstances.

As mentioned, a health insurance fund was created to reduce reliance on a single source of finances. State and country institutions took over ownership of health facilities.

The reforms have moved towards the kind of systems that guarantee equity but use competition to improve efficiency. The promotion of efficiency has been particularly important (*European Observatory on Health Care Systems, 1999*).

Reforms were implemented in phases. First, the Croatian Health Insurance Institute, set up in 1993, took over the existing fragmented insurance funds. Second, the large medical centres were broken up into separate enterprises: general hospitals, primary health care units and public health care institutes. Epidemiological units, microbiological laboratories, divisions of health statistics and school health units (and, where present, environmental health services) became parts of newly founded public health institutes in counties where public health institutes in such forms had not existed. Third, the ownership of health facilities was transferred to specific public-sector bodies. Legislation was enacted that established the state as the owner of teaching hospitals and teaching hospital centres and the counties as owners of general hospitals and health centres. Hospitals and health centres were to be run by a management board whose members consisted of employees and appointees of the owner (state or county).

The health reforms have been marked by a distinctive approach to privatization. The decision was to lease health care facilities at subsidized rates rather than sell them to provide stability in difficult economic times. At the same time, specialist ambulatory services have been privatized and many private polyclinics have opened in private premises.

The debts of the previous system have been eliminated, and in 1995 a surplus was accumulated to pay for new capital equipment. The funding available to health care has risen under the state insurance fund. County budgets also contribute to capital investment (*European Observatory on Health Care Systems, 1999*).

Primary health care

As mentioned, primary health care is still organized around several medical specialties but is gradually moving towards a family physician system. About one third of the primary care physicians are specialists in general medicine, and a smaller proportion are in family medicine. The primary care system also involves paediatricians (for preschool and school-age children), dentists, gynaecologists and emergency medicine specialists. Alongside these are pharmacists, nurses, physiotherapists, sanitary engineers and other middle-level health care staff. Physicians act as primary health care team leaders, and about seven of ten patient contacts are with physicians (*European Observatory on Health Care Systems, 1999*).

Patients have a free choice of primary care physician or dentist but must obtain a referral for any specialist service. The primary care physician acts as a gatekeeper to secondary care by a specialist, a polyclinic or a hospital. There are no formal restrictions on the referring physician's choice of a secondary care service. In practice, these services are often consulted.

Despite a legislative commitment to the principle of equal access to health services, there is still significant geographic inequity that reflects urban-rural divisions, differential economic development and population density. The new health legislation has

addressed these problems by reducing the population required for a primary health care team and by offering to lease equipment and premises free of charge to private practitioners. There are attempts to repopulate and redevelop areas that were devastated or whose populations were displaced as a result of the war (*European Observatory on Health Care Systems, 1999*).

Planning standards specify the size of population to be covered by a primary health care team. There should be a family physician supported by specialists and nurse for a population of 1700; a paediatrician and nurse for each 1000 children; a visiting nurse for each population of 5100; and an emergency medical service should cover a population of 40 000. Detailed standards cover dentistry services, hygiene-epidemiology services, pharmacy services and laboratory services. If a county wishes to exceed these standards, it must finance the extra services from its own funds (*European Observatory on Health Care Systems, 1999*).

In 1994 the General Medical Service employed 2190 physicians, 857 of whom were specialists (666 general medical specialists, 151 occupational health specialists and 40 other specialists). It engaged 275 health workers of junior college background and 2401 health workers with secondary school education (*Croatian National Institute of Public Health, 1995*).

In the process of privatization, which started in 1993, the previous primary health care centres were redefined as primary health care units. The number of primary health care units has increased significantly because each general practitioner contracts individually with the Croatian Health Insurance Institute. The number of general practitioners in primary health care per 100 000 population since 1990 has declined steadily from 84 general practitioners per 100 000 to 68 in 1997. The trend is unfavourable for the aim of primary health care becoming the backbone of the health system.

Hospitals

Hospitals are no longer allocated a budget from the state based on their facilities and staff but are paid by the Croatian Health Insurance Institute according to the services provided. This is also the case for polyclinics, health centres and private practices having contracts with the Institute. Payments are expected to cover recurrent costs such as salaries, drugs and consumables. Capital expenditure remains the responsibility of the owner of the hospital.

The contract takes several elements into account: “hotel” costs such as the contracted number of beds and food, staff salaries, the cost of drugs and a fee-for-service element.

