Health at a Glance: Europe 2016

STATE OF HEALTH IN THE EU CYCLE

OECD

European Commission

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Foreword

Ensuring universal access to quality care demands greater efforts to improve the effectiveness, accessibility and resilience of health systems in all EU countries. This new edition of Health at a Glance: Europe *stresses that more should be done to improve the health of populations in EU countries and, in particular, to reduce inequalities in access and quality of services. This is necessary to achieve more inclusive economic growth and to deliver on the Sustainable Development Goals (SDGs), in particular SDG 3 to ensure healthy lives and promote well-being for all at all ages.*

We need more effective health systems. *Policy action is needed to reduce the number of people dying prematurely and increase the number of years that people live in good health. Public health policies and the quality of care have undoubtedly improved over the past two decades, contributing to steady gains in life expectancy. In most EU countries, people can now expect to live beyond the age of 80, a gain of six years on average since the early 1990s. Moreover, the proportion of people dying after being admitted to hospital after a heart attack has dropped by nearly 40% across EU countries over the past decade alone. Yet, despite these gains, in 2013 more than 1.2 million people in EU countries died from a range of communicable and non-communicable diseases, as well as injuries that could have been avoided through better public health and prevention policies and the provision of more effective health care. Many lives could be saved if the standards of care were raised to the best level across EU countries.*

Globally, one of the health-related targets of the SDGs is to reduce the number of premature deaths due to non-communicable diseases (NCDs). This report looks at the impact that NCDs have not only on people's health, but also on the economy in terms of lower labour market participation and productivity. NCDs lead to the premature death of more than 550 000 people of working age each year across EU countries, resulting in the loss of 3.4 million potentially productive life years. This amounts to an annual loss of EUR 115 billion for EU economies, a figure which does not even include the loss from the lower employment rates and the lower productivity of people living with such chronic conditions.

Broad and coherent strategies are needed to address the many socioeconomic determinants of health and risk factors that are leading to many chronic diseases and premature deaths, particularly among disadvantaged groups. Notable progress has been achieved in reducing tobacco consumption in most EU countries, through a mix of public awareness campaigns, regulations and taxation. Still, more than one in five adults in EU countries continues to smoke every day. It is also crucial to step up efforts to tackle obesity and the harmful use of alcohol. More than one in five adults in EU countries report drinking heavily on a regular basis. And one in six adults across EU countries is obese, up from one in nine in 2000. Greater efforts are needed to tackle these major public health issues.

We need more accessible health systems. *Universal health coverage is a goal that has been embedded in the European Pillar of Social Rights and is another key objective of the Sustainable Development Goals. Most EU countries ensure that the whole population is covered for a core set of health services and goods, but some still need to address current coverage gaps for some segments of their population. In addition, too many Europeans, particularly those from the most vulnerable and disadvantaged groups, have difficulties in accessing necessary health care because of cost. In 2014, on average across EU countries, poor people were ten times more likely to report unmet medical needs for financial reasons than rich people. Any increase in unmet care needs may result in poorer health status for the population affected and contribute to even greater health inequalities.*

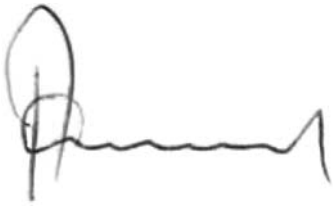
Universal access to care also relies on the right number of health workers, with the right skills, working in the right places to deliver health services to the population, wherever they live and whatever their ability to pay. While the number of doctors per capita has increased over the past decade in nearly all EU countries, the number of specialists grew more rapidly than generalists, so that there are now more than two specialists for every generalist across EU countries. This threatens access to primary care, particularly for people living in rural and remote areas.

We also need more resilient health systems. *Greater flexibility and innovation, including finding better ways to address the health needs of ageing populations and reaping the benefits of new technologies, requires changes in how we deliver health services. Following the global economic crisis in 2008, health spending growth has slowed significantly across Europe. This has triggered a wide range of initiatives to increase efficiency in public spending on health, notably by reducing the lengths of stays in hospital and pharmaceutical costs, and also by lowering administrative costs.*

Looking ahead, more pressures on health systems will come from population ageing and from new technologies. The latter promise better and earlier diagnoses and a greater range of treatment options, but also come at a cost. These changes can be afforded, but only if European health systems become more efficient at channelling resources where they have the most impact on health outcomes. In particular, a greater focus on primary care can help to promote more integrated and patient-centred care.

Health at a Glance: Europe 2016 *is part of the renewed co-operation between the OECD and the European Commission to implement the Commission's two-year State of Health in the EU cycle. We will be working closely with our partners at the national and international level to support EU Member States to deliver effective, accessible and resilient health systems in the EU, so that all European citizens can enjoy longer, healthier and more active lives.*

Angel Gurría
Secretary-General
Organisation for Economic Co-operation and Development



Vytenis Andriukaitis
European Commissioner
for Health and Food Safety

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This publication is the result of a close co-operation between the OECD and the European Commission and is the first step in the Commission's "State of Health in the EU" initiative to strengthen country-specific and EU-wide knowledge on health issues. The content, including the selection of key indicators of health and health systems, was agreed upon by the OECD and the Commission, based mainly on the European Core Health Indicators (ECHI), the Joint Assessment Framework on Health, and using the 2014 Commission Communication on effective, accessible and resilient health systems as reference framework. Its preparation was led by the OECD, but the Commission provided support throughout its preparation.

This publication would not have been possible without the effort of national data correspondents from the 36 countries who have provided most of the data and the metadata presented in this report, as well as the useful comments from members of the Commission's Expert Group on Health Information. The OECD and the European Commission would like to sincerely thank them for their contribution.

A large part of the data comes from the two annual data collections on health accounts and non-monetary health care statistics carried out jointly by the OECD, Eurostat and WHO. The OECD would like to recognise the work of colleagues from Eurostat (Giuliano Amerini, Justyna Gniadzik, Arja Kärkkäinen, Margarida Domingues de Carvalho and Marie Clerc), WHO Headquarters (Nathalie van de Maele, Veneta Cherilova, Chandika Indikadahena and Callum Brindley) and WHO Europe (Ivo Rakovac, Alena Usava, Omid Fekri and Stefanie Praxmarer) who have contributed to the collection and validation of the data from these two joint questionnaires, to ensure that they meet the highest standards of quality and comparability. Several indicators in Chapters 3 and 4 use data from the second wave of the European Health Interview Survey which was carried out in most EU countries in 2014; sincere thanks to Lucian Agafitei and Jakub Hrkal from Eurostat for making these data available in time for the preparation of this publication.

This report was prepared by a team from the OECD Health Division under the co-ordination of Gaétan Lafortune. Chapter 1 was prepared by Marion Devaux, with assistance from Eileen Rocard; Chapter 2 by Caroline Berchet; Chapter 3 by Gaétan Lafortune, Nelly Biondi, Marie-Clémence Canaud and Felicity Foster; Chapter 4 by Marion Devaux and Sahara Graf (thanks also to Joao Matias from the European Monitoring Centre for Drugs and Drug Addiction who prepared the indicator on illegal drug consumption); Chapter 5 by Michael Mueller, Michael Gmeinder and David Morgan; Chapter 6 by Ian Brownwood, Michael Padget and Nelly Biondi; Chapter 7 by Gaétan Lafortune, Gaëlle Balestat, Marie-Clémence Canaud and Michael Mueller; Chapter 8 by Gaétan Lafortune, David Morgan, Luke Slawomirski, Gaëlle Balestat and Marie-Clémence Canaud. This publication also benefited from useful comments from Francesca Colombo, Michele Cecchini, Ian Forde and Barbara Blaylock from the OECD Health Division.

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Executive summary

More effective prevention and quality care are needed to achieve further gains in population health and reduce health inequalities in EU countries

Life expectancy across EU member states has increased by more than six years since 1990, rising from 74.2 years in 1990 to 80.9 years in 2014, yet inequalities persist both across and within countries. People in Western European countries with the highest life expectancy continue to live over eight years longer, on average, than people in Central and Eastern European countries with the lowest life expectancy. Within countries, large inequalities in health and life expectancy also persist between people with higher levels of education and income and the more disadvantaged. This is largely due to different exposure to health risks, but also to disparities in access to high-quality care.

More than 1.2 million people in EU countries died in 2013 from illnesses and injuries that might have been avoided through more effective public health and prevention policies or more timely and effective health care. A wide range of actions are needed to address the many environmental and behavioural risk factors that are leading to premature deaths from diseases such as acute myocardial infarction (heart attack), lung cancer, stroke, alcohol-related deaths and other potentially avoidable deaths. Notable progress has been achieved in reducing tobacco consumption in most EU countries through a mix of public awareness campaigns, regulations and taxation. Yet, more than one in five adults in EU countries continues to smoke every day. It is also important to step up efforts to tackle the harmful use of alcohol and obesity, which are growing public health issues in many EU countries. More than one in five adults in EU countries reported in 2014 heavy alcohol drinking at least once a month. And one in six adults across EU countries was obese in 2014, up from one in nine in 2000.

The quality of care has generally improved in most EU countries, yet disparities persist. Improved treatments for life-threatening conditions such as heart attacks, strokes and several types of cancer have led to higher survival rates, but there is still room in many countries to improve the implementation of best practices in acute care and chronic care.

Ensuring universal access to care is critical to reducing health inequalities

Steady improvements in population health and reductions in health inequalities can also be achieved by ensuring universal access to high-quality care. Most EU countries have achieved universal (or near-universal) coverage of health care costs for a core set of services. However, four EU countries (Cyprus, Greece, Bulgaria and Romania) still had more than 10% of their population not regularly covered for health care costs in 2014.

Making sure that all the population is covered by public (or private) health insurance is an important indicator of access, but it is not sufficient. The range of services covered and the degree of cost-sharing applied to these services can also have an important impact on direct out-of-pocket expenditure by patients and financial accessibility. In most EU countries, the share of the population reporting unmet care needs due to financial reasons is fairly low and decreased in the years before the economic crisis, but this share has gone up since 2009 in several countries, particularly amongst the lowest-income households. In 2014, poor people were ten times more likely to report unmet

medical needs for financial reasons than rich people on average across EU countries. Any increase in unmet care needs may result in poorer health status for the population affected and thereby increase health inequalities.

Ensuring effective access to health care also requires having a sufficient number and mix of health care providers in different geographic regions in the country. Since 2000, the number of physicians per capita has increased in nearly all EU countries, on average by 20% (rising from 2.9 doctors per 1 000 population in 2000 to 3.5 in 2014). However, the number of specialists grew more rapidly than generalists, so that there are now more than two specialist doctors for every generalist across EU countries. In many countries, there are also persisting or growing problems regarding the uneven geographic distribution of doctors, with people living in rural and remote areas often being under-served. Many EU countries have taken measures in recent years to strengthen access to primary care providers for all the population wherever they live, to reduce inequalities in access and avoid unnecessary hospitalisations.

Strengthening the resilience, efficiency and sustainability of health systems

Population ageing, combined with tight budgetary constraints, will require profound adaptations to the health systems of EU countries, in order to promote more healthy ageing and respond in a more integrated and patient-centred way to growing and changing health care needs. On average across EU countries, the share of the population aged over 65 has increased from less than 10% in 1960 to nearly 20% in 2015 and is projected to increase further to nearly 30% by 2060. Currently, around 50 million EU citizens are estimated to suffer from two or more chronic conditions, and most of these people are over 65.

In 2015, health spending accounted for 9.9% of GDP in the EU as a whole, up from 8.7% in 2005. In all countries, the health spending share of GDP is projected to increase in the coming years due mainly to population ageing and the diffusion of new diagnostic and therapeutic technologies, and there will also be growing pressures on governments to respond to rising needs for long-term care.

As EU countries take up these challenges, there will be a need to further improve the planning and organisation of services to improve the resilience of health systems to be able to respond to new needs in the most efficient way. Health systems will also have to remain fiscally sustainable. Achieving further efficiency gains in hospital, pharmaceutical spending, administration and other health spending items will be crucial to meet the growing demands with limited resources. Many of the required improvements in health systems will involve at least some upfront investment. As countries consider how best to allocate any additional health spending, it will be important to maintain a good balance between investments in policies to improve public health and prevention, and policies to improve access, quality and efficiency in health care delivery.

Monitoring and improving the State of Health in the EU

Health at a Glance: Europe 2016 presents the most recent trends on health and health systems across the 28 EU member states, five candidate countries and three European Free Trade Association countries. It is the result of a strengthened collaboration between the OECD and the European Commission to improve country-specific and EU-wide knowledge on health issues as part of the Commission's new State of Health in the EU cycle (see *http://ec.europa.eu/health/state*).

Readers' guide

Health at a Glance: Europe 2016 presents key indicators of health and health systems in 36 European countries, including the 28 European Union member states, five candidate countries and three European Free Trade Association countries.

This new edition of *Health at a Glance: Europe* contains two main new features: 1) two thematic chapters at the beginning of the publication analyse in more depth the links between population health and labour market outcomes, and the need in all EU countries to strengthen primary care systems; and 2) a new chapter at the end of the publication on the resilience, efficiency and sustainability of health systems. This new chapter is designed to align more closely the content of this publication with the 2014 Commission Communication on effective, accessible and resilient health systems which proposes an EU agenda with tools and mechanisms to improve the performance of health systems in European countries.

The data presented in this publication are mostly official national statistics and have in many cases been collected through questionnaires administered jointly by the OECD, Eurostat and WHO. The data have been validated by the three organisations to ensure that they meet standards of data quality and comparability. Some data also come from European surveys co-ordinated by Eurostat, notably the European Union Statistics on Income and Living Conditions Survey (EU-SILC) and the second wave of the European Health Interview Survey (EHIS) and from the European Centre for Disease Prevention and Control (ECDC).

Structure of the publication

This publication is structured around eight chapters:

- Chapter 1 on *The labour market impacts of ill-health* draws on recent OECD methodologies to assess the labour market outcomes of selected modifiable risk factors to health (smoking, alcohol consumption and obesity) and related chronic diseases (e.g. diabetes, cancer, arthritis and mental health problems), in terms of employment opportunities, wages, productivity, sick leave, early retirement and receipt of disability or unemployment benefits. It concludes with a discussion on the potential of prevention policies and health care policies to improve the management of chronic conditions that might generate benefits both in terms of better health status for the population and better employment and economic outcomes.
- Chapter 2 on *Strengthening primary care systems* uses a number of indicators to measure access to primary care and its effectiveness and quality, either directly or indirectly through potentially avoidable hospital admissions. It identifies possible policy options that countries might consider to strengthen their primary care systems to better address the needs of ageing populations, drawing lessons from the recent series of OECD Health Care Quality Reviews and other relevant OECD work.
- Chapter 3 on *Health status* highlights the variations across countries in life expectancy and healthy life expectancy. It also presents more specific information on different causes of mortality and morbidity, including both communicable and non-communicable diseases. Wherever possible, it highlights the often substantial disparities between gender and socio-economic groups.

- Chapter 4 on *Determinants of health* focuses mainly on non-medical determinants of health among children and adults that are related to modifiable lifestyles and behaviours, such as smoking and alcohol drinking, the consumption of illegal drugs, nutrition habits, physical activity, and overweight and obesity. It also includes an indicator on air pollution, as another important factor affecting the health of children and adults.
- Chapter 5 on *Health expenditure* examines trends in health spending across European countries, both overall and for different types of health services and goods. It also looks at how these health services and goods are paid for and the mix between public funding, private health insurance, and direct out-of-pocket payments by households.
- Chapter 6 on *Effectiveness and quality of care* looks at potentially preventable deaths and amenable deaths (deaths that might have been avoided through the provision of optimal quality of care), based on the Eurostat lists of avoidable mortality. It then goes on to review more specific indicators of quality of care for chronic and acute conditions, cancers and communicable diseases, using the results from the OECD Health Care Quality Indicators data collection. The chapter also includes some indicators related to patient safety as measured by healthcare-associated infections and to tuberculosis outcomes, using data from the ECDC.
- Chapter 7 on *Access to care* presents a range of indicators related to access to care, starting with health care coverage and self-reported unmet needs for medical care and dental care. It also includes indicators on the availability of human resources, focusing on doctors and nurses (given the predominant role that they continue to play in most countries), and the availability of physical/technical resources, as well as the actual use of health services in hospital and outside hospital. It concludes by presenting trends in waiting times for some elective surgery (e.g. cataract surgery, and hip and knee replacement).
- Chapter 8 is a new chapter looking at the *Resilience, efficiency and sustainability of health systems*. It provides a small set of indicators related to how countries have responded to recent economic or other shocks on their health systems, and efforts to improve the efficiency of health systems to respond to growing needs with limited resources. It ends with some indicators related to the sustainability of health systems in terms of human resources and fiscal resources.

An annex provides some additional tables on the demographic and economic context within which different health systems operate, as well as additional data on health expenditure trends.

Presentation of indicators and calculation of EU averages

Following the first two thematic chapters, all indicators in the rest of the publication are presented in a user-friendly way over two pages. The first page provides a brief commentary highlighting the key findings conveyed by the data, defines the indicator(s) and discusses any significant national variations from that definition which might affect data comparability. On the facing page is a set of figures. These typically show current levels of the indicator and, where possible, trends over time. For those countries that have a relatively small population (less than 1 million), three-year averages have been calculated for several indicators in the chapter on health status and effectiveness and quality to minimise random errors due to small numbers.

The average in the figures includes only EU member states and is generally calculated as a *population-weighted average* of the EU member states presented (up to 28, if there is full data coverage), unless otherwise stated. This is an important difference from previous editions of *Health at a Glance: Europe* where EU averages were calculated based on an unweighted average (which gave the same weight to all countries, regardless of their population size). There remain, however, a few cases where the average is still calculated based on the unweighted average of EU countries for various reasons, notably to ensure consistency with owners of the data and authors of related reports (for example, the indicators on risk factors among children taken from the HBSC survey in Chapter 4 still use some unweighted average).

Data and limitations

Limitations in data comparability are indicated both in the text (in the box related to "Definition and comparability") as well as in footnotes to charts.

Readers interested in using the data presented in this publication for further analysis and research are encouraged to consult the full documentation of definitions, sources and methods contained in *OECD Health Statistics 2016* for all OECD member countries, including 22 EU member states and four additional countries (Iceland, Norway, Switzerland and Turkey). This information is available in OECD.Stat (*http://stats.oecd.org/index.aspx?DataSetCode=HEALTH*). For the ten other countries (Albania, Bulgaria, Croatia, Cyprus, the Former Yugoslav Republic of Macedonia, Lithuania, Malta, Montenegro, Romania and Serbia), readers should consult the *Eurostat Database* for more information on sources and methods: *http://ec.europa.eu/eurostat/data/database*.

Readers interested in an interactive presentation of the European Core Health Indicators (ECHI) indicators can also consult DG SANTE's ECHI data tool at *http://ec.europa.eu/health/indicators/indicators/index_en.htm*.

Population figures

The population figures for all EU member states and candidate countries presented in the annex and which are used to calculate rates per capita and the population-weighted EU averages in this publication come from the Eurostat demographics database. The data were extracted at the end of May 2016, and relate to mid-year estimates (calculated as the average between the beginning and the end of the year). Population estimates are subject to revision, so they may differ from the latest population figures released by Eurostat or national statistical offices.

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Chapter 1

The labour market impacts of ill-health

This chapter looks at the labour market impacts of chronic diseases and related behavioural risk factors, including obesity, smoking, and harmful alcohol consumption. Chronic diseases lead to the premature death of more than 550 000 people aged 25 to 64 each year across EU countries, resulting in the loss of some 3.4 million potential productive life years. Chronic diseases such as cardiovascular diseases, respiratory problems, diabetes, and serious mental health problems also have important labour market impacts for people living with these conditions: reduced employment, earlier retirement, and lower income. Using the latest data from the SHARE survey (Survey of Health, Ageing and Retirement in Europe), this chapter shows that the employment rate of people aged 50-59 who have one or more chronic diseases is lower than that of people who do not suffer from any disease. The same is true for people who are obese, smokers, or heavy alcohol drinkers. The labour market impacts of mental health problems such as depression are also large: across European countries, people aged 50-59 suffering from severe depression are more than two times more likely to leave the labour market early. The burden of ill-health on social benefit expenditures is huge: 1.7% of GDP is spent on disability and paid sick leave each year on average in EU countries, more than what is spent on unemployment benefits. Greater efforts are needed to prevent chronic diseases among the working-age population, and better integration is needed between health and labour market policies to reduce the detrimental labour market impacts of ill-health, and thus contribute to better lives and more inclusive economies.

Introduction

Health and work are interrelated in many ways: health problems can reduce labour market participation and income, and conversely, bad employment conditions or unemployment can negatively affect physical and mental health.

This chapter assesses the labour market outcomes of people with chronic (non-communicable) diseases (such as cardiovascular diseases, diabetes, cancer, musculoskeletal diseases, and mental health conditions) and related behavioural risk factors (such as obesity, tobacco and harmful alcohol use). Chronic diseases and related behavioural risk factors may result in the premature death of people still in their working age or reduce their employment prospects and earnings. Ill-health can cause recurrent sick leave or long-term absence from work, and increases the probability of early exit from the labour force. This can result in increased welfare payments for disability, sick leave, unemployment, or early retirement.

Preventing chronic diseases through properly designed public health and prevention policies may lead to substantial economic and employment benefits via a healthier and more active workforce. Through closer integration, health policies and labour market policies can also play an important role in reducing the detrimental labour market impacts of ill-health, and contribute to better lives and more inclusive economies.

This chapter reviews the latest evidence on the impacts of chronic diseases and related behavioural risk factors on labour market outcomes in European countries, building on previous OECD work (Devaux and Sassi, 2015). Eurostat data on mortality are used to estimate the number of potential productive years of life lost due to non-communicable diseases (NCDs) among the working-age population. The chapter also analyses the latest results from the Survey of Health, Ageing and Retirement in Europe (SHARE) to assess the labour market impacts of people living with chronic diseases and related risk factors. Labour market outcomes include employment status, productivity measures such as absence from work due to sickness and wages, and early exit from work.

Chronic diseases cause many premature deaths and a huge loss in potential productive life years

This section provides some estimates of the number of premature deaths due to NCDs among the working-age population and how this translates into the loss of potentially productive life years. The approach is based on some fairly simple and crude calculations, not accounting for all the productive life years lost due to greater morbidity and disability (which is discussed in the following sections, using a different dataset).

In the European Union, about 555 000 people aged 25 to 64 died from major NCDs (cardiovascular diseases, cancers, respiratory diseases, and diabetes) in 2013. This corresponds to a rate of about 200 per 100 000 population in this age group (Table 1.1). Premature mortality rates from NCDs among the working-age population were particularly high in Bulgaria, Hungary and Latvia (with a rate at least two-times greater than the EU average).

Assuming that these people would have been employed until age 65 at the same employment rate as the rest of the population, the associated potential loss for the economy is estimated to be around 3.4 million potentially productive life years across the 28 EU countries in 2013. This

Table 1.1. **Premature deaths and potential productive life years lost related to non-communicable diseases among people aged 25-64, EU countries, 2013**

	Premature NCD deaths		Potential productive life years lost	
	Number	Rate per 100 000 population	Number	Rate per 100 000 population
EU28 total	**555 065**	**201**	**3 412 060**	**1 236**
Austria	7 736	165	47 694	1 018
Belgium	10 307	173	62 115	1 042
Bulgaria	16 828	410	103 766	2 527
Croatia	6 894	293	40 015	1 701
Cyprus	558	116	3 786	789
Czech Republic	14 711	244	79 195	1 316
Denmark	5 177	178	29 755	1 023
Estonia	2 013	280	11 230	1 562
Finland	4 961	174	27 997	980
France	57 318	169	355 707	1 046
Germany	86 545	195	522 522	1 179
Greece	11 325	188	76 390	1 270
Hungary	22 947	411	129 389	2 319
Ireland	3 564	143	24 014	966
Italy	48 231	147	312 026	952
Latvia	4 439	400	29 731	2 682
Lithuania	5 910	372	39 220	2 466
Luxembourg	450	147	2 961	969
Malta	368	159	2 063	889
Netherlands	15 618	173	94 067	1 042
Poland	67 050	305	378 167	1 722
Portugal	9 827	170	66 294	1 147
Romania	40 621	361	247 952	2 203
Slovak Republic	9 148	289	53 324	1 685
Slovenia	2 380	200	13 384	1 122
Spain	38 003	142	256 969	960
Sweden	6 726	138	40 104	821
United Kingdom	55 410	166	362 228	1 084

Note: Non-communicable diseases include cardiovascular diseases (ICD-10: I00-I99), cancers (C00-C97), respiratory diseases (J40-J47), and diabetes (E10-E14). Potential productive life years have been calculated as the difference between the age of death and age 65, using the EU28 average of employment rates for the population aged 25-54 years and 55-64 years.
Source: OECD estimates based on Eurostat data.

StatLink http://dx.doi.org/10.1787/888933430238

corresponds to a rate of 1 236 productive life years per 100 000 population in that age group. Based on the average annual earnings of workers in EU countries of about EUR 33 800, this amounts to EUR 115 billion in potential economic loss each year (or 0.8% of GDP in the European Union).

Most premature deaths due to NCDs were for people aged 45-64. In 2013, about 508 000 people aged 45-64 died from NCDs in the EU. This corresponds to a loss of some 2.5 million potentially productive life years.

Chronic diseases and related behavioural risk factors reduce employment

In most cases, people of working age do not die from chronic diseases, but continue to live with them for several years (sometimes for the rest of their lives), with more or less severe levels of morbidity and disability. This section focuses on the employment impacts of chronic diseases and related risk factors such as obesity, smoking, and heavy alcohol drinking. Descriptive analyses are supplemented with econometric analysis of longitudinal survey data when possible to address at least partly possible reverse causal links (Box 1.1).

Box 1.1. **Assessing the impact of nonfatal health outcomes of chronic diseases on labour market outcomes: Methodological challenges and data sources**

The link between health and work is complex and difficult to explore because of its two-way causal relationship. The rest of this chapter illustrates this relationship using the latest data available for a large number of European countries, and aims to measure the impacts of health on labour market outcomes using econometric analysis to partly control for reverse causal links where possible.

Longitudinal data with information on both health (diseases and behavioural risk factors) and labour market outcomes were used for the causal analysis. The analysis used the two most recent waves of the Survey of Health, Ageing and Retirement in Europe (SHARE) in 2011 and 2013. The SHARE collects information on employment, retirement, chronic diseases diagnosed by a doctor (such as high blood pressure, diabetes, cancer, chronic lung disease, heart problems, stroke, arthritis, and ulcer), and health behaviours (such as obesity, smoking and alcohol drinking) among people aged 50 and over. The analysis is restricted to the population aged 50-59.

An econometric analysis based on longitudinal data from the SHARE assesses the impact of ill-health on labour market outcomes, at least partly addressing the endogeneity issue due to reverse causality. Logistic and negative binomial regression models accounting for clusters by country are used to assess the effect of lagged health outcomes (in 2011) on current labour market outcomes (in 2013). The control variables include: behavioural risk factors, age, age squared, marital status, education level, and country fixed effects. Further details (e.g. definition of variables, sample size) are provided in endnotes.

The rest of this chapter also provides some insights on the value of production potentially lost from illness due to adverse labour market outcomes. The evidence comes from many national or international studies using different definitions and valuation methods. The results are therefore not always strictly comparable across countries.

People with chronic diseases have lower employment rates

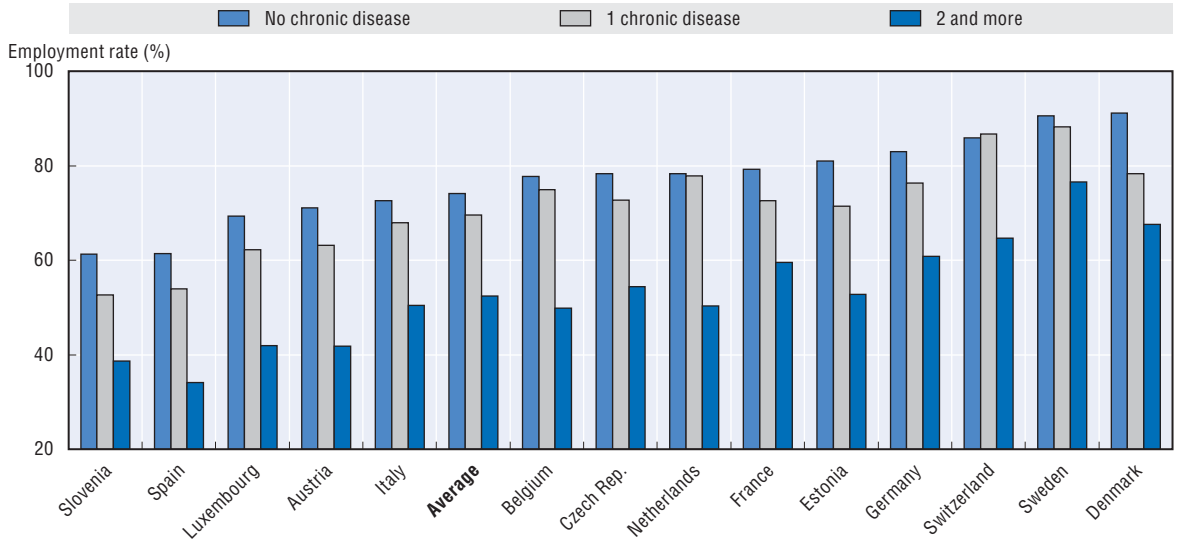
People with chronic diseases have reduced employment prospects, in part because they leave employment earlier or have greater difficulties re-entering the job market. Figure 1.1 shows that among people aged 50-59, 70% of those with one chronic disease and 52% of those with two or more chronic diseases[1] were employed in 2013, versus 74% of those with no chronic disease, on average across 14 European countries. Similar patterns are observed in virtually all 14 European countries.

Figure 1.2 shows significant differences for both men and women in the probability of being employed in 2013 depending on their chronic disease status in 2011. All things being equal, among people aged 50-59 in 2013, 83% of men without any chronic disease in 2011 were employed in 2013 compared to 74% of men with one chronic disease and 61% of those with two or more chronic diseases (respectively, 72%, 63%, and 48% among women).

Evidence for the effect of specific chronic diseases on employment is scarce in the economic literature, with some exceptions for diabetes, cancer, musculoskeletal diseases, and mental illness.

Diabetes is generally associated with a lower probability of employment. A recent cross-country study found that diabetes is associated with a 30% increase in the rate of labour-force exit across 16 European countries; at the national level, this association is significant in nine out of these 16 countries (Rumball-Smith et al., 2014). The impact of diabetes on employment depends heavily on the severity of the disease.

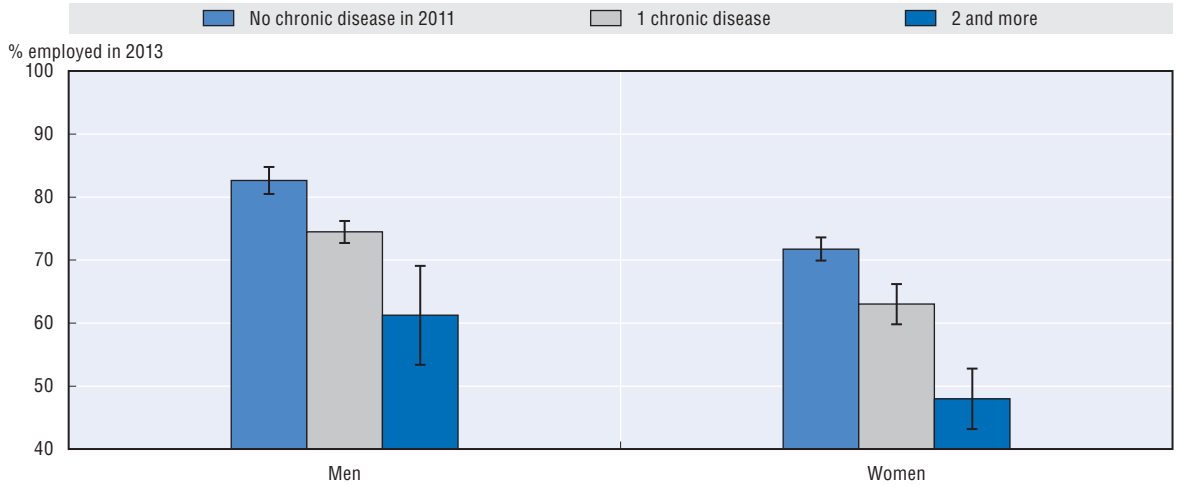
Figure 1.1. **Employment rate among people aged 50-59, with and without chronic diseases, 14 European countries, 2013**



Note: N = 17 666 in the 14 countries studied. See the Statlink for further details on the methodology.
Source: OECD estimates based on SHARE data (wave 5).

StatLink http://dx.doi.org/10.1787/888933428282

Figure 1.2. **Probability of being in employment among people aged 50-59 in 2013, by chronic diseases in 2011, aggregate results for 13 European countries**



Note: Excludes Luxembourg because it was not included in SHARE wave 4. N = 1 813 for men and N = 2 606 for women. 95% confidence intervals represented by H. See the Statlink for further details on the methodology.
Source: OECD estimates based on SHARE data (waves 4 and 5).

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As expected, cancer has a negative impact on employment probability. In Denmark, the probability of exiting the labour force increases by 5 to 10 percentage points three years after diagnosis among people with cancer compared to cancer-free people (Heinesen and Kolodziejczyk, 2013). Similarly, in France, 77% of people remained in employment two years after a cancer diagnosis compared to 94% of people without cancer (INCa, 2014).

A corrigendum has been issued for this page. See:
http://www.oecd.org/about/publishing/Corrigendum-HealthataGlanceEurope2016.pdf

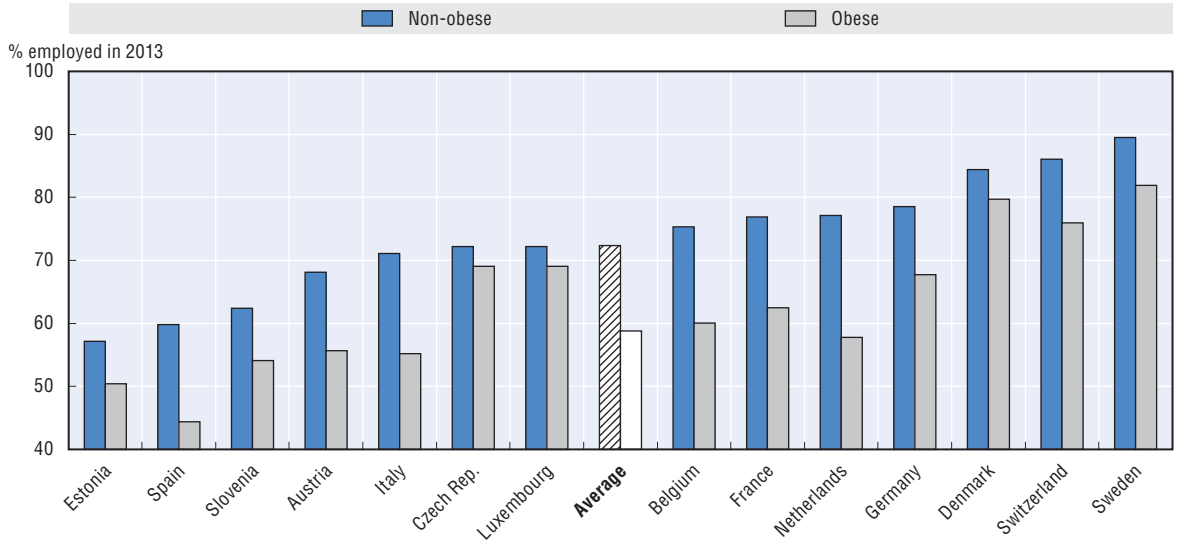
People with musculoskeletal diseases generally have lower employment rates and are more likely to leave employment early compared to people without such musculoskeletal problems. For example, a cohort study in the United Kingdom shows that a third of people who had symptoms of arthritis left work due to ill health (Oxford Economics, 2010).

People with mental health problems face a considerable employment disadvantage, are much less likely to be employed, and face much higher unemployment rates than people without mental health problems. The employment rate of people with severe mental disorders is 30 percentage points lower and the rate of those with mild-to-moderate mental health problems 10-15 percentage points lower (OECD, 2012). Unemployment rates of people with severe mental health problems are three to four times larger than those for people with no mental disorder. For people with mild-to-moderate disorders, this rate is on average almost twice the rate for people with no mental disorder (OECD, 2012).

Obese people are less likely to be employed than normal-weight people

Obese people are less likely to be employed than normal-weight people, although the association between obesity and labour market outcomes varies by gender and job characteristics (such as jobs requiring social skills or contact with clients and other types of occupations). Obese women are generally more penalised than obese men (e.g. Mosca, 2013 for Ireland; Lundborg et al., 2010 for Sweden). Figure 1.3 shows that among people aged 50-59, 59% of those obese were employed in 2013 versus 72% of those non-obese, on average across 14 European countries. Lower proportions of employment among obese people are consistently observed in all the countries studied.

Figure 1.3. **Employment rate among people aged 50-59, by obesity status, 14 European countries, 2013**



Note: N = 17 398 in the 14 countries studied. See the Statlink for further details on the methodology.
Source: OECD estimates based on SHARE data (wave 5).

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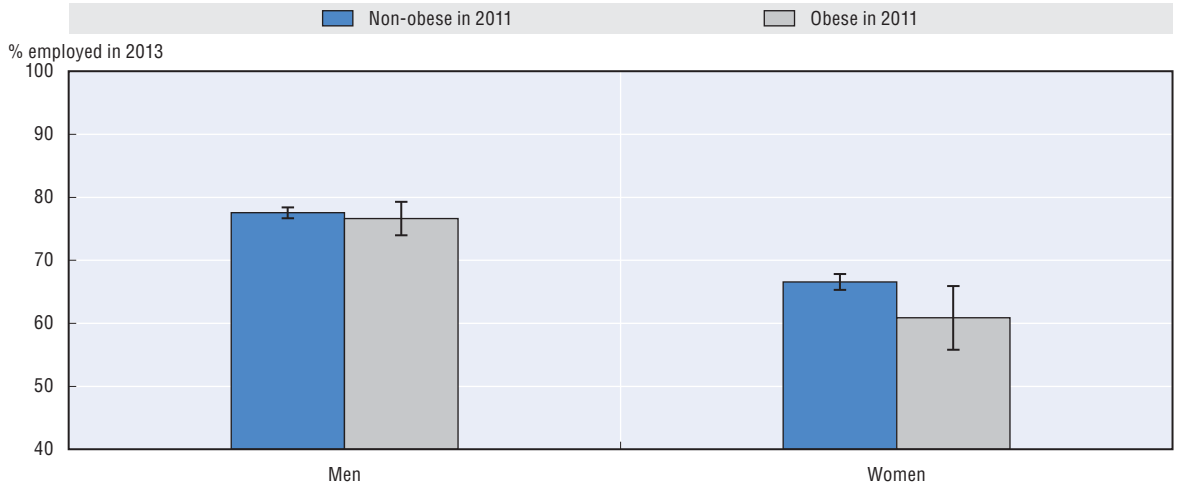
An econometric analysis[2] exploring the impacts of obesity on employment in 2013, net of the impacts of smoking and chronic diseases, shows that being obese in 2011 contributed to lower probabilities of employment in 2013 in men and women, although the relationship is not significant in men (Figure 1.4). All things being equal, 77% of men and 61% of women who were obese in 2011

Figure 1.4. **Probability of being employed among people aged 50-59 in 2013, by obesity status in 2011, aggregate results for 13 European countries**



Note: Excludes Luxembourg because it was not included in SHARE wave 4. N = 1 813 for men and N = 2 606 for women. 95% confidence intervals represented by H. See the Statlink for further details on the methodology.
Source: OECD estimates based on SHARE data (waves 4 and 5).

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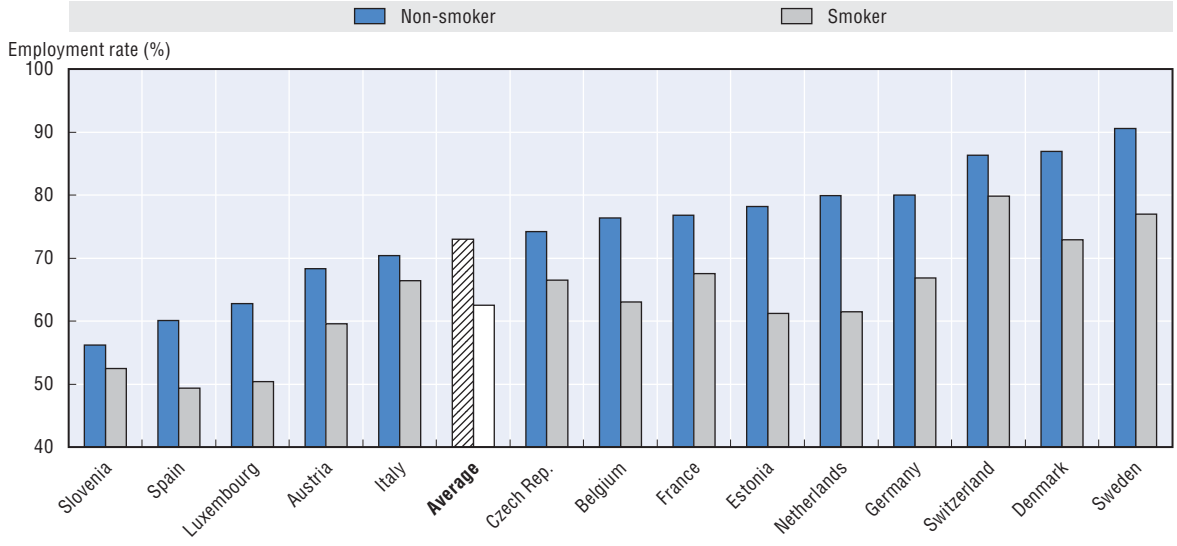
were employed in 2013 compared to 78% of men and 67% of women of normal weight. Among these people, some remained in employment and others re-entered the labour market. Obesity negatively affects both job retention and job return, but the relationship is not statistically significant.

Smokers have lower employment rates than non-smokers

Smoking is likely to affect employment status because of the well-known adverse health effects. Figure 1.5 shows that among people aged 50-59, 62% of current smokers were employed in 2013 versus 73% of non-smokers, on average across 14 European countries.

Figure 1.5. **Employment rate among people aged 50-59, by smoking status, 14 European countries, 2013**



Note: N = 17 514 in the 14 countries studied. See the Statlink for further details on the methodology.
Source: OECD estimates based on SHARE data (wave 5).

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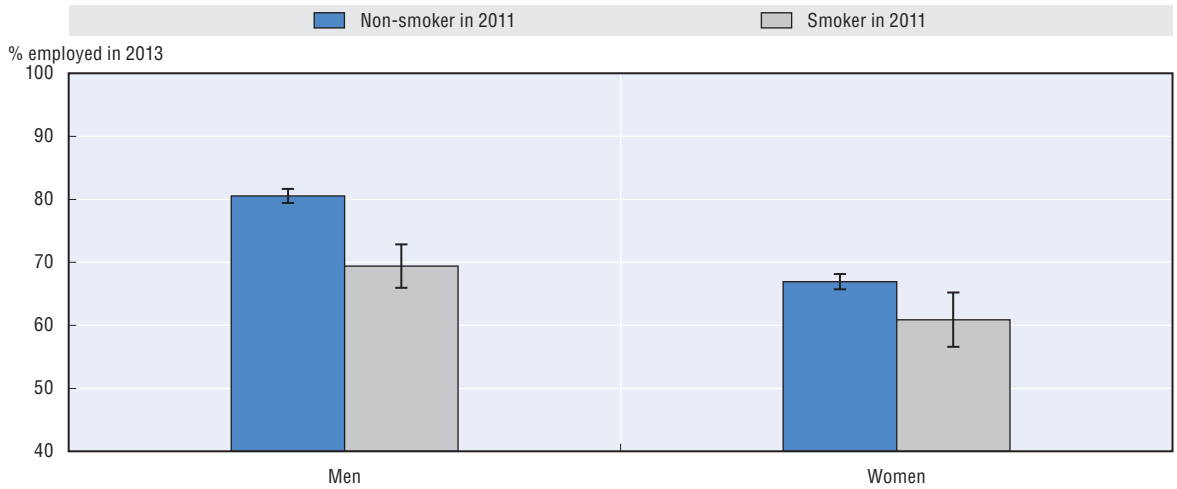
Using data from the SHARE (see endnote 2), Figure 1.6 shows significant differences in employment in 2013, by smoking status in 2011, for both men and women, suggesting that smoking contributes to lower employment opportunities. However, other studies only find a fairly small negative effect of smoking on the probability of employment (Schunck and Rogge, 2012) except for heavy smokers (Jusot et al., 2008). It is worth noting that differences by smoking status do not significantly affect whether one remains in employment or returns to employment.

Figure 1.6. **Probability of being in employment among people aged 50-59 in 2013, by smoking status in 2011, aggregate results for 13 European countries**



Note: Excludes Luxembourg because it was not included in SHARE wave 4. N = 1 813 for men and N = 2 606 for women. 95% confidence intervals represented by H. See the Statlink for further details on the methodology.
Source: OECD estimates based on SHARE data (waves 4 and 5).

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Heavy alcohol drinkers are less likely to be employed than light-moderate drinkers

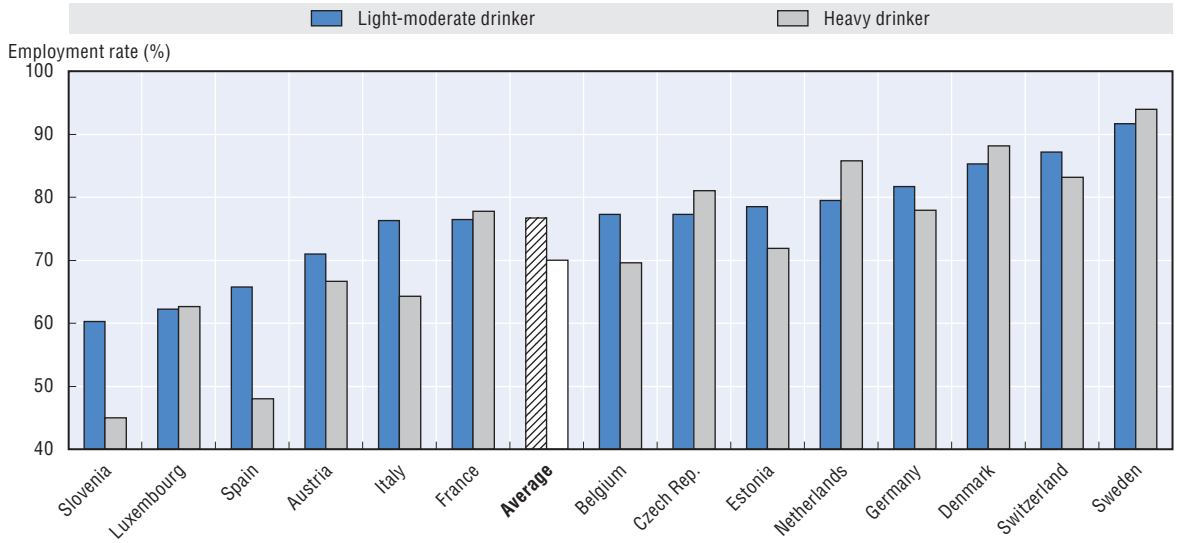
The impact of alcohol consumption on labour market outcomes is strongly affected by the quantity consumed and the pattern of consumption. The relationship between problematic alcohol consumption and employment is complex, with possible reverse causality as unemployment may cause alcohol problems.

Overall, evidence suggests that heavy alcohol users have reduced employment opportunities (MacDonald and Shields, 2004), although some studies found no significant relationship between alcohol abuse and employment (Asgeirsdottir and McGeary, 2009). Light drinkers are more likely to be working compared to long-term heavy drinkers, former drinkers, and abstainers (Jarl and Gerdtham, 2012). Evidence of positive effects of light-moderate drinking is, however, debated due to possible measurement error and classification of past drinking in studies (Stockwell et al., 2016; Jarl and Gerdtham, 2010).

Figure 1.7 shows that among people aged 50-59, the employment rate in 2013 is, on average across 14 European countries, about 70% for heavy drinkers compared to 77% for light-moderate drinkers. Eight out of 14 countries display lower employment rates among heavy drinkers, while six countries display the reverse relationship.

An econometric analysis (see endnote 2) exploring the impact of heavy drinking in 2011 on employment in 2013, based on SHARE data, controlling for obesity, smoking, and chronic diseases, shows a significant association between heavy drinking and lower employment in women only (Figure 1.8). All things being equal, among people aged 50-59, 63% of women (79% of men) who drank heavily in 2011 were employed in 2013 compared to 73% of women (82% of men) who drank moderately.

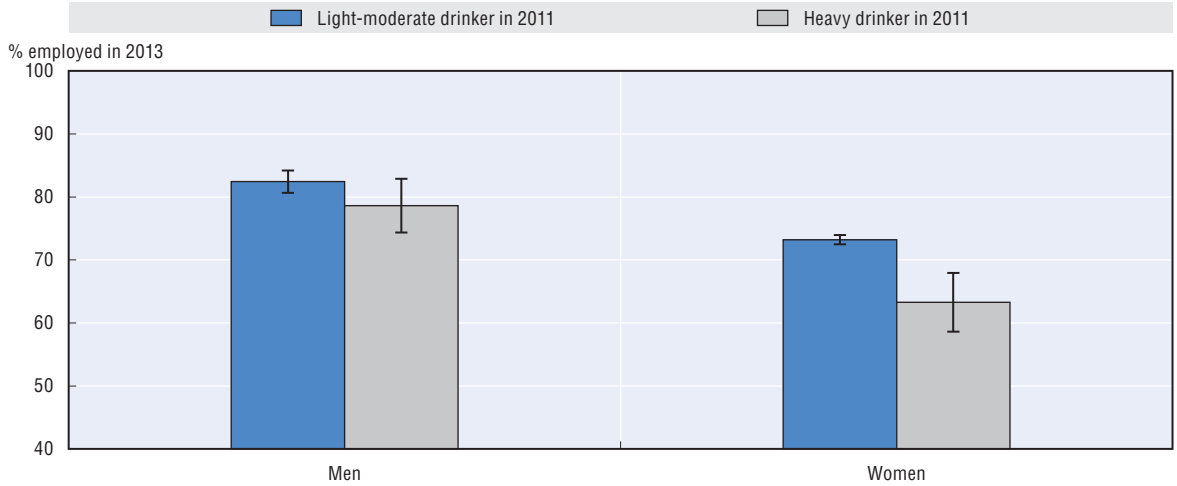
Figure 1.7. **Employment rate among people aged 50-59, by alcohol-drinking status, 14 European countries, 2013**



Note: N =13 318 in the 14 countries studied. See the Statlink for further details on the methodology.
Source: OECD estimates based on SHARE data (wave 5).

StatLink http://dx.doi.org/10.1787/888933428344

Figure 1.8. **Probability of being in employment among people aged 50-59 in 2013, by alcohol-drinking status in 2011, aggregate results for 13 European countries**



Note: Excludes Luxembourg because it was not included in SHARE wave 4. N = 1 497 for men and N = 1 777 for women. 95% confidence intervals represented by H. Non-drinkers are excluded. See the Statlink for further details on the methodology.
Source: OECD estimates based on SHARE data (waves 4 and 5).

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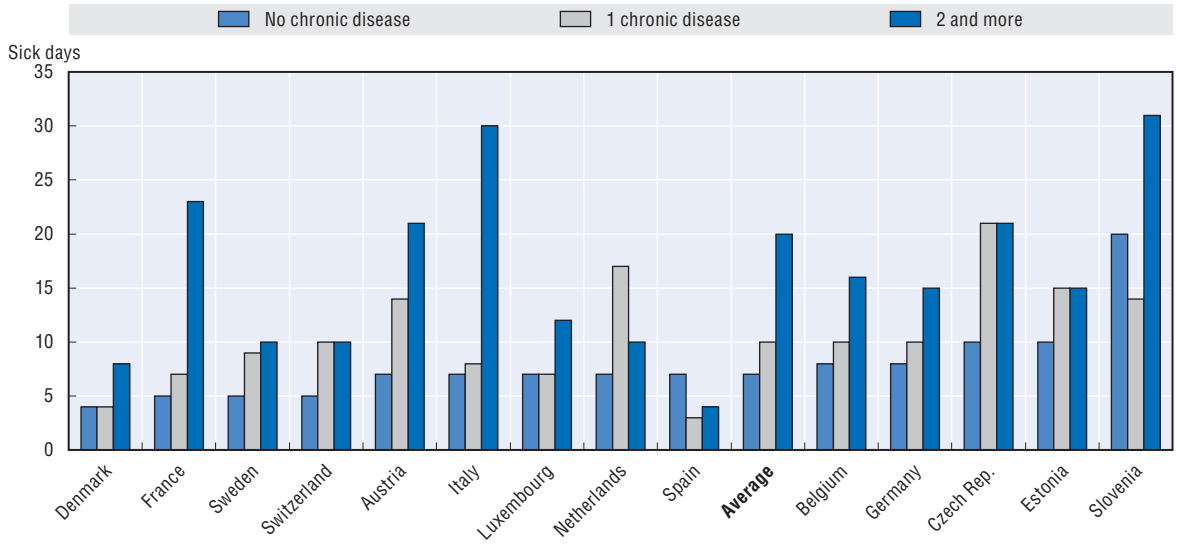
Chronic diseases and related behavioural risk factors also lead to lower productivity, hours worked and wages

Labour productivity can be measured in several ways, including rates of absenteeism from work or "presenteeism" at work (that is, being at work while sick, resulting in reduced performance), reduced work hours, and lower levels of wages. This section examines productivity losses due to chronic diseases and their risk factors.

People with chronic conditions work and earn less

Figure 1.9 shows that people with chronic diseases have more sick days than people without any chronic diseases in all countries but Spain. Among people aged 50-59 who were employed in 2013 and who reported absence from work in the past 12 months, the median number of sick days is 7 in people without chronic disease, 10 in people with one chronic disease, and 20 in people with two or more chronic diseases, on average across these 14 European countries.

Figure 1.9. **Number (median) of sick days in the last 12 months among employed people aged 50-59, by chronic diseases, 14 European countries, 2013**



Note: N = 12 228 in the 14 countries studied. See the Statlink for further details on the methodology.
Source: OECD estimates based on SHARE data (wave 5).

StatLink http://dx.doi.org/10.1787/888933428366

Chronic diseases reduce hours worked and wages. For instance, in the United States, men and women with chronic diseases worked about 6% and 4% fewer hours than healthy men and women, respectively, and earned about 6% and 9% less (Pelkowski and Berger, 2004).

Looking at the impact of specific chronic diseases, diabetes may affect the number of hours worked and the choice of full- or part-time work (Saliba et al., 2007). Evidence on US data shows that diabetes increases the number of work-loss days by two days per year in women (Tunceli et al., 2005). Diabetic people also generally earn less than nondiabetic workers (Minor, 2013).

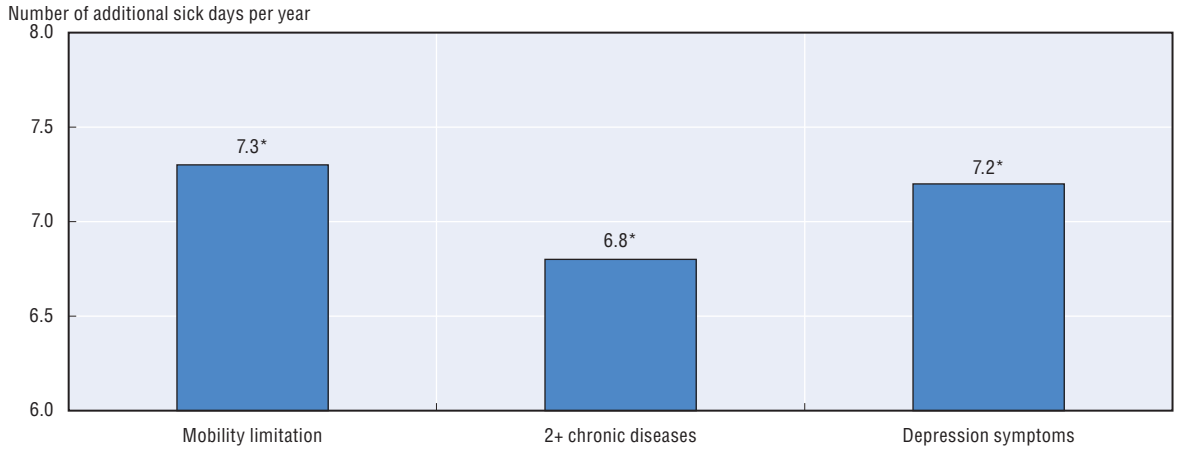
The effect of cancer on hours worked is also significant, with a difference of three to seven hours less per week for people with cancer compared to cancer-free people (Moran et al., 2011). Cancer increases work absence. In Canada, 85% of women diagnosed with breast cancer were absent from work for a four-week or longer period compared to 18% for healthy women (Drolet et al., 2005).

Musculoskeletal diseases are associated with lower productivity. In the United Kingdom, musculoskeletal problems accounted for 30.6 million days lost, which represented almost a quarter of the total days lost due to sickness absences in 2013 (Office for National Statistics, 2014).

Mental illness is responsible for a high incidence of sickness absence and reduced productivity at work (OECD, 2015a). Poor mental health reduces workers' marginal productivity when they are at work (presenteeism) and increases the rate of absence or reduces the numbers of hours worked (sickness absence). US workers lose an average of 1 hour per week owing to depression-related absenteeism and four hours per week due to depression-related presenteeism (Stewart et al., 2003).

Mental health problems are a predictor of both short- and long-term sickness absence, increasing the probability of short-term leave by 10% and of long-term leave by 13% for severe disorders and by 6% for mild-to-moderate disorders (OECD, 2012). Also, depression symptoms have a significant and large effect on sick-leave duration, since they account for an additional seven days of annual sick leave, more so than having two or more chronic diseases, as shown in Figure 1.10 (Knebelmann and Prinz, forthcoming).

Figure 1.10. **Additional days in annual sickness absence among workers aged 50-59 due to depression symptoms, European countries, 2013**



Note: N = 13 096.
* 0.1% significance level. See the Statlink for further details on the methodology.
Source: Knebelmann and Prinz (forthcoming). Authors' estimates based on SHARE data.

StatLink http://dx.doi.org/10.1787/888933428375

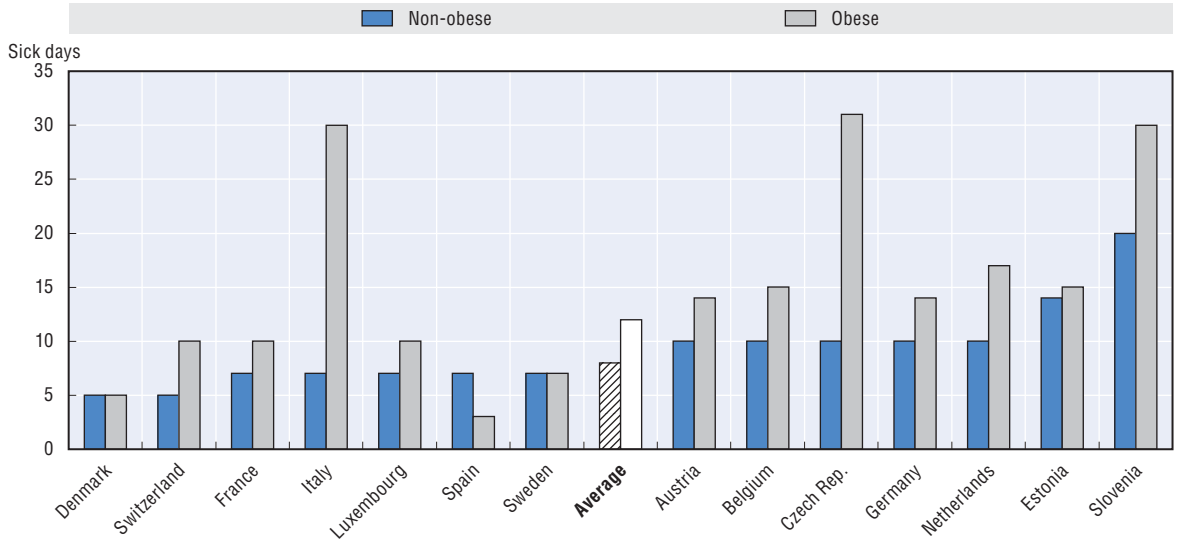
The negative labour market outcomes of chronic diseases amplify social inequalities on the labour market. Women and people with a low education level and blue-collar workers are more affected by the negative outcomes of chronic diseases on employment (Saliba et al., 2007). Lower autonomy and higher job demands increase the association of several chronic health problems (mental illness, circulatory diseases, musculoskeletal diseases, diabetes) with sickness absence.

