

European cardiovascular disease statistics 2008



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2008 edition

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Foreword

This is the third edition of *European cardiovascular disease statistics*. The first edition was published in 2000 when the European Union (EU) consisted of 15 Member States. After enlargement in 2004 and then again in 2007, there are now 27 Member States. Much has changed in the last seven years, but cardiovascular disease (CVD) remains the main cause of death in the EU.

The *European cardiovascular disease statistics* was the first publication to bring together all the available sources of information about the burden of CVD in Europe, including data on death and illness, treatment, the prevalence of behavioural risk factors for CVD (smoking, diet, physical inactivity and alcohol consumption), and the prevalence of medical conditions associated with CVD (raised cholesterol, raised blood pressure, overweight and obesity, and diabetes). It has become an indispensable resource for anybody working on reducing the burden of CVD in Europe or in public health generally.

The publication also includes an update of the analysis of economic costs of CVD in Europe, first published in the 2005 edition. The figures are staggering: CVD cost the EU just under €192 billion in 2006, almost €110 billion of which were for health care costs and €82 billion were from lost productivity and the cost of informal care. The direct health care costs alone cost each resident of the EU €223 per annum.

Coronary heart diseases (CHD) by itself remains the single most common cause of deaths in the EU but the 2008 *European cardiovascular disease statistics* shows a reduction in the crude number of CHD deaths when compared with the 2005 edition. This reflects a general trend in Western, Northern and Southern European countries, where CHD mortality rates are falling steadily. The situation in some Central and Eastern European countries is very different, with CHD rates rising dramatically. This gradient is more marked for stroke mortality, where the crude number of deaths increased since 2005. Over 200,000 men and nearly 300,000 women die of stroke in the EU every year.

The third edition of the *European cardiovascular disease statistics* is published by the European Heart Network. We hope that this important document will be used by policy makers, researchers, health professionals and all those working to improve the health and quality of life for people living in Europe.

Susanne Løgstrup
Director
European Heart Network

Summary

- Each year cardiovascular disease (CVD) causes over 4.3 million deaths in Europe and over 2.0 million deaths in the European Union (EU).
- CVD causes nearly half of all deaths in Europe (48%) and in the EU (42%).
- CVD is the main cause of death in women in all countries of Europe and is the main cause of death in men in all countries except France, the Netherlands and Spain.
- CVD is the main cause of the disease burden (illness and death) in Europe (23% of all the disease burden) and the second main cause of the disease burden in those EU countries with very low child and adult mortality (17%).
- Death rates from CHD are generally higher in Central and Eastern Europe than in Northern, Southern and Western Europe.
- Death rates from stroke are higher in Central and Eastern Europe than in Northern, Southern and Western Europe.
- CVD mortality, incidence and case fatality are falling in most Northern, Southern and Western European Countries but either not falling as fast or rising in Central and Eastern European countries.
- Each year smoking kills over 1.2 million people in Europe (450,000 from CVD) and about 650,000 people in the EU (185,000 from CVD). The numbers dying in Europe from CVD due to smoking rose by 13% between 1990 and 2000.
- Smoking has been declining in many European countries but the rate of decline is now slowing. Women are now smoking nearly as much as men in many European countries and girls often smoke more than boys.
- Dietary patterns across Europe - once very different - are now converging.
- Diets are generally improving in Northern and Western European countries but deteriorating in Southern, Central and Eastern European countries.
- Levels of physical inactivity are high in many European countries.
- Levels of obesity are increasing across Europe in both adults and children.
- Over 48 million adults in Europe and 23 million adults in the EU have diabetes and the prevalence is increasing.
- Overall CVD is estimated to cost the EU economy €192 billion a year.
- Of the total cost of CVD in the EU, around 57% is due to health care costs, 21% due to productivity losses and 22% due to informal care of people with CVD.

Introduction

The aim of the publication

This is the third edition of *European cardiovascular disease statistics* published by the European Heart Network. *European cardiovascular disease statistics* is designed for policy makers, health professionals, medical researchers and anyone else with an interest in cardiovascular disease (CVD). It provides the most recent statistics related to the incidence, prevalence, causes and effects of the disease.

The aim of *European cardiovascular disease statistics* is to show:

- (i) the extent to which CVD is a major health problem in Europe;
- (ii) where, in Europe, this problem is greatest;
- (iii) the variability in efforts to treat and prevent CVD across Europe as shown by differences in levels of treatment and in levels of risk factors for the disease;
- (iv) the economic costs of CVD in the European Union;
- (v) trends in CVD mortality, morbidity, treatment and risk factors over time.

European cardiovascular disease statistics is divided into 12 sections. The first two sections on mortality and morbidity deal with the burden of CVD in Europe. Next there is a section on treatment. Then there are four sections on the main aspects of lifestyle which affect the risk of the disease: smoking, diet, physical activity and alcohol consumption. These are followed by four sections on the main pathophysiological risk factors for the disease: raised blood pressure, raised blood cholesterol, overweight/obesity and diabetes. The final section provides information about the economic costs of CVD in the European Union (EU)¹. Each section contains a set of tables and graphs and a brief description of the data presented.

In *European cardiovascular disease statistics* we aim only to describe and not to explain. So, although there may be relationships between the various geographical and temporal patterns observed, we have made no attempt to draw any conclusions about the strength of these relationships or about causality.

Sources and scope of the data

In compiling the first 11 sections of *European cardiovascular disease statistics* we have only consulted international sources: that is the World Health Organization (WHO), the WHO MONICA (monitoring trends and determinants in cardiovascular disease) Project, Eurostat (provided by the European Commission), the Food and Agriculture Organization of the United Nations, the EU, the European Society of Cardiology etc. In the final section on economic costs, we have also consulted national sources. It should be noted that the data presented are extremely variable in quality and are only a selection of those available. The original sources need to be consulted for further information.

We also investigated several sources of data from which we have not extracted statistics: either because the data provided were similar, but less comprehensive or less recent than those we have included, or were not directly relevant to the focus of the publication.

There are many different definitions of 'Europe'. We have chosen to use the member states of the World Health Organization's European Region as our definition of 'Europe'. (An appendix provides a list and a map of the European Region and the EU.) The number of European countries covered in the tables and graphs varies considerably. We have, where possible, given an overall figure for Europe and also for the EU.

Previous publications

There have been several previous attempts to characterise the burden of CVD in Europe and to examine geographical and temporal patterns in the disease and its prevention and treatment. Notable in this regard is the 1997 report of a Task Force of the European Society of Cardiology on *Cardiovascular Mortality and Morbidity Statistics in Europe*² and a report published by the European Society of Cardiology entitled *Cardiovascular diseases in Europe* from which we draw data on rates of procedures in Europe³. *European cardiovascular disease statistics*, complements these publications. It is less detailed but more up-to-date than the European Society of Cardiology Task Force report and, in contrast to both previous publications, includes data on the prevalence of risk factors for CVD and the economic costs of CVD.

This publication is also designed to complement the work of the European Commission on monitoring health in the EU. Since the mid-1990s health status reports have been prepared for the European Commission on a regular basis. The recent *The health status of the European Union: narrowing the health gap*, was published in 2003⁴. This report- like *European cardiovascular disease statistics* - shows that CVD is the main health problem in the EU.

1. Because of a paucity of published economic data in many countries, the economic costs section of this publication relates only to the EU.
2. Task Force of the European Society of Cardiology on Cardiovascular Mortality and Morbidity Statistics in Europe (1997) *The burden of cardiovascular diseases mortality in Europe*. *European Heart Journal* 18; 1231-48.
3. European Society of Cardiology (2004) *Cardiovascular Diseases in Europe*. Nice: ESC.
4. European Commission (2003) *The health status of the European Union: narrowing the health gap*. Luxembourg: Office for Official Publications of the European Union.

1. Mortality

Total mortality

Diseases of the heart and circulatory system (cardiovascular disease or CVD) are the main cause of death in Europe: accounting for over 4.30 million deaths each year¹. Nearly half (48%) of all deaths are from CVD (54% of deaths in women and 43% of deaths in men). The main forms of CVD are coronary heart disease (CHD) and stroke. Just under half of all deaths from CVD are from CHD and nearly a third are from stroke (Table 1.1, Figures 1.1a and 1.1b).

CVD is also the main cause of death in the European Union (EU) accounting for over 2.0 million deaths each year. Nearly half (42%)² of all deaths in the EU (45% deaths in women and 38% deaths in men) are from CVD - slightly less than for Europe as a whole. Over a third of deaths from CVD are from CHD and just over a quarter are from stroke (Table 1.1, Figures 1.1c and 1.1d).

CHD by itself is the single most common cause of death in Europe: accounting for 1.92 million deaths in Europe each year. Over one in five women (22%) and over one in five men (21%) die from the disease (Table 1.1).

CHD by itself is also the single most common cause of death in the EU: accounting for over 741,000 deaths in the EU each year. Around one in six men (16%) and over one in seven women (15%) die from the disease (Table 1.1).

Stroke by itself is the second single most common cause of death in Europe: accounting for 1.24 million deaths in Europe each year. Over one in six women (17%) and one in ten men (11%) die from the disease (Table 1.1)

Stroke by itself is also the second single most common cause of death in the EU: accounting for just over 508,000 deaths in the EU each year. Around one in ten men (9%) and one in eight women (12%) die from the disease (Table 1.1).

CVD is the main cause of death for women in all 48 countries of Europe for which we have mortality data and it is the main cause of death for men in all these countries except France, the Netherlands and Spain³. CVD causes more than 50% of deaths in women in 25 countries. These countries are mostly in Central and Eastern Europe but they also include some Southern and Western European countries such as Greece. CVD causes more than 50% of deaths in men in eight countries: Armenia, Azerbaijan, Bulgaria, Georgia, FYR Macedonia, Serbia and Montenegro, Romania, and Ukraine (Table 1.1).

CVD is the main cause of death for women in all 27 countries of the EU and it is the main cause of death for men in all these countries except France, the Netherlands and Spain³. For men living in EU countries CVD causes between 62% (Bulgaria) and 26% of deaths (France)³ and for women between 71% (Bulgaria) and 31% of deaths (France)³ (Table 1.1).

Deaths before the age of 75

CVD is the main cause of deaths before the age of 75 in Europe: accounting for over 1.81 million deaths each year. 43% of deaths before the age of 75 in women and 38% of deaths before the age of 75 in men are from CVD. One in four of all men (25%) and one in six of all women (16%) die from CVD before the age of 75 (Tables 1.1 and 1.2, Figures 1.2a and 1.2b).

CVD is the second main cause of death before the age of 75 in the EU: accounting for over 576,000 deaths. CVD causes 30% of deaths but cancer causes 36% of deaths. 31% of deaths before the age of 75 in men and 29% of deaths before the age of 75 in women are from CVD. One in six of all men (16%) and one in 12 of all women (8%) die from CVD before the age of 75 (Tables 1.1 and 1.2, Figures 1.2c and 1.2d).

CHD by itself is the single most common cause of death before the age of 75 in Europe: accounting for over 900,000 deaths. 20% of deaths before the age of 75 in men and 19% of deaths before the age of 75 in women are from CHD (Table 1.2, Figures 1.2a and 1.2b).

CHD by itself is the single most common cause of death before the age of 75 in the EU: accounting for over 250,000 deaths. In the EU CHD causes 15% of deaths before the age of 75 in men – more than the most common form of cancer in men - lung cancer - which causes 11% of deaths. CHD causes 10% of deaths before the age of 75 in women - more than the most common form of cancer in women - breast cancer - which causes 8% of deaths (Table 1.2, Figures 1.2c and 1.2d).

Stroke accounts for almost 500,000 deaths among those aged 75 and under in Europe. Of all deaths in Europe among those aged under 75 almost one in ten men (9%) and one in seven women (14%) die from stroke.

Stroke accounts for just over 130,000 deaths among those aged 75 and under in the EU. Of the deaths in the EU among those aged under 75 6% of men and 8% of women die from stroke.

CVD is the main cause of death before the age of 75 for men in 28 of the 48 countries of Europe for which we have mortality data and for women in 23 countries. The countries where CVD is the main cause of death before the age of 75 are generally Central and Eastern European countries but, for men in particular, they also include Northern, Southern and Western countries. CVD causes between 61% (Georgia) and 18% (France)³ of deaths before the age of 75 in men, and between 64% (Georgia) and 16% (France)³ of deaths before the age of 75 in women (Table 1.2).

CVD is the main cause of death before the age of 75 for men in 12 countries out of 27 in the EU (Bulgaria, Cyprus, Czech Republic, Estonia, Finland, Hungary, Latvia, Lithuania, Malta, Poland, Romania and Slovakia). For women it is the main cause in seven countries: Bulgaria, Estonia, Hungary, Latvia, Lithuania, Romania and Slovakia (Table 1.2).

Deaths before the age of 65

CVD is the main cause of death before the age of 65 in Europe: accounting for over 803,000 deaths each year. 31% of deaths before the age of 65 in men and 29% of deaths before the age of 65 in women are from CVD. One in eight of all men (12%) and one in 20 of all women (5%) die from CVD before the age of 65 (Tables 1.1 and 1.3, Figures 1.3a and 1.3b).

CVD is the second main cause of death before the age of 65 in the EU: accounting for just under 232,000 deaths. CVD causes 24% of deaths but cancer causes 35% of deaths. 26% of deaths

before the age of 65 in men and 19% of deaths before the age of 65 in women are from CVD. 7% of all men and 3% of all women die from CVD before the age of 65 (Tables 1.1 and 1.3, Figures 1.3c and 1.3d).

CHD by itself is the single most common cause of death before the age of 65 in Europe: accounting for just under 401,000 deaths. 17% of deaths before the age of 65 in men and 12% of deaths before the age of 65 in women are from CHD (Table 1.3, Figures 1.3a and 1.3b).

CHD by itself is the single most common cause of death before the age of 65 in the EU: accounting for just over 104,000 deaths. In the EU, CHD causes 13% of deaths before the age of 65 in men - more than the most common form of cancer in men - lung cancer - which causes 10% of deaths. CHD causes 6% of deaths before the age of 65 in women - less than the most common form of cancer in women - breast cancer - which causes 11% of deaths (Table 1.3, Figures 1.3c and 1.3d).

Stroke accounts for more than 190,000 deaths among those aged 65 and under in Europe. Of all deaths in Europe among those aged under 65 6% of men and one in eleven women (9%) die from stroke.

Stroke accounts for just under 48,000 deaths among those aged 65 and under in the EU. Of all deaths in the EU among those aged under 65 5% of men and 6% of women die from stroke.

CVD is the main cause of death before the age of 65 for men in 26 of the 48 countries of Europe for which we have mortality data and for women in 17 countries. In women, the countries where CVD is the main cause of death before the age of 65 are all Central and Eastern European countries. CVD causes between 50% (Georgia) and 15% (France)³ of deaths before the age of 65 in men, and between 46% (Georgia) and 11% (France)³ of deaths before the age of 65 in women (Table 1.3).

CVD is the main cause of death before the age of 65 for men in 11 countries in the EU (Bulgaria, Cyprus, Estonia, Finland, Hungary, Latvia, Lithuania, Malta, Poland, Romania and Slovakia). For women it is the main cause of death before the age of 65 in three countries in the EU: Bulgaria, Latvia and Romania (Table 1.3).

Death rates

Death rates from CHD are generally higher in Central and Eastern Europe than in Northern, Southern and Western Europe. For example the death rate for men aged under 65 living in Ukraine is fourteen times higher than in France³ and for women it is twenty-five times higher. Western European countries generally have higher rates than Southern European countries. For example the death rate for men aged under 65 living in Ireland is 1.6 times higher than in Italy and for women it is 1.8 times higher (Table 1.4, Figures 1.4a and 1.4b).

Death rates from stroke are higher in Central and Eastern Europe than in Northern, Southern and Western Europe. For example the death rate in men aged under 65 living in the Russian Federation is twenty times higher than in Switzerland and for women of the same age it is fifteen times higher (Table 1.5, Figures 1.5a and 1.5b).

Over the past 30 years death rates from CHD have been falling rapidly in most Northern and Western European countries but rising rapidly in some Central and Eastern European countries.

For example death rates for men aged under 65 living in Finland and the United Kingdom fell by 37% and 42% respectively between 1994 and 2004, but rose by 57% for men of the same age living in Albania and by 19% for men living in the Ukraine. For women aged under 65 living in Finland and the United Kingdom death rates fell by 35% and 49% respectively, but rose by 46% for women living in Albania and by 19% for women living in Ukraine (Table 1.4, Figures 1.4c and 1.4d).

Death rates from stroke are falling rapidly in most European countries with some exceptions. For example death rates for men aged under 65 living in Germany and UK fell by 43% and 28% respectively between 1994 and 2004. For women aged 65 and under living in Germany and UK death rates fell by 37% and 28% respectively but rose by 15% for women living in Albania (Table 1.5, Figure 1.5c and 1.5d).

A recent publication by the Institute des Sciences de la Sante, describes changes in CHD mortality in under 75s in the EU over a decade, between 1990/91 and 2000/02. Age-standardized death rates fell in all countries, but not equally across the EU. Death rates almost halved in four countries - the Czech Republic, the UK, Ireland and Finland. Elsewhere rates fell by about one fifth to one-third, the only exceptions being Latvia (men) and Poland (women) where there were improvements of just over 10%⁴.

The WHO MONICA Project measured trends in CHD mortality between the early 1980s and 1990s, in 37 populations worldwide, including 29 populations in Europe. Results showed that around two-thirds of the decline in CHD mortality during this period was due to a decline in CHD incidence rates and the remaining one-third was due to improvements in survival because of better treatments. This highlights the importance of improvements in cardiovascular risk factors such as smoking⁵.

This conclusion was also found in a recent study looking at the decline in CHD mortality over a 20-year period in the UK. The authors found that between 1981 and 2000 in England and Wales, 58% of the decline was attributable to reductions in major risk factors, principally smoking, whereas treatment of individuals, including secondary prevention, explained the remaining 42% of the mortality decline⁶.

Years of life lost due to an early death

CVD is not only the main cause of death in Europe and the EU but is also the main cause of years lost due to an early death.

The WHO Global Burden of Disease Study found that in 1990 on average 31% of years of life lost were due to CVD in 'Established Market Economies' (mostly Northern, Southern and Western countries in Europe and all the member states of the EU - 15). This was more than any other cause. On average 16% of years of life lost were due to CHD in Established Market Economies, so by itself CHD was the most important cause of years of life lost in these countries⁷.

In Central and Eastern European countries 35% of years of life lost were due to CVD - again more than from any other cause - and 18% were lost due to CHD⁷.

1. When we state, in this section, that CVD is the main cause of death we are comparing "Diseases of the circulatory system" (Chapter IX 10th Revision) of the International Classification of Diseases, with other chapters (e.g. Chapter II "Neoplasms"). When we state that CHD is the most common cause of death we are comparing CHD (Chapter IX, I20-I25, 10th Revision) with all diseases within all chapters (e.g. with lung cancer, Chapter II, C33-C34, 10th Revision).
2. This figure and similar figures in the text are calculated from the tables rather than the graphs. Figures in the text may not seem to correspond exactly to figures in graphs because of rounding.
3. Data from the WHO MONICA project suggest that official mortality statistics in France under-report deaths from CVD compared to other countries. MONICA data from the French populations included in the MONICA Project (Lille, Strasbourg and Toulouse) show an underestimate of CHD deaths of over 75%. (See WHO Monica Project (2003) MONICA Monograph and Multimedia Sourcebook: World's largest study of heart disease stroke, risk factors and population trends 1979-2002. Edited by Hugh Tunstall-Pedoe for the WHO MONICA Project. WHO: Geneva). Table 1.1 also highlights that doctors in France have a much higher rate of reporting deaths from "all other causes". Together these suggest that the true numbers and proportions of deaths from CVD and CHD in France are likely to be higher than those reported in Table and Figures 1.1.
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Table 1.1 Total number of deaths by cause and sex, latest available year, Europe

Year	All causes	Coronary heart disease	Stroke	Other CVD	Stomach cancer	Colo-rectal cancer	Lung cancer	Breast cancer	Other cancer	Respiratory disease	Injuries and poisoning	All other causes
MEN												
2004	9,949	1,593	1,521	1,583	233	60	507	13	894	557	905	2,083
2005	13,093	4,292	1,810	552	267	159	743	0	1,196	931	824	2,319
2006	34,757	6,908	2,103	4,159	525	1,230	2,465	24	5,850	2,219	2,769	6,505
2007	24,405	9,112	2,282	1,661	656	164	656	17	1,779	1,754	1,422	4,902
2008	73,649	24,324	8,206	3,475	1,725	1,097	3,312	17	5,349	4,387	13,198	8,376
1997	51,888	6,723	3,652	6,656	644	1,532	6,029	17	7,847	6,225	4,054	8,509
2005	60,761	9,856	10,657	17,217	970	1,429	3,224	31	4,665	2,986	2,986	6,936
2006	26,066	4,819	3,373	3,151	556	998	2,300	10	3,566	1,817	1,950	3,526
2005	2,835	447	176	443	38	139	38	0	359	195	289	751
2005	11,330	5,808	5,808	7,435	755	2,463	4,436	23	7,890	3,237	4,333	6,962
2001	54,072	4,832	2,129	3,079	1,024	2,029	2,029	16	4,282	2,542	1,815	5,746
2005	27,877	2,288	888	922	163	203	546	1	1,024	331	1,276	1,212
2005	23,965	5,916	1,792	1,639	301	505	1,438	1	3,273	1,445	2,997	4,658
2005	276,553	23,300	14,844	33,413	8,856	23,467	23,467	203	54,454	18,365	23,399	73,075
2001	19,569	7,518	4,323	1,386	266	205	659	0	1,036	528	1,139	2,509
2005	388,554	72,003	24,786	55,485	6,211	13,696	30,347	245	61,569	29,333	20,358	74,521
2005	55,030	7,878	7,226	8,534	780	1,132	5,352	29	8,669	4,337	3,101	7,992
2005	69,781	17,559	6,837	8,240	984	2,462	5,836	24	7,828	3,724	5,442	10,845
2005	944	193	65	78	17	25	75	1	169	85	66	170
2006	14,111	2,741	767	1,421	192	558	1,033	7	2,364	1,845	909	2,274
1999	18,836	3,100	1,013	1,596	270	592	1,386	11	2,571	1,386	1,446	2,274
2002	279,296	39,345	26,545	39,836	6,266	9,164	27,512	101	46,998	20,617	16,026	46,886
Kazakhstan	82,913	19,788	8,664	8,027	1,520	666	6,310	0	5,009	6,310	16,135	13,809
2002	19,249	4,178	2,909	352	116	345	345	3	775	2,366	2,905	4,387
2005	16,632	4,403	2,217	1,563	318	316	961	6	1,609	667	2,440	2,135
2005	23,384	6,950	2,010	1,775	431	465	1,279	6	2,252	1,223	4,314	2,679
Luxembourg	1,735	216	122	258	23	52	152	0	281	144	138	349
2005	10,000	1,300	1,722	2,487	242	186	714	7	887	396	476	1,583
2005	1,576	414	130	115	47	205	112	0	205	189	72	269
2002	21,518	7,129	2,864	527	23	319	594	6	1,485	1,721	2,723	3,854
2005	66,362	7,631	4,032	9,110	963	2,267	6,549	21	11,441	7,305	3,070	13,973
Norway	20,025	3,557	1,541	2,195	244	806	1,211	3	3,325	1,711	1,553	3,879
2005	196,786	27,016	16,702	35,537	3,562	4,959	18,104	51	24,375	11,066	19,211	36,203
2005	55,753	4,586	7,112	4,785	1,463	1,856	2,947	19	7,136	6,139	3,297	16,413
2005	138,461	28,012	25,249	23,955	2,516	2,557	8,266	49	12,693	8,311	9,818	17,085
Russian Federation	1,249,784	308,708	183,890	100,378	23,812	15,866	47,620	229	73,386	72,564	264,055	159,276
San Marino	105	3	9	30	8	2	10	0	22	5	5	11
Serbia and Montenegro	61,656	7,763	8,616	15,188	904	1,276	3,586	31	5,795	3,191	3,401	11,905
2005	28,151	7,064	1,946	4,458	419	1,052	1,901	8	3,526	1,786	2,456	3,535
Slovakia	9,413	1,128	728	1,439	209	335	855	0	1,408	758	973	1,580
2005	201,769	22,188	14,611	20,943	3,549	7,472	18,178	65	31,578	27,183	11,798	44,204
2004	44,194	9,673	3,696	5,228	476	1,257	1,878	10	7,721	2,845	3,175	8,235
2004	28,991	4,603	1,626	3,659	311	848	2,022	9	5,260	2,068	2,147	6,438
Switzerland	14,252	2,718	836	2,483	236	43	75	0	570	1,910	1,065	4,316
Tajikistan	16,517	3,648	626	2,861	167	40	151	0	722	2,543	1,842	3,917
Turkmenistan	385,385	136,352	42,226	23,168	7,090	5,925	14,829	0	25,614	22,777	60,298	47,106
2002	277,309	56,337	21,899	21,706	3,527	8,653	47,414	92	47,414	36,737	12,648	48,198
2005	70,794	19,210	7,402	6,891	808	632	740	0	3,154	8,489	7,941	15,927
Uzbekistan	2,409,861	386,637	208,787	319,356	38,749	75,566	195,056	1,037	368,603	201,685	163,290	451,095
2006	4,577,539	960,632	494,188	501,640	78,682	105,205	279,136	1,386	511,421	339,254	548,640	757,355
Total Europe												

Table 1.1 continued

Year	All causes	Coronary heart disease	Stroke	Other CVD	Stomach cancer	Colo-rectal cancer	Lung cancer	Breast cancer	Other cancer	Respiratory disease	Injuries and poisoning	All other causes
2004	7,799	1,065	1,661	1,501	138	41	150	138	544	396	310	1,855
2002	12,461	4,193	2,563	617	137	178	137	457	958	489	247	2,484
2006	39,538	8,052	3,508	7,759	491	1,119	1,077	1,563	4,712	2,182	1,442	7,633
2002	22,121	8,609	2,914	1,927	432	158	183	410	1,404	1,446	447	4,191
2001	66,950	26,335	11,768	12,241	1,241	1,207	392	1,272	3,863	1,928	3,441	12,575
1997	51,912	5,256	5,801	9,866	499	1,627	1,145	2,416	6,118	4,447	2,238	12,499
2005	52,613	17,590	11,715	17,590	669	1,097	667	1,293	3,772	1,679	945	5,329
2005	25,724	5,129	4,781	4,776	350	749	569	922	2,620	1,363	928	3,537
2005	2,590	256	255	48	9	33	48	87	248	169	169	789
2005	53,866	12,037	8,780	9,765	541	1,783	1,400	1,916	6,826	2,803	2,043	5,972
2001	29,755	4,434	2,941	3,458	179	1,068	1,508	1,333	3,629	2,797	1,263	7,145
2005	8,482	2,644	1,446	1,063	150	210	144	242	796	142	383	1,262
2005	23,786	5,812	2,669	1,936	240	544	540	827	2,924	1,022	1,298	5,974
2005	261,633	17,842	20,076	43,407	1,867	7,958	6,127	11,466	33,608	17,269	15,366	86,647
2001	19,770	8,158	5,381	1,571	224	191	166	535	954	412	206	1,972
2005	441,672	76,638	42,332	96,120	5,090	13,843	11,871	17,454	51,076	28,411	12,687	86,150
2005	49,476	4,706	9,952	11,192	500	993	950	1,790	5,644	3,855	923	8,971
2005	65,951	19,334	8,720	10,248	738	2,095	2,294	2,085	6,269	2,778	2,548	8,842
2005	893	143	85	92	14	26	56	31	97	96	38	215
2006	13,368	2,119	1,136	1,478	133	396	650	667	1,868	2,133	383	2,405
1999	18,455	2,699	1,260	1,969	193	607	349	677	2,234	1,296	646	6,284
2002	281,094	36,035	38,350	56,087	4,686	8,072	6,685	11,309	36,073	15,324	10,667	56,806
2002	65,787	11,577	11,074	8,036	1,317	795	683	1,317	4,807	3,475	4,558	10,110
2002	15,986	4,492	3,477	813	197	129	93	204	784	1,780	713	3,304
2005	16,177	3,833	4,465	1,495	228	382	212	400	1,396	258	787	2,621
2005	20,415	8,099	3,400	1,589	337	463	225	582	2,008	513	1,235	1,964
2005	1,861	184	202	419	14	62	63	62	209	130	73	443
2006	8,630	780	1,936	2,707	123	143	132	252	703	295	177	1,380
2005	1,554	348	196	185	15	43	17	71	166	116	45	352
2002	20,335	8,932	3,735	532	190	269	149	434	1,059	972	770	3,293
2005	70,040	5,712	6,294	10,571	3,333	3,092	3,092	3,301	8,813	7,010	2,273	20,075
2004	21,232	3,212	2,287	3,070	164	780	749	694	2,513	1,783	1,002	4,978
2005	171,499	22,757	22,310	43,905	1,955	4,500	5,123	5,112	22,655	7,481	6,152	29,549
2005	52,086	4,051	9,168	7,021	965	1,463	652	1,479	4,744	5,160	1,280	16,123
2005	123,640	26,633	30,635	28,513	1,215	2,100	1,771	3,169	10,236	5,040	3,223	11,105
2002	1,082,488	309,463	301,951	103,661	17,483	19,520	8,625	21,873	64,539	28,439	75,241	131,673
2000	83	4	7	27	2	3	3	5	10	6	0	16
2000	56,422	5,613	10,644	18,163	520	921	972	1,600	4,555	2,124	1,243	10,067
2000	25,324	8,201	2,375	5,087	318	318	386	707	1,328	676	2,769	2,769
2005	9,412	1,010	981	2,362	147	317	279	389	1,167	641	462	1,657
2005	185,586	17,125	20,139	31,901	2,132	5,462	2,540	5,727	20,036	19,906	5,104	55,514
2004	46,891	5,379	5,379	6,780	357	1,289	1,507	1,572	5,799	2,902	1,941	11,067
2004	31,189	4,585	2,457	5,511	219	761	874	1,379	3,746	1,780	1,394	8,473
2001	12,485	2,429	801	2,491	173	33	45	102	513	1,772	566	3,538
1998	13,179	3,247	750	2,971	102	64	46	100	578	1,989	736	2,596
2002	369,526	168,579	65,305	29,715	4,497	5,692	2,625	7,954	20,088	9,048	16,013	40,010
2005	305,551	44,876	35,829	28,085	2,152	7,464	14,194	12,434	37,706	44,662	7,963	70,186
2000	64,804	21,451	9,788	6,645	519	229	279	696	2,939	7,217	2,739	12,302
European Union	2,406,606	355,196	299,378	438,606	26,168	67,465	65,135	89,484	281,333	180,277	83,642	519,922
Total Europe	4,341,791	963,404	744,550	637,852	54,148	99,932	82,444	130,746	400,765	248,264	194,964	784,722

Notes: No national mortality data available for Andorra, Bosnia and Herzegovina, Monaco and Turkey.

Source: World Health Organization (2007) www.who.int/tubosis/database/morttable1.cfm

Eurostat (2007) http://epp.eurostat.ec.europa.eu/portal/page?_pageid=1090,30070682,1090_33076576&_dad=portal&_schema=PORTAL

Figure 1.1a Deaths by cause, men, latest available year, Europe

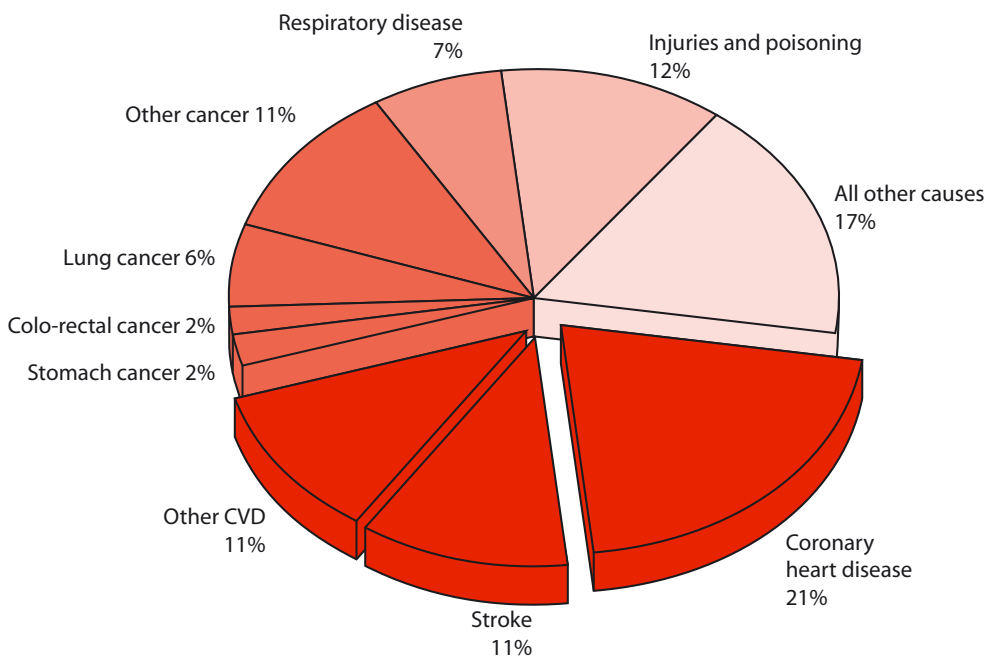


Figure 1.1b Deaths by cause, women, latest available year, Europe



Figure 1.1c Deaths by cause, men, latest available year, EU

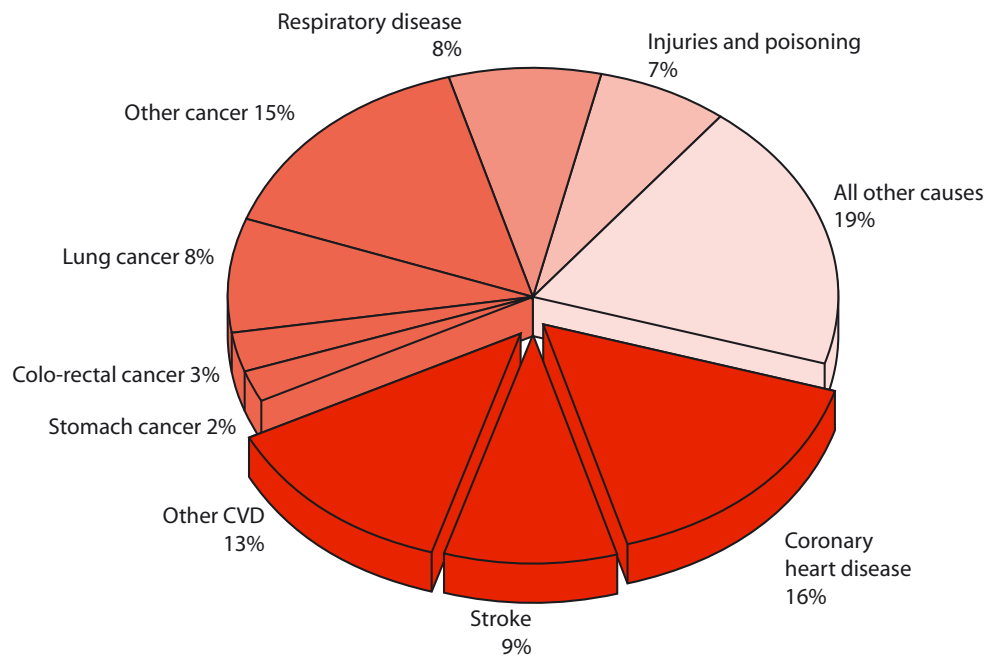


Figure 1.1d Deaths by cause, women, latest available year, EU

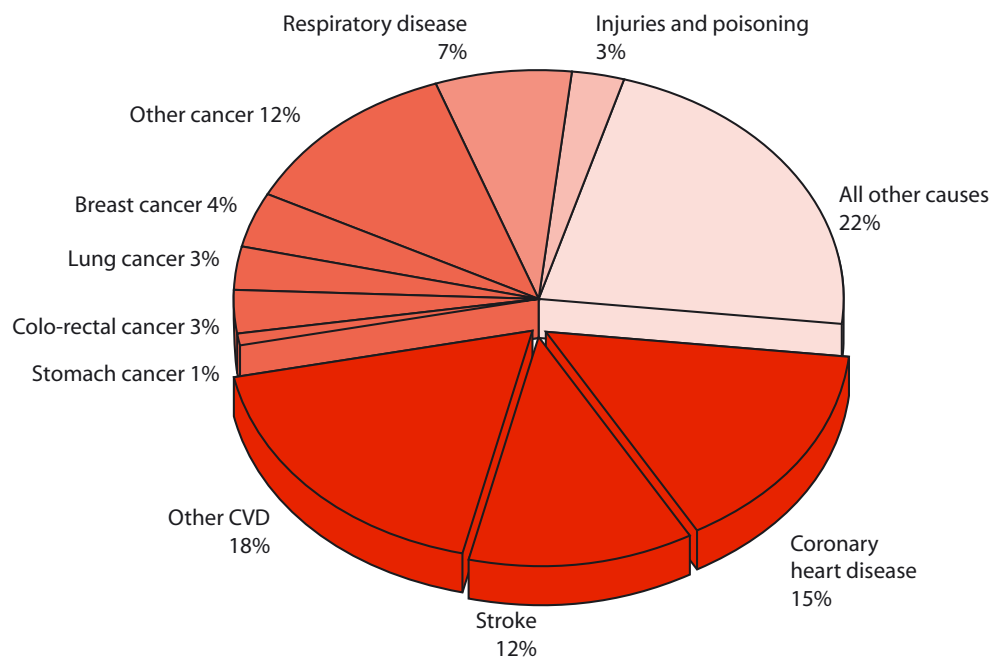


Table 1.2 Deaths under 75 by cause and sex, latest available year, Europe

Year	All causes	Coronary heart disease	Stroke	Other CVD	Stomach cancer	Colo-rectal cancer	Lung cancer	Breast cancer	Other cancer	Respiratory disease	Injuries and poisoning	All other causes
MEN												
2004	6,084	1,020	657	785	184	54	375	10	670	314	867	1,148
2002	9,701	2,873	1,130	415	229	124	668	0	1,027	659	764	1,812
2006	16,529	2,538	604	1,175	260	634	1,675	15	3,181	718	2,098	3,636
2001	20,036	6,821	1,692	1,310	558	152	603	10	1,617	1,545	1,396	4,327
2002	58,025	17,160	6,107	2,973	1,438	852	2,914	0	4,531	3,428	1,286	5,746
1997	27,275	3,668	1,322	2,545	359	862	4,220	12	4,463	2,346	3,344	4,134
2005	35,515	5,608	5,072	8,294	669	897	2,712	22	3,340	1,635	2,621	4,645
2005	15,999	2,692	1,667	1,422	367	625	1,818	6	2,476	881	1,630	2,365
2005	1,282	226	56	172	12	19	84	12	161	50	218	334
2005	31,230	5,499	2,137	3,525	461	1,514	3,409	13	5,006	1,576	3,672	4,418
2001	13,063	1,826	681	1,194	145	534	1,260	10	2,354	814	1,294	2,951
2005	6,072	1,248	506	611	133	124	416	1	676	220	1,204	933
2005	12,919	2,648	1,885	936	300	880	1,810	1	1,810	498	2,496	2,482
2005	130,665	9,379	4,565	10,217	1,697	4,295	16,327	114	29,506	4,937	16,352	33,276
2001	13,913	4,846	2,774	888	210	161	575	0	866	439	1,091	2,053
2005	201,986	32,049	8,885	21,561	3,605	7,832	20,984	141	36,483	10,784	15,676	43,986
2005	24,500	4,411	2,070	4,275	444	540	3,484	10	4,284	1,245	2,688	3,069
2005	44,144	8,987	3,289	4,375	1,608	4,731	4,731	10	5,634	2,054	4,510	8,308
2005	376	70	14	23	6	14	48	1	73	17	51	59
2006	6,710	1,219	255	537	121	317	637	4	1,236	475	805	1,104
1999	9,127	1,221	391	637	136	279	609	4	1,360	484	1,172	2,834
2002	124,064	15,889	6,659	12,395	3,336	4,839	17,383	60	25,357	5,149	11,288	21,709
Kazakhstan	70,914	14,885	6,649	6,604	1,302	530	2,668	0	4,310	5,261	15,922	12,783
2002	15,933	2,803	2,199	782	312	92	306	3	673	1,842	2,859	4,062
Kyrgyzstan	11,987	2,812	1,269	1,188	222	206	759	3	1,169	530	2,343	1,488
2005	16,578	3,821	1,073	1,328	306	285	1,010	2	1,562	815	4,114	2,262
Lithuania	926	119	42	107	17	25	100	0	165	62	116	173
2005	6,074	921	890	1,027	165	130	610	5	659	192	403	1,072
Macetonia, FYR	746	190	36	53	16	115	27	0	115	52	58	122
2005	16,015	3,889	1,941	457	262	260	551	5	1,308	1,280	2,632	3,430
Moldova	30,466	3,598	1,317	3,424	554	1,235	3,964	13	6,223	1,855	6,072	6,072
Netherlands	7,872	1,216	375	552	105	351	734	1	1,457	395	1,148	1,538
2004	128,698	16,486	9,014	17,221	2,432	3,214	14,045	34	16,605	5,371	17,548	26,728
2005	26,255	2,113	2,179	1,395	895	1,005	2,087	9	4,013	1,662	2,631	8,266
2005	87,734	15,495	12,585	10,342	1,858	1,784	7,173	31	9,629	5,331	9,076	14,130
Romania	1,046,236	237,332	126,244	83,069	20,023	12,119	41,625	182	62,501	61,621	259,141	142,379
Russian Federation	48	2	2	10	5	1	6	0	13	3	5	1
San Marino	42,147	5,749	5,347	7,663	713	982	3,168	21	4,691	2,035	3,040	8,738
2000	17,670	3,361	964	2,435	1,262	702	1,452	7	2,512	937	2,269	2,769
Slovakia	5,629	626	341	606	124	226	647	0	900	263	829	1,067
2005	88,825	9,740	4,267	6,513	1,951	3,666	11,767	30	16,532	6,981	9,282	18,096
Spain	16,187	3,097	868	1,176	231	579	1,109	4	3,335	648	2,202	2,938
2004	12,464	1,516	415	1,051	160	427	1,332	7	2,698	514	1,545	2,799
2001	11,315	1,813	564	1,628	191	39	70	0	487	1,016	1,057	3,850
Tajikistan	14,582	2,706	487	2,376	150	38	145	0	680	2,436	1,815	3,749
1998	297,532	91,099	28,148	16,265	6,079	4,561	12,980	0	21,927	17,471	58,619	40,383
2002	121,240	24,299	5,894	7,913	1,736	4,412	11,155	44	23,853	10,161	9,906	21,867
United Kingdom	58,744	12,793	4,998	5,851	727	209	667	0	2,854	7,749	7,837	15,059
Uzbekistan	1,229,518	181,084	77,008	123,518	22,683	41,649	133,540	582	210,027	67,260	130,954	241,213
2000	2,962,032	594,379	269,626	259,311	55,989	63,681	206,019	845	326,982	177,351	506,701	501,148
Total Europe												