The latter is based on a point system according to the level of skill and mix of health professionals and time needed for each procedure. There is an exhaustive list of more than 90 000 procedures and their point values. To calculate the point value of a bed-day, hospitals are classified into three groups (general hospitals, regional centres and university hospitals); different points are allocated to different specialties. The value of a point is adjusted in relation to the income of the Croatian Health Insurance Institute, so that the value of a point is lower in a period of low income than it is in a period of high income (*European Observatory on Health Care Systems, 1999*).

REFERENCES

- CENTRAL BUREAU OF STATISTICS (1998). *Statistical yearbook – 1998*. 30th ed. Zagreb, Central Bureau of Statistics.
- CROATIAN NATIONAL INSTITUTE OF PUBLIC HEALTH (1995). *Croatian health service yearbook 1994*. Zagreb, Croatian National Institute of Public Health.
- EUROPEAN COMMUNITIES (1976). Council directive 76/160/EEC of 8 December 1975 concerning the quality of bathing water (http://europa.eu.int/eur-lex/en/lif/dat/1976/en_376L0160.html). *Official journal of the European Communities*, **L031**(05/02/1976): 1–7 (accessed 15 June 2000).
- EUROPEAN COMMUNITIES (1998). Council directive 98/83/EC of 3 November 1998 on the quality of water intended for human consumption (http://europa.eu.int/eur-lex/en/lif/dat/1998/en_398L0083.html). *Official journal of the European Communities*, **L330**(05/12/1998): 32–54 (1998) (accessed 15 June 2000).
- EUROPEAN OBSERVATORY ON HEALTH CARE SYSTEMS (1999). *Health care systems in transition: Croatia, 1999* (<http://www.who.dk/document/e68394.pdf>). Copenhagen, WHO Regional Office for Europe (document AMS 5001891(CRO), accessed 15 June 2000).
- MINISTRY OF HEALTH (1999). *National environmental health action plan*. Zagreb, Ministry of Health.
- TURNER, B., ED. (1998). *The statesman's year-book 1998–99*. London, Macmillan.
- UNICEF COMMITTEE OF THE REPUBLIC OF CROATIA (1997). *Survey of the knowledge and attitudes of parents about nutrition and the most frequent health problems of children in Croatia*. Zagreb, UNICEF Committee of the Republic of Croatia.
- UNESCO (1999). *Statistical yearbook 1999*. Paris, UNESCO Publishing & Bernan Press.
- WHO REGIONAL OFFICE FOR EUROPE (1993). *Health for all targets. The health policy for Europe*. Copenhagen, WHO Regional Office for Europe (European Health for All Series, No. 4).
- WHO REGIONAL OFFICE FOR EUROPE (1998). *Health in Europe 1997. Report on the third evaluation of progress towards health for all in the European Region of WHO (1996–1997)*. Copenhagen, WHO Regional Office for Europe (WHO Regional Publications, European Series, No. 83).
- WHO REGIONAL OFFICE FOR EUROPE (1999a). *Country health report Croatia*. Copenhagen, WHO Regional Office for Europe (document, EUROHEALTH programme).
- WHO REGIONAL OFFICE FOR EUROPE (1999b). *HEALTH21: the health for all policy framework for the WHO European Region* (<http://www.who.dk/cpa/h21/h21long.htm>). Copenhagen, WHO Regional Office for Europe (European Health for All Series, No. 6) (accessed 15 June 2000).

GLOSSARY OF SELECTED TERMS

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.

The designations employed and the presentation of the material in this document do not imply the expression of any opinion whatsoever on the part of the Secretariat of the World Health Organization concerning the legal status of any country, territory, city or area or of its authorities, or concerning the delimitation of its frontiers or boundaries.

The map on the cover (©1999 Lonely Planet Publications) has been adapted from that on the Lonely Planet Web site (<http://www.lonelyplanet.com>) with their permission. The copyright remains with Lonely Planet Publications.

This document has been produced by the Health Information Unit of the WHO Regional Office for Europe in collaboration with the Croatian National Institute of Public Health and other relevant authorities in Croatia. All rights in this document are reserved by the WHO Regional Office for Europe. The document may nevertheless be freely reviewed, abstracted or reproduced (but not for sale or for use in conjunction with commercial purposes) provided that due acknowledgement is made to the source. The Regional Office encourages the translation of this document, but permission must be sought first.

The views expressed in this document are those of WHO. Comments or additional information should be forwarded to:

Health Information Unit
WHO Regional Office for Europe
8 Scherfigsvej
DK-2100 Copenhagen Ø
Denmark

Telephone: +45 39 17 12 00
Telex: 12000 who dk
Telefax: +45 39 17 18 95
E-mail: ano@who.dk
Web site: <http://www.who.dk>