The total costs of mental illness for society at large are estimated at 3-4% of GDP in the European Union (Gustavsson et al., 2011). Most of these costs are caused by people with mild-to-moderate mental illness, the majority of whom are employed. The large bulk of these costs are not direct costs borne by the health sector and related to medical treatments, but indirect costs due to loss of productivity and potential output, sick pay, and long-term inactivity – costs borne by employers and social benefits systems.

Obese people are more frequently absent from work and earn less than non-obese people

Obesity increases the likelihood of worker absence, especially for women (Cawley et al., 2007; Coudin and Souletie, 2016). Figure 1.11 shows that among people aged 50-59 who were in employment in 2013, more than half of obese people reported taking 12 sick days or more in the last 12 months, compared to eight days for non-obese people. Moderately and severely obese manufacturing workers have lower labour productivity because they experience greater difficulties with job-related physical tasks and with completing tasks on time compared to normal-weight workers. In the United States, obese workers' productivity was estimated to be about 12% lower compared to that of normal-weight workers (Goetzel et al., 2010).

Figure 1.11. **Number (median) of sick days in the last 12 months among employed people aged 50-59, by obesity status, 14 European countries, 2013**



Note: N = 12 091 in the 14 countries studied. See the Statlink for further details on the methodology.
Source: OECD estimates based on SHARE data (wave 5).

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The cost of productivity potentially lost due to obesity is high. Obese US workers cost an estimated USD 42.3 billion in lost productive time, an excess of USD 11.7 billion compared with normal-weight workers (Ricci and Chee, 2005). The loss of productivity associated with presenteeism is even larger than that associated with absenteeism, accounting for up to two-thirds of the monetary value of total productivity losses (Ricci and Chee, 2005).

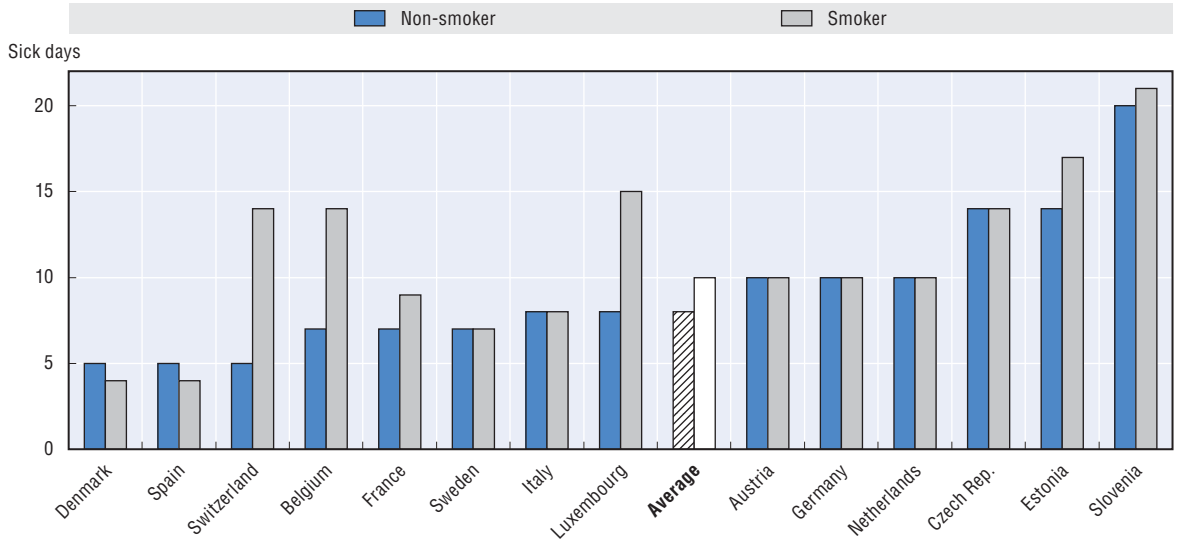
A review of the evidence covering 18 international studies highlighted that obese people earn about 10% less than normal-weight people (Sassi, 2010). This result was also found in a recent analysis of the 2012 German Socio-Economic Panel survey: among white-collar workers in Germany, obese women earn about 10% less on an hourly basis than non-obese women (Devaux and Sassi, 2015). In Sweden, a study of 450 000 men found an exceptionally large 18% wage penalty associated with obesity (Lundborg et al., 2010). More recently, in Finland, research concluded that a one-unit increase in BMI is associated with 6.6% lower wages and 1.7% fewer years employed (Böckerman et al., 2016).

Smokers are less productive and earn less than non-smokers

Smoking increases both the risk and duration of work absenteeism. For example, in Sweden, a 2007 study found that smokers were absent from work up to 8-10 days more per year compared to never-smokers (Lundborg, 2007). In a meta-analysis of 29 studies including OECD countries in Europe and outside Europe, current smokers were found to be 33% more likely to be absent from work than non-smokers (Weng et al., 2012). High costs of lost productivity are associated with smoking, in particular due to illness and smoking breaks, higher insurance premiums, increased accidents during work time, negative effects on non-smoking colleagues, and early retirement. Figure 1.12 shows that among people aged 50-59 who were employed in 2013, smokers reported ten days of absence due to sickness compared to eight days for non-smokers.

A comparison between current smokers and ex-smokers showed that quitting smoking can substantially reduce the risk of work absence (Weng et al., 2012). Smoking cessation can increase workers' productivity through reduced absenteeism and enhanced performance at work, and it has positive impacts on wages (Brune, 2007).

Figure 1.12. **Number (median) of sick days in the last 12 months among employed people aged 50-59, by smoking status, 14 European countries, 2013**



Note: N = 12 157 in the 14 countries studied. See the Statlink for further details on the methodology.
Source: OECD estimates based on SHARE data (wave 5).

StatLink http://dx.doi.org/10.1787/888933428396

Several studies have found that smokers suffer from wage penalties (e.g. van Ours, 2004, for the Netherlands). Cumulative lifetime cigarette consumption is also associated with lower long-term earnings. For instance, in Finland, reducing tobacco consumption by five pack-years could be associated with a 5-7% increase in wages (Böckerman et al., 2014). The relationship between tobacco use and wage gaps among workers is often explained by smokers' lower labour productivity, including frequent smoking breaks, absences due to sickness, and poorer health, resulting in lower wages (Berman et al., 2013).

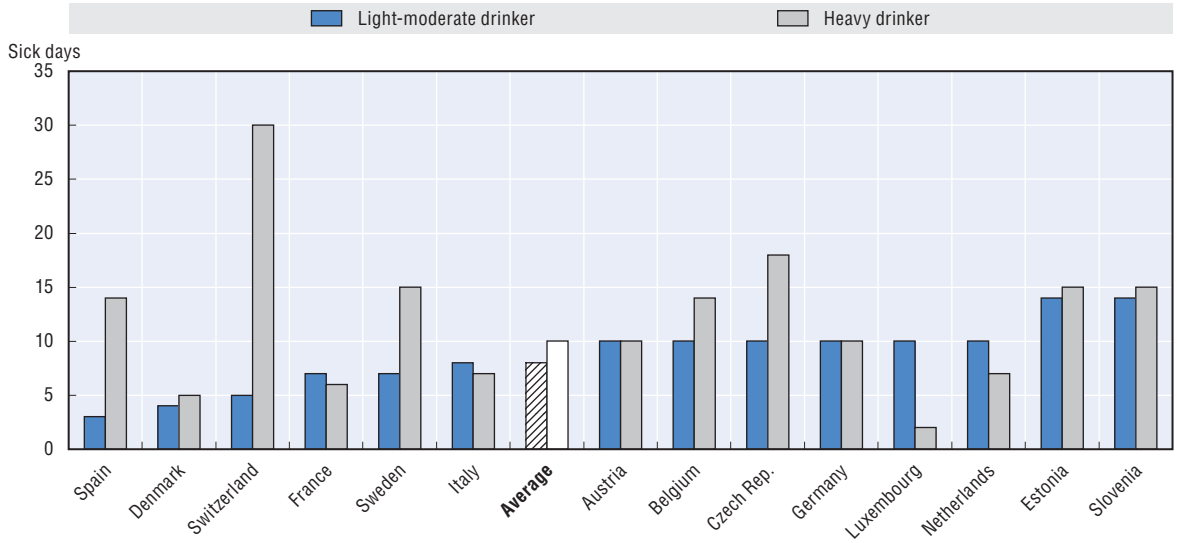
Smoking imposes a significant burden on the economy and society through such productivity loss. In France, the lost production related to tobacco smoking was estimated at around EUR 8.6 billion in 2010, about the same as for alcohol consumption (Kopp, 2015).

Heavy drinkers are less productive at work and earn less than light-moderate drinkers

Light-moderate drinkers have less absences from work compared to former and heavy drinkers as well as lifetime abstainers, partly because they are generally in better health. For instance, in Finland, medically certified absences from work were 20% higher among lifetime abstainers, former drinkers, and heavy drinkers compared with light drinkers (Vahtera et al., 2002). Similarly, in Sweden, absences from work were 10% higher among long-term heavy drinkers compared to long-term light drinkers (Jarl and Gerdtham, 2012). Figure 1.13 shows that among people aged 50-59 who took sick leave in the past 12 months, light-moderate drinkers reported eight sick days versus ten days for heavy drinkers, with variations across countries.

Moderate drinkers have higher wages than heavy drinkers and abstainers. The wage gap between moderate drinkers on one hand, and former and heavy drinkers on the other hand, is estimated at around 20% in Finland (Böckerman et al., 2015). Moderate drinkers spend more time with their colleagues out of work and they tend to be in good health, which positively influences their wages. They have a higher degree of life satisfaction than abstainers and have stronger social networks. Social and networking skills are important factors in the labour market and can have a big impact on wages.

Figure 1.13. **Number (median) of sick days in the last 12 months among employed people aged 50-59, by alcohol-drinking status, 14 European countries, 2013**



Note: N = 9 927 in the 14 countries studied. See the Statlink for further details on the methodology.
Source: OECD estimates based on SHARE data (wave 5).

StatLink http://dx.doi.org/10.1787/888933428406

In France, production losses related to alcohol were estimated at around EUR 9 billion in 2010 (Kopp, 2015). In the European Union, alcohol accounted for an estimated EUR 59 billion worth of potential lost production through absenteeism, unemployment, and lost working years through premature death in 2003 (Anderson and Baumberg, 2006).

Ill-health leads workers to premature labour market exit, resulting in increased expenditures on social benefits

People with chronic conditions are more likely to enter in disability, unemployment or early retirement schemes

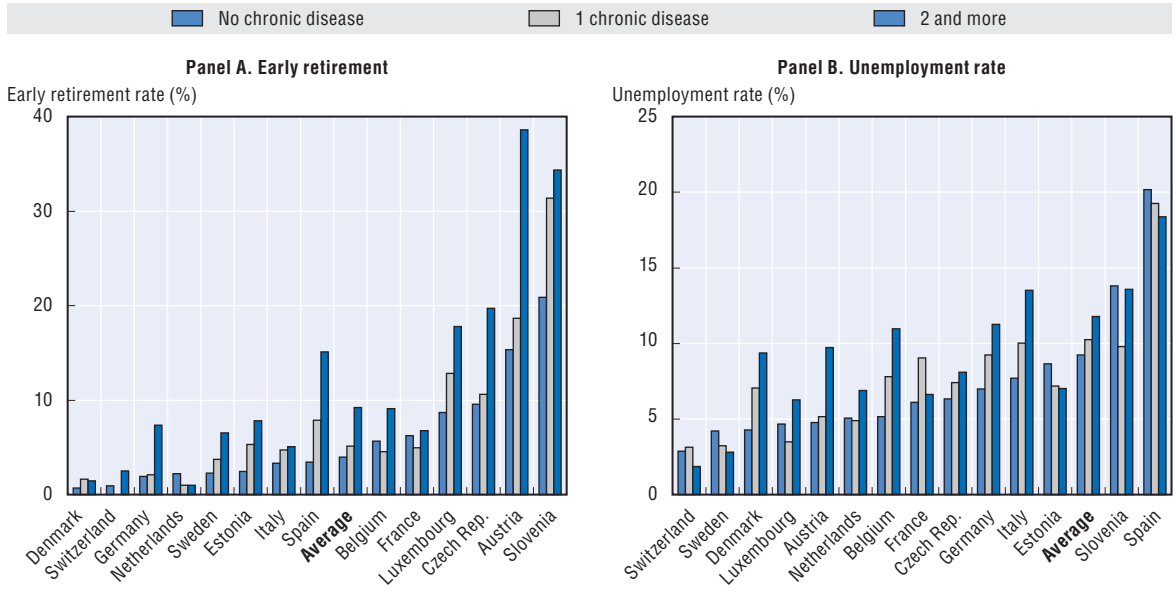
This section examines premature exit from work due to NCDs, through disability pension, unemployment, or early retirement.

Several European studies, focusing on self-assessed health as an indicator for ill-health and diseases, have shown that poor health status tends to lead to an early exit from work due to disability, unemployment, and early retirement (van den Berg et al., 2010). Similarly, having chronic diseases is a significant risk factor for transition from employment into disability pension or unemployment (van Rijn et al., 2014).

Based on SHARE data, out-of-work people can be identified as retired, unemployed and beneficiaries of disability benefits. Figure 1.14 shows the proportion of early retired and unemployed among people aged 50-59 by the number of chronic diseases they reported in 2013. Generally, the greater the number of chronic diseases, the more likely people were to have retired early or to be unemployed. Large variations in levels exist across countries, suggesting that the main reasons for receiving early retirement benefits are not driven so much by the intrinsic health condition, but more by the design of these programmes and prevailing labour market conditions.

An econometric analysis[3] examined the impacts of chronic diseases in 2011 on early retirement and unemployment in 2013, adjusting for behavioural risk factors. Results show that chronic diseases significantly lead to higher early retirement and unemployment among people aged 50-59. Figure 1.15 Panel A shows that, all things being equal, 16% of men (13% of women) aged 50-59 with

Figure 1.14. **Early retirement and unemployment rates among people aged 50-59, by chronic diseases, 14 European countries, 2013**



Note: N = 17 666 in the 14 countries studied. See the Statlink for further details on the methodology.
Source: OECD estimates based on SHARE data (wave 5).

StatLink http://dx.doi.org/10.1787/888933428413

Figure 1.15. **Probability of being unemployed or retiring prematurely among people aged 50-59 in 2013, according to chronic diseases in 2011, 13 European countries**

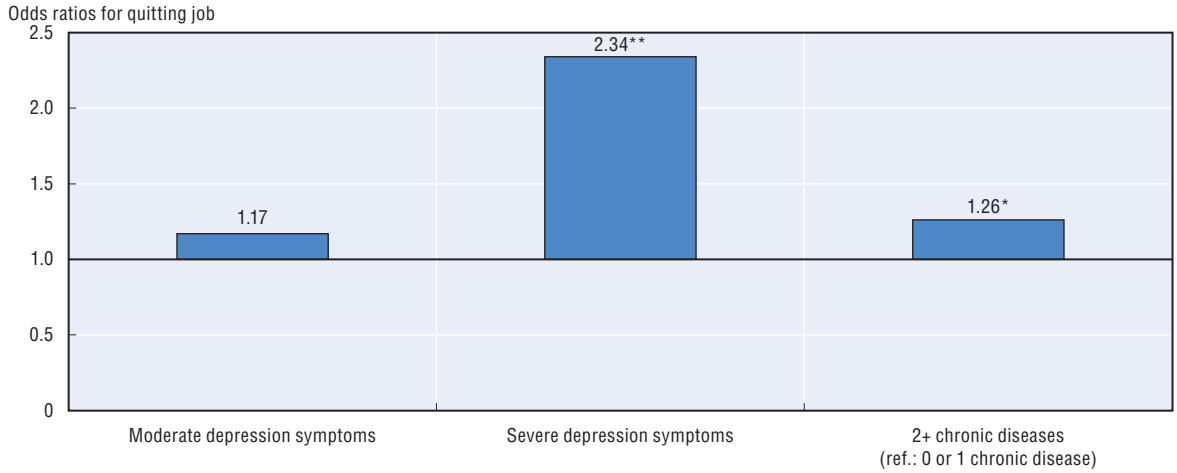
Note: Excludes Luxembourg because it was not included in SHARE wave 4. N = 1 510 for men and N = 1 907 for women. 95% confidence intervals represented by H. See the Statlink for further details on the methodology.
Source: OECD estimates based on SHARE data (waves 4 and 5).

StatLink http://dx.doi.org/10.1787/888933428424

two or more chronic diseases are retired compared to 5% of men (5% of women) who have no chronic disease. Panel B shows that 11% of men (10% of women) with two or more chronic diseases are unemployed compared to 6% of men (6% of women) without any chronic disease.

Long-term mental health problems are a major reason for labour market exit, including early retirement and entering disability schemes (OECD, 2012). In Germany, mental health problems have been the leading cause of early retirement since 1996 (McDaid et al., 2008). Across European countries, severe depression more than doubles the odds of labour market exit, after controlling for other factors (Knebelmann and Prinz, forthcoming) (Figure 1.16). This is the case especially for older people with more severe depressive symptoms, who are more than twice as likely to exit employment within four years. No significant difference exists between the impact for men and women.

Figure 1.16. **Exit from employment among people aged 50-59 as a function of depression symptoms, European countries**



Note: N = 3 485.
* 5% significance level; ** 1% significance level. See the Statlink for further details on the methodology.
Source: Knebelman and Prinz (forthcoming). Authors' estimates based on SHARE data.

StatLink http://dx.doi.org/10.1787/888933428435

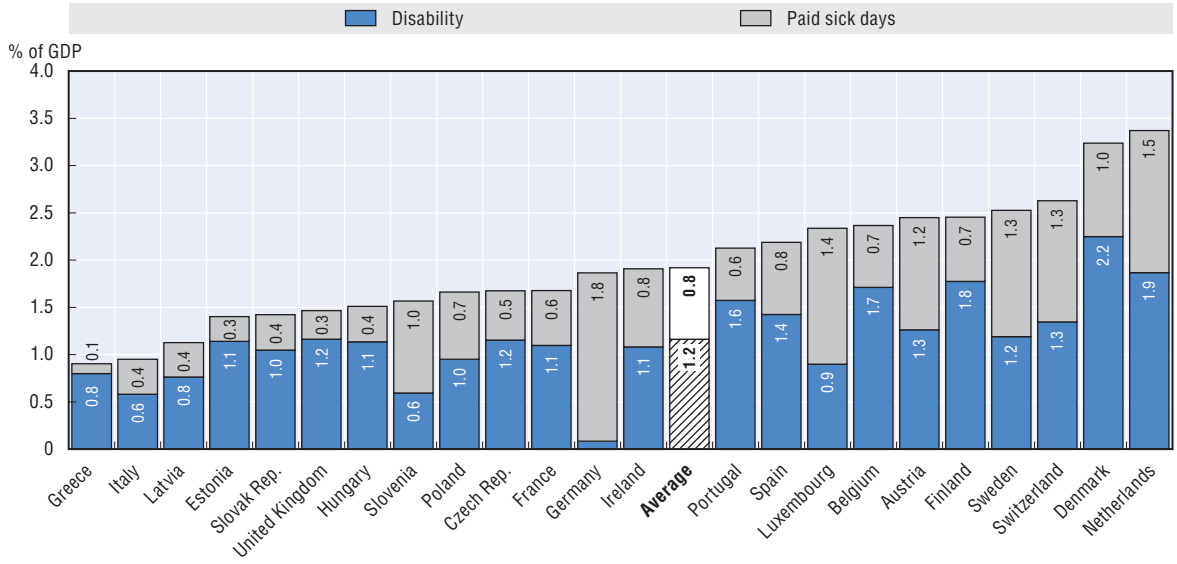
Social expenditures on disability and paid sick leave are greater than unemployment benefits

People suffering from chronic diseases or adopting unhealthy behaviours are more likely to prematurely exit the labour force to go into disability pension, unemployment, or early retirement. This transition out of the labour market has a cost for governments through higher payments of disability benefits, sick leave benefits, unemployment compensation, and early retirement pension.

The burden of ill-health on social spending is important. Incapacity-related spending is higher than unemployment-related spending. Public expenditure on disability and paid sick leave represented 1.7% of GDP on average across European countries, compared to 1.2% of GDP spent on unemployment benefits in 2013.

While expenditure on early retirement and unemployment caused by diseases cannot be identified from national aggregate data sources, data on expenditure on disability benefits and paid sick leave collected in the *OECD Social Expenditure Database* illustrate part of the burden of social expenditure related to ill-health. Combined public and mandatory private expenditure on disability benefits and paid sick leave represented 1.2% and 0.8% of GDP, respectively, in 2013, on average across European countries. Figure 1.17 shows the variation across countries in the share of public and mandatory private expenditure dedicated to disability benefits and paid sick days as a percentage of GDP.

Figure 1.17. **Combined public and mandatory private expenditure on disability benefits and paid sick leave, percentage of GDP, European countries, 2013**



Source: OECD Social Expenditure Database (2016).

StatLink http://dx.doi.org/10.1787/888933428448

Conclusions and policy implications

This chapter highlights the important effects of chronic diseases and related risk factors such as obesity, smoking, and harmful alcohol consumption on labour market outcomes. Non-communicable diseases such as heart attack, stroke, diabetes, cancer and respiratory diseases result in the premature death of more than 550 000 people of working age each year across the 28 EU countries. This represents a loss of about 3.4 million potential productive life years, assuming that these people would have had the same employment rate as the rest of the population. This amounts to a loss of EUR 115 billion each year (or 0.8% of the EU GDP).

Chronic diseases and related risk factors also have an important economic and labour market impact by reducing the employment rate and productivity of people living with these conditions. Based on data from the 2013 SHARE survey, the employment rate of people aged 50-59 who have one or more chronic diseases is lower than that of those who do not have any. The same is also true for people who are obese, smokers or heavy alcohol drinkers. The labour market impacts of mental health problems such as depression are also large: across European countries, people aged 50-59 suffering from severe depression are more than two times more likely to leave the labour market early. Given the higher prevalence of such chronic diseases and unhealthy behaviours among people with less education and lower socio-economic status, the negative labour market consequences of chronic diseases and unhealthy behaviours likely exacerbate social inequalities.

Health and labour market policies can play an important role in reducing the detrimental labour market impacts of ill-health, and thus contribute to better lives and more inclusive economies. Public health policies that prevent chronic diseases, and health care policies that are designed to better manage chronic diseases when they occur, can provide important benefits not only for individuals but for the economy at large (Devaux and Sassi, 2015). Yet today, EU member states allocate only around 3% on average of their health budget to public health and prevention (see the indicator on "Health expenditure by function" in Chapter 5). Further investment in prevention policies targeting chronic diseases and associated risk factors could help make the workforce healthier and more productive, leading to substantial economic benefits. Governments can use a wide range of prevention policies to improve both the health of the population and their labour market outcomes,

many of which can deliver effective results at a low cost (Sassi, 2010; OECD, 2015b). Some policies can even raise some revenues for governments, such as taxation of alcohol, tobacco, and sugar-sweetened beverages.

Labour market policies can facilitate access to paid work for people with physical limitations or disabilities by: encouraging firms to remove physical barriers to work; providing equal training opportunities for people with some forms of disabilities; reinforcing employment protection regulations; and offering work flexibility for early return-to-work. Rehabilitation and training programmes dedicated to newly disabled people can favour return to work (Weathers and Bailey, 2014). Employment protection policies to limit dismissal and redundancy can counteract the labour market disadvantages faced by sick or disabled people in Europe (Reeves et al., 2014). Experience rating of employers for worker compensation schemes can encourage firms to improve occupational health and safety, for instance through better prevention of musculoskeletal disorders (Lengagne and Afrite, 2015), but there is need to carefully design such schemes so that they do not provide a disincentive for employers to recruit employees with higher health risks and to recognise that some sectors have inherently higher risks. There is also evidence of positive effects from early return-to-work programmes offering flexibility and appropriate facilities at the workplace to allow people to continue their usual activities as much as possible following a health problem or disability (Waddell and Burton, 2004).

Although health and labour market policies are often formulated independently of one another, this chapter has shown the need for greater intersectoral collaboration. Both labour market and health outcomes would greatly benefit from improved policy integration.

Notes

1. The list of chronic diseases in the SHARE data includes: high blood pressure, diabetes, cancer, chronic lung disease, heart problems, stroke, arthritis, and ulcer.
2. This econometric model focuses on the effects of chronic diseases, obesity, smoking, and heavy alcohol drinking in 2011 on employment in 2013 among people aged 50-59. A logit model was used on data from SHARE waves 4 and 5 including 13 countries (Luxembourg was not present in wave 4), and accounting for clusters by country. Employment status is dichotomised as follows: employed versus non-employed (including unemployed, retired and permanently disabled). Control variables included: age, age squared, marital status, education level, and country fixed effects. Figures show the predicted probabilities with 95% confidence intervals derived from the model. Results by country cannot be displayed because of too small sample size.
3. The econometric model focuses on the effects of chronic diseases in 2011 on unemployment and early retirement in 2013 among people aged 50-59. Unemployment status is dichotomised as unemployed versus employed, and similarly for early retirement – retired versus employed. A probit model was used on data from SHARE waves 4 and 5 including 13 countries (Luxembourg was not present in wave 4), and accounting for clusters by country. Control variables included are: obesity, smoking, and heavy drinking in 2011, age, age squared, marital status, education level, and country fixed effects. Figures show the predicted probabilities with 95% confidence intervals derived from the model. Results by country cannot be displayed because of too small sample size.

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Chapter 2

Strengthening primary care systems

The demand for health care is evolving rapidly in EU countries in a context of population ageing and the growing number of people living with one or more chronic conditions. To meet the challenge of these demographic and epidemiological shifts, EU health systems need to strengthen primary care systems to provide continuous, comprehensive, and co-ordinated care for their populations.

This chapter looks at the organisation and provision of primary care across EU countries. It uses a number of indicators to measure access to primary care and its effectiveness and quality, either directly through indicators such as pharmaceutical prescribing quality or indirectly through potentially avoidable hospital admissions. The chapter identifies possible policy options that countries could consider to strengthen their primary care systems, drawing lessons from the recent series of OECD Reviews of Health Care Quality *and other relevant OECD work. This chapter shows that some countries, such as Denmark and the Netherlands, generally perform relatively well on several indicators related to access to and quality of primary care. All EU countries, particularly those in Central and Eastern Europe, need to pursue comprehensive reforms to strengthen their primary care system to better address the needs of ageing populations and reduce the unnecessary use of hospital care.*

Introduction: Addressing the changing demographic and epidemiological context

More than ever, strong primary care systems are needed to provide continuous, comprehensive, and co-ordinated care for the whole population. Strong primary care systems are not only needed to respond efficiently to the health care needs of ageing populations and the growing burden of chronic diseases, but a large body of evidence also shows that they can play an important role in reducing social health inequalities (Starfield et al., 2005; Kringos et al., 2015).

On average across EU countries, the share of the population aged over 65 increased from less than 10% in 1960 to 19% in 2015, and is projected to increase to nearly 30% by 2060. While it is a remarkable sign of progress that life expectancy for people at age 65 continues to steadily increase, for many people, most of the remaining years of life after that age are lived with some health problems and some types of disabilities (see the indicator on life expectancy and healthy life years in Chapter 3). Currently, around 50 million EU citizens are estimated to suffer from two or more chronic conditions, most of them are 65 years and over, and this number is expected to increase in coming years (European Commission, 2015).

Chronic and multi-morbidity patients require good management of their conditions at primary care level and greater person-centred care to be able to continue to live independently and have a good quality of life. Person-centred care is at the core of the strategy that many countries are striving to put in place to address care fragmentation and enable better co-ordinated care. Good co-ordination between and across levels of care is essential for patients with complex needs, who are likely to navigate between various parts of the health system and, in some cases, of the long-term care system. Robust, comprehensive primary care is best placed to provide the type of continuous care needed to manage such multiple and complex care needs.

Box 2.1. **Definition of primary care**

The 1978 Alma-Ata declaration defined primary care as the "first level of contact for the population with the health care system, bridging health care as close as possible to where people live and work. It should address the main health problems in the community, providing preventive, curative and rehabilitative services" (WHO, 1978). Primary care services range from educating the population about prevailing health problems, delivering maternal and child health, offering preventive services, and controlling diseases, to delivering appropriate treatment for common diseases and injuries that can be treated outside a hospital. The Alma-Ata declaration recognised that primary care goes beyond services provided by primary care physicians to encompass other health professionals such as nurses, midwives, auxiliaries, and community health workers.

At European level, the PHAMEU (Primary Health Care Activity Monitor for Europe) project defined primary care as "the first level of professional care where people present their health problems and where the majority of the population's curative and preventive health needs are satisfied" (Kringos et al., 2010). Primary care is expected to provide accessible, comprehensive care close to where patients live on a continuous basis, and to co-ordinate the care processes of patients across the health care system. Although the mix of disciplines that make up the primary care workforce may differ from country to country, general practitioners and family physicians are the most common primary care providers in Europe. General internists, paediatricians, pharmacists, primary care nurses, physiotherapists, and mental health care workers also are primary care providers.

This chapter looks at the organisation and provision of primary care across EU countries. Using the available data, it assesses primary care performance in these countries with regard to access and care quality. Finally, based on country experiences, the chapter recommends policies that could improve access to and quality of primary care.

Organisation and provision of primary care in Europe

This section presents an overview of the organisation and provision of primary care systems in EU countries. It describes three key organisational features (Table 2.1): i) the gatekeeping function of primary care providers; ii) the predominant modes of primary care provision; and iii) the payment methods for primary care providers.

Primary care physicians are the first point of contact in 15 EU health systems

A gatekeeping system, whereby primary care physicians (PCPs) are the entry point to the health system by controlling access to secondary care, has been a key feature of primary care systems in several countries for a long time and is becoming a key feature in other EU countries. This organisational feature can play an important role in securing the appropriate use of health resources (Kringos et al., 2015). A referral system and registering with a PCP are important strategies for ensuring that patients receive the best possible care for their conditions and for achieving greater care co-ordination. As such, primary care physicians are responsible for co-ordinating prevention, investigation, and treatment of health care needs and for steering demand for secondary care. A systematic review of the literature showed that gatekeeping is associated with lower utilisation of health services and lower expenditures (Garrido et al., 2011).

In 15 EU countries, PCPs are the first point of contact and have the ability to refer patients to secondary care when necessary (Table 2.1). PCPs control access to most types of secondary care in Bulgaria, Croatia, Estonia, Finland, Hungary, Ireland, Italy, Lithuania, the Netherlands, Poland, Portugal, Slovenia, Spain, Sweden and the United Kingdom. Six EU countries have no referral system in place. Patients in Austria, Cyprus, the Czech Republic, Germany, Greece and Luxembourg have direct access to most physicians and secondary care. In the other seven EU countries (Belgium, Denmark, France, Latvia, Malta, Romania and the Slovak Republic), patients have direct access to secondary care without any referral, but financial incentives to obtain a PCP's referral exist in the form of lower cost sharing.

Registering with a PCP who serves as the focal point for co-ordinating care is mandatory in 11 EU countries (Croatia, Estonia, Finland, Italy, Latvia, Lithuania, Portugal, Romania, Slovenia, Spain and the Slovak Republic). By contrast, 13 countries have not established a mandatory patient-registration system (Austria, Bulgaria, Cyprus, the Czech Republic, Greece, Hungary, Ireland, Luxembourg, Malta, the Netherlands, Poland, Sweden and the United Kingdom). The main reason for not establishing such a registration system in most of these countries is concern about the loss of patient freedom. A last group of four countries (Belgium, Denmark, France and Germany) made the choice to introduce financial incentives to register with a primary care doctor to encourage greater co-ordination and continuity of care.

In half of EU countries primary care is organised around solo practice

The way primary care is organised can significantly affect care quality and care co-ordination, both within primary care and between levels of care. Two predominant modes of primary care provision exist across European countries: solo practice and group practice staffed by physicians and

Table 2.1. **Mode of provision, remuneration, and role of primary care in Europe, 2016**

	Do primary care physicians control access to secondary care?	Are patients required or encouraged to register with a primary care physician or practice?	Predominant form of primary care provision	Primary care payments
EU countries				
Austria	No need and no incentive to obtain referral	No incentive and no obligation to register	Solo practice	Fee-for-service
Belgium	Patients have financial incentives to obtain a referral, but direct access is possible	Patients are not required to register but have financial incentives to do so	Solo practice	Capitation/fee-for-service
Bulgaria[1]	Primary care physician referral is required	No incentive and no obligation to register	Solo practice	Capitation/fee-for-service/other
Croatia[1]	Primary care physician referral is required	Patients are required to register	Solo practice	Capitation/fee-for-service/pay for performance
Cyprus[2]	No need and no incentive to obtain referral	No incentive and no obligation to register	Group practice	Fee-for-service
Czech Republic	No need and no incentive to obtain referral	No incentive and no obligation to register	Solo practice	Capitation/fee-for-service/pay for performance
Denmark	Patients have financial incentives to obtain a referral, but direct access is possible	Patients are not required to register but have financial incentives to do so	Solo practice	Capitation/fee-for-service
Estonia	Primary care physician referral is required[3]	Patients are required to register	Solo practice	Capitation/fee-for-service /pay for performance/other
Finland	Primary care physician referral is required	Patients are required to register	Group practice	Global budget
France	Patients have financial incentives to obtain a referral, but direct access is possible	Patients are not required to register but have financial incentives to do so	Group practice	Fee-for-service/pay for performance/other
Germany	No need and no incentive to obtain referral	Patients are not required to register but have financial incentives to do so	Solo practice	Fee-for-service
Greece	No need and no incentive to obtain referral	No incentive and no obligation to register	Group practice	Global budget
Hungary[1]	Primary care physician referral is required	No incentive and no obligation to register	Solo practice	Capitation/pay for performance/global budget
Ireland[2]	Primary care physician referral is required	No incentive and no obligation to register	Group practice	Capitation/fee-for-service
Italy	Primary care physician referral is required	Patients are required to register	Group practice	Capitation
Latvia	Patients have financial incentives to obtain a referral, but direct access is possible	Patients are required to register	Group practice	Fee-for-service/capitation/fixed payments/pay for performance
Lithuania	Primary care physician referral is required	Patients are required to register	Group practice	Capitation/fee-for-service/pay for performance/global budget
Luxembourg	No need and no incentive to obtain referral	No incentive and no obligation to register	Solo practice	Fee-for-service/capitation
Malta[1]	Patients have financial incentives to obtain a referral, but direct access is possible	No incentive and no obligation to register	Solo practice	Fee-for-service
Netherlands	Primary care physician referral is required	No incentive and no obligation to register	Group practice	Capitation/fee-for-service/pay for performance
Poland	Primary care physician referral is required	No incentive and no obligation to register	Group practice	Capitation/fee-for-service
Portugal	Primary care physician referral is required	Patients are required to register	Group practice	Capitation/pay for performance/global budget
Romania[1]	Patients have financial incentives to obtain a referral, but direct access is possible	Patients are required to register	Solo practice	Capitation/fee-for-service
Slovenia	Primary care physician referral is required	Patients are required to register	Group practice	Capitation/fee-for-service
Sweden	Primary care physician referral is required	No incentive and no obligation to register	Group practice	Capitation/fee-for-service
Spain	Primary care physician referral is required	Patients are required to register	Group practice	Capitation/pay for performance/global budget
Slovak Republic[1]	Patients have financial incentives to obtain a referral, but direct access is possible	Patients are required to register	Solo practice	Capitation/fee-for-service/other
United Kingdom	Primary care physician referral is the usual way of accessing secondary care, but patients can also refer themselves for secondary care without consulting a GP	No incentive and no obligation to register	Group practice	Capitation/fee-for-service/pay for performance
Non EU countries				
Iceland	No need and no incentive to obtain referral	No incentive and no obligation to register	Group practice	Global budget/fee-for-service
Norway	Primary care physician referral is required	Patients are required to register	Group practice	Capitation/fee-for-service
Switzerland	Patients have financial incentives to obtain a referral, but direct access is possible	Patients are not required to register but have financial incentives to do so	Solo practice	Capitation/fee-for-service
Turkey	No need and no incentive to obtain referral	Patients are required to register	Group practice	Global budget

1. Information taken from Kringos et al. (2015) and from *Health Systems in Transition Profiles*, *www.euro.who.int/en/about-us/partners/observatory/publications/health-system-reviews-hits*.
2. Based on the earlier wave of the OECD Health System Characteristics Survey in 2012.
3. Direct access to a dermatologist, ophthalmologist, gynaecologist, and psychiatrist is possible, however.

Source: 2016 OECD Health System Characteristics Survey, *www.oecd.org/els/health-systems/characteristics.htm*.

other health professionals* (Table 2.1). In 13 EU countries (Austria, Belgium, Bulgaria, Croatia, the Czech Republic, Denmark, Estonia, Germany, Hungary, Luxembourg, Malta, Romania and the Slovak Republic), solo practice is reported as the predominant form of primary care provision. A trend is emerging towards introducing more group practice, however, to improve access to care for patients and respond to the growing preference of many doctors to avoid the constraints and isolation related to solo practice. In the other 15 EU countries (Cyprus, Finland, France, Greece, Ireland, Italy, Latvia, Lithuania, the Netherlands, Poland, Portugal, Slovenia, Sweden, Spain and the United Kingdom), group practice is the predominant model for primary care provision. In countries where group practice dominates, PCPs can work alongside other general practitioners, other specialists, nurses, and other allied health personnel. Most often, nurses are increasingly involved in care delivery. According to the QUALICOPC study (Quality and Costs in Primary Care) (Groenewegen et al., 2015), the median number of other professions apart from physicians working in primary care practice ranges from only one in Austria, Germany, Luxembourg, Italy, Bulgaria, the Czech Republic, Hungary, Romania and the Slovak Republic to eight in Lithuania. A large number of professions also work in group practice in Finland (seven), Cyprus and Spain (six), and Sweden and the United Kingdom (with five other professions).

The trend towards introducing more group practice is generally a step in the right direction. A large body of evidence shows that group practice fosters collaboration with other providers, which encourages better care co-ordination and leads to improvement in care quality (Mousques and Daniel, 2015; Kringos et al., 2015; Ghebrehiwet, 2013). Such models are found to encourage human and infrastructure investments necessary to implement new models of care, encourage collaborative work, and increase the use of new technology. Group practice is generally associated with better patient outcomes, reduced hospitalisation, and enhanced patient and staff satisfaction (Ghebrehiwet, 2013). In France, a recent report concluded that group practices are more efficient than solo practices for several indicators including, for example, monitoring of type 2 diabetes patients, vaccination, screening and prevention, and rates of generic prescribing (Mousques and Daniel, 2015). By contrast, solo practice is more often associated with fewer interactions with other health providers, which might hinder care co-ordination (Kringos et al., 2015).

Fee-for-service and capitation are still the most common methods of payment in primary care, although use of blended forms of payments is growing

The majority of EU countries use capitation or fee-for-service (FFS) payments for primary care, although some also pay primary care providers through salary from a global budget (Table 2.1). A single payment method is used only in seven countries (capitation in Italy; FFS in Austria, Cyprus, Germany and Malta; and salary from a global budget in Finland and Greece). The current trend is towards introducing multiple methods of payment for primary care to achieve the multiple objectives of access, quality and efficiency (OECD, 2016a). Seven countries' payment system is a mix of both capitation and FFS (Belgium, Denmark, Ireland, Luxembourg, Poland, Romania and Slovenia). Ten countries (Croatia, the Czech Republic, Estonia, France, Hungary, Latvia, Lithuania, the Netherlands, Spain and the United Kingdom) combine capitation and/or FFS with pay-for-performance (P4P) and four countries (Hungary, Lithuania, Portugal and Spain) with global budgets to control costs.

In primary care, blending payment mechanisms can be a useful tool to counterbalance some of the shortcomings of the different traditional payment methods and to better align incentives to achieve specific health objectives (OECD, 2016a). Traditional forms of payment such as FFS and capitation alone have several weaknesses and are not always aligned with today's health system

* Group practices are public primary care clinics and private groups that are staffed by at least one physician and other health professionals (e.g. nurses). By contrast, solo practices are private practices where only one physician works by himself (and with no other health professionals).

priorities of changing epidemiology (OECD, 2016a). FFS reimburse primary care only for volume of activities delivered, which may lead to inefficient overprovision of services (through supply-induced demand) and does not reward value or quality care. Whilst capitation is a better payment system to control cost, it may lead to selection of patients requiring less services and lack of attention to clinical need. Hence, taken individually, FFS and capitation in their pure form are not well suited to meet the challenges posed by ageing populations and the rising burden of chronic conditions. As these modes of payment are predominantly used for "siloed" financing of health providers, they also struggle to support new models of care that are required to achieve patient-centred care stretching across several health providers. Many countries have already taken steps to adapt and blend these payment systems, and to develop new innovative mechanisms that incentivise provision of high-quality care and facilitate care co-ordination for people with complex needs across health providers (see the last section of the chapter).

Evaluation of primary care in Europe

This section examines two core dimensions of primary care performance across Europe: access to and quality of care. By contrast with hospital care, in most countries, less data are usually available to directly assess the quality of primary care. It is possible, however, to assess quality of primary care through indirect measures such as potentially avoidable hospital emergency visits or admissions, or through direct measures such as pharmaceutical prescribing quality. In a growing number of countries new data are also becoming available about patient experience with their primary care providers.

This section shows that some countries such as Denmark and the Netherlands are generally performing relatively well on several indicators of access to and quality of primary care presented in this chapter. For example, these two countries consistently report low rates of unmet medical needs, low rates of avoidable emergency department (ED) visits, and low rates of what is generally considered to be inappropriate pharmaceutical prescribing in primary care. However, in all countries, particularly in many Central and Eastern European countries, there is a need to further improve access to and quality of primary care for the whole population.

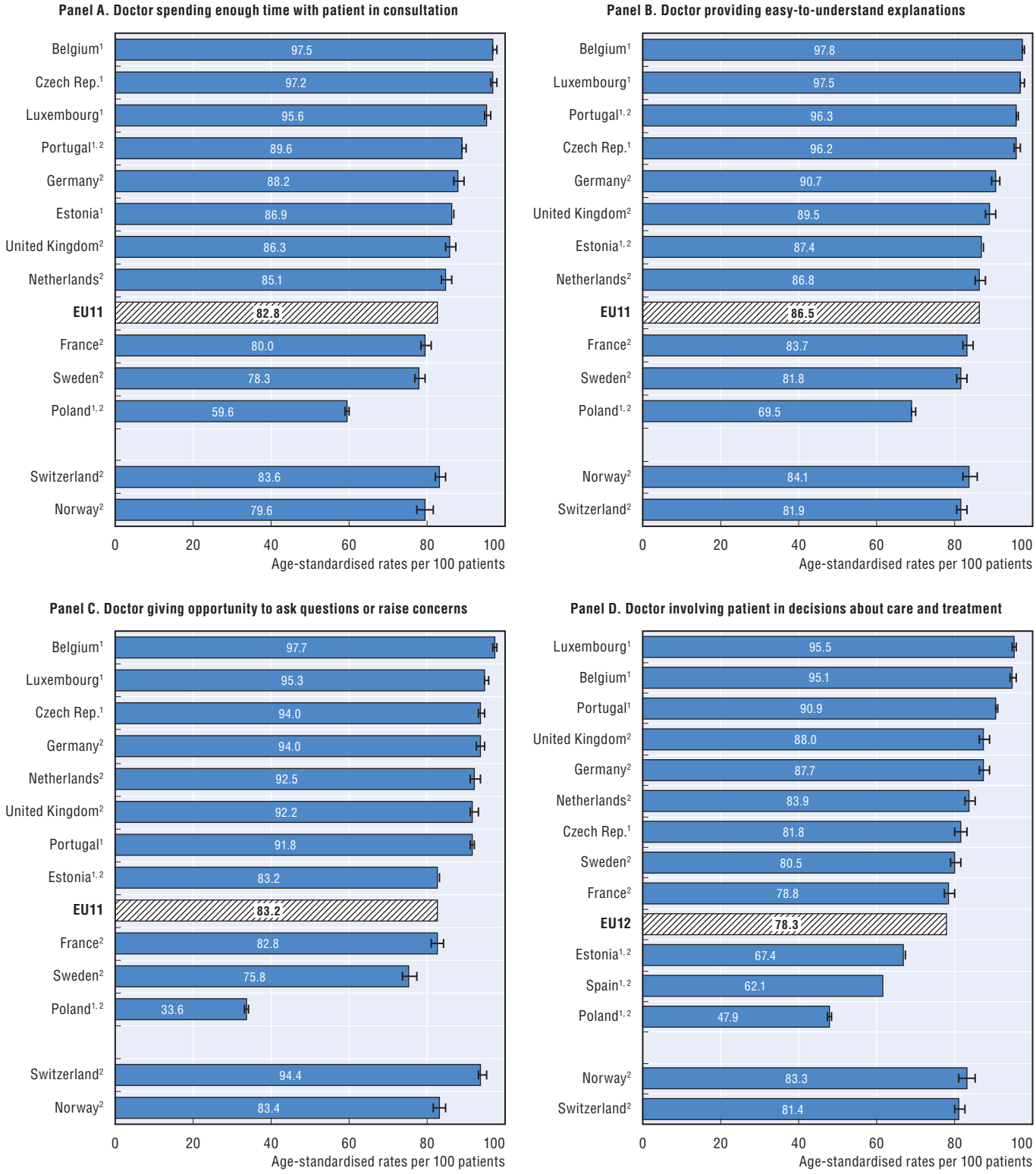
Patients generally report positive experience with primary care

Patient-reported experience measures (PREMs) with primary care are an important marker of primary care quality from the point of view of those most concerned – patients themselves.

Figure 2.1 shows that most patients report positive experiences in their interactions with their (regular) doctor when it comes to communication and autonomy in the ambulatory health care system. On average across the countries for which such PREM data are available, 82.8% of patients reported that their regular doctor spent enough time with them (Panel A), 86.5% reported that their regular doctor provided easy-to-understand explanations (Panel B), 83.2% reported having been given the opportunity to ask questions or raise concerns (Panel C), and 78.3% reported being involved in care and treatment decisions (Panel D).

For all four aspects of patient experiences, Belgium and Luxembourg score high, with more than 95% of patients reporting positive experience. At the other end of the scale, Poland has the lowest rates for all four aspects of patient experience. For example, less than one in two patients in Poland report having been given the opportunity to ask questions (Panel C) or been involved in their care and treatment during consultation (Panel D). The proportion of patients with positive experience has decreased since 2010 in France, the Netherlands and Switzerland but countries with lower rates such as Sweden and Poland have improved some aspect of patient experiences in recent years (Commonwealth Fund, 2010).

Figure 2.1. **Patient experience with ambulatory care, 2013 (or latest year)**



Note: 95% confidence intervals represented by H.

1. National source.
2. Patient experience with regular doctor.

Source: Commonwealth Fund International Health Policy Survey 2013 and other national sources.

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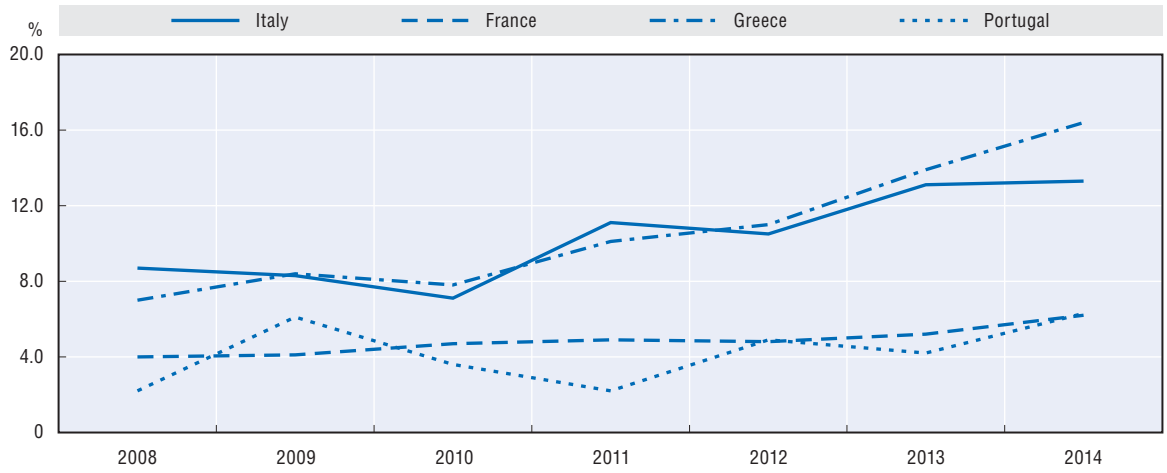
Unmet needs for medical examination and inappropriate visits to emergency departments signal problems in access to primary care

Whilst ensuring access to care is a priority objective for each health system, available data suggest that universal access to primary care is not always achieved across EU countries. Some of the barriers to primary care services include a lack of available services near people's home, waiting times and financial barriers. Such barriers lead to unmet health care needs and are also a leading source of inappropriate care such as unwarranted ED visits.

Around 3.6% of the population across EU countries in 2014 reported some unmet needs for medical care due to cost, travelling distance, and waiting time, based on data from EU-SILC (see indicator "Unmet health care needs" in Chapter 7). The proportion of people reporting unmet needs was highest in Latvia, Estonia and Greece (with a share above 10%), while less than 1% of the population reported unmet needs in Luxembourg, Spain, the Netherlands, Slovenia and Austria in 2014. Unmet medical care needs were consistently higher in low-income groups compared with high-income groups (see indicator "Unmet health care needs" in Chapter 7). Although unmet needs for a medical examination due to financial reasons remained fairly stable on average between 2008 and 2014, the proportion of people in low-income groups reporting unmet needs for financial reasons increased in several countries after the global financial crisis in 2008 (Figure 2.2). In Italy and France, the proportion of people reporting unmet needs due to financial reasons among the low-income population increased by more than 50% between 2008 and 2014. In Greece, the proportion more than doubled between 2008 and 2014, while it tripled in Portugal over the same period. Increasing unmet care needs, particularly among low-income groups, raise concerns as they may result in poorer health status and increased health inequalities.

Figure 2.2. **Change in unmet medical care needs for financial reasons among the lowest-income group, selected EU countries, 2008-14**



Source: Eurostat Database, based on EU-SILC.

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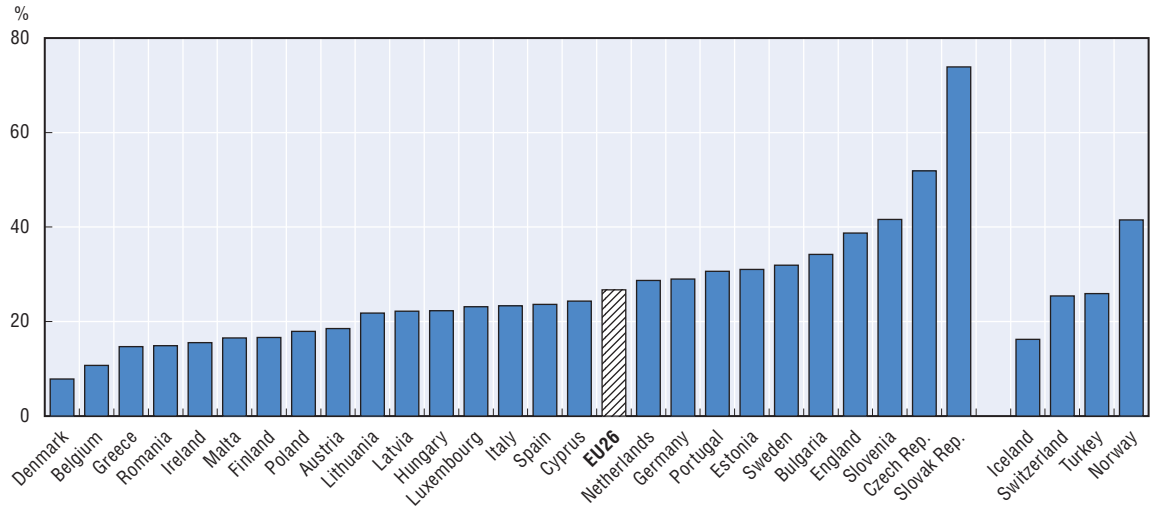
Unnecessary use of expensive hospital care is another proxy to monitor accessibility of primary care services. A significant proportion of ED visits are found to be unnecessary, for problems that normally should not require emergency care. Figure 2.3 shows that among patients who visited an ED, 27% of patients on average across EU countries did so because primary care was not available (van den Berg et al., 2016). This proportion was lowest in Denmark, Belgium, Greece and Romania, where less than 15% of patients reported going to an ED because of a lack of primary care availability.

Figure 2.3. **Proportion of patients who visited an emergency department because primary care was not available,[1] 2011-13**



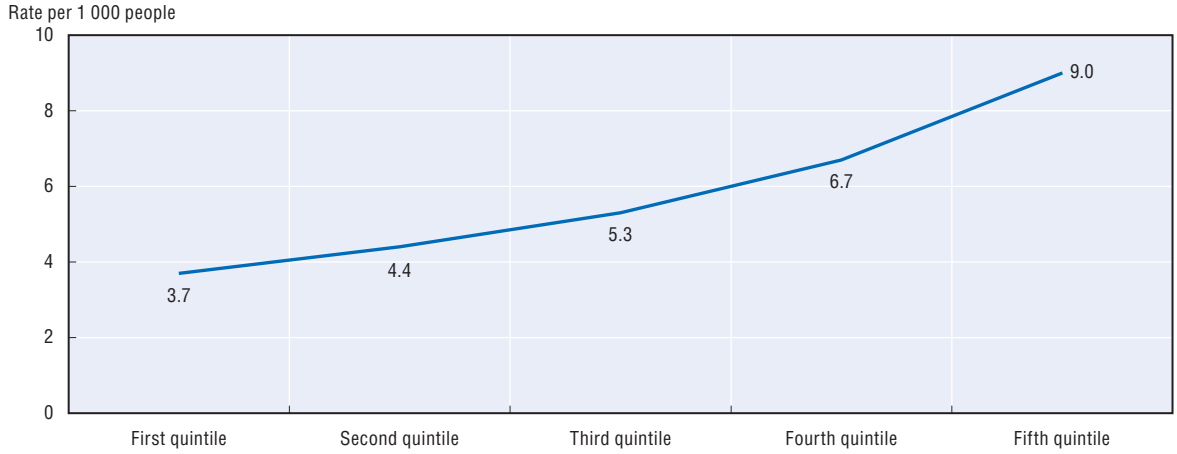
Note: Data were collected within the QUALICOPC study (Quality and Costs of Primary Care in Europe) between 2011 and 2013.
1. The reference population is the proportion of people who visited an ED in the previous year.
Source: van den Berg et al. (2016).

StatLink http://dx.doi.org/10.1787/888933428474

At the other end of the scale, the Slovak Republic reported the highest proportion, with 74% of patients going to an ED because primary care was not available, followed by the Czech Republic (52%) and Slovenia (42%).

As for unmet needs for a medical examination, high social inequalities arise in inappropriate visits to EDs. Inappropriate visits to EDs are significantly higher among the most disadvantaged populations. People living in the most deprived areas, low-income groups, low-education groups, or ethnic minorities consistently have a higher risk of unwarranted ED visits (Berchet, 2015). In England, for instance, people living in the most deprived fifth of neighbourhoods (first quintile of income at neighbourhood level) are nearly two and a half times more likely to be admitted to an ED as people living in the most affluent fifth (Figure 2.4) (Centre for Health Economics, 2016). Providing equal access to primary care for the whole population is therefore essential to reduce social inequalities.

Figure 2.4. **Rate of preventable emergency department admissions, by geographic deprivation level (income quintile), England, 2011-13**



Source: Adapted from Centre for Health Economics (2016).

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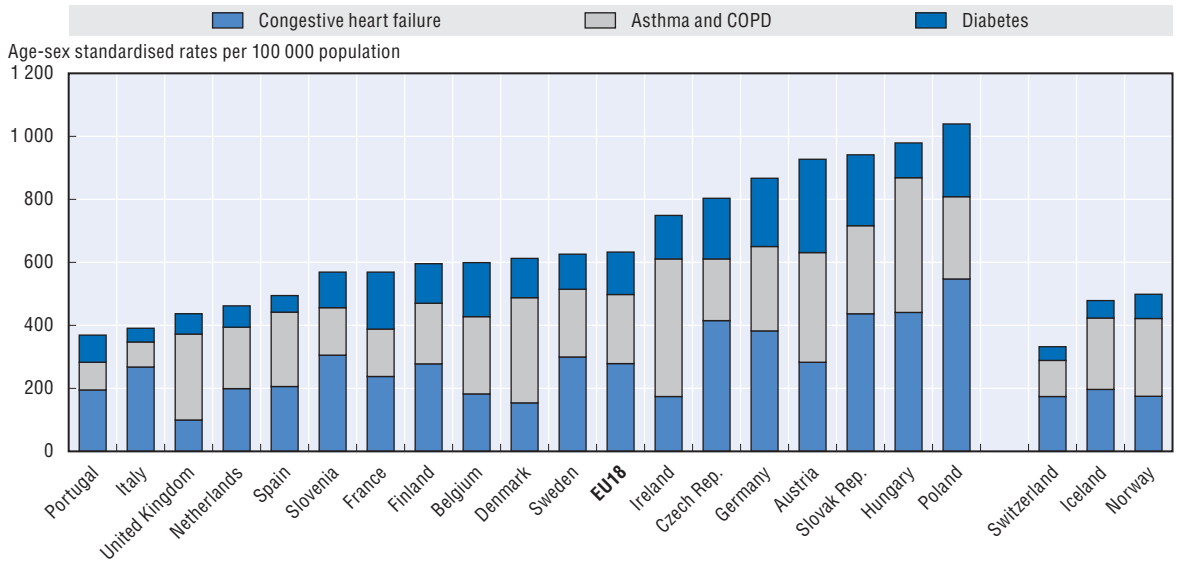
Avoidable hospital admissions for ambulatory care sensitive conditions suggest room for improving access to and quality of primary care

Ambulatory care sensitive conditions (ACSCs), such as asthma, chronic obstructive pulmonary disease (COPD), congestive heart failure (CHF) and diabetes, are conditions for which accessible and effective primary care can generally reduce the risk of complications and prevent the need for hospitalisation (Purdy et al., 2009, 2012). Potentially avoidable hospitalisations for these conditions are commonly used to measure access to and quality of primary care systems (Purdy et al., 2012; Longman et al., 2015; van Loenen et al., 2014).