Table 1.2 continued

Year	All causes	Coronary heart disease	Stroke	Other CVD	Stomach cancer	Colo-rectal cancer	Lung cancer	Breast cancer	Other cancer	Respiratory disease	Injuries and poisoning	All other causes
2004	3,310	438	524	493	99	26	103	117	413	160	274	663
2002	6,077	1,491	1,153	322	104	143	107	394	765	226	193	1,509
2006	9,076	873	493	660	177	367	630	845	2,031	353	680	1,987
2002	13,755	4,193	1,670	1,131	339	132	153	385	1,224	1,063	419	3,046
2001	30,657	10,327	5,706	1,550	847	271	819	1,010	2,943	888	2,999	3,297
1997	15,163	1,357	1,072	1,485	159	640	740	1,571	2,960	854	1,343	2,982
2005	19,940	2,453	3,592	5,071	329	641	479	950	2,599	646	693	2,487
2005	8,582	1,274	1,285	929	181	354	387	545	1,473	342	464	1,348
2005	790	62	39	72	9	13	35	63	150	31	110	206
2005	17,377	2,444	1,463	2,037	275	807	922	1,155	3,860	753	1,034	2,627
2001	9,271	719	516	568	80	432	995	806	1,819	897	495	1,944
2005	2,969	575	345	290	85	93	80	172	441	54	301	533
2005	6,401	705	438	373	125	225	290	527	1,326	237	757	1,398
2005	63,970	2,336	2,784	4,854	659	2,749	3,841	6,658	14,588	2,098	5,909	17,494
2001	8,972	3,000	2,165	552	157	134	134	445	770	160	178	1,178
2005	110,398	10,980	5,822	11,671	1,983	7,347	7,347	10,308	23,431	5,277	5,445	23,384
2005	12,369	1,259	1,485	1,394	242	374	524	1,033	2,700	674	678	2,006
2005	24,820	4,695	2,152	2,560	370	1,053	1,719	1,362	3,787	1,075	1,329	4,718
2005	238	18	11	15	5	9	37	22	51	11	27	32
2006	4,046	354	208	256	65	147	360	498	860	342	241	715
1999	6,612	597	310	498	106	147	201	498	1,177	324	322	2,215
2002	69,218	5,470	4,739	7,278	1,754	3,310	3,630	6,758	16,201	2,236	3,293	14,549
Kazakhstan	38,977	8,075	5,663	4,475	799	598	523	1,113	3,754	2,369	4,249	7,355
2002	9,453	1,709	1,835	524	146	102	168	168	637	1,049	668	2,542
2005	1,324	1,025	1,025	547	127	201	123	291	863	153	624	905
2005	6,189	1,660	886	622	178	242	117	412	1,178	201	1,021	1,228
2005	507	34	39	69	6	19	35	36	87	30	45	107
2006	3,993	388	772	784	82	102	119	201	524	140	113	768
Macetonia, FYR	484	72	44	23	7	25	14	49	105	30	17	98
2005	11,194	3,260	1,963	412	154	215	128	386	911	532	669	2,564
2002	20,012	1,278	1,037	1,724	1,976	968	2,171	1,976	4,286	1,288	948	4,089
Netherlands	4,815	344	284	283	67	265	472	397	1,076	281	489	857
2004	63,229	6,263	6,387	8,697	1,070	2,307	3,728	3,570	13,565	2,146	3,732	11,764
2005	13,938	865	1,420	1,010	480	636	397	947	2,408	752	711	4,332
2005	51,958	8,566	10,631	6,896	718	1,294	1,309	2,365	7,372	2,268	2,666	7,933
Romania	536,280	125,361	112,911	48,645	11,692	12,575	5,926	17,314	47,549	17,141	67,247	69,919
Russian Federation	23	2	3	5	0	1	1	2	7	1	0	1
San Marino	28,774	3,028	5,262	6,165	370	622	794	1,302	3,457	1,083	987	5,704
Serbia and Montenegro	9,279	1,806	583	1,388	269	371	410	492	1,770	410	504	1,534
2005	2,908	194	203	333	64	141	183	236	612	115	248	579
Slovakia	40,883	2,808	2,593	3,721	854	2,066	1,548	3,425	9,206	2,300	2,452	9,910
2005	10,468	1,059	587	598	133	466	934	865	2,536	536	922	1,832
Sweden	7,243	452	278	537	75	281	564	788	1,686	258	598	1,726
2004	8,530	1,291	481	1,453	136	28	40	94	1,399	1,399	550	3,008
Tajikistan	9,701	61,129	25,467	2,034	82	57	42	92	495	1,813	706	2,313
Turkmenistan	163,916	8,129	8,910	8,910	3,256	3,837	1,894	6,562	15,814	4,334	13,967	18,646
2002	81,289	4,914	5,077	5,077	772	2,905	7,280	6,901	17,515	7,646	3,534	15,949
United Kingdom	41,495	9,112	4,318	4,651	430	193	226	611	2,555	6,054	2,605	10,740
Uzbekistan	675,221	69,118	55,445	69,345	11,088	27,229	39,692	54,209	138,461	33,453	39,731	137,450
European Union	1,618,024	306,130	227,991	153,642	30,227	48,058	51,899	86,804	225,987	73,147	137,418	276,721
Total Europe												

Notes: No national mortality data available for Andorra, Bosnia and Herzegovina, Monaco and Turkey.

Source: World Health Organization (2007) www.who.int/tubosis/database/mortality1.cfm

Eurostat (2007) http://epp.eurostat.ec.europa.eu/portal/page?_pageid=1090,30070682,1090_33076576&_dad=portal&_schema=PORTAL

Figure 1.2a Deaths under 75 by cause, men, latest available year, Europe

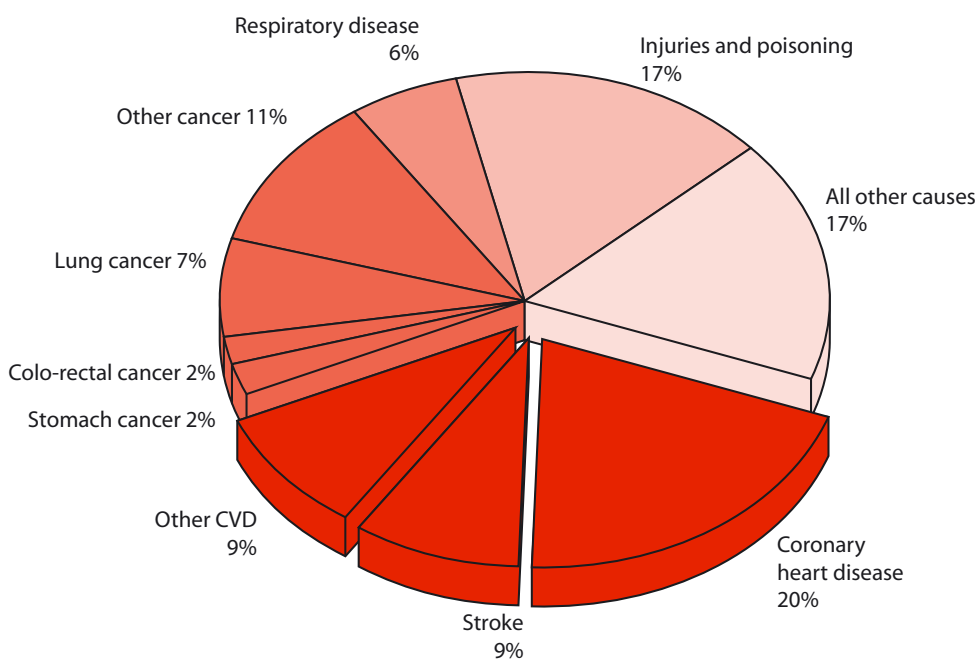


Figure 1.2b Deaths under 75 by cause, women, latest available year, Europe

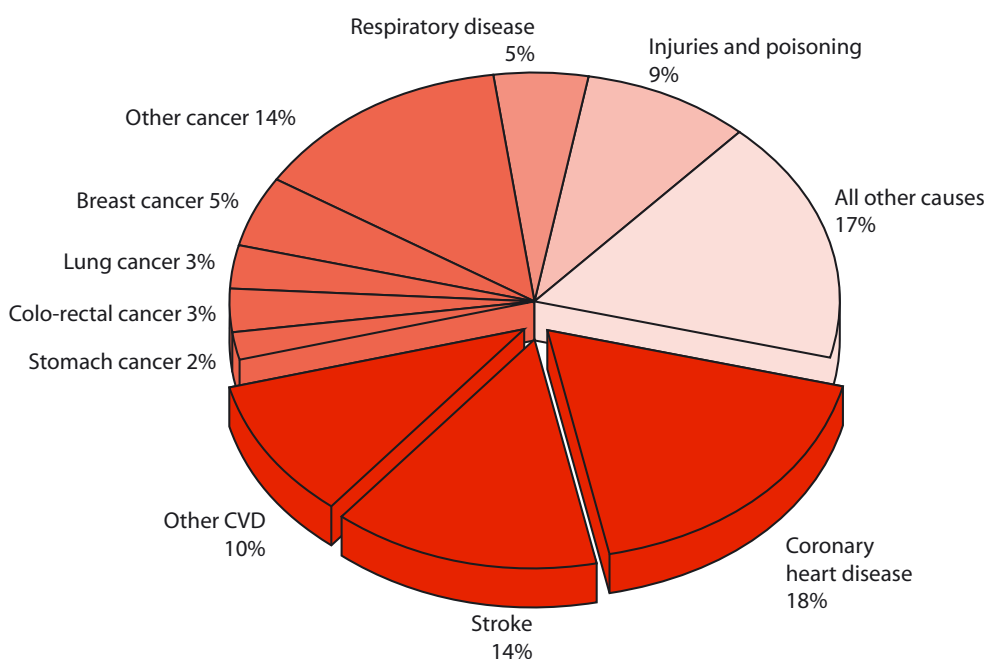


Figure 1.2c Deaths under 75 by cause, men, latest available year, EU

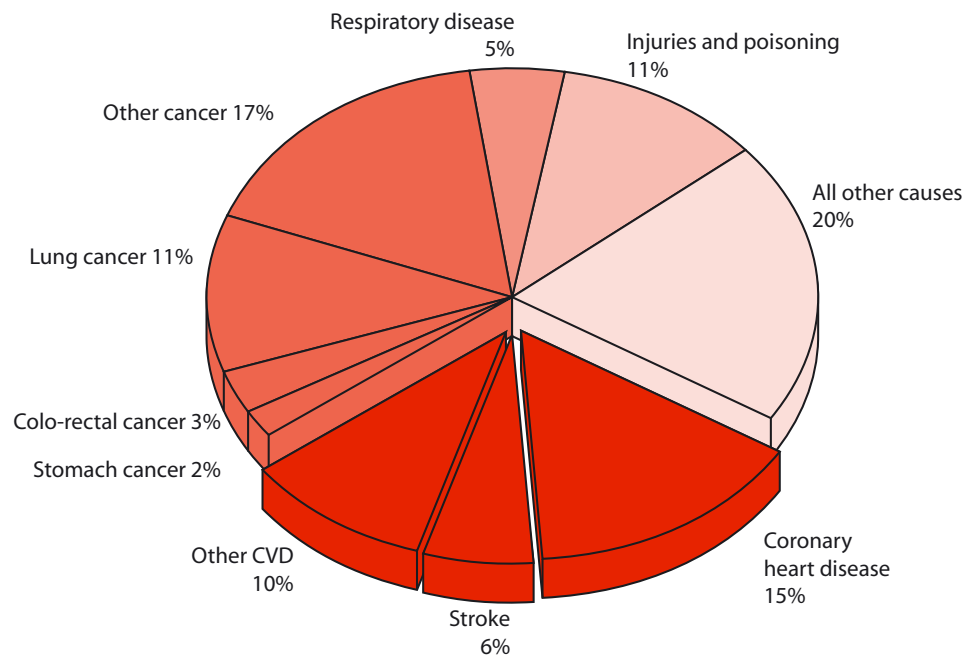


Figure 1.2d Deaths under 75 by cause, women, latest available year, EU

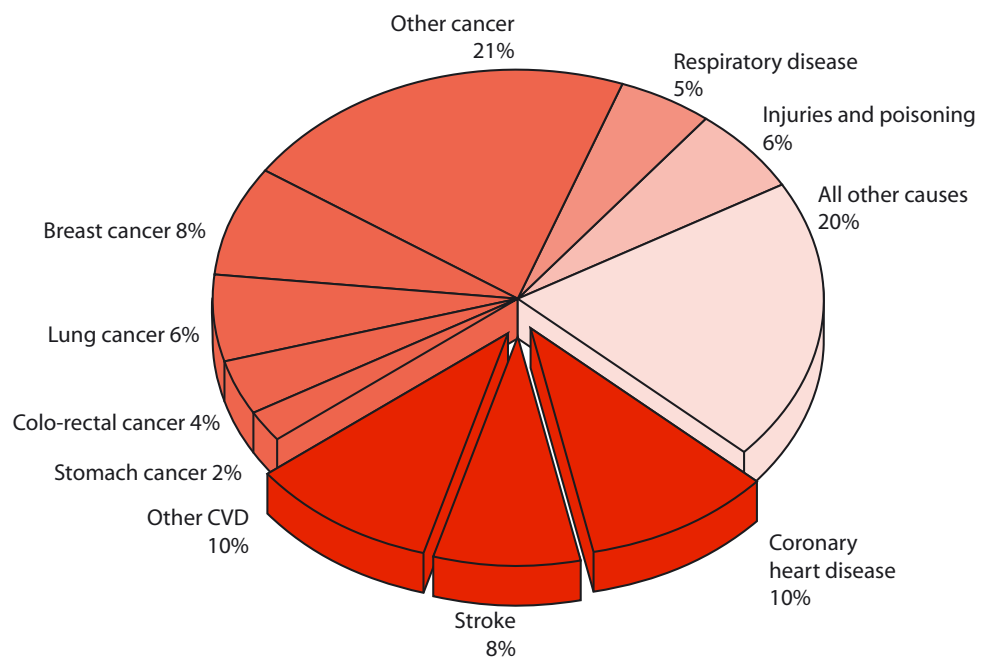


Table 1.3 Deaths under 65 by cause and sex, latest available year, Europe

Year	All causes	Coronary heart disease	Stroke	Other CVD	Stomach cancer	Colo-rectal cancer	Lung cancer	Breast cancer	Other cancer	Respiratory disease	Injuries and poisoning	All other causes
MEN												
2004	3,448	515	223	350	117	25	172	8	383	177	878	600
2002	4,815	1,213	366	184	94	54	329	0	572	243	649	1,111
2006	9,005	1,100	207	504	130	255	877	6	1,622	294	2,125	1,885
2002	11,982	3,120	695	743	293	96	380	9	985	1,133	1,300	3,228
2001	36,890	8,270	2,994	2,057	757	401	1,542	0	1,771	1,746	1,100	4,641
1997	13,109	1,544	483	931	153	350	1,767	6	2,028	661	3,293	1,893
2005	19,370	2,909	1,993	3,965	339	404	1,662	11	1,879	874	2,595	2,739
2005	7,898	1,156	591	639	169	226	889	2	1,245	287	1,592	1,102
2005	729	128	26	51	6	11	32	0	69	16	219	171
2005	18,400	2,750	840	1,832	249	787	1,936	5	2,804	779	3,649	2,769
2001	6,918	743	298	519	79	238	551	7	1,175	242	1,271	1,795
2005	3,671	549	215	369	58	53	192	1	338	134	1,232	530
2005	7,820	1,268	300	567	103	168	405	0	964	193	2,521	1,331
2005	76,095	4,629	1,931	4,692	848	1,920	9,629	51	15,403	1,901	16,000	19,091
2001	7,190	2,105	1,050	448	89	82	278	0	465	315	970	1,378
2005	97,862	12,580	3,045	8,999	1,632	3,053	9,432	66	16,879	3,553	15,797	22,826
2005	11,776	2,372	676	688	188	210	1,591	4	1,842	444	2,611	1,170
2005	27,474	4,680	1,513	2,466	347	832	3,003	5	3,663	1,104	4,528	5,333
2005	211	34	5	13	4	9	21	1	33	6	50	85
2006	3,629	554	108	250	58	145	286	2	637	155	803	631
1999	4,993	532	131	299	62	123	285	2	701	182	1,045	1,631
2002	57,920	6,405	2,163	5,106	1,382	2,060	7,063	31	11,324	1,569	11,094	9,723
2002	52,199	8,817	3,542	4,602	765	286	1,618	0	2,832	3,541	15,004	11,192
2002	11,306	1,341	1,121	537	188	40	181	2	418	1,211	2,692	3,575
2005	7,408	1,426	505	812	102	78	375	0	621	342	2,410	737
2005	10,808	1,890	465	912	156	115	496	1	861	484	4,190	1,238
2005	505	57	15	45	9	14	48	0	86	27	119	85
2006	3,287	533	317	408	79	65	397	2	398	76	390	622
2005	357	87	15	18	7	15	24	0	49	15	61	66
2002	10,111	1,491	906	318	167	142	376	4	866	745	2,366	2,730
2005	15,474	1,727	523	1,527	253	578	1,756	6	3,084	543	2,191	3,286
2004	4,296	548	142	242	52	161	329	1	704	140	1,140	837
2005	79,020	8,874	4,294	8,766	1,211	1,427	7,339	14	9,174	2,282	17,689	17,950
2005	13,979	959	763	533	452	427	1,117	5	2,044	587	2,622	4,470
2005	49,258	7,505	4,817	4,245	929	830	4,312	20	5,600	2,981	9,221	8,798
2002	732,857	136,364	56,159	58,810	11,150	5,714	23,333	121	38,106	41,332	239,626	122,142
2000	27	1	1	6	3	0	3	0	6	2	5	0
2000	2,947	2,947	1,987	2,754	352	437	1,712	11	2,495	775	2,384	5,378
Serbia and Montenegro	21,232	1,371	420	1,371	146	347	814	6	1,615	524	2,298	1,879
2005	11,016	1,596	420	1,371	146	347	814	6	1,615	524	2,298	1,879
2005	3,085	313	122	272	50	85	343	0	464	96	828	512
2005	46,309	4,395	1,600	2,909	941	1,568	6,004	13	8,175	2,322	9,044	9,338
2004	8,289	1,308	343	523	112	239	463	1	1,500	243	2,203	1,354
2004	6,781	694	172	472	81	212	654	2	1,323	169	1,535	1,467
2001	7,810	833	214	709	91	27	44	0	352	1,246	1,022	3,292
Tajikistan	11,518	1,524	262	1,596	89	479	99	0	1,781	2,242	1,781	3,418
1998	193,104	42,688	13,293	11,381	3,486	2,178	7,493	0	13,902	10,308	53,315	35,060
2002	193,104	42,688	13,293	11,381	3,486	2,178	7,493	0	13,902	10,308	53,315	35,060
2005	10,916	6,216	2,316	3,647	669	1,888	4,812	17	11,142	3,706	9,826	13,479
2000	42,274	5,702	2,429	3,798	471	142	455	0	2,059	6,466	7,517	13,235
European Union	662,240	83,355	30,070	56,560	10,612	18,095	66,352	276	105,053	26,060	130,514	135,293
Total Europe	1,835,933	303,692	116,596	146,865	29,178	28,545	106,919	443	176,057	98,413	477,472	351,753

Table 1.3 continued

WOMEN

Year	All causes	Coronary heart disease	Stroke	Other CVD	Stomach cancer	Colo-rectal cancer	Lung cancer	Breast cancer	Other cancer	Respiratory disease	Injuries and poisoning	All other causes
2004	1,798	171	169	205	62	20	59	93	249	97	268	405
2002	2,680	363	268	128	48	76	59	274	481	106	159	718
2006	4,449	264	192	382	88	163	382	521	975	135	672	855
2002	7,141	1,328	587	534	183	81	95	316	843	837	374	1,963
2001	13,680	2,739	1,887	856	368	392	1,114	638	1,584	367	2,499	2,236
1997	6,938	387	340	412	55	249	380	956	1,377	303	1,336	1,143
2005	8,488	741	1,041	1,628	147	278	283	623	1,529	329	665	1,224
2005	3,228	305	305	236	68	130	176	294	720	91	433	470
2005	401	27	11	16	5	5	19	36	76	10	108	88
2005	8,438	720	450	766	124	371	529	706	2,100	350	995	1,327
2001	4,503	219	184	195	48	169	457	526	974	485	485	987
2005	1,423	131	107	127	40	43	43	102	212	29	297	292
2005	3,467	191	169	164	62	117	157	355	680	100	750	722
2005	34,851	772	1,091	1,906	322	1,287	2,407	4,279	7,517	826	5,685	8,759
2001	3,504	855	595	205	65	67	73	284	463	213	123	651
2005	49,935	3,028	1,908	3,860	908	1,858	4,061	5,945	10,771	1,839	5,398	10,359
2005	5,067	480	351	281	97	156	274	564	1,283	207	656	718
2005	12,194	1,493	750	993	192	488	1,122	812	2,077	526	1,259	2,482
2005	124	3	6	3	3	4	20	11	25	4	24	21
2006	2,230	126	92	129	22	62	176	353	454	136	228	452
1999	3,116	144	96	177	62	130	113	407	581	113	251	1,063
2002	30,270	1,421	1,452	2,294	767	1,499	1,721	4,065	7,511	779	3,051	5,710
2002	23,532	2,980	2,514	2,497	453	311	288	815	2,381	1,634	3,846	5,813
2002	3,807	544	815	345	87	57	55	133	424	692	607	2,068
2005	2,922	398	296	299	64	83	52	190	406	98	613	423
2005	3,869	448	267	313	83	111	66	245	625	104	1,029	578
2005	252	7	13	24	2	9	21	26	50	8	47	45
2006	1,793	162	242	234	44	60	70	123	318	64	105	371
2005	238	22	10	12	4	13	9	35	59	13	13	48
2002	5,789	908	803	264	91	128	84	277	611	281	553	1,789
2005	10,709	493	425	642	120	484	1,280	1,397	2,380	488	922	2,078
2004	2,600	117	97	101	36	113	242	271	603	103	487	430
2005	31,681	2,042	2,298	2,854	512	1,031	2,273	2,363	7,530	904	3,618	6,256
2005	6,272	263	381	304	223	284	216	615	1,177	259	669	1,881
2005	23,126	2,653	2,897	1,922	692	531	692	1,473	4,273	1,286	2,688	4,316
2002	275,324	42,569	34,908	25,394	5,497	5,682	2,882	11,782	27,308	10,297	57,604	51,401
2000	10	1	2	0	0	0	0	2	4	0	0	1
2000	11,693	1,034	1,536	1,616	167	268	449	882	1,840	434	682	2,785
2005	4,524	455	165	518	81	183	161	342	994	208	493	924
2005	1,345	51	66	103	31	47	89	147	286	42	227	246
2005	19,132	844	852	1,142	407	914	971	2,197	4,580	765	2,283	4,177
2004	5,277	292	211	218	61	218	520	551	1,299	170	891	846
2004	3,673	138	96	197	37	130	323	469	796	103	595	789
2001	6,190	568	649	649	74	19	28	80	343	1,120	526	2,565
1988	6,951	634	185	1,213	52	47	26	73	345	1,691	676	2,009
2002	78,958	17,958	8,994	4,620	1,666	1,928	985	4,518	9,589	2,298	11,819	14,523
2005	39,457	2,793	1,833	1,923	321	1,275	3,182	4,533	8,772	2,560	3,455	8,830
2000	26,794	2,845	1,735	2,711	288	133	149	486	1,862	5,095	2,439	9,051
European Union	321,807	20,806	17,911	23,248	5,081	11,947	21,532	33,908	70,193	12,735	38,535	65,911
Total Europe	805,873	97,127	74,010	65,432	14,432	21,704	27,782	56,185	121,337	38,373	122,603	166,888

Notes: No national mortality data available for Andorra, Bosnia and Herzegovina, Monaco and Turkey.

Source: World Health Organization (2007) www.who.int/uhobis/database/morttable1.cfm

Eurostat (2007) http://epp.eurostat.ec.europa.eu/portal/page?_pageid=1090,33070682,1090_33076576&_dad=portal&_schema=PORTAL

Figure 1.3a Deaths under 65 by cause, men, latest available year, Europe

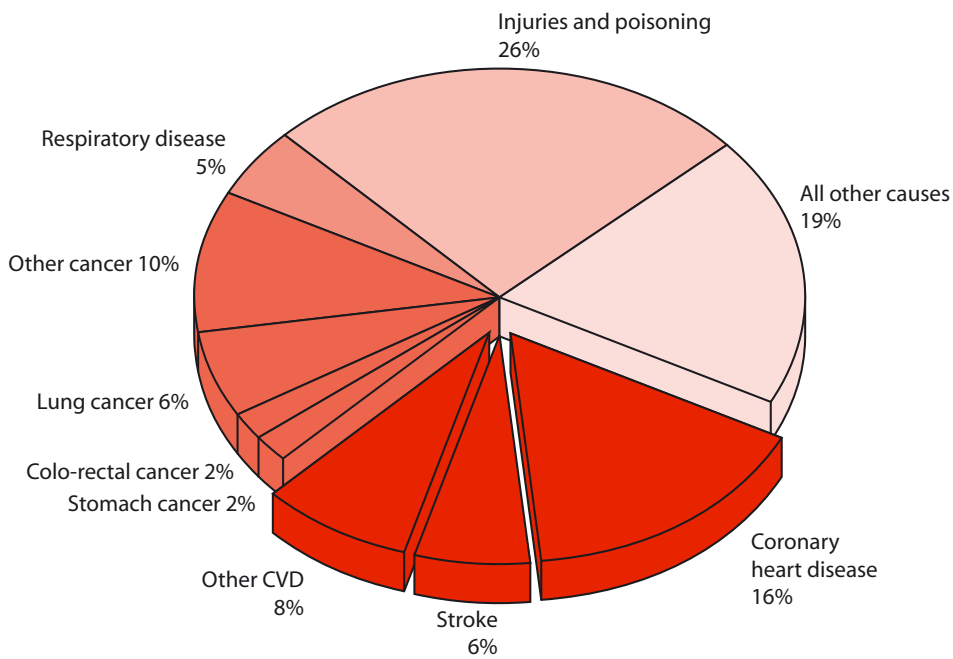


Figure 1.3b Deaths under 65 by cause, women, latest available year, Europe

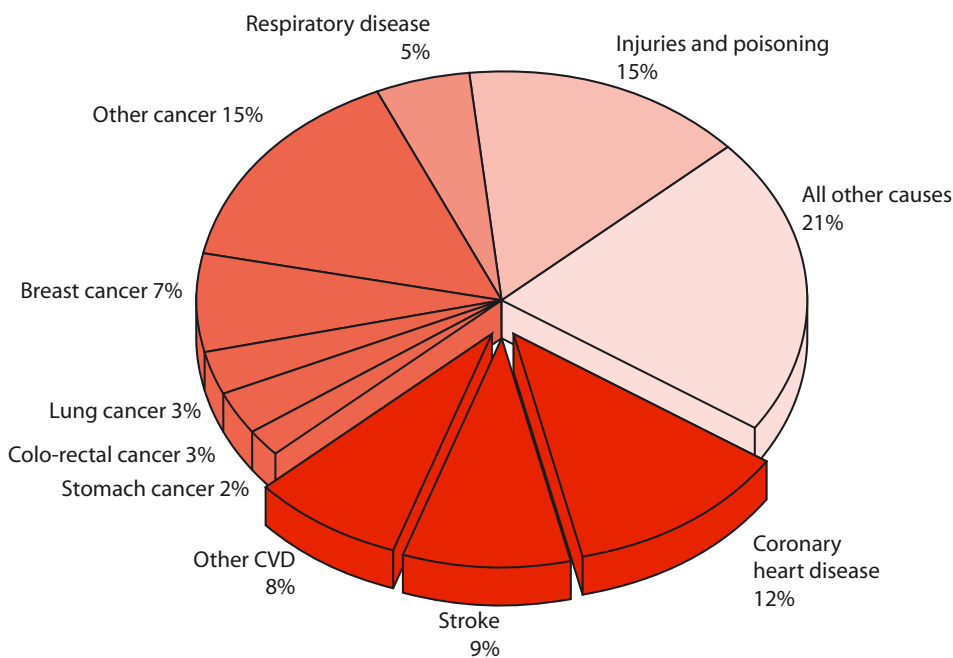


Figure 1.3c Deaths under 65 by cause, men, latest available year, EU

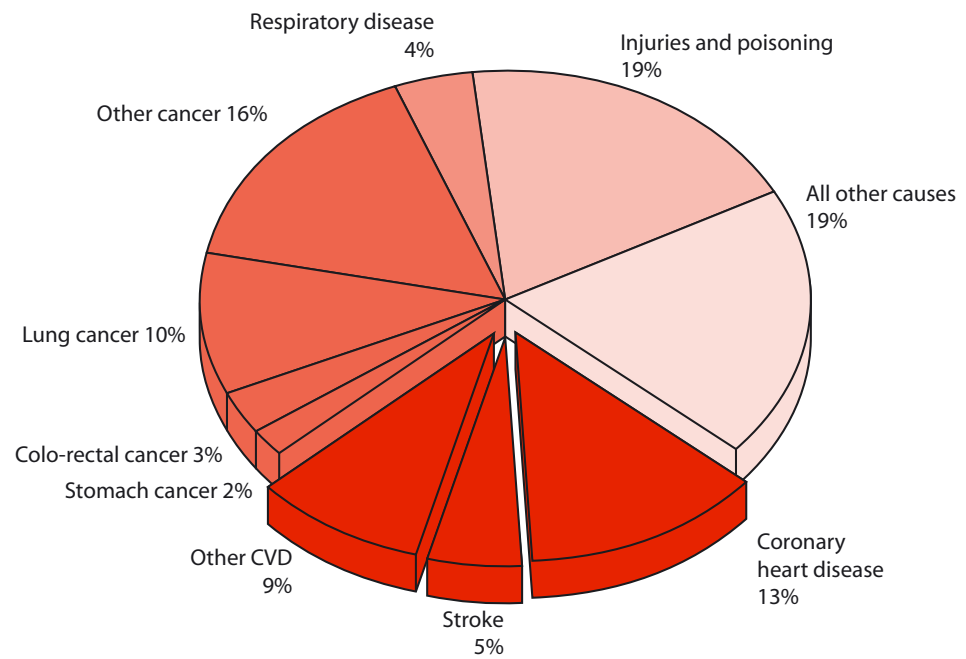


Figure 1.3d Deaths under 65 by cause, women, latest available year, EU

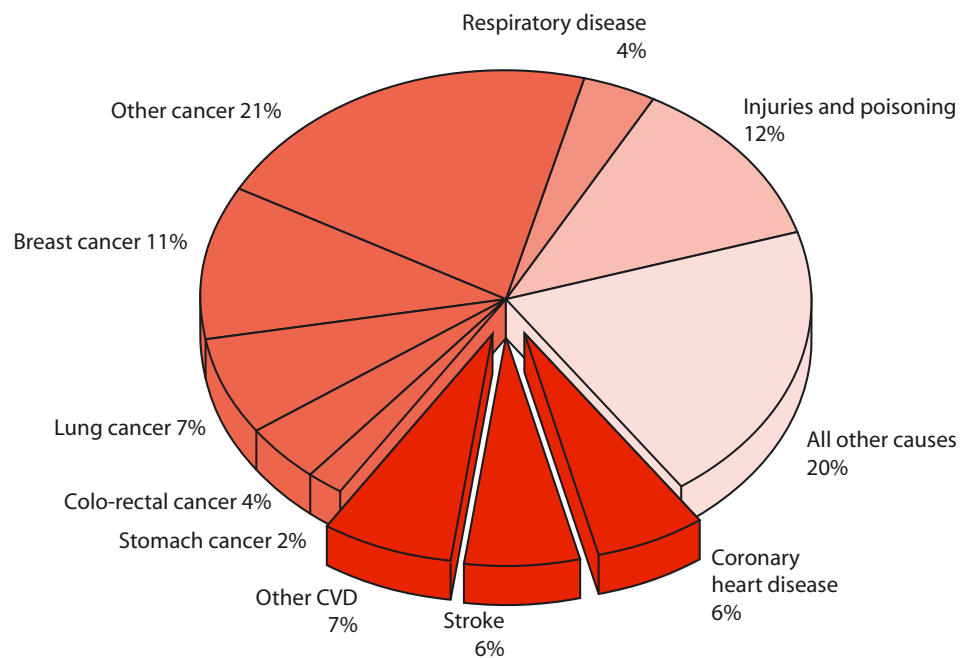


Table 1.4 Age-standardized death rates from CHD, adults aged 0 to 64, by sex, 1972 to 2005, Europe

Deaths per 100,000		1972	1973	1974	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005				
MEN																																							
Albania																																							
Armenia																																							
Austria	83	82	86	85	88	88	88	89	89	83	104	108	85	84	79	107	113	113	119	127	137	143	145	157	148	169	160	147	144	147	138	134	125	120	145	48			
Azerbaijan																																							
Belarus																																							
Belgium	103	92	90	90	90	85	84	80	80	77	73	73	70	65	62	57	52	47	43	40	38	38	40	37	38	37	36												
Bosnia and Herzegovina																																							
Bulgaria	59	61	65	65	69	75	77	78	77	71	78	80	83	83	84	83	83	85	85	89	91	91	105	100	105	94	101	95	87	84	83	84	83	84	82	80			
Croatia																																							
Cyprus																																							
Czech Republic	123	124	125	127	126	132	134	132	139	134	131	140	142	144	143	138	135	135	135	135	143	132	127	116	109	103	97	87	81	78	73	68	65	60	58	55			
Denmark	107	107	108	108	118	107	111	110	107	110	99	98	96	94	88	90	81	78	73	67	64	60	55	51	43	41	38	35	31	30									
Estonia																																							
Finland	206	204	202	198	206	205	193	183	170	171	165	152	151	140	126	121	118	110	102	96	87	82	78	74	68	65	63	65	54	52	54	51	48						
France	41	41	43	43	43	41	42	41	42	41	39	38	38	36	37	37	36	33	32	29	26	25	24	23	23	22	22	21	21	20	19	19	17						
Georgia																																							
Germany	44	47	47	49	55	57	56	53	54	52	55	54	53	56	53	56	54	53	52	52	50	50	51	52	54	53	54	51	53	54	51	53	50	52	55	50			
Greece	95	93	95	97	101	111	122	114	130	141	143	141	141	139	140	136	135	133	136	139	141	143	131	132	123	117	118	116	105	99	94	97	97	97	105				
Hungary	119	109	129	113	123	109	99	119	124	117	97	137	107	100	78	83	87	57	60	63	51	64	62	51	42	45	34	48	39	31	34	33	33	39	30				
Iceland	141	146	149	145	139	144	147	146	142	140	136	143	132	127	126	113	103	101	88	94	86	83	78	71	71	62	60	53	52	46	44	39							
Ireland	126	116	118	100	106	96	98	88	88	89	89	90	79	77	69	76	71	61	53	50	52	41	47	44	44	33	31	34	30	28	28	25	21						
Israel	59	62	65	67	69	69	70	67	62	60	58	58	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54		
Italy																																							
Kazakhstan																																							
Kyrgyzstan																																							
Latvia																																							
Lithuania	91	90	102	105	98	90	99	91	85	93	111	86	91	78	74	73	58	56	54	68	76	72	52	51	48	47	54	37	36	29	35	33	35	28	31	28			
Luxembourg																																							
Macedonia, FYR																																							
Malta	90	102	93	116	140	117	130	127	130	107	108	117	88	78	92	80	91	77	72	57	71	66	58	49	46	53	54	50	44	46	44	42	38	45					
Moldova																																							
Netherlands	112	101	99	103	100	100	97	92	89	86	83	80	81	78	71	66	64	58	55	50	48	46	44	43	39	38	35	34	28	27	28	22							
Norway	109	116	111	110	107	109	108	107	108	105	104	98	101	103	103	97	94	85	82	73	72	62	57	59	49	47	47	40	35	36	32	27	27						
Poland	64	66	67	73	78	82	85	83	93	88	90	89	87	102	107	110	106	112	116	109	99	90	88	85	85	85	77	71	66	63	61	57							
Portugal	47	48	47	47	50	47	48	48	48	45	40	41	45	41	39	40	41	37	38	41	38	39	33	33	33	30	31	29	26	26	29	28	27						
Romania	42	44	43	43	46	52	56	62	67	66	72	72	76	76	80	76	75	85	91	102	111	110	113	117	115	106	100	96	97	97	96	90							
Russian Federation																																							
San Marino	99	101	102	100	106	109	118	116	112	111	111	118	128	121	124	121	123	130	143	140	129	122	122	120	115	108	97	96	92	86	85	79	76	74					
Slovakia																																							
Slovenia																																							
Spain	37	40	45	46	45	44	45	45	44	43	42	42	42	41	41	39	38	35	35	36	36	34	33	33	34	32	32	31	30	28	27	27	25						
Sweden	92	96	95	94	99	99	99	99	99	100	94	89	85	87	82	78	75	65	61	55	54	51	50	44	43	39	38	37	36	33	31	29							
Switzerland																																							
Tajikistan	60	58	56	63	61	61	64	58	60	58	57	54	55	51	51	48	45	43	40	41	38	35	32	35	29	31	30	29	26	23	22	20							
Tajikistan																																							
Turkmenistan																																							
Ukraine																																							
United Kingdom	151	149	149	147	145	144	149	148	143	138	132	132	128	128	126	122	117	110	102	97	93	88	86	76	74	69	65	63	58	54	52	49	47	44					
Uzbekistan																																							
European Region																																							
European Union																																							

Figure 1.4c Death rates from CHD, men aged under 65, 1972 to 2005, selected countries

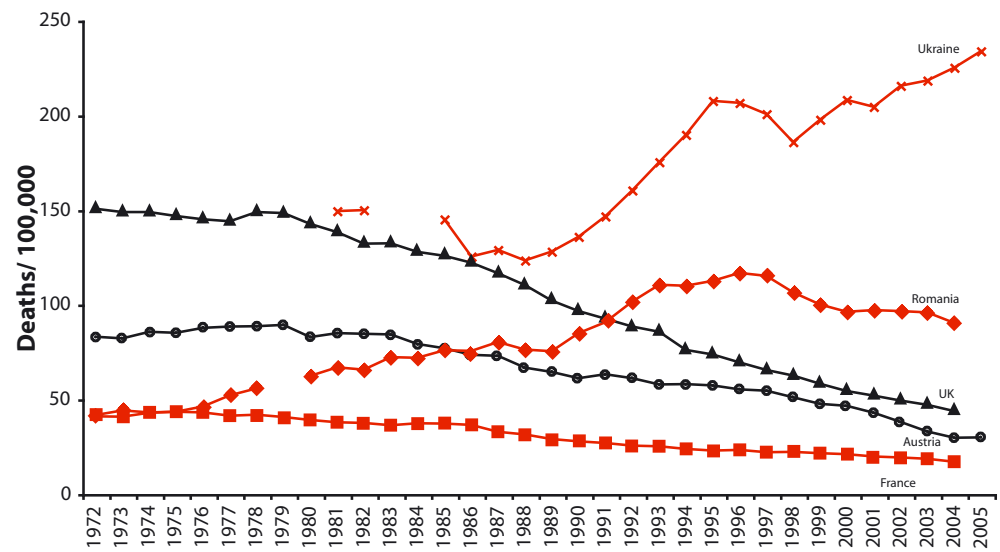


Figure 1.4d Death rates from CHD, women aged under 65, 1972 to 2005, selected countries

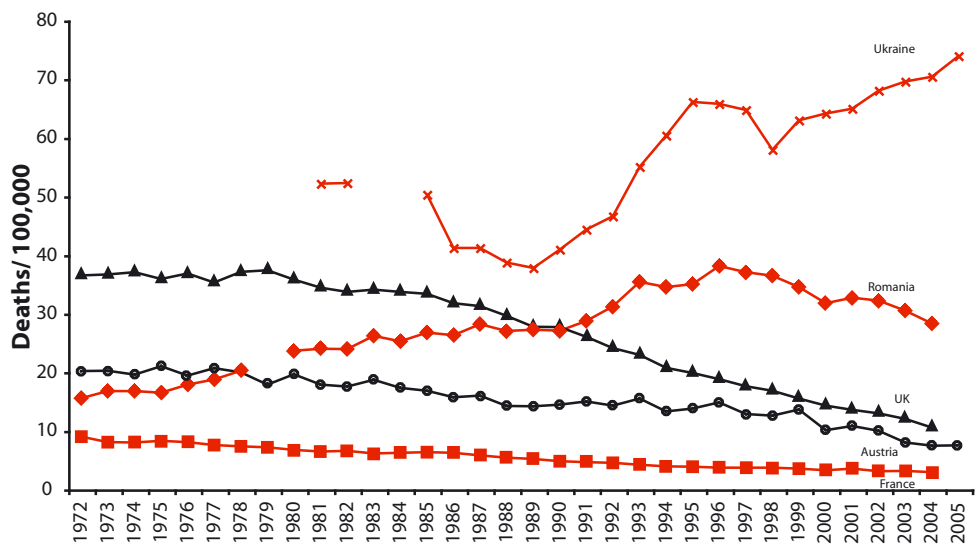


Table 1.5 Age-standardized death rates from stroke, adults aged 0 to 64, by sex, 1972 to 2005

Deaths per 100,000		1972	1973	1974	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005				
MEN																																							
Albania																																							
Armenia																																							
Austria	32	28	29	29	28	29	26	27	27	24	27	24	27	24	27	28	28	31	29	32	31	37	32	25	21	25	24	27	26	27	22	26	22	23	23	20			
Azerbaijan																																							
Belarus																																							
Belgium	27	25	25	23	24	23	20	18	19	18	18	18	18	18	17	15	13	13	13	12	11	11	10	11	10	11	11	11	11	11	11	11	11	11	11	11	11	11	
Bosnia and Herzegovina																																							
Bulgaria	48	48	51	52	53	60	62	63	61	61	62	61	62	61	65	66	64	62	66	64	68	68	75	83	78	69	66	70	69	59	63	59	60	55	55	55			
Croatia																																							
Cyprus																																							
Czech Republic	49	47	49	47	44	45	45	45	49	46	47	47	46	46	46	44	44	42	47	47	39	36	33	31	30	27	25	24	24	23	21	20	20	20	17	17	17		
Denmark	15	16	16	16	16	17	16	16	15	15	17	15	14	14	14	14	14	13	15	14	15	14	15	12	13	13	15	12	12	15	11	12	11	12	11	12	11	12	
Estonia																																							
Finland	42	42	40	35	37	38	35	31	27	28	27	26	26	26	26	22	21	21	23	22	26	22	21	21	18	18	18	17	16	17	13	15	14	14	14	11	11	11	
France	29	28	27	26	25	22	22	22	20	19	19	18	18	17	17	15	14	13	12	11	12	10	10	10	9	10	9	10	8	8	8	8	8	8	8	8	7	7	
Georgia																																							
Germany	24	23	21	22	23	23	24	22	22	21	20	20	20	21	20	18	18	18	19	14	15	14	14	14	14	13	13	12	11	10	10	9	9	9	9	8	8	8	
Greece																																							
Hungary	36	38	38	41	44	46	50	56	61	59	62	66	68	67	63	60	59	61	62	61	61	62	58	57	55	52	51	50	48	45	45	43	39	34	34	34	34		
Iceland	32	12	19	23	22	21	13	19	12	16	12	19	10	8	15	19	9	8	6	12	7	8	7	9	8	9	8	9	6	7	4	5	8	4	6	4	4		
Ireland	33	31	31	29	31	27	28	24	23	22	21	18	17	15	15	13	11	14	12	12	11	14	12	12	12	13	13	10	10	8	9	9	9	9	9	9	9		
Israel	26	27	27	26	25	24	21	20	23	17	18	17	16	17	16	16	16	12	11	12	11	13	12	13	13	13	13	10	10	8	9	9	9	9	9	9	9	9	
Italy	29	28	28	29	28	28	29	27	25	24	23	22	22	22	22	21	20	19	17	16	15	15	15	13	13	12	11	11	10	10	9	9	9	9	9	9	9	9	
Kazakhstan																																							
Kyrgyzstan																																							
Latvia																																							
Lithuania																																							
Luxembourg																																							
Macedonia, FYR	34	35	31	26	27	19	21	28	25	28	20	29	31	30	30	25	24	21	20	21	17	15	12	12	18	13	17	10	12	8	10	16	13	16	9	7	7		
Malta																																							
Moldova	41	33	39	39	38	49	42	23	32	26	32	33	19	22	29	38	16	15	10	20	16	16	10	12	14	8	8	8	7	13	12	8	6	8	6	8	8		
Netherlands	19	19	17	18	16	16	15	14	15	14	14	14	12	14	12	12	11	11	11	10	10	11	11	11	11	10	10	10	9	9	9	9	9	9	9	9	9	9	
Norway	22	20	17	17	18	16	16	16	16	16	14	13	15	15	13	12	12	12	12	13	10	11	13	10	10	10	10	10	9	9	8	8	8	7	6	7	6	7	
Poland	19	20	20	22	24	26	27	27	28	24	24	25	27	29	30	30	30	30	30	30	31	32	32	31	31	29	28	26	24	25	24	22	20	19	19	19	19		
Portugal	59	60	57	63	59	54	50	46	53	50	45	45	43	41	41	36	37	34	35	34	30	29	29	28	26	24	25	24	25	24	22	20	19	19	19	19	19		
Romania	42	43	40	41	40	42	45	44	45	44	45	44	45	47	48	48	50	51	54	70	73	74	77	79	73	66	62	64	65	62	57	57	57	57	57	57	57		
Russian Federation																																							
San Marino																																							
Slovakia	41	38	44	41	40	43	43	38	42	37	39	46	48	44	41	40	42	45	45	47	35	31	32	30	28	29	31	25	24	21	24	22	19	19	19	19	19		
Slovenia																																							
Spain	28	31	30	31	30	26	26	24	24	22	21	21	21	21	21	19	18	18	18	16	15	15	14	14	13	13	12	12	11	11	10	10	10	9	9	9	9		
Sweden	18	18	20	18	18	16	17	15	15	16	14	13	12	13	12	12	12	12	11	12	12	12	11	10	11	10	10	10	9	8	8	8	8	8	8	8	8	8	
Switzerland	15	16	14	14	14	14	14	14	12	11	10	10	10	10	8	8	8	8	7	8	7	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	
Tajikistan																																							
Turkmenistan																																							
Ukraine																																							
United Kingdom	28	28	27	27	25	24	24	24	23	21	20	20	19	19	19	17	16	15	15	15	14	13	13	13	13	13	12	12	11	10	10	10	9	9	9	9	9		
Uzbekistan																																							
European Region																																							
EU																																							

Figure 1.5a Age-standardized death rates from stroke, men aged 0 to 64, latest available year

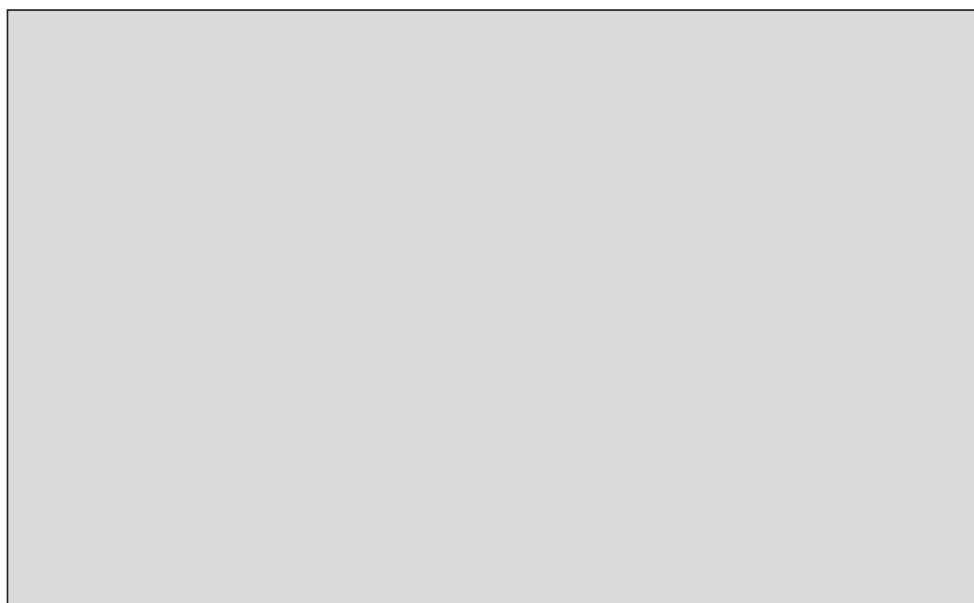


Figure 1.5b Age-standardized death rates from stroke, women aged 0 to 64, latest available year

Figure 1.5c Death rates from stroke, men aged under 65, 1972 to 2005, selected countries

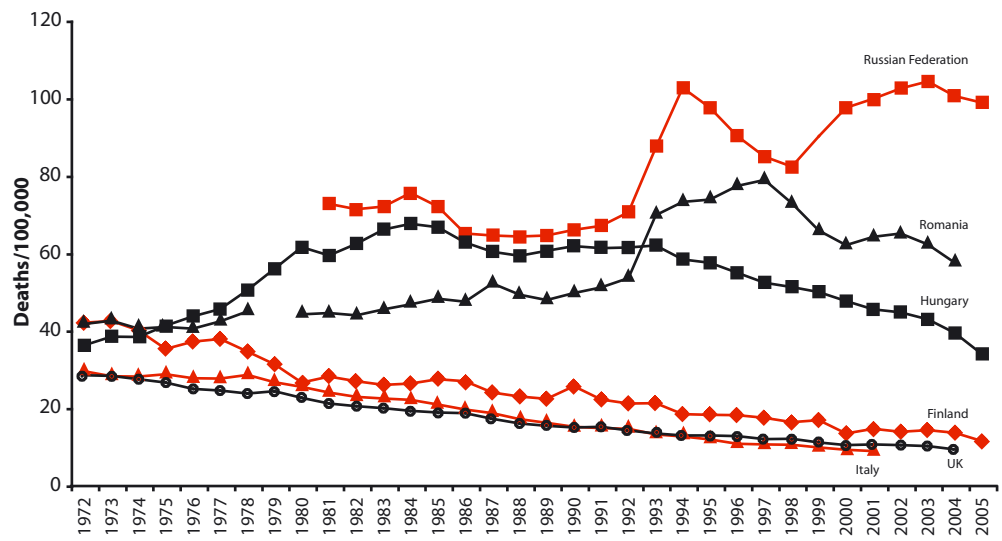
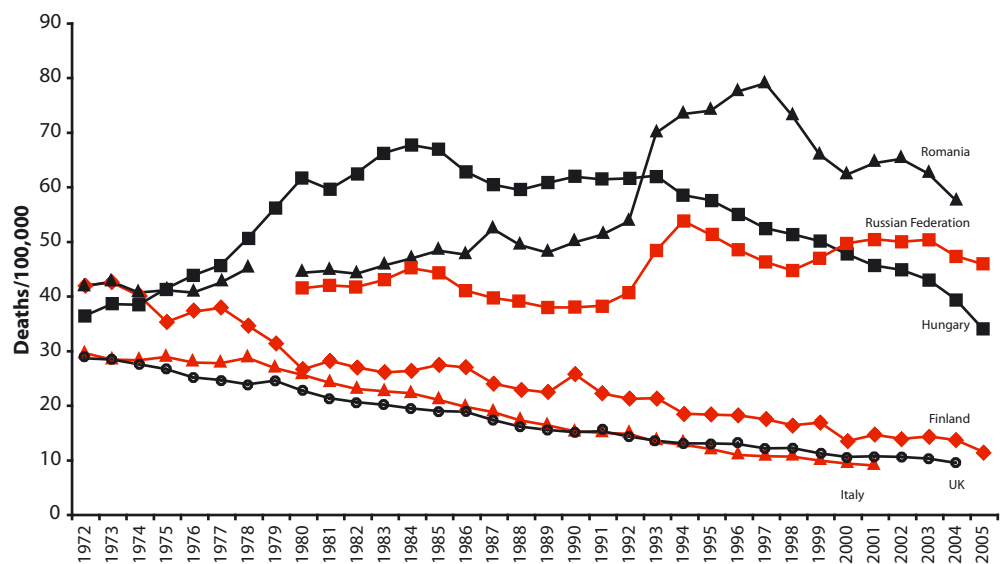


Figure 1.5d Death rates from stroke, women aged under 65, 1972 to 2005, selected countries



2. Morbidity

Incidence rates

Comparable data on morbidity from CVD are more difficult to collect than mortality data, since there are many different measures of morbidity (e.g. prevalence, incidence, DALYs, years of healthy life lost etc.). At present, there is no routinely updated source of Europe-wide CVD morbidity data¹.

The WHO MONICA (monitoring trends and determinants in cardiovascular disease) project² examined the incidence of major coronary events in 37 different populations in 21 countries (including 29 populations in 16 European countries). Although the data from the study are now more than 10 years old, it still represents the most recent Europe-wide comparable dataset on CVD morbidity. These populations are not necessarily representative of the countries in which they are located. Nevertheless the project has shown that the incidence of coronary events (a definite or likely myocardial infarction - heart attack) is higher in MONICA project populations in Northern, Central and Eastern Europe than in Southern and Western Europe. For example the coronary event rate for men aged 35 to 64 living in Warsaw (Poland) is nearly three times higher than it is in Catalonia (Spain); for women it is four times higher. The highest coronary event rates at the end of the project were found in Glasgow (United Kingdom) in both men and women. The geographical pattern in coronary event rates is similar to the pattern in death rates (Table 2.1).

The results of the MONICA project also show that incidence of coronary events is falling rapidly in most of the MONICA project populations in Northern and Western Europe but is not falling as fast in the populations in Southern, Central and Eastern Europe and in some cases is rising in these populations. For example incidence rates for men aged 35 to 64 living in North Karelia (Finland) fell by 6.5% per year over the study period (1983 to 1996) but rose by 1.2% for men of the same age living in Kaunas (Lithuania). For women aged 35 to 64 living in North Karelia the incidence rate fell by 5.1% per year but rose by 2.7% per year for women living in Kaunas. The geographical pattern in trends in incidence rates is similar to the geographical pattern in trends in death rates (Table 2.1)³.

Case fatality

The MONICA project also investigated patterns and trends in case fatality. Case fatality is defined by the MONICA project as dying within 28 days of a coronary event. Case fatality rates are affected by many factors including the accuracy of diagnosis, the severity of the disease and the impact of treatment. The MONICA project shows that case fatality from CHD is higher in many populations in Central and Eastern Europe than in most populations in Northern, Southern and Western Europe. For example case fatality for men aged 35 to 64 living in Moscow (Russia) is 50% higher than in Belfast (United Kingdom) or in Catalonia (Spain) (Table 2.1).

The results of the MONICA project also show that case fatality is falling in most of the MONICA project populations in Southern, Northern and Western Europe but is not falling as fast in the populations in Central and Eastern Europe and in some cases is rising in these populations. For

example case fatality for women aged 35 to 64 living in Toulouse (France) fell by 3.6% per year over the study period; over the same period the case fatality rate for women in Moscow increased by an average of 1.5% per year (Table 2.1).

The MONICA project was partly established to investigate how much of reported declines in CHD mortality are attributable to improvements in case fatality and how much to declines in incidence. The project concludes that the 'contribution to changing CHD mortality varied, but in populations in which mortality decreased, coronary-event rates contributed two thirds and case fatality one third'².

Patterns of CHD incidence and case fatality across Europe may have changed since the mid 1990s. Furthermore, the definition of myocardial infarction (heart attack) has changed following the introduction of troponin estimations which have increased the ability to detect myocardial infarction.

Years of life lost in disability and disability-adjusted life years lost

In 2002 the WHO Burden of Disease project synthesized data from WHO member states to make an estimate of the morbidity caused by different diseases⁴. The main measure of the burden of disease was the DALY (Disability Adjusted Life Year) – an aggregate of years of life lost due to premature death and years of healthy life lost due to disability.

In developed European countries, 17% of all DALYs lost are due to CVD – after neuropsychiatric disorders this represents the largest single cause. In less developed European nations, the proportion of DALYs lost due to CVD exceeds that of neuropsychiatric disorders. In the EU, over 12 million DALYs (19% of total) are lost each year to CVD. In Europe, over 34 million DALYs (23% of total) are lost each year to CVD (Table 2.2 and Figures 2.2a and 2.2b).

The highest morbidity rates for CVD appear in Eastern Europe and in the former Soviet countries. The age-standardised rates of DALYs lost for CHD in Ukraine, Russia and Belarus are at least three times higher than rates in Spain, France and Italy. The situation is similar for stroke, where the rate of DALYs lost in Russia is nearly 1,800 per 100,000, compared to only 360 per 100,000 in the UK (Table 2.3 and Figures 2.3a and 2.3b).

1. *The EUROCISS project (Cardiovascular Indicators Surveillance Set), which is co-funded by the European Commission, and working in conjunction with EU member states, has developed a set of standard indicators to improve the comparability, data quality and subsequent monitoring of CVD in the EU (see www.cuore.iss.it/eurociss/en/eurociss.htm)*
2. *Tunstall-Pedoe H, Kuulasmaa K, Mahonen M, Tolonen H, Ruokokoski E, Amouyel P, for the WHO MONICA project (1999) Contribution of trends in survival and coronary-event rates to changes in coronary heart disease mortality: 10 year results from 37 MONICA project populations. Lancet 353; 1547-57.*
3. *For more details see WHO Monica project (2003) MONICA Monograph and Multimedia Sourcebook: World's largest study of heart disease stroke, risk factors and population trends 1979-2002. Edited by Hugh Tunstall-Pedoe for the WHO MONICA project. WHO: Geneva.*
4. *World Health Organization (2004) World Health Report 2004. WHO: Geneva.*

Table 2.1 *Coronary event rates, coronary case fatality, annual change in coronary event rates and annual change in coronary case fatality by sex, adults aged 35 to 64, latest available year, MONICA European Project populations*

MONICA population	MONICA population code	Survey years	Coronary event rate Events per 100,000	Coronary case fatality within 28 days %	Annual change in coronary event rate %	Annual change in coronary case fatality %
MEN						
Belgium-Charleroi	BEL-CHA	1983/92	487	50	0.3	-1.8
Belgium-Ghent	BEL-GHE	1983/92	346	47	-3.2	-1.6
Czech Republic	CZE-CZE	1984/93	515	53	-0.4	0.7
Denmark-Glostrup	DEN-GLO	1982/91	517	53	-4.2	1.5
Finland-Kuopio Province	FIN-KUO	1983/92	718	46	-6.0	1.0
Finland-North Karelia	FIN-NKA	1983/92	835	48	-6.5	-0.5
Finland-Turku/Loimaa	FIN-TUL	1983/92	549	49	-4.2	-0.2
France-Lille	FRA-LIL	1985/94	298	59	-1.1	-0.3
France-Strasbourg	FRA-STR	1985/93	292	49	-3.9	-1.7
France-Toulouse	FRA-TOU	1985/93	233	40	-2.1	-3.8
Germany-Augsburg	GER-AUG	1985/94	286	55	-3.2	1.3
Germany-Bremen	GER-BRE	1985/92	361	50	-3.4	-0.9
Germany-East Germany	GER-EGE	1985/93	370	50	-0.5	1.7
Iceland	ICE-ICE	1981/94	486	37	-4.7	-2.1
Italy-Area Brianza	ITA-BRI	1985/94	279	41	-2.3	-0.8
Italy-Friuli	ITA-FRI	1984/93	253	45	-0.9	-2.0
Lithuania-Kaunas	LTU-KAU	1983/92	498	55	1.2	1.0
Poland-Tarnobrzeg Vovoidship	POL-TAR	1984/93	461	83	1.1	1.2
Poland-Warsaw	POL-WAR	1984/94	586	60	0.8	-0.4
Russia-Moscow (control)	RUS-MOC	1985/93	477	61	-1.0	3.0
Russia-Novosibirsk (control)	RUS-NOC	1984/92	464	60	0.9	-0.1
Spain-Catalonia	SPA-CAT	1985/94	210	37	1.8	-1.7
Sweden-Gothenburg	SWE-GOT	1984/94	363	44	-4.2	0.3
Sweden-Northern Sweden	SWE-NSW	1985/95	509	36	-5.1	-2.9
Switzerland-Ticino	SWI-TIC	1985/93	290	34	-2.6	-4.2
Switzerland-Vaud/Fribourg	SWI-VAF	1985/93	231	38	-3.6	-3.0
United Kingdom-Belfast	UNK-BEL	1983/93	695	41	-4.6	-1.5
United Kingdom-Glasgow	UNK-GLA	1985/94	777	48	-1.4	-1.3
Yugoslavia-Novi Sad	YUG-NOS	1984/95	422	52	0.4	-0.4
WOMEN						
Belgium-Charleroi	BEL-CHA	1983/92	118	59	1.1	-1.8
Belgium-Ghent	BEL-GHE	1983/92	77	58	-3.0	-1.8
Czech Republic	CZE-CZE	1984/93	101	54	2.1	-1.2
Denmark-Glostrup	DEN-GLO	1982/91	140	58	-2.5	2.5
Finland-Kuopio Province	FIN-KUO	1983/92	124	39	-4.5	1.0
Finland-North Karelia	FIN-NKA	1983/92	145	41	-5.1	-0.2
Finland-Turku/Loimaa	FIN-TUL	1983/92	94	49	-4.5	-1.9
France-Lille	FRA-LIL	1985/94	64	70	-1.6	0.8
France-Strasbourg	FRA-STR	1985/93	64	57	-6.6	-2.3
France-Toulouse	FRA-TOU	1985/93	36	60	-1.7	-3.6
Germany-Augsburg	GER-AUG	1985/94	63	65	0.9	-0.4
Germany-Bremen	GER-BRE	1985/92	81	52	0.7	-2.9
Germany-East Germany	GER-EGE	1985/93	78	63	2.5	-2.2
Iceland	ICE-ICE	1981/94	99	34	-3.7	-1.0
Italy-Area Brianza	ITA-BRI	1985/94	42	53	-3.5	-4.8
Italy-Friuli	ITA-FRI	1984/93	47	50	-0.8	-2.0
Lithuania-Kaunas	LTU-KAU	1983/92	80	54	2.7	-1.2
Poland-Tarnobrzeg Vovoidship	POL-TAR	1984/93	110	88	-0.1	-0.7
Poland-Warsaw	POL-WAR	1984/94	153	59	1.0	-2.1
Russia-Moscow (control)	RUS-MOC	1985/93	92	60	-6.7	1.5
Russia-Novosibirsk (control)	RUS-NOC	1984/92	111	67	2.3	0.3
Spain-Catalonia	SPA-CAT	1985/94	35	46	2.0	1.5
Sweden-Gothenburg	SWE-GOT	1984/94	84	45	-3.7	1.2
Sweden-Northern Sweden	SWE-NSW	1985/95	119	34	-2.4	0.4
United Kingdom-Belfast	UNK-BEL	1983/93	188	42	-2.4	-1.7
United Kingdom-Glasgow	UNK-GLA	1985/94	265	46	0.2	-2.1
Yugoslavia-Novi Sad	YUG-NOS	1984/95	101	50	2.8	0.5

Notes: Age-standardized rates - see source for details.

Source: Tunstall-Pedoe H, Kuulasmaa K, Mahonen M, Tolonen H, Ruokokoski E, Amouyel P, for the WHO MONICA Project (1999). Contribution of trends in survival and coronary-event rates to changes in coronary heart disease mortality: 10-year results from 37 MONICA Project populations. *Lancet* 353; 1547-57.

Table 2.2 Disability-adjusted life years (DALYs) by cause, 2002, WHO Mortality Sub-Region, EU and Europe

	WHO MORTALITY SUB-REGION									
	EUR-A		EUR-B		EUR-C		EUROPE		EU	
	DALYs lost (000s)	% of total DALYs lost	DALYs lost (000s)	% of total DALYs lost	DALYs lost (000s)	% of total DALYs lost	DALYs lost (000s)	% of total DALYs lost	DALYs lost (000s)	% of total DALYs lost
Cardiovascular disease	8,837	17	8,175	22	17,405	29	34,416	23	12,129	19
Coronary heart disease	3,569	7	3,382	9	8,800	14	15,752	10	4,931	8
Stroke	2,653	5	2,522	7	5,618	9	10,793	7	3,675	6
Diabetes	1,105	2	566	1	522	1	2,192	1	1,288	2
Cancer	8,548	17	3,289	9	5,322	9	17,159	11	10,273	16
Lung cancer	1,668	3	620	2	956	2	3,243	2	2,053	3
Cancer of the colon and rectum	1,027	2	285	1	550	1	1,862	1	1,200	2
Breast cancer	939	2	277	1	487	1	1,703	1	1,061	2
Infectious diseases	888	2	2,171	6	2,562	4	5,621	4	1,135	2
Diarrhoeal diseases	110	0	485	1	97	0	692	0	133	0
Sexually transmitted diseases exc. HIV	79	0	149	0	125	0	353	0	121	0
HIV/AIDS	198	0	52	0	976	2	1,226	1	229	0
Respiratory infections	690	1	1,524	4	901	1	3,115	2	877	1
Neuropsychiatric disorders	13,720	27	7,055	19	8,562	14	29,338	20	16,024	25
Alcohol use disorders	2,226	4	636	2	1,799	3	4,660	3	2,631	4
Alzheimer and other dementias	1,987	4	398	1	549	1	2,934	2	2,121	3
Depression	4,113	8	2,626	7	2,598	4	9,337	6	4,923	8
Respiratory diseases	3,405	7	1,547	4	1,782	3	6,734	4	3,667	6
Digestive diseases	2,414	5	1,900	5	3,082	5	7,396	5	3,302	5
Musculo-skeletal (non-rheumatic) disease	2,195	4	1,513	4	1,924	3	5,632	4	2,824	4
Unintentional injuries	3,041	6	3,123	8	8,317	14	14,481	10	4,235	7
Road traffic injuries	1,233	2	641	2	1,732	3	3,606	2	1,514	2
Intentional injuries (e.g. suicide, violence)	1,039	2	935	2	4,489	7	6,462	4	1,435	2
All causes	51,699	100	37,828	100	60,729	100	150,256	100	64,356	100

Notes: WHO mortality sub-regions: EUR-A, very low child and adult mortality; EUR-B, low child and adult mortality; EUR-C, low child, high adult mortality. Figures for EUR-A, EUR-B and EUR-C vary slightly from those reported in the World Health Report 2004. This is due to revisions of the estimates for HIV/AIDS, malaria, schistosomiasis and intestinal helminth infections. See appendix for a list of countries in each WHO mortality sub-region.

Source: World Health Organization (2004) The World Health Report 2004. WHO: Geneva. www.tobacco.int. Accessed July 2007.

Figure 2.2a Disability-adjusted life years lost by cause, 2002, Europe

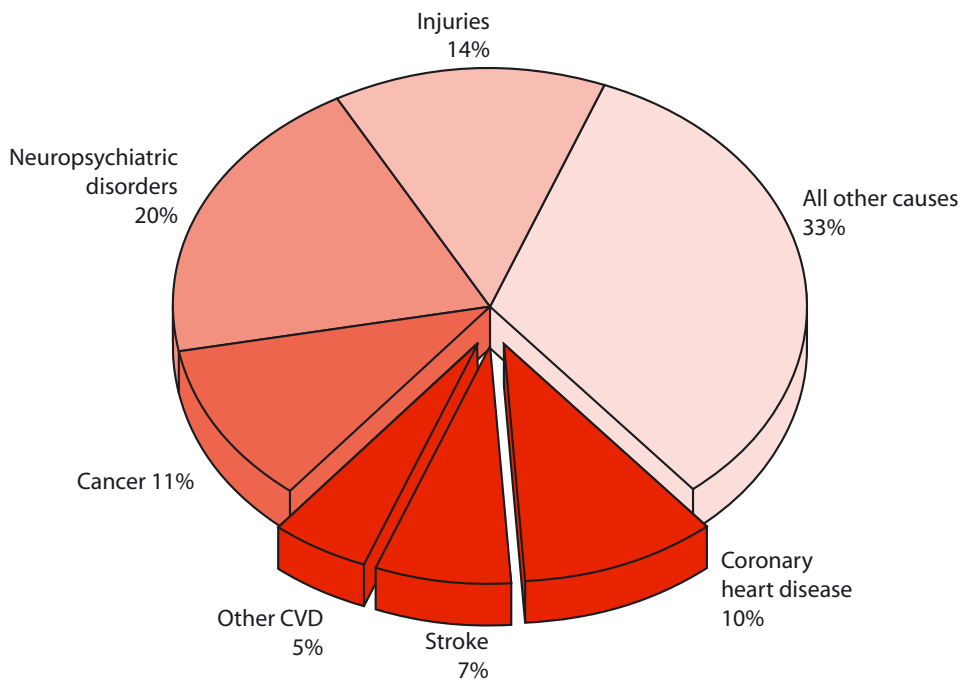


Figure 2.2b Disability-adjusted life years lost by cause, 2002, EU

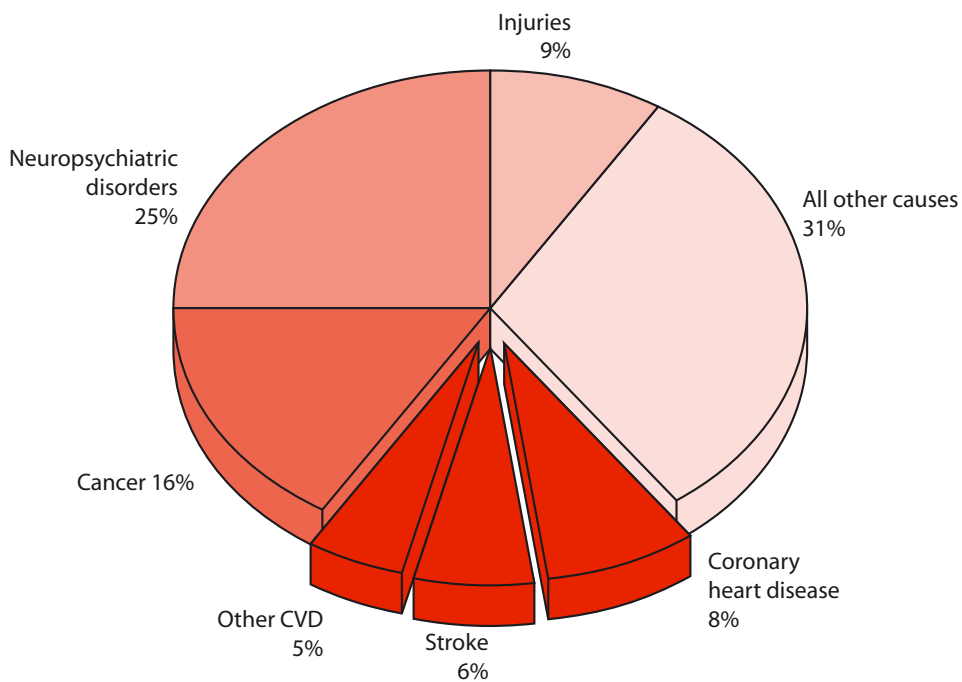


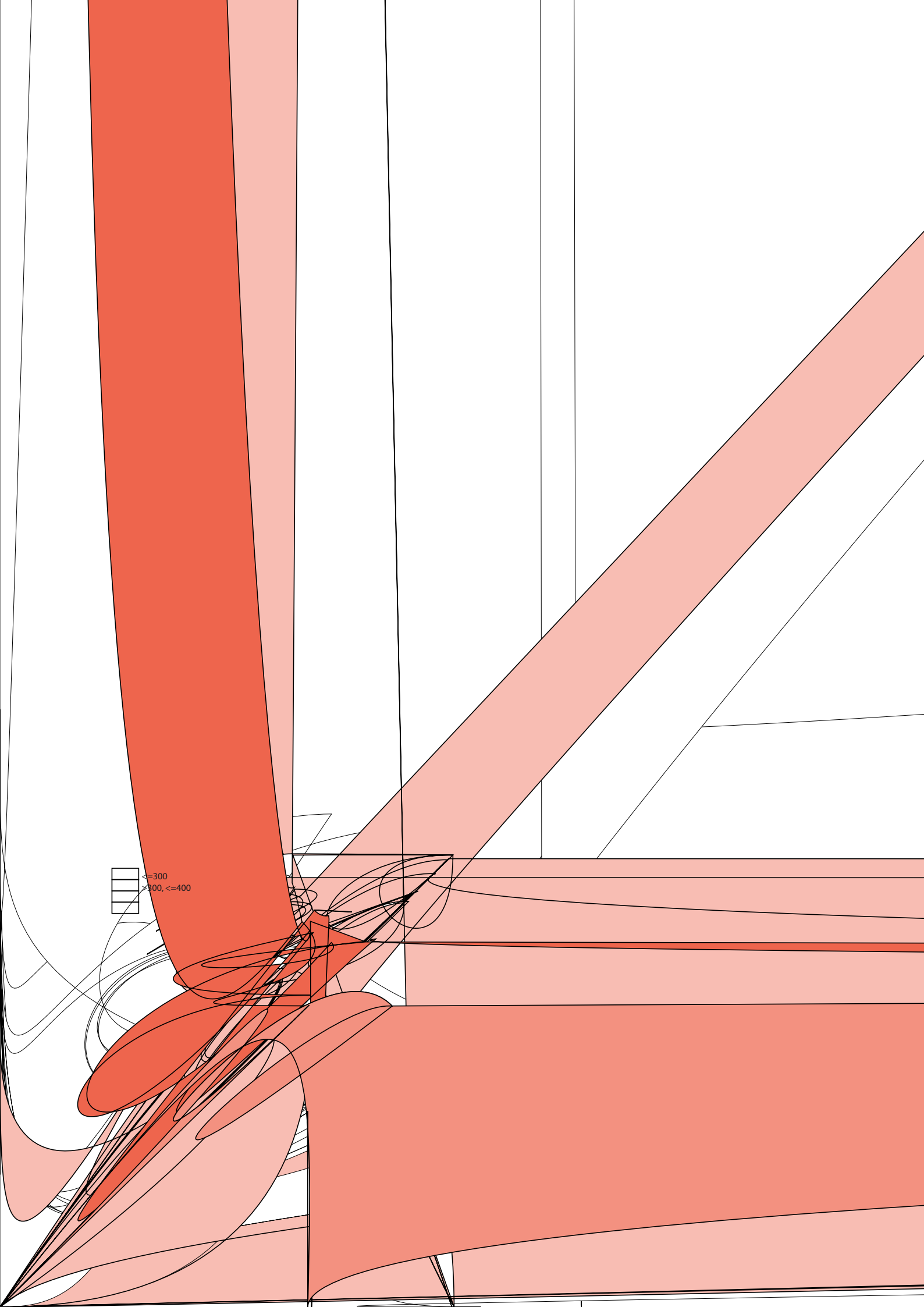
Table 2.3 Age-standardized DALYs rate for CHD, stroke and other CVD by country, 2002, Europe

	Age-standardized DALYs lost per 100,000		
	CHD	Stroke	Other CVD
Albania	1,107	1,006	884
Andorra *	313	271	266
Armenia	1,750	855	413
Austria	579	349	431
Azerbaijan	2,316	767	795
Belarus	2,497	1,239	543
Belgium	512	356	321
Bosnia and Herzegovina *	925	1,107	1,514
Bulgaria	1,344	1,188	1,485
Croatia	973	989	570
Cyprus	638	289	832
Czech Republic	945	629	452
Denmark	478	401	359
Estonia	1,449	819	714
Finland	687	411	299
France	259	271	360
Georgia	2,103	1,552	504
Germany	574	338	481
Greece	620	592	454
Hungary	1,137	731	654
Iceland	470	278	176
Ireland	671	361	359
Israel	370	214	284
Italy	409	335	363
Kazakhstan	2,452	1,469	1,326
Kyrgyzstan	1,885	1,939	687
Latvia	1,606	1,102	803
Lithuania	1,444	620	608
Luxembourg	403	420	397
Macedonia, TFYR	838	1,066	1,043
Malta	709	365	235
Moldova	1,922	1,327	312
Monaco *	247	250	322
Netherlands	460	329	411
Norway	503	309	267
Poland	949	598	657
Portugal	431	836	301
Romania	1,176	1,162	793
Russian Federation	2,630	1,747	1,174
San Marino	431	282	689
Serbia and Montenegro	1,087	1,102	1,149
Slovakia	1,037	387	795
Slovenia	552	524	492
Spain	368	294	274
Sweden	506	300	284
Switzerland	380	200	318
Tajikistan	1,886	571	1,912
Turkey	1,332	1,132	790
Turkmenistan	2,860	620	2,825
Ukraine	2,539	1,207	633
United Kingdom	657	359	298
Uzbekistan	1,907	975	1,159

Notes: The estimates should be interpreted as the best estimates of WHO, rather than the official viewpoint of member states. For details on age-standardization, see source.

* accuracy of estimates is lower than for other countries, due to data quality.

Source: World Health Organization (2004) *The World Health Report 2004*. WHO: Geneva.



≤300
300, <=400

3. Treatment

Hospital admissions

Rates of admissions (or more technically discharges) for CVD vary considerably across Europe. For example, the hospital admission rate is over four times higher in Belarus than in Portugal. In general, higher admission rates are found in Eastern European and Scandinavian countries. Similar geographical trends are seen for CHD and, to a lesser extent, stroke (Tables 3.1, 3.2 and 3.3).

Temporal trends in admission rates reflect patterns in mortality and morbidity discussed in previous chapters. Since 1995 (where comparable data across Europe are more readily available) the rates in some Eastern European and former Soviet countries have increased rapidly, whereas the rates in Western European countries have been relatively stable. In particular, the rates in Scandinavia have not increased substantially since 1995, suggesting that rates in Eastern European countries may soon overtake these rates. Similar temporal trends are apparent for CHD and stroke (Tables 3.1, 3.2 and 3.3).

Coronary revascularisation and other procedures for CVD

Rates of coronary revascularisation and other procedures for CVD vary widely across Europe. In general, Central and Eastern European countries have lower rates than Northern, Southern and Western countries. Within Northern, Southern and Western European countries there is no consistent geographical pattern but some countries, for example France, have high rates for all procedures (Table 3.4).

The differences in procedure rates are difficult to account for. For example, coronary artery bypass graft rates are much higher in Finland, Israel and Sweden than would be expected from comparisons of standardised mortality ratios for CHD. Similarly, rates are much lower than would be expected in Latvia, Estonia and Romania. Analysis of rates for percutaneous coronary interventions shows other anomalies: Germany, Israel and France have rates higher than expected whilst rates in Finland, Ireland and the UK are lower than would be expected, and rates in the Balkan states and Romania are much lower than expected (Figures 3.4a and 3.4b).

While rates of revascularisation vary widely across Europe, all countries have seen rates increase significantly since the 1990s. For example, since 1990 rates of PCI have increased twenty-fold in Hungary, fifteen-fold in Italy and twelve-fold in Finland. Most recently, the biggest increase in rates of PCI have been in Eastern European countries and Baltic States, including, for example, a twelve fold increase in Latvia between 1995 and 2000 (Table 3.5 and Figure 3.5).

Drugs

The European Society of Cardiology EUROASPIRE project has collected, among other data, information on drug prescriptions for cardiovascular conditions in hospitals in a number of European countries. While not necessarily representative of national prescribing patterns these data do give some indication of the scale of drug use across Europe. The EUROASPIRE II survey

showed that the use of drugs for secondary prevention in CHD patients varied considerably across survey populations, except in the case of anti-platelet drugs where over 80% of patients took this form of drug (mostly aspirin) in the countries studied. The use of beta blockers varied two-fold (from 44% in Hull and London, UK to 88% in Lille, France), as did the use of lipid-lowering drugs. The use of ACE inhibitors varied three-fold (from 19% in Malmo, Sweden to 69% in Ljubljana, Slovenia) (Table 3.6).

Recently data on the eight countries that have taken part in all three EUROASPIRE surveys to date have been released. Data from the most recent survey (2005/06) suggest that there is little variation in prescribing rates, particularly for anti-platelets and lipid-lowering drugs where all eight survey populations showed rates of at least 80%. There is some variation in the rate of prescribing beta blockers: 74% of patients in France compared to 96% of patients in Finland were prescribed these drugs (Table 3.6).