All EU countries have a large number of potentially avoidable admissions for diabetes, CHF, COPD and asthma (Figure 2.5). In 2013, these four chronic conditions accounted for 632 avoidable admissions per 100 000 population across EU countries. Portugal, Italy, the United Kingdom and the Netherlands have the lowest rates of avoidable admissions related to these four conditions, while Poland, Hungary and the Slovak Republic have the highest rates, nearly or over 50% higher than the EU average (Figure 2.5).

Figure 2.5. **Avoidable admissions for chronic ambulatory care sensitive conditions, 2013 (or nearest year)**



Note: Rates are not adjusted by health care needs and health risk factors.
Source: *OECD Health Statistics 2016.*

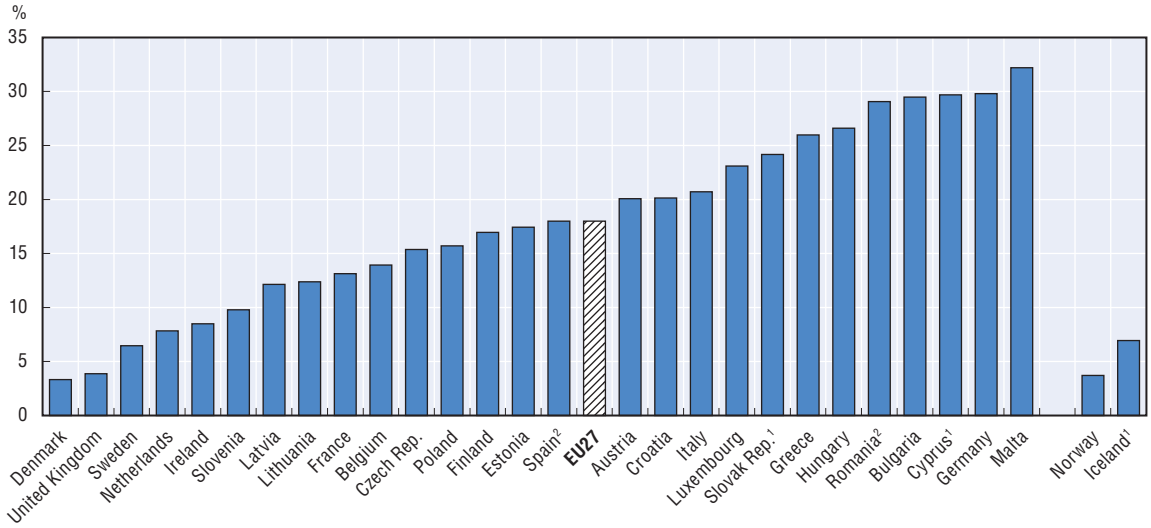
StatLink http://dx.doi.org/10.1787/888933428494

Most countries have achieved progress in reducing avoidable admission rates in recent years. In Denmark for example, admission rates for these four chronic conditions dropped by 15% between 2006 and 2013, going down from 719 admissions per 100 000 population in 2006 to 613 admissions in 2013. This reflects significant improvements in the management of chronic diseases. Denmark introduced in 2008 some disease management programmes to better manage chronic conditions and keep people out of hospital. Based on the Chronic Care Model in the United States, the overarching objectives were to strengthen co-ordination between primary and secondary care and to empower patients to play a greater role in self-management of their condition (OECD, 2013).

Prescribing patterns in primary care raise concerns about appropriate use of medications

Prescribing patterns are increasingly used as indicators of primary care quality. For example, antibiotics should be prescribed appropriately and only when indicated, to reduce the risk of antimicrobial resistance. There is also broad agreement that second-line antibiotics, such as quinolones and cephalosporins, should in general only be used when first-line antibiotics have not worked. Their volume as a proportion of the total volume of antibiotics prescribed has been validated as a marker of quality in the primary care setting (Adriaenssens et al., 2011). Figure 2.6 shows large variations in the use of such second-line antibiotics, suggesting that these antibiotics are prescribed unnecessarily in many EU countries. In 2014, 18% of all antibiotics prescribed across EU countries were second-line antibiotics. Denmark, the United Kingdom, Sweden and the Netherlands report the lowest proportions of second-line antibiotics use, whereas Malta, Germany, Cyprus, Bulgaria and Romania report volumes over 50% higher than the EU average.

Figure 2.6. **Second-line antibiotics (quinolones and cephalosporins) as a proportion of all antibiotics prescribed in primary care, 2014**



1. Data refer to all sectors (not only primary care).
2. Reimbursement data, i.e. not including consumption without a prescription and other non-reimbursed courses.

Source: European Centre for Disease Prevention and Control (2016).

StatLink http://dx.doi.org/10.1787/888933428506

Policy levers to improve primary care access and quality

Improving the performance of primary care requires working on several fronts. Making sure primary care services are available outside normal working hours, developing new models of shared care, investing in a specialist primary care workforce, linking payment to the provision of high-quality care, and investing in information infrastructure are all promising options for improving access to and quality of primary care.

Primary care should be accessible 24 hours a day, 7 days a week

To improve accessibility of primary care and limit inappropriate use of hospital care, EU health systems need to develop primary care services, especially for emergencies outside normal working hours. Yet a recent policy survey shows that most (if not all) EU health systems struggle to ensure comprehensive provision of out-of-hours (OOH) primary care services (Berchet and Nader, 2016). Much of this is due to high workload for primary care clinicians, insufficient remuneration, and lack of personnel and organisational support in remote areas. Poorly functioning primary care systems outside normal working hours are, as mentioned previously, a leading source of inappropriate ED visits.

Among the different models of OOH primary care organisation that exist in EU health systems, general practice co-operatives (GPCs) are found to be one of the most effective to secure safe and accessible primary care services outside normal working hours. Patients report high satisfaction, primary care clinicians' workload is less demanding, and avoidable visits to ED are reduced by diverting these visits to primary care settings (van Uden and Crebolder, 2004; van Uden et al., 2005; van Uden et al., 2006; Giesen et al., 2011).

GPCs are large-scale co-operatives in which primary care providers work on a rotational basis to respond to health care needs outside normal working hours (Berchet and Nader, 2016). This is the case in the Netherlands, for example, where GPCs (known as "huisartsenpost", HAP) are staffed by primary care providers who carry out both telephone and face-to-face consultations. Patients are first required to call the GPC to get medical advice. Depending on the medical condition, the general practitioner (GP), the GP assistant, or the GP triage nurse give self-care advice so that the patient stays at home and can visit primary care during normal working hours. An alternative option is to ask the patient to call back if the health problem gets worse, or to make a home visit. In case of more urgent health conditions, the GP, GP assistant, or GP triage nurse advise the patient to go to the GPC or directly to the hospital ED or to call an ambulance. Patients are discouraged from visiting the GPC for small complaints that do not require immediate attention. In case of minor ailments and without any referral, patients are asked to consult during normal office hours. Some regions in the Netherlands have a model that integrates a GPC and an ED, with one triage point determining which service patients attend, so that patients cannot go directly to the ED (Berchet and Nader, 2016). In 2014, the Netherlands had 122 GPCs.

Developing new care models centred around patients' needs has the potential to promote greater care co-ordination

Achieving greater patient-centred care entails developing new models of shared-care based on multidisciplinary practice and modernising the role of health professionals to best meet complex health care needs. Both changes have the potential to lead to efficiency and quality gains in primary care.

Several EU health systems have already developed new care models centred on patients to address the needs of those requiring co-ordination of activities between providers in various settings. In Belgium, new integrated care models based on multidisciplinary group practice and a horizontal governance model have been developed by primary care clinicians since 2016 (Auraaen, forthcoming). A case manager is assigned responsibility for the shared-care model. Case managers are most often primary care physicians but can also be nurses, allied health professionals and social workers. They have the responsibility for managing pathways of care within the health system. A similar model exists in Slovenia with the current development of Family Medicine Model Practice (Auraaen, forthcoming). In this new multidisciplinary approach, nurses with an advanced degree are taking new roles to ensure care co-ordination and care continuity, assisting patients in navigating the health system. Norway has established intermediate care facilities to bridge the gap between hospital and community care (OECD, 2014). The overarching objective of intermediate care facilities is to ensure that the right community services are delivered to patients requiring further care after a hospital stay, and that they are well co-ordinated with hospital care. In Finland, a new integrated care model linking primary care, acute care, and social care will be introduced in the whole country in 2019.

New care models seem to have been successful, with evidence suggesting benefits to patients through improved access, care quality and care co-ordination. In Norway, evidence suggests that intermediate care facilities led to better health outcomes for the population and to a reduction in avoidable hospitalisation (Garåsen et al., 2007; Lappegard and Hjortdahl, 2013). Recent evaluation shows that Slovenia's new model of care improved access, including access to broader preventive

medical programmes and reduced care fragmentation. Care co-ordination between primary care, hospitals and long-term institutions significantly improved. The Family Medicine Model Practice is found to be a promising multidisciplinary approach to meet the need of complex, multi-morbidity patients (Nolte et al., 2015).

Investing in a specialist primary care workforce is required to provide continuous and comprehensive care

Improving care quality requires investing in a specialist and distinct primary care workforce that has followed a defined programme of post-graduate training in primary care. The need for a specialist primary care workforce, characterised by a comprehensive and patient-centred orientation (rather than a disease-specialist approach), is particularly important in the context of population ageing and the rising burden of chronic conditions. Provision of continuous and comprehensive care, focusing on prevention and management of long-term conditions, should therefore be at the core of the distinct primary care specialty. Firm evidence suggests the benefits of having a specialist primary care workforce. At the macro level, it promotes the overall health and wellbeing of the population, while at the micro level it contributes to better co-ordination and cost-effectiveness of health care services, particularly with respect to the management of long-term conditions (OECD, forthcoming).

Expanding the role of primary care nurses and community pharmacists is equally important. A body of evidence shows that changing the scope of practice for nurses brings several advantages, specifically for management of long-term conditions. With appropriate training and on-going support from primary care practitioners, nurses have been found to provide as high-quality care as primary care doctors in the provision of care for acute and chronic conditions, and with higher patient satisfaction (Maier et al., forthcoming). An expanded scope of practice for nurses already exists in several European countries. In Sweden and Finland for example, additional training was developed for nurses to be involved in post-discharge protocol, patient education and chronic disease management. Expanding the role of community pharmacists is another avenue to renew the focus on preventive health care. In Finland, for example, community pharmacists are actively involved in the treatment and prevention of major chronic diseases. Expanding the role of nurses or community pharmacists is an important policy lever that European countries could pursue to provide both more preventive health care and better management of long-term conditions.

Payment systems should be based on the value and quality of primary care for patients

Traditional forms of FFS and capitation are still the most common method of payment for primary care across EU health systems, as mentioned previously. Such traditional payment mechanisms should be adapted (for example, by risk-adjusting capitation payments) or blended to best meet the growing health care needs. Alternatively, more innovative modes of payment can be applied to encourage care co-ordination and improve care delivery for patients with chronic diseases. Add-on payments, for example, can be used to incentivise high-quality care and desired activity (for example, particular co-ordinating activities). Replacing traditional payment systems with a single bundled tariff for a range of services, including preventive and care management stretching across different providers, is another innovative approach that can be used to pay for primary care. Such innovations show promise to better align provider incentives with health policy objectives and to reward providers for what they deliver (OECD, 2016a). They could therefore be considered as useful tools to complement or replace traditional payment systems.

Several EU health systems have embarked on such primary care payment reforms (OECD, 2016a). In France, add-on payments were introduced in 2009 to encourage greater care co-ordination and to provide more appropriate services to patients. The new payment scheme, known as *Expérimentations de nouveaux modes de rémunération* (ENMR), entails lump-sum payments per patient for three types of activities: i) co-ordinating activities; ii) provision of new services; and iii) inter-professional

co-operation. Available evidence suggests the ENMR's beneficial impact on both quality and health care costs. The multidisciplinary structures signed up to the ENMR achieved better results than traditional practices for nearly all care indicators (diabetes care processes, prevention and efficient prescription). The organisation of care is also found to be more effective through greater collaboration and greater care co-ordination between health professionals (IRDES, 2014).

An increasing number of countries have introduced P4P schemes to improve quality of primary care. In this case, physicians are rewarded if they meet certain quality targets, typically measured as process indicators (e.g. number of annual HbA1c tests per year for diabetic patients) or intermediate outcomes (e.g. number of diabetic patients below a certain HbA1c value). In Portugal, the introduction of a P4P component in the Family Health Unit model (a multidisciplinary primary care model created in 2006) led to an improvement in care quality and patient and practitioner satisfaction compared to the solo practice model (OECD, 2015). As shown by systemic reviews, evidence on the impact of P4P on health outcomes remains, however, limited or inconclusive (OECD, 2016a).

Another approach recently introduced in several countries is to rely on bundle payments for particular patient groups stretching across health care provision, including primary care. In the Netherlands, for example, bundled payments were introduced in 2007 to improve the delivery of care for patients with chronic conditions (type 2 diabetes, COPD and vascular risk management). For type 2 diabetes more specifically, the bundled payment consists of a single annual payment per patient for all standard diabetic care made to care groups. These care groups are typically composed of groups of GPs and are responsible for care delivery. However, they can decide whether to perform activities themselves or subcontract other providers such as nurses or other health professionals for the provision of certain services included in the bundle. This approach seems promising, with a slight quality improvement observed for several process and outcome indicators (including, for example, body mass index and blood pressure checks, meeting blood pressure and cholesterol targets) (Struijs et al., 2012).

Investing in a rich information infrastructure underpinning primary care services is essential to improve access to and quality of primary care

To assess the value that primary care brings to patients, health systems need to better report reliable information on quality of care and outcomes for patients. Collecting patient experience measures is also pivotal to delivering health services that are truly responsive to patients' needs. Not only does collecting PREMs and patient-reported outcome measures (PROMs) empower patients to play a greater role in decisions about their health care, but it also forms the basis for primary care providers to improve their clinical practice.

The United Kingdom has made good progress in developing a rich information infrastructure (known as the Quality and Outcomes Framework) to underpin quality monitoring and improvement in primary care. The volume and detail of information collected within this Framework is impressive, and it is one of the most advanced quality monitoring systems developed across the European Union (OECD, 2016b). The Quality and Outcomes Framework reports rich data at individual provider level, with a large amount of outcome indicators around prevention and management of chronic diseases, elderly care and mental health.

In a similar vein, Portugal collects a large amount of primary care-level data on quality around, for example, chronic conditions, mental health, pharmaceuticals and patient experience (Table 2.2). All health care providers have access to this information, which is a powerful driver of quality improvement. The indicators are used to evaluate performance and achievement, benchmarked against other primary care providers, and measure access, efficiency, and satisfaction (OECD, 2015).

Table 2.2. **Example of indicators collected for primary care in Portugal**

Indicator domain	Indicator
Hypertension	Proportion of patients with hypertension, with at least one record of BMI in the last 12 months
Diabetes	Proportion of patients with diabetes, with nursing consultation to monitor diabetes in the last year Proportion of patients with diabetes, with the last recorded HbA1c lower or equal to 8.0%
Mental health	Proportion of patients aged over 65 years who were not prescribed anxiolytics or sedatives or hypnotics
Pharmaceuticals	Proportion of users aged over 18 years and a diagnosis of depression who were prescribed antidepressant therapy
Patient experience	Proportion of users satisfied or very satisfied Number of complaints per 1 000 medical or nursing consultations

Source: OECD (2015).

Conclusions

This chapter showed that large variations exist in the organisation of primary care between European countries. While primary care increasingly serves a gatekeeper role across Europe to guide patients through the health system, primary care in many countries is still organised around solo practice and traditional payment mechanisms prevail. However, countries are increasingly taking steps in the right direction to meet the need of complex, multi-morbidity patients, notably by introducing more group practice and blended forms of payments.

International comparisons show that some countries such as Denmark and the Netherlands are among the top performers for several indicators related to access and care quality. These countries consistently report low rates of unmet medical needs, low rates of unnecessary use of hospital care, and low rates of inappropriate prescribing patterns in primary care. All countries, particularly those in Central and Eastern Europe, need to pursue comprehensive reforms to strengthen their primary care system to better address the needs of ageing populations and reduce the unnecessary use of hospital care.

Country experiences show that the following policy options have the potential to improve access and quality of primary care across EU countries:

- Making sure that primary care options are available outside normal working hours is a prerequisite to improve access and to reduce avoidable ED visits (as seen in the Netherlands with the GPCs).
- Delivering high-quality care for patients with complex needs entails developing new models of shared-care, based on multidisciplinary practice and where case managers have the responsibility for managing pathways of care within the health system (as seen in Belgium and Slovenia).
- Investing in a specialist primary care workforce is important to provide continuous and comprehensive care, focusing on prevention and management of long-term conditions. Expanding the roles of nurses and community pharmacists also has the potential to improve care quality (as seen in Sweden and Finland).
- Implementing innovative payment systems that reward the quality and value of care is also important to improve care co-ordination and improve care delivery (as seen in France and the Netherlands). Such innovations show promise to better align provider incentives with health policy objectives, and to achieve greater accountability for patients' outcomes.
- Finally, investing in a rich information infrastructure underpinning primary care services (as seen in the United Kingdom and Portugal) is essential to turn measurement into actions that lead to quality improvement. Health systems need in particular to better report outcomes and quality of care around prevention and management of chronic conditions, elderly care, mental health and patient experience.

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Chapter 3

Health status

Life expectancy and healthy life expectancy at birth 56
Life expectancy and healthy life expectancy at age 65 58
Mortality from all causes 60
Mortality from heart disease and stroke 62
Mortality from cancer 64
Mortality from respiratory diseases 66
Suicide 68
Infant and child mortality 70
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Life expectancy at birth continues to increase in EU countries, rising on average by 3 months each year. These gains in longevity can be attributed to a number of factors, including improved education, socio-economic conditions and lifestyle, as well as progress in health care.

Life expectancy at birth across the 28 EU member states reached 80.9 years on average in 2014, an increase of around seven years since 1990 (Figure 3.1). Spain, Italy and France lead a large group of about two-thirds of EU countries in which life expectancy at birth now exceeds 80 years. Life expectancy remained more than five years below the EU average in Latvia, Bulgaria, Lithuania and Romania. Since 1990, there have been significant increases in life expectancy in all EU member states, due mainly to a marked reduction in mortality from cardiovascular diseases, particularly among people aged 50 to 65. Estonia is the country that has achieved the largest gains since 1990 (7.5 years), followed by the Czech Republic (7.4 years). Lithuania and Bulgaria have achieved smaller gains (around three years).

Recent data for France and Italy indicate that there has been a reduction in life expectancy at birth in these two countries in 2015 for the first time in many years. In France, the reduction in life expectancy at birth in 2015 (compared with 2014) was driven mainly by an increase in death rates among people aged over 65 due to "cyclical" factors such as an exceptionally long epidemic of flu and some exceptional weather fluctuations (Bellamy and Beaumel, 2016). In Italy also, the increase in mortality in 2015 was concentrated among elderly people aged over 75 (ISTAT, 2016).

The gender gap in life expectancy has narrowed over the past 25 years in many countries, but women still live 5.5 years more than men on average across EU countries (83.6 years for women and 78.1 years for men in 2014). Life expectancy among women is highest in Spain (86.2 years), while for men, it is highest in Italy (80.7 years). The gap between those EU countries with the highest and lowest life expectancies is 8.2 years for women and 11.6 years for men (Figure 3.2).

Healthy life years (HLY) is an important European indicator which is designed to monitor whether the extra years of life are lived in good health. The current main indicator of HLY is a measure of disability-free life expectancy which indicates how long people can expect to live without disability. On average across EU member states, HLY at birth in 2014 was 61.8 years for women and 61.4 years for men (Figure 3.2). It was highest in Malta and Sweden for both women and men (above 70 years), and shortest in the Slovak Republic, Latvia and Portugal for women, and in Latvia, Estonia and the Slovak Republic for men. In Malta and Sweden, women can expect to live more than 85% of their life expectancy without limitations in their usual activities, while this proportion reaches over 90% for men.

The gender gap in healthy life years is much smaller than for life expectancy, reflecting the fact that in nearly all countries, women can expect to live a smaller proportion of their lives without disability. In seven countries, the number of healthy life years for men was in fact greater than for women.

Between 2010 and 2014, there have been virtually no gains in healthy life years for men and women in many EU countries. This suggests that greater efforts may be needed to prevent illness and disability and to improve the management of these conditions to reduce their disabling effects.

Definition and comparability

Life expectancy at birth measures the average number of years that a person can expect to live based on current mortality conditions (age-specific death rates). However, the actual age-specific death rates of any particular birth cohort cannot be known in advance. If age-specific death rates are falling (as has been the case over the past decades), actual life spans will on average be higher than life expectancy calculated with current death rates.

Healthy life years (HLY) are the number of years spent free of long-term activity limitation, being equivalent to disability-free life expectancy. HLY are calculated annually by Eurostat based on life table data and age-specific prevalence data on long-term activity limitations. The underlying health measure is the Global Activity Limitation Indicator (GALI), which measures limitation in usual activities, and comes from the EU-SILC survey.

Comparing trends in HLY and life expectancy can show whether extra years of life are healthy years. However, valid comparisons depend on the underlying health measure being reliable and comparable. The HLY indicator presented here is derived from self-reported data which can be affected by people's subjective assessment of their health and cultural and social background.

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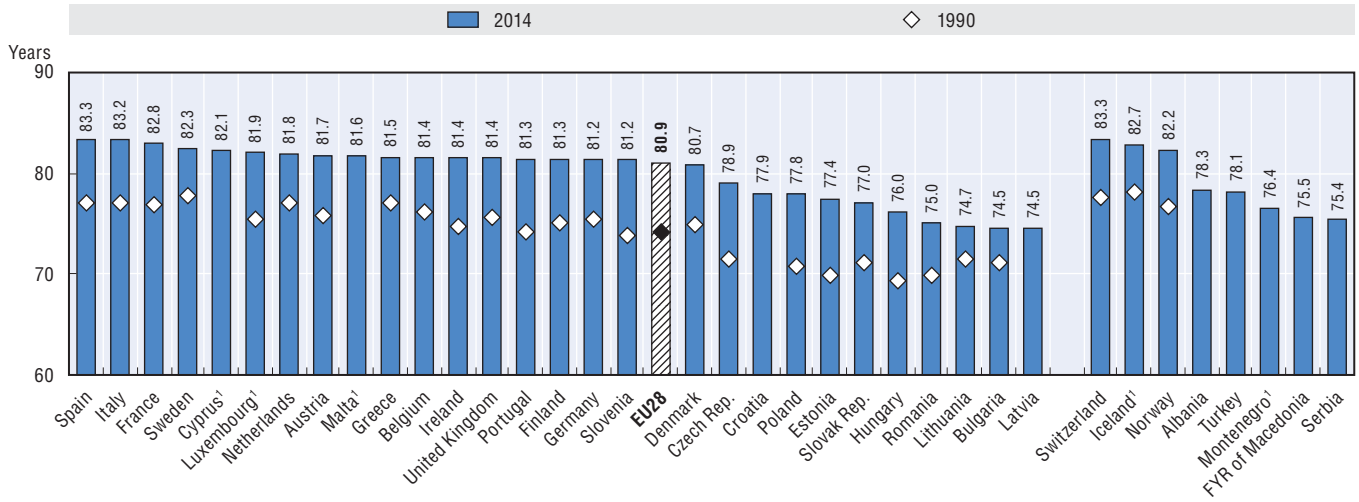
3.1. Life expectancy at birth, 1990 and 2014

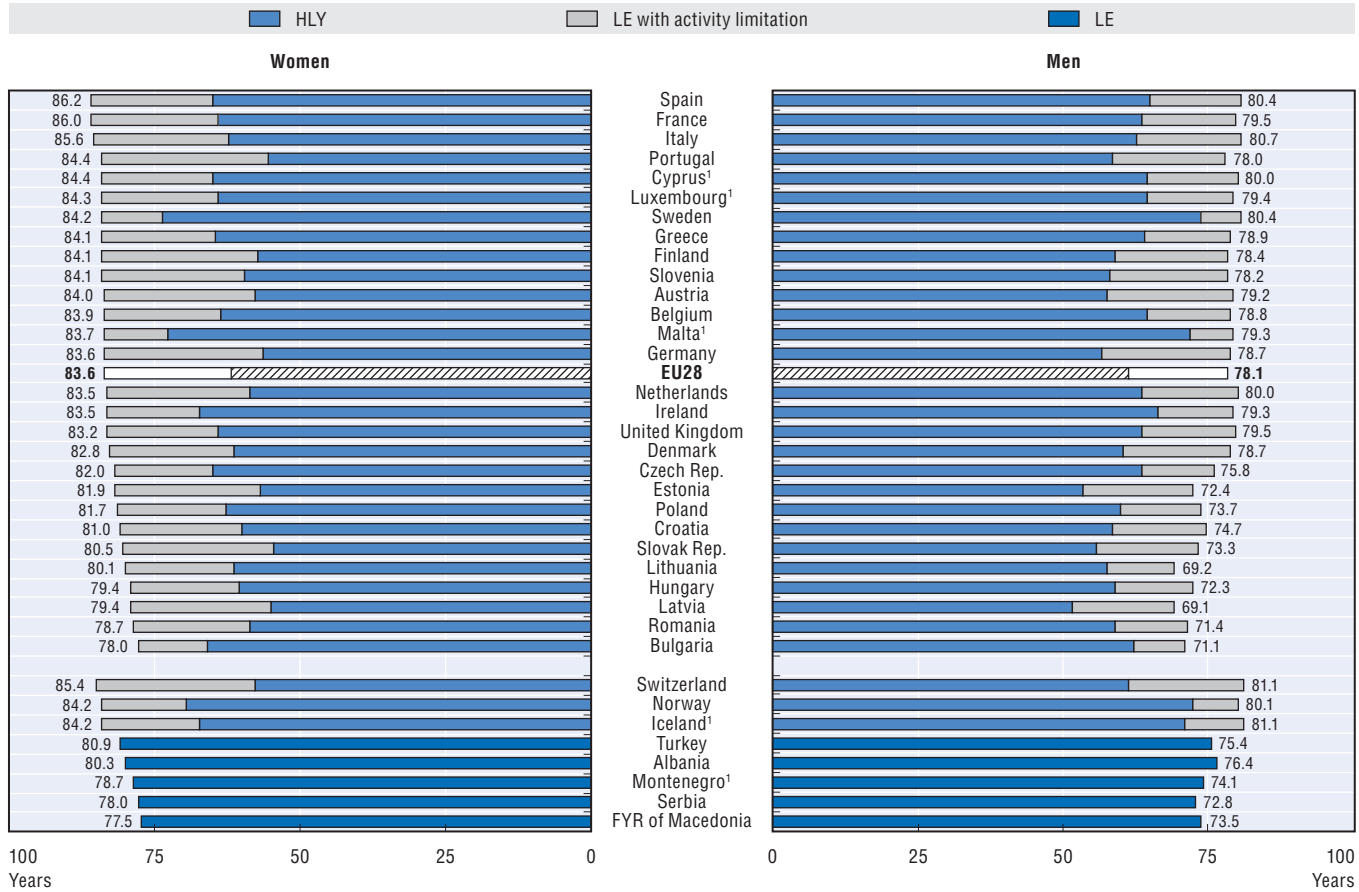


1. Three-year average (2012-14).

Source: *Eurostat Database* completed with data from *OECD Health Statistics 2016*.

StatLink http://dx.doi.org/10.1787/888933428513

3.2. Life expectancy (LE) and healthy life years (HLY) at birth, by gender, 2014



Note: Countries are ranked in descending order of life expectancy for women.

1. Three-year average (2012-14).

Source: *Eurostat Database*.

StatLink http://dx.doi.org/10.1787/888933428529

Life expectancy at age 65 has increased significantly among both women and men over the past several decades in all EU member states. Some of the factors explaining the gains in life expectancy at age 65 include advances in medical care combined with greater access to health care, healthier lifestyles and improved living conditions before and after people reach age 65.

In 2014, people at age 65 on average in EU member states could expect to live an additional 20 years (21.6 years for women and 18.2 years for men) (Figure 3.3). France had the highest life expectancy at age 65 for both women (24 years) and men (19.7 years). Life expectancy at age 65 was lowest in Bulgaria for women (17.6 years) and Latvia for men (13.8 years). Latvia, Lithuania and Estonia had the largest gender gap in life expectancy at age 65 (over 5 years).

Since 1990, there have been significant gains in life expectancy at age 65 in all EU member states. Ireland and Portugal achieved the largest gains (more than 4.5 years), while the gains in Lithuania and Bulgaria were much smaller (2 years or less).

Looking ahead, the life expectancy for people at age 65 is expected to continue to increase in the coming decades, by 4.7 years for men and 4.5 years for women on average between 2013 and 2060, according to Eurostat projections (Eurostat, 2014). This increase combined with the trend reduction in fertility rates will pose considerable challenges associated with an ageing society, possibly reducing labour market participation rates and increasing pressures on pensions and health and long-term care systems. Whether longer life expectancy is accompanied by good health and functional status among ageing populations has therefore important implications on possibilities to extend working lives and the demands for health and long-term care.

In 2014, the number of healthy life years (HLY) for people at age 65 on average in EU member states was 8.6 years for both men and women. It was greatest in the Nordic countries (Sweden, Denmark, Norway and Iceland), Ireland and Malta, and shortest in the Slovak Republic and Latvia for both men and women (Figure 3.4). In Sweden, men and women at age 65 can expect to live about three-quarter of their remaining years of life without limitations in their usual activities, while in the Slovak Republic this proportion is less than a third.

There is no gender gap in HLY at age 65 compared with the gap of 3.4 years in life expectancy. This reflects the fact that a greater proportion of women report some activity limitations. In twelve EU countries, the number of healthy life years for men at age 65 is in fact greater than for women.

Life expectancy at age 65 years also varies by educational status (Figure 3.4). For both men and women, highly educated people are likely to live longer. Differences in life expectancy by education level are particularly large in Central and Eastern European countries, especially for men. In the Slovak Republic, Latvia, Hungary, Estonia and the Czech Republic, 65-year-old men with a high level of education can expect to live more than four years longer than those with a low education level. By contrast, differences in life expectancy by education level are smaller in the Nordic countries (Sweden, Finland and Denmark) and Italy. These gaps in life expectancy by education level, for both men and women, are driven mainly by higher mortality rates from cardiovascular diseases among elderly with the lowest level of education (Murtin et al., forthcoming).

Definition and comparability

Life expectancy at age 65 measures the average number of remaining years of life for people at that age based on current mortality conditions (age-specific death rates).

Healthy life years (HLY) are the number of years spent free of long-term activity limitation, being equivalent to disability-free life expectancy. HLY are calculated annually by Eurostat for each EU country based on life table data and age-specific prevalence data on long-term activity limitations. The underlying health measure is the Global Activity Limitation Indicator (GALI), which measures limitation in usual activities, and comes from the EU-SILC survey.

Comparing trends in HLY and life expectancy can show whether extra years of life are healthy years. However, valid comparisons depend on the underlying health measure being reliable and comparable. The HLY indicator presented here is derived from self-reported data which can be affected by people's subjective assessment of their health and cultural and social background.

References

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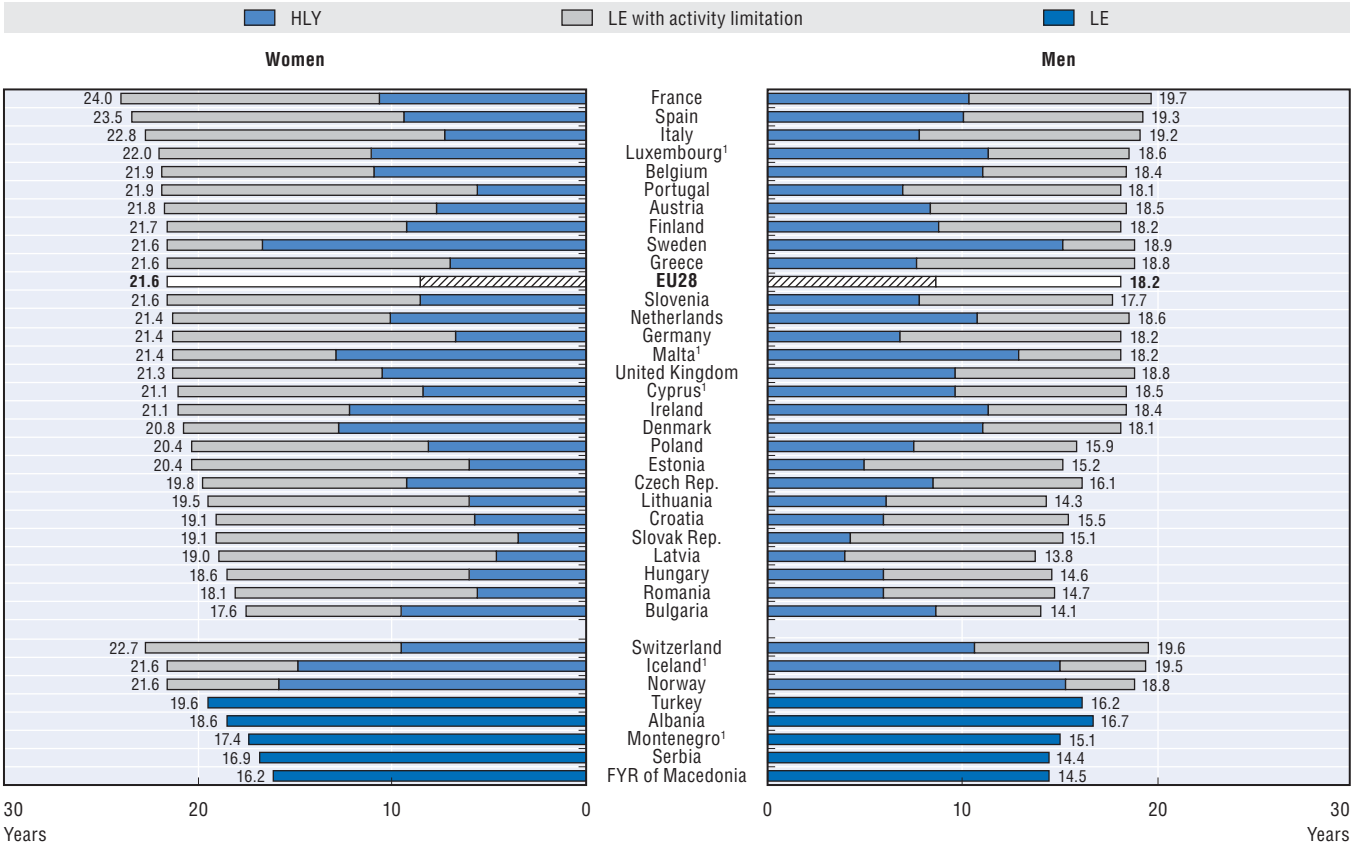
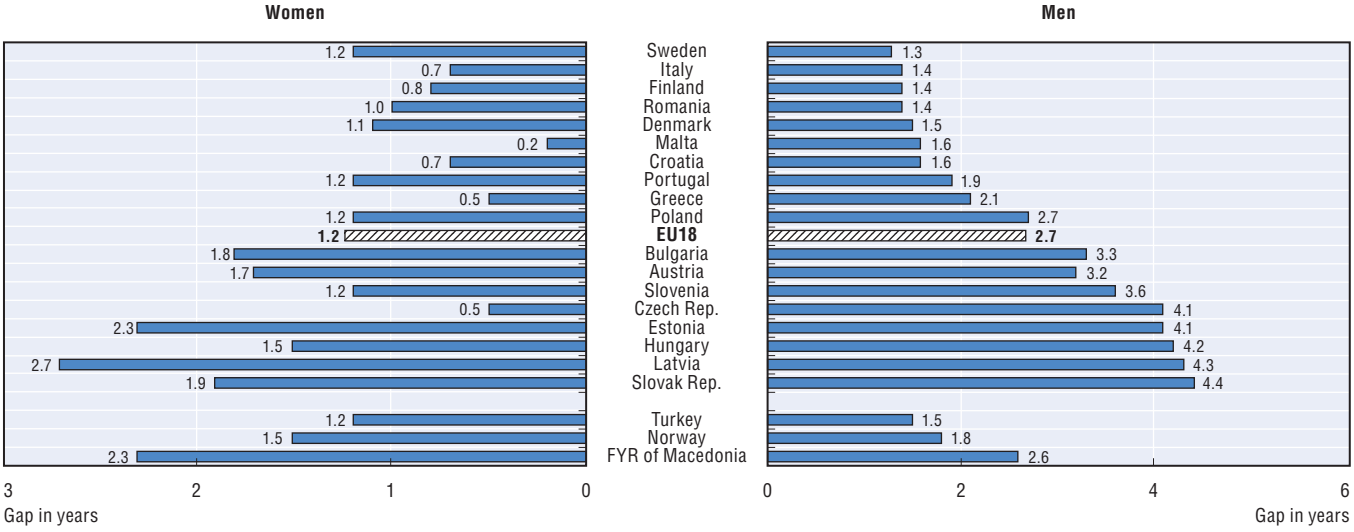
3.3. Life expectancy (LE) and healthy life years (HLY) at 65, by gender, 2014



Note: Countries are ranked in descending order of life expectancy at 65 for women.
1. Three-year average (2012-14).
Source: Eurostat Database.

StatLink http://dx.doi.org/10.1787/888933428539

3.4. Gap in life expectancy at age 65 by gender and educational level, 2013 (or nearest year)



Note: The figures show the gap in the expected years of life remaining at age 65 between adults with the highest level ("tertiary education") and the lowest level ("below upper secondary education") of education.
Source: Eurostat Database completed with *OECD Health Statistics 2016* for Austria and Latvia.

StatLink http://dx.doi.org/10.1787/888933428542

Statistics on deaths remain one of the most widely available and comparable sources of information on health. Registering deaths is compulsory in all European countries, and the data collected through this registration process can be used to monitor diseases and health status, and to plan health services. In order to compare levels of mortality across countries and over time, the data need to be standardised to remove the effect of differences in age structure.

In 2013, there were large variations in age-standardised mortality rates for all causes of death across European countries. Death rates were lowest in Spain, France and Italy at around 900 deaths or less per 100 000 population (Figure 3.5). Rates were highest in Bulgaria, Latvia, Romania, Lithuania, Hungary and the Slovak Republic, with age-standardised rates more than 50% higher than those of the lowest countries (around 1 400 deaths or more per 100 000 population).

A significant gender gap exists in mortality rates in all countries (Figure 3.5). Across all EU member states, the mortality rate among men was, on average, 75% higher than among women in 2013. But larger gaps exist in some countries: in Estonia, Lithuania and Latvia, mortality rates among men were almost two times greater than among women.

Lower mortality rates translate into higher life expectancies (see indicator on "Life expectancy and healthy life expectancy at birth" in this chapter). Differences in life expectancy among countries with the lowest and highest mortality rates are more than eight years for women (between Spain and Bulgaria) and almost 12 years for men (between Italy and Latvia).

Although mortality rates in Baltic and Central and Eastern European countries are still relatively high, significant reductions have occurred in a number of these countries since 2000. For example, mortality rates in Estonia have fallen by about 30% between 2000 and 2013, a greater reduction than in the European Union as a whole (21%).

Figure 3.6 shows that cardiovascular diseases (including ischaemic heart diseases, stroke and other diseases of the circulatory system) were the leading cause of death in Europe in 2013, accounting for 34% of all deaths among men and 40% of all deaths among women across all EU countries (see indicator "Mortality from heart disease and stroke" in this chapter).

Cancer was the second leading cause of death, accounting for 30% of all deaths among men and 24% of all deaths among women in EU countries in 2013. Lung cancer, colon cancer and prostate cancer were the main causes of cancer death for men, while breast cancer, colon cancer and lung cancer were the main three causes of cancer death among women (see indicator "Mortality from cancer").

After cardiovascular diseases and cancer, respiratory diseases were the third most common cause of death in EU countries, accounting for 9% of all deaths among men and 8% among women in 2013. Chronic obstructive pulmonary disease (COPD) was the most common cause of mortality among respiratory diseases followed by pneumonia (see indicator "Mortality from respiratory diseases"). The vast majority of deaths from respiratory diseases are among people aged over 65.

External causes of death (which include accidents, suicides and other causes of death) were responsible for around 6% of all deaths among men and 3% of deaths among women in EU countries in 2013 (see indicator on "Suicide").

Most deaths (around 80%) in EU countries occur after the age of 65. While the main cause of death for people aged over 65 is circulatory diseases, the main cause of death for people under 65 is cancer (Eurostat, 2016).

Definition and comparability

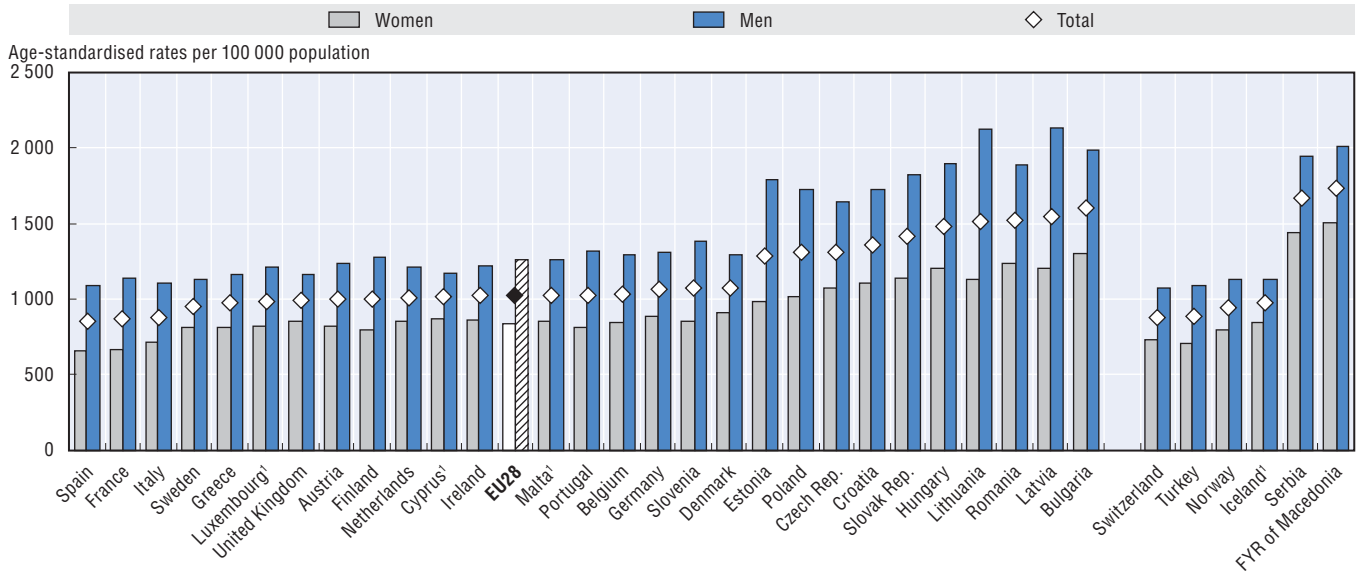
Mortality rates are based on numbers of deaths registered in a country in a year divided by the size of the corresponding population. The rates have been age-standardised to the revised European standard population adopted by Eurostat in 2012 (including EU countries and EFTA countries), to remove variations arising from differences in age structures across countries and over time.

Deaths from all causes include ICD-10 codes A00-Y89, excluding S00-T98.

Reference

Eurostat (2016), "Causes of Death Statistics – People Over 65", *Eurostat Statistics Explained*, European Commission, Luxembourg, May.

3.5. Mortality rates from all causes of death, 2013

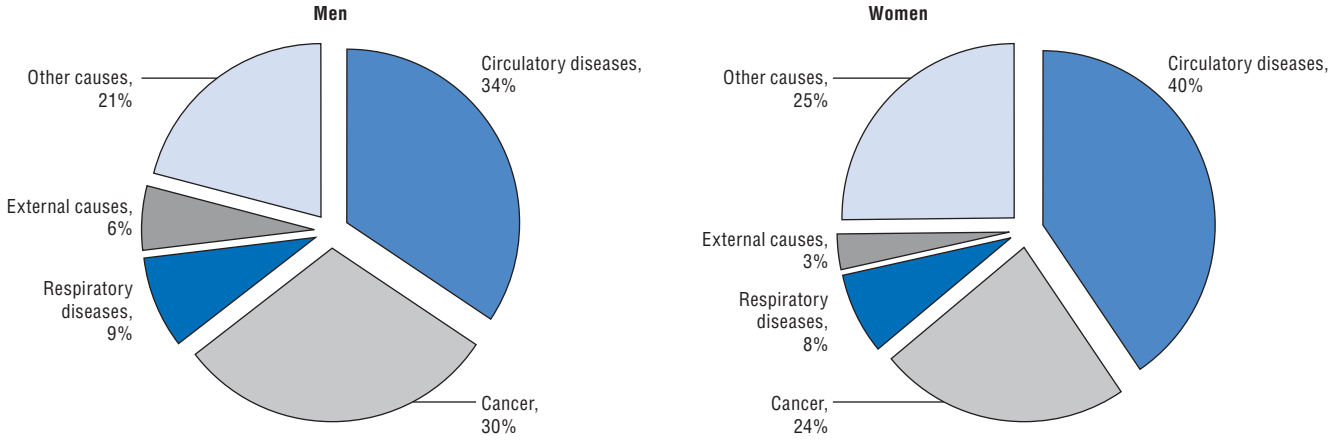


1. Three-year average (2011-13, except for Iceland: 2007-09).

Source: Eurostat Database.

StatLink http://dx.doi.org/10.1787/888933428552

3.6. Main causes of deaths among men and women in EU countries, 2013



Source: Eurostat Database.

StatLink http://dx.doi.org/10.1787/888933428566

Cardiovascular diseases are the main cause of mortality in nearly all EU member states, accounting for almost 40% of all deaths across EU countries in 2013. They cover a range of diseases related to the circulatory system, including ischemic heart diseases (which includes heart attacks) and cerebrovascular diseases (or strokes). Together, ischemic heart diseases and strokes comprise around 60% of all cardiovascular deaths, and caused more than one-fifth of all deaths in EU member states in 2013.

Ischemic heart diseases (IHD) are caused by the accumulation of fatty deposits lining the inner wall of a coronary artery, restricting blood flow to the heart. IHD alone were responsible for 644 000 deaths across EU countries in 2013, accounting for around 13% of all deaths. Mortality rates from IHD are highest in Lithuania, Latvia, the Slovak Republic, Hungary and the Czech Republic, with over 350 deaths per 100 000 population (Figure 3.7). The countries with the lowest IHD mortality rates are France, Portugal, the Netherlands, Spain and Belgium.

Death rates for IHD are much higher for men than for women in all countries (Figure 3.7). The gender gap was greatest in France, Belgium, Spain, Cyprus, the Netherlands, Luxembourg, Greece, Slovenia and the United Kingdom, with the rates for men being two times higher than for women.

Since 2000, IHD mortality rates have declined in all countries, although the decline has been quite modest in countries like Lithuania and Hungary (Figure 3.9). The decline has been particularly strong in countries such as the Netherlands and the United Kingdom, with rates being cut by more than half. Declining tobacco consumption has contributed significantly to reducing the incidence of IHD, and consequently the mortality rates (see the indicator on smoking in Chapter 4). Improvements in medical care have also played an important role (see the indicator on "Cardiac procedures" in Chapter 7 and the indicator on "Mortality following acute myocardial infarction" in Chapter 6).

Strokes were responsible for 433 000 deaths in EU countries in 2013, accounting for about 9% of all deaths. Strokes are caused by the disruption of the blood supply to the brain. In addition to being an important cause of mortality, the disability burden from stroke is substantial. As with IHD, there are large variations in stroke mortality rates across countries (Figure 3.8). The rates are highest in Bulgaria, Romania, Latvia and Lithuania, with more than 200 deaths per 100 000 population. They were the lowest in France and Spain.

Since 2000, stroke mortality has decreased in nearly all EU member states (Figure 3.10). Mortality rates have declined rapidly in Estonia, but about half of this large decrease was due to changes in death registration practices, with an increased selection of hypertension as the cause of death rather than stroke (Denissov, 2016). The decline in stroke mortality has been more modest in countries such as Lithuania and Bulgaria. As with IHD, the reduction in stroke mortality can be attributed at least partly to a reduction in risk factors as well as improvements in medical treatments (see the indicator "Mortality following stroke" in Chapter 6). However, rising obesity and diabetes threatens the progress in tackling cerebrovascular diseases (OECD, 2015).

Definition and comparability

Mortality rates are based on numbers of deaths registered in a country in a year divided by the size of the corresponding population. The rates have been age-standardised to the revised European standard population adopted by Eurostat in 2012 (including EU countries and EFTA countries), to remove variations arising from differences in age structures across countries and over time.

Deaths from ischemic heart disease relate to ICD-10 codes I20-I25, and cerebrovascular disease to I60-I69.

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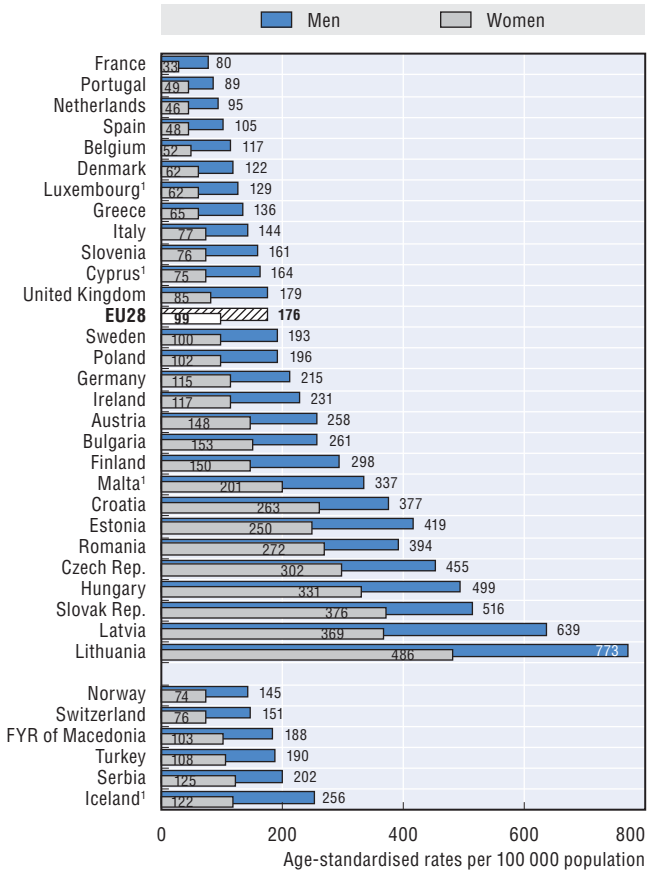
3.7. Ischemic heart disease, mortality rates, 2013

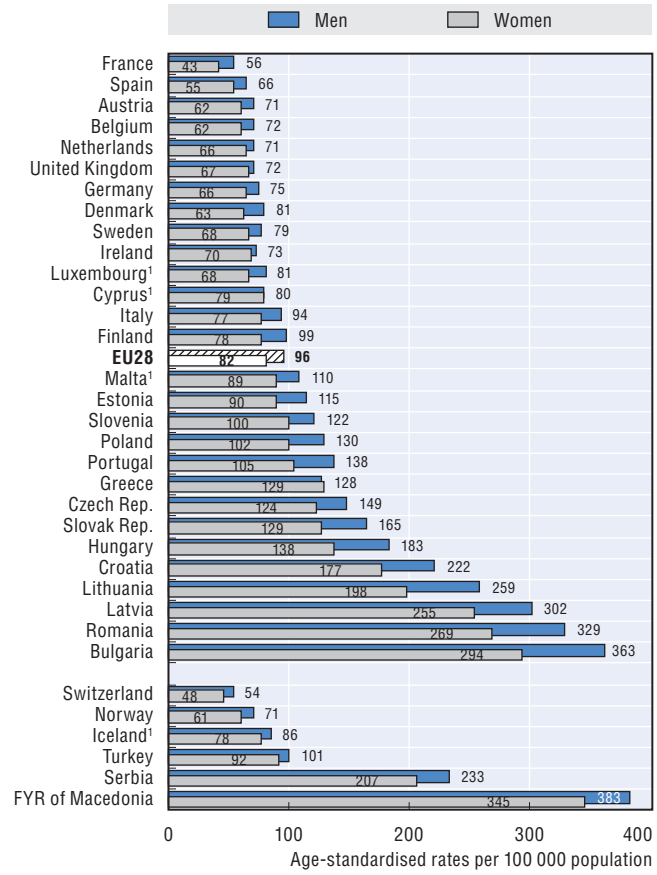


1. Three-year average (2011-13, except for Iceland: 2007-09).

Source: Eurostat Database.

StatLink http://dx.doi.org/10.1787/888933428578

3.8. Stroke, mortality rates, 2013

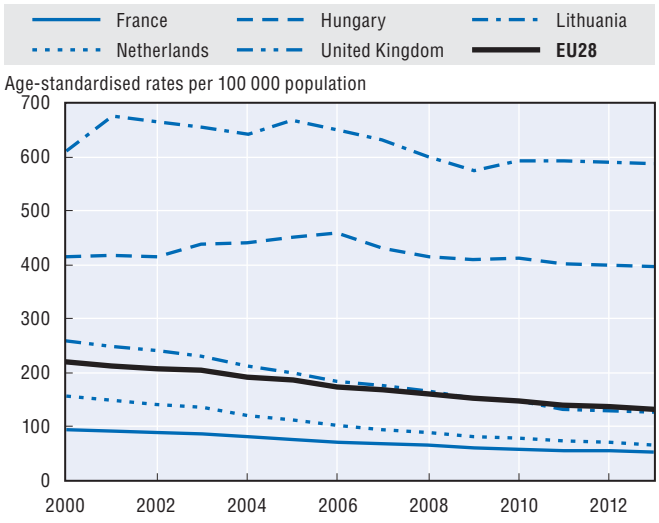


1. Three-year average (2011-13, except for Iceland: 2007-09).

Source: Eurostat Database.

StatLink http://dx.doi.org/10.1787/888933428589

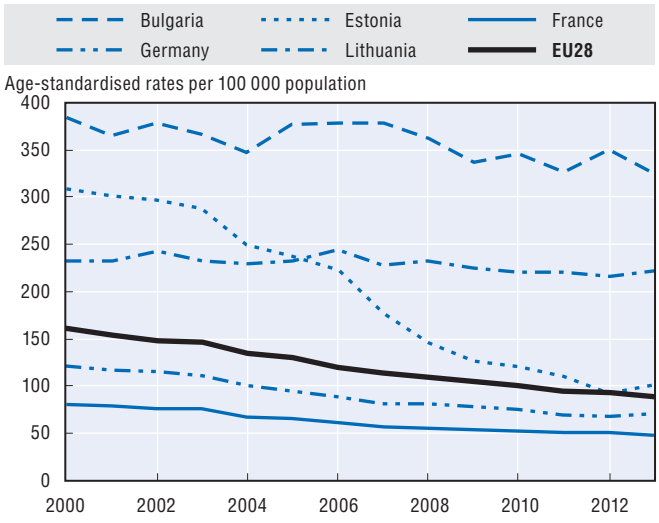
3.9. Trends in ischemic heart disease mortality rates, selected EU countries, 2000-13



Source: Eurostat Database.

StatLink http://dx.doi.org/10.1787/888933428592

3.10. Trends in stroke mortality rates, selected EU countries, 2000-13



Source: Eurostat Database.

StatLink http://dx.doi.org/10.1787/888933428603

Cancer is the second leading cause of mortality in EU member states after cardiovascular diseases, accounting for 26% of all deaths in 2013. More than 1 300 000 people died of cancer in 2013 across the 28 EU countries. Cancer mortality rates were lowest in Cyprus, Finland, Sweden and Spain, with rates at least 10% lower than the EU average. They were highest in Hungary, Croatia, the Slovak Republic, Slovenia and Denmark, with rates at least 10% higher than the EU average (Figure 3.11).

Cancer mortality rates are higher for men than for women in all countries. In 2013, the gender gap was particularly wide in Latvia, Estonia, Lithuania, the Slovak Republic, Spain and Portugal, with mortality rates among men more than twice those among women. This gap can be explained partly by the greater prevalence of risk factors among men, as well as the lesser availability or use of screening programmes for cancers affecting men, leading to lower survival rates after diagnosis.

Lung cancer is still by far the most common cause of death from cancer among men (25.6% in the EU as a whole), followed by colorectal cancer (11.5%) and prostate cancer (10.0%). Breast cancer is the leading cause of death from cancer among women (16.2%), followed by lung cancer (14.7%) and colorectal cancer (12.1%) (Figure 3.12).

Death rates from lung cancer are almost three times higher among men than among women in the European Union as a whole (Figure 3.13). Smoking is the main risk factor for lung cancer. In 2013, death rates from lung cancer among men were highest in Hungary, Poland, Croatia, Greece and Latvia. These are all countries where smoking rates among men were in the past and are still today relatively high (see indicator on "Smoking among adults" in Chapter 4). Death rates from lung cancer among men are lowest in Sweden and Finland among EU countries, and relatively low also in Switzerland and Norway.

Colorectal cancer is an important cause of cancer death among both men and women. There are several risk factors for colorectal cancer besides age, including a diet high in fat and genetic background. In 2013, colorectal cancer mortality was lowest in Cyprus, Greece and Finland, while it was highest in Hungary, the Slovak Republic and Croatia (see the indicator on "Survival and mortality from colorectal cancer" in Chapter 6).

Breast cancer is the most common form of cancer among women in all European countries. While there has been an increase in incidence rates of breast cancer over the past decade, death rates have declined or remained stable, indicating increases in survival rates due to earlier diagnosis and better treatment (Ferlay et al., 2013). In 2013, mortality from breast cancer was lowest in Spain, Portugal, Estonia, Sweden and Finland, while it was highest in Croatia, Malta, Ireland and the Slovak Republic (see the indicator on "Screening, survival and mortality for breast cancer" in Chapter 6).

Prostate cancer has become the most common cancer among men in many European countries, particularly among men aged over 65 years, although death rates from prostate cancer remain lower than for lung cancer in all countries except Sweden. The rise in the reported incidence of prostate cancer in many countries during the 1990s and 2000s was largely due to the greater use of prostate-specific antigen (PSA) diagnostic tests. Death rates from prostate cancer in 2013 were lowest in Italy, Luxembourg and Malta, and highest in Estonia, Latvia and Lithuania as well as in the Nordic countries (Denmark, Sweden and Norway).

Death rates from all types of cancer among men and women have declined at least slightly in most EU member states since 2000, although the decline has been more modest than for cardiovascular diseases, explaining why cancer now accounts for a larger share of all deaths.

Definition and comparability

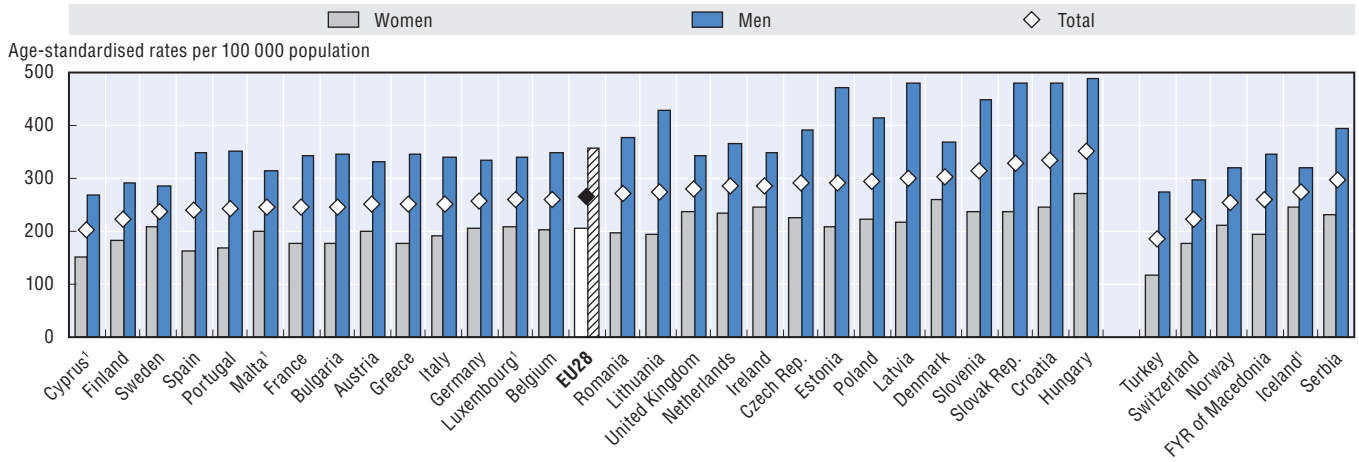
Mortality rates are based on numbers of deaths registered in a country in a year divided by the size of the corresponding population. The rates have been age-standardised to the revised European standard population adopted by Eurostat in 2012 (Including EU countries and EFTA countries), to remove variations arising from differences in age structures across countries and over time.