Since 1995/96 the prescription of lipid-lowering drugs has massively increased in Europe. The prescription rate for these drugs has at least doubled in all eight EUROASPIRE populations for which data are available. In Italy, the rate has more than tripled, increasing from 25% in 1995/96 to 91% in 2005/06. There has also been a large increase in the prescription of ACE inhibitors, although in general the prescription rates for these drugs are lower than for lipid-lowering drugs¹.

This general increase in the use of drugs for secondary prevention noted by EUROASPIRE, has also been found in more representative studies carried out at a national level. For example, data from the Myocardial Infarction National Audit Project (MINAP) in the UK show a rapid increase in the use of beta blockers, lipid-lowering drugs (statins) and aspirin in people discharged from hospital following a heart attack, with prescription rates for these drugs now standing at 92%, 96% and 97% respectively in England, and 93%, 95% and 99% in Wales².

1. Wood D (2007) *Clinical reality of coronary prevention in Europe: a comparison of EURO ASPIRE I, II and III surveys. Lessons learned from the Euro Heart Survey Programme. Presentation at the European Society of Cardiology annual congress, Vienna, September 2007.*
2. Royal College of Physicians (2007) *How Hospitals Manage Heart Attacks. Sixth Public Report of the Myocardial Infarction National Audit Project.* London: Royal College of Physicians. See <http://www.rcplondon.ac.uk/pubs/contents/1236173e-ec7d-49be-ae16-322ed16f7de6.pdf>

Table 3.1 Rates of hospital discharges from CVD, 1970 to 2005, Europe

	Discharges per 100,000											
	1970	1975	1980	1985	1990	1995	2000	2001	2002	2003	2004	2005
Albania						417	540	520	614	665	646	623
Andorra							586	610	799	799	729	727
Armenia			1,092	1,236	1,225	762	639	599	676	786	833	931
Austria					3,253	3,589	4,074	3,938	4,036	4,009	4,061	
Azerbaijan					1,481	595	472	484	515	541	570	572
Belarus						3,415	4,577	4,749	5,049	5,226	5,309	5,165
Belgium						2,235	2,377	2,352	2,324	2,275	2,303	
Bosnia and Herzegovina			964	905								
Bulgaria			1,451	1,790	1,779	1,774	1,869	2,013	2,292	2,600	2,911	2,840
Croatia				1,136	1,265	1,232	1,760	1,692	1,730	1,781	1,798	1,850
Cyprus			607	690	809	549	818	927	837	820	840	738
Czech Republic						3,051	3,379	3,431	3,495	3,592	3,635	3,743
Denmark					2,292	2,201	2,543	2,546	2,574	2,514	2,558	2,559
Estonia					2,338	2,664	3,239	3,237	3,168	3,309	3,387	
Finland					3,293	3,858	3,785	3,654	3,646	3,662	3,670	3,121
France							2,263	2,260	2,254	2,218	2,233	
Georgia					1,642	543	451	412	520	531	635	632
Germany						2,955	3,267	3,305	3,300	3,237	3,125	
Greece	778	978	1,191	1,404	1,593	2,010	2,309	2,432				
Hungary						3,171	4,239	4,039	4,248	4,448	4,949	4,977
Iceland					1,935		1,863	1,919	1,878	1,819	1,710	
Ireland						1,440	1,466	1,540	1,486	1,496	1,444	1,316
Israel					1,754	2,241	2,076	2,072	1,996	1,894		
Italy					2,128	2,349	2,582	2,572	2,552	2,444		
Kazakhstan					1,597	1,207	1,314	1,389	1,519	1,638	1,785	1,805
Kyrgyzstan			1,158	1,217	1,257	903	1,041	1,036	975	1,000	1,004	1,130
Latvia			1,898	2,423	2,445	2,598	3,144	3,137	3,175	3,289	3,399	3,636
Lithuania		1,634	1,978	2,628	2,687	3,201	4,102	4,164	4,231	4,369	4,483	4,570
Luxembourg							2,612	2,364	2,439	2,433	2,407	
Macedonia, TFYR				759		1,184	1,267	1,398	1,424	1,266	1,477	1,556
Malta							666	665	592	741	835	727
Moldova			1,316	1,626	1,727	1,580	1,315	1,311	1,558	1,983	2,032	2,023
Montenegro					1,059	1,249	1,325	1,448	1,585	1,759	1,733	1,636
Netherlands					1,420	1,589	1,409	1,374	1,416	1,456	1,549	
Norway						2,194	2,349	2,366	2,388	2,500	2,480	2,469
Poland			1,344	1,530	1,814	2,052			2,880	2,931		
Portugal						944	1,125	1,164	1,213	1,221	1,248	1,240
Romania			1,784	1,914	1,737	2,024	2,422	2,741	2,965	2,798	2,882	
Russian Federation					2,226	2,255	2,763	3,020	3,020	3,108	3,267	3,414
Serbia								1,590	1,571	1,691	1,798	1,796
Slovakia						2,534	2,443	2,569	2,539	2,501	2,564	2,679
Slovenia			1,286	1,391	1,424	1,560	1,685	1,738	1,718	1,745	1,792	
Spain					780	1,108	1,374	1,387	1,406	1,413		
Sweden					2,796	2,996	2,639	2,585	2,538	2,505	2,481	2,458
Switzerland								1,879	1,800	1,829		
Tajikistan					939	653	533	561	622	678	735	771
Turkey			270	390	531	896	909	962	1,051	1,153	1,220	
Turkmenistan						821			1,385			
Ukraine			2,119	2,601	2,792	2,568	2,612	2,791	2,964	3,105	3,280	3,462
United Kingdom							1,471	1,448	1,462	1,452		
Uzbekistan						1,217	959	1,059	1,178	1,234	1,269	1,394
European average					2,088	2,187	2,430	2,516	2,554	2,575	2,634	2,676
EU					1,977	2,194	2,411	2,435	2,463	2,444	2,458	2,454

Notes: Blank cells indicate that insufficient data were available for an estimate.

Source: World Health Organization (2007) European Health for all statistical database. <http://www.who.dk/bfadb> Accessed August 2007.

Table 3.2 Rates of hospital discharges from CHD, 1970 to 2005, Europe

	Discharges per 100,000											
	1970	1975	1980	1985	1990	1995	2000	2001	2002	2003	2004	2005
Albania						121	157	146	172	191	195	187
Andorra								126	142	186	156	124
Armenia			334	437	521	318	282	258	288	324	350	382
Austria					785	917	924	960	981	992	1,035	
Azerbaijan					499	201	154	162	155	166	184	175
Belarus						1,621	2,212	2,296	2,278	2,452	2,541	2,569
Belgium						689	742	720	716	711	722	
Bosnia and Herzegovina			181	139								
Bulgaria			460	524	545	553	542	542	489	579	663	722
Croatia				295	334	309	495	457	458	490	491	503
Cyprus			223	293	339	222	332	360	293	248	269	253
Czech Republic						1,223	1,101	1,107	1,087	1,126	1,071	1,063
Denmark					700	684	790	803	844	817	831	823
Estonia					936	990	1,117	1,093	1,033	1,038	1,047	
Finland					1,153	1,369	1,160	1,140	1,128	1,138	1,091	923
France							497	510	513	514		
Georgia					680	194	193	186	236	263	307	308
Germany						947	1,060	1,011	1,003	960	916	
Greece	191	241	296	412	521	722	777	829				
Hungary						961	1,113	943	879	895	1,040	998
Iceland					790		724	763	769	738	639	
Ireland						477	480	504	495	504	465	451
Israel					834	1,012	872	857	814	747		
Italy					493	520	600	593	606	599		
Kazakhstan					522	436	419	519	521	552	583	606
Kyrgyzstan			324	321	365	156	322	324	307	328	367	385
Latvia			849	1,094	1,163	1,166	1,263	1,278	1,269	1,342	1,339	1,381
Lithuania				1,283	1,327	1,526	1,415	1,371	1,374	1,387	1,388	1,397
Luxembourg							819	868	907	931	865	
Macedonia, TFYR				141		321	480	573	623	579	789	909
Malta							184	204	185	260	304	271
Moldova			508	689	665	562	419	373	444	571	578	547
Montenegro						342	398	458	488	559	595	541
Netherlands					546	614	526	512	523	524	555	
Norway						890	876	944	938	981	971	953
Poland			332	397	541	598			958	889		
Portugal						225	277	274	285	283	285	277
Romania						637	752	809	848	723	649	
Russian Federation					888	936	1,103	1,168	1,178	1,201	1,258	1,313
Serbia												
Slovakia						1,089	955	954	917	874	861	884
Slovenia		309	313	349	347	366	381	394	401	392		
Spain					202	285	363	361	365	362		
Sweden					868	959	905	912	878	856	818	783
Switzerland								567	535	540		
Tajikistan						174	122	136	169	176	195	217
Turkey			38	56	99	144	206	216	239	277	289	
Turkmenistan						269			37			
Ukraine			614	719	728	665	1,197	1,284	1,380	1,450	1,555	1,646
United Kingdom							547	540	545	533		
Uzbekistan						321	300	347	392	398	444	443
European average					669	711	817	834	843	848	867	883
EU					581	657	714	707	711	701	688	686

Notes: Blank cells indicate that insufficient data were available for an estimate.

Source: World Health Organization (2007) European Health for all statistical database. <http://www.who.dk/hfad/b> Accessed August 2007.

Figure 3.2 Rates of hospital discharge from CHD, latest available year, Europe

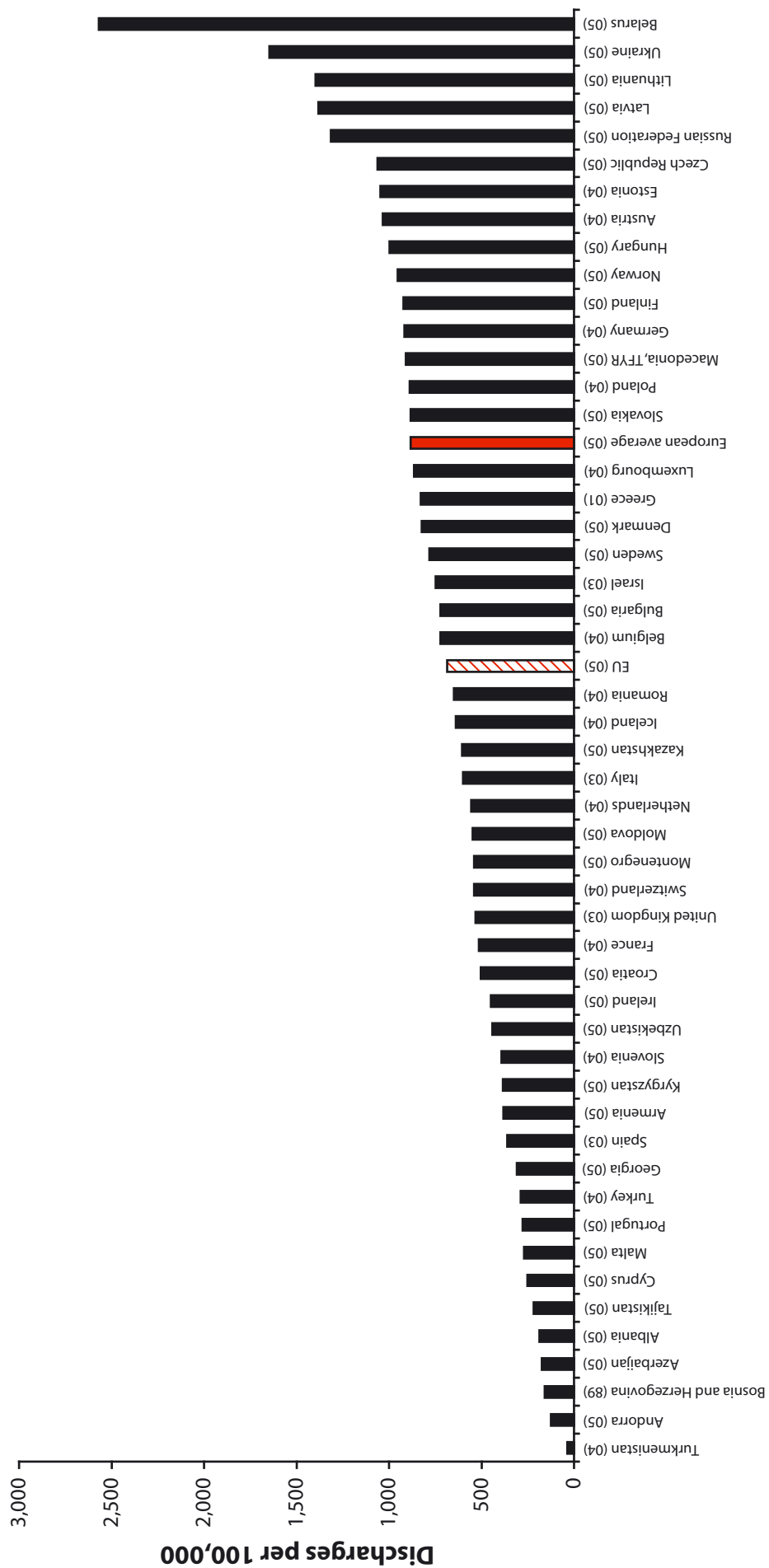


Table 3.3 Rates of hospital discharges from stroke, 1970 to 2005, Europe

	Discharges per 100,000											
	1970	1975	1980	1985	1990	1995	2000	2001	2002	2003	2004	2005
Albania						45	80	82	80	91	91	94
Andorra								107	123	113	101	121
Armenia			101	128	194	132	130	129	147	163	161	172
Austria					646	680	847	639	654	617	629	
Azerbaijan					113	53	45	48	53	48	52	52
Belarus						564	896	912	949	1,037	1,083	1,063
Belgium						362	394	394	391	377	379	
Bosnia and Herzegovina			131	119								
Bulgaria			134	268	293	323	426	468	586	666	717	593
Croatia				233	297	281	411	394	396	392	383	409
Cyprus			116	131	143	89	140	149	137	146	149	109
Czech Republic						558	629	625	639	638	626	647
Denmark					430	394	452	435	424	411	404	384
Estonia					380	497	502	499	535	570	608	
Finland					681	820	658	661	645	646	633	561
France							216	215	213	218		
Georgia					193	58	74	72	79	80	93	95
Germany						487	462	464	462	453	422	
Greece	117	190	230	256	274	330	404	424				
Hungary						598	832	845	969	1,082	1,325	1,395
Iceland					244		237	228	206	254	206	
Ireland						234	251	259	252	248	253	170
Israel					203	288	295	293	283	285		
Italy					394	436	489	494	503	491		
Kazakhstan					176	169	210	234	278	293	321	351
Kyrgyzstan			91	107	145	124	153	155	142	142	149	174
Latvia			282	383	445	542	638	669	695	713	732	795
Lithuania				408	512	671	780	825	912	956	1,013	1,055
Luxembourg							233	184	164	164	175	
Macedonia, TFYR				121		199	251	240	224	221	250	269
Malta							79	77	65	73	61	54
Moldova			181	230	293	270	271	247	328	418	429	475
Montenegro						163	160	174	195	201	197	197
Netherlands					175	194	185	186	193	201	213	
Norway						382	320	321	328	353	345	342
Poland			130	159	191	232			370	418		
Portugal						287	336	345	350	338	336	329
Romania						280	328	404	442	461	516	
Russian Federation					370	458	595	653	668	684	720	760
Serbia												
Slovakia						491	452	473	475	465	473	518
Slovenia			219	268	249	255	230	230	222	225	228	
Spain					117	198	249	261	266	268		
Sweden					613	617	446	418	422	417	418	417
Switzerland								214	212	207		
Tajikistan					109	31	38	44	52	42	47	56
Turkey			27	50	71	106	148	158	166	184	202	
Turkmenistan						82			169			
Ukraine			244	358	486	467	540	585	629	671	723	770
United Kingdom							213	218	227	225		
Uzbekistan						112	79	94	99	102	105	116
European average					343	379	428	446	460	468	484	495
EU					319	351	373	378	389	390	398	397

Notes: Blank cells indicate that insufficient data were available for an estimate.

Source: World Health Organization (2007) European Health for all statistical database. <http://www.who.dk/hfad/b> Accessed August 2007.

Table 3.4 Rates of various procedures for treating CVD, around 2000, Europe

	Procedures per million population							Implantable cardioverter defibrillators
	Coronary Angiograms	Percutaneous coronary interventions	Coronary stents	Open heart surgery	Valve surgery	Coronary artery bypass surgery	Pacemakers	
Austria	4,061	1,146	848	815		468		
Belgium	4,798	1,536	931	1,230			857	48
Bulgaria	397	126	38	171	56	78	169	0
Croatia		443		305				
Czech Republic	2,265	724	504	551	127	469	508	12
Denmark		825		993				
Estonia	1,530	388	237	475	111	323	364	0
Finland	2,522	607	365	1,054	183	921	361	19
France	4,009	1,560	1,501	679	214	408	798	18
Germany		2,194		1,191				
Greece	1,660	382	322				442	15
Hungary	1,667	249	191	525	119	281	368	14
Iceland	4,098	1,670	1,241	599	141	404	520	
Ireland		537		718				
Israel	4,719	2,377		1,266	156	879		
Italy	2,846	962						
Latvia	1,120	365	260	317	97	237	253	3
Lithuania	1,622	523	127	396	127	241	249	3
Macedonia, TFYR	967	415	385	151	21	115	80	1
Netherlands		1,091		904				
Norway				954				
Poland	1,520	527	298	438	66	303	358	7
Portugal	2,058	538	458	550	156	297	390	9
Romania	531	77	75	119	48	49	53	0
San Marino	2,253	789	789	113	188	413		
Spain	1,646	581	449	435	174	162	371	38
Sweden		857		1,061		659		
Switzerland	3,907	1,358	991	907		565	447	27
Turkey	1,348	249	150				24	
United Kingdom		564	473	645	79	444	326	18

Notes: Data collated by the European Society of Cardiology from national registries and reports from national cardiology societies. Data represent crude, non-standardised numbers per million population. Rates for coronary artery bypass grafting include operations with and without valve surgery.

Source: European Society of Cardiology (2004) Personal communication.

Figure 3.4a Crude rate of coronary artery bypass surgery, adults aged 35 to 74, around 2000, Europe

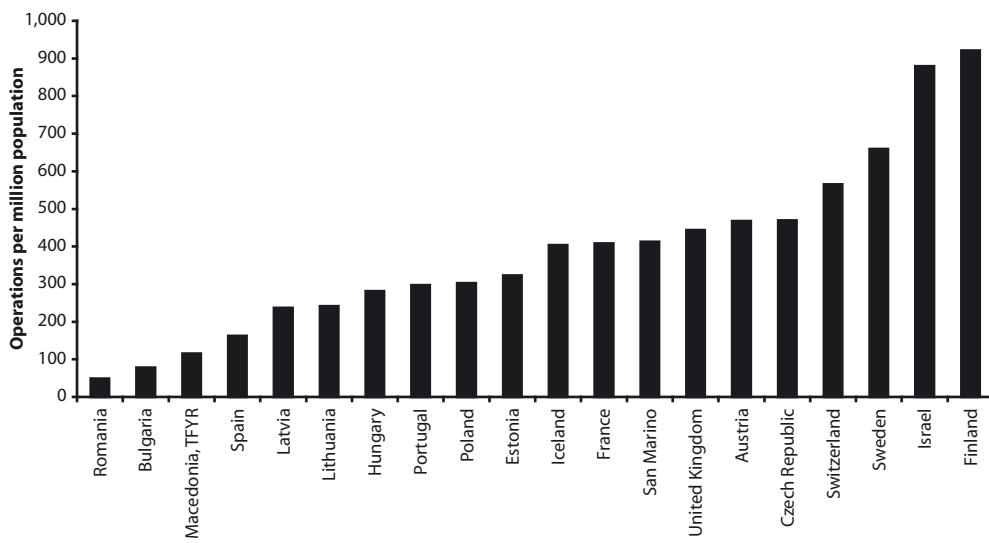


Figure 3.4b Crude rate of percutaneous coronary interventions, adults aged 35 to 74, around 2000, Europe

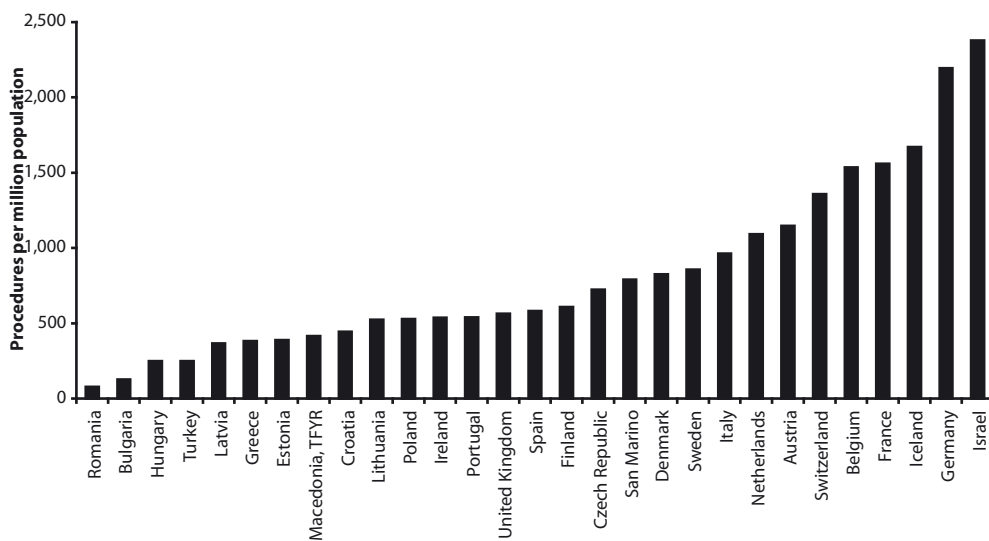


Table 3.5 Rates of percutaneous coronary interventions, 1990 to 2003, selected European countries

	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
Austria						733	882	942	1,059	1,040	1,291	1,482	1,686	
Belgium						1,133	1,375	1,291	1,459	1,336	1,647			
Croatia						55	58	82	260	443				
Czech Republic				89	112	177	338	513	637	724	899	935	958	
Denmark						293	429	535	730	825				
Estonia						155	236	261	321	430	388			
Finland	131	175	212	274	315	354	410	436	490	607	643	655	1,032	1,276
France	426	550	690	857	1,062	924	1,074	1,200	1,321	1,426	1,560	2,368	2,439	
Germany						1,335	1,533	1,682	1,788	2,024	2,194			
Greece				218	216	308	397	477	359	382				
Hungary	14	34	36	64	124	100	134	170	195	231	249	256	276	
Iceland	424	407	617	830	891	1,272	1,290	1,377	1,655	1,670	1,608			
Israel		464	622	999	1,207	1,299	1,402	1,502	2,006	2,377				
Italy	89	121	164	185	228	275	341	471	630					
Latvia					21	31	45	135	193	315	962	1,148	1,319	681
Lithuania						111	147	203	341	424	523			
Macedonia, TFYR				6	26	36	113	154	157	193	415			
Netherlands	537	583	691	723	795	859	904	943	972	1,012	1,091	1,147	1,205	
Poland						75	129	190	281	373	527			
Portugal		49	72	69	116	176	234	303	370	459	538			
Romania						8	21	18	43	68	77		148	
San Marino	174	261	174	332	266	678	549	347	648	789				
Spain	92	127	173	200	266	315	382	472	512	581	612	654		
Sweden	128	206	325	418	497	547	628	686	750	857	981	1,102		
Switzerland						953	1,082	1,248	1,341	1,358	1,537			
Turkey				80	117	157	197	242	252					
United Kingdom	147	165	200	213	237	296	349	388	421	473	563	660	758	

Notes: Data collated by the European Society of Cardiology from national registries and reports from national cardiology societies. Data represent crude, non-standardised numbers per million population.

Source: European Society of Cardiology (2004) Personal communication.

Figure 3.5 Rates of percutaneous coronary interventions per million population, 1990 to 2003, selected European countries

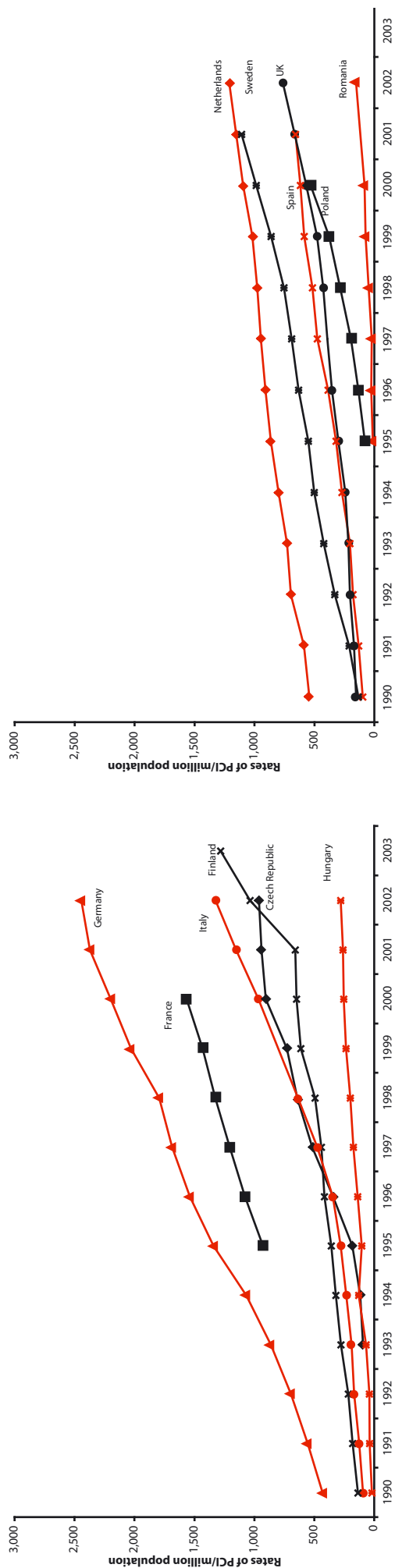


Table 3.6 *Reported medication, hospital patients with established CHD, around 1999/2000, EUROASPIRE II Survey populations*

Region	CHD hospital patients receiving medication					
	Anti-platelets %	Beta-blockers %	ACE inhibitors %	Lipid-lowering %	Anti-coagulants %	
Belgium	90	77	30	49		3
Czech Republic	88	74	47	57		4
Finland	82	88	24	64		11
France	86	60	39	68		3
Germany	86	68	45	68		5
Greece	92	55	32	47		4
Hungary	75	84	57	51		11
Italy	92	61	52	60		1
Netherlands	81	48	38	76		16
Poland	87	62	48	42		6
Republic of Ireland	93	47	27	62		4
Slovenia	82	66	59	58		9
Spain	86	47	22	65		6
Sweden	92	64	19	77		9
United Kingdom	81	44	27	69		4
Total	86	63	38	61		7

Notes: For age and sex breakdown of the survey samples, and for details of the diagnoses and surgical procedures, see source.

Source: EUROASPIRE II Study Group (2001) *Lifestyle and risk factor management and use of drug therapies in coronary patients from 15 countries: principal results from the EUROASPIRE II Euro Heart Survey Programme*. *European Heart Journal*, 22: 554-572.

4. Smoking

Smoking related mortality and morbidity

The long-term risk of smoking to individuals has been quantified in a 50-year cohort study of British doctors. Observing deaths in smokers and non-smokers over a 50-year period, the study concluded that “about half of all regular smokers will eventually be killed by their habit”^{1,2}.

In Europe, about 20% of deaths from CVD in men and about 3% of deaths from CVD in women are due to smoking. (The equivalent figures for the 25 countries that made up the EU in 2006 (EU-25) are 16% and 5% respectively). A higher proportion of premature deaths from CVD are due to smoking. In Europe, smoking causes 32% of CVD deaths in men aged 35 to 69 years and 6% of CVD deaths in women of the same age. In the EU-25 the equivalent figures are 28% and 13% respectively³.

Smoking is a major risk factor for many diseases other than CVD - notably cancer - which means that about 23% of all deaths in men living in Europe and about 5% of all deaths in women are due to smoking (23% and 7% in the EU-25) (Table 4.1). Over 1 million men and 200,000 women in Europe die from smoking each year (of which 375,000 men and 78,000 women die from CVD). In the EU-25 506,000 men and 148,000 women die from smoking each year (of which 135,000 men and 48,000 women die from CVD) (Table 4.1). In the EU-25, around 32% of deaths in men aged 35 to 69 are due to smoking, and around 12% of deaths in women in the same age band (Table 4.2).

Research from the World Health Organization has estimated the impact of smoking on total disease burden (both mortality and morbidity) in terms of disability-adjusted life years (DALYs) lost. The World Health Report 2002 estimates that in developed countries around 12% of all disease burden and over 20% of CVD is due to smoking⁴.

The INTERHEART case-control study estimated that 29% of heart attacks in Western Europe and 30% in Central and Eastern Europe are due to smoking, and that smokers and former smokers from these regions are at almost twice the risk of a heart attack compared to never smokers⁵.

Prevalence of smoking

Data from the World Health Organization’s “Health for All” database show that in all European countries (excluding Sweden) the prevalence of smoking is higher in men than it is in women. The difference in the prevalence of smoking between men and women is more marked in Eastern Europe than in Western Europe. For example, in Uzbekistan 24% of men smoke compared to only 1% of women, and in the Ukraine 62% of men smoke compared to only 17% of women (Table 4.3).

The prevalence of smoking in men is generally higher in Eastern and former Soviet countries - of the six European countries where more than half of men smoke, five were part of the Soviet Union; the sixth is Albania. In contrast, the male smoking rate in Western and Northern Europe is in general less than 35%, with the exception of Germany (37%) and the Netherlands (35%).

This pattern is reversed for women, where smoking rates are very low in former Soviet states (6% in Georgia, 2% in Kyrgyzstan, 1% in Uzbekistan), low in Eastern and Central European countries but higher in Western and Northern European countries (Table 4.3 and Figures 4.3a and 4.3b).

Data from the Health Behaviour in School-aged Children survey on smoking among 15 year olds suggest that the traditional gender smoking patterns may be beginning to change. In more than half of the countries included in the survey in 2001/02, a greater proportion of 15 year old girls smoked than did boys. This was particularly the case for Western European countries (e.g. Portugal, 18% boys smoked at least once a week vs. 26% of girls). Smoking is more prevalent among 15 year old boys in Eastern European and former Soviet countries, but the gap between the sexes is less marked than is seen for adults (e.g. Russian Federation, 27% boys vs. 19% girls) (Table 4.4 and Figures 4.4a and 4.4b).

Passive smoking

The relationship between passive smoking and various non-communicable diseases has been studied since the mid 70s and a number of relationships between passive smoking and a variety of health problems – including CVD and cancer – have been observed⁶.

It is estimated that nearly 80,000 people in the EU-25 died from passive smoking in 2002, of which over 32,000 died from CHD. Over 25,000 passive smoking deaths were in the United Kingdom or Germany alone (Table 4.5).

Smokers tend to live with other smokers, so many of the deaths due to passive smoking are amongst smokers. But nearly 20,000 non-smokers died of passive smoking in the EU-25 in 2002, over half of which died from CHD (Table 4.5).

Trends in smoking prevalence

Over the past 25 years the prevalence of smoking amongst men has fallen in many Northern, Southern and Western European countries. The prevalence of smoking amongst women has also fallen in some, but not all, of these countries. In many countries where there has been a decline in the prevalence of smoking amongst women the decline has been less marked. For example between 1980 and 2005 the prevalence of smoking in Swedish men fell by nearly 60% but in Swedish women it fell by just 35%. This has meant that the difference in smoking prevalence between men and women has become less pronounced in recent years (Table 4.3).

In Western European countries the male premature mortality rate due to smoking fell between 1990 and 2000 (in some countries by between 40% and 50%), whereas this mortality rate increased in Belarus, the Russian Federation, Romania and Ukraine over this time period. The pattern is not as clear in women, where the premature mortality rate due to smoking increased in some Western (Netherlands, France) and Eastern (Hungary, Poland) European countries, and fell in other Western and Eastern countries (Table 4.2 and Figures 4.2c and 4.2d).

Trend data on the prevalence of smoking in 15 year olds around Europe seem to suggest a general increase, especially amongst girls, but the data are sparse (Table 4.3).

1. Doll R, Peto R, Boreham J and Sutherland I (2004) Mortality in relation to smoking: 50 years' observations on male British doctors. *BMJ*; 328: 1519-27.
2. For a detailed discussion of the health effects of tobacco use, see the recent European Commission publication prepared by the ASPECT (Analysis of the Science and Policy for European Control of Tobacco) consortium, European Commission (2004) Tobacco or Health in the EU: past, present and future. Luxembourg: Office for Official Publications of the European Union and http://europa.eu.int/comm/health/ph_determinants/life_style/Tobacco/Documents/tobacco_fr_en.pdf
3. Peto R, Lopez AD, Boreham J, Thun M (2003) Mortality from smoking in developed countries 1950-2000. 2nd edition. Oxford: Oxford University Press. For table see www.heartstats.org.
4. World Health Organization (2002) *The World Health Report 2002. Reducing Risks, Promoting Healthy Life*. Geneva: World Health Organization.
5. See table 4 and figure 5 from Yusuf S, Hawken S, Ounpuu S, Dans T, Avezum A, Lanas F, McQueen M, Budaj A, Pais P, Varigo J, Lisheng A, on behalf of the INTERHEART Study Investigators (2004) Effect of potentially modifiable risk factors associated with myocardial infarction in 52 countries (the INTERHEART Study): case-control study. *The Lancet*; 364: 937-952.
6. *The Smoke Free Partnership* (2007) *Lifting the smokescreen. 10 reasons for a smoke free Europe*. Brussels: European Respiratory Society.

Table 4.1 Total number of deaths and number of deaths due to smoking by cause, adults aged 35 and over, by sex, 2000

	MALE DEATHS				FEMALE DEATHS					
	All causes		CVD		All causes		CVD		Cancer	
	Total	Due to smoking	Total	Due to smoking	Total	Due to smoking	Total	Due to smoking	Total	Due to smoking
Austria	35,211	6,332	16,259	1,951	41,569	2,553	23,852	988	9,225	832
Belarus	70,202	17,508	33,595	8,053	64,665	0	38,806	0	7,857	0
Belgium	32,330	15,915	17,243	3,473	32,573	2,732	21,305	710	11,800	849
Bulgaria	61,520	9,977	38,692	5,130	53,567	1,171	37,449	674	6,521	248
Croatia	25,477	6,686	11,758	2,454	24,769	3,053	14,954	577	4,851	363
Czech Republic	54,882	14,098	26,468	5,369	34,119	3,648	17,421	1,740	12,661	1,135
Denmark	27,761	6,570	9,754	1,478	29,283	5,800	10,777	1,513	7,646	1,710
Estonia	9,265	2,320	4,296	1,053	9,138	431	5,686	258	1,559	88
Finland	24,042	4,132	9,925	1,712	25,274	972	11,474	329	5,030	309
France	272,040	54,247	75,140	9,823	258,810	5,860	86,773	1,212	56,908	2,327
Germany	388,981	84,015	161,360	22,981	449,816	24,497	233,683	8,252	101,113	7,926
Greece	55,455	12,061	24,885	3,868	49,764	1,726	27,398	720	9,100	524
Hungary	70,475	21,445	31,827	8,287	65,126	7,279	37,046	3,290	14,548	2,277
Ireland	16,192	3,307	6,449	880	15,199	2,422	6,217	734	3,587	675
Italy	280,714	66,269	107,433	15,796	279,407	13,267	132,997	4,144	65,143	4,262
Latvia	16,155	3,729	7,710	1,299	16,050	424	10,156	248	2,568	87
Lithuania	20,408	4,652	9,077	1,848	18,511	0	11,853	0	3,403	0
Luxembourg	1,857	445	651	107	1,852	125	790	41	435	37
Macedonia, FYR	1,801	1,801	4,880	718	7,926	242	4,790	120	1,208	60
Malta	1,513	243	688	66	1,460	51	702	21	349	15
Moldova	21,162	3,107	10,379	1,197	20,062	214	12,619	117	2,014	37
Netherlands	68,773	18,759	23,638	4,175	71,754	6,966	25,553	1,686	17,028	2,304
Norway	21,676	3,359	8,659	828	22,342	2,110	9,532	596	4,915	641
Poland	195,390	56,892	83,678	20,578	172,638	11,780	91,729	5,005	36,537	3,570
Portugal	55,346	7,590	18,675	1,642	50,487	476	22,319	130	8,755	141
Romania	136,325	27,625	75,512	12,169	119,495	4,883	61,895	2,648	17,236	1,005
Russian Federation	1,179,775	303,210	545,162	148,231	1,045,557	29,188	686,211	16,433	132,472	4,702
Serbia and Montenegro	61,656	14,187	31,567	5,623	56,422	3,760	34,420	1,844	8,475	797
Slovakia	28,157	7,162	13,558	2,855	24,567	848	15,325	421	4,886	234
Slovenia	9,557	2,337	3,395	646	9,031	455	4,109	147	2,080	152
Spain	189,488	45,055	57,056	8,274	170,923	417	68,667	71	34,321	232
Sweden	45,710	4,678	20,877	1,295	47,806	3,509	22,400	1,103	10,120	1,123
Switzerland	30,411	5,556	11,011	2,754	32,134	1,767	13,899	471	6,934	635
Ukraine	382,260	90,177	196,536	41,685	375,822	7,971	267,340	4,300	41,972	1,220
United Kingdom	290,186	63,475	113,784	15,758	318,180	51,312	122,959	14,969	73,175	15,186
Total EU-25	2,214,295	506,742	845,516	135,489	2,237,793	147,846	1,027,530	47,825	492,693	46,083
Total EU-25 (% of deaths due to smoking)		23%	84%	16%		7%		5%		9%

Notes: Figures are indirect estimates from projected National Vital Statistics. See source for details.

Source: Peto R, Lopez AD, Boreham J, Thun M (2003). Mortality from smoking in developed countries 1950-2000. 2nd edition (data updated June 2006). Oxford: Oxford University Press. See www.deathsfromsmoking.net

Table 4.2 *Total all-cause mortality rate and smoking attributable all-cause mortality rate by age and sex, Europe, 1950 to 2000*

	All-cause mortality rate per 1,000							
	1950		1975		1990		2000	
	Not due to smoking	Due to smoking	Not due to smoking	Due to smoking	Not due to smoking	Due to smoking	Not due to smoking	Due to smoking
MEN AGED 35 TO 69								
Austria			10.5	4.0	7.9	3.1	6.1	2.1
Belarus					11.1	6.3	15.7	7.9
Belgium			8.6	6.0	6.0	4.2	5.1	3.4
Bulgaria					10.9	4.7	11.4	4.5
Czech Republic					10.5	7.7	8.1	4.7
Denmark			8.2	3.7	7.7	3.8	6.4	2.6
Estonia					12.9	7.7	13.9	6.6
Finland					9.3	3.4	7.5	1.7
France	15.0	1.6	10.3	3.4	7.1	3.6	5.9	2.8
Germany			10.1	4.4	7.8	3.7	6.3	2.6
Greece			6.9	2.8	5.5	2.7	5.2	2.6
Hungary			11.3	4.4	12.3	8.5	11.1	7.8
Ireland	13.6	1.6	9.5	4.8	7.8	3.5	6.6	2.1
Italy			8.9	4.2	6.0	3.6	4.9	2.2
Latvia					12.4	7.3	14.8	6.6
Lithuania					11.3	6.7	12.5	5.4
Luxembourg			10.4	6.6	7.2	4.0	5.9	2.9
Malta			9.5	5.9	6.6	2.8	5.6	1.9
Moldova					13.0	5.8	14.4	4.2
Netherlands	8.3	2.0	6.9	5.4	5.8	3.7	5.3	2.5
Norway			9.2	2.0	7.6	2.1	5.5	1.6
Poland			10.4	4.8	10.5	7.7	9.2	6.0
Portugal			13.9	2.0	9.1	2.2	7.4	2.1
Romania					10.8	4.7	10.9	5.3
Russian Federation					12.2	8.4	19.1	9.9
Slovakia					12.1	7.5	10.3	5.8
Spain			9.2	2.8	6.2	2.9	5.3	2.7
Sweden			9.1	1.6	7.0	1.4	5.4	1.0
Switzerland			7.6	3.8	6.0	2.8	5.1	1.8
Ukraine					11.3	7.3	16.7	7.8
United Kingdom	10.8	5.6	8.0	6.3	6.9	3.7	5.9	2.1
Total EU-25			9.5	4.5	7.5	4.1	6.4	2.9
Total EU-25 (% of deaths due to smoking)				32%		35%		32%
MEN AGED 70 TO 79								
Austria			66.2	18.4	48.2	10.9	38.7	8.2
Belarus					59.9	14.2	66.3	15.8
Belgium			60.6	22.3	41.2	20.0	34.1	16.2
Bulgaria					70.6	7.3	70.5	6.8
Czech Republic					69.3	19.5	51.3	13.8
Denmark			52.4	13.5	47.8	16.8	39.8	14.7
Estonia					63.9	14.8	55.6	17.2
Finland					50.8	15.5	40.2	11.1
France	82.1	0.9	61.7	20.0	50.8	15.5	40.2	11.1
Germany			61.1	10.8	39.8	9.3	34.2	7.5
Germany			67.2	19.5	50.4	13.3	38.1	10.2
Greece			45.8	10.9	41.2	10.9	35.9	9.9
Hungary			68.8	18.0	64.1	17.8	56.3	17.5
Ireland	81.6	0.2	62.3	15.3	53.0	18.3	46.8	13.9
Italy			60.0	12.9	40.8	12.9	32.6	11.2
Latvia					68.0	15.3	60.6	14.4
Lithuania					54.8	15.0	51.2	14.0
Luxembourg			62.5	19.7	44.0	18.6	35.9	12.1
Malta			81.5	7.7	53.1	12.5	45.9	7.8
Moldova					67.4	9.0	73.4	5.7
Netherlands	59.4	3.6	46.8	20.0	39.8	21.6	37.4	16.0
Norway			58.3	5.8	50.7	8.8	37.4	8.0
Poland			66.5	13.7	62.0	16.7	50.3	17.1
Portugal			88.6	5.4	56.0	6.9	45.8	6.7
Romania					64.0	6.5	60.8	7.8
Russian Federation					65.0	18.4	73.8	19.6
Slovakia					65.1	14.0	58.6	15.4
Spain			61.1	10.6	39.5	11.2	33.2	10.2
Sweden			56.8	7.4	48.2	5.9	37.5	5.0
Switzerland			51.7	12.1	40.9	11.7	33.4	8.5
Ukraine					61.9	15.8	73.0	15.5
United Kingdom	79.8	7.6	56.5	26.9	44.7	18.0	38.9	12.6
Total EU-25			61.9	16.8	46.6	13.8	38.2	11.2
Total EU-25 (% of deaths due to smoking)				21%		23%		23%

Table 4.2 continued

	All-cause mortality rate per 1,000							
	1950		1975		1990		2000	
	Not due to smoking	Due to smoking	Not due to smoking	Due to smoking	Not due to smoking	Due to smoking	Not due to smoking	Due to smoking
WOMEN AGED 35 TO 69								
Austria			6.9	0.4	4.8	0.4	3.5	0.5
Belarus					7.1	0.1	8.6	0.0
Belgium			7.0	0.2	4.5	0.4	3.8	0.5
Bulgaria					7.2	0.3	6.9	0.4
Czech Republic					7.0	0.7	5.0	0.7
Denmark			6.1	0.7	5.1	1.9	4.2	1.9
Estonia					7.6	0.6	7.1	0.3
Finland			6.7	0.1	4.8	0.2	3.8	0.2
France	9.8	0.0	6.1	0.0	4.1	0.1	3.4	0.2
Germany			7.2	0.2	5.2	0.4	3.8	0.5
Greece			5.3	0.3	3.9	0.2	3.2	0.2
Hungary			8.2	0.5	7.8	1.3	6.2	1.6
Ireland	12.2	0.0	6.8	1.4	5.0	1.3	4.2	1.0
Italy			6.1	0.2	4.2	0.2	3.2	0.2
Latvia					7.5	0.5	7.3	0.1
Lithuania					6.9	0.2	6.4	0.0
Luxembourg			8.0	0.0	5.4	0.6	3.9	0.5
Malta			9.1	0.0	5.3	0.0	4.2	0.1
Moldova					10.6	0.3	9.7	0.3
Netherlands	8.5	0.0	5.6	0.0	4.2	0.5	3.6	1.0
Norway			5.3	0.1	4.1	0.6	3.3	0.8
Poland			7.1	0.3	6.8	0.8	5.3	0.8
Portugal			7.6	0.0	5.3	0.0	4.1	0.1
Romania					7.6	0.5	7.1	0.5
Russian Federation					7.6	0.5	9.9	0.3
Slovakia					7.5	0.3	5.8	0.4
Spain			6.1	0.0	3.9	0.0	3.1	0.1
Sweden			5.4	0.2	4.0	0.5	3.3	0.7
Switzerland			5.3	0.1	3.8	0.3	3.1	0.4
Ukraine					7.3	0.5	8.9	0.3
United Kingdom	9.5	0.5	6.2	1.4	4.7	1.5	3.9	1.1
Total EU-25			6.6	0.3	4.9	0.5	3.9	0.5
Total EU-25 (% of deaths due to smoking)				5%		9%		12%
WOMEN AGED 70 TO 79								
Austria			49.3	1.4	32.2	1.5	24.8	1.8
Belarus					44.8	0.4	48.4	0.0
Belgium			49.6	0.8	31.3	0.9	24.7	1.5
Bulgaria					53.7	0.9	52.4	0.9
Czech Republic					51.3	2.2	36.9	2.7
Denmark			37.4	2.0	30.3	5.7	25.4	8.9
Estonia					46.2	1.5	39.7	2.8
Finland			48.6	0.2	35.3	1.3	25.8	1.5
France	59.7	0.0	39.5	0.0	24.4	0.2	19.8	0.5
Germany			52.9	0.7	35.4	1.4	25.0	1.7
Greece			42.5	1.3	34.5	1.2	28.8	1.2
Hungary			56.4	3.0	47.7	4.3	40.5	4.1
Ireland	69.3	0.0	47.8	3.8	33.2	7.4	28.5	7.5
Italy			45.1	0.9	28.6	1.3	22.0	1.3
Latvia					48.1	1.2	40.4	1.5
Lithuania					41.4	1.6	35.0	0.0
Luxembourg			62.9	0.7	33.4	0.4	25.5	2.0
Malta			69.0	0.0	39.2	0.0	31.9	1.8
Moldova					53.3	2.1	54.8	0.0
Netherlands	59.9	0.0	40.7	0.0	28.6	1.2	25.2	3.1
Norway			39.2	0.0	30.9	1.7	22.4	3.7
Poland			50.5	0.9	44.7	2.3	36.3	2.3
Portugal			59.2	0.0	39.1	0.0	29.9	0.3
Romania					51.8	0.8	47.3	1.8
Russian Federation					47.4	2.0	52.9	1.8
Slovakia					47.4	1.4	42.3	1.2
Spain			47.9	0.0	28.1	0.0	21.9	0.0
Sweden			38.6	1.0	28.1	1.5	22.2	2.4
Switzerland			38.0	0.0	26.2	1.3	20.6	1.5
Ukraine					47.0	2.3	52.6	1.2
United Kingdom	63.8	0.8	42.4	3.7	30.6	6.2	25.5	6.9
Total EU-25			47.3	1.2	32.7	2.0	25.6	2.2
Total EU-25 (% of deaths due to smoking)				2%		6%		8%

Notes: Blank cells indicate that insufficient data were available for the estimate.

Source: Peto R, Lopez AD, Boreham J, Thun M (2003). Mortality from smoking in developed countries 1950-2000. 2nd edition (data updated June 2006). Oxford: Oxford University Press. See www.deathsfromsmoking.net

Figure 4.2a All-cause mortality due to smoking, men aged 35 to 69, Europe, 2000

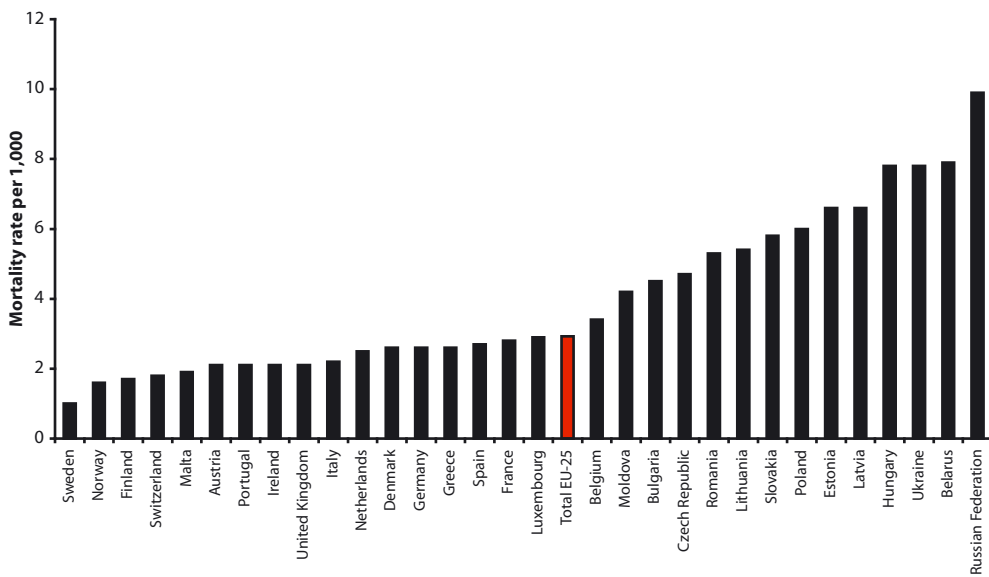


Figure 4.2b All-cause mortality due to smoking, women aged 35 to 69, Europe, 2000

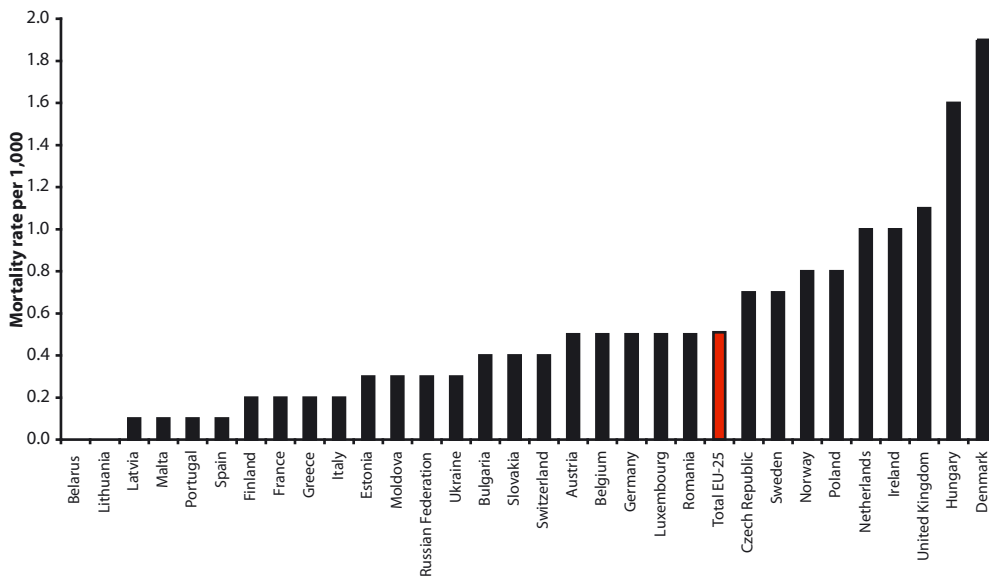


Figure 4.2c Change in mortality rate due to smoking between 1990 and 2000, men aged 35 to 69, Europe

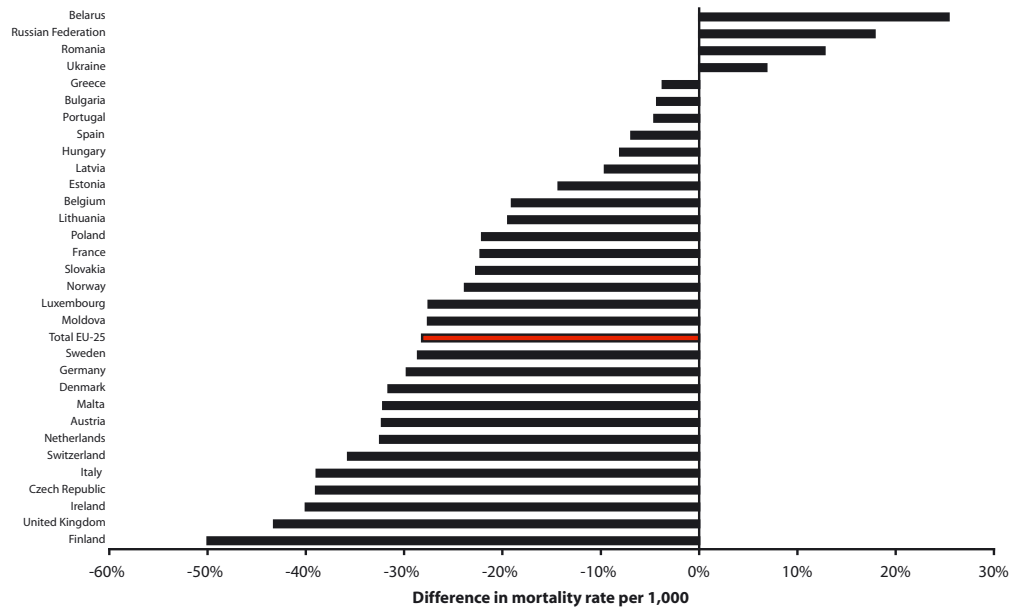
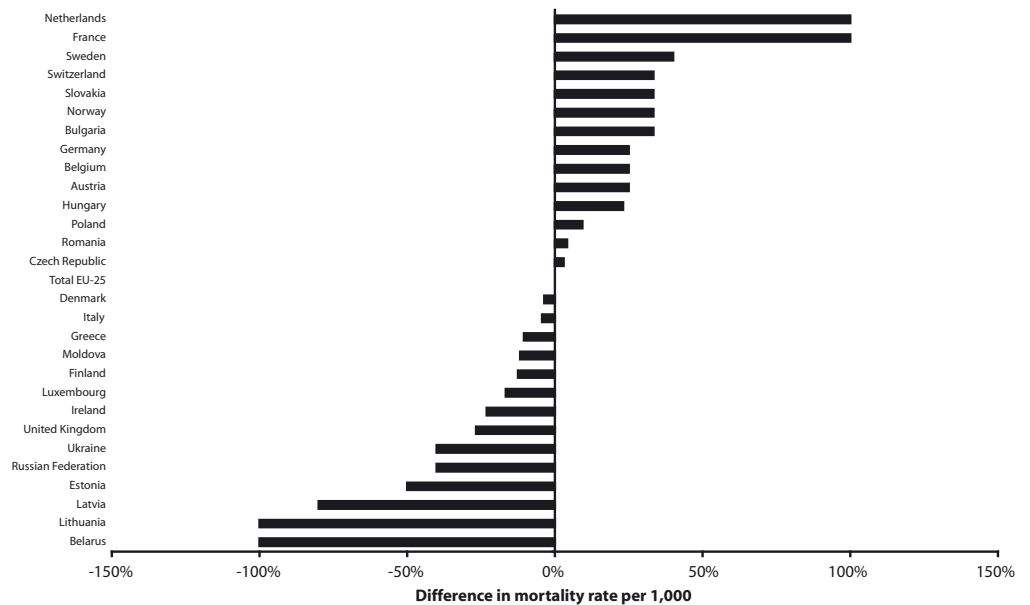


Figure 4.2d Change in mortality rate due to smoking between 1990 and 2000, women aged 35 to 69, Europe



Note: No change in EU-25 mortality rate between 1990 and 2000

Table 4.3 Prevalence of smoking by sex, adults aged 15 and over, Europe, 1980 to 2005

	1980	1985	1990	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005
	%	%	%	%	%	%	%	%	%	%	%	%	%	%
MEN														
Albania			50						60					
Andorra						44					42			
Armenia							64			68				60
Austria		34	39	37		30								
Belarus				55	55	53	55	54	54	53	53	53	54	54
Belgium	49	43	33	33	34	31	30	31	36	34	33	30	26	23
Bosnia and Herzegovina											49			
Bulgaria		49		49	49					44				
Croatia					34				34			34		
Cyprus						29					44			
Czech Republic			38		33			30	36	26	31	32	31	
Denmark			39	38	36	34	34	35	32	34	31	31	29	
Estonia			49		48		42		44		45		42	
Finland	34	33	31	29	27	30	30	27	27	29	28	26	27	26
France	46		38		35				33		31		30	
Georgia						43	53			53				
Germany									39			37		
Greece			53	49					47					
Hungary			44	46				44	38			37		
Iceland		33	29	27	28	28	25	25	23	25	22	25	22	
Ireland	39	34	30	31							28		24	24
Israel	46	39	37	31	32	31	33		30		32	32	33	32
Italy			35	34	35	34	33	33	32		32	31		
Kazakhstan					60					47				41
Kyrgyzstan						60		60		51			41	41
Latvia			49				53	49	51		51		47	
Lithuania			43		47		49		52		44		39	42
Luxembourg		41	32	28			39		34		35	39	36	32
Macedonia, TFYR								40						
Malta			40	34							30			
Moldova									40	39	36	34	32	38
Netherlands	46	40	43	41	40	39	39	36	36	39	38	36	35	35
Norway	41	40	37	34	34	34	34	32	31	30	29	27	27	26
Poland			51		44				42		40		38	42
Portugal	42	39	38		33			33						
Romania		44	37						32			33		
Russian Federation			47				62		62	60			61	
San Marino			28											
Serbia									46					
Slovakia			33				41							
Slovenia			35		33			30		28				24
Spain			44	44		42			39			34		
Sweden	34	28	24	22	21	17	17	19	17	18	16	17	15	14
Switzerland			34			39				27	31		24	
Turkey		63										49		
Ukraine				49					58					62
United Kingdom	39	34	29	29	29		28		29	28	27	28	26	
Uzbekistan											24			
WOMEN														
Albania			8						18					
Andorra						28					30			
Armenia							1			3				2
Austria		17	24	13		19								
Belarus				4	5	5	5	5	7	6	6	7	7	8
Belgium	27	26	22	24	27	22	23	26	26	22	25	25	15	16
Bosnia and Herzegovina											30			
Bulgaria				17	24					23				
Croatia				32					27			22		
Cyprus						8						11		
Czech Republic			26		20			17	22	20	18	23	20	
Denmark			35	33	32	30	31	27	29	26	26	25	23	
Estonia			19		22		20		20		18		21	
Finland	18	18	20	20	18	20	20	20	20	20	20	19	20	18
France	17		20		21				21		22	21		
Georgia							12			6				
Germany						30			31			31		
Greece			30	29					29					
Hungary			27	28				21	23			25		
Iceland		32	28	27	28	26	25	26	23	23	21	20	19	
Ireland	32	30	28	28					31		26		24	24
Israel	30	29	26	25	25	25	25		24		18	18	18	19
Italy			17	17	18	18	18	17	17	17	17			
Kazakhstan					7					8				9
Kyrgyzstan						12		12		5			2	2
Latvia			11				18	13	18		19		18	
Lithuania			6		10		13		16		13		14	10
Luxembourg		25	26	28			27		26		25	26	26	22
Macedonia, TFYR								32						
Malta			18	15							18			
Moldova									2	2	2	2	2	4
Netherlands	33	32	31	31	32	32	31	32	29	30	29	28	27	26
Norway	32	33	33	32	33	33	32	32	31	30	29	25	25	24
Poland			29		24				23		25		26	25
Portugal	7	9	15		8			10						
Romania		11	9									10		
Russian Federation			12				11		13	16			15	
San Marino			17											
Serbia									31					
Slovakia			16				15							
Slovenia			23		21			20		20				22
Spain			21	25		25				25		22		
Sweden	28	26	25	24	23	22	21	19	21	20	19	18	18	18
Switzerland			23			28				21	23		20	
Turkey		24										18		
Ukraine				21					14					17
United Kingdom	34	31	28	26	28		26		25	26	25	24	23	
Uzbekistan											1			

Notes: 'Smoking' defined as regular daily smoking. Blank cells indicate that data were not available. Estimates for grouped years are averages of all available annual estimates.

Source: World Health Organization (2007) European health for all statistical database. <http://www.euro.who.int/hfad> Accessed 16th July 2007.

Figure 4.3a Prevalence of smoking, men aged 15 and over, Europe, latest available year

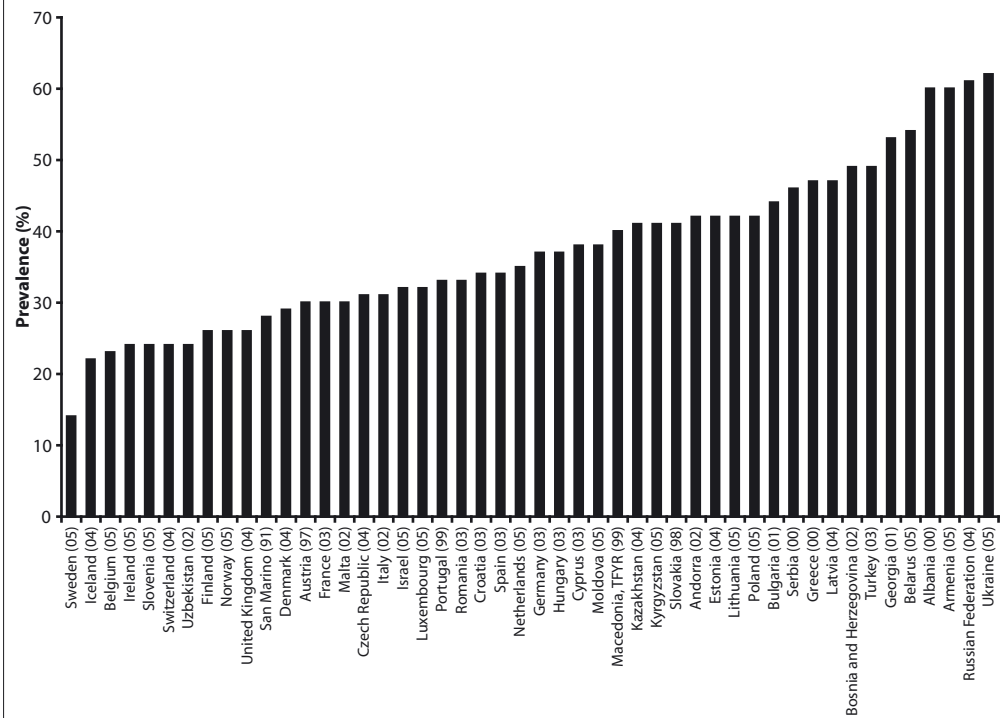


Figure 4.3b Prevalence of smoking, women aged 15 and over, Europe, latest available year

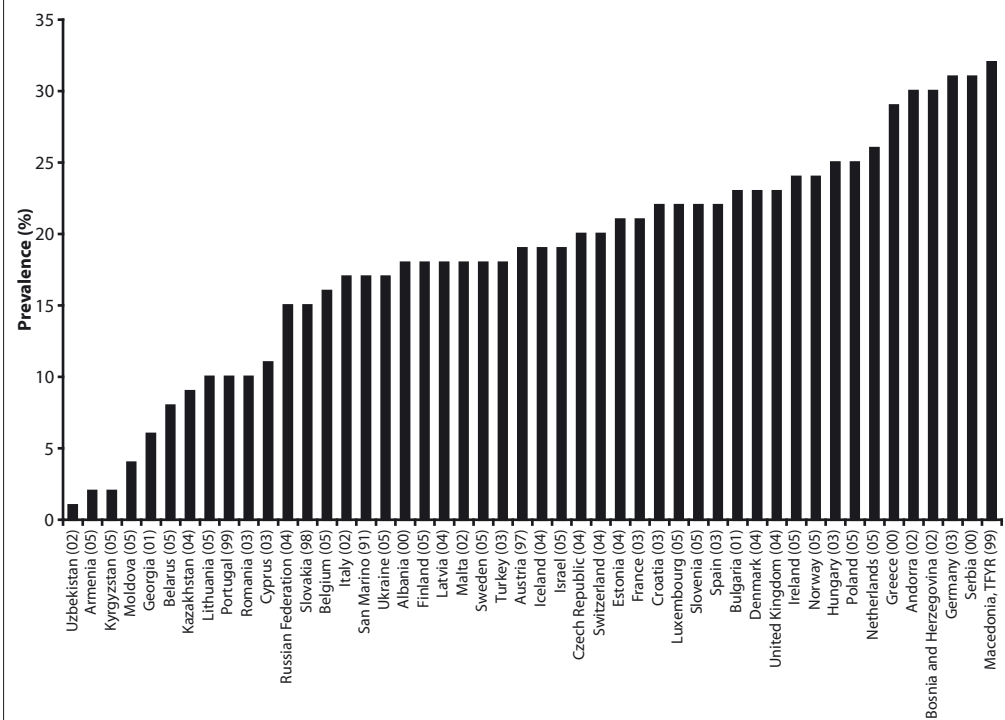


Table 4.4 Prevalence of smoking by sex, 15 year olds, 1989/90 to 2001/02, Europe

	BOYS				GIRLS			
	1989/90	1993/94	1997/98	2001/02	1989/90	1993/94	1997/98	2001/02
	%	%	%	%	%	%	%	%
Austria	23	29	30	26	20	31	36	37
Belgium (Flemish)	15	32	28	23	17	18	28	23
Belgium (French)		23		22		21		24
Croatia				23				25
Czech Republic		16	22	29		12	18	31
Denmark		14	20	17		24	28	21
Estonia		22	24	30		6	12	18
Finland	33	30	25	28	32	26	29	32
France		23	28	26		25	31	27
Germany		21	28	32		29	33	34
Greece			18	14			19	14
Hungary	31	25	36	28	20	19	28	26
Ireland			25	20			26	21
Israel			24	17			13	12
Italy		9		22		9		25
Latvia		33	37	29		14	19	21
Lithuania		15	24	35		4	10	18
Macedonia, TFYR				15				13
Malta				17				17
Netherlands				23				24
Norway	21	20	23	20	23	21	28	27
Poland	20	23	27	26	10	13	20	17
Portugal			19	18			14	26
Russian Federation		19	24	27		10	22	19
Slovakia		19	28			5	18	
Slovenia				30				30
Spain	18	20		24	27	27		32
Sweden	15	15	18	11	20	19	24	19
Switzerland		17	25	25		18	25	24
Ukraine				45				23
United Kingdom - England			25	21			33	28
United Kingdom - Northern Ireland		23	20			25	28	
United Kingdom - Scotland	16	21	22	16	18	26	28	23
United Kingdom - Wales	14	18	22	16	22	27	29	27

Notes: Smoking defined as smoking at least once a week.

Data collected using representative national samples of schoolchildren, with the exception of France, Germany and the Russian Federation, where the samples were drawn from regions. In 1993/94 and 1997/98 these regions were Nancy and Toulouse, North Rhine-Westphalia, and St Petersburg respectively. In 2001/02 national samples were collected for France and the Russian Federation, and the regional sample for Germany was collected in Berlin, Hessen, North Rhine-Westphalia and Saxony.

Source: World Health Organization (2003) *Young people's health in context. Health Behaviour in School-aged Children (HBSC) study: international report from the 2001/02 survey.* WHO: Copenhagen, and previous editions.

Figure 4.4a Prevalence of smoking, boys aged 15, 2001/02, Europe

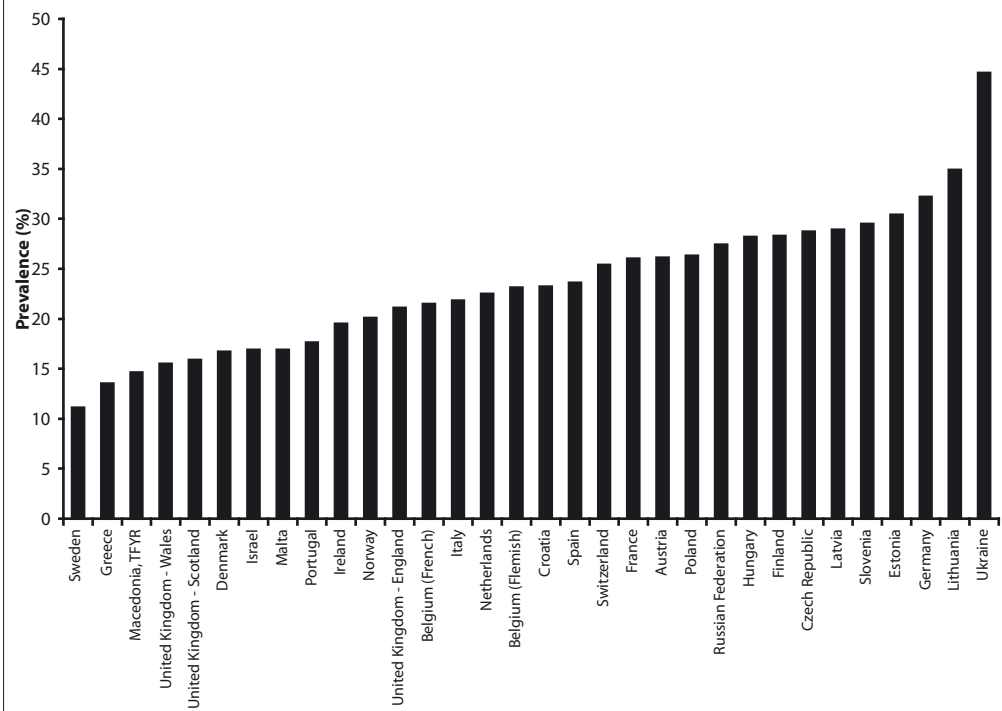


Figure 4.4b Prevalence of smoking, girls aged 15, 2001/02, Europe

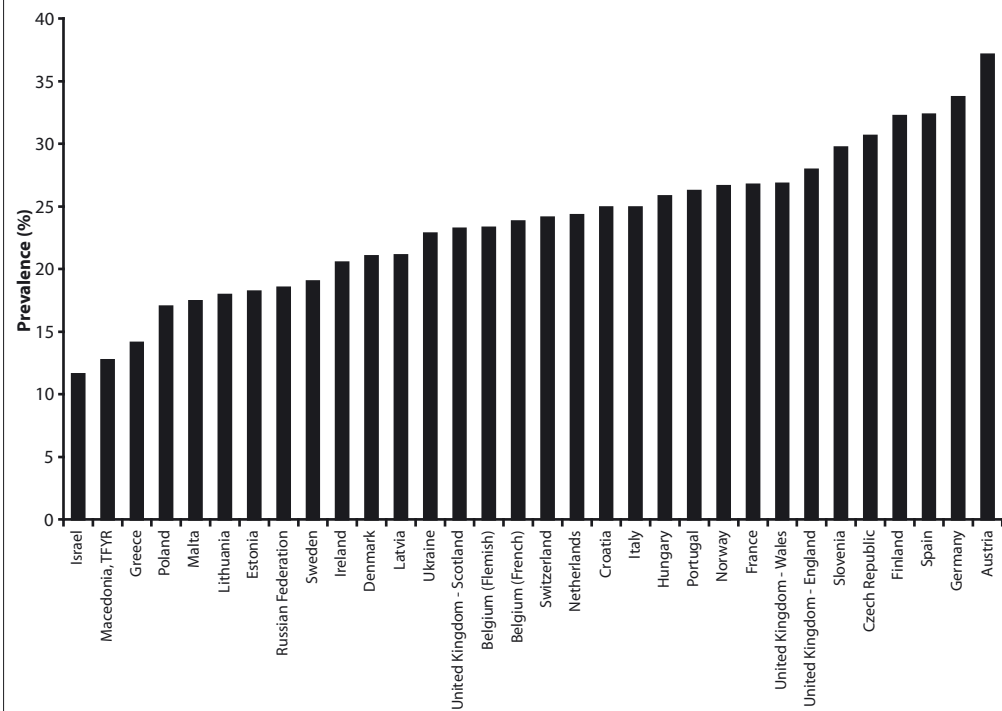


Table 4.5 Estimated number of deaths attributable to passive smoking, adults aged 20 and over, Europe, 2002

	Deaths attributed to passive smoking in non-smokers			Deaths attributed to passive smoking in all adults		
	CHD	Stroke	Total	CHD	Stroke	Total
Austria	146	69	268	426	310	1,029
Belgium	243	164	522	719	727	2,133
Czech Republic	526	313	956	1,455	1,346	3,501
Denmark	217	114	428	627	505	1,714
Estonia	57	45	108	217	225	499
Finland	82	59	159	274	271	659
France	510	392	1,114	1,902	1,997	5,863
Germany	2,452	1,085	4,000	7,536	4,892	15,609
Greece	238	288	568	791	1,282	2,416
Hungary	555	313	959	1,766	1,421	3,940
Iceland	6	2	9	20	11	40
Ireland	89	31	140	294	145	566
Italy	835	625	1,778	2,513	2,788	7,180
Latvia	243	151	414	703	673	1,507
Lithuania	240	86	345	800	420	1,362
Luxembourg	10	7	20	30	33	86
Malta	11	4	17	31	19	59
Netherlands	269	161	562	806	729	2,332
Norway	98	46	176	267	188	626
Poland	933	692	1,826	3,390	3,514	8,720
Portugal	145	271	457	368	939	1,519
Slovakia	362	109	519	995	469	1,733
Slovenia	37	30	79	108	124	303
Spain	680	517	1,498	2,082	2,328	6,305
Sweden	91	43	151	267	184	539
Switzerland	163	62	267	470	270	1,003
United Kingdom	1,526	769	2,690	4,950	3,520	10,944
EU-25	10,239	6,279	19,242	32,342	28,591	79,449

Notes: Estimates based on population attributable proportions applied to routinely collected mortality data for passive smoking-related conditions. See source for details.

Source: Smoke Free Partnership and the European Heart Network (2006) *Lifting the smokescreen. 10 reasons for a smoke free Europe*. European Respiratory Society: Brussels.

5. Diet

Mortality and morbidity attributable to poor diets

It is universally recognised that a diet which is high in fat, salt and free sugars, and low in complex carbohydrates, fruit and vegetables increases the risk of chronic diseases – particularly CVD and cancer. These risks are outlined in the World Health Organization (WHO) report *Diet, nutrition and the prevention of chronic diseases*¹. The more recent WHO report *Global strategy on diet, physical activity and health* outlined the need to improve diets in individuals and populations across the world².

Whilst estimates of the impact of the total diet on mortality and morbidity are rare, the WHO have produced estimates of the contribution of individual elements of the diet. For example, the World Health Report 2002 estimates that around 4% of all disease burden in developed countries is caused by low fruit and vegetable consumption, and that just under 30% of CHD and almost 20% of stroke in developed countries is due to fruit and vegetable consumption levels below 600g per day³.

Prevalence of poor diets

The data on diets in Europe presented here come from two sources: a questionnaire based survey carried out by the WHO Regional Office for Europe and food supply data published by the Food and Agriculture Organization (FAO) of the United Nations.

For the questionnaire data the WHO requested information from dietary surveys, but dietary surveys should be interpreted with caution; surveys may be conducted using different methods, at different times and with differing base populations.

The data published by the FAO is calculated from the food produced in and imported into countries minus the food exported, fed to animals, or otherwise not available for human consumption. This amount is then divided by the population size. The FAO data thus provide an estimate of average *availability* per person rather than actual food *consumption*. It is therefore likely to give figures which are higher than actual food consumption in wealthy countries where substantial amounts of food are wasted, and to give figures which are lower than actual consumption in countries where people grow crops or raise animals in their back gardens or small holdings.

Data from the FAO and WHO suggest that the average diet in many European countries is poor. The WHO recommends that average fruit and vegetable intake should be at least 400g of fruit and vegetables per person per day¹. The average adult intake of fruit and vegetables is less than 400g of fruit and vegetables per day in 20 of the 25 countries for which data are available (Table 5.1)⁴.

Both the WHO survey and the FAO data show that fruit and vegetable intake is higher in Southern European countries than it is in Northern, Western, Central and Eastern European countries. For example, the FAO data indicate that people in Greece eat more than twice as much fruit

and vegetables as in the UK, Sweden and Germany and three times as much as in Ukraine and Kazakhstan (Table 5.1, Table 5.2 and Figure 5.2a).

The WHO recommends that average fat intake should be between 15% and 30% of total energy intake, and average saturated fat intake should be no more than 10% of total energy intake¹. Twenty one of 26 European countries where data are available do not meet the target for total fat (Table 5.3). The five countries that achieve the WHO recommendation are all in Eastern Europe - in general, Western European countries have an average fat intake of 35% or more of total energy, with some countries (Iceland, Belgium) over 40%. This East / West divide is also shown by the FAO data which suggest that, for example, fat intake is 35% lower in Romania than in Switzerland (Table 5.2 and Figure 5.2a). However, the FAO data do indicate generally lower levels of fat intake than the WHO data - with 22 out of 48 European countries for which FAO data is available meeting the goal of less than 30% of total energy from fat (Table 5.4).

The level of saturated fat intake is likely to be a better indicator of a poor diet than the level of total fat intake, as total fat also includes healthy vegetable fats. A secondary analysis of FAO food intake data has estimated the intake of saturated fat across Europe. This shows that the highest levels of saturated fat intake are in France, Switzerland, the Netherlands, Iceland, Belgium and Finland. Of the 46 European countries included in this analysis, less than half (22) meet the WHO population goal of less than 10% of energy from saturated fats (Table 5.5).

Trends in diets

FAO data show that over the past 30 years levels of fat consumption have remained stable while fruit and vegetable intake has increased in many Northern and Western European countries. For example, the average fruit and vegetable intake in Denmark more than doubled from the early seventies (307g per person per day) to the early 2000s (629g per person per day) (Table 5.4). In Southern, Central and Eastern European countries where fat intake was historically low, intakes are currently rising. Conversely fruit and vegetable consumption has not increased, and is even in decline in some countries (e.g. Cyprus). It appears that dietary patterns in Europe are converging (Table 5.2 and Table 5.4).

1. World Health Organization (2003) *Diet, nutrition and the prevention of chronic diseases. Report of a Joint AHO/FAO Expert Consultation*. Geneva: World Health Organization.
2. World Health Organization (2004) *Global strategy on diet and physical activity*. Geneva: World Health Organization. See www.who.int/gb/ebwha/pdf_files/WHA57/A57_9-en.pdf
3. World Health Organization (2002) *The World Health Report 2002. Reducing Risks, Promoting Healthy Life*. Geneva: World Health Organization.
4. *One of the countries that achieved an average consumption of fruit and vegetables greater than the 400g target (Italy) included potatoes in the definition of fruit and vegetables. The WHO target is for fruit and vegetables consumption excluding potatoes.*

Table 5.1 Fruit and vegetable consumption by country, adults by sex, latest available year, Europe

	Year of survey	Age group surveyed	Vegetables (g/person/day)			Fruit (g/person/day)			Fruit and veg (g/person/day)		
			Men	Women	Total	Men	Women	Total	Men	Women	Total
Austria*	Early 1990s	19+			145			183			328
Azerbaijan	1994/95	18+			121			46			166
Belgium*	1980/84	25-74	139	172	155	207	205	206	346	377	360
Croatia	1990	18+			157			142			299
Denmark	1995	19-64	109	119	115	142	174	159	251	293	273
Estonia	1997	18+	241	209	225	249	270	259	380	377	378
Finland*	1992	25-64									433
France*	1993/94	19-64	93	109	202	189	184	187	282	293	288
Germany - East*	1991/92	18-80							338	359	349
Germany - West*	1987/88	18-88							231	257	244
Hungary	1992/94	19+									360
Iceland	1990	18+	72	71	72	134	169	152	206	240	224
Ireland	1994/96	18+	121	114	118	93	129	111	214	243	229
Italy*	1994/96	18-60							431	434	433
Kazakhstan	1996	18+	129	130	130	31	39	35	163	172	168
Latvia	1997	19-64	201	167	183	66	97	83	267	264	266
Lithuania	1997	18+	211	168	189	138	202	170	349	369	359
Macedonia, FYR	1996	18+			230			144			374
Norway	1993/94	16-79	125	134	130	209	212	211	334	346	341
Portugal	1980	19-64	233	219	226	172	174	173	405	393	399
Slovenia	1997	18+			337			179			516
Spain - Catalonia*	1992	18-60							455	500	480
Sweden*	1989	15-74							240	290	265
Ukraine	1997	18+			190			87			285
United Kingdom*	1986/87	16-64							253	242	248
Uzbekistan	1984	18+	352	309	330	79	78	78	431	386	408

Notes: *Vegetables* does not include potatoes except in Italy and Germany.

Source: World Health Organization (1999), personal communication;

* British Journal of Nutrition (1999) Food-based Dietary Guidelines - A Staged Approach. Volume 81 Supplement Number 2.

Table 5.2 Quantity of fruit and vegetables consumed, Europe, 1969/71 to 2001/03

	Quantity consumed (g/person/day)					
	1969-1971	1979-1981	1990-1992	1993-1995	1995-1997	2001-2003
Albania				503		714
Armenia				493		591
Austria	498	566	570		526	603
Azerbaijan				348		506
Belarus				339		410
Bosnia and Herzegovina				476		577
Bulgaria				495		506
Croatia				426		554
Cyprus	999	852	746		711	766
Czech Republic				384		401
Denmark	307	323	424		443	629
Estonia				268		443
Finland	200	327	375		362	435
France	594	489	573		609	651
Georgia				378		357
Germany	456	466	558		530	561
Greece	939	1,059	1,183		1,162	1,145
Hungary				434		499
Iceland	171	242	330		351	447
Ireland	263	379	398		392	528
Israel	908	744	906		1,017	960
Italy	798	754	861		817	817
Kazakhstan				165		379
Kyrgyzstan				172		413
Latvia				301		400
Lithuania				302		440
Macedonia,TFYR				650		650
Malta	429	519	583		719	621
Moldova				467		413
Netherlands	469	495	626		575	661
Norway	353	393	419		443	504
Poland				454		429
Portugal	553	438	711		784	831
Romania				525		590
Russian Federation				297		380
Serbia and Montenegro				449		548
Slovakia				311		345
Slovenia				440		548
Spain	601	722	850		702	749
Sweden	327	360	427		421	508
Tajikistan				342		240
Turkey	798	850	862		877	909
Turkmenistan				336		357
Ukraine				340		384
United Kingdom	379	382	457		439	526
Uzbekistan				420		398

Notes: Estimates refer to the amount of food available for human consumption as estimated by the Food and Agriculture Organization food balance sheets. Actual food consumption may be lower than the quantity shown due to wastage and losses of food in the household. Fruit and vegetables do not include potatoes or other starchy roots, or pulses.