Deaths from all cancers relate to ICD-10 codes C00-C97, lung cancer to C33-C34. The international comparability of cancer mortality data can be affected by differences in medical training and practices as well as in death certification procedures across countries.

Reference

Ferlay, J. et al. (2013), "Cancer Incidence and Mortality Patterns in Europe: Estimates for 40 Countries in 2012", *European Journal of Cancer*, Vol. 49, pp. 1374-1403.

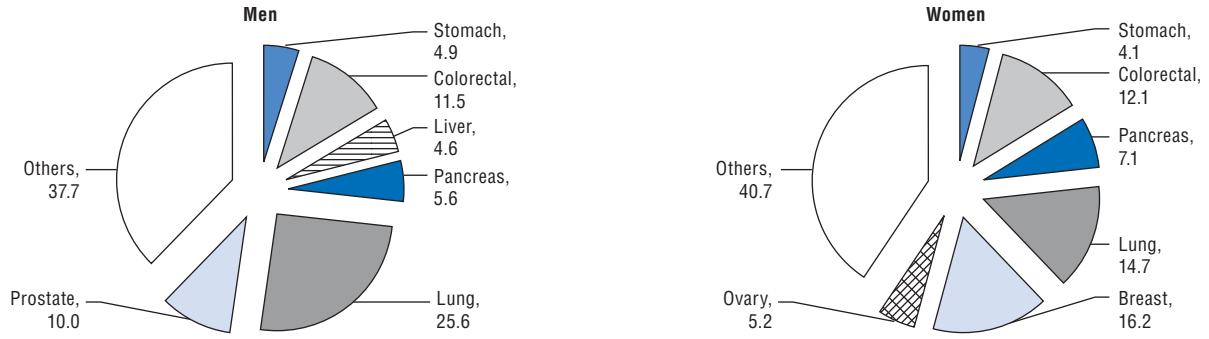
3.11. Cancer mortality rates, 2013



1. Three-year average (2011-13, except for Iceland: 2007-09).
Source: Eurostat Database.

StatLink http://dx.doi.org/10.1787/888933428618

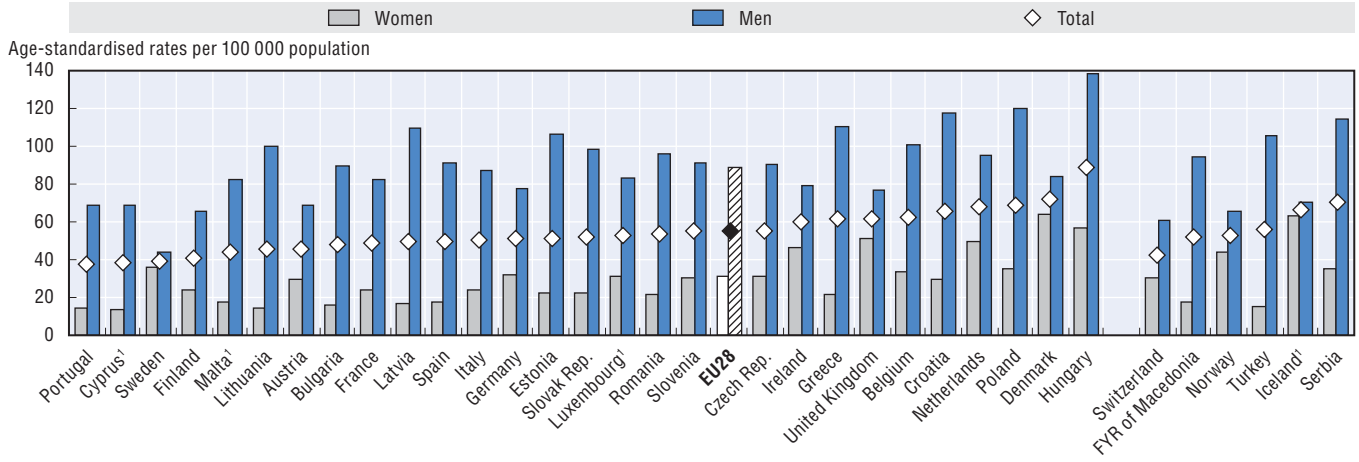
3.12. Main causes of cancer deaths among men and women in EU countries, 2013



Source: Eurostat Database.

StatLink http://dx.doi.org/10.1787/888933428622

3.13. Lung cancer mortality rates, 2013



1. Three-year average (2011-13, except for Iceland: 2007-09).
Source: Eurostat Database.

StatLink http://dx.doi.org/10.1787/888933428639

Mortality from respiratory diseases is the third main cause of death in EU countries, accounting for 8% of all deaths in 2013. More than 400 000 people died from respiratory diseases in 2013, mainly from chronic obstructive pulmonary disease and pneumonia, but also from asthma, influenza and other diseases.

In 2013, the United Kingdom had the highest death rates from respiratory diseases among EU countries, followed by Ireland (Figure 3.14). The high rates in the United Kingdom and Ireland are associated with higher-than-average rates for all the main causes of death from respiratory diseases. The lowest rates were in Finland, Estonia and Latvia.

In most countries, more men than women die from respiratory diseases. This is partly due to higher smoking rates among men, which is an important risk factor for many respiratory diseases.

Chronic obstructive pulmonary disease (COPD) – the term now used mainly to describe chronic bronchitis and emphysema – was responsible for nearly 170 000 deaths in EU member states in 2013, accounting for more than 40% of all respiratory disease mortality in that year. Mortality from COPD varies considerably across countries: Denmark, Hungary, Ireland and the United Kingdom have the highest COPD mortality rates, whereas France, Latvia, Greece and Estonia have the lowest rates (Figure 3.16). The main risk factor for COPD is tobacco smoking, but other risk factors include occupational exposure to dusts, fumes and chemicals, and air pollution more generally. People with COPD are also more susceptible to colds, influenza and pneumonia. A large number of people with COPD are undiagnosed or only diagnosed at a late stage. Greater efforts are needed to diagnose people with COPD earlier to improve their health outcomes and survival.

Pneumonia was responsible for more than 125 000 deaths in EU countries in 2013, accounting for 30% of all respiratory disease mortality. As with COPD, there are large variations in mortality rates from pneumonia across EU countries. Portugal, the Slovak Republic and the United Kingdom had the highest rates of pneumonia mortality in 2013, whereas Finland, Croatia and Austria had the lowest rates (Figure 3.15). The main risk factors for pneumonia are age, lifestyle factors such as smoking and alcohol abuse, and having COPD or HIV infection (Torres et al., 2013).

About 6 800 died from asthma in EU countries in 2013, while more than 3 000 people died from influenza. Most of these deaths were concentrated among people aged 65 and over.

Respiratory diseases are expected to increase in the coming years as the population ages and presently unreported cases of COPD begin to manifest whether alone or in co-morbidity with other chronic diseases.

Many deaths from respiratory diseases could be prevented by tackling some of the main risk factors, notably smoking, and also by increasing vaccination coverage for influenza and pneumonia, particularly among more vulnerable groups (see indicator on influenza vaccination among older people in Chapter 6). Better management of both asthma and COPD in primary care could also help reduce exacerbations.

Definition and comparability

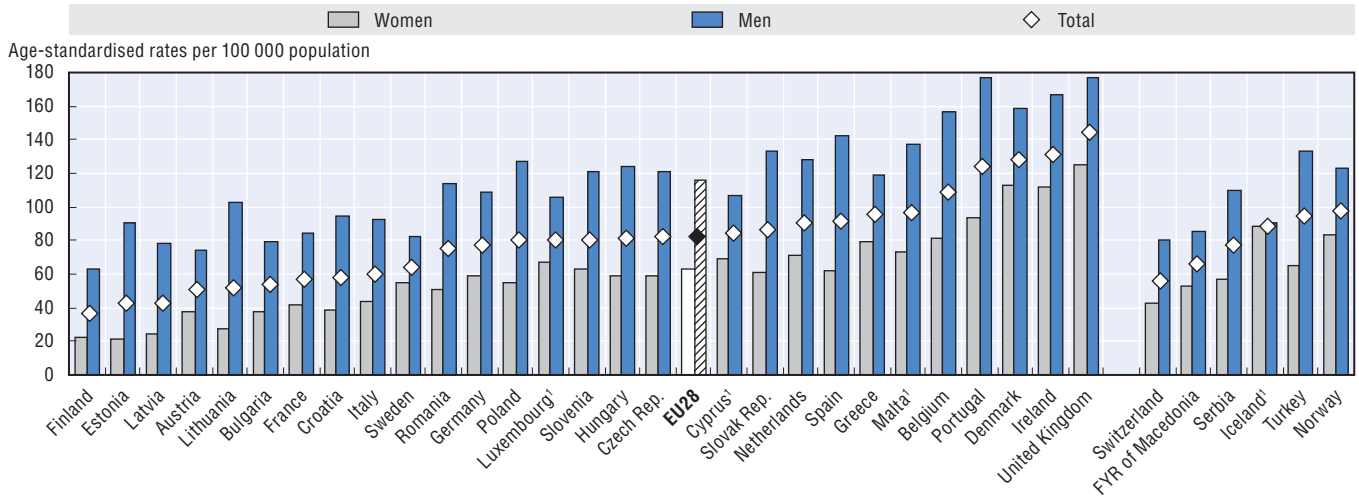
Mortality rates are based on numbers of deaths registered in a country in a year divided by the size of the corresponding population. The rates have been age-standardised to the revised European standard population adopted by Eurostat in 2012 (including EU countries and EFTA countries), to remove variations arising from differences in age structures across countries and over time.

Deaths from respiratory diseases relate to ICD-10 codes J00-J99, with pneumonia relating to J12-J18 and chronic obstructive pulmonary disease relating to J40-J47.

Reference

Torres, A. et al. (2013), "Risk Factors for Community-acquired Pneumonia in Adults in Europe: A Literature Review", *Thorax*, Vol. 68, pp. 1057-1065.

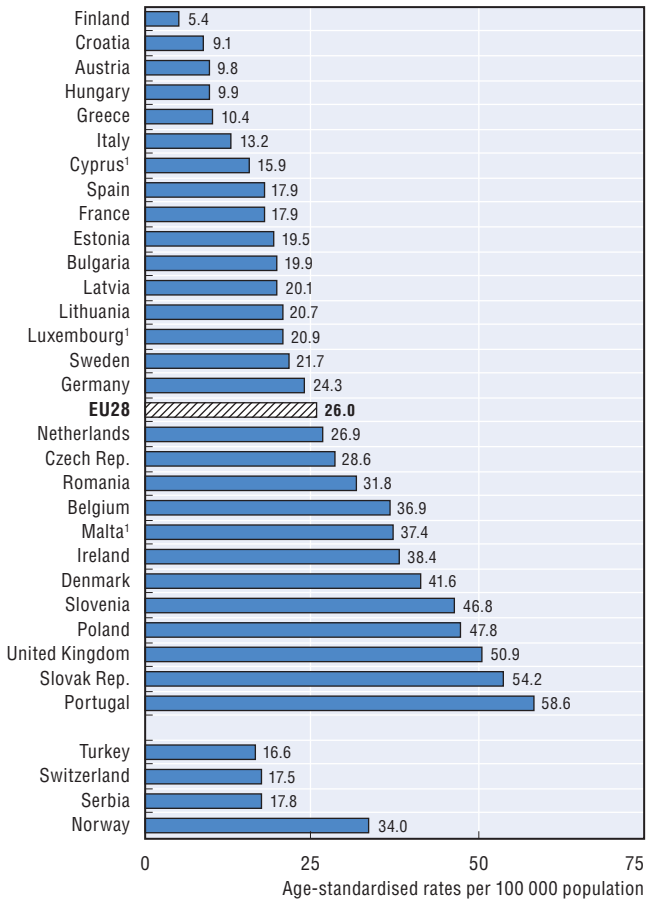
3.14. Respiratory diseases mortality rates, men and women, 2013 (or nearest year)



1. Three-year average (2011-13, except for Iceland: 2007-09).
Source: Eurostat Database.

StatLink http://dx.doi.org/10.1787/888933428644

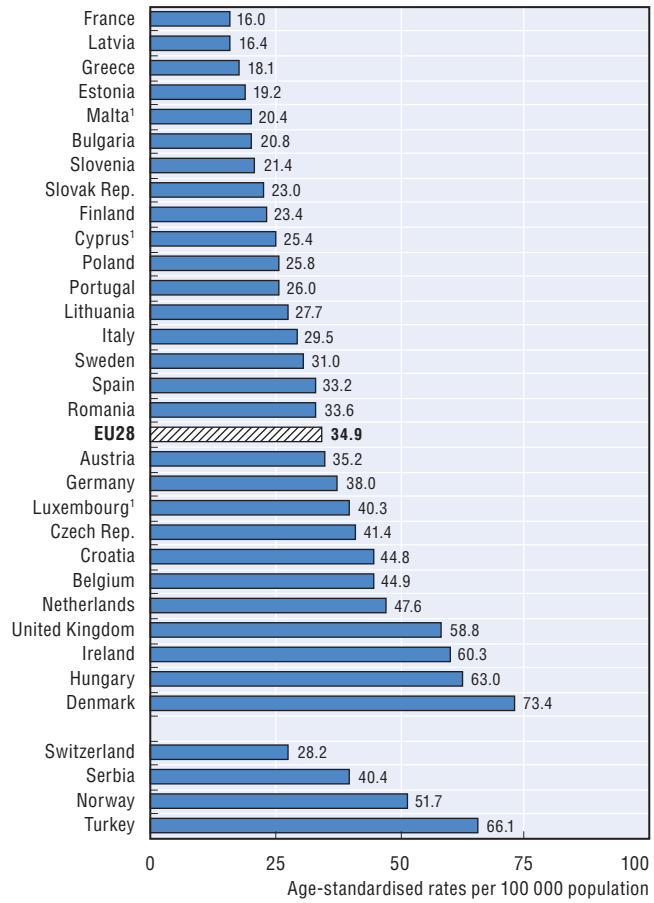
3.15. Pneumonia mortality rates, 2013 (or nearest year)



1. Three-year average (2011-13).
Source: Eurostat Database.

StatLink http://dx.doi.org/10.1787/888933428650

3.16. COPD mortality rates, 2013 (or nearest year)



1. Three-year average (2011-13).
Source: Eurostat Database.

StatLink http://dx.doi.org/10.1787/888933428663

Suicide is a significant cause of death in many EU member states. Approximately 60 000 people committed suicides in 2013 across all EU countries. Suicide rates vary widely across countries, with the lowest rates in Southern European countries – Greece, Malta, Cyprus and Italy – as well as in the United Kingdom, and the highest rates in Lithuania, followed by Slovenia, Hungary and Latvia (Figure 3.17). There is an eight-fold difference between Lithuania and Cyprus, the countries with the highest and lowest death rates from suicides. The high suicide rates in Lithuania are driven by exceptionally high rates among men, which are six times higher than among women. These very high rates of suicide are associated with a range of factors, including high levels of psychological and social insecurity, and high rates of addictions to alcohol and illegal drugs.

Death rates from suicide are almost four times greater for men than for women on average across EU countries. The gender gap is narrower for attempted suicides, reflecting the fact that women tend to use less fatal methods than men. Suicide risk also generally increases with age.

Between 2000 and 2013, suicide rates have decreased by 20% across European countries, with pronounced declines of over 40% in some countries such as Estonia and Latvia, although suicide rates in these two countries still remain above the EU average (Figure 3.18). In Lithuania, suicide rates fell between 2000 and 2007, but started to go back up at the beginning of the economic crisis in 2008 and went up again in 2013.

Suicide is often linked with depression and the abuse of alcohol and other substances. Early detection of these psycho-social problems in high-risk groups by families and health professionals is an important part of suicide prevention campaigns, together with the provision of effective support and treatment. Many countries are developing national strategies for prevention, focusing on at-risk groups. Further efforts are also needed to remove the stigma associated with seeking care (OECD, 2014).

Previous studies have shown a strong link between adverse economic conditions and higher levels of suicide (e.g. van Gool and Pearson, 2014). Suicide rates rose slightly at the start of the economic crisis in 2008 in a number of European countries, mainly among men (Chang et al., 2013), but this trend did not persist in most countries. In Greece, mortality rates from suicide remain relatively low, but the absolute number of deaths due to suicides has increased substantially in recent years, from 328 in 2007 to 532 in 2013. This amounts to an increase of over 60% in absolute number over this six-year period. All countries need to continue monitoring developments closely in order to be able to respond quickly, including monitoring high-risk populations such as the unemployed and those with psychiatric disorders.

The EU-Compass for Action on Mental Health and Wellbeing, launched in 2015, is a mechanism to collect and exchange information on policies and activities related to mental health. It focuses on seven priority areas, including preventing depression and promoting resilience, better access to mental health services, providing community-based mental health services, and preventing suicide (European Commission, 2016).

Definition and comparability

The World Health Organization defines suicide as an act deliberately initiated and performed by a person in the full knowledge or expectation of its fatal outcome. The number of suicides in certain countries may be under-reported because of the stigma associated with the act (for religious, cultural or other reasons). The comparability of suicide data between countries is also affected by a number of reporting criteria, including how a person's intention of killing themselves is ascertained, who is responsible for completing the death certificate, whether a forensic investigation is carried out, and the provisions for confidentiality of the cause of death. Caution is therefore required in interpreting variations across countries.

Mortality rates have been age-standardised to the revised European standard population adopted by Eurostat in 2012 (Including EU countries and EFTA countries), to remove variations arising from differences in age structures across countries and over time.

Deaths from suicide relate to ICD-10 codes X60-X84 and Y870.

References

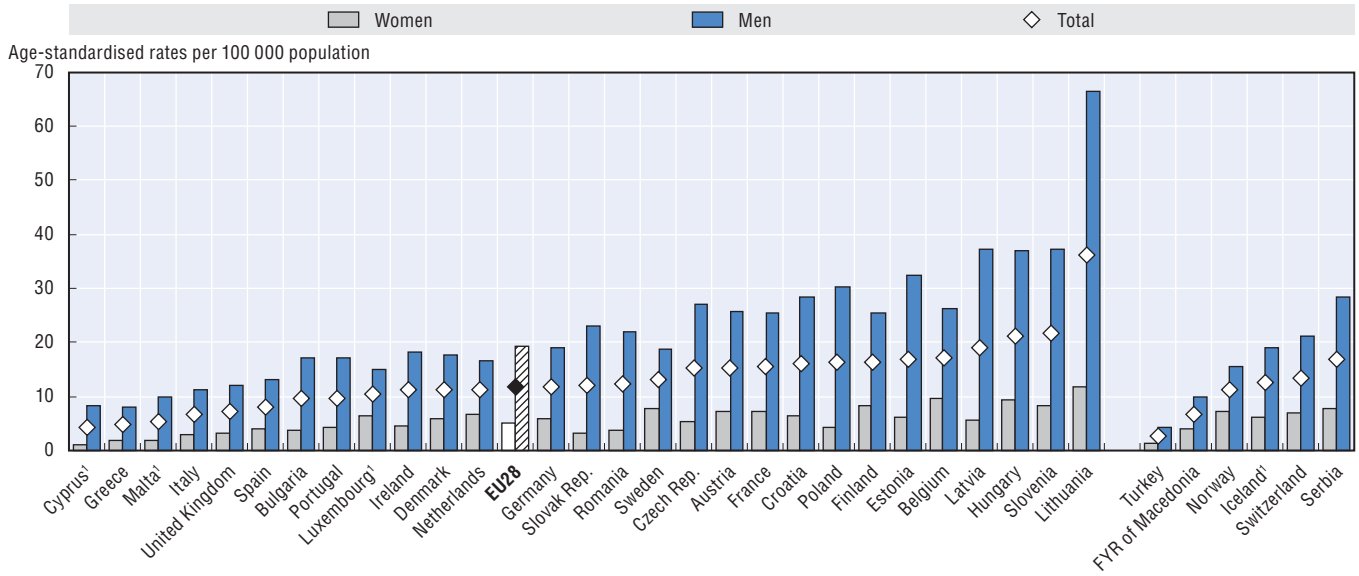
Chang, S.S. et al. (2013), "Impact of 2008 Global Economic Crisis on Suicide: Time Trend Study in 54 Countries", *British Medical Journal*, Vol. 347, p. f5239.

European Commission (2016), *EU-Compass for Action on Mental Health and Wellbeing*, *http://ec.europa.eu/health/mental_health/eu_compass/index_en.htm*.

OECD (2014), *Making Mental Health Count: The Social and Economic Costs of Neglecting Mental Health Care*, OECD Publishing, Paris, *http://dx.doi.org/10.1787/9789264208445-en*.

van Gool, K. and M. Pearson (2014), "Health, Austerity and Economic Crisis: Assessing the Short-term Impact in OECD Countries", *OECD Health Working Papers*, No. 76, OECD Publishing, Paris, *http://dx.doi.org/10.1787/5jxx71lt1zg6-en*.

3.17. Suicide mortality rates, 2013

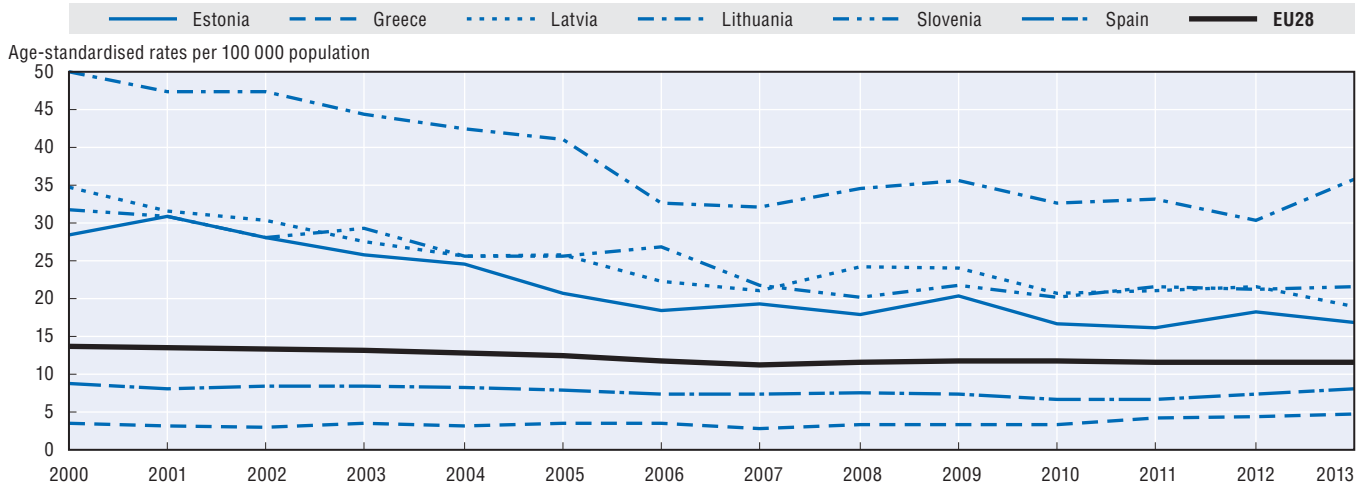


1. Three-year average (2011-13, except for Iceland: 2007-09).

Source: Eurostat Database.

StatLink http://dx.doi.org/10.1787/888933428679

3.18. Trends in suicide rates, selected European countries, 2000-13



Source: Eurostat Database.

StatLink http://dx.doi.org/10.1787/888933428686

Infant mortality, the rate at which babies and children of less than one year of age die, reflects the effect of economic and social conditions on the health of mothers and newborns, as well as the effectiveness of health systems, particularly in addressing any life-threatening problem during the neonatal period (i.e. during the first four weeks).

In most EU countries, infant mortality is low and there is little difference in rates (Figure 3.19). A small group of countries, however, have infant mortality rates above 5 deaths per 1 000 live births, including Romania, Bulgaria, the Slovak Republic and Malta. In 2013, the rates were the lowest in Slovenia, Cyprus, Finland, Sweden and the Czech Republic, with the rates below 2.5 deaths per 1 000 live births.

Around two-thirds of the deaths that occur during the first year of life are neonatal deaths (i.e. during the first month). Congenital anomalies, prematurity and other conditions arising during pregnancy are the principal factors contributing to neonatal mortality in European countries. With an increasing number of women deferring childbearing and the rise in multiple births linked with fertility treatments, the number of pre-term births has increased in many countries. In a number of high-income countries, this has contributed to a leveling-off of the downward trend in infant mortality rates over the past few years. For deaths beyond one month (post neonatal mortality), there tends to be a greater range of causes – the most common being Sudden Infant Death Syndrome (SIDS), birth defects, infections and accidents.

All European countries have achieved remarkable progress in reducing infant mortality rates from the levels of 1970, when the average was around 25 deaths per 1 000 live births, to the current average of less than 4 (Figure 3.21). Between 2000 and 2010, inequalities in infant mortality between EU member states dropped by 26% (European Union, 2013).

Child mortality is defined here as deaths among children aged 1 to 14. In 2013, the death rate among children in that age group was 11.8 per 100 000 children on average across EU countries (Figure 3.20). Bulgaria, Romania, Latvia and Estonia recorded the highest rates with more than 20 deaths per 100 000 children, whereas Sweden, Denmark, the Netherlands, Italy, Finland and Slovenia had the lowest rates, with less than ten deaths. Norway and Switzerland also have relatively low rates of child mortality. External causes of death were the leading cause of death among children in that age group, accounting for 25% of all deaths (of which 32% was due to transport accidents and 16% from drowning). Cancer accounted for 22% of all deaths among children (mainly due to brain cancer and leukemia).

As has been the case with infant mortality, there has been a steady decline in child mortality in EU countries since the 1970s. For example, in Portugal, childhood mortality came down from about 80 deaths per 100 000 children in the late 1970s (one of the highest rates in EU countries then) to 12 per 100 000 children in 2013 (which is around the EU average now). There have also been huge reductions in child mortality in countries like the Czech Republic and Hungary (Lyons and Brophy, 2005).

Definition and comparability

Infant mortality rate is the number of deaths of children under one year of age per 1 000 live births. Some of the international variation in infant and neonatal mortality rates may be due to variations among countries in registering practices of premature infants. While some countries have no gestational age or weight limits for mortality registration, several countries apply a minimum gestational age of 22 weeks (or a birth weight threshold of 500 grams) for babies to be registered as live births (Euro-Peristat, 2013).

Child mortality rate is defined as the number of deaths of children aged 1 to 14 per 100 000 children in that age group.

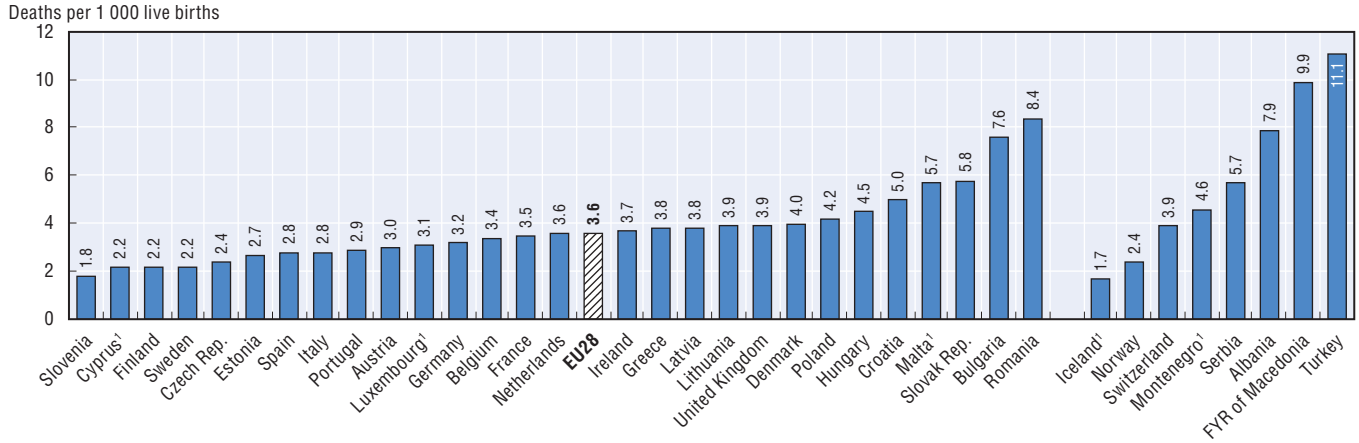
References

Euro-Peristat (2013), *European Perinatal Health Report: The Health and Care of Pregnant Women and their Babies in 2010*, Luxembourg.

European Commission (2013), *Health inequalities in the EU – Final Report of a Consortium*, Consortium lead by Sir Michael Marmot.

Lyons, R. and S. Brophy (2005), "The Epidemiology of Childhood Mortality in the European Union", *Current Paediatrics*, Vol. 15, pp. 151-162.

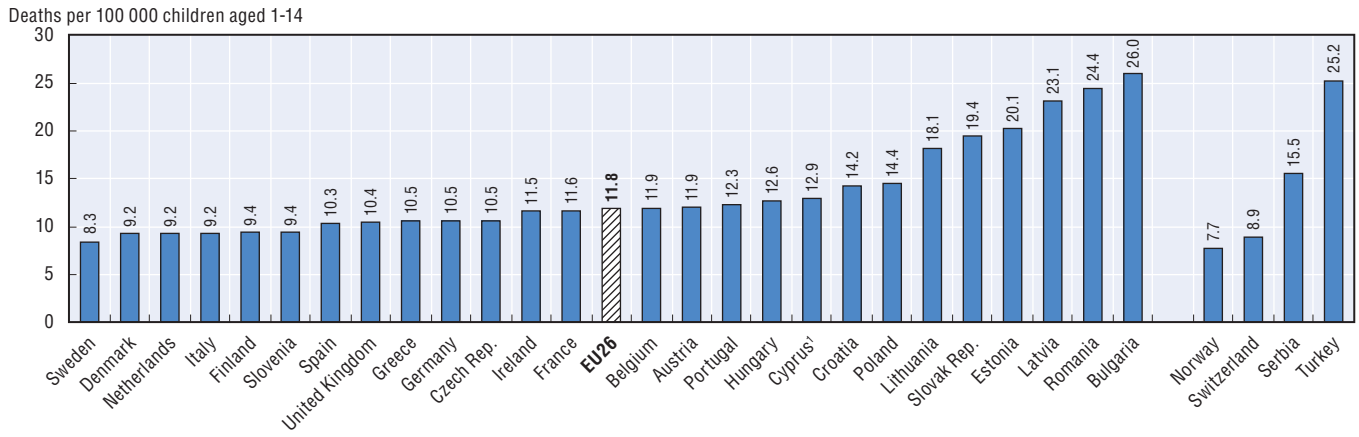
3.19. Infant mortality rates, 2014 (or nearest year)



1. Three-year average (2012-14).
Source: Eurostat Database.

StatLink http://dx.doi.org/10.1787/888933428695

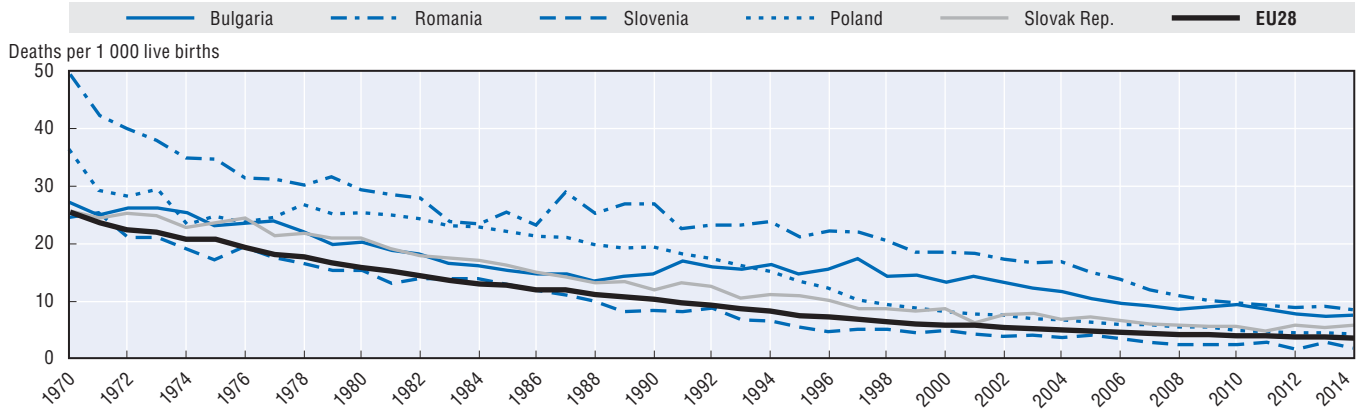
3.20. Child mortality, 2013 (or nearest year)



1. Three-year average (2011-13).
Source: Eurostat Database.

StatLink http://dx.doi.org/10.1787/888933428703

3.21. Trends in infant mortality, 1970-2014 (or nearest year)



Source: Eurostat Database.

StatLink http://dx.doi.org/10.1787/888933428711

The health module in the EU Statistics on Income and Living Conditions survey (EU-SILC) allows respondents to report on their general health status, whether they have a chronic illness and whether they are limited in usual activities because of a health problem. Despite the subjective nature of these questions, indicators of perceived general health have been found to be a good predictor of people's future health care use and mortality (DeSalvo et al., 2005).

For the purpose of international comparisons, cross-country differences in perceived health status can be difficult to interpret because responses may be affected by social and cultural factors. Since they rely on the subjective views of respondents, self-reported health status may reflect cultural biases or other influences. Also, since older people report poor health more often than younger people, countries with a larger proportion of elderly people will have a lower proportion of people reporting good or very good health.

With these limitations in mind, adults in the European Union are generally rating their health quite positively: only about 10% on average reported to be in bad or very bad health in 2014 (Figure 3.22). Ireland and Sweden had the highest proportion of adults rating their health as good or very good, with 80% or more doing so. By contrast, less than 50% of adults in Lithuania, Latvia and Portugal reported to be in good or very good health.

In all European countries, men are more likely than women to rate their health as good. As expected, people's rating of their own health tends to decline with age. In many countries, there is a particularly marked decline in a positive rating of one's own health after age 45 and a further decline after age 65.

There are large disparities in self-reported health across different socio-economic groups, as measured by income or educational level. Figure 3.23 shows that, in all countries, the 20% of the population in the highest income group is much more likely to report being in good health than the 20% in the lowest income group. On average across European countries, nearly 80% of people in the highest income quintile report being in good health, compared with just over 60% for people in the lowest income quintile. The gap between the two income groups is highest in Estonia, Latvia and the Czech Republic. These disparities may be explained by differences in living and working conditions, as well as differences in lifestyles (e.g. smoking, harmful alcohol drinking, physical inactivity, and obesity problems). In addition, people in the lowest income group may have limited access to certain health services for financial or other reasons (see Chapter 7 on "Accessibility"). It is also possible that there is a reverse causal link, with poor health status leading to lower employment and lower income. Regardless of the causality link, greater emphasis on public health and disease prevention among disadvantaged groups and improving access to health services may contribute to further improvements in population health status in general and to reducing health inequalities.

EU-SILC also asks whether respondents had any long-standing limitations in daily activities because of a health problem, which is a common definition of disability. On average across EU member states, more than one-quarter of adults reported some limitations in daily activities in 2014, with most of them reporting that they were only "limited to some extent" (18.6%), but 8.6% of respondents reporting that they were "severely limited" (Figure 3.24). Adults most commonly reported some activity limitations in Latvia, Germany, Portugal and Estonia (more than one-third of respondents), and less so in Malta and Sweden (only about 10%).

Definition and comparability

The questions used in the EU-SILC survey to measure health and the prevalence of disability are: i) "How is your health in general? Is it very good, good, fair, bad, very bad", and ii) "For at least the past 6 months, to what extent have you been limited because of a health problem in activities people usually do? Would you say you have been severely limited, limited but not severely, or not limited at all?". Persons in institutions are not surveyed.

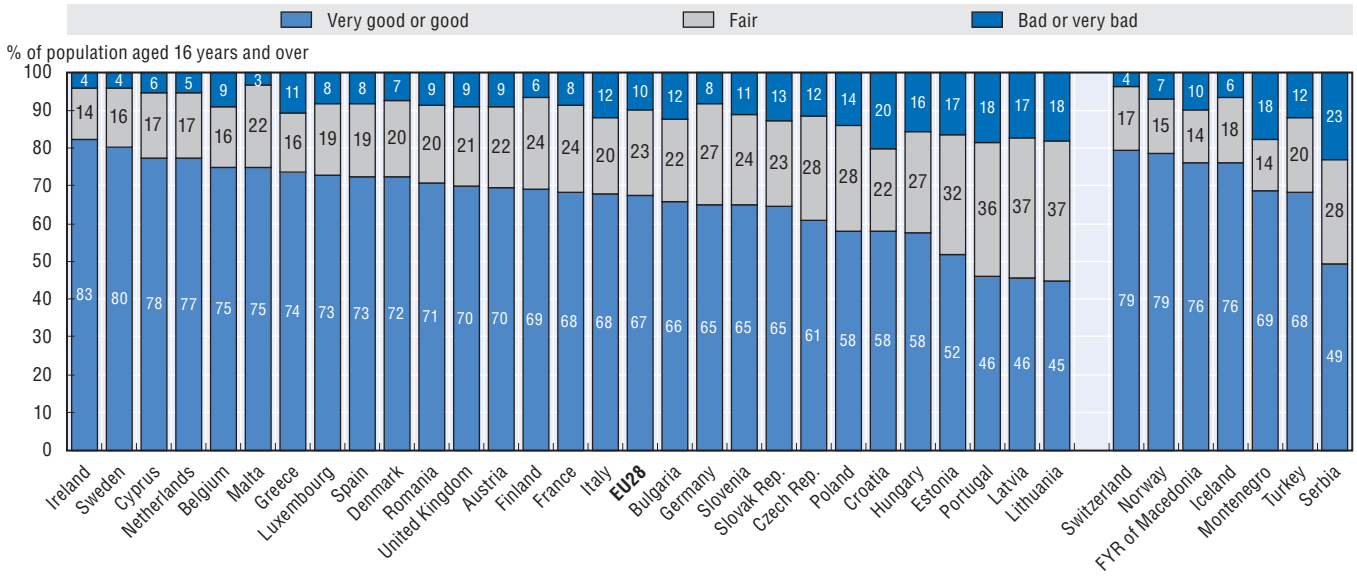
Self-reported health by income level is reported for the first quintile (lowest 20% of income group) and the fifth quintile (highest 20%). The income may relate either to the individual or the household (in which case the income is equivalised to take into account the number of persons in the household).

Caution is required in making cross-country comparisons of perceived general health, since people's assessment of their health is subjective and can be affected by their social and cultural backgrounds.

Reference

DeSalvo, K.B. et al. (2005), "Predicting Mortality and Healthcare Utilization with a Single Question", *Health Services Research*, Vol. 40, pp. 1234-1246.

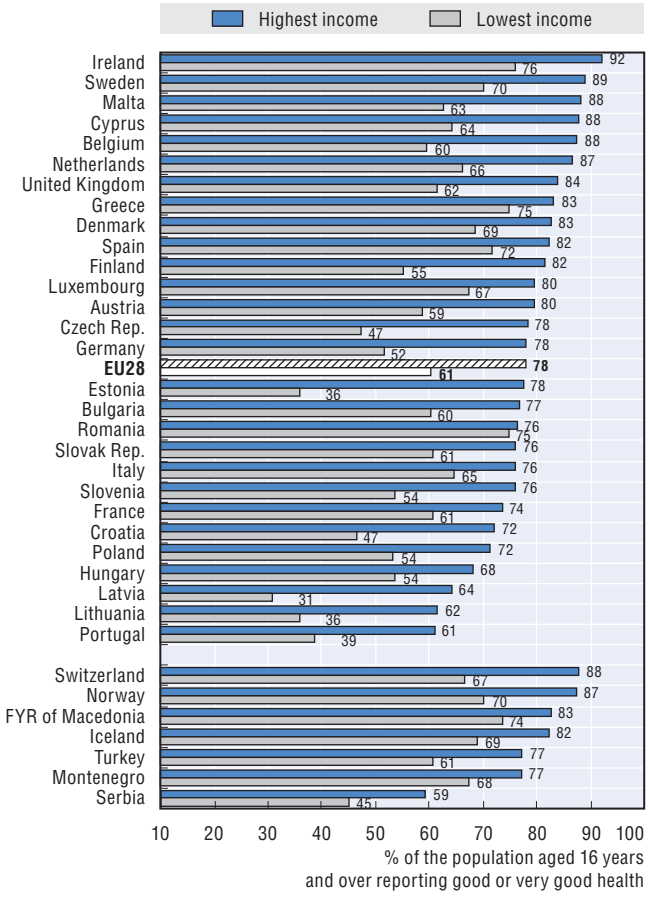
3.22. Self-reported health status, 2014



Source: EU Statistics on Income and Living Conditions survey.

StatLink http://dx.doi.org/10.1787/888933428725

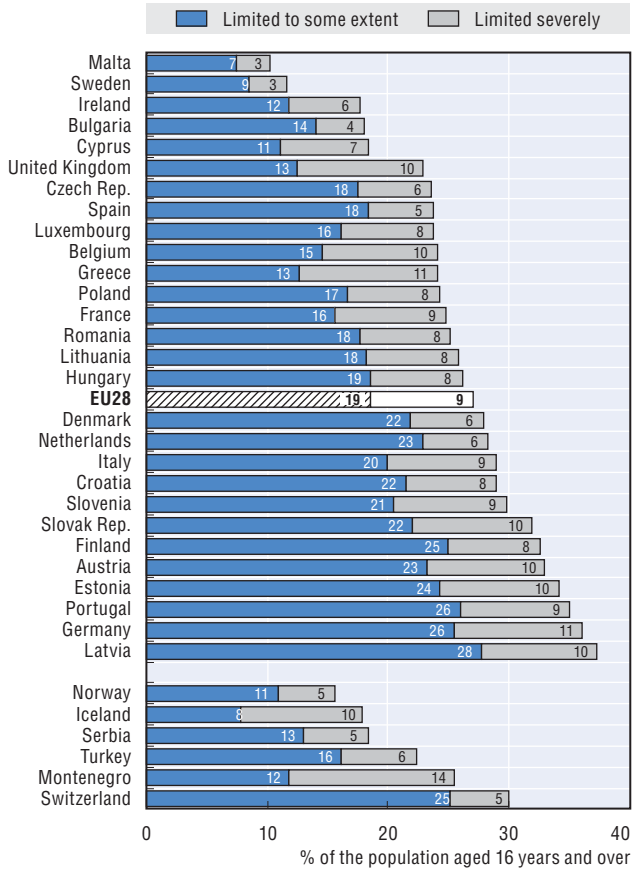
3.23. Self-reported health status by income level, 2014



Source: EU Statistics on Income and Living Conditions survey.

StatLink http://dx.doi.org/10.1787/888933428736

3.24. Self-reported disability, 2014



Source: EU Statistics on Income and Living Conditions survey.

StatLink http://dx.doi.org/10.1787/888933428745

Communicable diseases such as measles, pertussis, hepatitis B and many others still pose major threats to the health of European citizens (ECDC, 2016a). Measles, a highly infectious disease of the respiratory system, is caused by a virus. Symptoms include fever, cough, runny nose, red eyes and skin rash. It can lead to severe health complications, including pneumonia, encephalitis, diarrhoea and blindness. Pertussis (or whooping cough) is highly infectious, and is caused by bacteria. The disease derives its name from the sound made from the intake of air after a cough. Hepatitis B is an infection of the liver caused by the hepatitis B virus. The virus is transmitted by contact with blood or body fluids of an infected person. A small proportion of infections become chronic, and these people are at high risk of death from cancer or cirrhosis of the liver. Protection against measles, pertussis and hepatitis B is available through vaccination (see indicator "Childhood vaccination programme" in Chapter 6).

In 2015, 3 969 cases of measles were reported by a total of 30 EU/EEA countries, corresponding to an overall rate of about eight cases per million population (Figure 3.25). Germany accounted for 62% of all cases reported during that year. Seven EU countries (and Iceland) reported zero cases, while several others reported very few cases. Croatia reported the highest rate (51.6 cases per million population), followed by Austria and Germany. Of all cases, 88.9% had a known vaccination status, and of these 84.8% were reported as unvaccinated. In the target group for routine childhood measles vaccination (1-4 year-old children), 77.0% were unvaccinated. To progress towards the WHO goal to eliminate measles, in 2014, 16 EU/EEA countries were above the measles vaccination coverage target of 95% for the first dose. Six countries were above the coverage target for the second dose. A coverage of 95% for both the first and the second dose is necessary to achieve the level of population immunity to interrupt endemic transmission (ECDC, 2016b).

According to the ECDC, in 2014, 40 727 (38 044 confirmed) cases of pertussis were reported by 29 EU/EEA countries (ECDC, 2016c). The notification rate in 2014 was 9.1 per 100 000 population, higher than in 2013, but lower than in the epidemic year of 2012. Norway reported the highest notification rate, with 59.4 cases per 100 000 population. The Netherlands, the Czech Republic and the Slovak Republic followed with 47.9, 24.0 and 20.7 cases per 100 000 population, respectively (Figure 3.26). Norway has consistently reported the highest notification rate since 2011 (due at least partly to more extensive testing, as testing is carried out among adults with persistent coughs, not just children, as in many other countries). Between 2013 and 2014, notable increases in the notification rate of pertussis were observed in the Netherlands, the Czech Republic, Slovenia, Denmark and Belgium. Belgium has reported a consistently increasing annual notification rate since 2010. Pertussis is no longer solely a child infection and immunisation that is given at around one year of age as part of national childhood immunisation programmes no longer confers lifelong immunity. Some countries have already added an adolescent pertussis booster vaccine to their vaccination schedule (e.g. Austria, Belgium, Finland, France, Germany and Italy), while others (e.g. the United Kingdom) are currently examining the cost-effectiveness of strategies, including adolescent vaccination, to improve population level control.

A total of more than 22 400 hepatitis B cases were reported in EU member states in 2014, a rate of 4.2 per 100 000 population. Sweden and the United Kingdom had the highest notification rates among EU countries, with more than 19 cases per 100 000 population (Figure 3.27). The notification rate was also high in Norway. The higher number of reported cases in these countries is due at least partly to a more comprehensive surveillance and reporting system that includes both acute and chronic cases, whereas other countries (such as France, Greece and Lithuania) only report acute cases. Reported cases of hepatitis B are higher in men than in women. More than one-third of all reported hepatitis B cases occurs among people aged 25-34. Heterosexual transmission is the most common route of transmission, followed by nosocomial transmission and injecting drug use for acute infections. Mother-to-child transmission was the most common route for chronic cases (ECDC, 2016d).

Definition and comparability

Mandatory notification systems for communicable diseases, including measles, pertussis and hepatitis B, exist in most European countries, although case definitions, laboratory confirmation requirements and reporting systems may differ. Measles, pertussis and hepatitis B notification is mandatory in all EU member states. Caution is required in interpreting the data because of the diversity in surveillance systems, case definitions and reporting practices (for example, several countries only collect data on acute cases, not chronic cases). Variation between countries also likely reflects differences in testing as well as differences in immunisation and screening programmes (ECDC, 2016a).

References

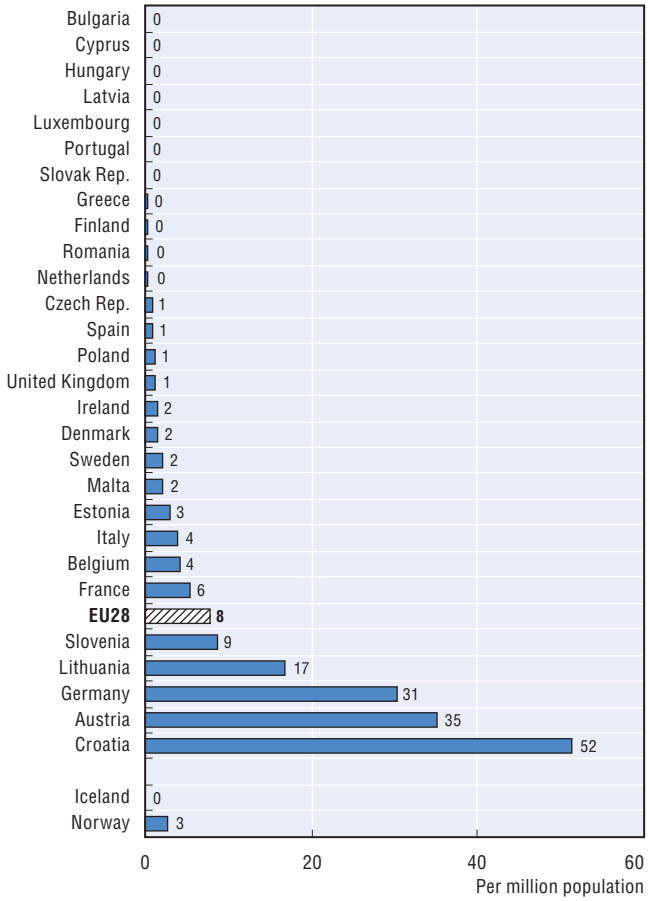
ECDC (2016a), *Surveillance Atlas of Infectious Diseases*, *http://ecdc.europa.eu/en/data-tools/atlas/pages/atlas.aspx*, Stockholm.

ECDC (2016b), *Measles and Rubella Monitoring Report*, Stockholm.

ECDC (2016c), *Annual Epidemiological Report 2016: Pertussis*, Stockholm.

ECDC (2016d), *Annual Epidemiological Report 2015: Hepatitis B*, Stockholm.

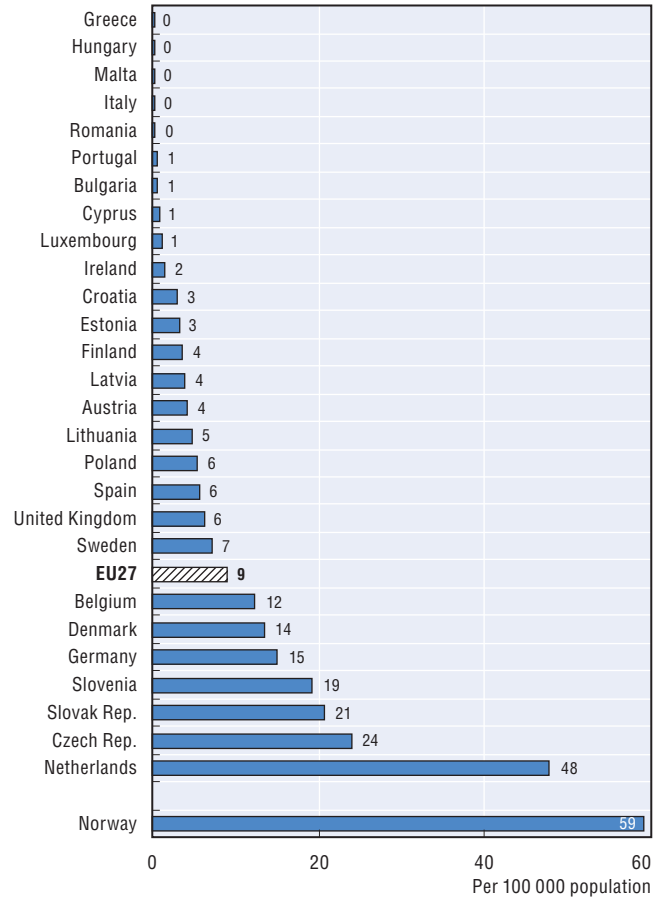
3.25. Notification rate of measles, 2015



Source: ECDC (2016), *Measles and Rubella Monitoring Report.*

StatLink http://dx.doi.org/10.1787/888933428758

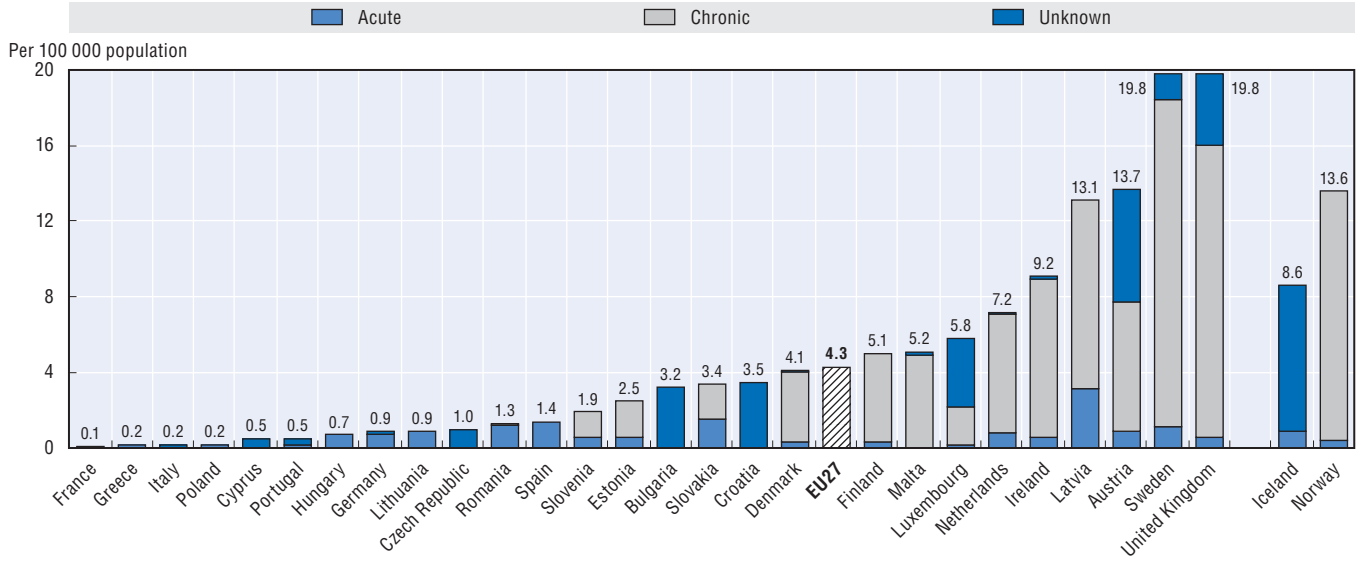
3.26. Notification rate of pertussis, 2014



Source: ECDC (2016), *Surveillance Atlas of Infectious Diseases.*

StatLink http://dx.doi.org/10.1787/888933428769

3.27. Notification rate of hepatitis B, 2014



Source: ECDC (2016), *Annual Epidemiological Report 2015: Hepatitis B.*

StatLink http://dx.doi.org/10.1787/888933428774

HIV remains a major public health issue in Europe, with more than 500 000 people living with HIV infection in the EU countries in 2014 and continued transmission increasing this number. In 2014, nearly 30 000 people were newly-diagnosed with HIV infection in EU countries. Estonia had the highest rate of new cases (22.1 per 100 000 population), followed by Latvia and Luxembourg. Since 2000, the main transmission route in Estonia has been the sharing of contaminated needles among drug users, along with increases in sexual transmission (ECDC and WHO Regional Office for Europe, 2015). The lowest rates were in the Slovak Republic, Croatia, the Czech Republic and Slovenia. In total across EU countries, about six new cases of HIV infection were diagnosed per 100 000 population in 2014 (Figure 3.28). More than three-quarters of these cases were among men. The predominant mode of transmission of HIV was through men having sex with men (42%), followed by heterosexual contact (33%). As already noted for Estonia, drug use through injections is also a frequent mode of transmission in some countries.

The number and rate of newly-diagnosed HIV cases has not declined significantly since 2008 across EU countries. There has been a large reduction in Estonia and Portugal, although the infection rates remain above the EU average. On the other hand, HIV infection rates have increased at least slightly since 2008 in some countries like Latvia and Malta (ECDC and WHO Regional Office for Europe, 2015). All countries need to pursue their efforts to reduce new HIV infections through effective prevention, and to improve access to treatment for people infected.

Tuberculosis is still an important public health issue in several EU countries, despite notable progress in some countries in reducing the number of cases over the past few years. In 2014, about 58 000 cases of tuberculosis were reported across EU countries (excluding Italy which did not report data in 2014, but reported 3 150 cases in 2013). This number was down from about 76 000 cases in 2010.

Romania had, by far, the highest number and rates of reported tuberculosis cases in 2014, with almost 16 000 people reported as having tuberculosis, a rate of almost 80 per 100 000 population (Figure 3.29). However, the number of people with tuberculosis in Romania has come down from more than 21 000 in 2010. Lithuania and Latvia also have high numbers and rates of reported tuberculosis cases. The numbers in these two countries have also come down since 2010, although the reduction has been less pronounced. Of all the people with tuberculosis in EU countries for which information is available on HIV, about 5% were co-infected by HIV (ECDC and WHO Regional Office for Europe, 2016).

Many people acquire each year sexually transmitted infections (STI) which, apart from the burden of the direct acute infection, may also cause complications. Chlamydia and gonorrhoea can lead to pelvic inflammatory disease and infertility among women, whereas syphilis in pregnant women can have devastating consequences through congenital syphilis (ECDC, 2016). In 2014, almost 400 000 cases of chlamydia were reported across EU countries, a rate of 187 per 100 000 population (Figure 3.30). Reported rates of chlamydia vary a lot across countries, but this mainly reflects differences in chlamydia screening policies and case-finding than real differences in the number of cases. More than 66 000 cases of gonorrhoea were reported across EU countries in 2014, a rate of 20 cases per 100 000 population, with the number increasing by 25% compared with 2013. In 2014, reported rates of gonorrhoea were highest in the United Kingdom, followed by Ireland, Denmark and Latvia. Antimicrobial resistance (AMR) to gonorrhoea threatens effective treatment and infection control. Strategies to address this threat are outlined in national, regional and global action plans (ECDC, 2012), all of which emphasise the importance of high quality surveillance of AMR, prompt recognition and effective management of potential treatment failures, and good communication of emerging problems to allow timely review of empirical treatment guidelines and public health policies.

Almost 25 000 cases of syphilis were reported in 2014 across EU countries, an overall rate of five cases per 100 000 population (Figure 3.30). The number of syphilis cases has gone up by nearly 30% since 2010, particularly among men, mainly due to increases cases in men who have sex with men. The rates among women have decreased (ECDC, 2016).

Definition and comparability

The rates of reported HIV are the number of new cases per 100 000 population at year of diagnosis. Under-reporting and under-diagnosis affect the reported rates, and may represent as much as 40% of cases in some countries (ECDC and WHO Regional Office for Europe, 2015). HIV data for Turkey do not include people diagnosed with AIDS at the time of HIV diagnosis, and are therefore under-estimated compared with other countries.

Notification rate of tuberculosis is defined as a patient in whom tuberculosis has been confirmed by bacteriology or diagnosed by a clinician per 100 000 population (ECDC and WHO Regional Office for Europe, 2016). The rate of reported sexually-transmitted infections (chlamydia, gonorrhea and syphilis) is also measured as the number of new diagnosed cases per 100 000 population.