Source: Food and Agriculture Organization statistics division. http://www.fao.org/statistics/faostat/foodsecurity/index_en.htm accessed August 2007.

*Figure 5.2a Quantity of fruit and vegetables consumed,
Europe, 2001/03*

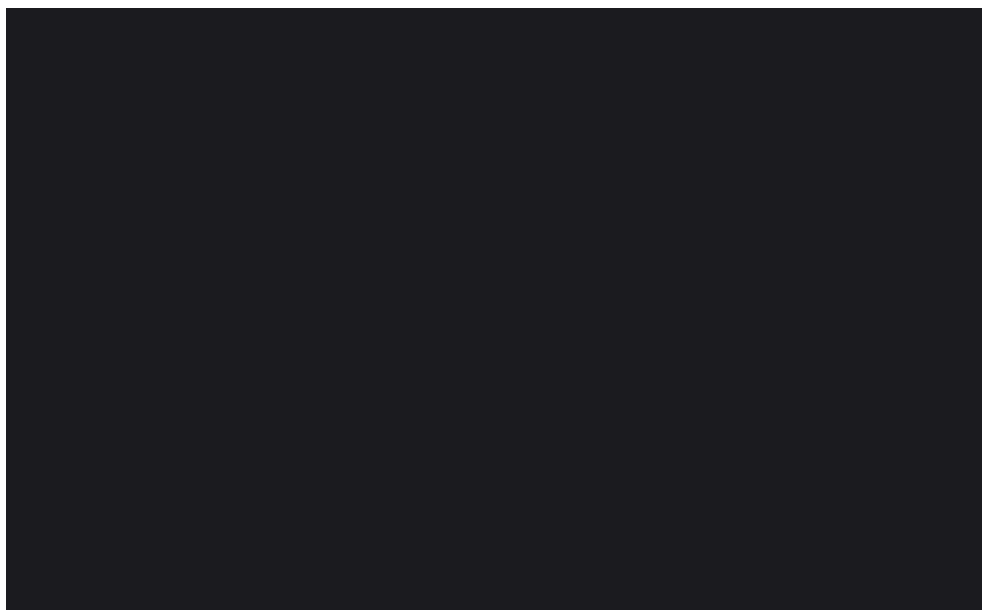


Table 5.3 Percentage of total energy from fat by country and sex, adults, latest available year, Europe

	Year of survey	Age group surveyed	Men	Women	Total
Austria*	Early 1990s	19+			38.2
Azerbaijan	1994/95	18+			16.4
Belgium*	1980/84	18+	41.8	42.6	42.2
Croatia	1990	18+			36.0
Denmark*	1995	15-80	37.0	37.0	37.0
Estonia	1997	18+	36.4	36.2	36.3
Finland*	1992	25-64			33.8
France*	1993/94	19-64	37.7	40.0	38.9
Germany - East*	1991/92	18-80	41.3	43.9	42.6
Germany - West*	1987/88	18-88	38.4	39.2	38.8
Hungary	1992/94	19+	38.1	38.0	38.1
Iceland	1990	18+	42.6	40.3	41.5
Ireland	1990	18+	34.8	35.0	34.9
Italy*	1994/96	18-60	31.7	33.3	32.6
Kazakhstan	1996	18+			28.0
Latvia	1997	19-64	42.7	41.2	42.0
Lithuania	1997	18+	45.4	42.6	44.0
Netherlands	1997/98	22-64			35.9
Norway	1993/94	16-79	31.0	30.0	30.5
Portugal	1980	19-64	37.5	31.5	34.5
Slovenia	1997	18+	43.7	44.9	44.3
Spain - Catalonia*	1992	18-60	37.5	38.4	38.0
Sweden*	1989	15-74	37.0	36.0	36.5
Turkey	1984	18+			24.0
Ukraine	1997	18+			25.1
United Kingdom*	1986/87	16-64	38.0	39.0	38.5
Uzbekistan	1984	18+	29.0	28.3	28.7

Source: World Health Organization (1999), personal communication;

* British Journal of Nutrition (1999) Food-based Dietary Guidelines - A Staged Approach. 81; Suppl 2.

Table 5.4 Quantity of fat consumed and percentage of energy from fat, Europe, 1969/71 to 2002/04

	Quantity of fat consumed (g/person/day)										Percentage of energy from fat					
	1969-1971	1979-1981	1990-1992	1993-1995	1995-1997	2001-2003*	2002-2004*	1969-1971	1979-1981	1990-1992	1993-1995	1995-1997	2001-2003*	2002-2004*		
Albania				80		86	85				25		27	27		
Armenia				36		47	50				17		19	19		
Austria	125	146	158		159	162	154	35	40	40		40	39	37		
Azerbaijan				35		41	43				15		14	14		
Belarus				98		99	92				28		30	29		
Belgium				44		162	149				15		40	37		
Bosnia and Herzegovina				93		58	59				15		19	19		
Bulgaria				73		87	87				26		28	28		
Croatia	106	104	122		127	132	126	30	33	35		36	37	35		
Cyprus				109		115	111				32		32	30		
Czech Republic	141	135	134		134	140	137	41	39	37		36	36	35		
Denmark				89		96	94				29		27	26		
Estonia	126	129	126		127	119	119	36	38	36		37	36	34		
Finland	127	148	163		164	170	164	35	39	42		42	39	42		
France				32		52	61				14		19	21		
Georgia	127	136	145		145	141	135	36	37	38		39	36	35		
Germany	109	124	143		149	145	140	32	34	36		37	36	34		
Greece				139		149	141				37		38	35		
Hungary						117	126	35	39	35		34	36	35		
Ireland	114	143	122		131	130	132				33		33	32		
Ireland	125	137	134		136	132	133				32		36	33		
Israel	105	108	122		123	149	133				31		36	33		
Italy	109	129	149		147	157	149	29	32	37		38	38	36		
Kazakhstan				80		80	85				22		26	27		
Kyrgyzstan				56		54	55				21		16	16		
Latvia				90		109	106				27		33	31		
Lithuania				80		100	104				25		27	27		
Lithuania				68		91	95				24		29	30		
Maccedonia, TFYR						112	110				31		28	28		
Malta	99	112	113			110	109	28	31	31		30	28	28		
Moldova				62		54	55				19		18	18		
Netherlands	132	130	139		142	144	139	39	38	37		40	38	36		
Norway	132	144	131		134	144	140	39	39	37		37	36	36		
Poland				110		112	110				30		30	29		
Portugal	79	87	122		129	141	137	24	28	32		33	34	33		
Romania				85		101	103				24		26	26		
Russian Federation				81		83	81				25		24	24		
Serbia and Montenegro				116		118	115				36		40	38		
Slovakia				106		107	98				33		34	32		
Slovenia				108		108	102				33		33	31		
Spain	88	113	143		144	154	149	29	33	39		40	41	39		
Sweden	115	124	123		131	125	123	36	37	37		38	36	35		
Switzerland	146	158	150		147	157	149	38	41	41		40	40	38		
Tajikistan				50		40	39				19		19	19		
Turkey	69	77	87		91	90	86	21	22	22		24	24	23		
Turkmenistan				74		70	70				26		22	22		
Ukraine				79		79	79				23		23	23		
United Kingdom	143	137	140		140	138	127	39	39	39		39	36	33		
Uzbekistan				75		64	62				26		25	24		

Notes: Estimates refer to the amount of food available for human consumption as estimated by the Food and Agriculture Organization food balance sheets. Actual food consumption may be lower than the quantity shown due to wastage and losses of food in the household.

* Data for 2001-2003 are provisional, data for 2002-2004 are preliminary. See source for details.

Source: Food and Agriculture Organization statistics division. http://www.fao.org/statistics/faostat/foodsecurity/index_en.htm accessed August 2007.

Figure 5.4a Quantity of fat consumed, Europe, 2001/03

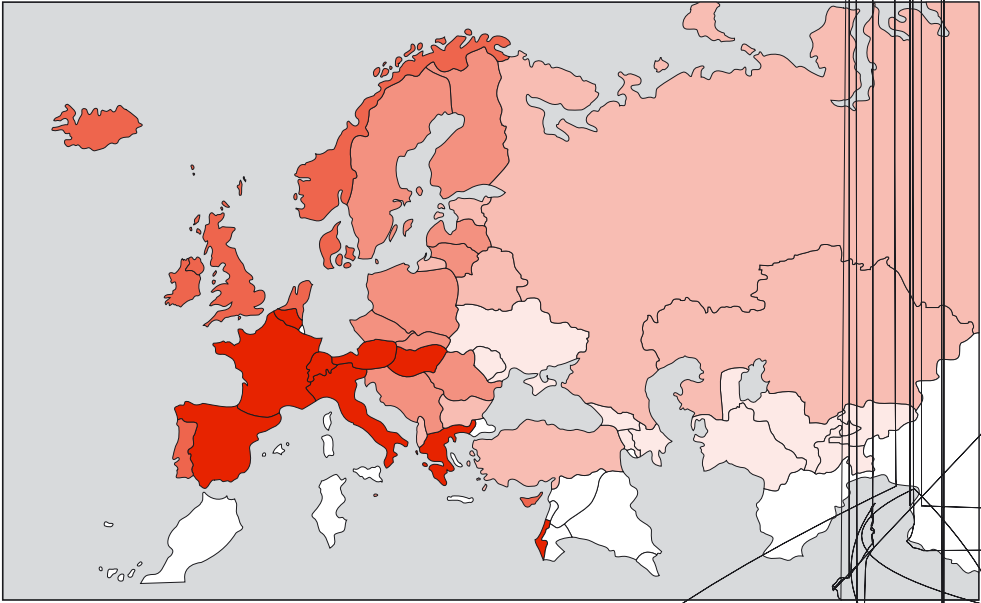


Table 5.5 Percentage of total energy from saturated fat, Europe, 1998

	%		%
Albania	9.2	Latvia	9.1
Armenia	7.3	Lithuania	7.7
Austria	13.9	Macedonia, TFYR	7.5
Azerbaijan	5.7	Malta	9.5
Belarus	10.2	Moldova	5.8
Belgium	14.5	Netherlands	14.6
Bosnia and Herzegovina	3.9	Norway	13.1
Bulgaria	9.8	Poland	10.7
Croatia	7.1	Portugal	10.6
Denmark	12.6	Romania	8.3
Estonia	10.6	Russian Federation	8.3
Finland	14.4	Slovakia	10.7
France	15.5	Slovenia	10.0
Georgia	5.2	Spain	10.9
Germany	13.7	Sweden	12.8
Greece	11.1	Switzerland	15.3
Hungary	11.8	Tajikistan	5.4
Iceland	14.6	Turkey	7.0
Ireland	13.5	Turkmenistan	10.1
Israel	8.8	Ukraine	7.6
Italy	11.8	United Kingdom	13.5
Kazakhstan	8.1	Uzbekistan	9.2
Kyrgyzstan	7.8	Yugoslavia	12.8

Notes: Data taken from the Food and Agriculture Organization.

Source: A Ferro-Luzzi, National Institute for Food and Nutrition Research, Rome, personal communication.

6. Physical activity

Mortality and morbidity attributable to physical inactivity

A lack of physical activity increases the risk of CVD and other chronic diseases. The recent World Health Organization *Global strategy on diet, physical activity and health* outlined the urgent need to increase physical activity in individuals and populations across the world. To reduce the risk of CVD, the report recommends at least 30 minutes of regular moderate-intensity physical activity on most days¹.

The World Health Report 2002 estimates that over 3% of all disease burden in developed countries is caused by physical inactivity, and that over 20% of CHD and 10% of stroke in developed countries is due to physical inactivity (less than 2.5 hours per week of moderate exercise or 1 hour per week of vigorous exercise)².

Prevalence of physical inactivity

The data on levels of physical inactivity across Europe are poor. There have only been three multinational surveys which have looked at levels of physical activity in Europe^{3,4,5}, each carried out only in member states of the EU-15⁶. The most recent was the 2005 Eurobarometer survey on physical activity, which asked a series of questions on the frequency and duration of vigorous activity, moderate activity and walking. While the results of the survey, designed to explore the prevalence of physical activity, are difficult to interpret, they show that the proportion of adults who regularly undertake physical activity is low.

For example, in 2005, over 40% of adults in EU-15 countries reported no moderate level physical activity in the past week, 16% no episodes of walking for 10 minutes or more and 66% spent in excess of 4 hours each day sitting. Only 18% reported daily moderate level physical activity, the frequency WHO suggests is required to reduce CVD⁷ (Table 6.1). The Eurobarometer survey also investigated work-related physical activity and showed that over half (59%) of the EU population get little or no physical activity at work⁵.

Levels of physical activity vary across the member states of EU-15 (Table and Figure 6.1).

1. World Health Organization (2004) *Global strategy on diet and physical activity*. WHO: Geneva. See www.who.int/gb/ebwha/pdf_files/WHA57/A57_9-en.pdf
2. World Health Organization (2002) *The World Health Report 2002. Reducing Risks, Promoting Healthy Life*. World Health Organization: Geneva.
3. Flynn A (1999) Pan EU survey of consumer attitudes to physical activity, body weight and health. *Public Health Nutrition*; 2(1a): 0-160.
4. European Commission (2003) *Physical Activity. Special Eurobarometer 183-6/ Wave 58.2- European Opinion Research Group EEIG*. http://europa.eu.int/comm/public_opinion/archives/ebs/ebs_183_6_en.pdf
5. European Commission (2006) *Health and Food Special Eurobarometer 246 / Wave 64.3 – TNS Opinion & Social* http://ec.europa.eu/health/ph_publication/eb_food_en.pdf
6. EU-15 are the 15 Member States of the EU prior to the expansions in 2004 and 2007.
7. The Eurobarometer survey does not report how many of those who undertook daily moderate-intensity physical activity were active for 30 minutes or more. This means the proportion of the adult EU-15 population achieving the overall recommended level of physical activity required to reduce CVD remains unclear.

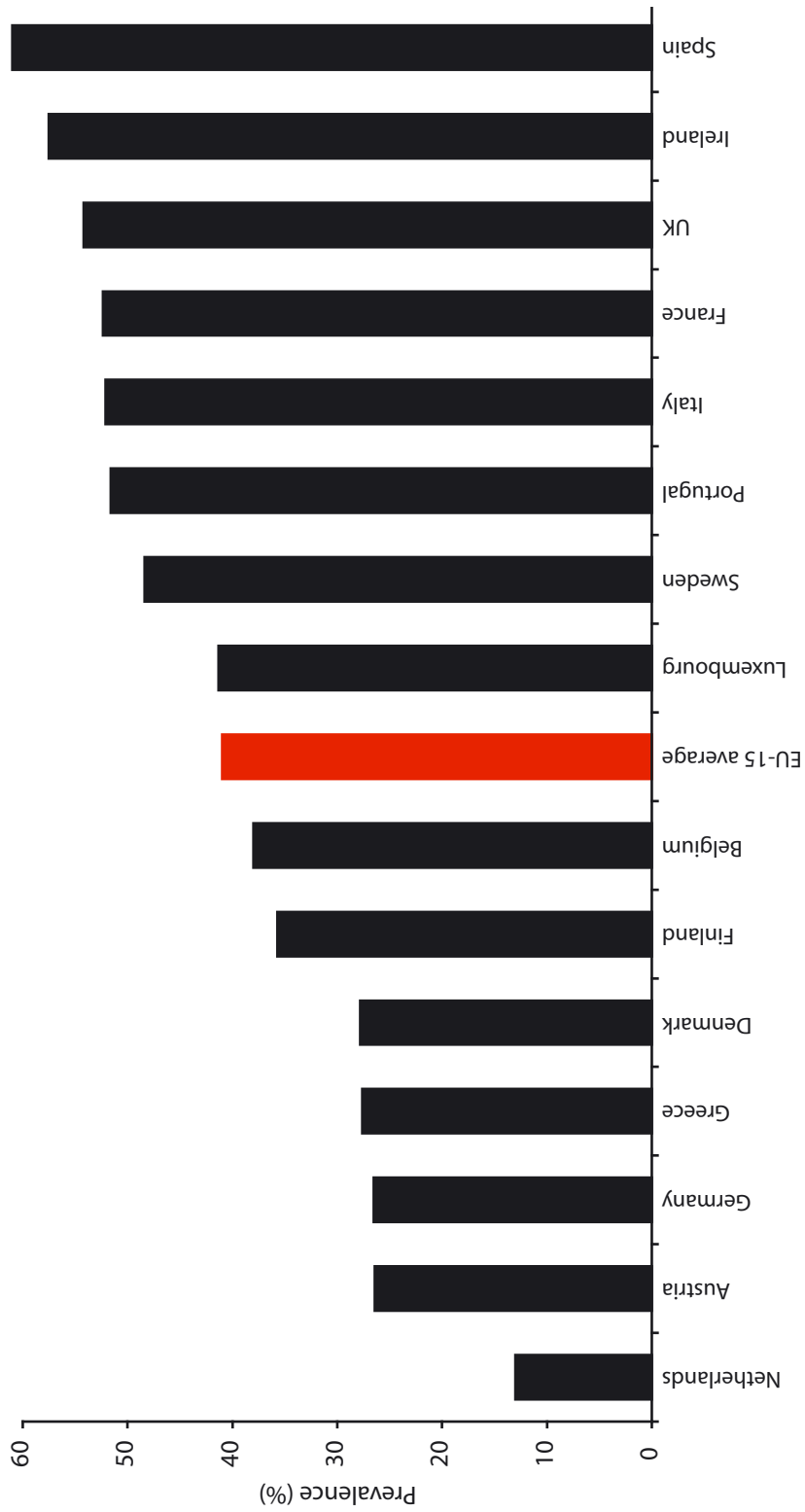
Table 6.1 Self reported physical activity levels, 2005, EU-15 countries

	Austria	Belgium	Denmark	Finland	France	Germany	Greece	Ireland	Italy	Luxembourg	Netherlands	Portugal	Spain	Sweden	UK	Total EU-15
Number of days in last week walked for 10 minutes or more																
	%	%	%	%	%	%	%	%	%	%	%	%	%	%	%	%
None	18	23	14	12	15	9	20	20	21	13	8	22	17	12	14	16
1-3	27	29	19	24	24	17	22	20	23	25	18	13	11	28	18	21
4-6	26	15	13	18	13	20	20	26	22	16	14	20	12	20	20	18
7 days	27	33	53	44	48	52	38	33	32	45	59	43	49	40	46	43
Don't know	2	0	2	2	1	2	0	1	3	1	1	3	10	0	2	2
Number of days in last week undertook moderate physical activity																
	%	%	%	%	%	%	%	%	%	%	%	%	%	%	%	%
None	26	38	28	36	52	27	28	58	52	41	13	52	61	48	54	41
1-3	33	29	28	30	22	26	30	19	23	30	21	13	12	31	19	24
4-6	27	14	15	15	9	20	17	13	14	9	23	14	9	11	10	15
7 days	12	19	27	18	15	24	25	9	9	18	43	17	10	9	14	18
Don't know	3	0	2	2	2	3	0	2	2	2	0	3	7	0	2	2
Number of hours spent sitting on a usual day																
	%	%	%	%	%	%	%	%	%	%	%	%	%	%	%	%
Never	4	1	1	4	0	0	0	2	8	1	0	16	2	0	0	3
Less than 1 hour	1	1	0	1	3	0	0	1	1	2	0	2	0	1	0	1
1h - 3h59	23	28	17	26	36	26	16	31	31	32	16	45	36	26	27	28
4h - 7h59	52	42	45	36	41	44	48	41	42	40	41	27	40	43	42	42
8h - 9h59	12	12	13	12	8	12	21	8	9	12	17	7	11	14	9	12
10h - 12h59	6	15	15	15	8	9	14	6	5	10	17	3	3	12	8	10
13+ h	1	2	3	2	1	1	1	1	0	2	6	0	1	2	2	2
Don't know	0	1	5	4	4	9	0	11	4	2	2	0	7	2	10	4

Notes: Results for UK calculated using base data for Great Britain and Northern Ireland, no weighting applied.
Results for Germany calculated using base data for East Germany and West Germany, no weighting applied.

Source: European Commission (2005). Eurobarometer 64.3, personal communication.

Figure 6.1 Prevalence of adults who do no moderate-intensity activity in a typical week, 2005, EU-15 countries



7. Alcohol

Mortality and morbidity attributable to alcohol consumption

While moderate alcohol consumption (one or two drinks a day) reduces the risk of CVD, at high levels of intake – particularly in ‘binges’ - the risk of CVD is increased. Alcohol consumption also increases the risk of liver cirrhosis, injuries and some forms of cancer. On balance, the positive effects of alcohol on the health of populations are generally outweighed by its negative effects.

The World Health Report 2002 estimates that over 9% of all disease burden in developed countries is caused by alcohol consumption and that 2% of CHD and almost 5% of stroke in men in developed countries is due to alcohol. However, the impact of alcohol consumption in women in developed countries is estimated to be positive – if no alcohol were consumed, there would be a 3% increase in CHD and a 16% increase in stroke¹.

Levels of and trends in alcohol consumption

Levels of recorded alcohol consumption vary considerably across Europe². Data from 2003, the most recent comparable year, show that the amount of recorded alcohol consumption ranges from 0.4 litres (Tajikistan) to 18.0 litres (Luxembourg) per adult per year. There is a wide regional spread of countries with an above average level of alcohol consumption, including Northern (Estonia), Western (Ireland and Germany), Southern (France and Spain), Central (Czech Republic and Hungary) and Eastern (Republic of Moldova) countries (Table 7.1, Figure 7.1).

Levels of alcohol consumption are falling in many Northern, Southern and Western European countries but rising in a few. For example alcohol consumption in Portugal, France and Germany fell by 24%, 18% and 12% respectively between 1994 and 2003, but rose by 21% in Ireland. In Central and Eastern European countries alcohol consumption generally fell rapidly in the mid-to-late 1980s but has risen markedly again since then. Between 1994 and 2003 alcohol consumption in Kyrgyzstan, Lithuania and the Russian Federation rose by 16%, 94% and 21% respectively (Table 7.1).

1. World Health Organization (2002) *The World Health Report 2002. Reducing Risks, Promoting Healthy Life*. World Health Organization: Geneva.
2. Levels of actual alcohol consumption may vary less than levels of recorded consumption because there is probably much unrecorded consumption in countries with low recorded rates. For example, estimates from WHO suggest that unrecorded alcohol consumption is twice that of recorded consumption in Latvia and is four times that of recorded consumption in FYR Macedonia. For more details see: Rehn N, with Room R and Edwards G (2001) *Alcohol in the European Region – consumption, harm and policies*. www.who.dk/document/E76240.pdf

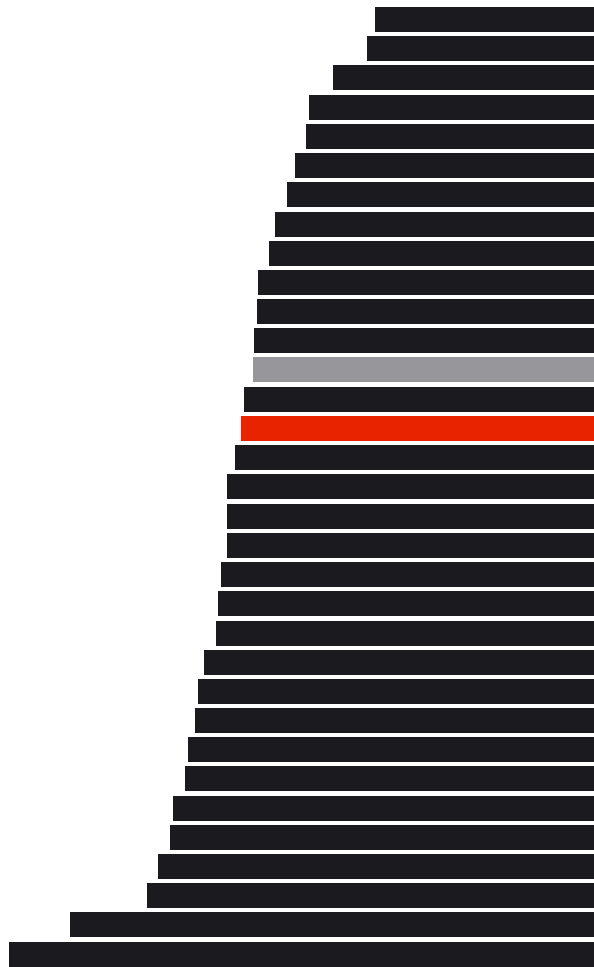
Table 7.1 Alcohol consumption, adults aged 15 years and above, 1970 to 2005, Europe

	1970	1972	1974	1976	1978	1980	1982	1984	1986	1988	1990	1992	1994	1996	1998	2000	2001	2002	2003	2004	2005
Albania	1.8	1.6	1.6	1.3	1.7	1.5	1.5	1.6	1.4	1.7	2.0	1.3	2.7	3.4	1.5	2.0	2.5	2.3	2.3		
Armenia												2.4	3.8	2.4	1.6	1.5	1.4	1.2	1.4		
Austria	13.9	15.6	15.0	14.4	13.5	13.8	13.9	13.8	13.8	13.9	14.2	13.8	13.5	13.3	12.8	12.7	12.3	12.5	12.6	12.6	12.6
Azerbaijan												4.9	1.4	2.7	1.0	6.8	5.8	4.7	4.3		
Belarus												8.5	9.4	10.2	9.8	7.0	6.5	6.4	5.8		
Belgium	12.6	13.2	13.6	13.8	13.6	14.3	14.0	13.5	13.0	12.5	12.5	11.9	11.4	11.2	10.1	10.4	10.5	10.7	10.9		
Bosnia and Herzegovina												10.0	8.3	10.9	12.4	9.6	10.5	11.9	10.1		
Bulgaria	8.7	9.5	10.6	11.2	11.6	11.1	11.5	11.7	11.8	11.5	11.8	10.4	10.1	9.6	8.3	7.8	7.1	6.4	5.9		
Croatia												11.6	11.8	11.2	13.8	11.8	12.4	12.8	11.4		
Cyprus	4.8	5.3	4.1	4.8	5.7	6.3	7.0	7.6	8.4	9.7	9.5	10.3	9.5	8.6	8.9	9.7	10.3	11.7	11.4		
Czech Republic	14.1	14.7	14.9	15.5	15.8	16.0	16.6	15.9	15.1	14.8	16.3	16.5	15.9	16.1	16.4	16.3	16.2	16.0	16.2		
Denmark	9.7	10.2	10.8	12.0	11.1	11.7	12.7	12.6	12.5	12.1	12.1	12.2	12.5	12.6	12.0	12.0	11.9	11.9	12.1		
Estonia												7.7	8.0	6.4	9.1	9.3	10.2	11.9	13.0		
Finland	5.8	6.8	8.4	8.1	7.9	7.9	7.9	8.1	8.5	9.0	9.5	8.9	8.2	8.2	8.6	8.6	9.0	9.2	9.3		
France	23.2	22.6	22.5	22.2	21.1	20.1	19.4	17.9	17.1	16.8	16.7	15.5	14.9	14.5	14.0	13.6	13.6	13.3	12.3		
Georgia												6.6	5.1	6.7	4.0	1.8	1.7	1.5	1.6		
Germany	15.5	16.2	15.9	17.3	16.4	16.5	15.6	14.7	14.7	14.9	14.9	15.1	14.3	13.7	13.2	13.0	12.9	12.9	12.7		
Greece												10.4	10.9	10.1	9.5	9.4	9.3	9.1	9.0		
Hungary	12.9	13.2	13.3	15.2	16.5	16.8	16.8	16.8	16.7	15.4	16.1	14.8	13.8	12.7	13.0	13.5	13.5	13.5	13.8		
Ireland	4.6	5.1	5.3	4.8	4.9	5.1	5.0	5.5	5.6	5.7	5.2	4.7	4.6	4.9	5.5	6.2	6.4	6.6	7.1		
Ireland	7.0	7.7	9.3	9.0	9.8	9.6	8.8	9.6	9.6	9.9	11.2	11.4	11.2	12.2	13.2	14.2	14.4	14.3	13.5		
Israel	4.3	4.7	4.5	4.7	3.3	2.8	2.5	2.2	2.2	2.2	1.8	1.8	1.7	1.6	2.1	2.1	2.0	2.2	2.3		
Italy	21.2	21.0	21.1	18.9	17.7	17.9	15.6	15.0	13.2	12.2	11.7	11.4	10.8	9.9	9.6	9.3	9.1	9.2	10.5		
Kazakhstan												10.7	8.5	2.9	3.6	3.6	2.8	3.5	3.0		
Kyrgyzstan												2.4	3.1	3.3	3.6	3.6	3.3	3.1	3.6		
Latvia												7.1	10.1	8.7	8.9	9.4	9.3	9.5	9.9		
Lithuania												3.9	3.6	6.9	6.1	7.7	8.4	9.4	10.4		
Luxembourg	16.0	16.5	18.0	17.6	16.0	16.3	16.5	18.4	17.2	17.3	17.6	17.9	16.5	16.2	17.8	17.7	17.6	17.2	18.0		
Macedonia, FYR												5.0	5.0	4.4	6.6	3.3	3.1	2.5	5.7		
Malta												7.0	7.0	7.1	6.6	7.0	6.7	6.6	6.6		
Moldova												10.1	16.3	14.5	18.3	13.5	12.8	13.1			
Netherlands	7.6	8.9	10.5	10.7	11.5	11.7	10.6	10.4	10.3	9.9	9.9	10.2	9.7	9.9	9.9	9.8	9.8	9.6	9.6		
Norway	4.9	5.4	5.8	5.9	5.5	6.2	5.1	5.2	5.5	5.7	5.4	5.1	5.2	5.4	5.6	5.9	5.8	5.8	6.0		
Poland	7.6	8.6	8.7	10.7	10.9	11.5	8.5	8.7	9.6	9.5	8.3	8.4	8.4	8.1	8.5	8.4	7.7	8.1	8.2		
Portugal	14.4	16.9	19.6	19.5	14.2	14.9	16.1	16.5	14.7	13.5	16.0	15.3	14.6	13.9	12.9	12.6	12.1	11.3	11.1		
Romania	8.6	9.0	10.3	11.7	12.5	12.4	12.8	12.8	11.8	10.3	9.0	8.9	8.0	8.2	7.3	7.7	8.6	8.8	8.9		
Russian Federation												6.7	6.7	9.3	10.0	10.8	10.6	10.5	10.5		
Slovakia	12.9	13.9	13.7	13.9	13.9	15.2	15.4	14.6	13.5	13.0	13.7	12.8	13.2	13.0	12.3	12.2	12.1	12.0	11.6		
Slovenia												19.5	17.2	18.1	15.0	14.4	11.4	11.7	11.8		
Spain	16.1	17.3	19.5	18.9	19.2	18.6	17.0	15.1	15.0	14.0	13.4	12.5	11.6	11.1	11.9	11.4	11.4	11.2	11.7		
Sweden	7.9	8.2	8.6	8.9	8.2	7.8	7.4	7.0	7.4	7.5	7.6	7.6	7.8	7.0	7.0	7.0	6.9	7.0	6.9		
Switzerland	14.3	14.6	14.8	13.6	13.8	13.9	14.4	14.0	13.7	13.7	13.5	12.7	12.2	11.8	11.7	11.9	11.6	11.3	11.4		
Tajikistan												2.3	1.4	1.8	0.4	0.4	0.8	0.5	0.4		
Turkey	0.9	1.0	1.0	1.2	1.3	1.3	1.2	1.1	1.1	1.3	1.4	1.4	1.5	1.7	1.7	1.5	1.5	1.4	1.4		
Turkmenistan												0.7	1.7	1.3	1.2	1.5	1.1	1.2	1.2		
Ukraine												5.5	4.2	3.1	3.6	4.5	4.2	4.8	6.1		
United Kingdom	8.5	9.2	10.5	10.9	11.0	10.8	10.0	10.3	10.4	11.0	10.8	10.1	10.2	9.9	9.9	10.2	10.7	11.1	11.4		
Uzbekistan												1.3	1.5	0.9	0.9	1.6	1.6	1.5	1.6		
European Region												10.8	10.9	10.7	10.7	10.8	10.7	10.7	10.6		
EU												15.1	14.1	13.7	12.8	12.6	11.1	11.0	11.0		

Notes: Data presented are for latest year available.

Source: World Health Organization (2007) European Health for All statistical database. <http://www.euro.who.int/hfad>

Figure 7.1 Alcohol consumption, adults aged 15 years and above, 2003



8. Blood pressure

Risk of CVD is directly related to both systolic and diastolic blood pressure levels¹. Both drug treatment and lifestyle changes - particularly weight loss, an increase in physical activity, and a reduction in salt and alcohol intake - can effectively lower blood pressure.

The World Health Report 2002 estimates that around 11% of all disease burden in developed countries is caused by raised blood pressure, and that over 50% of CHD and almost 75% of stroke in developed countries is due to systolic blood pressure levels in excess of the theoretical minimum (115 mmHg)².

The INTERHEART case-control study estimated that 22% of heart attacks in Western Europe and 25% of heart attacks in Central and Eastern Europe are due to a history of high blood pressure, and that those with a history of hypertension are at just under twice the risk of a heart attack compared to those with no history of hypertension³.

Reliable data on the prevalence of raised blood pressure across Europe comes from the MONICA Project. These data were collected using standardized methods between 1989 and 1997 for the 35 to 64 year age range in 29 populations in 16 European countries. The results of this project show that the prevalence of systolic blood pressure levels of 160mmHg and above varies markedly across the populations sampled: from 2% (Toulouse, France) to 21% (North Karelia, Finland) in men and from 2% (Catalonia, Spain and Ghent, Belgium) to 17% (former East Germany) in women (Table and Figure 8.1). Trend data from the MONICA Project show that between the mid-1980s and mid-1990s the majority of European populations included in the study experienced a decline in average systolic blood pressure⁴.

More recently the WHO has provided estimates of systolic blood pressure for the European region for 2002 and projected estimates for 2005 and 2010. Among men aged 15 or over WHO data suggest that mean systolic blood pressure ranges between 118 mmHg (Turkey) and 140 mmHg (Georgia). Among women aged 15 or over WHO data suggest that the mean systolic blood pressure ranges between 115 mmHg (Switzerland) and 135 mmHg (Georgia)⁵ (Table and Figure 8.2).

1. For example, a meta-analysis of prospective data on over one million adults has shown that for adults aged 40 to 69 years, each 20mmHg increase in usual systolic blood pressure, or 10 mmHg increase in usual diastolic blood pressure, doubles the risk of death from CHD. Prospective Studies Collaboration (2002) Age-specific relevance of usual blood pressure to vascular mortality: a meta-analysis of individual data for one million adults in 61 prospective studies. *The Lancet*; 360: 1903-1913.
2. World Health Organization (2002) *The World Health Report 2002. Reducing Risks, Promoting Healthy Life*. World Health Organization: Geneva.
3. Yusuf S, Hawken S, Ounpuu S, Dans T, Avezum A, Lanas F, McQueen M, Budaj A, Pais P, Varigo J, Lisheng A, on behalf of the INTERHEART Study Investigators (2004) Effect of potentially modifiable risk factors associated with myocardial infarction in 52 countries (the INTERHEART Study): case-control study. *The Lancet*; 364: 937-952.
4. WHO Monica Project (2003) *MONICA Monograph and Multimedia Sourcebook: World's largest study of heart disease stroke, risk factors and population trends 1979-2002*. Edited by Hugh Tunstall-Pedoe for the WHO MONICA Project. WHO: Geneva.
5. Ono T, Guthold R, Strong K. WHO comparable estimates 2005. (<http://www.who.int/infobase> IB ref 199999)

Figure 8.1 Percentage with systolic blood pressure levels ≥ 160 mmHg by sex, adults aged 35 to 64, latest available year, MONICA European Project populations

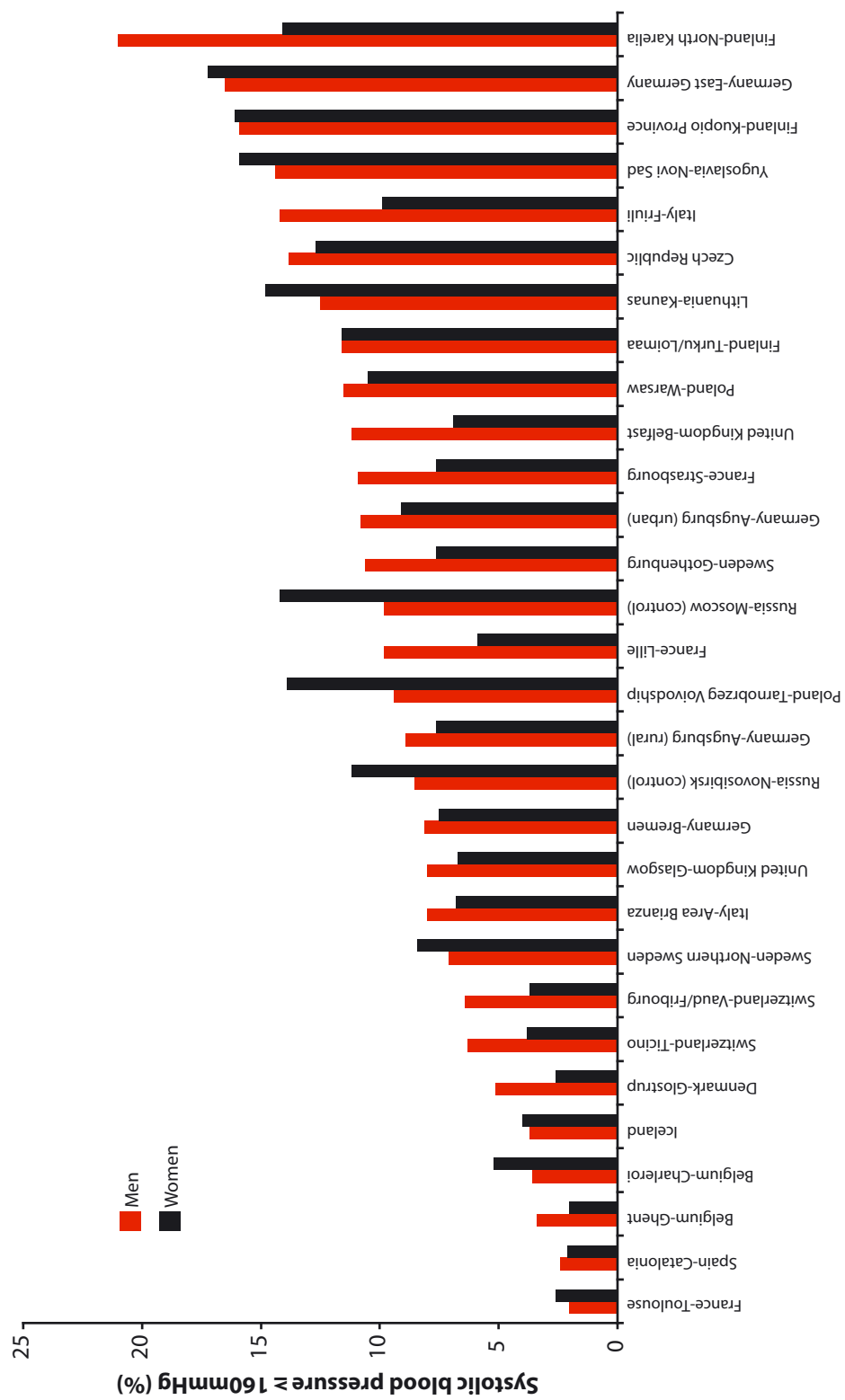


Table 8.2 Mean systolic blood pressure by sex, adults aged 15 and over, Europe, 2002, and projections for 2005 and 2010

	MEN			WOMEN		
	2002	2005	2010	2002	2005	2010
Albania	129	129	129	125	125	125
Armenia	122	122	122	123	123	123
Austria	129	128	127	122	122	120
Azerbaijan	122	122	122	123	123	123
Belarus	134	134	134	128	128	128
Belgium	127	127	127	119	119	119
Bosnia and Herzegovina	130	130	130	131	131	131
Bulgaria	132	132	132	125	125	125
Croatia	129	129	128	123	123	121
Cyprus	128	128	128	123	123	123
Czech Republic	130	129	128	123	122	121
Denmark	122	122	121	115	114	113
Estonia	131	131	131	122	122	122
Finland	131	130	129	125	123	121
France	129	127	124	125	123	119
Georgia	140	140	140	135	135	135
Germany	134	134	134	130	130	130
Greece	131	130	129	124	123	122
Hungary	134	134	134	126	126	126
Iceland	125	125	125	118	118	118
Ireland	129	129	128	123	123	121
Israel	128	127	126	121	120	119
Italy	129	127	125	122	120	118
Kazakhstan	131	131	131	128	128	128
Kyrgyzstan	122	122	122	123	123	123
Latvia	131	131	131	128	128	128
Lithuania	137	137	137	134	134	134
Luxembourg	126	125	124	121	120	119
Macedonia, TFYR	130	130	130	126	126	126
Malta	132	132	130	128	127	126
Moldova	131	131	131	128	128	128
Netherlands	131	130	129	122	121	120
Norway	129	129	128	123	123	121
Poland	129	129	129	123	123	123
Portugal	127	126	125	124	124	122
Romania	127	127	127	122	122	122
Russian Federation	129	129	129	127	127	127
Serbia and Montenegro	133	133	133	130	130	130
Slovakia	130	130	130	126	126	126
Slovenia	129	129	128	123	123	121
Spain	123	123	122	118	117	116
Sweden	131	131	131	125	125	125
Switzerland	126	125	124	115	114	112
Tajikistan	122	122	122	123	123	123
Turkey	118	118	118	119	119	119
Turkmenistan	122	122	122	123	123	123
Ukraine	127	127	127	125	125	125
United Kingdom	132	131	129	127	125	123
Uzbekistan	121	121	121	121	121	121

Notes: Age adjusted estimated systolic mean blood pressure values, aged 15 and above, Europe. 2005 and 2010 data rely on estimation techniques - see source for details.