References

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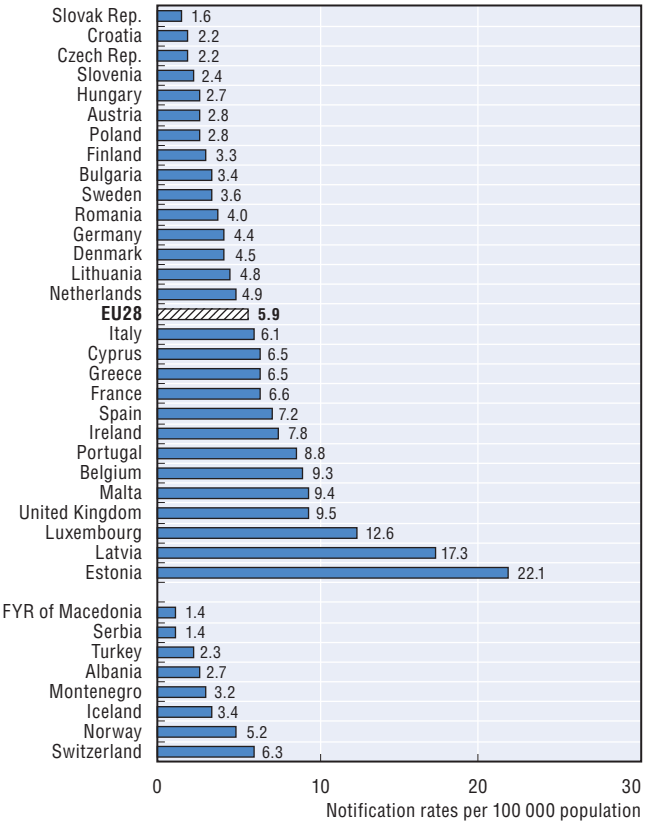
ECDC (2012), "Response Plan to Control and Manage the Threat of Multidrug-resistant Gonorrhoea in Europe", Stockholm.

ECDC and WHO Regional Office for Europe (2016), *Tuberculosis Surveillance and Monitoring in Europe 2016*, Stockholm.

ECDC and WHO Regional Office for Europe (2015), *HIV/AIDS Surveillance in Europe 2014*, Stockholm.

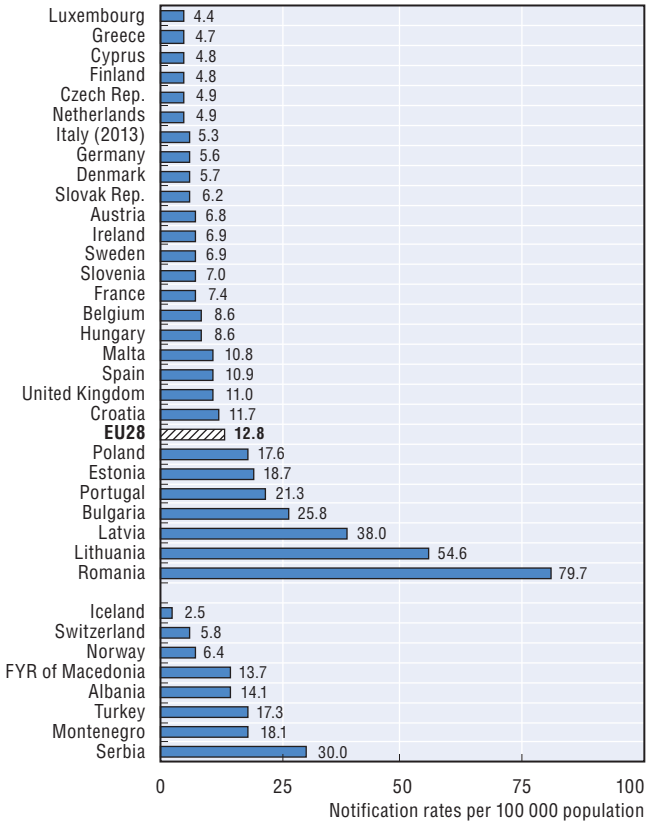
3.28. HIV notification rates, 2014



Source: ECDC and WHO Regional Office for Europe (2015), *HIV/AIDS Surveillance in Europe 2014*.

StatLink http://dx.doi.org/10.1787/888933428782

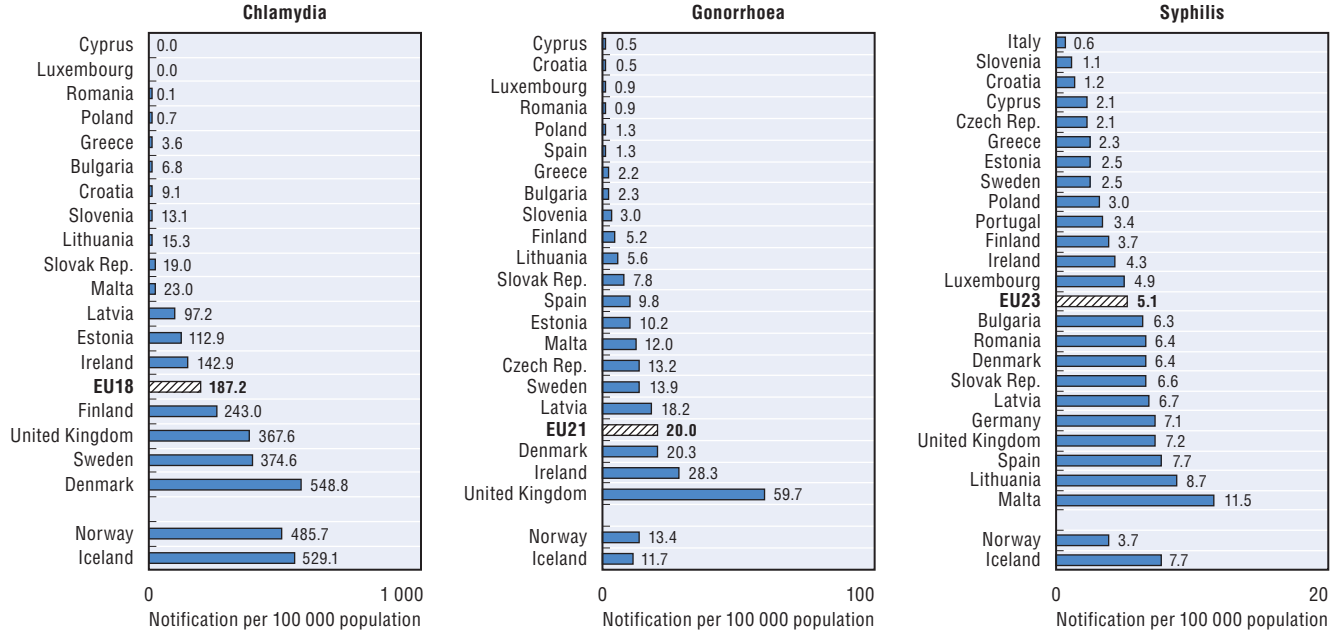
3.29. Tuberculosis notification rates, 2014



Source: ECDC and WHO Regional Office for Europe (2016), *Turberculosis Surveillance and Monitoring in Europe 2016*.

StatLink http://dx.doi.org/10.1787/888933428794

3.30. Sexually transmitted infections (STIs) notification rates, 2014



Source: ECDC (2016), *Annual Epidemiological Report*.

StatLink http://dx.doi.org/10.1787/888933428801

In 2012 (latest year available), an estimated 2.7 million new cases of cancer were diagnosed in EU member states, 54% (around 1.5 million) occurring in men and 46% (around 1.2 million) in women. The most common cancer site was breast cancer (13.8% of all new cancer cases), followed by prostate cancer (13.6%), colorectal cancer (13%) and lung cancer (11.8%). These four cancers represented more than half of the estimated overall burden of cancer in the European Union (Ferlay et al., 2013). The risk of getting cancer before the age of 75 years was 27% (31% for men and 24% for women) and the risk of dying from cancer also before the age of 75 was 12% (14% for men and 9% for women).

Large variations exist in cancer incidence across EU countries. Cancer incidence is highest in Northern and Western European countries, with Denmark, France, Belgium and Norway registering more than 300 new cancer cases per 100 000 population in 2012 (Figure 3.31). The lowest rates were reported in Greece and Cyprus, at around 200 new cases per 100 000 population. These variations reflect not only variations in the prevalence of risk factors for cancer, but also national policies regarding cancer screening and differences in quality of reporting.

Cancer incidence rates were higher for men in all EU member states in 2012, although the gender gap varies widely across countries. In Estonia, Spain and Latvia, incidence rates among men were around 60% higher than among women, whereas in the United Kingdom, Denmark and Cyprus, the gap was less than 10%.

Breast was by far the most common primary site in women (30% on average), followed by colorectal (13%), lung (8%), and cervical (5%). The causes of breast cancer are not fully understood, but the risk factors include age, family history, breast density, exposure to oestrogen, being overweight or obese, alcohol, radiation and hormone replacement therapy. Incidence rates were highest in Western Europe (Belgium, France, the Netherlands and Germany), Denmark, the United Kingdom and Ireland, with rates 25% or more than the EU average (Figure 3.32). Greece had the lowest rate, followed by Baltic countries (Lithuania, Estonia and Latvia), Romania and Poland. The variation in breast cancer incidence across EU member states may be at least partly attributed to variation in the extent and type of screening activities (Ferlay et al., 2013). Although mortality rates for breast cancer have declined in most EU countries since the 1990s due to earlier detection and improvements in treatments, breast cancer continues to be the leading cause of death from cancer among women (see indicator on "Mortality from cancer" in this chapter and the indicator on "Screening, survival and mortality from breast cancer" in Chapter 6).

Prostate cancer has become the most commonly diagnosed cancer among men in almost all EU countries, except in some Central and Eastern European countries where lung cancer is still predominant. It accounted for one quarter (25%) of all new cancer diagnoses in men in 2012, followed by lung (15%), colorectal (13%) and bladder cancer (7%). As for breast cancer, the causes of prostate cancer are not well-understood but age, ethnic origin, family history, obesity, lack of exercise and nutrition habits are the main risk factors. Incidence rates were highest in Western European countries such as France, Ireland and Switzerland as well as in the Nordic countries (Sweden, Norway, Iceland and Finland) (Figure 3.33). Greece had the lowest rates, followed by Central and Eastern European countries (Bulgaria, Romania, Poland and Hungary). Prostate incidence rates have increased in most European countries since the late 1990s, particularly in Northern and Western Europe where the greater use of prostate specific antigen (PSA) tests led to greater detection. Part of the difference between countries can be attributed to difference in the use of PSA testing. Mortality rates from prostate cancer have decreased in some European countries as a consequence of early detection and improvements in treatments.

Definition and comparability

Cancer incidence rates are based on numbers of new cases of cancer registered in a country in a year divided by the population. The rates have been directly age-standardised based on Segi's world population to remove variations arising from differences in age structures across countries and over time. The data come from the International Agency for Research on Cancer (IARC), GLOBOCAN 2012, available at *http://globocan.iarc.fr/*. GLOBOCAN estimates for 2012 may differ from national estimates due to differences in methods.

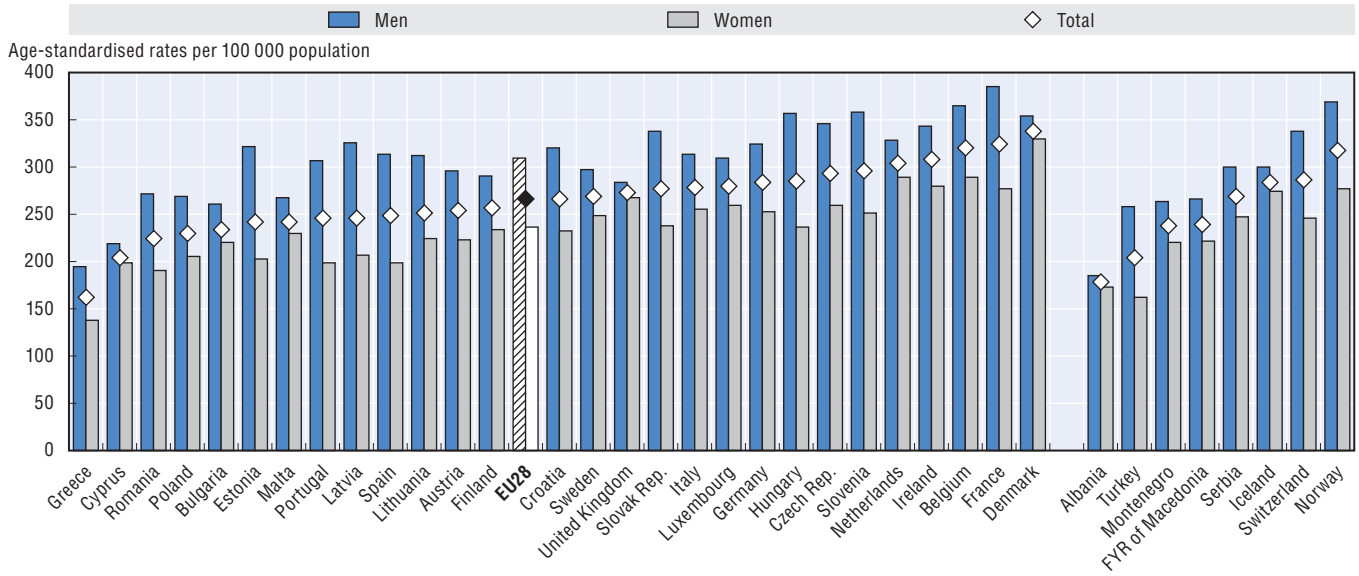
Cancer registration is well established in most EU member states, although the quality and completeness of cancer registry data may vary. In some countries, cancer registries only cover subnational areas. The international comparability of cancer incidence data can also be affected by differences in medical training and practice.

The incidence of all cancers is classified to ICD-10 codes C00-C97 (excluding non-melanoma skin cancer C44). Breast cancer corresponds to C50, and prostate cancer to C61.

Reference

Ferlay, J. et al. (2013), "Cancer Incidence and Mortality Patterns in Europe: Estimates for 40 Countries in 2012", *European Journal of Cancer*, Vol. 49, pp. 1374-1403.

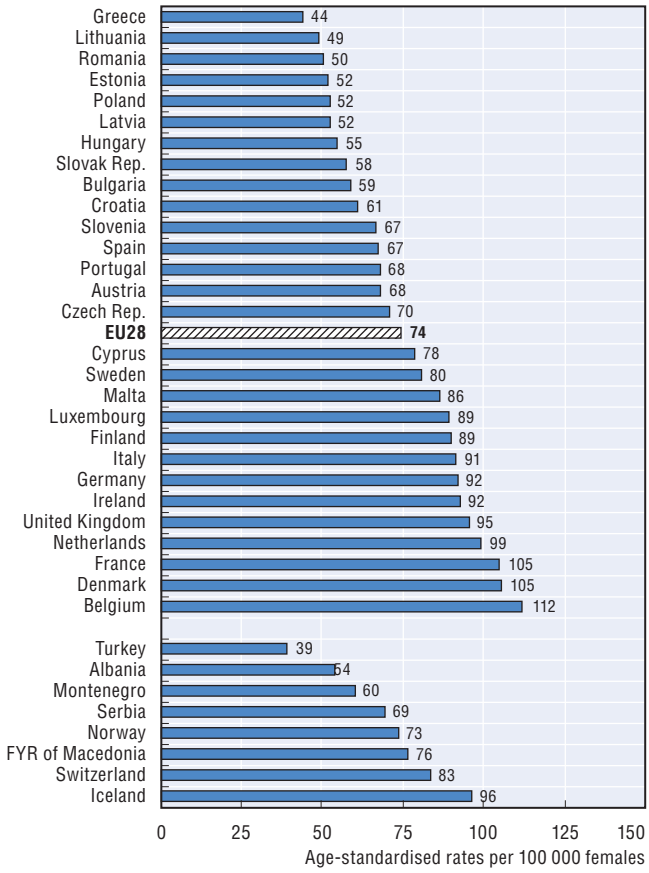
3.31. All cancers incidence rates, men and women, 2012



Source: IARC (2012), GLOBOCAN 2012, International Agency for Research on Cancer.

StatLink http://dx.doi.org/10.1787/888933428814

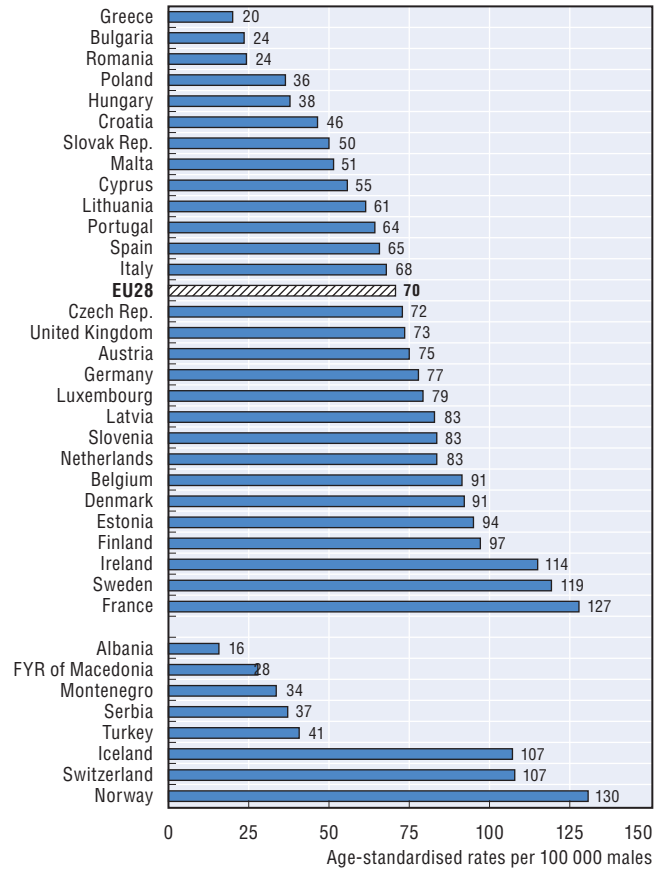
3.32. Breast cancer incidence rates, women, 2012



Source: IARC (2012), GLOBOCAN 2012, International Agency for Research on Cancer.

StatLink http://dx.doi.org/10.1787/888933428828

3.33. Prostate cancer incidence rates, men, 2012



Source: IARC (2012), GLOBOCAN 2012, International Agency for Research on Cancer.

StatLink http://dx.doi.org/10.1787/888933428834

Diabetes is a chronic disease characterised by high levels of glucose in the blood. It occurs either because the pancreas stops producing the insulin hormone (type 1 diabetes), or through a combination of the pancreas having reduced ability to produce insulin alongside the body being resistant to its action (type 2 diabetes). People with diabetes are at greater risk of developing cardiovascular diseases such as heart attack and stroke if the disease is left undiagnosed or poorly controlled. They also have higher risks for sight loss, foot and leg amputation due to damage to the nerves and blood vessels, and renal failure requiring dialysis or transplantation.

Globally, an estimated 422 million adults had diabetes in 2014, compared to 108 million in 1980. The global prevalence (age-standardised) of diabetes has nearly doubled since 1980, rising from 4.7% to 8.5% in the adult population, according to WHO estimates. Over the past decade, diabetes prevalence has risen faster in low- and middle-income countries than in high-income countries (WHO, 2016).

The data on diabetes prevalence among adults in EU countries presented in this section come from the second wave of the European Health Interview Survey which was conducted in (or around) 2014. Overall, 7% of adults across EU countries in 2014 reported to have diabetes. Diabetes prevalence ranged from less than 5% in Lithuania, Denmark, Latvia, Romania, Sweden and Austria, to over 9% in Greece, Portugal and France (Figure 3.34).

People with the lowest level of education are more than twice as likely to report having diabetes than those with the highest level on average across EU countries (Figure 3.35). This may partly be due to the fact that a higher proportion of low-educated people are in older population groups and the risk of diabetes increases with age, but people with lower levels of education often have poorer nutrition and are more likely to be obese, which are important risk factors for diabetes (see indicator on obesity among adults in Chapter 4).

The economic burden of diabetes is substantial. Health expenditure in EU member states allocated to prevent and treat diabetes and its complications was estimated to be in the order of EUR 100 billion in 2013 (IDF, 2013). Over one-quarter of these health expenditure is spent on controlling elevated blood glucose, another quarter on treating long-term complication of diabetes, and the remainder on additional general medical care. People with diabetes also have a lower probability to be employed and, when they are employed, have more days of sick leave and generally earn less (see Chapter 1). The growing direct and indirect costs related to diabetes reinforce the need for effective preventive actions and the provision of quality care to effectively manage diabetes and its complications.

Type 2 diabetes is largely preventable. A number of risk factors, such as overweight and obesity and physical inactivity are modifiable, and can also help reduce the complications associated with diabetes. But in most countries, the prevalence of overweight and obesity continues to increase (see indicator on "Overweight and obesity among adults" in Chapter 4).

Definition and comparability

Estimates of the prevalence of diabetes are derived from the second wave of the European Health Interview Survey that was conducted in EU member states between 2013 and 2015 (with most countries carrying out the survey in 2014). Respondents were asked: "During the past 12 months, have you had any of the following diseases or conditions?" with the list including diabetes. The same survey also asked for information on age, sex and educational level.

Self-reported data on diabetes may be subject to under-diagnosis and reporting errors. Studies from several European countries show that self-reported data under-estimate the real prevalence of diabetes, as many diabetes cases are undiagnosed.

The percentage of missing values in the EHIS survey was between 5 to 10% for France and higher than 10% for Finland. Data are not age-standardised; aggregate country estimates are crude rates among respondents aged 15 years and over. The data, therefore, exclude the prevalence of diabetes among children (age 0-14 years).

At the time of preparation of this publication, data from a few EU countries that conducted this survey in 2015 were not available yet.

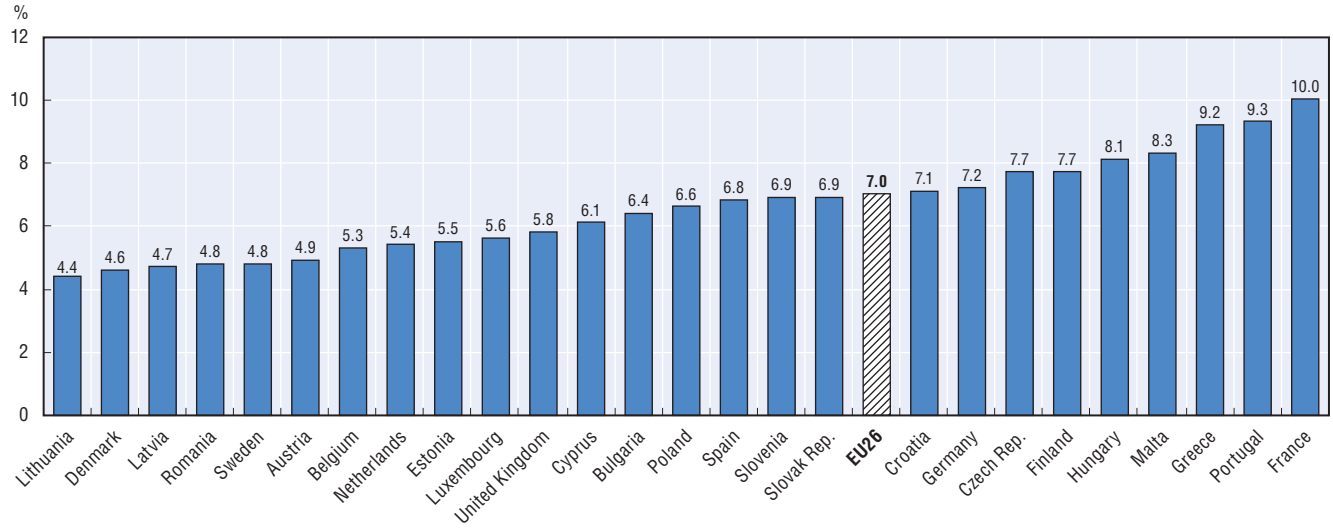
Education level is based on the ISCED 2011 classification. Lowest education level refers to people who have a lower secondary education or below (ISCED 0-2). Highest education level refers to people who have tertiary education (ISCED 6-8).

References

IDF (2013), *Diabetes Atlas, 6th edition*, International Diabetes Federation, Brussels.

WHO (2016), *Global Report on Diabetes*, April 2016, Geneva.

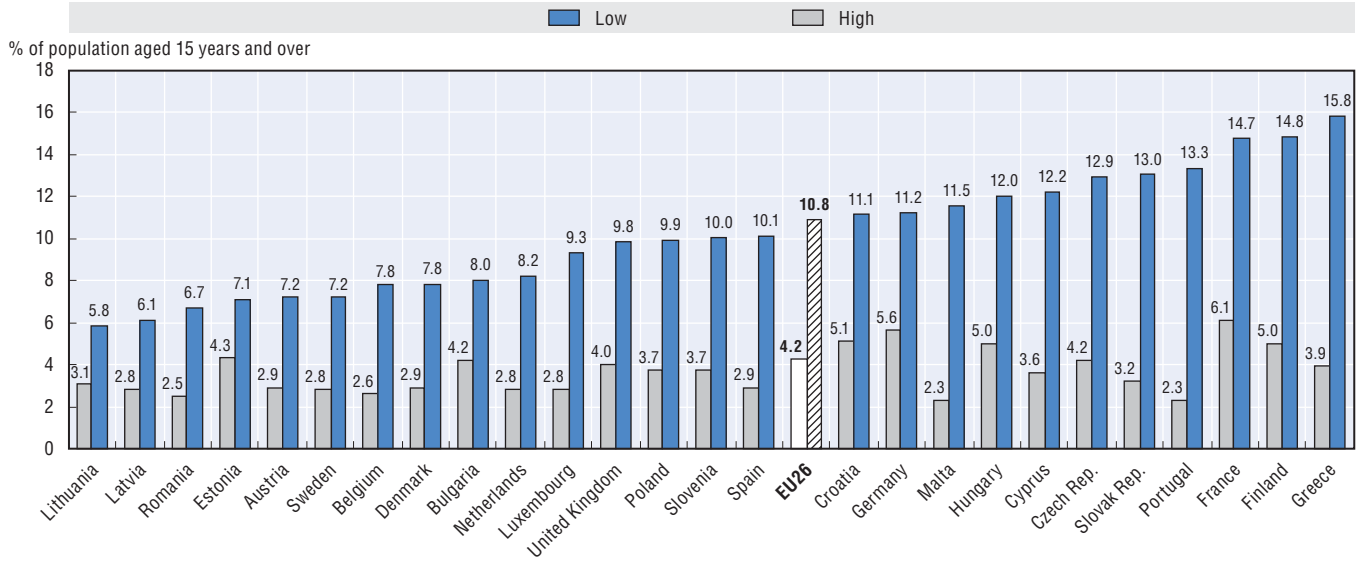
3.34. Self-reported diabetes, population aged 15 years and over, 2014 (or nearest year)



Source: *Eurostat Database*, based on Health Interview Surveys.

StatLink http://dx.doi.org/10.1787/888933428845

3.35. Self-reported diabetes by level of education, 2014 (or nearest year)



Source: *Eurostat Database*, based on Health Interview Surveys.

StatLink http://dx.doi.org/10.1787/888933428852

Asthma is a disease of the bronchial tubes characterised by "wheesing" during breathing, shortness of breath or coughing. Asthma is the single most important chronic disease among children, and also affects many adults. It is a significant public health problem for which prevention is partly possible and treatment can be effective. Its causes are not well understood, but effective medicines are available to help in maintaining quality of life.

Chronic obstructive pulmonary disease (COPD) – the term now used mainly to describe chronic bronchitis and emphysema – is another high-burden disease causing disability and impairing quality of life, as well as generating high costs. COPD is characterised by difficult breathing that is not fully reversible and usually progressive. Patients are often smokers or ex-smokers, and their symptoms rarely develop before age 40. COPD is among the leading causes of chronic morbidity and mortality in the European Union. Nearly 170 000 people died in EU countries in 2013 because of COPD (see the indicator in this chapter on mortality from respiratory diseases). COPD is preventable and treatable. Proper management of both asthma and COPD in primary care settings can reduce exacerbation and costly hospitalisation (see indicator on avoidable hospital admissions in Chapter 6).

The data on asthma and COPD prevalence presented in this section come from the second wave of the European Health Interview Survey which was conducted in EU countries in (or around) 2014.

Based on this survey, the average prevalence rate of asthma among adults across EU countries in 2014 was just over 6%. This ranged from more than 9% in Finland and the United Kingdom to less than 3% in Romania, Lithuania and Bulgaria (Figure 3.36). Lower reported prevalence of asthma among new EU member states in all likelihood reflects higher levels of under-diagnosis and under-treatment. In most countries, asthma is more commonly reported by women.

The reported prevalence of COPD among adults ranged from less than 2% in Malta and Sweden, to over 6% in Lithuania (Figure 3.37). Across EU member states, the average prevalence of COPD was 4% in 2014.

People with the lowest level of education are more than twice as likely to report having COPD than those with the highest level (Figure 3.38). While this may be due partly to the fact that a higher proportion of people with low education are in older population groups, another reason is that lower-educated people are more likely to smoke, which is the main risk factor for COPD (see indicator on smoking among adults in Chapter 4).

A new study on Ageing Lungs in European Cohorts (ALEC), funded by the EU Horizon 2020 project, aims to identify which behavioural, environmental, occupational, nutritional and modifiable lifestyle factors, and genes, affect lung function decline and increase the risk of COPD.

Definition and comparability

Estimates of the prevalence of asthma and chronic obstructive pulmonary disease (COPD) are derived from the second wave of the European Health Interview Survey that was conducted in EU member states between 2013 and 2015 (with most countries carrying out the survey in 2014). Respondents were asked: "During the past 12 months, have you had any of the following diseases or conditions?" with the list including asthma (allergic asthma included), and chronic bronchitis, chronic obstructive pulmonary disease, emphysema. The same survey also asked for information on age, sex and educational level.

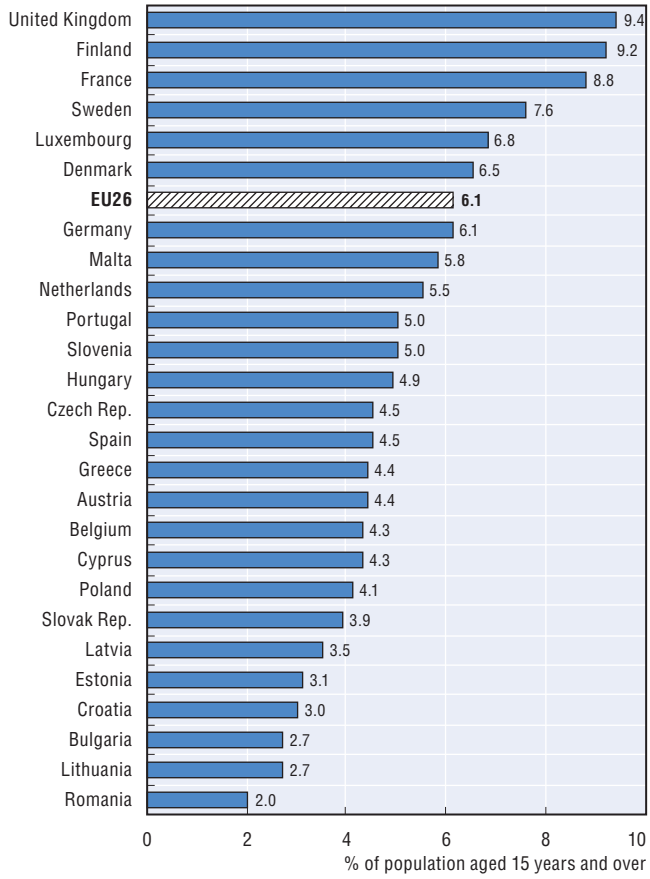
Self-reported data on asthma and COPD may be subject to under-diagnosis and reporting errors. An under-estimation of the real prevalence may particularly occur for COPD as studies in many countries report higher COPD prevalence than those based on self-report.

The percentage of missing values in the EHIS survey was between 5 to 10% for France and higher than 10% for Finland. Data are not age-standardised; aggregate country estimates represent crude rates among respondents aged 15 years and over. The data, therefore, exclude the prevalence of childhood asthma (age 0-14 years).

At the time of preparation of this publication, data from a few EU countries that conducted this survey in 2015 were not available yet.

Education level is based on the ISCED 2011 classification. Lowest education level refers to people who have a lower secondary education or below (ISCED 0-2). Highest education level refers to people who have tertiary education (ISCED 6-8).

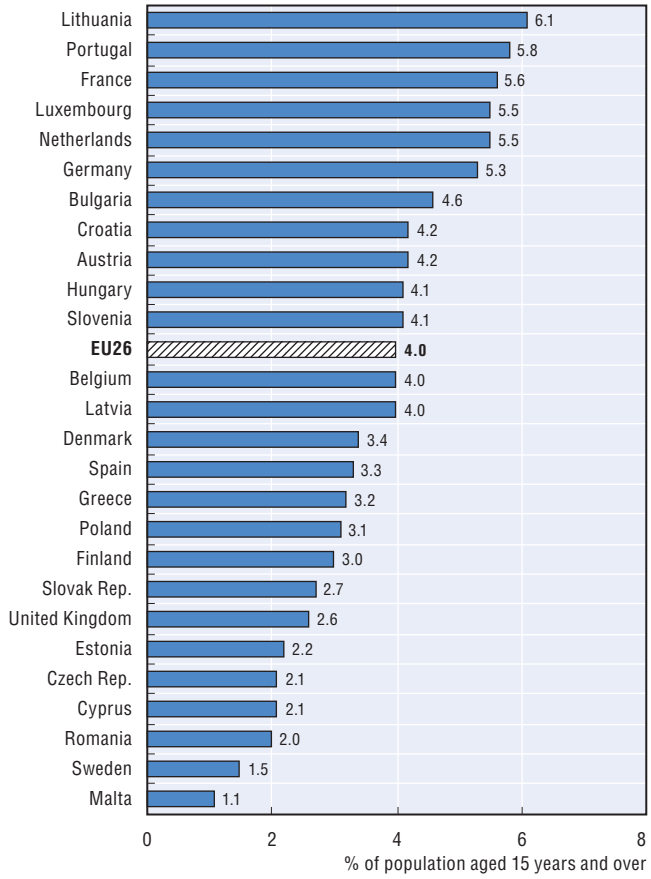
3.36. Self-reported asthma, percentage of the population aged 15 years and over, 2014 (or nearest year)



Source: *Eurostat Database*, based on Health Interview Surveys.

StatLink http://dx.doi.org/10.1787/888933428869

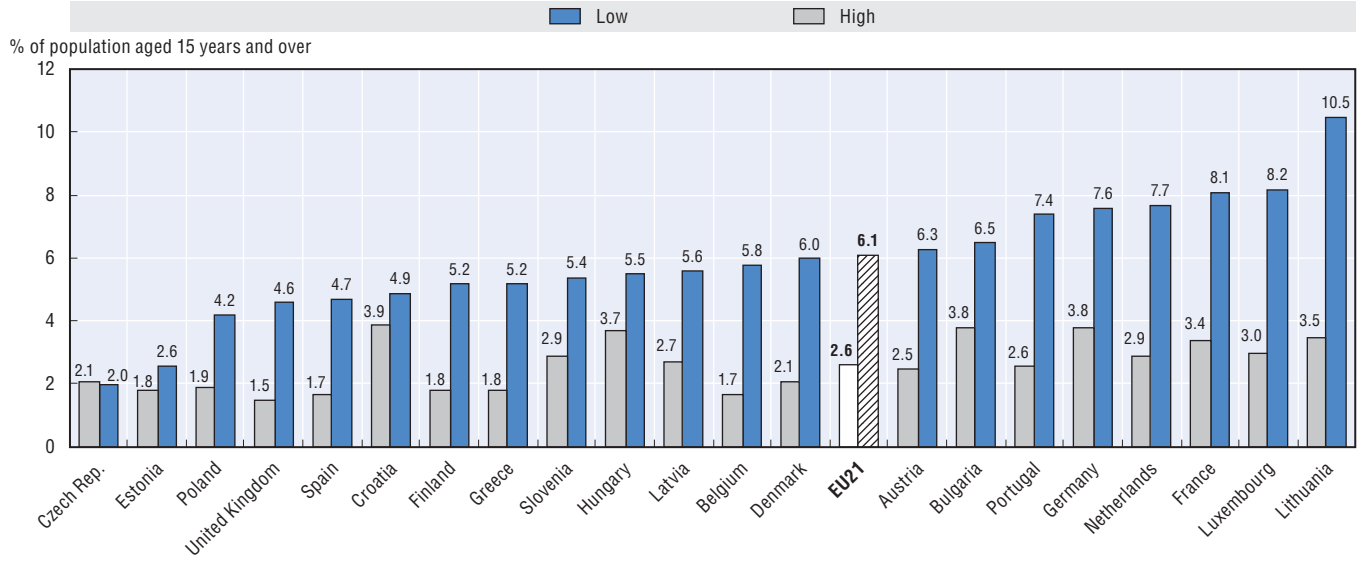
3.37. Self-reported COPD, percentage of the population aged 15 years and over, 2014 (or nearest year)



Source: *Eurostat Database*, based on Health Interview Surveys.

StatLink http://dx.doi.org/10.1787/888933428876

3.38. Self-reported COPD by level of education, 2014 (or nearest year)



Source: *Eurostat Database*, based on Health Interview Surveys.

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Dementia describes a variety of brain disorders which progressively lead to brain damage and cause a gradual deterioration of the individual's functional capacity and social relations. Alzheimer's disease is the most common form of dementia, representing about 60% to 80% of cases. There is currently no cure or disease-modifying treatment, but better policies can improve the lives of people with dementia by helping them and their families adjust to living with the condition and ensuring that they have access to high quality health and social care.

According to WHO, 47.5 million people around the world lived with dementia in 2015. With populations ageing and the effectiveness of preventive strategies still unclear, this number is expected to rise to 75.6 million by 2030 and almost triple by 2050, reaching 135.5 million (WHO, 2015). The global cost of dementia was estimated at USD 604 billion in 2010 (Wimo et al., 2013), and as prevalence increases this cost will grow.

In 2015, there were an estimated 9.6 million people living with dementia in EU countries, equivalent to nearly one in every 50 people. Prevalence varies between countries: Italy and Germany have more than 20 people with dementia per 1 000 population, while the Slovak Republic has fewer than ten (Figure 3.39). Much of the variation in prevalence is due to the age structures of the populations in different countries, since dementia is strongly linked to age. Although some people develop early-onset dementia, the vast majority of those with dementia are older people. Across all EU countries, around 1% of people aged 60-64 have dementia, compared to more than 40% of those aged over 90 (Figure 3.40).

If the age-specific prevalence of dementia remains the same, ageing populations mean that it will become more common in the future. Prevalence will rise more quickly in countries that are ageing rapidly. For example, the next 20 years will see prevalence in Germany increase by more than half, from 20 to 31 out of every 1 000 people. Countries with populations that are ageing more slowly will see less of an increase: prevalence in Sweden will only increase by just over a third, from 18 to 25 per 1 000 people. The overall number of people living with dementia in EU countries is expected to rise from 9.6 million in 2015 to nearly 15 million in 2035, with the oldest people (aged over 90) accounting for an increasing share (Figure 3.41). However, there is some evidence that the age-specific prevalence of dementia may be falling in some countries (Matthews et al., 2013) and it may be possible to reduce the risk of dementia through healthier lifestyles and preventive interventions. If such efforts are successful, the rise in prevalence may be less dramatic than these numbers suggest.

There has recently been a renewed international focus on tackling dementia and supporting countries to develop better policies. Finding a cure must be the long-term goal, but this will require greater investment and a more collaborative approach to research, harnessing the potential of big data. Any cure is likely to take several years to develop; in the meantime countries need to act to improve the lives of the millions of people living with dementia now. This must include promoting timely diagnosis, delivering high quality health and long-term care and providing support for families and carers (OECD, 2015).

Many EU countries have developed dementia strategies which aim to tackle these issues and improve the lives of people with dementia. To support member states in these efforts, the European Commission has an active programme of dementia research, including the recent ALCOVE (Alzheimer Cooperative Valuation in Europe) Joint Action which addresses four key issues: improving data on dementia; promoting early diagnosis; improving care for those with behavioural symptoms; and securing the rights of people with dementia. However, difficulties in measuring and comparing dementia care continue to hold back quality improvement. The OECD is working with member countries to develop internationally comparable indicators that can help countries to monitor and improve the quality of dementia care in the future.

Definition and comparability

The prevalence estimates in Figure 3.39 are taken from Prince et al. (2013), which is the latest and most comprehensive systematic review of studies of dementia prevalence around the world. Prevalence by country has been estimated by applying these age-specific prevalence rates for the relevant region of the world to population estimates from the United Nations (World Population Prospects: The 2012 Revision). Although gender-specific prevalence rates were available for some regions, the overall rates were used in this analysis. Prevalence rates are crude rates and are assumed to be constant over time. This might lead to an over-estimation in projected increase if prevention efforts are successful in reducing the age-specific prevalence in the future.

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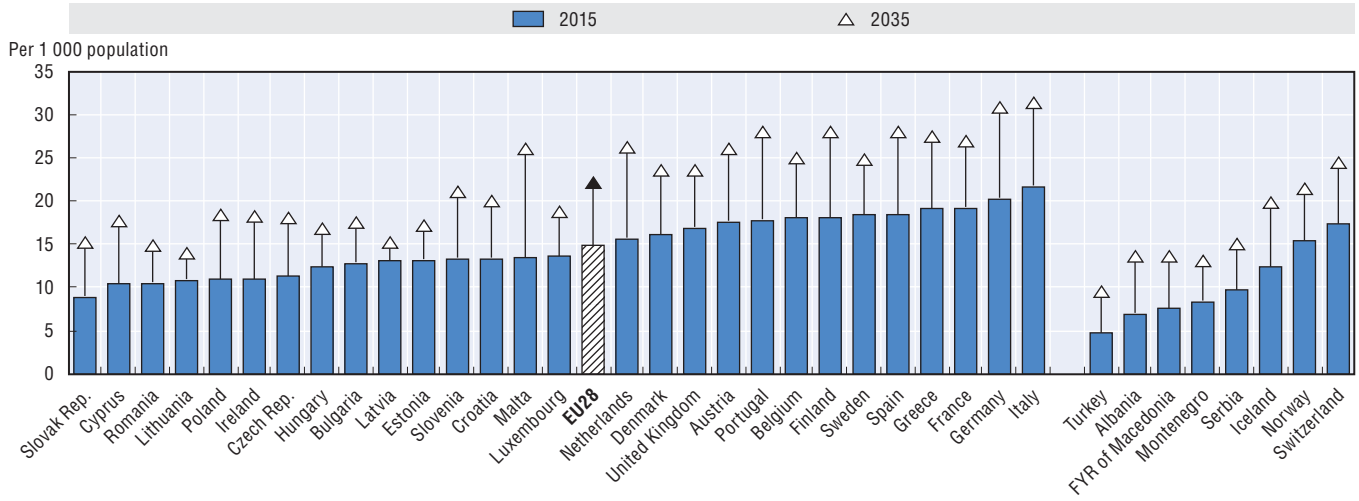
3.39. Estimated prevalence of dementia per 1 000 population, 2015 and 2035



Source: OECD analysis of data from Prince et al. (2013) and the United Nations.

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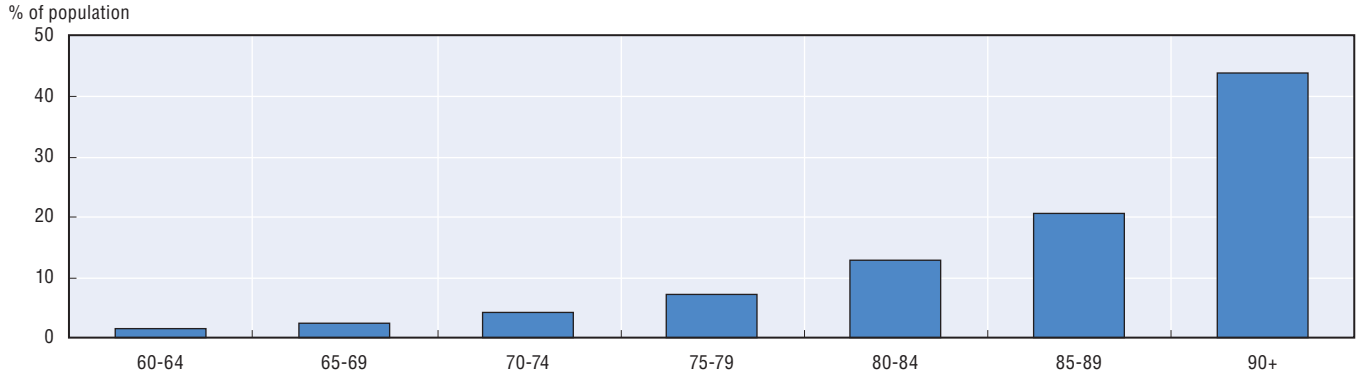
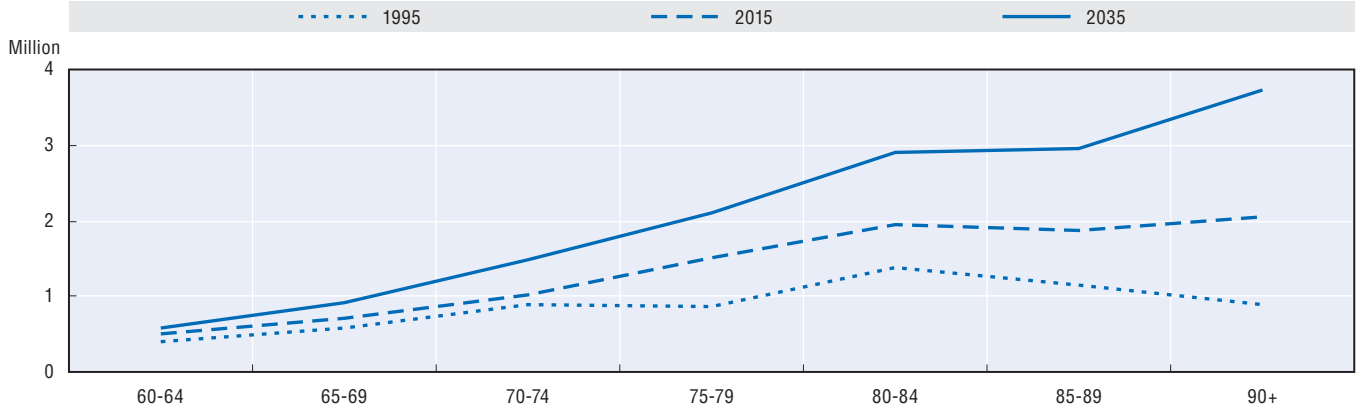
3.40. Age-specific prevalence of dementia across EU countries, 2015



Source: OECD analysis of data from Prince et al. (2013) and the United Nations.

StatLink http://dx.doi.org/10.1787/888933428909

3.41. Estimated number of people with dementia in EU countries, by age, 1995, 2015 and 2035



Source: OECD analysis of data from Prince et al. (2013) and the United Nations.

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Chapter 4

Determinants of health

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Smoking in adolescence has both immediate and long-term health consequences. Children who establish smoking habits early on increase their risk of cardiovascular diseases, respiratory illnesses and cancer (Currie et al., 2012). Daily cigarette smoking in adolescence is associated with an increase in likelihood of diagnoses of anxiety and mood disorders (USDHHS, 2012). Young smokers experience lower physical fitness in terms of performance and endurance, with reduced lung growth and higher resting heart rates. They are also more likely to experiment with alcohol and other drugs. One of the most significant effects of adolescent smoking is nicotine addiction, which keeps young smokers smoking longer, increasing their risk of adverse health effects.

Results from the Health Behaviour in School-aged Children (HBSC) surveys, a series of collaborative cross-national studies conducted in a number of countries worldwide, allow for monitoring of smoking behaviours among children (Inchley et al., 2016).

Over one in five 15-year-olds report smoking at least once a week in Bulgaria, Croatia, Hungary and Italy (Figure 4.1). Rates are much lower (under 10%) in Denmark, Ireland, Sweden and the United Kingdom, as well as in Albania, Iceland and Norway. The EU average is 14% for both boys and girls. More girls than boys report smoking, with 1-2 percentage points' difference in Denmark, France, Germany, Hungary, Italy, Malta, the Slovak Republic, Spain, Sweden and the United Kingdom. The difference rises to 5-9 percentage points in Bulgaria, the Czech Republic and Luxembourg.

The EU average rates of 15-year-olds who report smoking at least once a week have consistently decreased since 2001-02, and rates for boys and girls have converged (Figure 4.2). They are now at their lowest since 1993-94. Rates are decreasing in most EU countries and have more than halved since 2001-02 in Belgium, the Czech Republic, Denmark, Finland, Germany, Ireland, the Netherlands, Slovenia, Spain, Sweden, the United Kingdom, as well as Austria and Portugal (girls), Estonia and Latvia (boys). Rates are nevertheless on the rise for girls in Poland, Romania and the Slovak Republic (1-3 percentage points between 2009-10 and 2013-14) and for boys in Portugal (1 percentage point).

In May 2016, the new Tobacco Products Directive became effective in all EU member states. This directive is particularly aimed towards young people, as 25% of 15-24 year-olds in the European Union are smokers (Pötschke-Langer, 2016). It bans flavoured cigarettes, makes larger health warnings (image and text) on packages mandatory, and introduces safety, quality and packaging regulations pertaining to e-cigarettes. Some EU countries have taken additional measures, and have implemented plain packaging, advertising restrictions, or smoke-free environments legislation.

Studies show that young smokers are responsive to policies aiming to reduce tobacco consumption, including excise taxes to increase prices, clean indoor-air laws, restrictions on youth access to tobacco, and increase in education about the effects of tobacco (Forster et al., 2007; Lewit et al., 1997).

Definition and comparability

Estimates for smoking refer to the proportion of 15-year-old children who self-report smoking at least once a week.

The Health Behaviour in School-aged Children (HBSC) surveys were undertaken every four years between 1993-94 and 2013-14 and include up to 27 EU countries. Data are drawn from school-based samples of 1 500 in each age group (11-, 13- and 15-year-olds) in most countries.

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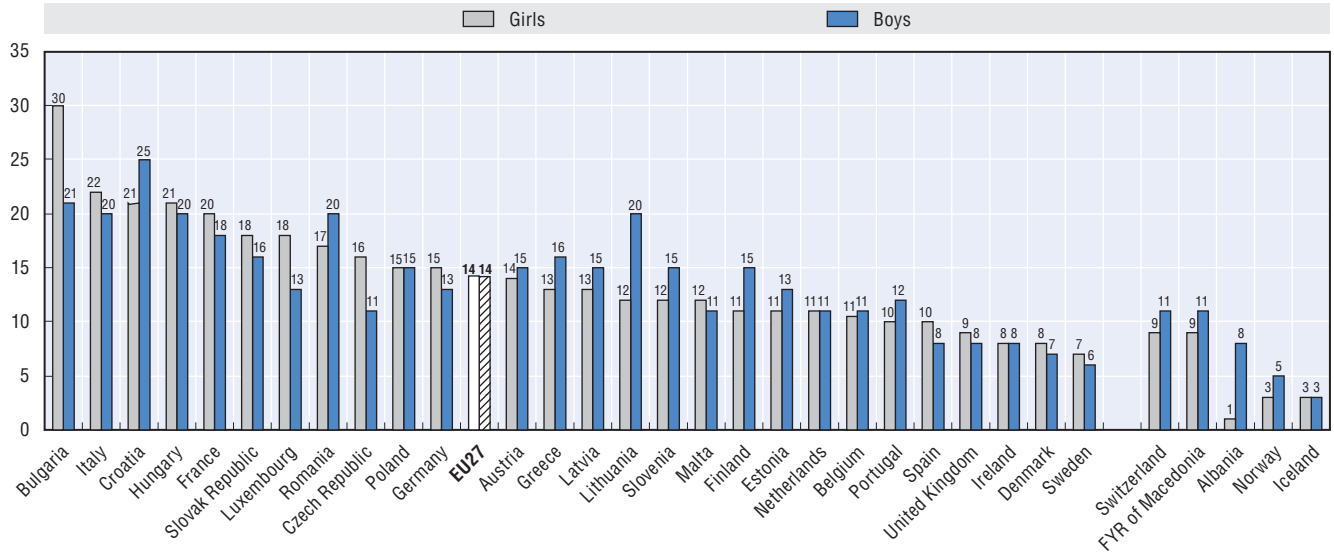
4.1. Smoking among 15-year-olds, 2013-14

Smoking at least once a week



Source: Inchley et al. (2016).

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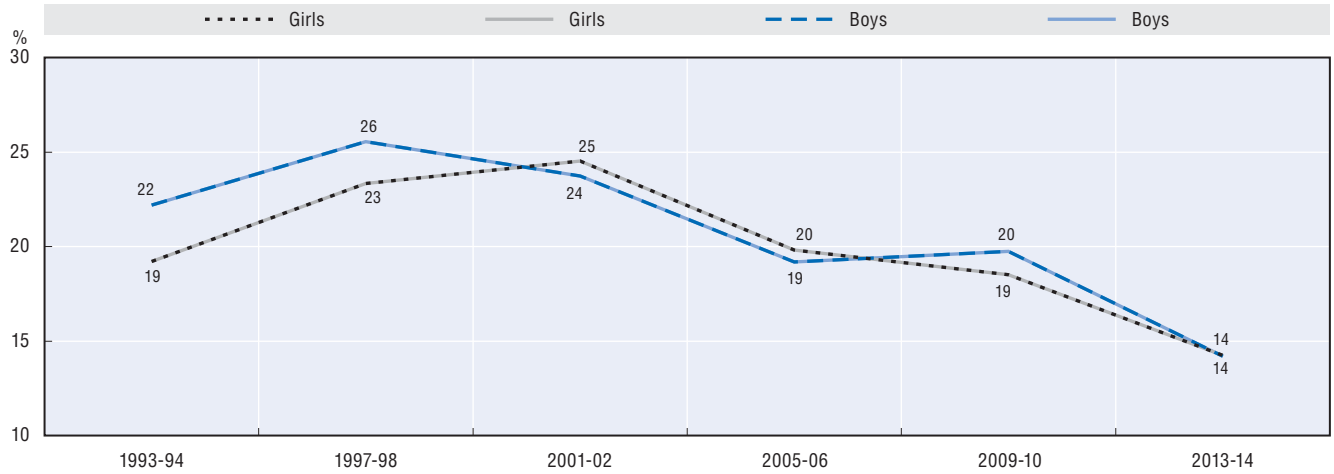
4.2. Trends in regular smoking among 15-year-olds, EU countries



Source: Currie, C. et al. (2000, 2004, 2008, 2012); Inchley et al. (2016).

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Tobacco consumption is the largest avoidable health risk in the European Union and is the most significant cause of premature death, with nearly 700 000 per year (European Commission, 2014a). Around 50% of smokers die prematurely (14 years earlier on average). It is a major risk factor for at least two of the leading causes of premature mortality – circulatory disease and cancer – increasing the risk of heart attack, stroke, lung cancer, cancers of the larynx and mouth, and pancreatic cancer. Smoking is also an important contributory factor for respiratory diseases such as chronic obstructive pulmonary disease (COPD), while smoking among pregnant women can lead to low birth weight and illnesses among infants.

The proportion of daily smokers among adults varies greatly across European countries (Figure 4.3). Twelve out of 28 EU countries had less than 20% of the adult population smoking daily in 2014. Rates were lowest in Luxembourg, Portugal and the Nordic countries (Sweden, Finland, Denmark, as well as in Iceland and Norway). Although large disparities remain, smoking rates across most EU member states have shown a marked decline. On average, smoking rates have decreased by 16% since 2000, with a higher decline among men than women. Large declines occurred in Denmark (30% to 17% in 2014), Ireland (33% to 19% in 2015), Luxembourg (26% to 15% in 2014), the Netherlands (32% to 19% in 2014), as well as in Norway (32% to 13% in 2014). Bulgaria, Croatia, Cyprus, Greece and Hungary as well as Albania, Montenegro and Serbia had the highest levels of smoking in 2014, with more than 25% of adults reporting to smoke daily.

Smoking prevalence among men is higher than among women in all European countries, except in Denmark, Iceland and Sweden, where the rate is equal for men and women (Figure 4.4). The gender gap is also small in Finland, Ireland, Luxembourg as well as Norway. On the other hand, it is particularly large in Cyprus, Latvia, Lithuania, Romania, as well as in Turkey.

Smoking is more concentrated among people with a lower level of education, except in Cyprus, Greece and Romania (Figure 4.5). About 20% of adults with a lower level of education smoke daily compared to 14% of those with a higher level of education on average across EU countries. The education-related disparities in smoking are largest in Austria, Belgium, Estonia, Hungary, the United Kingdom and the Netherlands.

In the post-war period, most European countries tended to follow a general pattern marked by very high smoking rates among men (50% or more) through to the 1960s and 1970s, while the 1980s and the 1990s were characterised by a downturn in tobacco consumption. In most countries, much of the decline in tobacco use can be attributed to policies aimed at reducing tobacco consumption through public awareness campaigns, advertising bans, increased taxation, and restriction of smoking in public spaces and restaurants, in response to rising rates of tobacco-related diseases. More stringent policies and higher level of taxes have led to bigger reductions in smoking rates between 1996 and 2011 in many EU countries (OECD, 2015).

A new Tobacco Products Directive (2014/40/EU), adopted in February 2014, lays down rules governing the manufacture, presentation and sale of tobacco and related products. The Directive notably requires that health warnings appear on packages of tobacco and related products, bans all promotional and misleading elements on tobacco products, and sets out safety and quality requirements for electronic cigarettes (European Commission, 2014b). As governments continue to reinforce their anti-tobacco policies, new strategies such as plain packaging for tobacco products aimed to restrict branding are being adopted by an increasing number of countries (e.g. in France and the United Kingdom).

Definition and comparability

The proportion of daily smokers is defined as the percentage of the population aged 15 years and over who report tobacco smoking every day. Other forms of smokeless tobacco products, such as snuff in Sweden, are not taken into account.

The comparability of data is limited to some extent due to the lack of standardisation in the measurement of smoking habits in health interview surveys across EU member states. Variations remain in the age groups surveyed, wording of questions, response categories and survey methodologies, e.g. in some countries, respondents are asked if they smoke regularly, rather than daily.

Estimates from the European Health Interview Survey 2014 are based on self-reports of daily smoking. Education level is based on the ISCED 2011 classification. Lowest education level refers to people who have a lower secondary education or below (ISCED 0-2). Highest education level refers to people who have tertiary education (ISCED 6-8).