Source: Ono T, Guthold R, Strong K. WHO comparable estimates 2005 (<http://www.who.int/infobase> IB ref 199999)

9. Blood cholesterol

Risk of CVD is directly related to blood cholesterol levels. Blood cholesterol levels can be reduced by drugs, physical activity and by dietary changes, in particular a reduction in the consumption of saturated fat.

Research from the World Health Organization highlights the importance of raised blood cholesterol as a risk factor for CHD. The World Health Report 2002 estimates that around 8% of all disease burden in developed countries is caused by raised blood cholesterol, and that over 60% of CHD and around 40% of ischaemic stroke in developed countries is due to total blood cholesterol levels in excess of the theoretical minimum (3.8 mmol/l)¹.

The INTERHEART case-control study estimated that 45% of heart attacks in Western Europe and 35% of heart attacks in Central and Eastern Europe are due to abnormal blood lipids, and that those with abnormal lipids are at over three times the risk of a heart attack compared to those with normal lipids².

Reliable information on the prevalence of raised cholesterol levels in Europe comes from the MONICA Project. These data were collected using standardized methods between 1989 and 1997 for the 35 to 64 year age range in 25 populations in 15 European countries. The results show that the prevalence of cholesterol levels of 6.5mmol/l and above varies substantially across the populations sampled: from 8% (Novosibirsk, Russia) to 53% (Ticino, Switzerland) in men and from 15% (Novosibirsk, Russia) to 40% (Kaunas, Lithuania and Novi Sad, Yugoslavia) in women (Table and Figure 9.1). Trend data from the MONICA project show that between the mid-1980s and mid-1990s around half of the European populations included in the study experienced a decline in average blood cholesterol levels³.

More recently the WHO has provided estimates of mean total cholesterol for the European region for 2002 and projected estimates for 2005 and 2010. Among men aged 15 or over WHO data suggest that mean total cholesterol ranges between 4.5 mmol/l (Turkey) and 6.2 mmol/l (Serbia and Montenegro). Among women aged 15 or over WHO data suggest that the mean total cholesterol ranges between 4.6 mmol/l (Turkey) and 6.1 mmol/l⁴ (Norway) (Table 9.2).

1. World Health Organization (2002) *The World Health Report 2002. Reducing Risks, Promoting Healthy Life*. World Health Organization: Geneva.
2. Yusuf S, Hawken S, Ounpuu S, Dans T, Avezum A, Lanas F, McQueen M, Budaj A, Pais P, Varigo J, Lisheng A, on behalf of the INTERHEART Study Investigators (2004) Effect of potentially modifiable risk factors associated with myocardial infarction in 52 countries (the INTERHEART Study): case-control study. *The Lancet*; 364: 937-952.
3. WHO Monica Project (2003) *MONICA Monograph and Multimedia Sourcebook: World's largest study of heart disease stroke, risk factors and population trends 1979-2002*. Edited by Hugh Tunstall-Pedoe for the WHO MONICA Project. WHO: Geneva.
4. Ono T, Guthold R, Strong K. WHO comparable estimates 2005. (http://www.who.int/infobase/IB_ref_199999)

Table 9.1 Mean total blood cholesterol and percentage with levels of 6.5mmol/l and above, adults aged 35 to 64, by sex, latest available data, MONICA European Project populations

MONICA population	MONICA population code	Year of survey	MEN		WOMEN	
			Mean total cholesterol mmol/l	Prevalence of levels 6.5 mmol/l and above*	Mean total cholesterol mmol/l	Prevalence of levels 6.5 mmol/l and above*
Belgium-Charleroi	BEL-CHA	1990/93	6.2	40	6.1	30
Belgium-Ghent	BEL-GHE	1990/92	6.0	33	6.0	32
Czech Republic	CZE-CZE	1992	6.2	38	6.1	37
Denmark-Glostrup	DEN-GLO	1991/92	6.0	30	5.8	26
France-Lille	FRA-LIL	1995/96	5.4	36	5.8	28
France-Strasbourg	FRA-STR	1995/97	6.0	40	5.9	34
France-Toulouse	FRA-TOU	1994/96	5.8	32	5.7	26
Germany-Bremen	GER-BRE	1991/92	6.2	36	6.2	37
Germany-East Germany	GER-EGE	1993/94	6.1	29	5.9	23
Iceland	ICE-ICE	1993/94	6.2	36	6.0	31
Italy-Area Brianza	ITA-BRI	1993/94	5.9	28	5.9	26
Italy-Friuli	ITA-FRI	1994	5.9	28	5.7	21
Lithuania-Kaunas	LIT-KAU	1992/93	6.0	31	6.2	40
Poland-Tarnobrzeg Voivodship	POL-TAR	1992/93	5.6	19	5.5	18
Poland-Warsaw	POL-WAR	1993	5.8	25	5.7	21
Russia-Moscow (control)	RUS-MOC	1992/95	5.3	13	5.6	21
Russia-Novosibirsk (control)	RUS-NOC	1995	5.0	8	5.3	15
Spain-Catalonia	SPA-CAT	1994/96	5.6	21	5.5	19
Sweden-Gothenburg	SWE-GOT	1994/96	5.6	26	5.4	22
Sweden-Northern Sweden	SWE-NSW	1994	6.3	45	6.1	35
Switzerland-Ticino	SWI-TIC	1993/93	6.5	53	5.2	38
Switzerland-Vaud/Fribourg	SWI-VAF	1992/93	6.3	42	6.1	35
United Kingdom-Belfast	UNK-BEL	1991/92	5.9	27	5.9	31
United Kingdom-Glasgow	UNK-GLA	1995	6.1	35	6.1	36
Yugoslavia- Novi Sad	YUG-NOS	1994/95	6.4	44	6.2	40

Notes: Age-standardized levels; consult WHO MONICA Project for details of measurement and age-standardization.

*Total cholesterol 6.5mmol/l and above and/or using lipid lowering drugs

Source: Tolonen H, Keil U, Ferrario M and Evans A (2005) Prevalence, awareness and treatment of hypercholesterolaemia in 32 populations: results from the WHO MONICA Project. *International Journal of Epidemiology*, 2005; 34(1): 181-92.

Figure 9.1 Percentage with blood cholesterol levels of 6.5mmol/l and over by sex, adults aged 35 to 64, latest available year, MONICA European Project populations

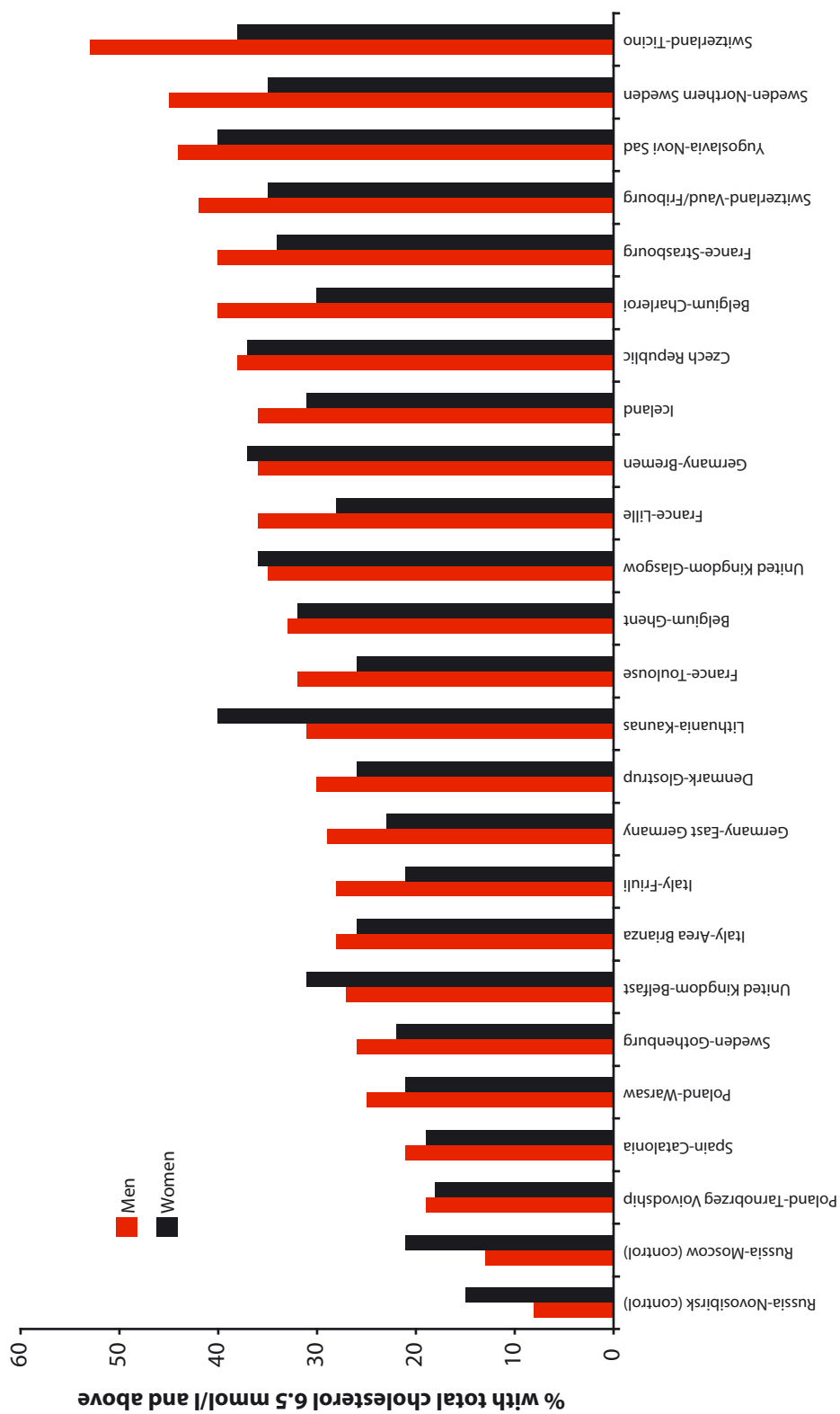


Table 9.2 Mean total cholesterol by sex, adults aged 15 and over, Europe, 2002, and projections for 2005 and 2010

Mean mmol/l total cholesterol	MEN			WOMEN		
	2002	2005	2010	2002	2005	2010
Albania	5.2	5.2	5.2	5.1	5.1	5.1
Armenia	5.1	5.1	5.1	5.1	5.1	5.1
Austria	5.5	5.4	5.3	5.5	5.5	5.4
Azerbaijan	5.0	5.0	5.0	5.0	5.0	5.0
Belarus	6.0	6.0	6.0	5.3	5.3	5.3
Belgium	5.5	5.5	5.4	5.6	5.5	5.4
Bosnia and Herzegovina	5.1	5.1	5.1	5.1	5.1	5.1
Bulgaria	5.7	5.7	5.7	5.9	5.9	5.9
Croatia	5.5	5.5	5.4	5.4	5.3	5.2
Cyprus	6.0	6.0	6.1	5.7	5.8	5.8
Czech Republic	5.5	5.4	5.3	5.5	5.5	5.4
Denmark	5.4	5.4	5.3	5.3	5.2	5.1
Estonia	5.2	5.0	5.0	5.3	5.2	5.2
Finland	5.4	5.3	5.2	5.3	5.2	5.1
France	5.5	5.4	5.3	5.4	5.3	5.2
Georgia	5.0	5.0	5.0	5.0	5.0	5.0
Germany	5.7	5.7	5.6	5.8	5.7	5.6
Greece	4.8	4.8	4.7	4.7	4.7	4.6
Hungary	5.4	5.4	5.4	5.1	5.1	5.1
Iceland	5.7	5.6	5.5	5.5	5.4	5.3
Ireland	5.6	5.5	5.4	5.4	5.4	5.3
Israel	5.5	5.6	5.5	5.8	6.0	5.9
Italy	5.2	5.2	5.1	5.1	5.1	5.0
Kazakhstan	5.2	5.2	5.2	5.2	5.2	5.2
Kyrgyzstan	5.1	5.1	5.1	5.0	5.0	5.0
Latvia	5.3	5.3	5.3	5.3	5.3	5.3
Lithuania	5.3	5.3	5.3	5.4	5.4	5.4
Luxembourg	6.1	6.0	5.9	5.9	5.9	5.8
Macedonia, TFYR	5.1	5.1	5.1	5.1	5.1	5.1
Malta	5.7	5.7	5.6	5.9	5.9	5.8
Moldova	5.0	5.0	5.0	5.0	5.0	5.0
Netherlands	4.9	4.8	4.7	5.0	4.9	4.8
Norway	5.7	5.6	5.5	6.1	6.0	5.9
Poland	5.2	5.2	5.2	5.1	5.1	5.1
Portugal	5.3	5.2	5.1	5.1	5.1	5.0
Romania	5.1	5.1	5.1	5.0	5.0	5.0
Russian Federation	4.9	4.9	4.9	4.9	4.9	4.9
Serbia and Montenegro	6.2	6.2	6.2	5.9	5.9	5.9
Slovakia	5.0	5.0	5.0	5.1	5.1	5.1
Slovenia	5.3	5.2	5.1	5.3	5.2	5.1
Spain	5.1	5.1	5.0	5.1	5.1	5.0
Sweden	5.3	5.2	5.1	5.3	5.2	5.1
Switzerland	5.3	5.1	5.0	5.3	5.2	5.1
Tajikistan	4.9	4.9	4.9	4.9	4.9	4.9
Turkey	4.5	4.5	4.5	4.6	4.6	4.6
Turkmenistan	5.2	5.2	5.2	5.2	5.2	5.2
Ukraine	5.1	5.1	5.1	5.2	5.2	5.2
United Kingdom	5.2	5.1	5.0	5.2	5.1	5.0
Uzbekistan	5.0	5.0	5.0	5.0	5.0	5.0

Notes: Age adjusted estimated blood cholesterol values aged 15 and above, Europe. 2005 and 2010 data rely on estimation techniques - see source for details.

Source: Ono T, Guthold R, Strong K. WHO comparable estimates 2005 (<http://www.who.int/infobase> IB ref 199999)

10. Overweight and obesity

Overweight and obesity increase the risk of CVD. As well as being an independent risk factor, obesity is also a major risk factor for high blood pressure, raised blood cholesterol, diabetes and impaired glucose tolerance¹.

The World Health Organization's World Health Report 2002 estimates that over 7% of all disease burden in developed countries is caused by raised Body Mass Index (BMI), and that around a third of CHD and ischaemic stroke and almost 60% of hypertensive disease in developed countries is due to levels of BMI in excess of the theoretical minimum (21 kg/m²)².

The INTERHEART case-control study estimated that 63% of heart attacks in Western Europe and 28% of heart attacks in Central and Eastern Europe are due to abdominal obesity (a high waist to hip ratio), and those with abdominal obesity are at over twice the risk of a heart attack compared to those without³. This study also found that raised abdominal obesity was a better predictor of heart attack than raised BMI.

Prevalence of overweight and obesity

Data on the prevalence of overweight and obesity in Europe usually are taken from national health surveys. Because of differences in the survey designs (sampling frames, age of population surveyed etc.) the results are difficult to compare. Truly comparable data are available from the results of single pan-European studies; the most recent study that includes the prevalence of overweight and obesity is the WHO MONICA project. The latest results of this project showed that in the mid-1990s between 8% (Moscow, Russia) and 24% (Kuopio Province, Finland and rural Augsburg, Germany) of men aged 35 to 64 were obese. For women aged 35 to 64 between 10% (Toulouse in France, Gothenburg in Sweden, and Vaud/Fribourg in Switzerland) and 36% (Tanobrzeg Vovoidship, Poland) were obese (Table 10.1).

Recent WHO estimates (based on national survey data) suggest that the prevalence of obesity in men aged 15 and above ranges from 5% in Uzbekistan to 26% in Greece, and the prevalence in women ranges from 6% in Norway to 30% in Turkey (Table 10.2 and Figures 10.2 and 10.2b). There does not appear to be any clear geographical pattern to the variation in the prevalence of obesity in either men or women.

WHO data suggest that the average BMI of men aged 15 and over in 2002 ranged from 23.2 in Tajikistan to 27.6 in Greece, and the average BMI of women ranged from 23.5 in both Estonia and France to 27.9 in Malta (Table 10.3 and Figures 10.3a and 10.3b).

Overweight and obesity in children

The classification of overweight and obesity in children and adolescents is more problematic

than in adults. Constant changes in body composition during growth mean that the relationship between BMI and adiposity during childhood is age dependent, and further complicated by race and gender. While there is no clear agreement on the best way to define overweight and obesity in children, the International Obesity Task Force (IOTF) has developed a new international classification based on age and sex-specific BMI cut-off points.

The most recent data on the prevalence of childhood obesity around Europe is hampered by differential definitions of obesity, and differential methods of data collection. The results suggest that the highest levels of childhood obesity in Europe are found in the United Kingdom, Italy and Spain. In both Italy and the United Kingdom there are nearly twice as many boys aged 5 to 17 who are obese than in Germany or the Czech Republic (Table 10.4).

Trends in overweight and obesity prevalence

Trend data from the MONICA Project show that between the mid-1980s and mid-1990s the majority of European populations included in the study experienced an increase in average BMI⁴.

The WHO have made projections of expected average BMI of men and women in the year 2010, based on trend data from national survey data. Only the women in Kazakhstan (out of all of the countries in the WHO European region) were expected to see a fall in average BMI between 2002 and 2010 (Table 10.3 and Figures 10.3c and 10.3d).

There are complex patterns in trends for obesity in childhood. Data from the International Association for the Study of Obesity suggest that childhood obesity in Europe has increased steadily over the past two or three decades⁵. In England, for example, the prevalence of obesity in children aged 4 to 11 years increased by over 50% between 1974 and 1994.

1. World Health Organization (2000) *Obesity – preventing and managing the global epidemic. Report of a WHO Consultation on Obesity*. World Health Organization: Geneva.
2. World Health Organization (2002) *The World Health Report 2002. Reducing Risks, Promoting Healthy Life*. World Health Organization: Geneva.
3. Yusuf S, Hawken S, Ounpuu S, Dans T, Avezum A, Lanas F, McQueen M, Budaj A, Pais P, Varigos J, Lisheng L, on behalf of the INTERHEART Study Investigators (2004) *Effect of potentially modifiable risk factors associated with myocardial infarction in 52 countries (the INTERHEART Study): case-control study*. *The Lancet*; 364: 937-952.
4. WHO Monica Project (2003) *MONICA Monograph and Multimedia Sourcebook: World's largest study of heart disease stroke, risk factors and population trends 1979-2002*. Edited by Hugh Tunstall-Pedoe for the WHO MONICA Project. World Health Organization: Geneva
5. *For a discussion on childhood obesity in Europe and further details of the IOTF classification system see Lobstein T, Baur L and Uauy R, for the IASO International Obesity Task Force (2004) Obesity in children and young people: A crisis in public health. Report to the World Health Organization. Obesity Reviews; 5 (suppl 1): 4-104.*

Table 10.1 Prevalence of overweight and obesity, adults aged 35 to 64, by sex, latest available data, MONICA Project populations

MONICA Population	MONICA population code	Year of survey	Overweight %	Obese %	Mean BMI kg/m ²
MEN					
Belgium - Charleroi	BEL-CHA	1990/93	47	19	27.1
Belgium - Ghent	BEL-GHE	1990/92	52	13	26.4
Czech Republic	CZE-CZE	1992	52	23	27.6
Denmark - Glostrup	DEN-GLO	1991/92	41	13	26.0
Finland - Kuopio Province	FIN-KUO	1992	46	24	27.3
Finland - North Karelia	FIN-NKA	1992	49	23	27.5
Finland - Turku, Loimaa	FIN-TUL	1992	46	22	27.1
France - Lille	FRA-LIL	1995/96	40	17	26.4
France - Strasbourg	FRA-STR	1995/97	51	22	27.3
France - Toulouse	FRA-TOU	1994/96	49	13	26.1
Germany - Augsburg (rural)	GER-AUR	1994/95	55	24	27.8
Germany - Augsburg (urban)	GER-AUU	1994/95	54	17	27.1
Germany - Bremen	GER-BRE	1991/92	50	16	26.8
Germany - East Germany	GER-EGE	1993/94	51	18	26.9
Iceland	ICE-ICE	1993/94	50	16	26.8
Italy - Area Brianza	ITA-BRI	1993/94	50	14	26.4
Italy - Friuli	ITA-FRI	1994	51	17	26.9
Lithuania - Kaunas	LTU-KAU	1992/93	47	20	27.1
Poland - Tarnobrzeg Voivodship	POL-TAR	1992/93	41	15	25.9
Poland - Warsaw	POL-WAR	1993	45	22	27.1
Russia - Moscow (control)	RUS-MOC	1992/95	38	8	25.2
Russia - Novosibirsk (control)	RUS-NOC	1995	35	17	25.9
Spain - Catalonia	SPA-CAT	1994/96	53	16	26.7
Sweden - Gothenburg	SWE-GOT	1994/96	47	13	26.2
Sweden - Northern Sweden	SWE-NSW	1994	50	14	26.4
Switzerland - Ticino	SWI-TIC	1992/93	53	13	26.5
Switzerland - Vaud, Fribourg	SWI-VAF	1992/93	47	16	26.5
United Kingdom - Belfast	UNK-BEL	1991/92	49	14	26.3
United Kingdom - Glasgow	UNK-GLA	1995	42	23	26.8
Yugoslavia - Novi Sad	YUG-NOS	1994/95	49	20	27.3
WOMEN					
Belgium - Charleroi	BEL-CHA	1990/93	33	24	26.8
Belgium - Ghent	BEL-GHE	1990/92	40	16	26.1
Czech Republic	CZE-CZE	1992	35	30	27.8
Denmark - Glostrup	DEN-GLO	1991/92	26	12	24.7
Finland - Kuopio Province	FIN-KUO	1992	34	26	27.1
Finland - North Karelia	FIN-NKA	1992	37	24	27.1
Finland - Turku, Loimaa	FIN-TUL	1992	35	19	26.2
France - Lille	FRA-LIL	1995/96	30	22	26.4
France - Strasbourg	FRA-STR	1995/97	31	19	26.2
France - Toulouse	FRA-TOU	1994/96	24	10	24.5
Germany - Augsburg (rural)	GER-AUR	1994/95	33	23	26.8
Germany - Augsburg (urban)	GER-AUU	1994/95	36	21	26.5
Germany - Bremen	GER-BRE	1991/92	36	19	26.3
Germany - East Germany	GER-EGE	1993/94	37	18	26.4
Iceland	ICE-ICE	1993/94	36	18	26.3
Italy - Area Brianza	ITA-BRI	1993/94	29	18	25.5
Italy - Friuli	ITA-FRI	1994	31	19	25.8
Lithuania - Kaunas	LTU-KAU	1992/93	34	32	28.0
Poland - Tarnobrzeg Voivodship	POL-TAR	1992/93	36	36	28.5
Poland - Warsaw	POL-WAR	1993	35	29	27.5
Russia - Moscow (control)	RUS-MOC	1992/95	33	22	26.5
Russia - Novosibirsk (control)	RUS-NOC	1995	33	35	28.5
Spain - Catalonia	SPA-CAT	1994/96	42	25	27.4
Sweden - Gothenburg	SWE-GOT	1994/96	31	10	24.9
Sweden - Northern Sweden	SWE-NSW	1994	34	14	25.7
Switzerland - Ticino	SWI-TIC	1992/93	27	16	25.3
Switzerland - Vaud, Fribourg	SWI-VAF	1992/93	31	10	24.7
United Kingdom - Belfast	UNK-BEL	1991/92	30	16	25.6
United Kingdom - Glasgow	UNK-GLA	1995	36	23	26.9
Yugoslavia - Novi Sad	YUG-NOS	1994/95	36	32	27.8

Notes: Overweight refers to a body mass index (BMI) of greater than or equal to 25 and less than 30 kg/m². Obese refers to a BMI of greater than or equal to 30 kg/m².

Age-standardized levels - refer to source for details of measurement and age-standardization.

Source: Evans A, Tolonen H, Hense HW, Ferrario M, Sans S, Kuulasmaa K, for the WHO MONICA Project (2001) Trends in coronary risk factors in the WHO MONICA Project. *International Journal of Epidemiology*; 30 (Suppl 1): S35-S40.

Table 10.2 Prevalence of obesity by sex, adults aged 15 and over, latest available year, Europe

	Survey year	MEN %	WOMEN %
Armenia	2000/01		14
Azerbaijan	2001		12
Belgium *	2004	12	13
Bosnia and Herzegovina	2002	17	25
Croatia	2003	22	23
Czech Republic *	2002	14	16
Denmark *	2000	10	9
Estonia *	2004	14	15
Finland	2000/01	21	24
Germany *	2002/03	14	12
Greece	2004	26	18
Hungary *	2003/04	17	18
Iceland *	2002	12	12
Ireland *	2002	14	12
Israel	1999/2001	20	25
Italy *	2003	9	9
Kazakhstan	1999		13
Kyrgyzstan	1997		9
Latvia *	2004	12	20
Lithuania *	2004	14	17
Macedonia, TFYR	1999		11
Malta *	2002	25	21
Netherlands	1998/2001	10	12
Norway *	1998	7	6
Poland	2000	16	20
Romania	1997	9	19
Serbia and Montenegro	2000	14	20
Slovenia *	2001	17	14
Spain	2003	13	14
Sweden *	2002/03	10	10
Switzerland *	2002	8	8
Turkey	1997	13	30
Turkmenistan	2000		10
Uzbekistan	2002	5	7

Notes: * estimate from self-reported data. Obesity is defined as a body mass index $\geq 30\text{kg/m}^2$. Blank cells indicate that insufficient data were available for an estimate. Comparisons between countries may be limited owing to differences in sample characteristics or survey years.

Source: World Health Organization (2007) World Health Statistics 2007. WHO: Geneva.

Figure 10.2a Prevalence of obesity, men aged 15 and over, latest available year, Europe

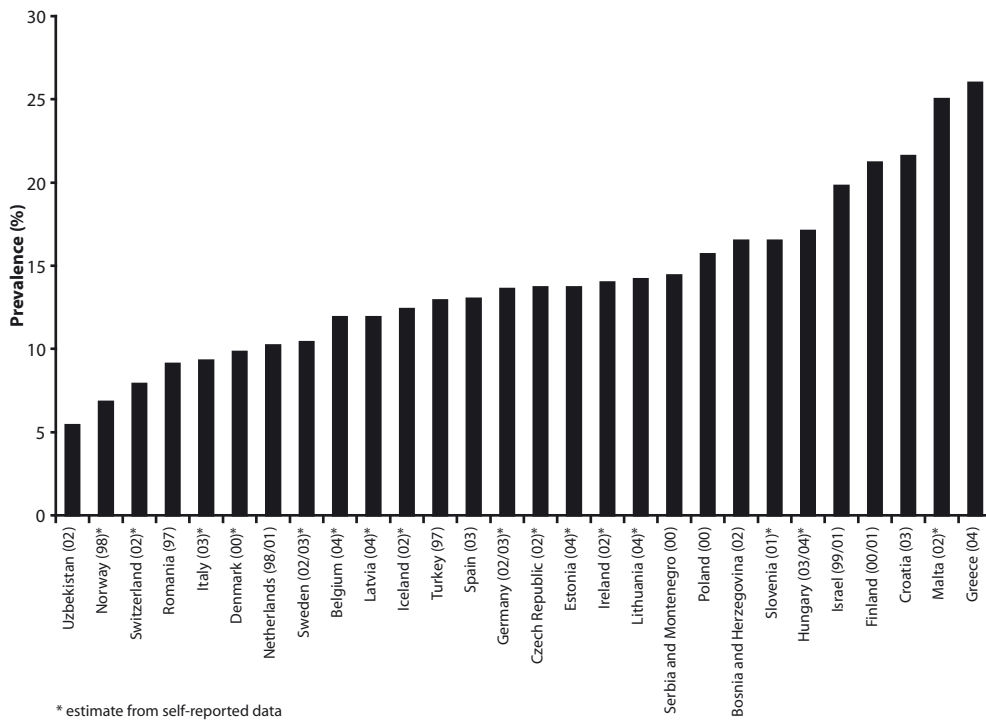


Figure 10.2b Prevalence of obesity, women aged 15 and over, latest available year, Europe

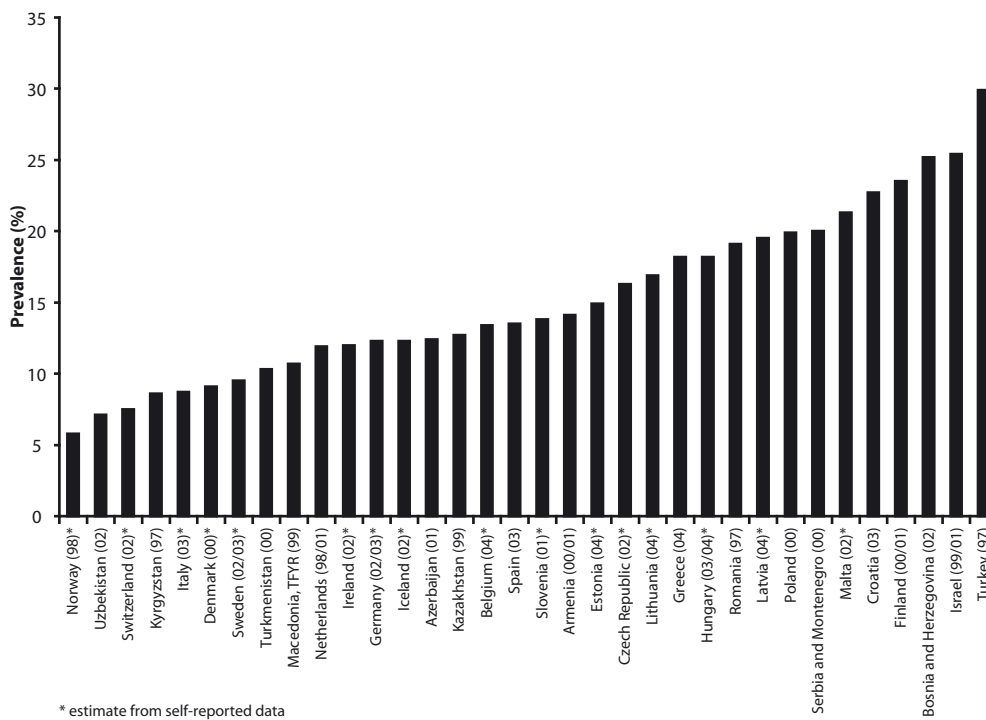


Table 10.3 Mean Body Mass Index by sex, adults aged 15 and over, 2002 and projections for 2005 and 2010, Europe

	MEN			WOMEN		
	Estimates for 2002 – kg/m ²	Projection for 2005 – kg/m ²	Projection for 2010 – kg/m ²	Estimates for 2002 – kg/m ²	Projection for 2005 – kg/m ²	Projection for 2010 – kg/m ²
Albania	26.0	26.0	26.0	25.8	25.8	25.8
Andorra	26.0	26.2	26.3	27.1	27.3	27.6
Armenia	25.5	25.5	25.5	25.7	25.7	25.7
Austria	26.2	26.5	26.7	25.9	25.9	26.1
Azerbaijan	25.9	25.9	25.9	26.4	26.4	26.4
Belarus	26.3	26.3	26.3	27.7	27.7	27.7
Belgium	25.1	25.4	25.6	24.2	24.2	24.5
Bosnia and Herzegovina	25.8	25.8	25.8	25.7	25.7	25.7
Bulgaria	26.3	26.3	26.3	25.0	25.0	25.0
Croatia	26.2	26.3	26.6	24.9	25.0	25.3
Cyprus	25.2	25.3	25.5	26.2	26.4	26.7
Czech Republic	26.0	26.1	26.4	25.2	25.3	25.6
Denmark	25.2	25.3	25.6	23.9	24.0	24.2
Estonia	25.1	25.1	25.1	23.5	23.5	23.5
Finland	26.5	26.6	26.8	25.6	25.6	25.9
France	24.6	24.7	25.0	23.5	23.7	23.9
Georgia	24.0	24.1	24.3	25.0	25.2	25.6
Germany	26.6	26.7	27.0	25.8	26.0	26.2
Greece	27.6	27.7	28.0	26.5	26.7	27.0
Hungary	25.8	25.8	25.8	25.1	25.1	25.1
Iceland	25.9	26.1	26.3	26.4	26.6	26.8
Ireland	25.1	25.3	25.5	24.2	24.3	24.5
Israel	25.8	25.9	26.2	26.3	26.5	26.7
Italy	25.4	25.5	25.7	24.1	24.2	24.4
Kazakhstan	24.6	24.6	24.6	24.4	24.0	24.0
Kyrgyzstan	23.6	23.6	23.6	24.7	24.7	24.7
Latvia	25.1	25.1	25.1	24.8	24.8	24.8
Lithuania	26.3	26.3	26.3	24.7	24.7	24.7
Luxembourg	25.4	25.6	25.8	25.4	25.6	25.8
Macedonia, TFYR	23.9	23.9	23.9	26.4	26.4	26.4
Malta	27.2	27.4	27.7	27.9	28.1	28.3
Moldova	23.6	23.7	24.0	24.6	24.9	25.2
Monaco	25.9	26.0	26.2	26.9	27.1	27.4
Netherlands	24.8	25.0	25.2	24.4	24.6	24.8
Norway	25.4	25.5	25.8	24.3	24.4	24.7
Poland	25.3	25.3	25.3	24.8	24.8	24.8
Portugal	25.7	25.9	26.1	25.0	25.2	25.5
Romania	23.9	23.9	23.9	24.2	24.2	24.2
Russian Federation	24.9	24.9	24.9	25.9	25.9	25.9
San Marino	25.8	25.9	26.1	26.9	27.1	27.4
Serbia and Montenegro	26.3	26.3	26.3	25.4	25.4	25.4
Slovakia	25.2	25.3	25.5	26.2	26.4	26.8
Slovenia	25.6	25.7	25.9	26.6	26.8	27.1
Spain	25.8	25.8	26.0	24.9	25.2	25.4
Sweden	25.3	25.5	25.8	24.5	24.6	24.9
Switzerland	25.4	25.6	25.8	25.6	25.9	26.2
Tajikistan	23.2	23.4	23.6	24.3	24.5	24.9
Turkey	25.0	25.0	25.0	27.6	27.6	27.6
Turkmenistan	25.0	25.0	25.0	24.9	24.9	24.9
Ukraine	24.3	24.3	24.3	25.4	25.4	25.4
United Kingdom	26.4	26.8	27.0	26.2	26.7	26.9
Uzbekistan	24.4	24.4	24.4	24.7	25.4	25.4

Notes: Values age-adjusted to the WHO standard population.

Source: World Health Organization (2005) *The SuRF report 2. Surveillance of chronic disease risk factors: country level data and comparable estimates*. WHO: Geneva.

Figure 10.3a Mean Body Mass Index, men aged 15 and over, 2002, Europe

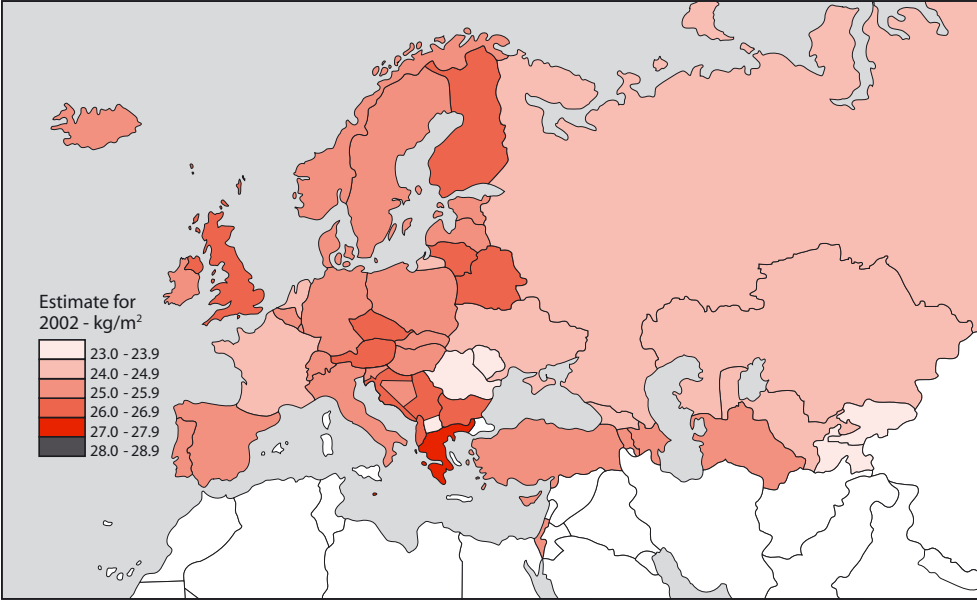


Figure 10.3b Mean Body Mass Index, women aged 15 and over, 2002, Europe

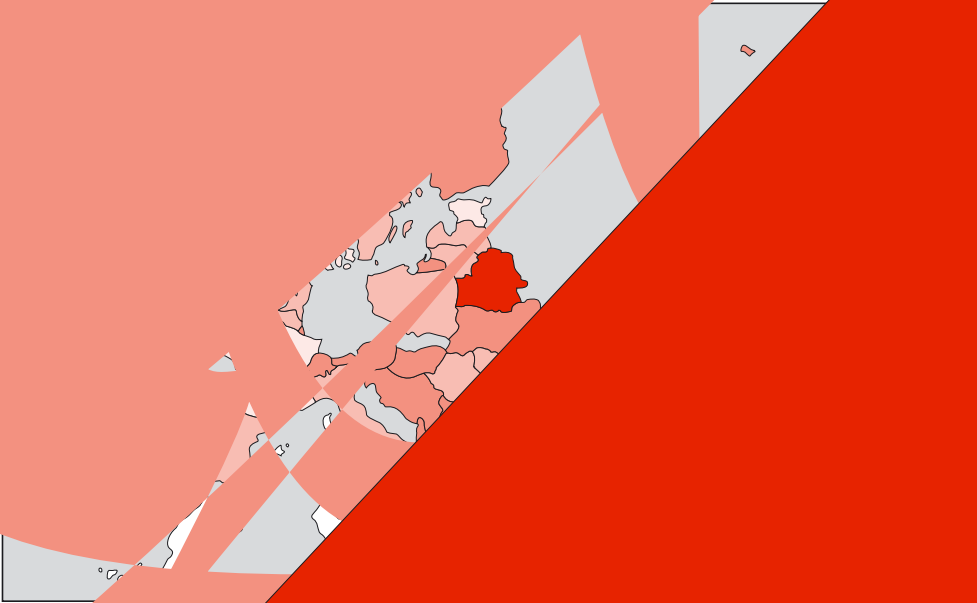


Figure 10.3c Mean Body Mass Index, men aged 15 and over, projections for 2010, Europe

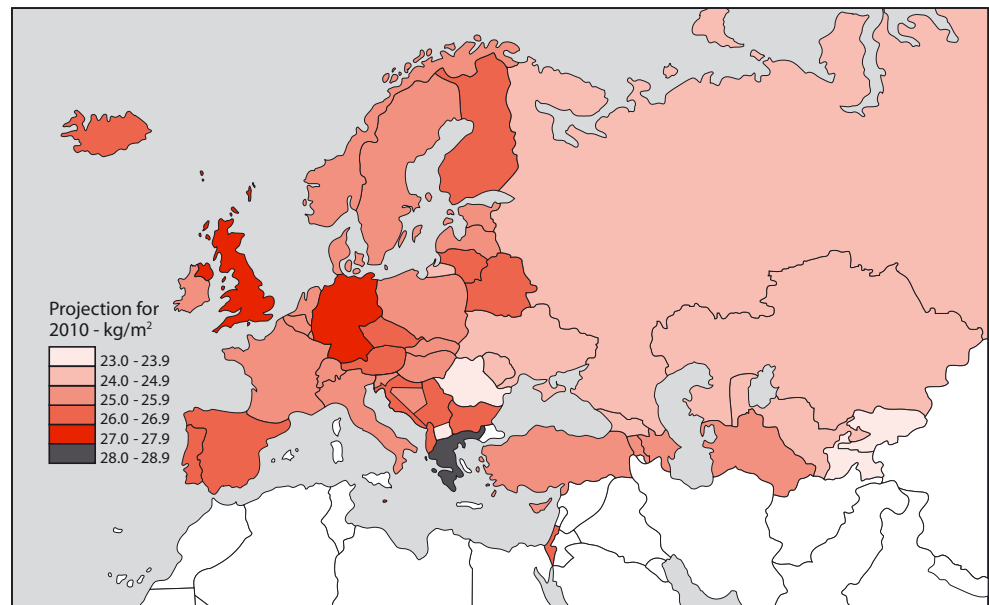


Figure 10.3d Mean Body Mass Index, women aged 15 and over, projections for 2010, Europe

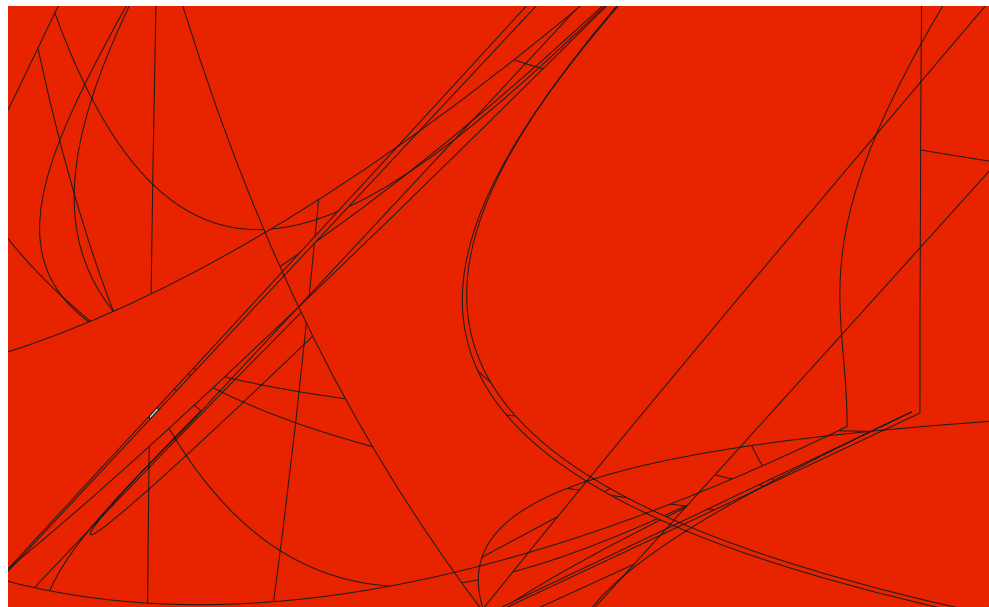


Table 10.4 Prevalence of overweight and obesity in children, latest available year, Europe

	Survey year	Age range	BOYS %	GIRLS %
Austria †	2003	8-12	23	17
Belgium †	1998/99	5-15	28	27
Bulgaria	1998	7-17	19	16
Cyprus	1999/2000	6-17	25	23
Czech Republic	2001	5-17	15	13
Denmark	1996/97	5-16	14	15
Estonia *	2001/02	13 and 15	19	9
Finland *	1999	12, 14 and 16	17	10
France	2000	7-9	18	18
Germany	1995	5-17	14	14
Greece	2003	13-17	30	16
Hungary	1993/94	10 and 15	18	16
Iceland	1998	9	22	26
Italy	1993/2001	5-17	27	25
Malta *	2001	13 and 15	31	20
Netherlands	1997	5-17	9	12
Poland	2001	7-9	14	15
Portugal	2002/03	7-9	30	34
Russian Federation	1992	5-17	24	20
Slovakia	1995/99	11-17	10	8
Spain	2000/02	13-14	35	32
Sweden	2001	6-11	18	27
Switzerland	2002	6-12	17	19
Turkey	2001	12-17	11	10
United Kingdom - England	2004	5-17	29	29

Notes: Body Mass Index cut off to define overweight and obesity from the International Obesity Task Force method, except for countries marked †, where the cut-off was based on the 90th centile (Austria) and the 85th centile (Belgium). See source for details.