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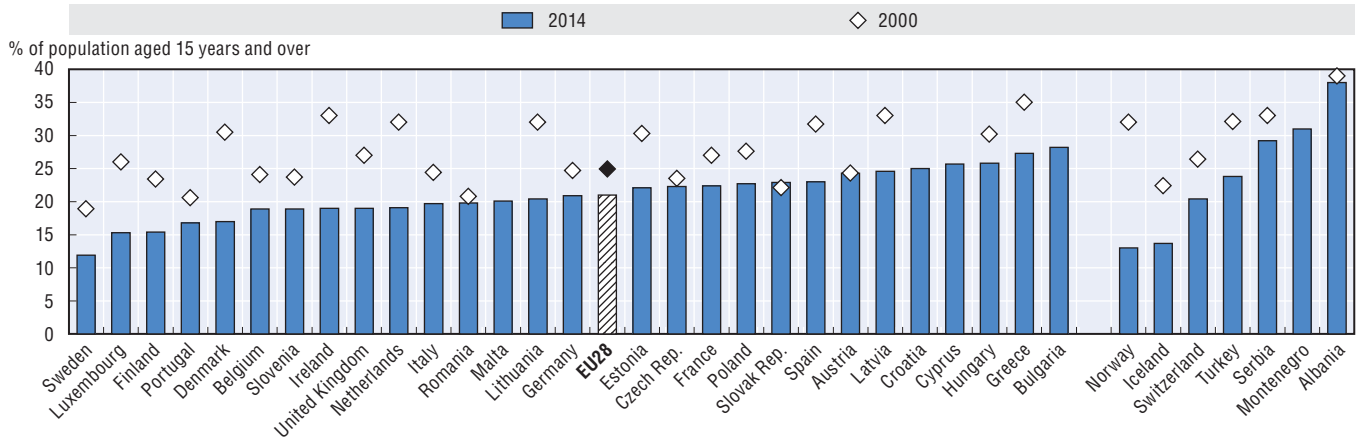
4.3. Adults smoking daily, 2000 and 2014 (or nearest year)



Source: EHIS survey for most EU countries for 2014 data; regular national surveys for the Czech Republic, Denmark, Estonia, Finland, Germany, Italy, Luxembourg, Sweden, the United Kingdom, as well as non-EU countries (extracted from *OECD Health Statistics 2016* and WHO *European Health for All Database*).

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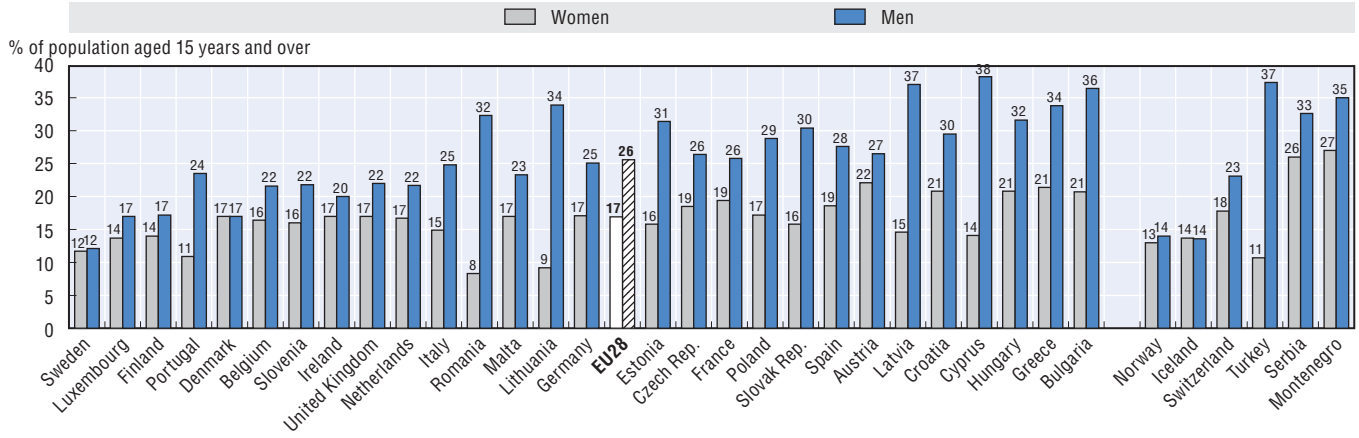
4.4. Gender gap in adults smoking daily, 2014 (or nearest year)



Note: Countries are ranked in ascending order of smoking rates for the whole population.
Source: EHIS survey for most EU countries; regular national surveys for the Czech Republic, Denmark, Estonia, Finland, Germany, Italy, Luxembourg, Sweden, the United Kingdom, as well as non-EU countries (extracted from *OECD Health Statistics 2016* and WHO *European Health for All Database*).

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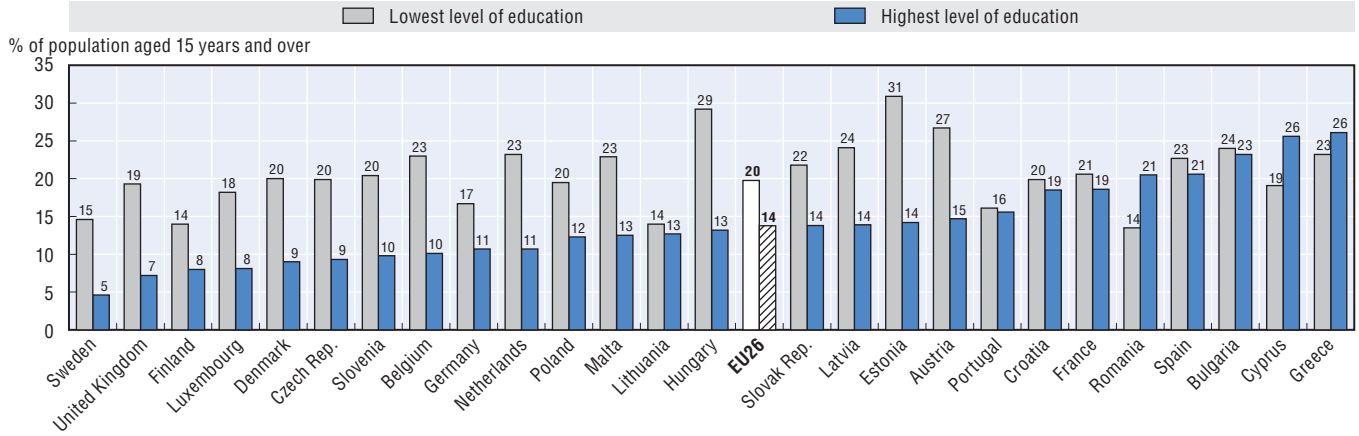
4.5. Education gap in adults smoking daily in EU countries, 2014



Note: Countries are ranked in ascending order of smoking rates for people with the highest level of education.
Source: Eurostat, EHIS 2014.

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Adolescent alcohol use is a major health concern in many European countries. Early and frequent drinking or drunkenness is associated with negative psychological, social and physical health issues, such as violence, accidents, injury and use of other substances (Inchley et al., 2016). Alcohol use has been shown to affect learning performance. Binge drinking, as well as high frequency of drinking, reduce achievement scores. Alcohol consumption also reduces attendance and increases probability of having difficulty in school or dropping out without having graduated (Balsa et al., 2011; Chatterji et al., 2005).

More than one third of 15-year-olds report having experienced drunkenness at least twice in Bulgaria, Denmark, Hungary and Lithuania (Figure 4.6). Much lower rates (between 14% and 19%) are reported in France, Ireland, Italy, Luxembourg, the Netherlands, Portugal and Sweden, as well as Albania, the FYR of Macedonia, Norway and Switzerland. Across the European Union as a whole, boys are more likely than girls to report repeated drunkenness (27% versus 24%). Croatia and Romania have the biggest differences, with rates of alcohol abuse among boys 16 and 18 percentage points higher than those of girls, respectively. In Malta, Sweden and the United Kingdom more girls than boys report repeated drunkenness (around 2-4 percentage points difference). In Ireland, Poland and Spain, as well as Iceland and Norway, there is no gender gap.

Alcohol-related risk-taking behaviour among children has fallen in many countries, with drunkenness rates for boys and girls showing a strong decline from the levels of the late 1990s on average (Figure 4.7). Levels of repeated drunkenness are at their lowest in 20 years, with on average one in four 15-year-olds having experienced repeated drunkenness. Since 1993-94, rates have gone down by more than 30% in Austria, Denmark, Finland, the United Kingdom, as well as the Slovak Republic and Sweden (boys). However, recent upward trends in Greece (girls) and Malta (both genders) are cause for concern.

In 2013, the Committee on National Alcohol Policy and Action of the European Commission established the Action Plan on Youth Drinking and on Heavy Episodic Drinking (binge drinking), which has a duration of two years (2014-16). It aims to contribute to achieving the objectives of the EU Strategy to support member states in reducing alcohol-related harm. The policy goals involved include delaying the age of first use of alcohol, as well as reducing and minimising the amount of alcohol consumed among children who may drink. Policies tackling alcohol use among children could effectively reduce harmful consumption and improve health and well-being (OECD, 2015).

Definition and comparability

Estimates for drunkenness record the proportions of 15-year-old children who report that they have been drunk twice or more in their lives.

The Health Behaviour in School-aged Children (HBSC) surveys were undertaken every four years between 1993-94 and 2013-14 and include up to 27 EU countries. Data are drawn from school-based samples of 1 500 in each age group (11-, 13- and 15-year-olds) in most countries.

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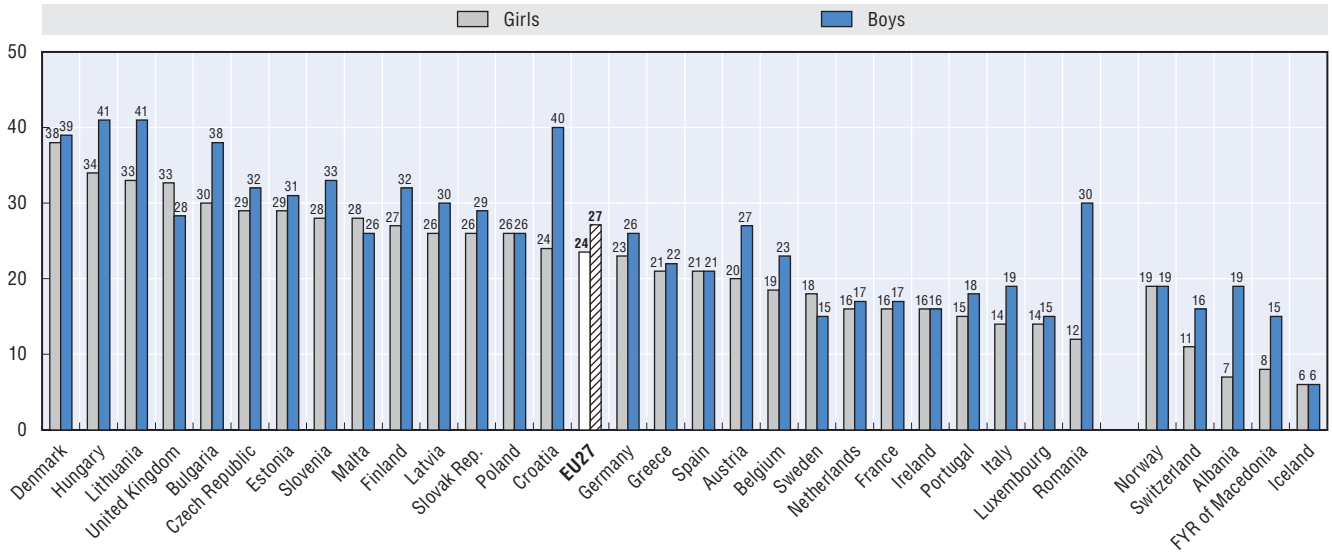
4.6. Drunkenness among 15-year-olds, 2013-14

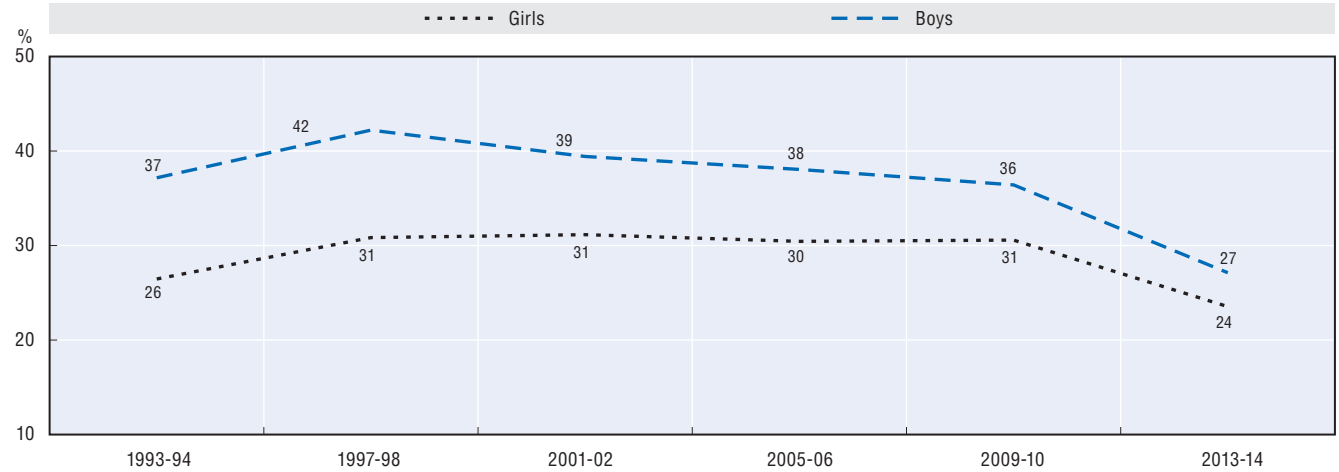
Drunk at least twice in life



Source: Inchley et al. (2016).

StatLink http://dx.doi.org/10.1787/888933428978

4.7. Trends in repeated drunkenness among 15-year-olds, EU countries, 1993-94 to 2013-14



Source: Currie, C. et al. (2000, 2004, 2008, 2012); Inchley et al. (2016).

StatLink http://dx.doi.org/10.1787/888933428981

Alcohol-related harm is a major public health concern in the European Union, both in terms of morbidity and mortality (WHO Europe, 2012; OECD, 2015). Alcohol was the third leading risk factor for disease and mortality after tobacco and high blood pressure in Europe in 2012 and accounted for an estimated 7.6% of all men's deaths and 4.0% of all women's deaths, though there is evidence that women may be more vulnerable to some alcohol-related health conditions compared to men (WHO, 2014). High alcohol intake is associated with increased risk of heart, stroke and vascular diseases, as well as liver cirrhosis and certain cancers, but even moderate alcohol consumption increases the long term risk of developing such diseases. Foetal exposure to alcohol increases the risk of birth defects and intellectual impairments. Alcohol also contributes to death and disability through accidents and injuries, assault, violence, homicide and suicide, particularly among young people.

The EU region has the highest alcohol consumption in the world. Measured through monitoring annual sales data, it stands at 10 litres of pure alcohol per adult on average across EU member states in 2014 (Figure 4.8). Austria, Belgium, Bulgaria, Croatia and Lithuania reported the highest consumption of alcohol, with 12 litres or more per adult. At the other end of the scale, Greece, Italy, Sweden, as well as Albania, Iceland, Norway and Turkey have relatively low levels of consumption, below 8 litres of pure alcohol per adult. In particular, the rate for Turkey is below 2 litres.

Although average alcohol consumption has gradually fallen in many European countries over the past three decades, it has risen in some others. Alcohol consumption has notably increased since 2000 in Belgium, Bulgaria, Latvia, Lithuania, Malta, Poland and Sweden (Figure 4.8). There has been a degree of convergence in drinking habits across the European Union, with wine consumption increasing in many traditionally beer-drinking countries and vice versa.

Although adult alcohol consumption per capita is a useful measure to assess long-term trends, it does not identify sub-populations at risk from harmful drinking patterns. Heavy drinking and alcohol dependence account for an important share of the burden of diseases associated with alcohol. One in four adults regularly consumes large quantities of alcohol in a single session, a practice known as binge drinking, with variations from 5% in Cyprus to 37% in Denmark (Figure 4.9). Binge drinking is more prevalent among men than women in all countries. OECD analysis based on individual-level data show that hazardous drinking and binge drinking are on the rise in young people and women especially. Men of low socio-economic status are more likely to drink heavily than those of a higher socio-economic status, while the opposite is observed in women (OECD, 2015).

In 2010, the World Health Organization endorsed a global strategy to combat the harmful use of alcohol, through direct measures such as medical services for alcohol-related health problems, and indirect measures such as the dissemination of information on alcohol-related harm (WHO, 2010). The OECD used this as a starting point to identify a set of policy options to be assessed in an economic evaluation relying on a computer-based simulation approach, and showed that several policies have the potential to reduce heavy drinking, regular or episodic, as well as alcohol dependence. Governments seeking to tackle binge drinking and other types of alcohol abuse can use a range of policies that have proven to be effective, including counselling heavy drinkers, stepping up enforcement of drinking-and-driving laws, as well as raising taxes, raising prices and increasing the regulation of the marketing of alcoholic drinks (OECD, 2015).

In 2006, the European Union launched its Strategy to support member states in reducing alcohol-related harm. Its aims include reducing injuries and death from alcohol-related road accidents, preventing alcohol-related harm among adults and reducing the negative impact on the workplace, and developing and maintaining a common evidence base (European Commission, 2012).

Definition and comparability

Alcohol consumption is defined as annual sales of pure alcohol in litres per person aged 15 years and over. The methodology to convert alcohol drinks to pure alcohol may differ across countries. Official statistics do not include unrecorded alcohol consumption, such as home production. Unrecorded alcohol consumption and low quality of alcohol consumed (beverages produced informally or illegally) remain a problem, especially when estimating alcohol-related burden of disease among low income groups. In some countries (e.g. Luxembourg), national sales do not accurately reflect actual consumption by residents, since purchases by non-residents may create a significant gap between national sales and consumption. Alcohol consumption in Luxembourg is thus the mean of alcohol consumption in France and Germany.

Regular binge drinking is derived from self-reports of the European Health Interview Survey 2014. Regular binge drinking is defined as having six or more alcoholic drinks per single occasion at least once a month over the past 12 months.

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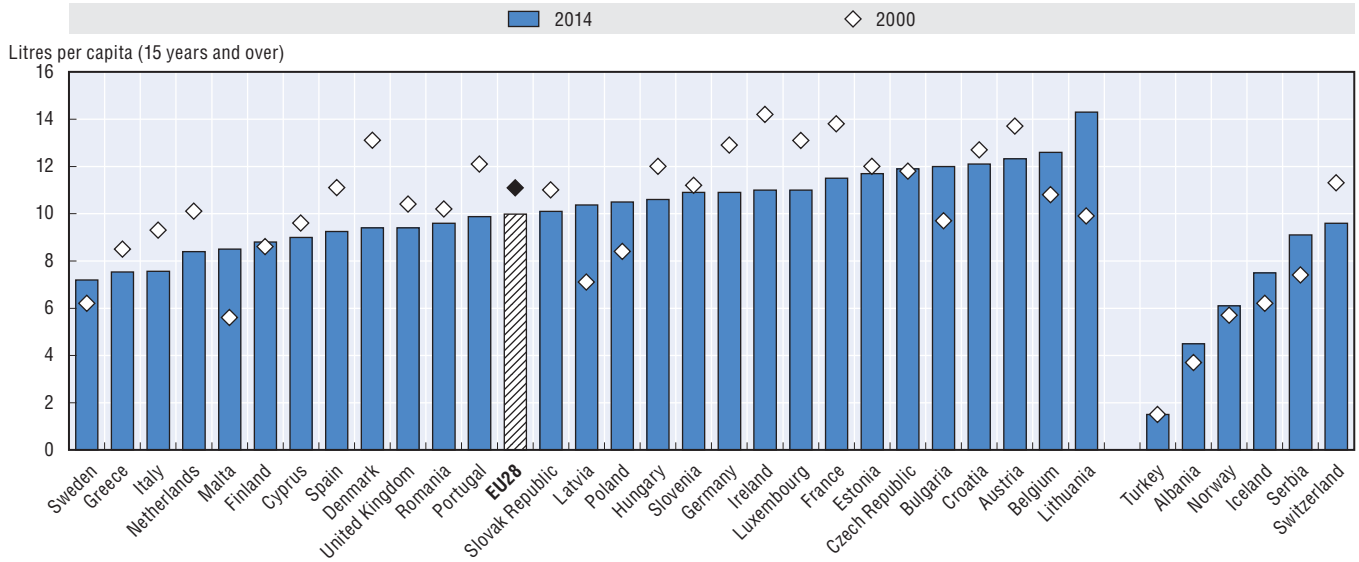
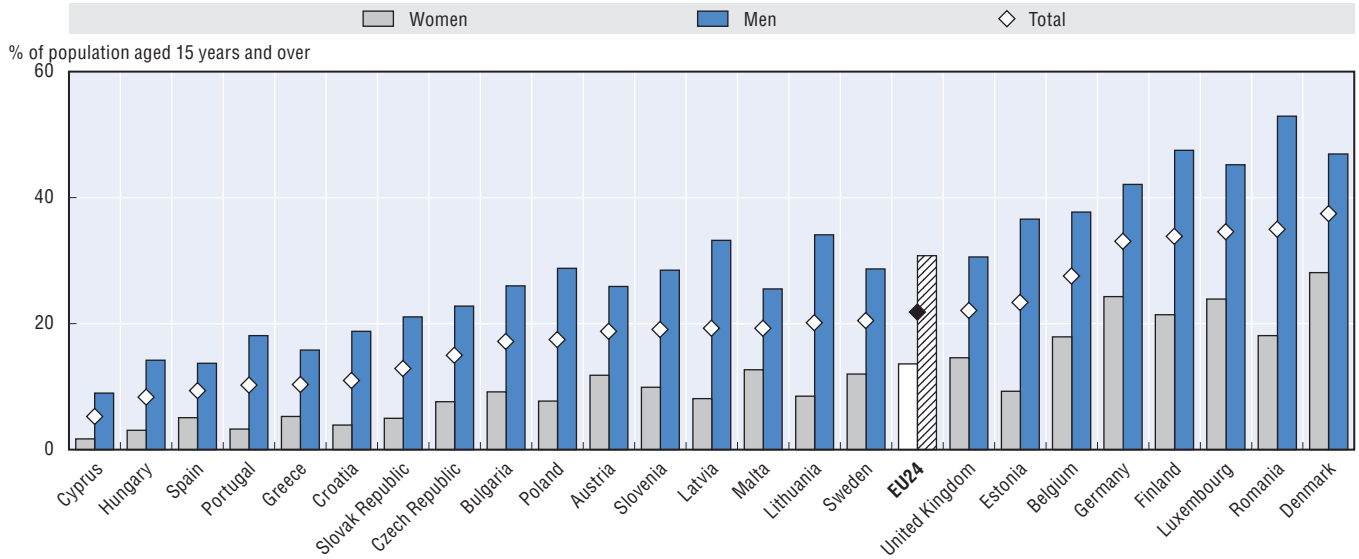
4.8. Alcohol consumption among adults, 2000 and 2014 (or nearest years)



Source: *OECD Health Statistics 2016*; Global Information System on Alcohol and Health for non-OECD countries and Austria, Belgium, Greece, Iceland, Italy, Latvia, Portugal and Spain.

StatLink http://dx.doi.org/10.1787/888933428990

4.9. Regular binge drinking in EU countries, 2014



Source: Eurostat, EHIS 2014.

StatLink http://dx.doi.org/10.1787/888933429007

Children who are overweight or obese are at a greater risk of poor health in adolescence as well as in adulthood. Among young people, psychosocial problems such as poor self-esteem, eating disorders and depression can result from being obese. Excess weight problems in childhood are associated with an increased risk of being an obese adult, at which point cardiovascular disease, as well as pulmonary and musculoskeletal complications, become health concerns (Inchley et al., 2016).

Overweight (including obesity) rates based on measured (rather than self-reported) height and weight are about 23% for boys and 21% for girls, on average, in EU countries, although rates are measured in different age groups in different countries (Figure 4.10). Boys tend to carry excess weight more often than girls, with the largest gender differences observed in Denmark and Iceland (8 percentage points), as well as in Poland (12 percentage points). In contrast, the United Kingdom (England), Ireland, Portugal and Sweden, as well as Switzerland and Turkey show larger overweight rates among girls, the largest differences being in Sweden (8 percentage points) and Ireland (7 percentage points). More than one in four children are overweight in Austria, Hungary, Portugal, and more than one in three in Greece and Italy.

In complement, overweight rates can be derived from self-reported height and weight. Self-reported measures tend to underestimate obesity and overweight. According to the Health Behaviour in School-based Children survey, 21% of boys and 12% of girls are overweight in 2013-14 on average across EU countries, with a range from 12% in Denmark to 30% in Malta (Figure 4.11).

Trends in child obesity have been increasing in the past few decades worldwide (Lobstein et al., 2015). The average of self-reported overweight rates (including obesity) across EU countries increased between 2001-02 and 2013-14 from 11% to 18% in 15-year-olds (Figure 4.12). The largest increases during this period were in Bulgaria, Greece and Malta, where the rates now reach between 20% and 30%. There was also a marked increase in the Czech Republic, Estonia, Ireland, Latvia, Poland, Romania, Slovenia and Sweden with the rate now reaching between 15% and 20%. The proportion of overweight or obese children at age 15 remained relatively unchanged in Denmark between 2001-02 and 2013-14, while the increase in Austria, France, the United Kingdom (England) was somewhat more modest than in other countries.

The *EU Action Plan on Childhood Obesity 2014-2020* aims to halt the rise in overweight and obesity in children and young people aged 0 to 18 years old by 2020. It is based on several key areas for action, including the support of a healthy start in life, promoting healthier environments, especially in schools and pre-schools (limiting exposure to less healthy food options, access to free drinking water) and increasing research (improvement of systematic data collection and proper dissemination of findings) (European Commission, 2014). The Joint Action on Nutrition and Physical Activity is a direct contributor to this plan. Its goals include forecasting the economic costs of overweight and obesity, improving the implementation of interventions to promote health nutrition and physical activity for pregnant women and families with young children, and increasing the use of nutritional information of foods by public health authorities, stakeholders and families (European Commission, 2015).

Definition and comparability

Estimates of overweight and obesity are based on body mass index (BMI) calculations using either measured or child self-reported height and weight, the latter possibly under-estimating obesity and overweight. Overweight and obese children are those whose BMI is above a set of age- and sex-specific cut-off points (Cole et al., 2000).

Measured data are gathered by the World Obesity Federation (WOF, former IASO) from different national studies. The estimates are based on national surveys of measured height and weight among children at various ages. Caution is therefore needed in comparing rates across countries. Definitions of overweight and obesity among children may sometimes vary among countries, although whenever possible the IOTF BMI cut-off points are used.

Self-reported data are from the Health Behaviour in School-aged Children (HBSC) surveys undertaken between 2001-02 and 2013-14. Data are drawn from school-based samples of 1 500 in each age group (11-, 13- and 15-year-olds) in most countries. Self-reported height and weight is subject to under-reporting, missing data and error, and requires cautious interpretation.

References

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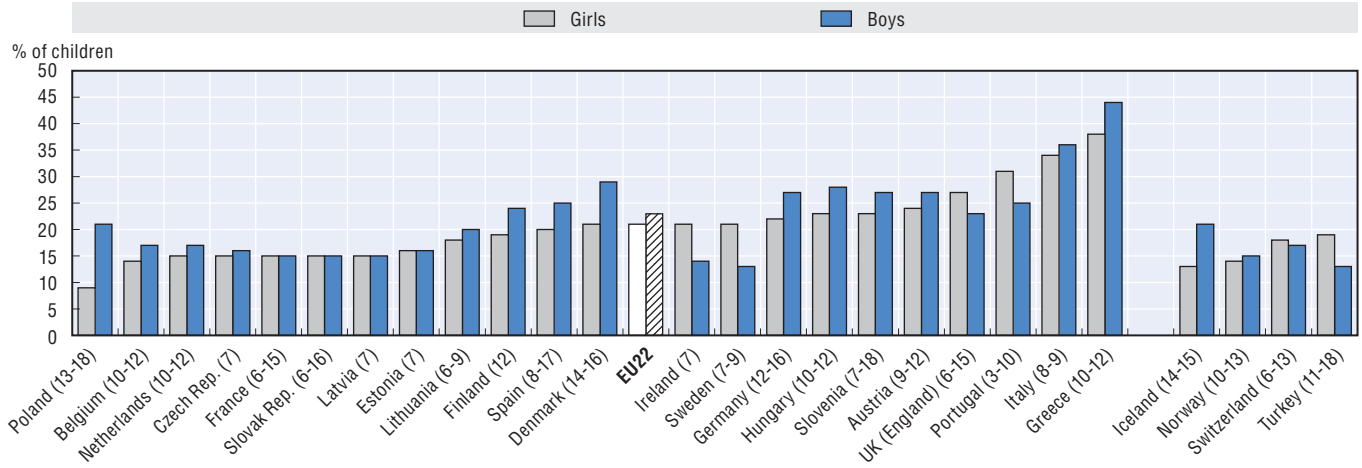
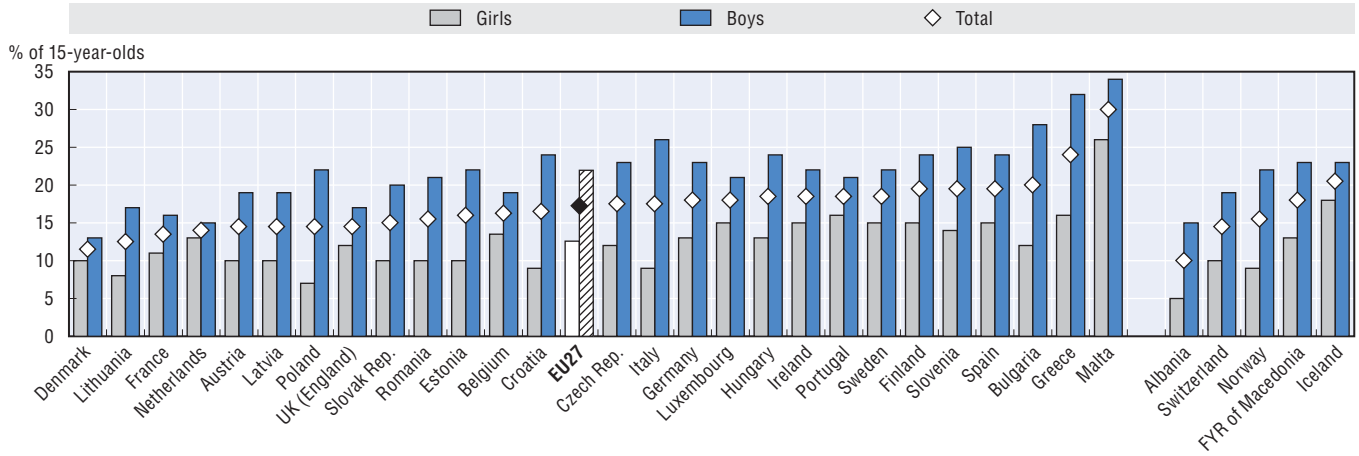
4.10. Measured overweight (including obesity) among children at various ages, 2010 (or latest year)



Note: The numbers in parentheses refer to the age of the children surveyed in each country.
Source: International Association for the Study of Obesity, 2013; World Obesity Forum, 2016.

StatLink http://dx.doi.org/10.1787/888933429010

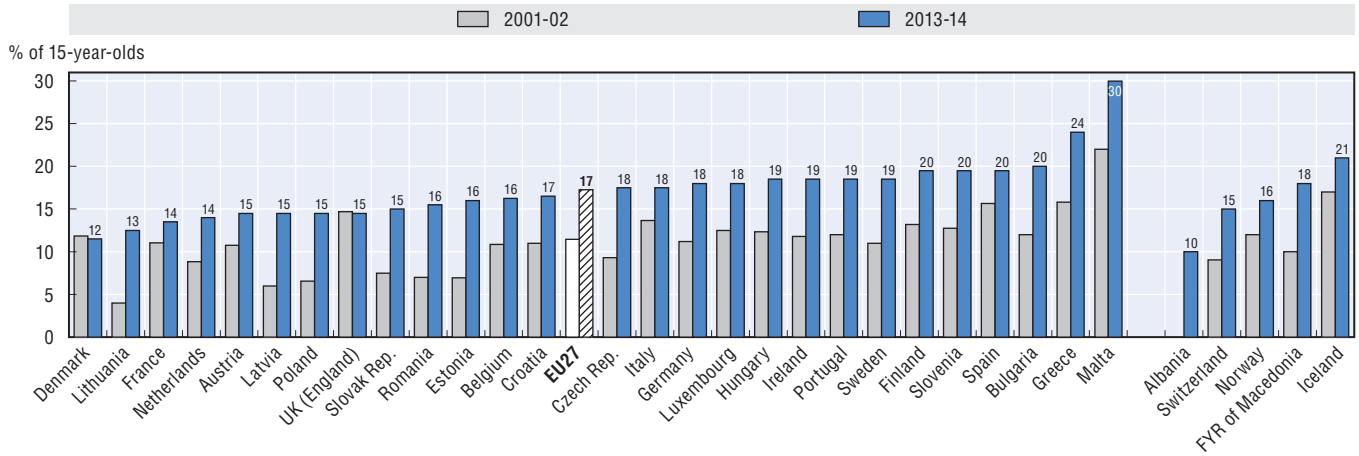
4.11. Self-reported overweight (including obesity) among 15-year-olds, 2013-14



Source: Inchley et al. (2016).

StatLink http://dx.doi.org/10.1787/888933429021

4.12. Change in self-reported overweight among 15-year-olds, 2001-02 and 2013-14



Note: For the Slovak Republic, Romania, Luxembourg, Bulgaria and Iceland, the first data point refers to 2005-06 rather than 2001-02.
Source: Currie, C. et al. (2004); Currie, C. et al. (2008); Currie, C. et al. (2012), Inchley et al. (2016).

StatLink http://dx.doi.org/10.1787/888933429032

Obesity is a known risk factor for numerous health problems, including hypertension, high cholesterol, diabetes, cardiovascular diseases and some forms of cancer. Because obesity is associated with higher risks of chronic illnesses, it is linked to significant additional health care costs.

Obesity varies three-fold among EU countries, from 9% in Romania to 26% in Malta, although some of the variations across countries are due to different methodologies in data collection (see box on "Definitions and comparability") (Figure 4.13). On average across EU member states, 16% of adults were obese around the year 2014, an increase from 11% in 2000 (Figure 4.15).

Obesity has grown fairly quickly over the past 14 years in countries like Austria, France, Finland, Ireland, as well as Iceland, Norway and Turkey. It has grown more moderately in other countries such as Belgium, Hungary, Italy and the Slovak Republic. The rise in obesity has affected all population groups, regardless of sex, age, race, income or education level, but to varying degrees (Sassi, 2010).

Social disparities in obesity are marked. Figure 4.14 shows that in all countries, overweight rates are more prevalent among low educated people. On average across EU countries, 21% of adults with a lower level of education are obese compared to 11% of those with a higher level of education. The gap in obesity rates between low- and high-educated people is largest (above 15 percentage points) in Luxembourg and Slovenia. Rates of obesity vary by education level and socio-economic status, and these disparities are found to be significant in women while less clear-cut in men (Devaux and Sassi, 2013).

A number of behavioural and environmental factors have contributed to the long-term rise in overweight and obesity rates in industrialised countries, including the widespread availability of energy-dense foods and more time spent being physically inactive. These factors have created obesogenic environments, putting people, and especially those socially vulnerable, more at risk (Popkin, 2014).

A growing number of countries have adopted policies to prevent obesity from spreading further. The policy mix includes, for instance, public awareness campaigns, health professionals training, advertising limits or bans on unhealthy food, taxations and restrictions on sales of certain types of food and beverages and nutrition labelling (OECD, 2014). Better informed consumers, making healthy food options available, encouraging physical activity and focusing on vulnerable groups are some of the areas in which progress has been made (European Commission, 2014).

At EU level, the 2007 Strategy for Europe on Nutrition, Overweight and Obesity-related Health Issues promotes a balanced diet and active lifestyles. It also encourages action by member states and civil society through marketing and advertising, consumer information and labelling, and advocacy and information exchange, among other commitments (European Commission, 2014). The 2016 European Council conclusions on food products improvement recognise the potential of reformulation and food improvement reducing salt, sugars and saturated fats, and they call for national plans to make the healthy food choice easier for consumers by 2020.

Definition and comparability

Overweight and obesity are defined as excessive weight presenting health risks because of the high proportion of body fat. The most frequently used measure is based on the body mass index (BMI), which is a single number that evaluates an individual's weight in relation to height (weight/height^2, with weight in kilograms and height in metres). Based on the WHO classification, adults over age 18 with a BMI greater than or equal to 25 are defined as overweight, and those with a BMI greater than or equal to 30 as obese.

Overweight and obesity rates can be assessed through self-reported estimates of height and weight derived from population-based health interview surveys, or measured estimates derived from health examinations. Estimates from health examinations are generally higher and more reliable than from health interviews.

Estimates from the European Health Interview Survey 2014 are based on self-reported height and weight. Education level is based on the ISCED 2011 classification. Lowest education level refers to people who have a lower secondary education or below (ISCED 0-2). Highest education level refers to people who have tertiary education (ISCED 6-8).

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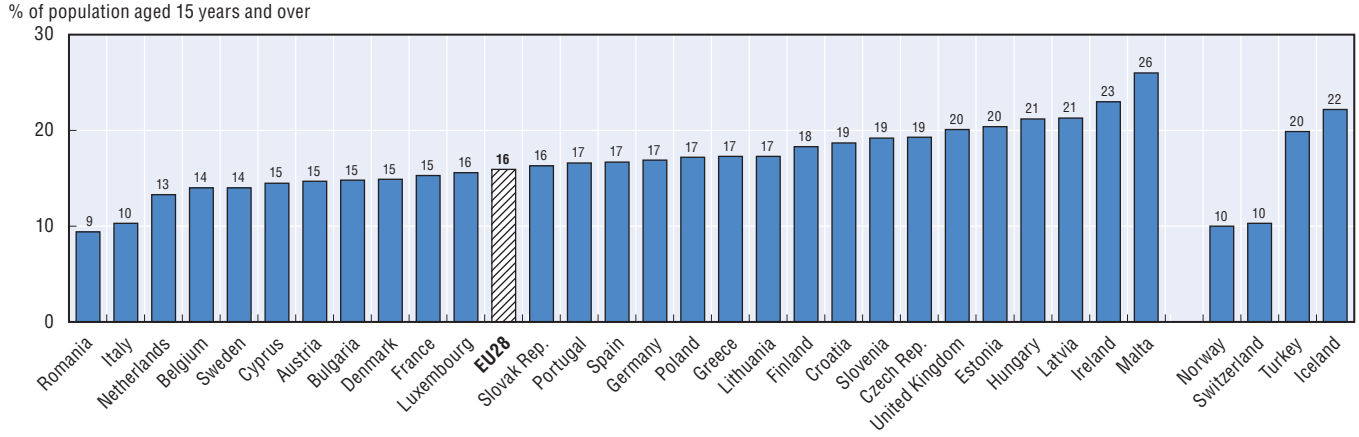
Sassi, F. (2010), *Obesity and the Economics of Prevention: Fit not Fat*, OECD Publishing, Paris, *http://dx.doi.org/10.1787/9789264084865-en*.

4.13. Self-reported obesity among adults, 2014 (or latest year)



Source: Eurostat, EHIS 2014; *OECD Health Statistics 2016* for non-EU countries.

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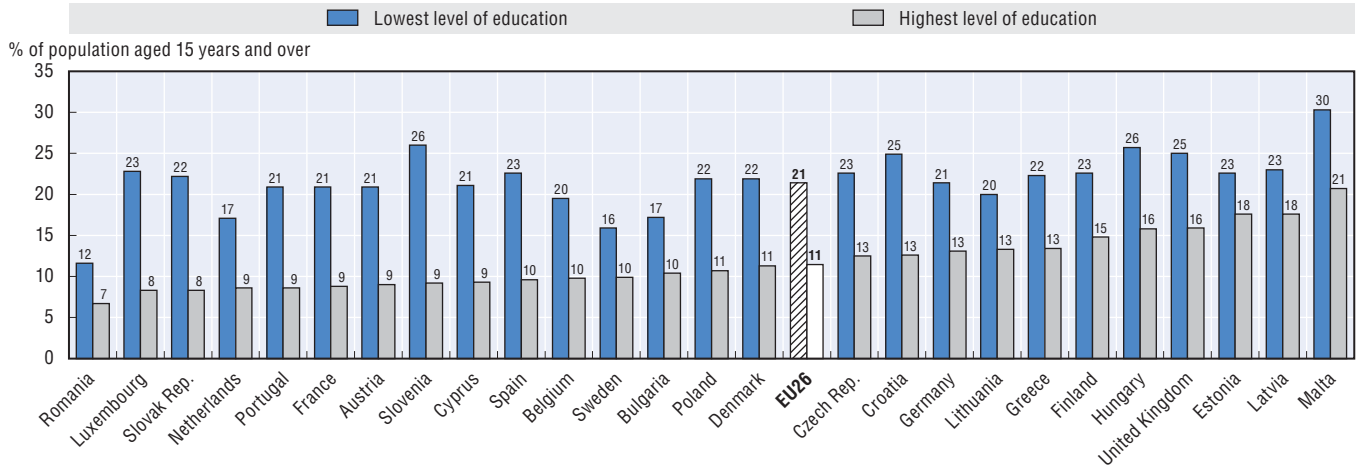
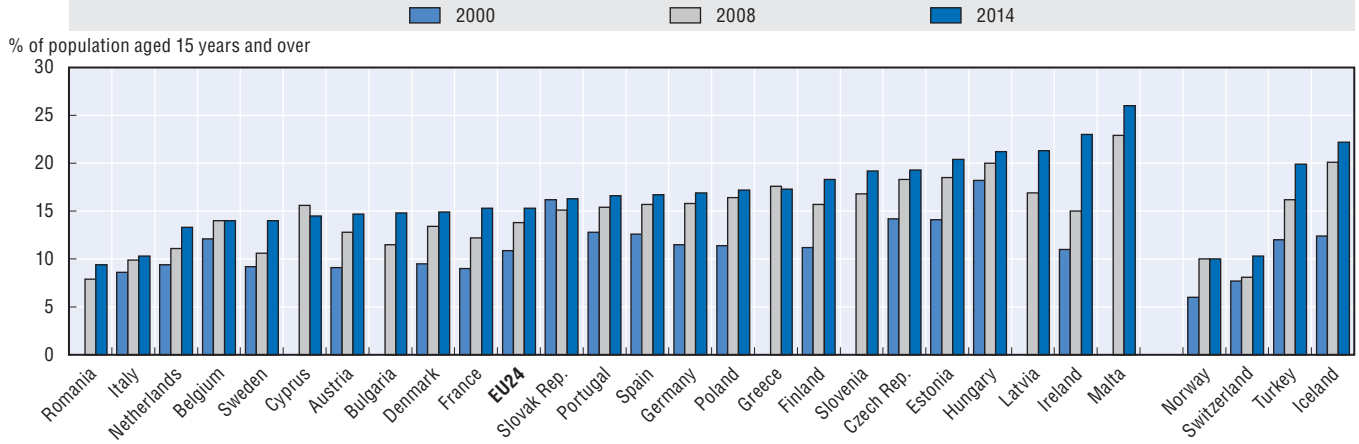
4.14. Self-reported obesity among adults in EU countries, by level of education, 2014



Source: Eurostat, EHIS 2014.

StatLink http://dx.doi.org/10.1787/888933429054

4.15. Trends in self-reported obesity among adults in EU countries, 2000, 2008 and 2014 (or latest years)



Source: Eurostat, EHIS 2008, 2014; *OECD Health Statistics 2016* for non-EU countries and for 2000 data (based on national surveys).

StatLink http://dx.doi.org/10.1787/888933429062

Nutrition is important for children's development and long-term health. Eating fruit and vegetables during childhood, rather than foods high in fat, sugar and salt, can protect against health problems such as obesity, diabetes and cardiovascular diseases. Moreover, eating fruit and vegetables when young can be habit-forming, promoting healthy eating in adult life.

A number of factors influence the amount of fruit consumed by children, including availability and exposure to fruit and vegetables at home and school, parental and peer influence, local climate and cost (Krølner et al., 2011). Fruit consumption and vegetable consumption have a high priority as indicators of healthy eating in most EU countries.

Overall, boys in Denmark, Ireland, Luxembourg and Portugal, and girls in Austria, Denmark, Ireland and Italy had the highest rates of daily fruit consumption, while consumption was relatively low in Greece, Latvia and Sweden (boys and girls) and Finland (boys), with rates of around one in four for girls and one in five, or less, for boys (Figure 4.16). Outside the European Union, the consumption of fruit was high for both boys and girls, especially in Albania and Switzerland, where rates are higher than in any EU country. In all surveyed countries, girls were more likely than boys to eat fruit daily. The gap between the fruit consumption of boys and girls was especially large in Finland, where 30% of girls but only 12% of boys reported eating fruit each day. Denmark and Slovenia, as well as Albania and Switzerland, also had large differences.

Daily vegetable eating was reported by over one in three girls and one in four boys on average across EU countries in 2013-14 (Figure 4.17). Girls in Belgium most commonly ate vegetables daily (61%), followed by Denmark, Ireland and the Netherlands (45-50%). Belgium also led the way for boys (52%), with 41% in Ireland and close to 40% in France, Malta and the Netherlands. Eating vegetables daily was less common in Spain, as well as in Estonia and Portugal (girls) and Finland and Germany (boys). Gender gaps were highest in Finland, Germany and Italy. Rates were high outside the EU, especially in the FYR of Macedonia and Switzerland.

Average reported rates of daily vegetable consumption across EU countries have increased between 2001-02 and 2013-14, for both girls and boys (Figure 4.18). The largest increases (above 10%) occurred in Denmark and Estonia (in both genders), while smaller increases (8-10%) were seen in Lithuania (both genders), as well as Austria (girls) and Ireland (boys). For fruit consumption, there has been a small increase on average since 2001-02 among boys and girls, although rates have decreased since 2009-10 for girls. Rates have grown by 10% or more in Austria, Denmark, Estonia, Greece, Hungary and Malta, as well as in Spain and Sweden (girls only), whereas they have fallen in Germany and Poland.

Effective and targeted strategies are required to ensure that children are eating enough fruit and vegetables to conform to recommended national dietary guidelines.

In the school year 2009-10, the European School Fruit Scheme was introduced in 24 EU countries, and has since been expanded to include more countries and children each year, showing positive results. It supplies fresh fruit and vegetables to children, and also provides educational measures (European Commission, 2016). European studies have shown that school-based interventions have a stronger positive effect on fruit and vegetable consumption among children when they are multicomponent (i.e. combine changes to the food environment with educational intervention), rather than when focus only on one of those aspects (van Wauwenberghe et al., 2010).

Definition and comparability

Dietary habits are measured here in terms of the proportions of children who report eating fruit and vegetables at least every day or more than once a day, no matter the quantity. No reference to exclude juice, soup or potatoes was mentioned in the survey questions. In addition to fruit and vegetables, healthy nutrition also involves other types of foods.

Data are from the Health Behaviour in School-aged Children (HBSC) surveys. They are drawn from school-based samples of 1 500 in each age group (11-, 13- and 15-year-olds) in most countries.

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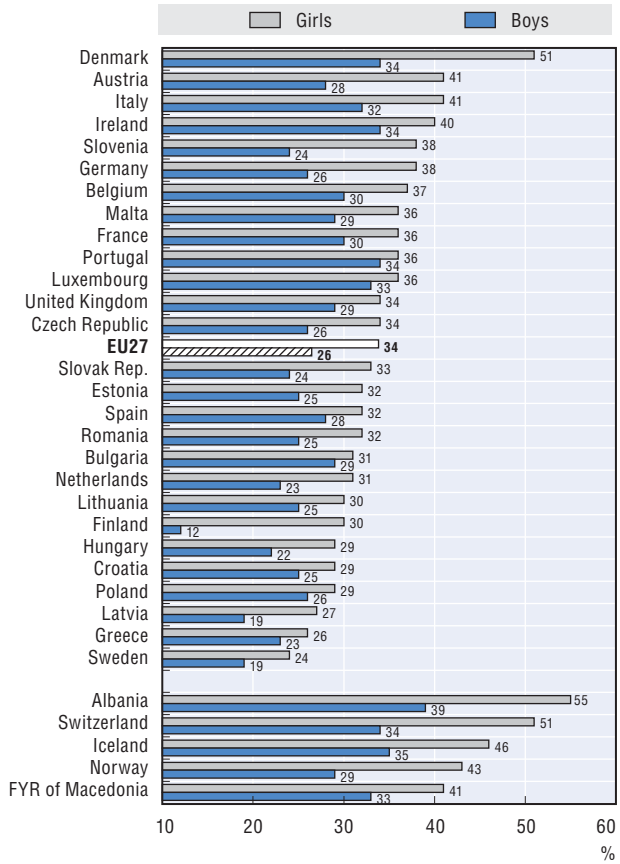
van Wauwenbergne, E. et al. (2010), "Effectiveness of School-Based Interventions in Europe to Promote Health Nutrition in Children and Adolescents: Systematic Review of Published and 'Grey' Literature", *British Journal of Nutrition*, Vol. 103, No. 6, pp. 781-797.

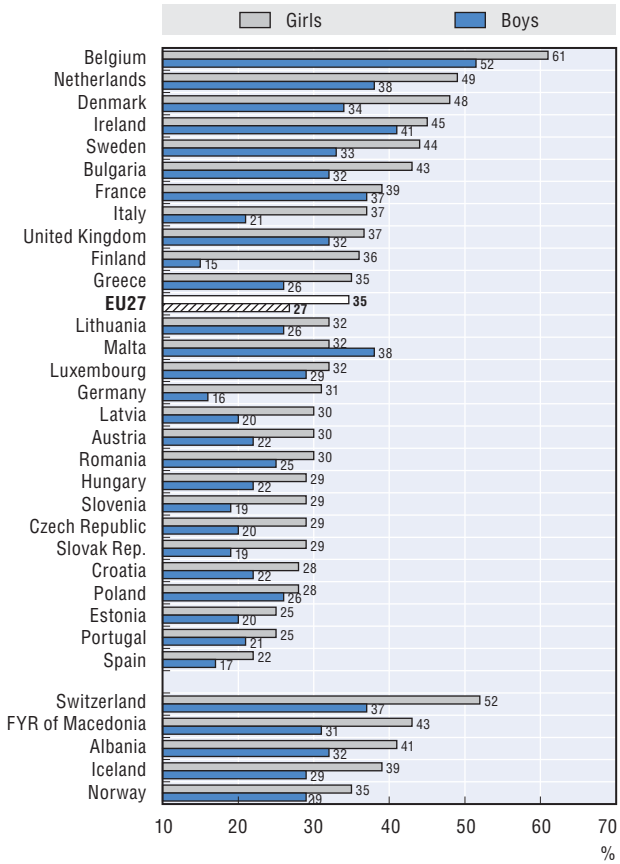
4.16. Daily fruit eating among 15-year-olds, 2013-14



Source: Inchley et al. (2016).

StatLink http://dx.doi.org/10.1787/888933429078

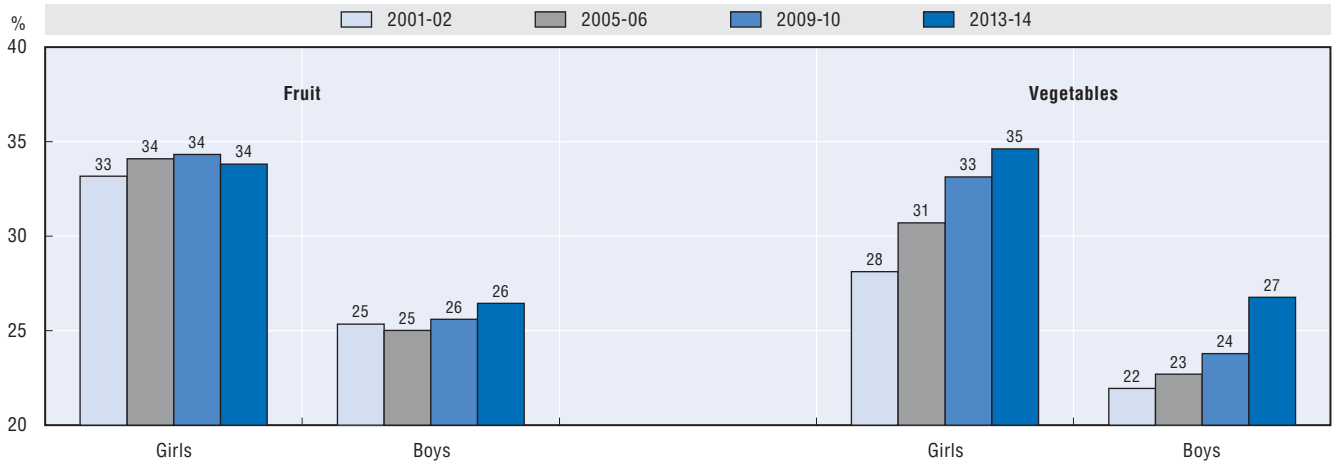
4.17. Daily vegetable eating among 15-year-olds, 2013-14



Source: Inchley et al. (2016).

StatLink http://dx.doi.org/10.1787/888933429087

4.18. Trends in daily fruit and vegetable eating among 15-year-olds, EU countries, 2001-02 to 2013-14



Source: Currie, C. et al. (2004, 2008, 2012); Inchley et al. (2016).

StatLink http://dx.doi.org/10.1787/888933429099

Nutrition is an important determinant of health. Inadequate consumption of fruit and vegetables is one factor that can play a role in increased morbidity. Proper nutrition assists in preventing a number of chronic conditions, including hypertension, cardiovascular disease, stroke, diabetes and certain cancers. The 2007 EU Strategy on Nutrition, Overweight and Obesity-related Health Issues promotes a balanced diet and active lifestyle among all the population. The WHO recommends adults consume five portions (400g) of fruit and vegetables daily, excluding starches.

The percentage of adults reporting to consume fruit daily varied from less than 40% in Bulgaria, Latvia and Romania, to more than 70% in Italy and Portugal (Figure 4.19). On average across EU member states, 57% of adults reported eating fruit daily. Women are eating fruit more often than men in all countries, with the largest gender gaps in Austria, the Czech Republic, Denmark, Finland and Sweden, as well as Iceland and Switzerland. In many Mediterranean countries (Cyprus, Greece, Italy, Malta, Portugal, Spain and Turkey), the gender gap is much smaller.

Daily vegetable consumption ranged from less than 30% in Romania, to nearly 80% in Belgium (Figure 4.20). The average across the 28 EU countries was just over 50% (51%). Again, more women reported eating vegetables daily. The gender gap is greatest in Denmark, Germany, Luxembourg and Sweden. Patterns of vegetable consumption among age groups and educational groups are similar to those for fruit. Older people more commonly eat fruit and vegetables daily.

About 12% of adults report to eat a least five fruit and vegetables per day across the European Union as a whole, ranging from about 4% in Romania and Bulgaria to 25% in Denmark and the Netherlands (Figure 4.21). People with a higher level of education also tend to eat fruit and vegetables more often compared to those with lower level of education. About 14% of adults with higher level of education consume at least 5 fruits and vegetables per day, compared to 10% in those with lower level of education, on average across 25 EU countries. These social disparities are large in Denmark, the Netherlands, Portugal and Estonia.

The availability of fruit and vegetables is the major determinant of consumption. According to FAO data, vegetable and especially fruit availability is higher in Southern European countries, with cereals and potatoes more available in Central and Eastern European countries. Fruit and vegetable availability also tends to be higher in families where household heads have a higher level of education (Elmadfa, 2009).

The promotion of fruit and vegetable consumption, especially in schools and at the workplace, is a policy objective of the European Union. It features in the EU platform for action on diet, physical activity and health, a forum for European-level organisations including the food industry, consumer protection NGOs and other stakeholders committed to improving trends in diet and physical activity (European Commission, 2013b). The European Commission is also monitoring progress in the consumption of fruit and vegetables as one of a number of ways to offset a worsening trend of poor diets and low physical activity (European Commission, 2013a). The WHO European Food and Nutrition Action Plan 2015-20, adopted in 2014 by 53 countries of the WHO European Region, is intended to significantly reduce the burden of preventable diet-related non-communicable diseases, obesity and all other forms of malnutrition still prevalent in the WHO European region.

Definition and comparability

Estimates of daily fruit and vegetable consumption are derived from the European Health Interview Survey wave 2, conducted in many EU member states in 2014. Typically, respondents were asked "How often do you eat fruit (excluding juice)?" and "How often do you eat vegetables or salad (excluding juice and potatoes)?" Response categories included: Twice or more a day/once a day/less than once a day but at least four times a week/less than four times a week, but at least once a week/less than once a week/never. The quantity of fruits and vegetables consumed is not known. Data rely on self-report and are subject to errors in recall.

Education level is based on the ISCED 2011 classification. Lowest education level refers to people who have a lower secondary education or below (ISCED 0-2). Highest education level refers to people who have tertiary education (ISCED 6-8).

References

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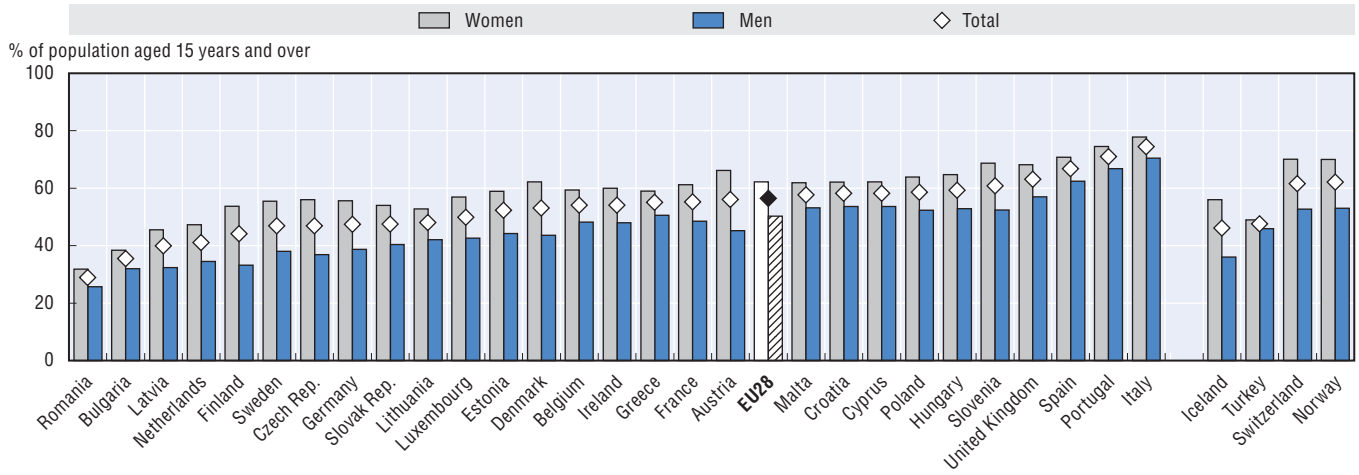
European Commission (2013b), *EU Platform on Diet, Physical Activity and Health. 2013 Annual Report*, European Commission, Brussels.

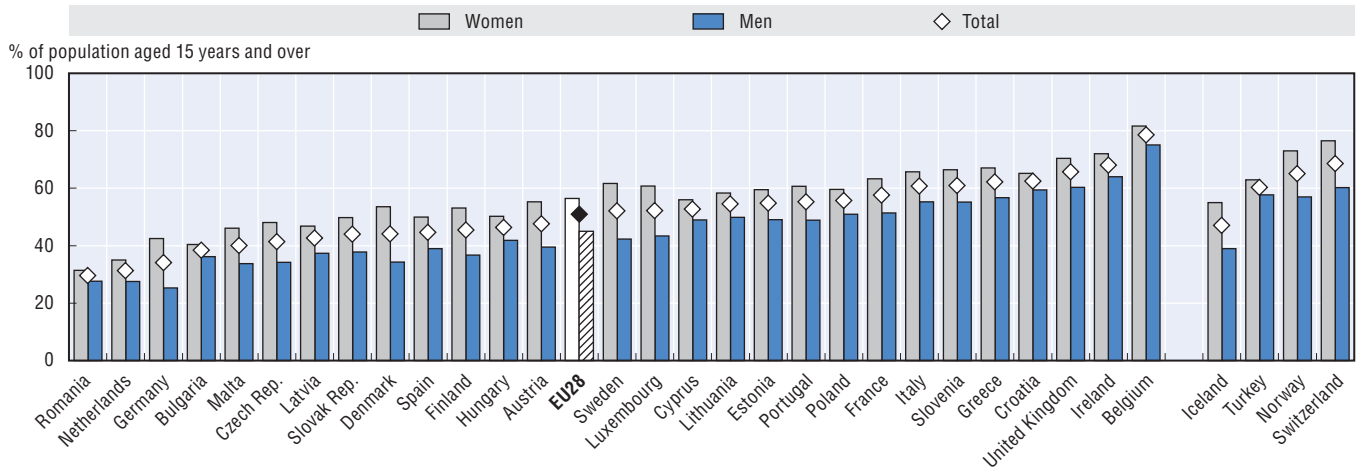
4.19. Daily fruit eating among adults, 2014 (or latest year)



Source: Eurostat, EHIS 2014; *OECD Health Statistics 2016* for non-EU countries, Ireland and Italy.