Estimates for countries marked * are based on self report.

Source: International Obesity Task Force www.ietf.org. Accessed 11th July 2007.

11. Diabetes

There are two main types of diabetes: Type 1 and Type 2 diabetes¹. Diabetes not only substantially increases the risk of CVD but also magnifies the effect of other risk factors for CVD such as raised cholesterol levels, raised blood pressure, smoking and obesity.

The INTERHEART case-control study estimated that people with diagnosed diabetes are at three times the risk of a heart attack compared to those without².

There are two data sources on the prevalence of diabetes in Europe. *The WHO European Health for All database* compiles data from national diabetes registers, where available, or from routine reporting systems. The prevalence of diabetes is highest in Malta (7.6%) and the Czech Republic (7.2%). These data show the prevalence of diagnosed diabetes is increasing in nearly all countries of Europe (Table 11.1).

The WHO data, however, greatly underestimate the true prevalence of diabetes in the population as around 50% of diabetes is undiagnosed. The *International Diabetes Federation's Diabetes Atlas* collates population-based prevalence studies across Europe, and reports data on diagnosed and undiagnosed diabetes combined (Table 11.2). This study estimates an overall European prevalence of 7.8%, with over 48 million adults aged 20 to 79 years in Europe living with diabetes in 2003. Rates are generally highest in countries of Central and Eastern Europe (Fig 11.2).

1. Diabetes is characterized by high blood glucose levels. It arises when the pancreas fails to make enough insulin or when the body cannot effectively make use of the insulin produced or both. The chronic high blood glucose levels (hyperglycaemia) that result are associated with long-term damage, dysfunction and failure of various organs, especially the eyes, kidneys, nerves, heart and blood vessels. Type 1 diabetes results from an autoimmune destruction of the cells in the pancreas (the pancreas produces insulin). People with Type 1 diabetes must take daily injections of insulin for survival. Type 2 diabetes, which accounts for about 90% of all diabetes, is characterized by an inability on the part of the body to respond to insulin (insulin resistance) and/or abnormal insulin secretion. People with Type 2 diabetes are not usually treated with insulin. There are a number of other less common types of diabetes including gestational diabetes. This occasionally occurs during pregnancy in women not previously diagnosed with diabetes and is a marker of greater risk of developing Type 2 diabetes in later life.
2. Yusuf S, Hawken S, Ounpuu S, Dans T, Avezum A, Lanas F, McQueen M, Budaj A, Pais P, Varigo J, Lisheng A, on behalf of the INTERHEART Study Investigators (2004) Effect of potentially modifiable risk factors associated with myocardial infarction in 52 countries (the INTERHEART Study): case-control study. *The Lancet*; 364: 937-952.

Table 11.1 Prevalence of diabetes, 1980 to 2005, adults, Europe

	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	
Armenia	0.45	0.54	0.55	0.64	0.66	0.72	0.76	0.83	0.90	0.95	1.07	1.05	1.00	1.14	1.21	1.12	1.10	1.07	1.08	1.05	1.06	1.07	1.09	1.03	1.06	1.10	
Azerbaijan											0.63	0.62	0.61	1.19	1.17	1.14	1.14	1.04	1.18	1.30	1.29	1.37	1.45	1.53	1.56	16.50	
Belarus																										3.51	
Belgium																											
Bosnia and Herzegovina	0.44	0.51	0.47	0.50	0.57	0.49	0.57	0.55	0.62	0.72	0.73	0.73														1.68	
Bulgaria	0.83	0.95	1.02	1.08	1.07	1.10	1.19	1.20	1.19	1.13	1.14	1.12	1.15	1.30	1.31	1.32	1.51	1.58	1.62	1.73	1.72	1.72	1.71	1.73	1.72	7.22	
Czech Republic	3.07	3.27	3.42	3.64	3.78	3.83	3.93	4.06	4.24	4.46	4.62	4.76	4.89	4.78	4.86	5.35	5.65	5.83	5.92	6.07	6.37	6.37	6.39	6.54	6.73	6.98	
Denmark											2.40																
Finland	1.77	1.77	1.80	1.78	1.79	1.80	1.86	1.88	1.90	1.94	2.01	2.08	2.15	2.23	2.21	2.21	2.25	2.32	2.38	2.45	2.56	2.68	2.80	2.93	3.09	3.26	
France																											
Georgia											1.12	1.14	0.87	1.04	1.12	1.19	1.13	1.25	1.10	1.24	0.97	1.02	1.08	1.11	1.14	1.23	
Greece	0.16		0.18		0.19	0.20	0.19	0.19	0.20	0.18	0.17	0.17	0.17	0.18													
Hungary																											
Iceland	0.12								4.35																		
Ireland										0.14																	
Israel																											
Italy																											
Kazakhstan											0.61	0.70	0.71	0.69	0.66	0.63	0.63	0.63	0.60	0.56	0.71	0.72	0.60	0.81	0.89	0.78	
Kyrgyzstan	0.19		0.24	0.27	0.29	0.31	0.33	0.35	0.38	0.39	0.39	0.39	0.40	0.37	0.39	0.40	0.39	0.42	0.40	0.47	0.41	0.41	0.41	0.46	0.38	0.48	
Kyrgyzstan									1.06	1.09	1.13	1.20	1.21	1.04	1.05	1.07	1.03	1.07	1.17	1.38	1.50	1.54	1.49	1.73	1.72	2.09	
Latvia																											
Lithuania											0.78	0.84	0.90	0.93	0.95	0.97	0.94	0.98	0.93	1.14	1.19	1.46	1.51	1.71	1.95	2.06	
Lithuania																											
Malta																											
Netherlands																											
Netherlands																											
Norway																											
Norway																											
Portugal																											
Portugal																											
Moldova	0.55	0.57	0.60	0.65	0.70	0.75	0.80	0.86	0.90	0.97	1.01	1.03	1.02	0.98	0.97	0.94	0.93	0.91	0.94	0.92	0.91	0.73	0.78	1.01	1.08	1.21	
Romania											0.64	0.65	0.66	0.69	0.76	0.82	0.90	0.98	1.05	1.15	1.27	1.43	1.60	1.79	1.92	2.22	
Romania																											
Russian Federation																											
Russian Federation																											
Slovakia	2.45		2.78		3.06		3.13		3.29		3.43		3.55		3.70		3.76		3.82		4.18		4.41		5.24	5.34	
Slovakia																											
Slovenia	2.42		2.58		2.68		2.77		2.87		2.85		3.30		3.45		3.52		3.52		4.44		4.90		5.24	5.34	
Slovenia																											
Sweden																											
Sweden																											
Switzerland																											
Switzerland																											
Tajikistan																											
Tajikistan																											
Macedonia, TFYR																											
Macedonia, TFYR																											
Turkmenistan																											
Turkmenistan																											
Ukraine	0.86	0.91	0.97	1.04	1.11	1.18	1.27	1.35	1.42	1.48	1.56	1.68	1.69	1.71	1.73	1.74	1.76	1.76	1.78	1.83	1.85	1.87	1.92	1.97	2.05	2.15	
Ukraine																											
Uzbekistan																											
Uzbekistan																											
European Region																											
European Region																											

Source: World Health Organization (2007) European Health for All Database. <http://www.euro.who.int/hfad>

Table 11.2 Estimated prevalence of diabetes, 2003, 2007 and 2025, Europe

	2003					2007					2025				
	Population Aged 20-79 (000s)	Men (000s)	Women (000s)	Total (000s)	Crude prevalence %	Population Aged 20-79 (000s)	Men (000s)	Women (000s)	Total (000s)	Crude prevalence %	Population Aged 20-79 (000s)	Men (000s)	Women (000s)	Total (000s)	Crude prevalence %
Europe	621,235	22,337	26,041	48,378	7.8	634,373	25,270	27,884	53,154	8.4	646,334	27,842	30,796	58,638	9.1
Albania	1,966	35	40	75	3.8	1,995	46	50	96	4.8	2,559	61	70	131	5.1
Andorra	50	2	2	4	7.7	52	2	2	4	7.8	52	3	3	5	9.5
Austria	5,991	259	318	576	9.6	5,776	328	355	682	11.1	5,887	338	365	703	11.9
Azerbaijan	5,154	144	214	358	6.9	5,474	152	228	380	6.9	6,793	259	377	636	9.4
Belarus	7,336	309	374	683	6.9	7,241	307	363	669	9.2	7,233	357	417	773	10.7
Belgium	7,531	141	175	315	4.2	7,600	297	302	599	7.9	7,658	180	214	395	5.2
Bosnia and Herzegovina	3,074	117	178	295	9.6	2,972	111	156	267	9.0	3,270	166	237	402	12.3
Bulgaria	5,894	236	356	591	10.0	5,880	357	357	596	10.1	4,871	223	342	565	11.6
Croatia	3,412	82	117	199	5.8	3,445	139	194	329	9.5	3,304	97	124	221	6.7
Cyprus	541	12	15	28	5.1	604	21	21	62	10.3	637	18	22	40	6.3
Czech Republic	7,734	365	370	735	9.5	7,792	380	377	757	9.7	7,599	442	446	887	11.7
Denmark	3,863	121	144	265	6.9	3,889	153	138	291	7.5	3,988	148	182	330	8.3
Estonia	991	43	53	96	9.7	983	43	54	97	9.9	814	42	48	89	11.0
Finland	3,775	130	143	274	7.2	3,837	174	148	322	8.4	3,822	186	198	384	10.0
France	42,546	1,306	1,347	2,654	6.2	43,116	1,695	1,922	3,617	8.4	45,141	1,610	1,676	3,285	7.3
Georgia	3,681	129	203	332	9.0	3,130	111	175	286	9.1	3,341	143	215	358	10.7
Germany	61,895	2,879	3,415	6,294	10.2	62,580	3,063	3,816	7,379	11.8	60,030	3,459	3,685	7,144	11.9
Greece	8,069	217	276	493	6.1	8,554	346	391	737	8.6	7,767	254	312	566	7.3
Hungary	7,350	336	375	711	9.7	7,543	352	389	742	9.8	6,807	365	397	762	11.2
Iceland	192	2	2	4	2.0	204	2	2	4	2.0	229	3	3	6	2.5
Ireland	2,674	44	46	90	3.4	3,017	87	83	170	5.6	3,290	66	69	135	4.1
Israel	3,959	141	141	282	7.1	4,302	161	161	327	7.8	5,776	243	225	468	8.1
Italy	43,925	1,400	1,480	2,880	6.6	44,006	1,967	1,883	3,850	8.7	40,482	1,584	1,615	3,198	7.9
Kazakhstan	10,235	305	254	559	5.5	9,846	296	255	551	5.6	11,358	430	367	797	7.0
Kyrgyzstan	2,896	71	54	125	4.3	3,106	76	56	132	4.3	4,355	144	108	252	5.8
Latvia	1,758	78	96	174	9.9	1,707	76	94	170	10.0	1,610	84	94	178	11.1
Lithuania	2,648	115	134	249	9.4	2,481	110	130	240	9.7	2,626	136	148	284	10.8
Luxembourg	327	6	7	13	3.8	344	12	12	24	6.9	415	8	10	18	4.4
Macedonia, FYR	1,428	31	39	70	4.9	1,465	52	69	120	8.2	1,598	44	53	97	6.1
Malta	280	11	15	26	9.2	296	12	17	29	9.7	304	15	20	35	11.6
Moldova	2,915	117	125	242	9.3	3,026	122	128	250	8.3	3,095	148	154	302	9.8
Monaco	23	1	1	1	6.1	24	1	1	2	8.1	24	1	1	2	7.2
Netherlands	11,678	203	229	432	3.7	11,883	443	430	872	4.3	12,538	291	344	635	5.1
Norway	3,154	96	116	212	6.7	3,242	89	64	152	7.3	3,534	129	159	289	8.2
Poland	27,852	1,239	1,268	2,507	9.0	28,686	1,295	1,313	2,608	9.1	28,567	1,546	1,607	3,153	11.0
Portugal	7,471	279	306	585	7.8	7,922	317	331	648	8.2	7,456	344	362	706	9.5
Romania	16,392	760	759	1,519	9.3	16,212	759	766	1,525	9.4	15,860	834	843	1,677	10.6
Russian Federation	105,244	4,418	5,276	9,694	9.2	106,481	4,393	5,239	9,632	9.0	98,969	4,909	5,838	10,747	10.9
San Marino	20	1	1	1	6.1	22	1	1	2	7.8	21	1	1	2	7.2
Serbia and Montenegro	7,542	182	240	422	5.6	7,625	288	387	675	8.9	7,597	215	268	483	6.4
Slovakia	3,903	168	171	339	8.7	4,014	176	178	353	8.8	4,127	219	224	443	10.7
Slovenia	1,511	72	73	145	9.6	1,518	75	74	149	9.8	1,451	87	87	174	12.0
Spain	30,329	1,210	1,795	3,004	9.9	33,181	1,250	1,248	2,498	7.5	29,155	1,479	1,466	2,945	10.1
Sweden	6,290	206	251	457	7.3	6,456	214	253	468	7.2	6,373	246	303	549	8.6
Switzerland	5,310	235	270	505	9.5	5,336	284	313	597	11.2	5,114	308	339	647	12.6
Tajikistan	3,174	70	46	117	3.7	3,280	46	46	116	3.5	5,305	158	110	268	5.1
Turkey	42,411	1,254	1,704	2,959	7.0	46,513	1,386	1,901	3,287	7.1	59,689	2,285	3,145	5,430	9.1
Turkmenistan	2,648	62	43	105	4.0	2,857	67	48	115	4.0	4,337	143	105	248	5.5
Ukraine	35,625	1,552	1,901	3,453	9.7	34,309	1,489	1,849	3,347	9.8	31,102	1,558	1,800	3,358	10.8
United Kingdom	42,423	814	858	1,672	3.9	42,771	839	870	1,709	4.0	45,322	1,080	1,062	2,141	4.7
Uzbekistan	14,144	333	228	561	4.0	15,293	361	245	606	4.0	22,883	754	544	1,297	5.7

Source: International Diabetes Federation (2003) *The Diabetes Atlas (Second edition)* International Diabetes Federation: Brussels.
International Diabetes Federation (2006) *The Diabetes Atlas (Third edition)* International Diabetes Federation: Brussels.

Figure 11.2 Estimated prevalence of diabetes, 2003, Europe



12. Economic costs

CVD has major economic costs as well as human costs for Europe.

Health care costs

CVD cost the health care systems of the EU just under €110 billion in 2006^{1,2}. This represents a cost per capita of €223 per annum, around 10% of the total health care expenditure across the EU. The cost of inpatient hospital care for people who have CVD accounted for about 54% of these costs, and that of drugs for about 28% (Table and Figure 12.1).

The amount spent on health care for people with CVD varies widely across the EU. Cost per capita varied almost 12 fold in 2006, from €34 in Romania to €413 in Germany. Percentage of total health care expenditure spent on CVD varied from 5% in Luxembourg, Denmark and Cyprus to 17% in Poland (Table 12.1).

Around one-fifth (22%) of health care expenditure on CVD in the EU is due to CHD (Tables 12.1 and 12.2). CHD cost the health care systems of the EU just under €24 billion in 2006. Inpatient hospital care for people who have CHD accounted for about 52% of these costs and drugs accounted for about 25% (Table 12.2).

Almost one-fifth (17%) of health care expenditure on CVD in the EU is due to stroke (Tables 12.1 and 12.3). Stroke cost the health care systems of the EU over €18 billion in 2006. Inpatient hospital care for people who have strokes accounted for about 80% of these costs and drugs accounted for about 6% (Table 12.3).

Non health-care costs

Looking only at the cost of CVD to the health care systems of the EU grossly underestimates the true cost of CVD. Production losses from death and illness in those of working age and from the informal care of people with the disease contribute greatly to the overall financial burden.

In 2006, production losses due to mortality and morbidity associated with CVD cost the EU almost €41 billion, with around two-thirds of this cost due to death (€26.9 billion) and one-third due to illness (€13.9 billion) in those of working age (Table 12.4).

Just under half (46%) of the production losses due to mortality from CVD and almost a third (31%) of the cost of production losses due to morbidity were due to CHD. In 2006, production losses due to mortality and morbidity associated with CHD cost the EU just under €17 billion (Table 12.4).

Just under one-fifth (17%) of the cost of production losses due to mortality from CVD and more

than one-quarter (26%) of the cost of production losses due to morbidity were due to stroke. In 2006, production losses due to mortality and morbidity associated with stroke cost the EU over €8 billion (Table 12.4).

The cost of informal care for people with CVD in the EU is another important non-health care cost. In 2006, the total cost of providing this care was just under €42 billion. Just over one-fifth of these costs were due to CHD (€9.1 billion) and over one-quarter were due to stroke (€11.1 billion) (Table 12.4).

Total costs

Overall CVD is estimated to cost the EU economy €192 billion a year. This represents a total annual cost per capita of €391⁴. Per capita costs vary over 11 fold between Member States - from around under €60/capita/year in Bulgaria to over €600/capita/year in Germany and the UK⁴. Of the total cost of CVD in the EU, around 57% is due to direct health care costs, 21% to productivity losses and 22% to the informal care of people with CVD (Table 12.5).

CHD is estimated to cost the EU economy over €49 billion a year: just over one-quarter of the overall cost of CVD. Of the total cost of CHD in the EU, around 48% is due to direct health care costs, 34% to productivity losses and 18% to the informal care of people with CHD (Table 12.5).

Stroke is estimated to cost the EU economy over €38 billion a year: around one-fifth of the overall cost of CVD. Of the total cost of stroke in the EU, around 49% is due to direct health care costs, 23% to productivity losses and 29% to the informal care of people with stroke (Table 12.5).

1. *The figures for this section are from a new cost of illness study by researchers at the Health Economics Research Centre, Department of Public Health, University of Oxford. The analysis was carried out for the year 2006, and costs calculated for individual Member States and the EU as a whole. Details of the methods and data used can be found at www.heartstats.org/eucosts*

2. *Due to lack of data across the EU, this figure does not include the money spent on non-clinical activities concerned with the primary prevention of CVD, for example, public anti-smoking campaigns, nutrition education etc. However, the cost of drugs prescribed in primary care for both primary and secondary prevention are included.*

3. *The cost of informal care is equivalent to the opportunity costs of unpaid care. It is a measure of the amount of money that carers forgo to provide unpaid care for their spouse, friend or relative living with CVD. For more details of the methods used see www.heartstats.org/eucosts.*

4. *For data on total costs per capita (for individual Member States and the EU as a whole) see table at www.heartstats.org/eucosts*

Table 12.1 Health care costs of CVD, by country, 2006, EU

	Primary care	Outpatient care	Accident and Emergency	Inpatient care	Medications	Total health care costs	Cost per capita	Percentage of total health care expenditure
	€ (thousands)	€ (thousands)	€ (thousands)	€ (thousands)	€ (thousands)	€ (thousands)	€	%
Austria	109,234	96,853	17,518	875,423	533,837	1,632,865	198	6
Belgium	156,909	60,976	63,622	1,000,875	747,646	2,030,028	193	6
Bulgaria	32,042	32,051	5,607	132,270	71,305	273,275	35	14
Cyprus	4,321	6,608	3,182	10,559	20,727	45,397	59	5
Czech Republic	29,511	132,145	70,159	410,907	454,851	1,097,573	107	13
Denmark	55,495	63,335	13,576	619,399	238,178	989,983	182	5
Estonia	8,219	21,365	1,526	41,371	31,272	103,753	77	15
Finland	24,626	26,839	9,609	771,812	413,318	1,246,204	237	10
France	1,146,635	876,855	259,123	6,513,404	4,207,406	13,003,422	207	7
Germany	5,418,746	2,276,990	1,300,678	17,777,334	7,256,111	34,029,860	413	14
Greece	27,645	25,735	67,819	810,342	990,169	1,921,710	173	10
Hungary	48,213	73,963	6,169	174,053	449,449	751,847	75	10
Ireland	70,264	40,178	21,934	311,279	325,122	768,777	183	6
Italy	1,081,033	322,548	98,093	7,022,524	5,266,000	13,790,198	235	10
Latvia	5,694	9,793	2,242	57,460	33,189	108,378	47	9
Lithuania	19,057	13,612	2,263	94,984	71,327	201,243	59	13
Luxembourg	4,795	5,294	3,073	69,797	32,647	115,605	252	5
Malta	562	628	522	5,629	21,757	29,098	72	6
Netherlands	176,796	211,340	78,017	3,052,690	905,666	4,424,508	271	9
Poland	243,757	334,862	18,353	1,086,026	1,147,205	2,830,204	74	17
Portugal	173,348	82,802	136,535	547,579	659,087	1,599,851	151	10
Romania	24,833	113,071	9,653	366,838	209,437	725,833	34	15
Slovakia	42,314	59,617	3,475	131,791	160,639	397,836	74	13
Slovenia	12,441	12,195	6,579	65,130	85,620	181,966	91	7
Spain	439,422	579,507	259,513	1,849,545	2,566,623	5,694,611	130	7
Sweden	167,011	499,558	94,568	1,661,298	361,923	2,784,356	308	10
United Kingdom	1,098,629	390,487	88,760	13,635,293	3,698,222	18,911,391	313	12
EU	10,621,552	6,371,208	2,642,166	59,095,613	30,958,732	109,689,271	223	10

Notes: For details of methods and sources used, see www.heartstats.org/en/costs

Figure 12.1 Costs of CVD to the health care system, 2006, EU

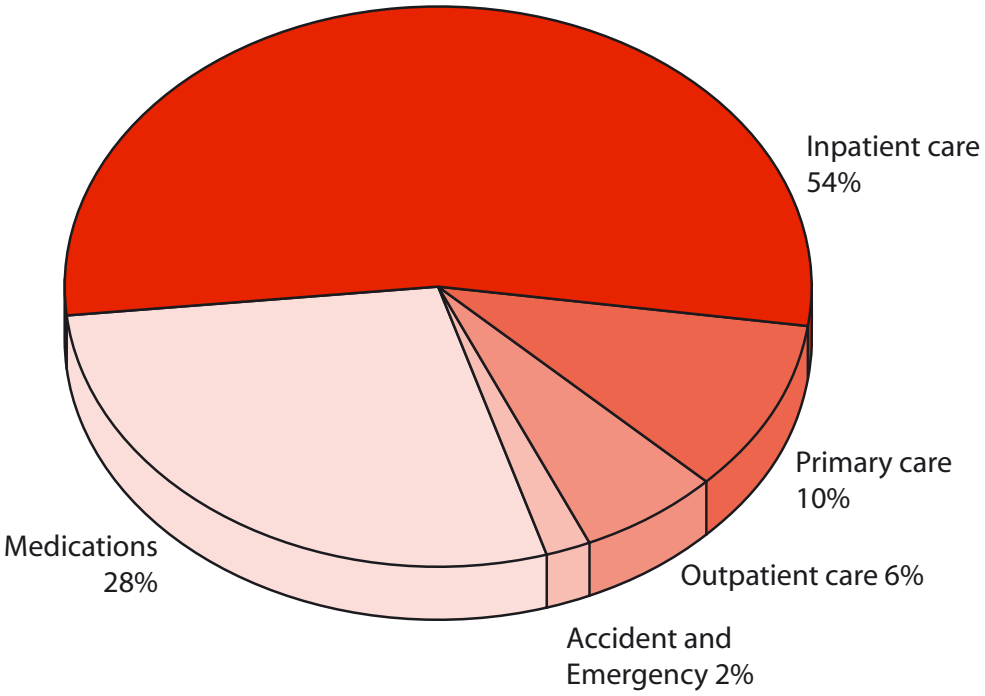


Table 12.2 Health care costs of CHD by country, 2006, EU

	Primary care	Outpatient care	Accident and Emergency	Inpatient care	Medications care	Total health costs	Cost per capita	Percentage of total health care expenditure
	€ (thousands)	€ (thousands)	€ (thousands)	€ (thousands)	€ (thousands)	€ (thousands)	€	%
Austria	28,556	25,320	4,580	178,982	117,444	354,882	43	1
Belgium	51,703	20,092	20,964	225,489	164,482	482,730	46	1
Bulgaria	5,637	5,638	986	22,220	15,687	50,169	6	2
Cyprus	1,502	2,296	1,106	3,478	5,149	13,532	18	2
Czech Republic	8,379	37,518	19,919	86,999	100,067	252,882	25	3
Denmark	17,995	20,537	3,933	145,053	52,389	239,918	44	1
Estonia	2,540	6,603	472	12,432	6,880	28,926	22	4
Finland	7,074	7,710	2,760	166,227	90,930	274,701	52	2
France	262,439	200,692	37,396	1,066,496	471,133	2,038,157	32	1
Germany	1,588,186	667,366	577,144	4,000,558	1,075,287	7,908,541	96	3
Greece	9,420	8,769	23,108	253,023	217,837	512,157	46	3
Hungary	9,271	14,223	1,186	25,652	98,879	149,212	15	2
Ireland	23,503	13,440	7,337	79,649	71,527	195,455	46	1
Italy	273,025	81,463	24,774	1,117,408	1,158,550	2,655,190	45	2
Latvia	1,838	3,161	724	16,967	7,301	29,990	13	3
Lithuania	5,746	4,104	682	20,331	15,692	46,555	14	3
Luxembourg	1,582	1,747	1,014	15,863	7,182	27,389	60	1
Malta	251	280	204	1,838	4,787	7,359	18	2
Netherlands	38,224	42,932	33,105	703,413	380,183	1,197,858	73	2
Poland	73,747	101,310	5,553	265,751	252,385	698,745	18	4
Portugal	40,027	19,119	31,527	108,499	144,999	344,172	33	2
Romania	4,534	21,010	1,763	64,626	46,076	138,008	6	3
Slovakia	14,067	19,820	1,155	41,544	35,341	111,928	21	4
Slovenia	2,752	2,697	1,455	12,293	18,836	38,034	19	1
Spain	115,291	152,045	68,088	442,694	564,657	1,342,776	31	2
Sweden	52,549	157,184	29,755	245,875	79,623	564,987	62	2
United Kingdom	177,140	136,349	29,811	3,116,830	813,609	4,273,738	71	3
EU	2,816,978	1,773,425	930,502	12,440,191	6,016,894	23,977,991	49	2

Notes: For details of methods and sources used, see www.heartstats.org/en/costs

Table 12.3 Health care costs of stroke by country, 2006, EU

	Primary care	Outpatient care	Accident and Emergency	Inpatient care	Medications	Total health care costs	Cost per capita	Percentage of total health care expenditure
	€ (thousands)	€ (thousands)	€ (thousands)	€ (thousands)	€ (thousands)	€ (thousands)	€	%
Austria	16,786	14,884	2,692	235,622	19,042	289,026	35	1
Belgium	20,182	7,843	8,183	221,799	26,669	284,677	27	1
Bulgaria	7,297	7,299	1,277	34,464	2,543	52,880	7	3
Cyprus	648	991	477	2,103	835	5,055	7	1
Czech Republic	5,133	22,985	12,203	112,555	16,225	169,100	16	2
Denmark	8,973	10,241	2,587	168,093	8,496	198,391	37	1
Estonia	1,476	3,836	274	12,557	1,115	19,258	14	3
Finland	4,158	4,532	1,623	317,838	14,743	342,894	65	3
France	112,702	86,186	16,060	1,040,325	172,712	1,427,985	23	1
Germany	731,492	307,377	5,640	3,469,295	304,554	4,818,358	58	2
Greece	4,813	4,481	11,808	429,299	35,319	485,719	44	2
Hungary	13,720	21,049	1,756	52,791	16,032	105,348	10	1
Ireland	9,517	5,442	2,971	80,594	11,597	110,121	26	1
Italy	195,193	58,240	17,712	2,161,498	187,838	2,620,481	45	2
Latvia	1,244	2,140	490	13,625	1,184	18,683	8	2
Lithuania	4,445	3,175	528	36,002	2,544	46,695	14	3
Luxembourg	359	396	230	8,799	1,165	10,949	24	0
Malta	80	89	51	1,168	776	2,164	5	0
Netherlands	11,572	21,538	13,875	1,198,632	22,302	1,267,919	78	3
Poland	33,982	46,683	2,559	245,309	40,921	369,454	10	2
Portugal	44,739	4,934	35,238	178,587	23,510	287,008	27	2
Romania	5,020	23,263	1,952	84,629	7,471	122,334	6	2
Slovakia	8,601	12,118	706	34,229	5,730	61,385	11	2
Slovenia	1,538	1,538	830	16,406	3,054	23,397	12	1
Spain	73,406	96,808	43,352	434,714	91,551	739,832	17	1
Sweden	29,743	88,968	16,841	318,206	12,910	466,668	52	2
United Kingdom	74,542	48,583	14,250	3,903,755	131,916	4,173,045	69	3
EU	1,421,396	905,618	216,164	14,812,894	1,162,753	18,518,825	38	2

Notes: For details of methods and sources used, see www.heartstats.org/en/costs

Table 12.4 Non health care costs of CVD, CHD and stroke, by country, 2006, EU

	CVD				CHD				Stroke			
	Production losses due to mortality	Production losses due to morbidity	Informal care	€ (thousands)	Production losses due to mortality	Production losses due to morbidity	Informal care	€ (thousands)	Production losses due to mortality	Production losses due to morbidity	Informal care	€ (thousands)
Austria	408,638	89,754	847,218	216,439	34,471	195,952	66,111	12,293	12,293	229,626	66,111	
Belgium	665,115	297,984	676,760	303,715	83,592	133,414	136,969	56,789	136,969	163,682	136,969	
Bulgaria	116,429	15,706	53,919	35,877	9,036	35,877	25,989	3,388	25,989	14,088	25,989	
Cyprus	33,620	6,273	18,492	20,536	2,770	5,310	4,997	741	4,997	4,473	4,997	
Czech Republic	327,873	148,201	182,965	142,460	27,570	36,378	49,534	43,158	49,534	63,229	49,534	
Denmark	562,883	258,548	602,604	235,807	68,618	136,718	121,859	74,413	121,859	202,204	121,859	
Estonia	59,633	11,062	17,571	26,409	2,845	5,380	11,415	2,868	11,415	5,443	11,415	
Finland	471,780	84,064	784,412	235,819	15,789	181,246	82,534	40,442	82,534	343,823	82,534	
France	2,230,399	934,705	6,449,854	776,205	193,355	1,053,676	452,801	146,479	1,053,676	1,143,708	452,801	
Germany	7,004,914	2,207,745	10,823,637	3,141,824	576,009	2,446,306	1,028,024	349,492	2,446,306	2,102,523	1,028,024	
Greece	606,303	62,722	387,987	327,762	45,534	126,106	104,091	20,360	104,091	203,095	104,091	
Hungary	487,247	86,245	353,417	246,157	12,712	52,107	85,710	22,704	52,107	107,835	85,710	
Ireland	291,067	103,285	80,000	149,996	31,259	19,302	48,224	24,956	48,224	23,369	48,224	
Italy	2,529,652	1,440,096	4,095,990	940,400	375,550	817,711	440,663	314,809	440,663	1,161,948	440,663	
Latvia	102,155	8,864	83,757	44,519	2,578	24,746	18,101	1,346	18,101	20,036	18,101	
Lithuania	135,380	17,983	99,263	68,368	5,257	19,903	20,933	5,090	20,933	41,891	20,933	
Luxembourg	32,459	13,171	37,939	12,332	4,168	8,734	6,304	1,249	6,304	4,744	6,304	
Malta	8,345	2,282	7,008	5,980	1,044	2,055	966	347	2,055	1,600	966	
Netherlands	1,075,322	800,197	1,596,490	430,965	286,110	444,808	187,624	139,149	444,808	336,555	187,624	
Poland	815,503	493,436	971,585	291,379	153,430	235,344	177,991	108,787	235,344	219,676	177,991	
Portugal	258,809	90,505	360,380	101,385	29,085	72,031	87,902	23,877	87,902	117,600	87,902	
Romania	503,157	43,665	164,855	223,595	9,668	28,645	147,045	9,511	147,045	38,147	147,045	
Slovakia	137,670	73,639	229,188	59,111	20,128	71,075	17,168	16,653	71,075	58,563	17,168	
Slovenia	62,718	17,532	88,139	23,008	4,663	16,019	13,237	4,019	16,019	22,773	13,237	
Spain	1,631,030	1,147,138	1,168,320	720,706	327,556	252,305	319,158	236,376	252,305	283,342	319,158	
Sweden	558,960	438,349	1,138,177	290,853	120,933	264,273	103,710	126,867	264,273	393,486	103,710	
United Kingdom	5,811,286	5,050,674	10,580,037	3,229,547	1,899,213	2,436,608	1,014,953	1,899,213	2,436,608	3,826,883	1,014,953	
EU	26,928,328	13,943,824	41,899,961	12,301,152	4,337,245	9,097,186	4,774,012	3,685,378	9,097,186	11,134,343	4,774,012	

Notes: For details of methods and sources used, see www.heartstats.org/en/costs

Table 12.5 Total cost of CVD, CHD and stroke, 2006, EU

	CVD (€ millions)	% of total	CHD € million	% of total	Stroke € million	% of total
Direct health care costs	109,689	57	23,978	48	18,517	49
Productivity loss due to mortality	26,928	14	12,301	25	4,774	13
Productivity loss due to morbidity	13,944	7	4,337	9	3,685	10
Informal care costs	41,900	22	9,097	18	11,134	29
Total	192,461	100	49,714	100	38,111	100

Notes: For details of methods and sources used, see www.heartstats.org/eucosts

Appendix

Member states of the WHO European Region

There are 53 member states of the WHO European region. These are listed below, with the 2006 mid-year population estimates for males and females. The 27 countries of the European Union are identified with an asterisk. A map follows, with countries identified by their three letter code.

Country	Code	WHO mortality strata sub-region	Male population 2006	Female population 2006
Albania	ALB	EUR-B	1,560,000	1,587,000
Andorra	AND	EUR-A	40,530	37,183
Armenia	ARM	EUR-B	1,400,000	1,608,000
Austria*	AUT	EUR-A	4,016,000	4,189,000
Azerbaijan	AZE	EUR-B	4,109,000	4,362,000
Belarus	BLR	EUR-C	4,529,000	5,171,000
Belgium*	BEL	EUR-A	5,122,000	5,315,000
Bosnia and Herzegovina	BIH	EUR-B	1,899,000	2,013,000
Bulgaria*	BGR	EUR-B	3,712,000	3,959,000
Croatia	HRV	EUR-A	2,193,000	2,363,000
Cyprus*	CYP	EUR-A	411,000	434,000
Czech Republic*	CZE	EUR-A	4,970,000	5,239,000
Denmark*	DNK	EUR-A	2,696,000	2,750,000
Estonia*	EST	EUR-C	609,000	716,000
Finland*	FIN	EUR-A	2,578,000	2,684,000
France*	FRA	EUR-A	29,578,000	31,145,000
Georgia	GEO	EUR-B	2,094,000	2,340,000
Germany*	DEU	EUR-A	40,408,000	42,308,000
Greece*	GRC	EUR-A	5,504,000	5,636,000
Hungary*	HUN	EUR-C	4,794,000	5,277,000
Iceland	ISL	EUR-A	149,000	149,000
Ireland*	IRL	EUR-A	2,095,000	2,115,000
Israel	ISR	EUR-A	3,389,000	3,458,000
Italy*	ITA	EUR-A	28,219,000	29,920,000
Kazakhstan	KAZ	EUR-C	7,290,852	7,856,177
Kyrgyzstan	KYZ	EUR-B	2,622,000	2,703,000
Latvia*	LVA	EUR-C	1,050,000	1,246,000
Lithuania*	LTU	EUR-C	1,593,000	1,824,000
Luxembourg*	LUX	EUR-A	232,000	239,000
Macedonia, TFYR	MKD	EUR-B	1,016,000	1,021,000
Malta*	MAL	EUR-A	200,000	203,000
Moldova	MDA	EUR-C	2,006,000	2,189,000
Monaco	MON	EUR-A	16,000	16,000
Montenegro	MTN	EUR-B	306,839	316,439
Netherlands*	NLD	EUR-A	8,127,000	8,240,000
Norway	NOR	EUR-A	2,307,000	2,336,000
Poland*	POL	EUR-B	18,664,000	19,834,000
Portugal*	PRT	EUR-A	5,099,000	5,446,000
Romania*	ROM	EUR-B	10,536,000	11,093,000
Russian Federation	RUS	EUR-C	66,080,000	76,458,000
San Marino	SMR	EUR-A	13,000	14,000
Serbia	SRB	EUR-B	3,618,040	3,822,729
Slovakia*	SVK	EUR-B	2,619,000	2,782,000
Slovenia*	SVN	EUR-A	960,000	1,006,000
Spain*	ESP	EUR-A	21,304,000	22,075,000
Sweden*	SWE	EUR-A	4,503,000	4,567,000
Switzerland	CHE	EUR-A	3,516,000	3,748,000
Tajikistan	TAJ	EUR-B	3,267,000	3,324,000
Turkey	TUR	EUR-B	37,362,000	36,813,000
Turkmenistan	TUK	EUR-B	2,412,000	2,487,000
Ukraine	UKR	EUR-C	21,051,000	24,935,000
United Kingdom*	GBR	EUR-A	29,258,000	30,589,000
Uzbekistan	UZB	EUR-B	13,417,000	13,564,000

Notes: * Member state of the European Union
 EUR-A: Very low child and very low adult mortality
 EUR-B: Low child and low adult mortality
 EUR-C: Low child and high adult mortality

Source: WHO (2007) European Health For All database www.euro.who.int/hfadb. Accessed October 2007.