StatLink http://dx.doi.org/10.1787/888933429102

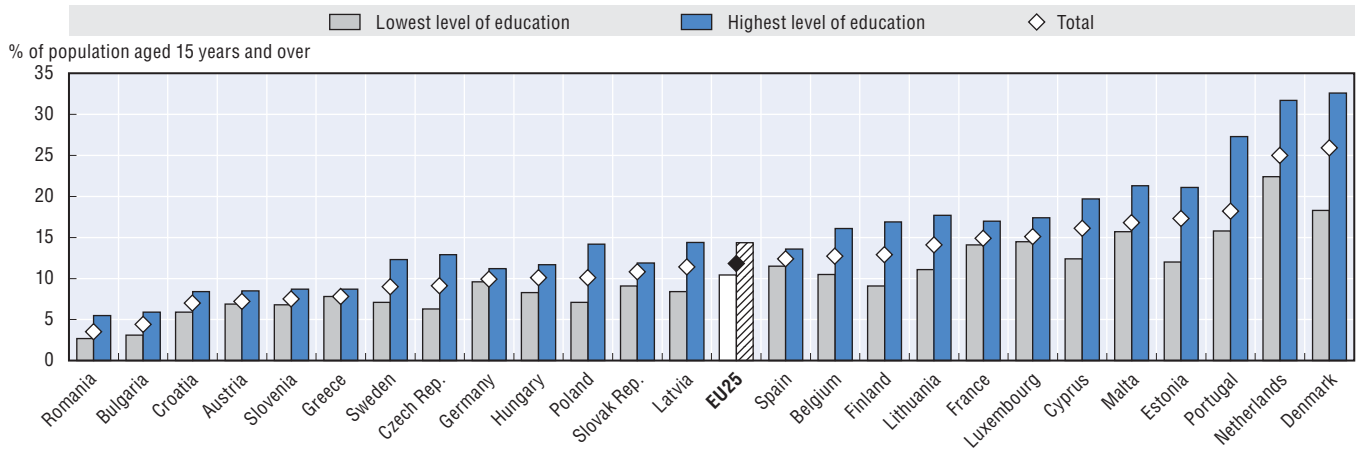
4.20. Daily vegetable eating among adults, 2014 (or latest year)



Source: Eurostat, EHIS 2014; *OECD Health Statistics 2016* for non-EU countries, Ireland and Italy.

StatLink http://dx.doi.org/10.1787/888933429114

4.21. Adults who consume at least five fruit and vegetables daily in EU countries, by education, 2014



Source: Eurostat, EHIS 2014.

StatLink http://dx.doi.org/10.1787/888933429129

Undertaking physical activity during childhood is beneficial for health and can set standards for adult physical activity levels, thereby influencing health outcomes later in life. Research suggests that physical activity has a role in child and adolescent development, learning and well-being, and in the prevention and treatment of a range of youth health issues including asthma, mental health and bone health. More direct links to adult health are found between physical activity in childhood and its effect on overweight and obesity and related diseases, breast cancer rates and bone health in later life (Currie et al., 2012).

The WHO recommends that children participate in at least 60 minutes of moderate-to-vigorous physical activity daily, although evidence suggests that many children do not meet these guidelines (Borraccino et al., 2009; Hallal et al., 2012). Some of the factors influencing the levels of physical activity undertaken by children include the availability of space and equipment, their present health conditions, their school curricula and other competing pastimes.

In EU countries, around one in four children report that they undertake moderate-to-vigorous exercise regularly (Figure 4.22). At age 11, Ireland and Finland, with over 30% of girls and 45% of boys reporting exercising for at least 60 minutes per day over the past week, as well as Bulgaria, Croatia, Romania, the Slovak Republic and Spain, with over 35% of boys, stand out as strong performers. At age 15, boys in Spain are the most active, followed by Bulgaria, Croatia, Ireland, Luxembourg, Poland and the Slovak Republic. Girls in Bulgaria, the Czech Republic, Finland, Latvia and the Slovak Republic are the most active. Children in Denmark, France, Greece and Italy were least likely to report exercising regularly. Italy ranks at the bottom end of the spectrum for both boys and girls, and at both ages. Outside the European Union, Albania and the FYR of Macedonia are the most active, at both ages and for both genders. A consistently higher proportion of boys than girls reported undertaking physical activity, across all countries and all age groups (Figure 4.22).

It is of concern that physical activity falls between ages 11 to 15 in all EU countries, for both genders. In Finland, the rate of boys exercising at recommended levels is reduced by half between age 11 and age 15. This is also the case for girls in many countries. In Austria, Finland, Ireland, Poland, Portugal and Slovenia, rates of physical activity among girls fall by over 60%.

On average across EU countries, daily moderate-to-vigorous physical activity increased slightly between 2009-10 and 2013-14 for both boys and girls, and in all age groups, as shown in Figure 4.23.

The change in activity levels between ages 11 and 15 may reflect a move to different types of activity, since free play is more common among younger children, and structured activities at school or in sports clubs become more common later. Children's daily habits have also evolved in recent years, due to new leisure patterns (TV, Internet, smartphones), which has led to a decrease in their physical activity (Council of the European Union, 2015). Boys tend to be more physically active than girls in all countries, also suggesting that the opportunities to undertake physical activity may be gender-biased (Currie et al., 2012).

Definition and comparability

Data for physical activity consider the regularity of moderate-to-vigorous physical activity as self-reported by 11-, 13- and 15-year-olds in 2005-06, 2009-10 and 2013-14. Moderate-to-vigorous physical activity refers to exercise undertaken for at least an hour each day which increases the heart rate, and sometimes leaves the child out of breath.

Data for EU countries are from the Health Behaviour in School-aged Children (HBSC) surveys. They are drawn from school-based samples of 1 500 in each age group in most countries.

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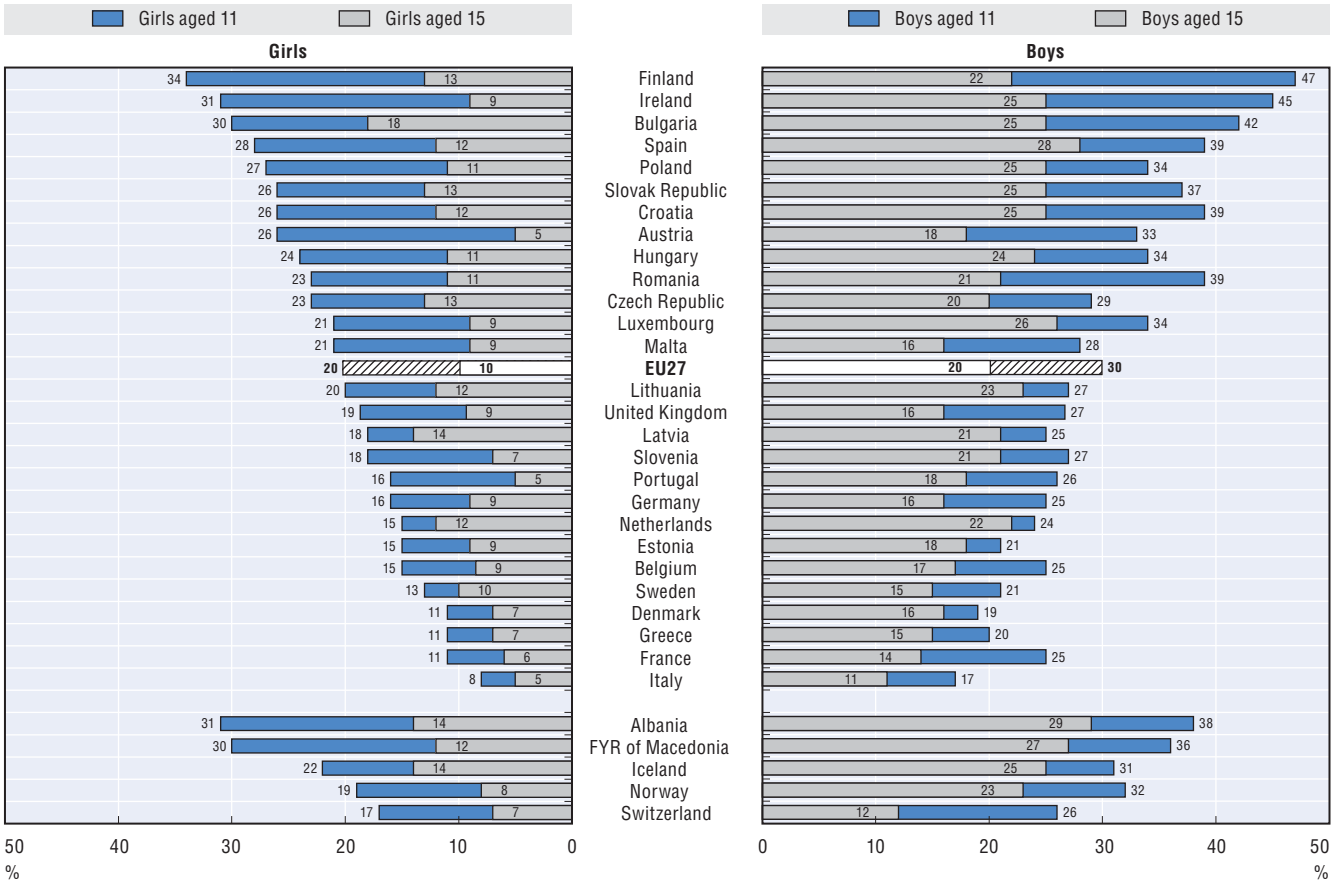
4.22. Daily moderate-to-vigorous physical activity, 11- and 15-year-olds, 2013-14



Source: Inchley et al. (2016).

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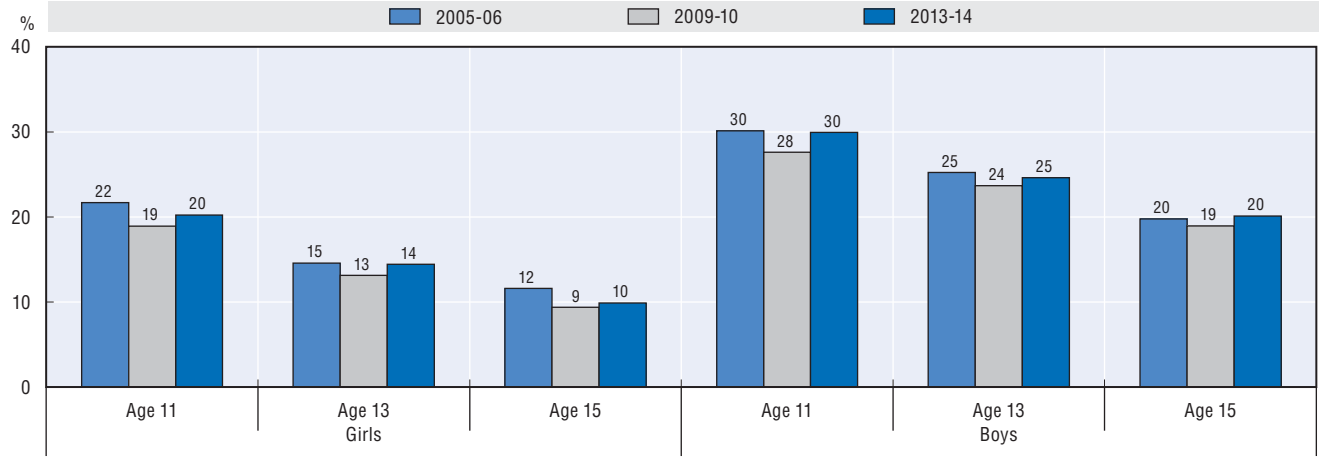
4.23. Trends in daily moderate-to-vigorous physical activity, EU countries, 2005-06 to 2013-14



Source: Currie, C. et al. (2008, 2012); Inchley et al. (2016).

StatLink http://dx.doi.org/10.1787/888933429148

Physical inactivity is a risk factor for cardiovascular disease, as well as a number of other chronic diseases including diabetes, certain types of cancer, obesity and hypertension (Knight, 2012). Regular physical activity improves chances of living longer, strengthens bones and muscles, helps control body weight and improves mental health and mood. It has also been shown to have positive effects on symptoms of anxiety and clinical depression (Anderson et al., 2013; Richardson et al., 2005).

The WHO recommends at least 150 minutes of moderate-intensity aerobic physical activity throughout the week for adults aged 18-64 years old, or an equivalent combination of moderate- and vigorous-intensity activity (WHO, 2011). A 2013 Council Recommendation on Health-Enhancing Physical Activity also promotes sport and physical activity.

Physical activity among adults varies two-fold across the EU, from 38% in Romania to 80% in Sweden (Figure 4.24). In 2014, less than 60% of adults in Bulgaria, Portugal, Romania and Spain took part in the recommended amount of physical activity, compared with over 70% in Austria, Denmark, Finland, France, Slovenia and Sweden. Overall, 64% of the EU adult population meet the recommended amount. Gender gaps also differ by country. They are low (under 2 percentage points) in Finland, Greece, Sweden and the United Kingdom. In the Czech Republic, Latvia, Romania and Spain, there is a gap of over 15 percentage points in the proportion of men doing regular moderate physical activity compared to women. Denmark is the only country where women exercise more than men (3 percentage points' difference). The average gender gap across the EU is 8 percentage points.

There is also a gap in many countries between adults with lower and higher levels of education (Figure 4.25). In 17 of 24 EU countries, people with a lower level of education do more physical activity than those with a higher level of education. These differences are most prominent in Bulgaria, France and Romania (over 10 percentage points). On the other hand, in Austria, the Czech Republic, Finland, Greece, the Slovak Republic, Spain and the United Kingdom, people with a higher level of education undertake physical activity more often than those with lower education. Across the European Union, an average of 62% of people with lower levels of education, and 59% of those with higher levels, meet the weekly recommended level of physical activity.

WHO/Europe and the European network for the promotion of health-enhancing physical activity collaborate closely, strengthening and supporting efforts to increase participation in physical activity. Studies have shown that common barriers to physical activity include perception of lack of time, feeling too tired and preferring to rest, and concerns about personal safety (WHO, 2006).

Promotion of physical activity is being used in public health campaigns in many countries. An increasing number of private large companies have also invested in wellness programmes to encourage physical activity and improve health-related behaviours of their employees with the view of keeping workers in good health and working longer.

Definition and comparability

The indicator of moderate physical activity is defined as doing at least 150 minutes of moderate physical activity per week. Estimates of moderate physical activity are based on self-reports from the European Health Interview Survey 2014, combining work-related physical activity with leisure-time physical activity (bicycling for transportation and sport).

Education level is based on the ISCED 2011 classification. Lowest education level refers to people who have a lower secondary education or below (ISCED 0-2). Highest education level refers to people who have tertiary education (ISCED 6-8).

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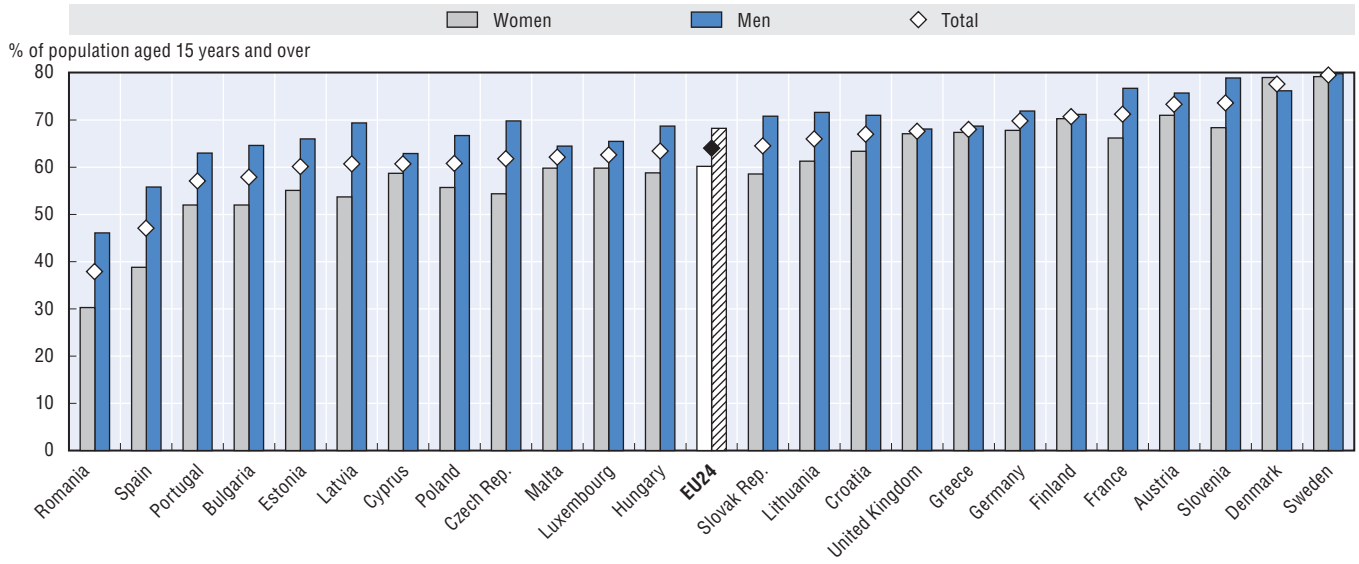
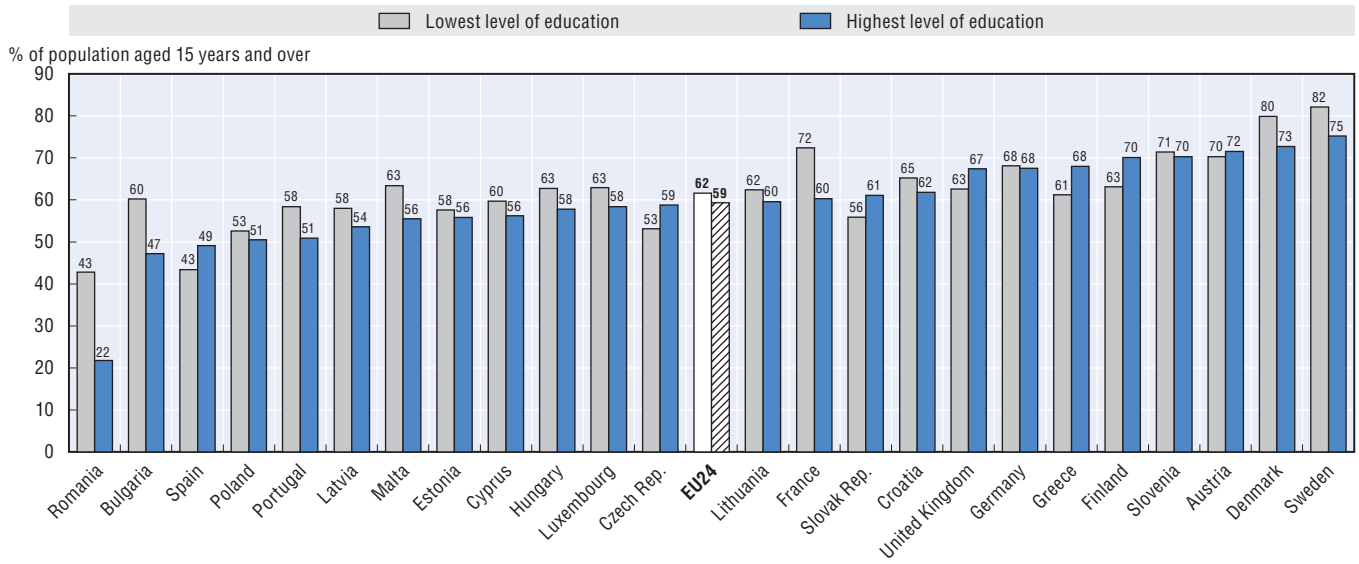
4.24. Moderate weekly physical activity among adults in EU countries, 2014



Source: Eurostat, EHIS 2014.

StatLink http://dx.doi.org/10.1787/888933429157

4.25. Moderate weekly physical activity among adults in EU countries, by level of education, 2014



Source: Eurostat, EHIS 2014.

StatLink http://dx.doi.org/10.1787/888933429162

The use of illicit drugs remains an important public health issue in Europe. Over a quarter of adults in the European Union aged 15-64, or over 88 million people, have used illicit drugs at some points in their lives. In most cases, they have used cannabis, but some have also used cocaine, amphetamines, ecstasy and other drugs (EMCDDA, 2016). The use of illicit drugs, particularly among people who use them regularly, is associated with higher risks of cardiovascular diseases, mental health problems, accidents, as well as infectious diseases such as HIV when the drug is injected. Illicit drug use is an important cause of mortality among young people in Europe, both directly through overdose and indirectly through drug-related diseases, accidents, violence and suicide.

Cannabis is the illicit drug most used among young adults in Europe, especially among young men. Over 13% of people aged 15 to 34 on average in EU countries report having consumed cannabis in the last year (Figure 4.26). Cannabis use is highest in the Czech Republic and France, with more than 20% of people aged 15 to 34 reporting to have consumed cannabis in the last year. Cannabis use has increased over the past decade in some Nordic countries (Denmark and Finland), with consumption levels in these countries now exceeding the European average.

Cocaine is the most commonly used illicit stimulant in Europe: about 2% of young adults aged 15-34 report having used cocaine in the last year (Figure 4.27). The percentage of young adults consuming cocaine is highest in the United Kingdom, Spain and the Netherlands, with 3% or more young adults having used cocaine at least once in the last year. Cocaine use has gone up in recent years in at least six countries (the Czech Republic, Finland, France, the Netherlands, Norway and Poland).

The use of amphetamines and ecstasy (or MDMA) is slightly lower than cocaine, with about 1% of young adults in EU countries reporting to have consumed amphetamines and 1.7% ecstasy (or MDMA) in the last year. The use of amphetamines tends to be higher in the Netherlands, followed by Estonia, Finland and the Czech Republic (Figure 4.28). The use of ecstasy is highest in the Netherlands, the Czech Republic and the United Kingdom (Figure 4.29). Between 2007 and 2014, the use of amphetamines has remained relatively stable in most European countries. However, the use of ecstasy has increased in several countries, including not only the Netherlands, the Czech Republic and the United Kingdom, but also Finland, France, Italy and Sweden.

The consumption of opioids (i.e. heroin and other drugs) is responsible for the majority of drug overdose deaths (reported in over 80% of fatal overdoses). The main opioid used in Europe is heroin, but there are concerns in several countries about the increasing use of other synthetic opioids (such as buprenorphine, methadone, fentanyl and tramadol). Although trends have varied across countries, the percentage of adults consuming opioids generally appears to have declined over the last decade in most countries.

A growing concern in many European countries is the increased availability of unregulated psychoactive substances ("legal highs") which have emerged in recent years, some of which have been associated with deaths. The EMCDDA monitors a growing number of such new psychoactive substances. In 2015, 98 new substances were detected for the first time, bringing the number of new substances monitored to more than 560, of which 380 (70%) were detected in the last five years (EMCDDA, 2016).

Definition and comparability

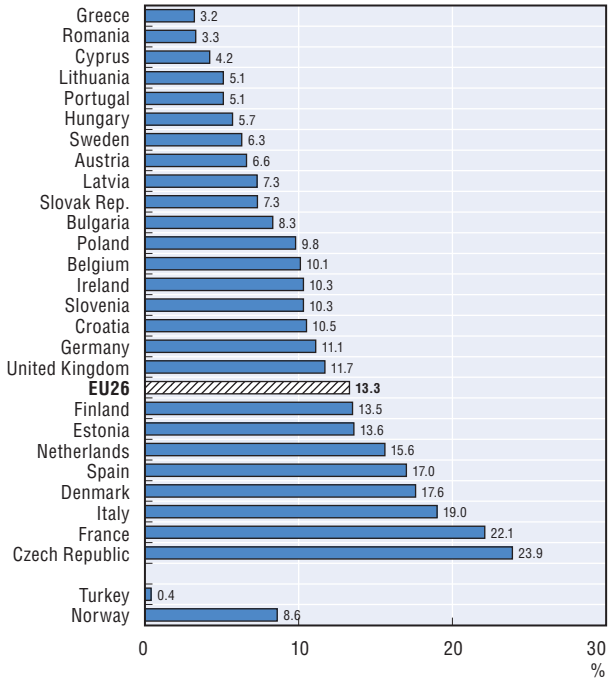
Data on drug use prevalence come from national population surveys, as gathered by the European Monitoring Centre for Drugs and Drug Addiction (EMCDDA). The data presented in this section focus on the percentage of young adults aged 15 to 34 years old reporting to have used different types of illicit drugs in the last year. Such estimates of recent drug use produce lower figures than "lifetime experience", but better reflect the current situation. The information is based on the last survey available for each country. The study year ranges from 2004 to 2014. To obtain estimates of the overall number of users in Europe, the EU average is applied to countries without prevalence data.

For more information, please see *www.emcdda.europa.eu/data/stats2016*.

Reference

EMCDDA (2016), *European Drug Report 2016: Trends and Developments*, European Monitoring Centre for Drugs and Drug Addiction, Lisbon.

4.26. Cannabis use over the last 12 months among people aged 15 to 34, 2014 (or nearest year)



Source: EMCDDA (2016), *European Drug Report 2016: Trends and Developments.*

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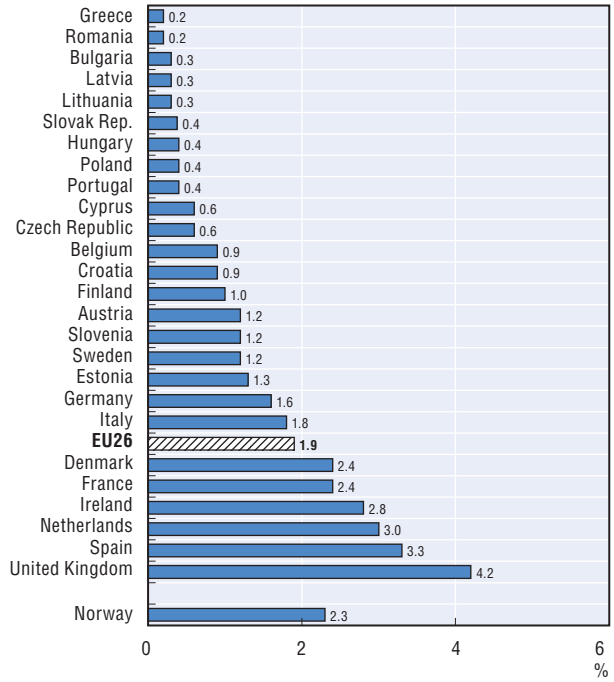
4.27. Cocaine use over the last 12 months among people aged 15 to 34, 2014 (or nearest year)



Source: EMCDDA (2016), *European Drug Report 2016: Trends and Developments.*

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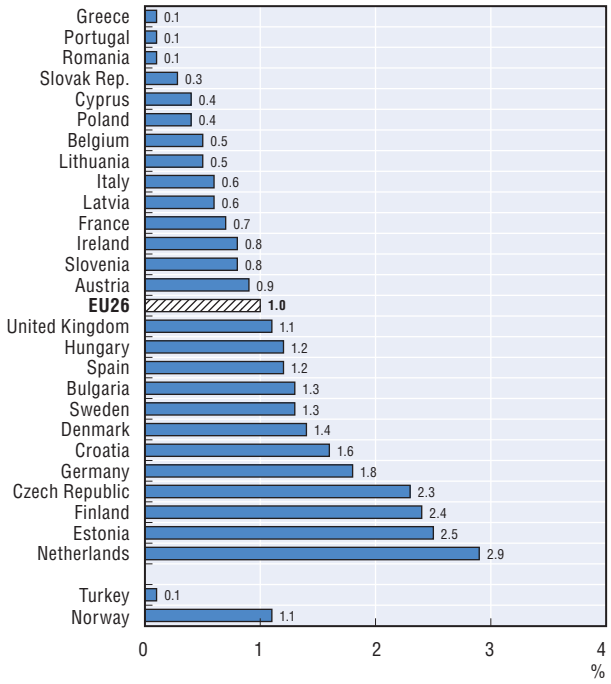
4.28. Amphetamines use over the last 12 months among people aged 15 to 34, 2014 (or nearest year)



Source: EMCDDA (2016), *European Drug Report 2016: Trends and Developments.*

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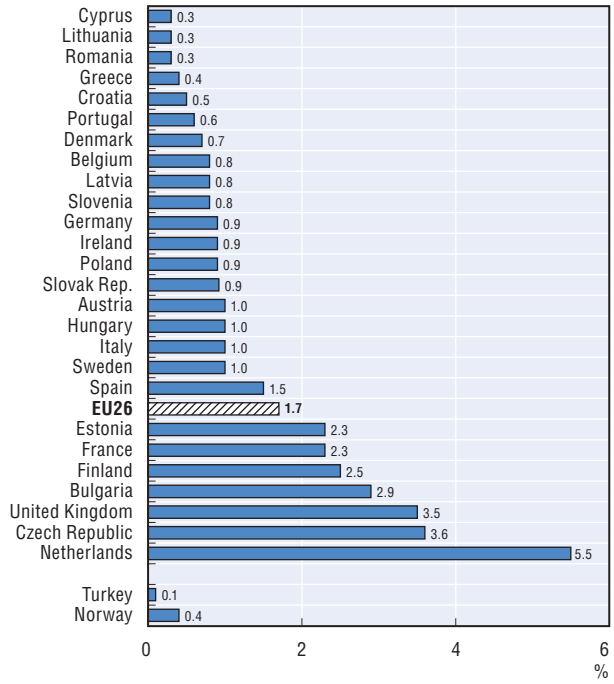
4.29. Ecstasy use over the last 12 months among people aged 15 to 34, 2014 (or nearest year)



Source: EMCDDA (2016), *European Drug Report 2016: Trends and Developments.*

StatLink http://dx.doi.org/10.1787/888933429207

Air pollution increases the risk of various health problems (including of course respiratory diseases, but also lung cancer and cardiovascular diseases), with children and older people being particularly vulnerable. According to WHO estimates, nearly 500 000 deaths in Europe in 2012 were linked to exposure to outdoor air pollution (WHO, 2014).

Air pollution concentrations are greater in urban areas in all countries. Of all air pollutants, fine particulate matter (PM) has the greatest effect on human health. Most fine particulate matter comes from fuel combustion, including from vehicles, power plants, industries and households.

Despite a reduction in the emission of PM_{10} over the past decade, a considerable portion of the urban population in EU countries continued to live in 2013 in areas where PM_{10} levels exceeded the EU and WHO threshold. The emission of PM_{10} across all EU countries decreased by 27% between 2003 and 2013, and the exposure of the urban population to PM_{10} also fell in most countries (Figure 4.30). Population exposure to PM_{10} remains high in Bulgaria, as well as in the FYR of Macedonia and Turkey.

In the European Union as a whole, nearly one fifth of the population lived in areas where the EU air quality limits for particulate matter was exceeded in 2013 (Figure 4.31). This share varied from 17 to 41% between 2001 and 2013, peaking in 2003, 2006 and 2011, and decreasing ever since. The proportion of the EU urban population exposed to PM_{10} levels exceeding the WHO air quality guidelines, which are stricter than the threshold set by EU legislation, was much higher, reaching 60.9% of the total urban population in 2013 (European Environment Agency, 2015). Following the WHO air quality guidelines would significantly improve health and reduce mortality. In France, exposure to $PM_{2.5}$ pollution causes 48 000 premature deaths per year, which represents 9% of the total mortality. If the WHO air quality guidelines were met for $PM_{2.5}$ levels all over France, 17 700 deaths could be avoided each year, leading to a 4% decrease in mortality (Pascal et al., 2016).

A large percentage of people living in urban areas in EU countries are also exposed to other air pollutants for which concentrations exceed the thresholds set in the EU legislation and the WHO air quality guidelines. In the period from 2001 to 2013, between 14 and 58% of the urban population in EU countries was exposed to ozone (O_3) concentrations exceeding the EU target value set for the protection of human health. This proportion peaked in 2003 and 2006, but has declined since then and now appears stable. Similarly, in the period 2001-13, between 8% and 27% of the urban population in EU countries was exposed to nitrogen dioxide (NO_2) concentrations above the EU limit for the protection of human health. This proportion also peaked in 2003 and has come down since then.

While there have been improvements in reducing emissions of a number of air pollutants in the past decade, further efforts are needed to reduce air pollution, notably by reducing emissions from transports due to motor vehicles, but also from power stations which produce more pollution than any other industry. Better dispersion of pollutants emitted by tall chimneys can promote better dilution in the air and lower local concentrations of pollutants. However, this leads to wider dispersion of pollution and trans-boundary air pollution. Stricter operating practices and the use of modern techniques have resulted in a sizeable reduction in the amount of pollutants emitted from power stations.

Definition and comparability

The indicators presented here refer to population exposure to particulate matter 10 (PM_{10}) and other pollutants in cities with more than 100 000 population. The estimates represent the average annual exposure level of the average urban resident.

PM_{10} refers to suspended particulates less than 10 microns in diameter that are capable of penetrating deep into the respiratory tract and causing significant health damage. Fine particulates smaller than 2.5 microns in diameter ($PM_{2.5}$) cause even more severe health effects because they penetrate deeper into the respiratory tract and are potentially more toxic as they may include heavy metals and toxic organic substances (OECD, 2013). $PM_{2.5}$ is newly available in ECHI indicators collected by Eurostat.

Ozone is a secondary pollutant (meaning that it is not emitted directly by any emission source), formed in the lower part of the atmosphere from complex chemical reactions following emissions of precursor gases such as nitrogen dioxides (which are emitted during fuel combustion).

Data on exposure to air pollution are available for most but not all European countries. Further efforts are needed to monitor or estimate overall population exposure.

References

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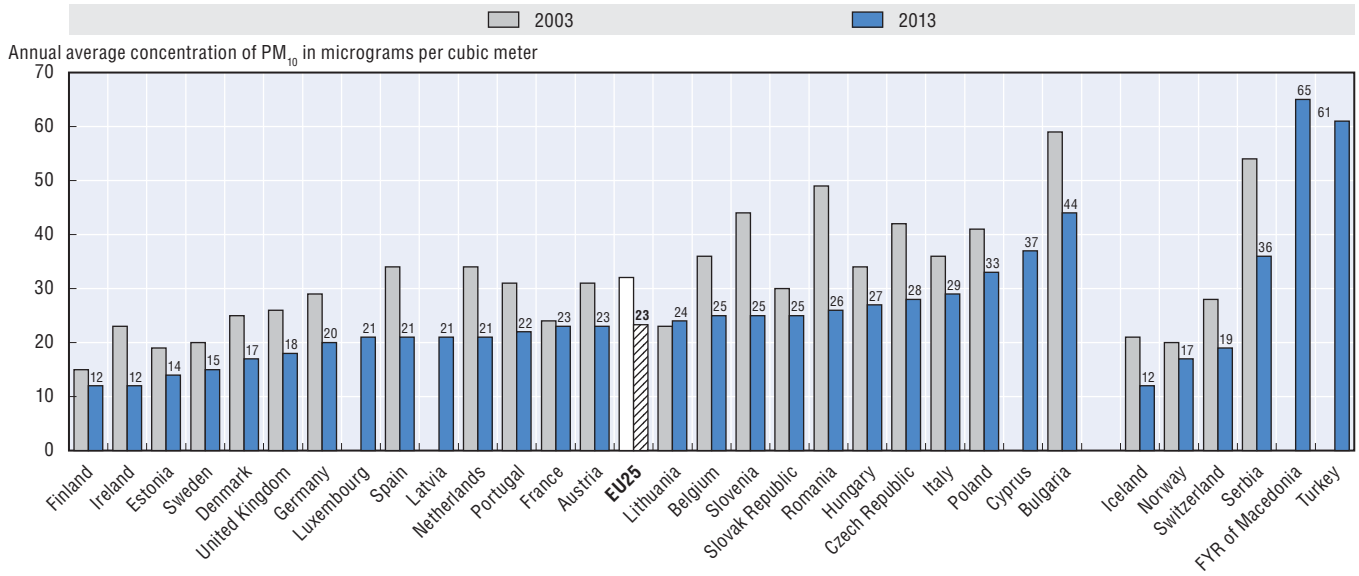
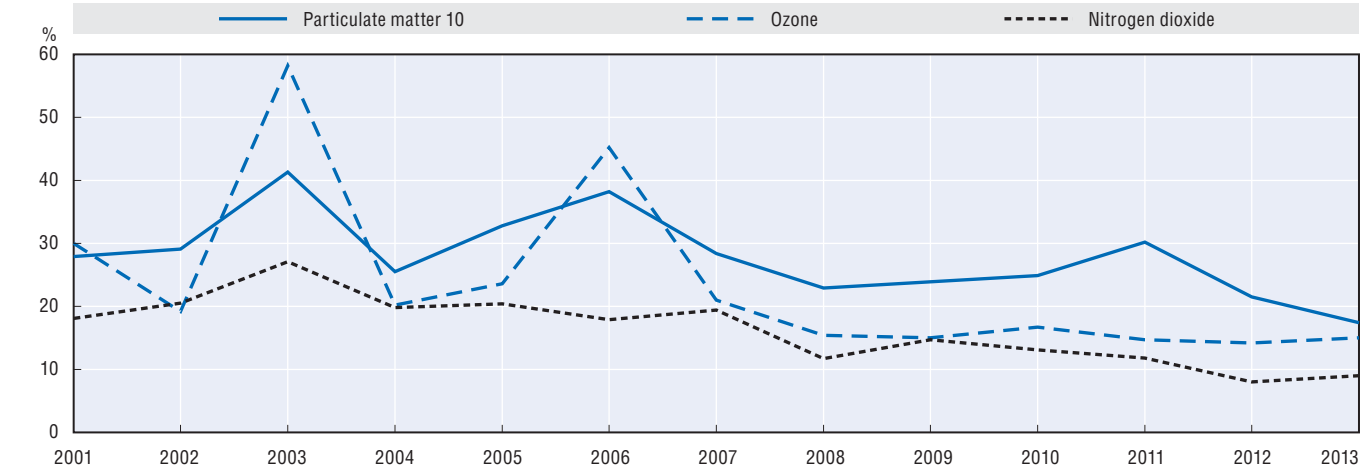
4.30. Urban population exposure to air pollution by particulate matter (PM_{10}), 2003 and 2013 (or nearest years)



Source: European Environment Agency (2015), *Air Quality in Europe – 2015 Report*.

StatLink http://dx.doi.org/10.1787/888933429213

4.31. Percentage of the EU urban population exposed to air pollution exceeding EU air quality standards, 2001-13



Source: European Environment Agency (2015), *Air Quality in Europe – 2015 Report*.

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Chapter 5

Health expenditure

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How much a country spends on health and the rate at which that spending grows can be the result of a wide array of social and economic factors, as well as the financing and organisational structures of a country's health system. At the same time, there is a strong relationship between the overall income level of a country and how much the population of that country will spend on health.

As such, there are large variations in the level and growth of health spending across Europe and it is not surprising that high-income countries such as Luxembourg, Norway and Switzerland are the European countries that spent the most on health in 2015 (Figure 5.1). With spending in excess of EUR 6 000 per person – adjusted for differences in countries' purchasing powers – Luxembourg was by far the biggest spender in the European Union. Among the other EU member states, Germany (EUR 4 003), the Netherlands (EUR 3 983), Sweden (EUR 3 937) and Ireland (EUR 3 922) were the highest spenders. At the other end of the scale, Romania (EUR 816) and Latvia (EUR 1 030) were the lowest spending countries among EU members. Considering the EU as a whole, per capita health spending was EUR 2 781 in 2015. Among the other European states outside the European Union, Switzerland (EUR 5 354) and Norway (EUR 4 681) rank among the highest spenders overall while health spending per capita in Montenegro, the Former Yugoslav Republic of Macedonia and Turkey was on a par with Romania and Albania the lowest overall.

Figure 5.1 also shows the breakdown of per capita spending on health into public (including compulsory insurance) and private sources (see also indicator "Financing of health care"). Overall, more than three-quarters of health spending come from public sources with the ranking by public spending similar to overall health spending. Of all the EU member states, only in Cyprus does private spending on health account for more than 50% of the total, although Latvia and Bulgaria also have relatively high levels of private spending. By contrast, Germany, Luxembourg, Sweden and Denmark all have private spending at around 15% of overall spending on health.

Following the economic crisis in 2008, health spending slowed significantly across Europe after years of continuous growth. In the European Union as a whole, health spending increased by only 0.7% each year in real terms (adjusted for inflation) between 2009 and 2015, compared with an annual growth rate of 3.1% between 2005 and 2009. In eight EU countries, expenditure on health retracted since 2009 whilst it significantly slowed in almost all others (Figure 5.2). A similar pattern can be seen in the other European countries, although Switzerland has seen higher health spending growth in the years since 2009 compared with the previous period.

On a country-by-country basis, Greece experienced one of the biggest reversals of health spending growth. Over the period 2005 to 2009, per capita health spending in Greece averaged a 4.5% annual growth rate. With fiscal consolidation in place in the context of reining in public budgets, Greek health spending has seen an average annual contraction of 6.6% since 2009. Portugal, Croatia, Cyprus and Italy have also experienced significant negative growth in per capita health spending since the onset of the crisis, particularly in the years between 2010 and 2013. In the last couple of years, health spending across Europe has generally seen a slow but steady increase, albeit at much lower rates compared to the pre-crisis period and more in line with economic growth.

Definition and comparability

Expenditure on health measures the final consumption of health goods and services, as defined in the System of Health Accounts manual (OECD, Eurostat and WHO, 2011). This refers to current spending by both public and private sources on medical services and goods, public health and prevention programmes, and administration.

The vast majority of countries now produce health spending data according to the boundaries and definitions proposed in the System of Health Accounts (SHA) manual. The comparability of the functional breakdown of health expenditure data has improved over recent years but in some areas further progress needs to be made. For example, different practices regarding the inclusion of long-term care in health or social expenditure can be one of the factors affecting data comparability.

Data on health expenditure for 2015 is considered preliminary, either estimated by national authorities or projected by the OECD Secretariat, and is therefore subject to revision.

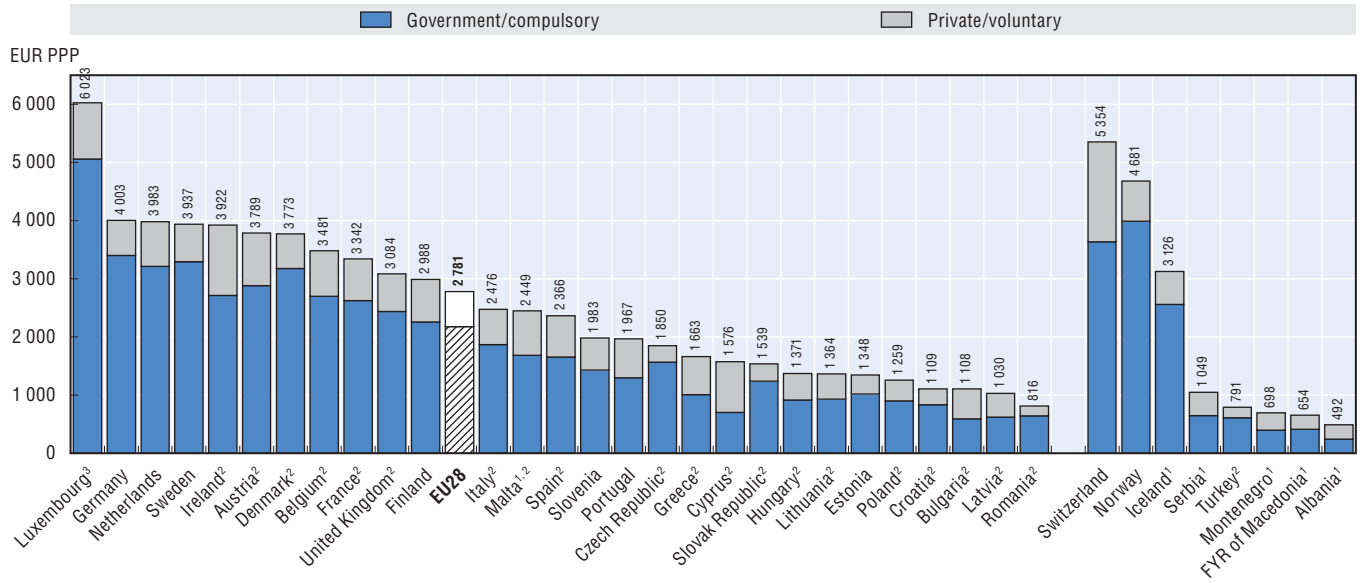
Countries' health expenditures are converted to a common currency (euro) and are adjusted to take account of the different purchasing power of the national currencies, in order to compare spending levels. Economy-wide (GDP) PPPs are used to compare relative expenditure on health in relation to the rest of the economy.

For the calculation of growth rates in real terms, economy-wide GDP deflators are used. In some countries (e.g. France and Norway) health-specific deflators exist, based on national methodologies, but these are not used due to limited comparability.

Reference

OECD, Eurostat and WHO (2011), *System of Health Accounts: 2011 Edition*, OECD Publishing, Paris, *http://dx.doi.org/10.1787/9789264116016-en*.

5.1. Health expenditure per capita, 2015 (or nearest year)



1. Includes investments.
2. OECD estimate.
3. For Luxembourg, the population data refer only to the total insured resident population, which is somewhat lower than the total population.

Source: OECD Health Statistics 2016; *Eurostat Database*; WHO, *Global Health Expenditure Database*.

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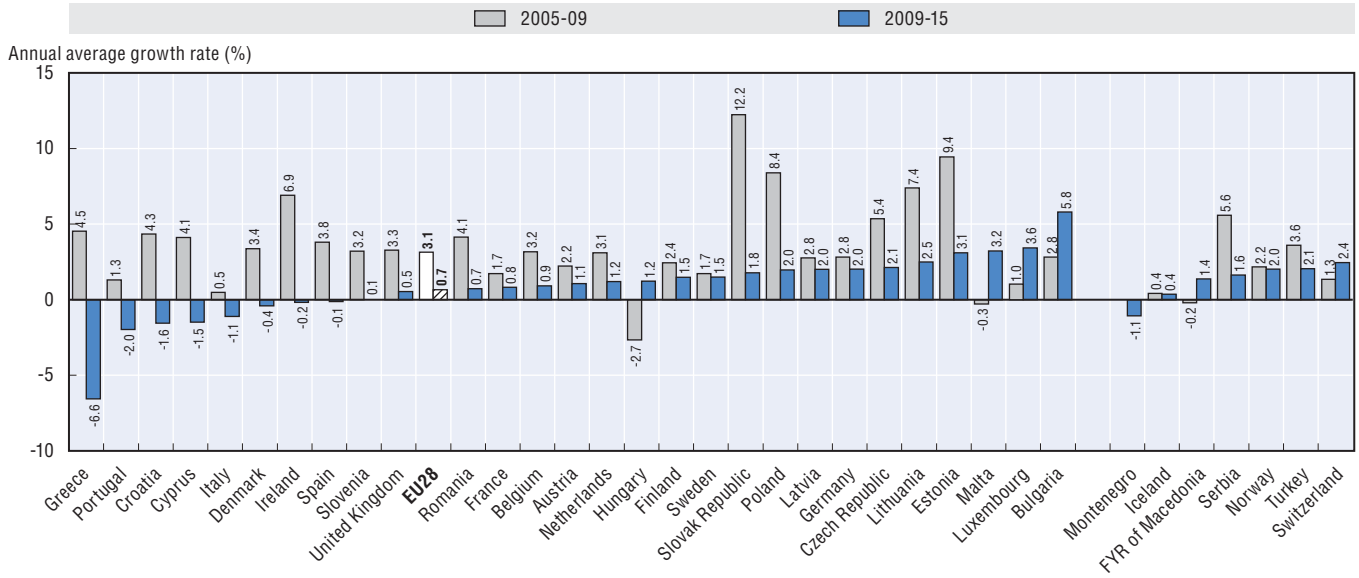
5.2. Annual average growth rate in per capita health expenditure, real terms, 2005 to 2015 (or nearest year)



Source: OECD Health Statistics 2016; *Eurostat Database*; WHO, *Global Health Expenditure Database*.

StatLink http://dx.doi.org/10.1787/888933429242

The amount a country spends on health care in relation to all the other goods and services in the economy depends on growth in health spending itself as well as in the economy as a whole.

In 2015, the EU devoted a total of 9.9% of its GDP to health care (Figure 5.3). This figure has stayed more or less unchanged from the level registered in both 2013 and 2014. Among individual EU member states, Germany, Sweden and France each spent around 11% of GDP on health care, closely followed by the Netherlands and Denmark (at 10.8% and 10.6%, respectively). However, this share remains well below that of the United States where health expenditure accounted for 16.9% of GDP in 2015, but is higher than the overall OECD average which stood at 9.0%. Among EU countries, the share of health spending in GDP was lowest in Romania, Latvia, Estonia and Poland, ranging from 5.0% to 6.3%. Looking beyond the EU countries, Switzerland allocated the biggest share in Europe, spending 11.5% of its GDP on health, while at the other end Albania and Turkey were on a par with Romania and Latvia, allocating 5.2% and 5.9% of GDP, respectively.

For a more complete understanding of the differences in health spending, the health spending to GDP ratio should be considered together with health spending per capita. While higher income countries tend to devote more of that income to health care, some countries having relatively high health expenditure per capita might have a relatively low health spending to GDP ratio, and vice versa. For example, Slovenia and Bulgaria both spent close to 8.5% of their GDP on health in 2015; however, per capita spending (adjusted to EUR PPP) was nearly 80% higher in Slovenia (see Figure 5.1).

As overall economic conditions rapidly deteriorated from 2008 onwards in the light of the economic crisis, health spending was initially maintained or continued to grow in many countries. As a result, in 2009 the health spending to GDP ratio subsequently jumped to reach a total of 9.7% in the European Union – up sharply from 8.9% in 2008. This was followed in 2010 and 2011 by a range of measures in many countries to rein in government health spending as part of broader efforts to reduce the burgeoning budgetary deficits (Morgan and Astolfi, 2014). The reductions in (public) spending on health resulted in the share of GDP first falling before slowly rising again in recent years, as health expenditure growth has become more aligned to economic growth in many European countries.

As shown above, the changes in the ratio of health spending to GDP are the result of the combined effect of growth in both GDP and health expenditure. Even taking into account the economic crisis, the annual average growth in health expenditure per capita (in real terms) in the European Union between 2005 and 2015 has been greater than the growth rate in GDP per capita. Therefore, with the exception of Croatia, Greece, Hungary, Latvia, Luxembourg, Romania and Portugal, the share of GDP allocated to health has increased in all other EU countries.

Considering individual countries, both France and Germany saw their health spending to GDP ratio stabilise after 2009 as health spending growth has become more closely aligned with economic growth (Figure 5.4). Other European countries, such as Greece and Latvia saw health spending growth decline much more than GDP, resulting in a rapidly decreasing health spending to GDP ratio. This was after marked increases prior to 2009, as health spending significantly outpaced economic growth (Figure 5.5). Estonia also experienced a drop in the health spending to GDP ratio in 2010 and 2011 but health spending has since outpaced growth in the overall economy since bringing the share of health spending back close to the level of 2009.

Definition and comparability

See indicators "Health expenditure per capita" and "Health expenditure by function" for the definition of health expenditure and its components. In particular, the health part of long-term care is included under health expenditure.

Gross domestic product (GDP) = final consumption + gross capital formation + net exports. Final consumption of households includes goods and services used by households or the community to satisfy their individual needs. It includes final consumption expenditure of households, general government and non-profit institutions serving households.

Data on health expenditure for 2015 is considered preliminary, either estimated by national authorities or projected by the OECD Secretariat, and is therefore subject to revision.

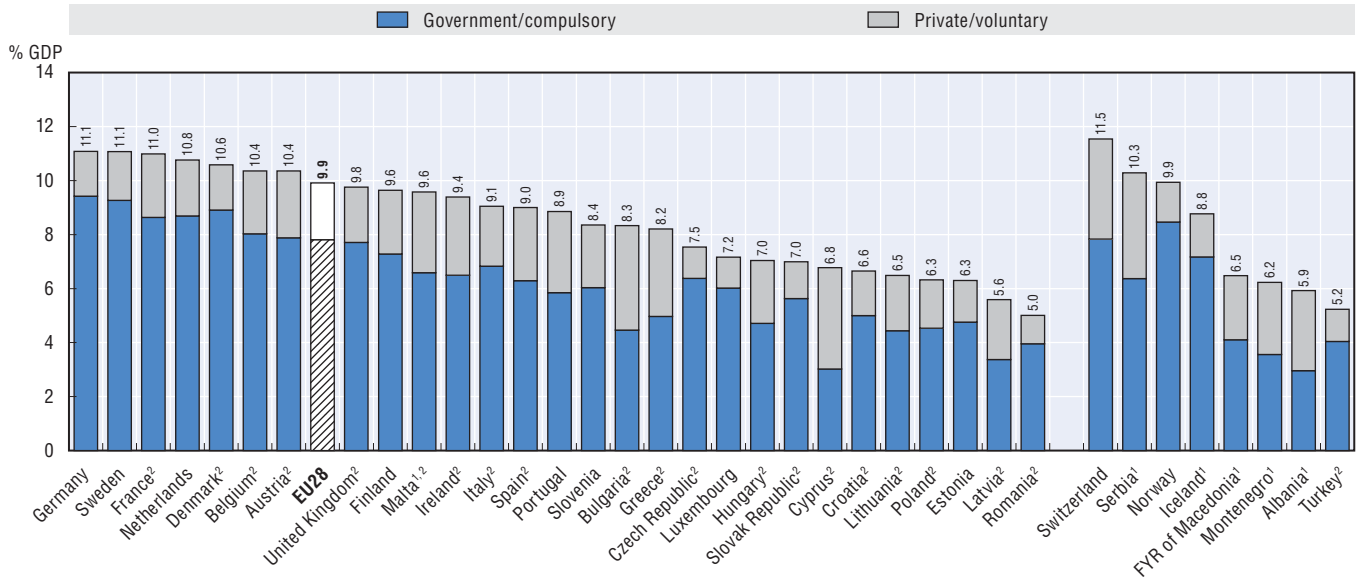
The GDP figures used to calculate the indicator health expenditure to GDP are based on official GDP data available as of mid-June 2016. Any subsequent revisions to GDP data are not reflected in the indicator.

In countries, such as Ireland and Luxembourg, where a significant proportion of GDP refers to profits exported and not available for national consumption, gross national income (GNI) may be a more meaningful measure than GDP.

Reference

Morgan, D. and R. Astolfi (2014), "Health Spending Continues to Stagnate in Many OECD Countries", *OECD Health Working Papers*, No. 68, OECD Publishing, Paris, *http://dx.doi.org/10.1787/5jz5sq5qnwf5-en*.

5.3. Health expenditure as a share of GDP, 2015 (or nearest year)

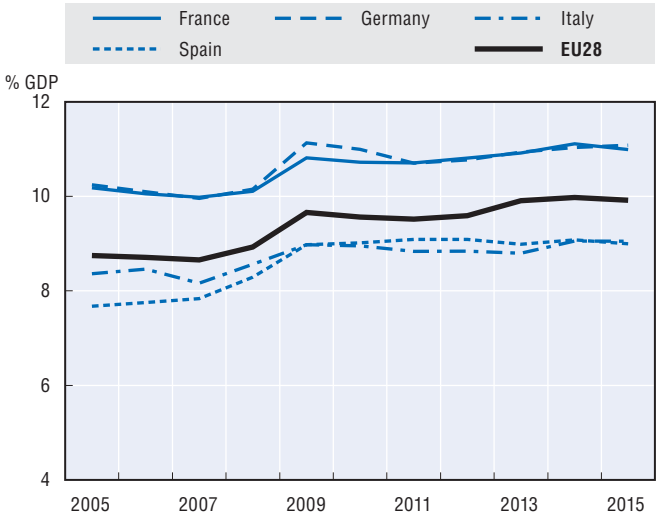


1. Includes investments.
2. OECD estimate.

Source: OECD Health Statistics 2016; Eurostat Database; WHO, Global Health Expenditure Database.

StatLink http://dx.doi.org/10.1787/888933429258

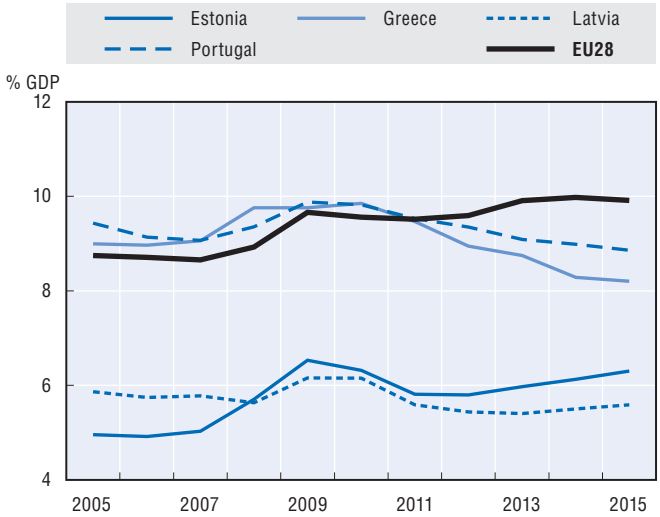
5.4. Health expenditure as a share of GDP, selected European countries, 2005-15



Source: OECD Health Statistics 2016; Eurostat Database.

StatLink http://dx.doi.org/10.1787/888933429269

5.5. Health expenditure as a share of GDP, selected European countries, 2005-15



Source: OECD Health Statistics 2016; Eurostat Database.

StatLink http://dx.doi.org/10.1787/888933429274

Spending on inpatient care and outpatient care combined covers the major part of health expenditure across EU member states – almost two-thirds of current health expenditure in the European Union in 2014 (Figure 5.6). A further 19% of overall EU health spending was allocated to medical goods (mainly pharmaceuticals), while 15% went towards long-term care and the remaining 7% to collective services, such as public health and prevention services as well as administration.

Greece stands out as the European country with the highest share of spending on inpatient care (including day care in hospitals): it accounted for 41% of total health spending in 2014, up from 36% in 2009, as a consequence of larger decreases in spending for outpatient care and pharmaceuticals. In Romania, Bulgaria, Poland, Austria, France and Italy, the hospital sector also plays an important role with inpatient spending comprising more than a third of total costs. On the other hand, Portugal, Cyprus and Estonia have a high share of outpatient spending, representing more than 40% of health expenditure in those countries.

The other major category of health spending is medical goods. Differences in the consumption pattern of pharmaceuticals and relative prices are some of the main factors explaining the variations between countries. In Bulgaria and Romania, medical goods represent the largest spending category at 43% and 37% of all health expenditure, respectively. They also account for 30% or more in the Slovak Republic, Hungary, Croatia, Lithuania, Greece and Latvia. In Denmark and Norway, on the other hand, spending on medical goods represents only 10-11% of total health spending.

There are also differences between countries in their expenditure on long-term care. Countries such as Norway, the Netherlands and Sweden, which have established formal arrangements for the elderly and the dependent population, allocate more than a quarter of all health spending to long-term care. In many southern and central European countries with a more informal long-term care sector, the expenditure on formal long-term care services accounts for a much smaller share of total spending.

The slowdown in health spending experienced in many European countries following the economic crisis has affected all spending categories, but to varying degrees (Figure 5.7). Expenditure for pharmaceuticals in the European Union has been cut annually by 1.1% after recording positive annual increases of 1.4% in the pre-crisis years – still down on previously strong growth in pharmaceutical spending in the 1990s and early 2000s (see also indicator "Pharmaceutical expenditure"). Despite initially ring-fencing and protecting public health budgets, prevention spending showed negative growth rates in around half of EU countries since 2009. Overall, spending on preventive care contracted by 1.9% on an annual basis, after recording very high growth rates during the period 2005-09 (5.1%). Part of the reversal in spending growth can be explained by the H1N1 influenza epidemic, which led to significant one-off expenditure for vaccination in many countries around 2009.

While spending on long-term, outpatient and inpatient care have continued to grow, the rates have also significantly reduced since 2009. Expenditure growth for outpatient care was reduced by two-thirds overall (3.8% versus 1.2%), but still has remained positive in the majority of EU countries. Some governments decided to protect expenditure for primary care and front-line services whilst looking for cuts elsewhere in the health system. The annual average growth rate for hospital care dropped to a quarter of its previous growth rate, down from 3.3%, and was negative between 2009 and 2014 in around one-third of EU countries. Reducing wages in public hospitals, postponing staff replacement and delaying investment in hospital infrastructure were among the most frequent measures taken in EU countries to balance health budgets.

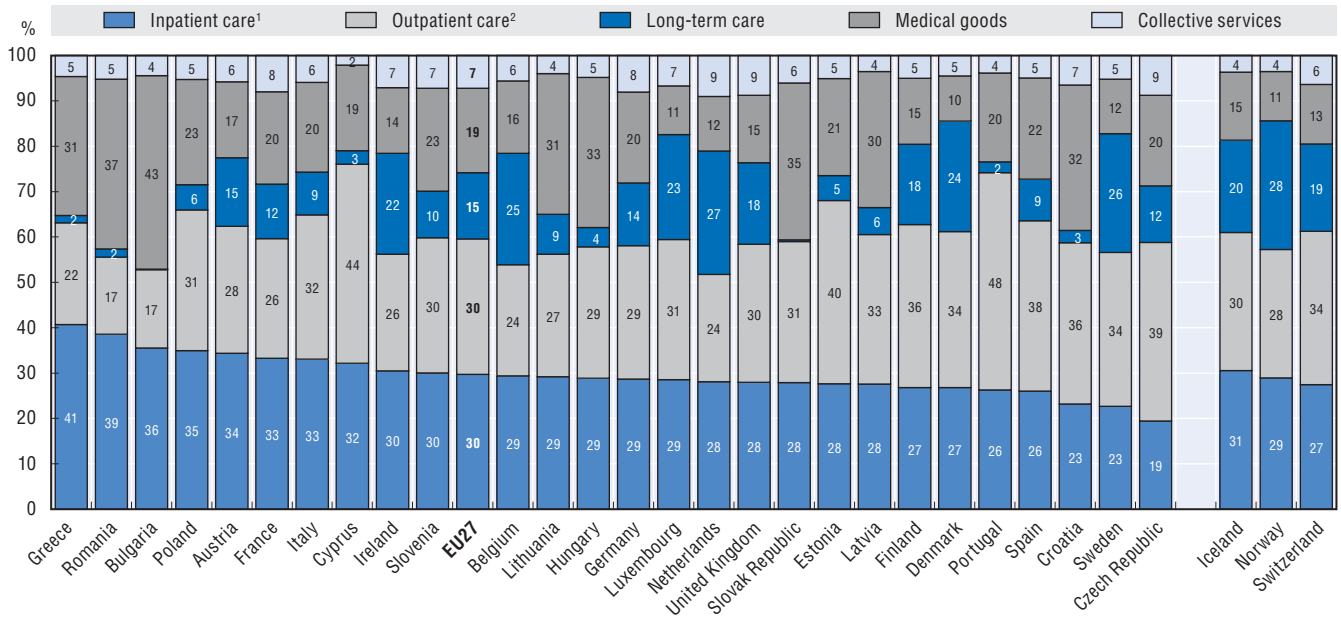
Definition and comparability

The *System of Health Accounts* (OECD, Eurostat, WHO, 2011) defines the boundaries of the health care system. Current health expenditure comprises personal health care (curative care, rehabilitative care, long-term care, ancillary services and medical goods) and collective services (prevention and public health services as well as health administration). Curative, rehabilitative and long-term care can also be classified by mode of production (inpatient, day care, outpatient and home care). Concerning long-term care, only the health aspect is reported as health expenditure, although it is difficult in certain countries to separate out clearly the health and social aspects of long-term care. Some countries with comprehensive long-term care packages focusing on social care might be ranked surprisingly low based on SHA data because of the exclusion of their social care. Thus, estimations of long-term care expenditure are one of the main factors limiting comparability across countries.

Reference

OECD, Eurostat and WHO (2011), *A System of Health Accounts: 2011 Edition*, OECD Publishing, Paris, *http://dx.doi.org/10.1787/9789264116016-en*.

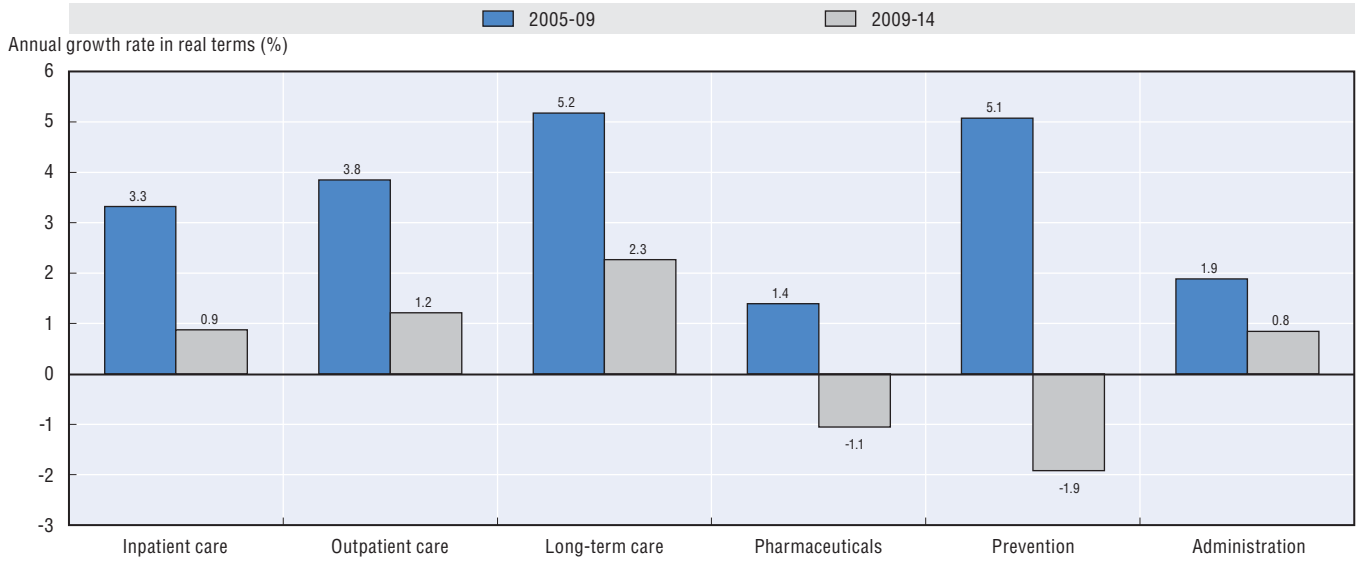
5.6. Health expenditure by function of health care, 2014



Note: Countries are ranked by inpatient care as a share of health expenditure.
1. Refers to curative-rehabilitative care in inpatient and day care settings.
2. Includes home-care and ancillary services.
Source: *OECD Health Statistics 2016*; *Eurostat Database*.

StatLink http://dx.doi.org/10.1787/888933429289

5.7. Growth of health spending for selected functions per capita, EU average, 2005-14



Source: *OECD Health Statistics 2016*; *Eurostat Database*.

StatLink http://dx.doi.org/10.1787/888933429295

Pharmaceuticals play a vital role in the health system and policy makers must balance the access of patients to new effective medicines, while providing the right incentives to manufacturers to go on developing new generations of drugs. At the same time, health care budgets are limited. After inpatient and outpatient care, pharmaceuticals represent the third largest expenditure item of health care spending and accounted for around a sixth of health expenditure in the European Union in 2014, not taking into account spending on pharmaceuticals in hospitals.

In 2014, the total pharmaceutical bill across the European Union was more than EUR 200 billion. However, there are wide variations in pharmaceutical spending per capita across countries, reflecting differences in volume, structure of consumption and pharmaceutical prices (Figure 5.8). With more than EUR 500 per capita – adjusted for differences in countries' purchasing powers – Germany (EUR 551) and Ireland (EUR 523) spent far more on pharmaceuticals than any other European country and at least 30% more than the average EU citizen (EUR 402). At the other end of the scale, Denmark, Estonia, Poland and Latvia had relatively low spending levels, below or around EUR 250 on a per capita basis.

Public protection against the costs of pharmaceuticals – provided either by residence-based entitlement schemes or compulsory private insurance – is not as developed as for other health services, such as inpatient and outpatient care (Figure 5.9). Across EU countries, public schemes covered a much higher proportion of the costs of health services (83%) compared with pharmaceuticals (64%) in 2014. Public coverage for pharmaceuticals is highest in Germany, Luxembourg and the Netherlands where more than three-quarters of total pharmaceutical costs are covered by a public scheme. Private sources have to cover more than half of the total pharmaceutical bill in eight EU countries, with public coverage the lowest in Cyprus (20%) and Bulgaria (23%).

The growth in spending on pharmaceuticals has remained below total health spending growth over the last decade, with average annual growth rates in the 2009-14 period much lower compared to pre-crisis years (Figure 5.10). Between 2009 and 2014, expenditure on pharmaceuticals dropped by 1.1% in real terms on average in the European Union – mainly triggered by cuts in public spending – while it increased by 1.4% each year in the 2005-09 period. The reduction was particularly steep in Greece (-8.5%), Portugal (-7.5%) and Denmark (-5.3%). Greece, Ireland and the Slovak Republic have also seen significant reversals in growth of pharmaceutical spending following the crisis compared to the pre-crisis period. Many governments made cutting pharmaceutical expenditure a priority to rein in public spending during the economic and financial crisis. The policy measures taken include reforms that have aimed to shift some of the burden of pharmaceutical spending away from the public purse to private payers. These measures included the de-listing of products (i.e. excluding them from reimbursement) and the introduction or increase of user charges for retail prescription drugs (Belloni et al., 2016). In recent years, measures of this kind have been taken by many EU countries. Other measures include general price reductions by cutting manufacturer prices, pharmacy and wholesale margins as well as promoting the use of less costly generics.

In Estonia, Latvia, Lithuania and Romania, on the other hand, average growth rates in the 2009-14 period are around or above pre-crisis level. A number of countries, including Austria, Germany and France, have seen increases of pharmaceutical spending in 2014 again due to steep growth in spending for certain high-cost drugs such as hepatitis C drugs or oncological drugs.

Definition and comparability

Pharmaceutical expenditure covers spending on prescription medicines and self-medication, often referred to as over-the-counter products. In some countries, other medical non-durable goods are also included. It also includes pharmacists' remuneration when the latter is separate from the price of medicines. Final expenditure on pharmaceuticals includes wholesale and retail margins and value-added tax. Total pharmaceutical spending refers in most countries to "net" spending, i.e. adjusted for possible rebates payable by manufacturers, wholesalers or pharmacies. Pharmaceuticals consumed in hospitals and other health care settings as part of an inpatient or day case treatment are excluded (data available suggests that their inclusion would add another 10-20% to pharmaceutical spending approximately). Comparability issues exist with regards to the administration and dispensing of pharmaceuticals for outpatients in hospitals. In some countries the costs are included under curative care whereas in others under pharmaceuticals.

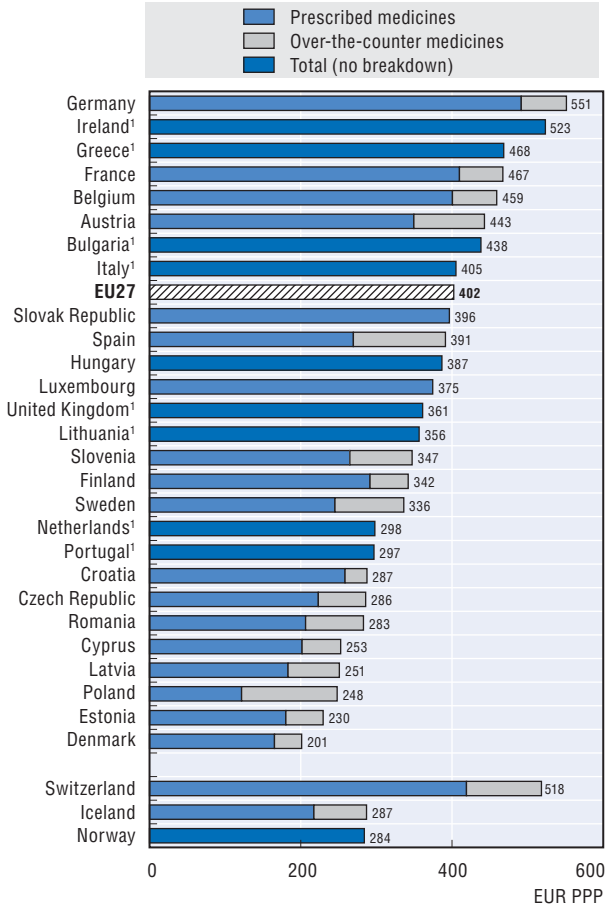
Health services refer to inpatient and outpatient care (including day cases), long-term health care and auxiliary services.

For the calculation of pharmaceutical spending growth rates in real terms, economy-wide GDP deflators are used.

Reference

Belloni, A., D. Morgan and V. Paris (2016), "Pharmaceutical Expenditure and Policies: Past Trends and Future Challenges", *OECD Health Working Papers*, No. 87, OECD Publishing, Paris, *http://dx.doi.org/10.1787/5jm0q1f4cdq7-en*.

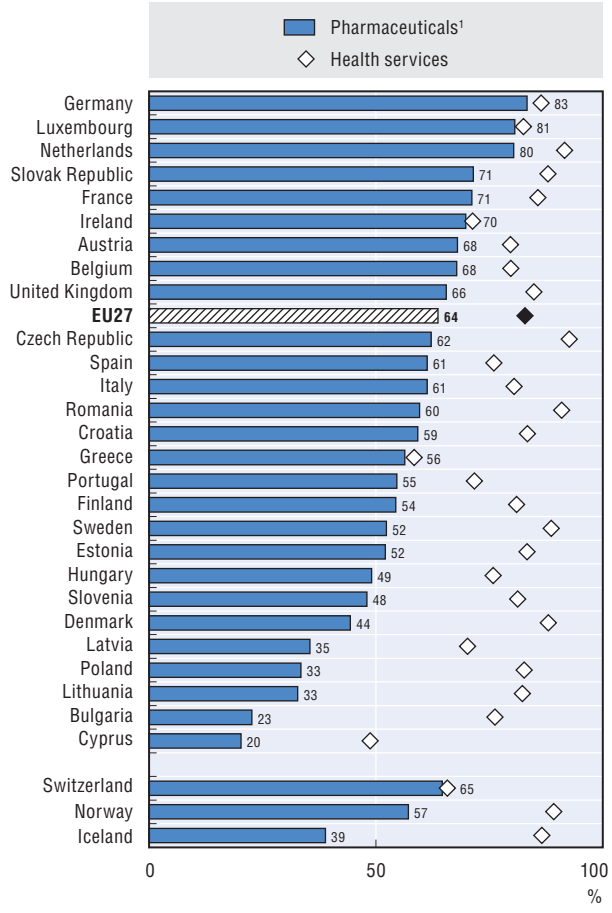
5.8. Expenditure on pharmaceuticals per capita, 2014 (or nearest year)



1. Includes medical non-durables.
Source: OECD Health Statistics 2016.

StatLink http://dx.doi.org/10.1787/888933429302

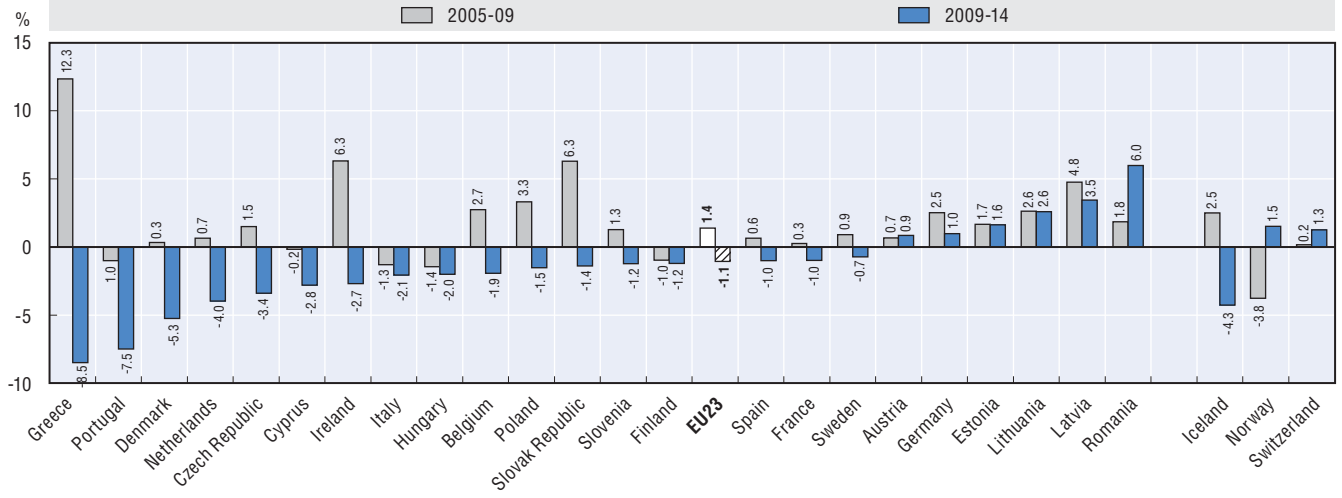
5.9. Public share of spending on pharmaceuticals compared with health services, 2014 (or nearest year)



1. Includes medical non-durables.
Source: OECD Health Statistics 2016.

StatLink http://dx.doi.org/10.1787/888933429311

5.10. Average annual growth in pharmaceutical expenditure[1] per capita, in real terms, 2005-09 and 2009-14 (or nearest year)



1. Includes medical non-durables.
Source: OECD Health Statistics 2016.

StatLink http://dx.doi.org/10.1787/888933429320

Across all European countries, health care is financed through a mix of financing schemes. In some countries, health spending is generally confined to spending by the government using general revenues. In others, compulsory health insurance finances the bulk of health expenditure. Apart from government and compulsory insurance spending, health care financing consists mainly of payments by households (either as standalone payments or as part of co-payment arrangements) as well as various forms of voluntary health insurance intended to replace, complement or supplement publicly financed coverage.

In all but one EU country (Cyprus), government schemes and compulsory health insurance together are the main health care financing arrangements (Figure 5.11). More than three-quarters of all health care spending in the European Union was financed through government schemes and compulsory health insurance in 2014. In Denmark, Sweden and the United Kingdom, the central, regional or local governments finance around 80% or more of all health spending. In Germany, the Slovak Republic, the Netherlands, Luxembourg, France, Croatia and the Czech Republic, compulsory health insurance finances more than 70% of all health expenditure, making it the dominant financing scheme. Only in Cyprus was less than half of all health spending financed by the government or compulsory health insurance with a large proportion of health spending (50%) financed directly by households.

Governments provide a multitude of services for their population from public budgets. Hence, health care is competing with many different sectors such as education, defence and housing. The size of the public funds allocated to health is determined by a number of factors including, among others, the type of health and long-term care system, the relative budget priorities in countries which can change between years and the demographic composition of the population. In the European Union as a whole, 16% of total government expenditure was dedicated to health care (Figure 5.12). There are, however, important variations across EU member states. In Germany and the Netherlands, one euro out of every five spent by the government is allocated to health care. A similar share is also seen in Switzerland (22%). On the other hand, this falls to less than one out of every ten euros spent by governments in Cyprus and Latvia.

After government schemes and compulsory health insurance, the main source of funding tends to be out-of-pocket payments. Private households directly financed 15% of all EU health spending in 2014. This share is above 30% in Cyprus (50%), Bulgaria (46%), Latvia (39%), Greece (35%) and Lithuania (31%), while it was lowest in countries such as France (7%), Luxembourg (11%), the Netherlands (12%) and Germany (13%). Although not the dominant financing scheme, voluntary health insurance also financed a significant proportion of total health spending in Slovenia (15%), France (14%) and Ireland (13%). The nature of the voluntary health insurance, however, varies in these countries.

Developments in overall health spending are largely driven by the trends in government and compulsory insurance spending. Strong pre-crisis growth resulted in government and compulsory insurance expenditure on health in the EU increasing at an annual rate of 3-5% (Figure 5.13). In 2010, growth in government and compulsory insurance spending came to a halt with reductions in many countries. Since then, spending growth has been very slow, often in line with overall economic growth. Out-of-pocket spending, on the other hand, has continued to grow since 2009, albeit at a slower rate, partly as a result of cost-sharing measures introduced in a number of countries. Measures taken include increasing co-payments and raising reimbursement thresholds for pharmaceuticals, reducing benefits for dental treatment, increasing user charges for hospital care, introducing cost sharing for certain activities in primary care, and removing entitlements for public coverage for particular groups of the population.

Definition and comparability

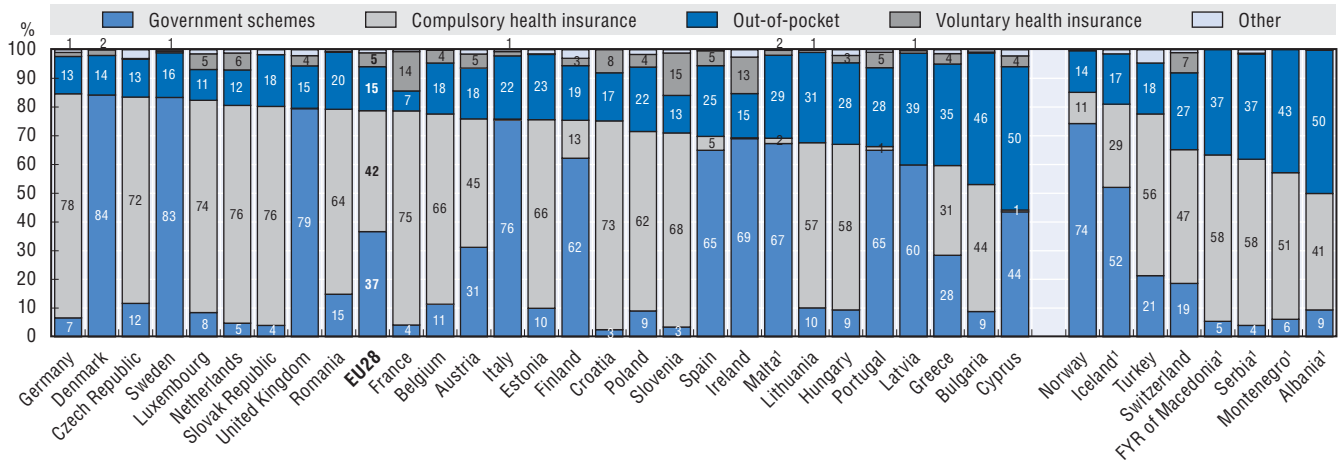
The financing of health care can be analysed from the point of view of *financing schemes* (financing arrangements through which health services are paid for and obtained by people, e.g. social health insurance), *financing agents* (organisations managing the financing schemes, e.g. social insurance agency) and *types of revenues* of financing schemes (e.g. social insurance contributions). Here "financing" is used in the sense of financing schemes as defined in the *System of Health Accounts* (OECD, Eurostat and WHO, 2011) and includes government schemes, compulsory health insurance as well as voluntary health insurance and private funds such as households' out-of-pocket payments, NGOs and private corporations. Out-of-pocket payments are expenditures borne directly by patients. They include cost sharing and, in certain countries, estimations of informal payments to health care providers.

Total government expenditure is used as defined in the System of National Accounts and includes as major components intermediate consumption, compensation of employees, interest, social benefits, social transfers in kind, subsidies, other current expenditure and capital expenditure payable by central, regional and local governments as well as social security funds.

Reference

OECD, Eurostat and WHO (2011), *A System of Health Accounts: 2011 Edition*, OECD Publishing, Paris, *http://dx.doi.org/10.1787/9789264116016-en*.

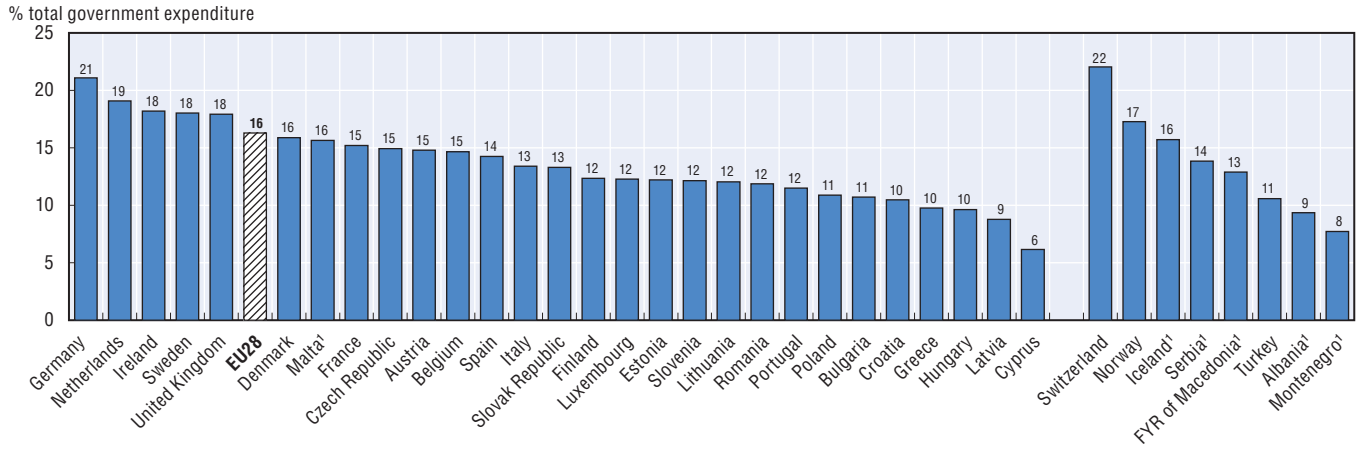
5.11. Current health expenditure by type of financing, 2014



Note: Countries are ranked by government schemes and compulsory health insurance as a share of current health expenditure.
1. Includes investments.
Source: *OECD Health Statistics 2016*; *Eurostat Database*; WHO, *Global Health Expenditure Database*.

StatLink http://dx.doi.org/10.1787/888933429333

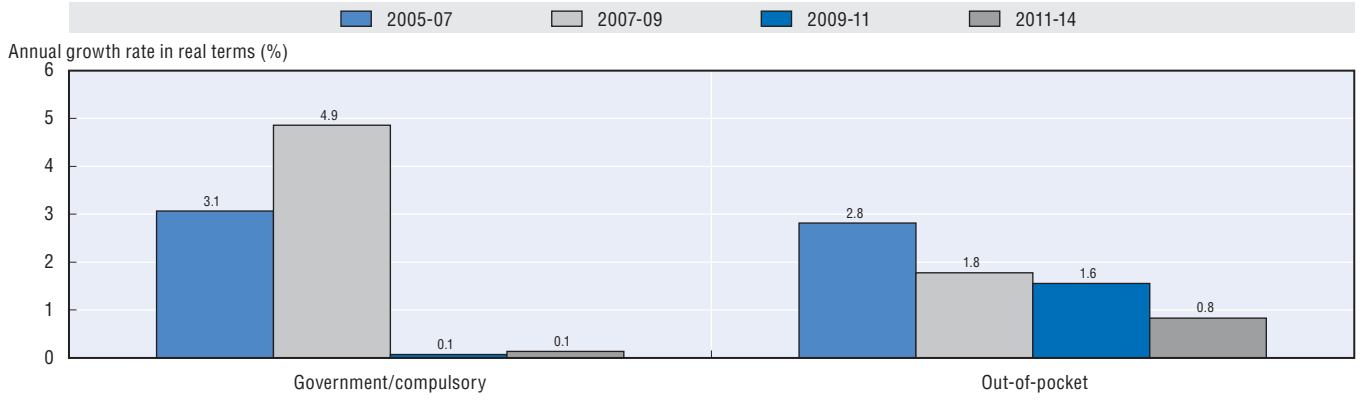
5.12. Government/compulsory insurance spending as share of total government expenditure, 2014



Note: Compulsory health insurance includes expenditure by compulsory private health insurance.
1. Including investments.
Source: *OECD Health Statistics 2016*; WHO, *Global Health Expenditure Database*; IMF, *World Economic Outlook Database*.

StatLink http://dx.doi.org/10.1787/888933429342

5.13. Growth of health spending by financing per capita, EU average, 2005-14



Source: *OECD Health Statistics 2016*; *Eurostat Database*.

StatLink http://dx.doi.org/10.1787/888933429359

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Chapter 6

Effectiveness and quality of care

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Improving public health and the performance of health care systems is a key priority across EU countries. One approach to assess the general effectiveness of public health programmes and health care policies, in achieving their objective of improving health outcomes, is through measuring potentially avoidable mortality. This term refers to deaths that might either be avoided through effective preventive strategies or through the provision of high-quality care. Better prevention and health care policies should be reflected in lower numbers of both preventable deaths and deaths amenable to health care.

The data presented in this section are based on the two lists of preventable and amenable mortality that have been adopted by Eurostat in 2014 (see the box on definition and comparability). The overall number of avoidable deaths across the 28 EU countries, accounting for the fact that some causes of death are deemed to be both preventable and amenable to health care, was 1.2 million in 2013 (Eurostat, 2016). This includes close to 1 million deaths that might have been prevented through more effective public health and prevention policies (preventable deaths) and over 0.6 million deaths that might have been avoided through the provision of timely and effective health care (amenable deaths).

Figure 6.1 shows that there are large variations across countries in rates of preventable mortality, with a three-fold difference between Italy with the lowest rates (143 per 100 000 population) and Lithuania with the highest (431 per 100 000 population). Cyprus and Spain also reported low rates while Latvia and Hungary were the next highest after Lithuania. The average across EU countries was 204 deaths per 100 000 population, nearly two times greater than for amenable mortality.

Figure 6.2 shows the rates of amenable mortality which are lower than those for preventable mortality in all countries, due to the inclusion of a narrower range of causes of death that are deemed to be amenable to treatment once established. Amenable mortality ranged from 73 deaths per 100 000 population in France up to 320 deaths per 100 000 in Latvia. The low rate of amenable mortality in France can be largely attributed to a low rate of death from ischemic heart diseases. These diseases are the leading cause of amenable mortality on the Eurostat list, accounting for nearly one-third of total amenable mortality. Spain and Italy also have relatively low rates of amenable mortality (85 or under per 100 000 population), while Lithuania and Romania have rates more than two times the EU average of 119.

Figure 6.3 shows the relative proportion of preventable and amenable mortality by cause across all EU countries. Ischaemic heart disease made up the highest proportion of both indicators accounting for 32% of amenable mortality and 19% of preventable mortality. Cerebrovascular diseases (16%) and colorectal cancer (12%) were other important causes in amenable mortality, while lung cancer (17%) and accidental injury (12%) were leading causes in preventable mortality.

Because these indicators include a wide range of causes of death, lowering avoidable mortality means implementing wide-reaching strategies including both public health and health care policies. While improvements in policy can be effective in reducing avoidable mortality, their effects are not likely to be seen immediately. This is often the case with preventable mortality as public health interventions may only show results years after their implementation.

Definition and comparability

Avoidable mortality refers to amenable and preventable deaths and these are separately defined (Eurostat, 2016) as follows:

- A death is preventable if, in the light of understanding of the determinants of health at the time of death, all or most deaths from that cause could be avoided by public health interventions in the broadest sense.
- A death is amenable if, in the light of medical knowledge and technology at the time of death, all or most deaths from that cause could be avoided through optimal quality health care.

The two lists of diseases and conditions included in preventable and amenable mortality were constructed by a specific Task Force composed of health experts convened by Eurostat. These two lists specify age limits and reflect current medical knowledge, technology, and understanding of the determinants of health at the time of death and as such may be subject to future changes. While the main age limit is set at 74 years, for certain deaths the age limit is lower due to uncertainties in the treatment of the diseases. For example, if an individual aged below 50 years suffers from diabetes, then timely health care is more likely to prevent diabetes-related mortality than for someone over 50 years old.

A number of causes of death are counted in both preventable and amenable mortality as they are deemed to be potentially prevented through public health measures or medical treatment. These include ischemic heart diseases and other important diseases such as breast cancer, which are considered to be 100% preventable and 100% amenable to medical care. This "double counting" of conditions means that the sum of amenable and preventable deaths is larger than the total number of avoidable deaths.

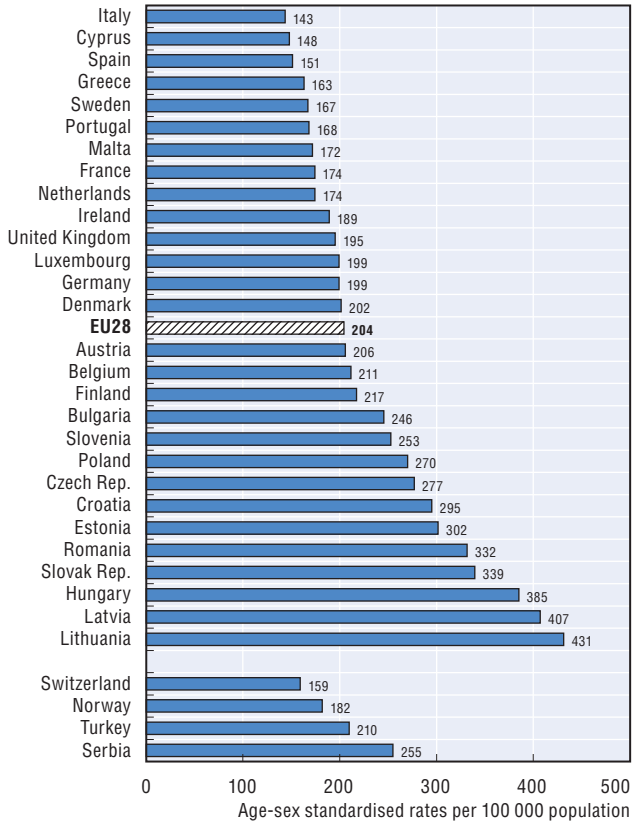
While avoidable mortality indicators are not definite measures of the quality of the health care in a country, they can provide some indication for the quality and performance of health care and the broader public health policies of a country (Eurostat, 2016).

References

Eurostat (2016), *Amenable and Preventable Deaths Statistics*, Eurostat Statistics Explained, May.

OECD (2011), "Mortality Amenable to Health Care in 31 OECD Countries: Estimates and Methodological Issues", *OECD Health Working Papers*, No. 55, OECD Publishing, Paris, *http://dx.doi.org/10.1787/5kgj35f9f8s2-en*.

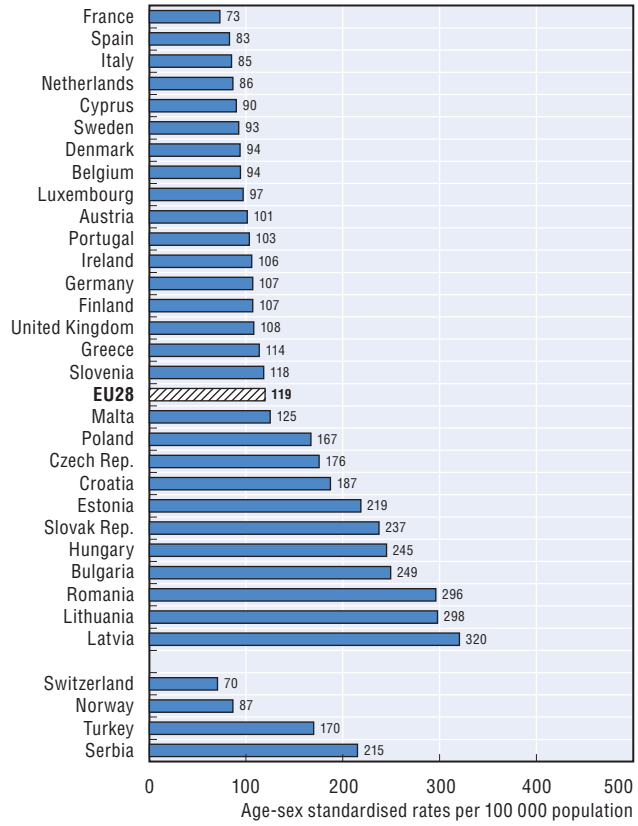
6.1. Preventable mortality rates, 2013



Source: Eurostat Database.

StatLink http://dx.doi.org/10.1787/888933429364

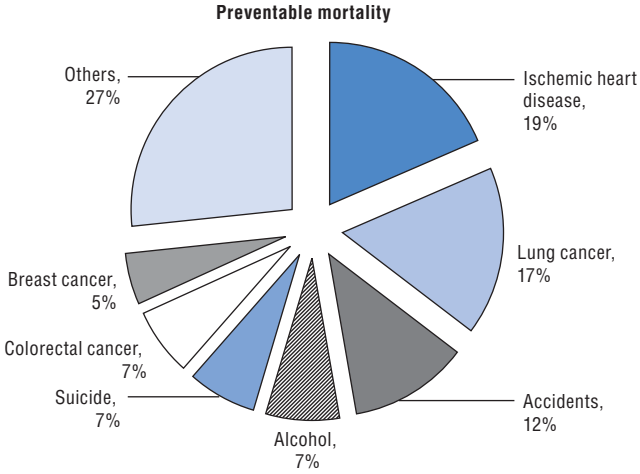
6.2. Amenable mortality rates, 2013

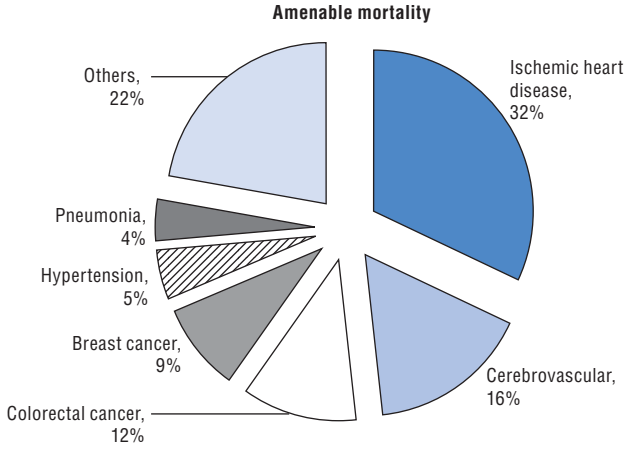


Source: Eurostat Database.

StatLink http://dx.doi.org/10.1787/888933429376

6.3. Leading causes of preventable and amenable mortality in the European Union, 2013





Source: Eurostat Database.

StatLink http://dx.doi.org/10.1787/888933429387

Most health systems have developed a "primary level" of care whose functions include health promotion, disease prevention, managing new health issues, managing chronic conditions, and referring patients to hospital-based services when appropriate (see Chapter 2). This primary level serves as a consistent point of care for patients and provides continuity in health management including chronic disease management. As rates of chronic conditions rise across EU countries, managing these conditions at the primary level becomes increasingly important to improve health outcomes and control costs.

Asthma, chronic obstructive pulmonary disease (COPD) and congestive heart failure (CHF) are three widely prevalent chronic conditions. Both asthma and COPD limit the ability to breathe: asthma symptoms are usually intermittent and reversible with treatment, whilst COPD is a progressive disease that almost exclusively affects current or prior smokers (see indicator on "Asthma and COPD prevalence" in Chapter 3). CHF is a serious medical condition in which the heart is unable to pump enough blood to meet the body's needs. CHF is often caused by hypertension, diabetes or coronary heart disease. Heart failure is estimated to result in about 1.5 million hospitalisations annually in Europe (OECD, 2016).

Common to these three conditions is that effective treatment can be delivered at the primary care level. An effective primary care system should therefore be able to manage disease progression in people living with asthma, COPD or CHF and prevent expensive hospital admissions.

Figure 6.4 shows hospital admission rates for asthma and COPD together. Admission rates for asthma vary 11-fold across EU countries with Italy and Portugal reporting the lowest rates and Latvia and the Slovak Republic reporting rates over twice the EU average. High variation in admissions for COPD was also seen with an almost six-fold variation across EU countries, with Italy and Portugal reporting the lowest rates and Ireland and Hungary the highest rates. High admission rates are related to higher mortality rates for respiratory disease (see indicator on "Mortality from respiratory diseases" in Chapter 3).

Figure 6.5 shows the rates of admission for CHF for selected years. Like asthma and COPD, hospital admission rates for CHF showed high variability across EU member countries with over a five-fold difference between the United Kingdom and Poland in 2013. Along with the United Kingdom, Denmark, and Ireland reported the lowest rates, while Poland, Hungary and the Slovak Republic reported rates at least 40% higher than the EU average.

The majority of countries reported a reduction in admission rates for CHF and the EU average dropped slightly between 2008 and 2013. However, little progress has been seen in countries with high rates. A number of EU countries are taking steps to improve the quality of primary care and the small overall decrease may be representative of an improvement in this sector.

Definition and comparability

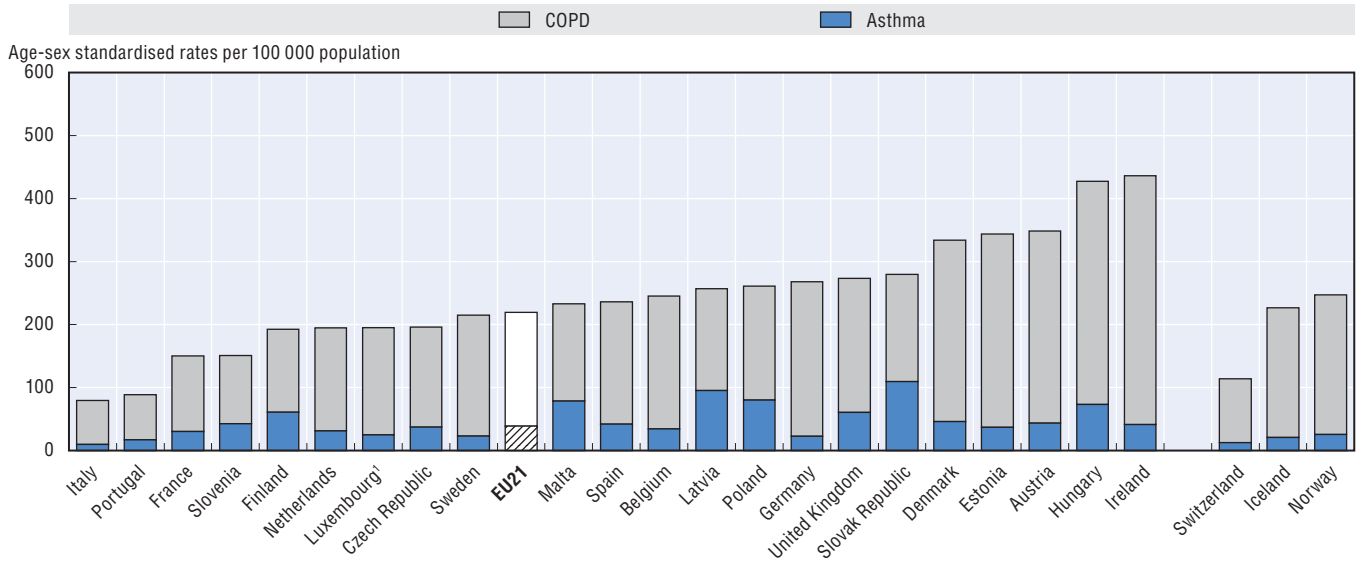
The indicators are defined as the number of hospital admissions with a primary diagnosis of asthma, COPD and CHF among people aged 15 years and over per 100 000 population. Rates were age-sex standardised to the 2010 OECD population aged 15 and over.

Disease prevalence may explain some, but not all, variations in cross-country rates. Differences in coding practices among countries and the definition of an admission may also affect the comparability of data. For example, while the transfer of patients from one hospital to another should be excluded from the calculations to avoid "double counting", not all countries can do this in practice. There is also a risk that countries that do not have the capacity to track patients through the system do not identify all relevant admissions due to changes in diagnosis coding on transfer between hospitals. The impact of excluding admissions where death occurred has been investigated, given these admissions are less likely to be avoidable. The results reveal that while the impact on the indicator rate varies across conditions (e.g. on average, it reduces asthma rates by less than 1% whereas for CHF the reduction is nearly 9%), the changes in the variation of rates across countries for each condition were minimal.

Reference

OECD (2016), *OECD Health Statistics 2016*, OECD Publishing, Paris, *www.oecd.org/health/healthdata*.

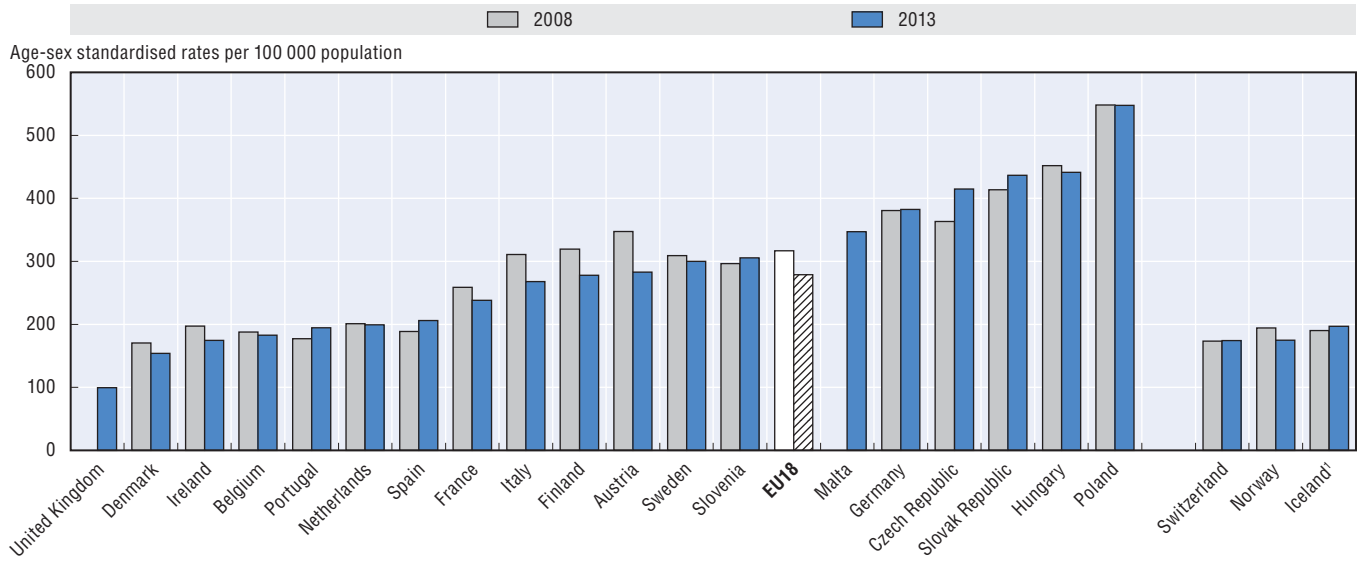
6.4. Asthma and COPD hospital admission in adults, 2013 (or nearest year)



1. Three-year average.
Source: OECD Health Statistics 2016.

StatLink http://dx.doi.org/10.1787/888933429394

6.5. Congestive heart failure hospital admission in adults, 2008 and 2013 (or nearest years)



1. Three-year average.
Source: OECD Health Statistics 2016.

StatLink http://dx.doi.org/10.1787/888933429407

Beyond consumption and expenditure information (see Chapter 2), prescribing can be used as an indicator of health care quality. Antibiotics, for example, should be prescribed only where there is an evidence-based need, to reduce the risk of resistant bacteria. Quinolones and cephalosporins are considered second-line antibiotics in most prescribing guidelines and their use should be restricted in order to ensure their availability, should first-line antibiotics fail. The total volume of antibiotics prescribed and the proportion of second-line antibiotics prescribed have been validated as markers of quality in the primary care setting. In the context of rising antibiotic resistance, the European Commission has requested that the ECDC develop draft EU guidelines on the prudent use of antimicrobials in human medicine.

Figure 6.6 shows volume of all antibiotics prescribed in primary care, with volumes of second-line antibiotics embedded within the total amount. During 2010-14, overall antibiotic consumption in the community within the European Union showed a significant increasing trend but the cross-country variation in antibiotic consumption remained. Total volumes vary more than three-fold across countries with the Netherlands, Estonia and Latvia reporting the lowest volumes and France, Romania and Greece reporting volumes roughly 1.5 times the EU average. Volumes of second-line antibiotics vary more than 18-fold across EU countries. The Nordic countries along with the United Kingdom and the Netherlands report the lowest volumes of these antibiotics, while Cyprus, Greece and Romania report the highest. Variation is likely to be explained, on the supply side, by differences in the regulation, guidelines and incentives that govern primary care prescribers and, on the demand side, by cultural differences in attitudes and expectations regarding antibiotic use and prescription.

Prescribing in primary care is particularly important in the case of chronic disease. In diabetic patients with hypertension, angiotensin-converting enzyme inhibitors (ACE-I) or angiotensin receptor blockers (ARB) are recommended in most national guidelines as first-line medications to reduce blood pressure, since they are most effective at reducing the risk of cardiovascular disease and renal disease. Figures 6.7 and 6.8 show that, with the exception of the Slovak Republic which reported 27% of diabetic patients being given prescriptions for cholesterol-lowering medication and 12% of these patients with a prescription for antihypertensive agents in the last year, EU countries were relatively homogeneous on these indicators.

Benzodiazepines are often prescribed for elderly patients for anxiety and sleep disorders, despite the risk of adverse side effects such as fatigue, dizziness and confusion. A meta-analysis suggests that the use of benzodiazepines in elderly people is associated with more than doubling the risk of developing such adverse effects compared with placebo (Sithamparanathan et al., 2012). Figures 6.9 and 6.10 indicate a wide range of rates of elderly patients who receive long-term prescriptions for benzodiazepines and related drugs (365 defined daily doses in one year), or who receive at least one prescription for a long-acting benzodiazepine or related drugs within the year across several EU countries.

The *Choosing Wisely* campaign was launched in 2012 to reduce the potentially harmful overuse and misuse of medicines, diagnostic tests and procedures. This campaign communicates evidence-based information to clinicians and patients on when medications and procedures may be inappropriate including antibiotic and benzodiazepines (*www.choosingwisely.org*). Since 2012, countries and medical organisations around the globe have participated or become partners.

Definition and comparability

Defined daily dose (DDD) is the assumed average maintenance dose per day for a drug used for its main indication in adults. DDDs are assigned to each active ingredient(s) in a given therapeutic class by international expert consensus. For instance, the DDD for oral aspirin equals 3 grams, which is the assumed maintenance daily dose to treat pain in adults. DDDs do not necessarily reflect the average daily dose actually used in a given country. DDDs can be aggregated within and across therapeutic classes of the Anatomic Therapeutic Classification (ATC). For more detail, see *www.whocc.no/atcddd*.

In Figure 6.6, data for Luxembourg and Slovenia exclude drugs prescribed in hospitals, non-reimbursed drugs and OTC drugs. Data for Iceland, Lithuania, the Slovak Republic, Slovenia and Cyprus refer to all sectors, not just primary care. Data for Portugal include OTC and non-reimbursed drugs. Data for Turkey refer to outpatient health care. Data from Slovenia include reimbursed and non-reimbursed drugs (ccommunity pharmacy market prescriptions) prescribed in outpatient care. Data for Sweden exclude OTC drugs and drugs administered in hospitals.

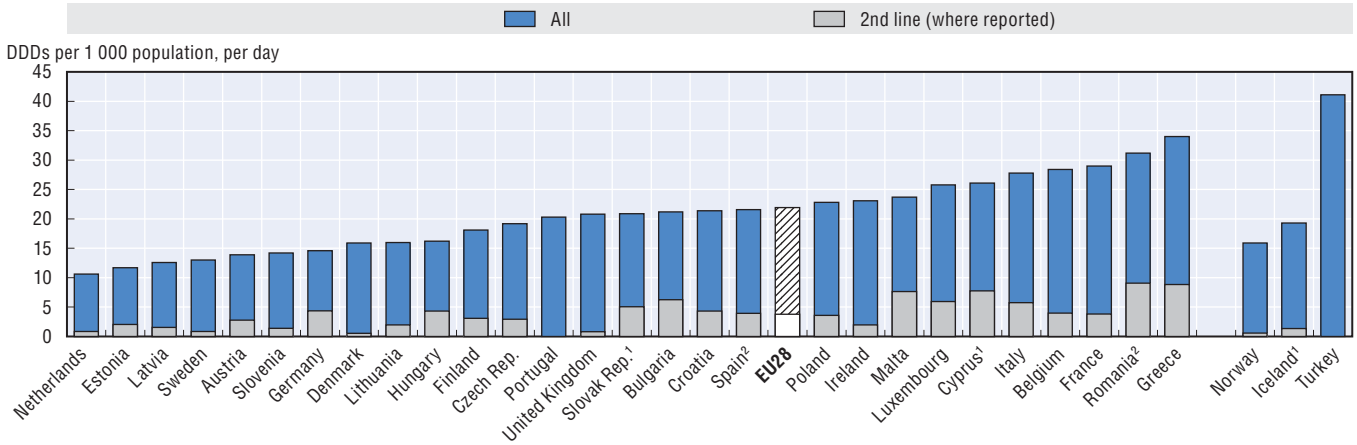
Denominators comprise the population held in the national prescribing database, rather than the general population (with the exception of Belgian data on benzodiazepines, which come from a national health survey).

References

ECDC (2015), "Summary of the Latest Data on Antibiotic Consumption in the European Union", *ESAC-Net Surveillance Data*, European Centre for Disease Prevention and Control, Stockholm.

Sithamparanathan, K. et al. (2012), "Adverse Effects of Benzodiazepine Use in Elderly People: A Meta-analysis", *Asian Journal of Gerontology and Geriatrics*, Vol. 7, No. 2, pp. 107-111.

6.6. Overall volume of antibiotics prescribed, 2014 (or nearest year)

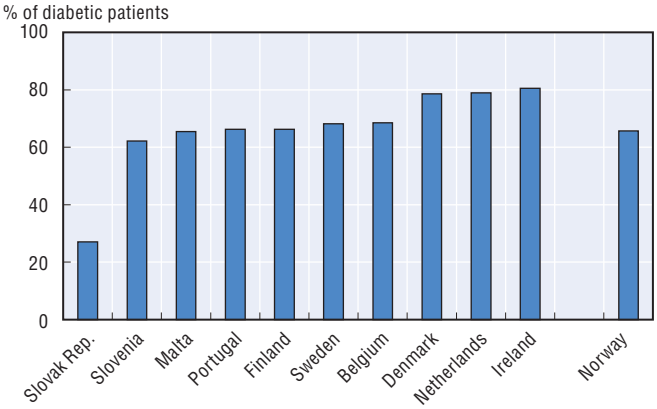


1. Data refer to all sectors (not only primary care).
2. Reimbursement data (not including consumption without a prescription and other non-reimbursed antibiotics).

Source: European Centre for Disease Prevention and Control (2016); *OECD Health Statistics 2016.*

StatLink http://dx.doi.org/10.1787/888933429416

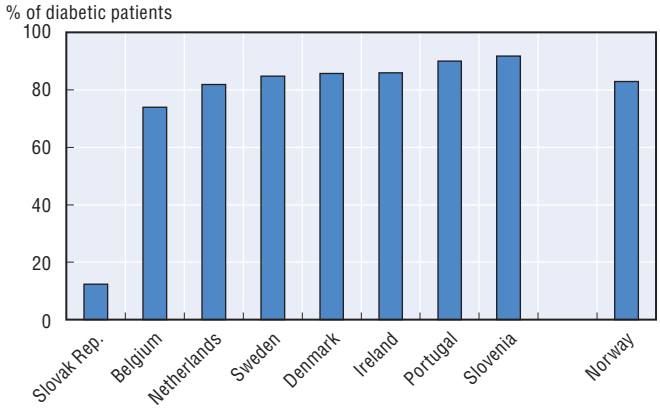
6.7. People with diabetes with a prescription of cholesterol lowering medication in the past year, 2013 (or nearest year)



Source: OECD Health Statistics 2016.

StatLink http://dx.doi.org/10.1787/888933429422

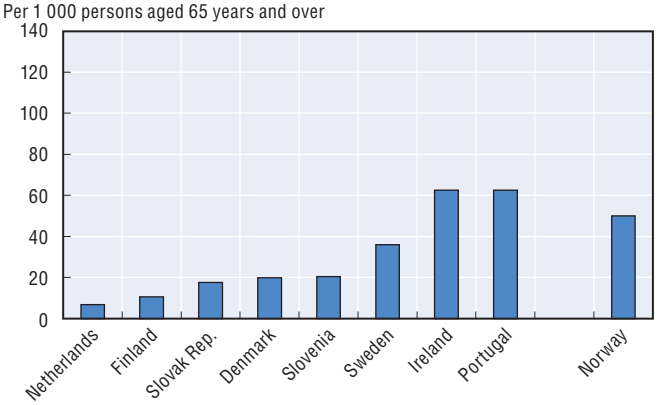
6.8. People with diabetes with a prescription of antihypertensive medication in the past year, 2013 (or nearest year)



Source: OECD Health Statistics 2016.

StatLink http://dx.doi.org/10.1787/888933429434

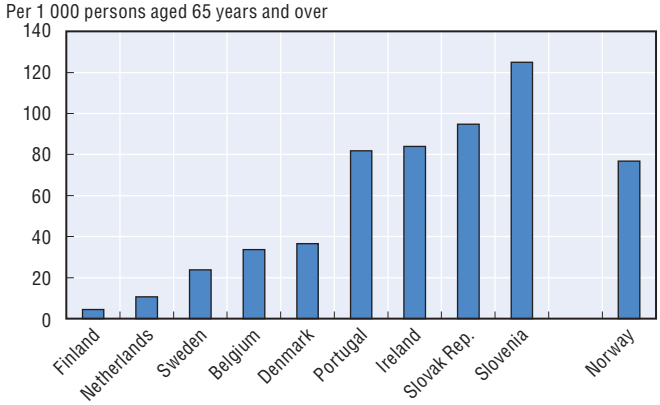
6.9. Elderly people prescribed long-term benzodiazepines or related drugs, 2013 (or nearest year)



Source: OECD Health Statistics 2016.

StatLink http://dx.doi.org/10.1787/888933429440

6.10. Elderly people prescribed long-acting benzodiazepines or related drugs, 2013 (or nearest year)



Source: OECD Health Statistics 2016.

StatLink http://dx.doi.org/10.1787/888933429455

Mortality due to coronary heart disease has declined substantially since the 1970s (see indicator "Mortality from heart disease and stroke" in Chapter 3). Smoking reduction (see indicator "Smoking among adults" in Chapter 4) and improvements in treatment of cardiovascular diseases have played a large role in this decline (OECD, 2015) along with changes in diet and exercise. Clinical practice guidelines such as those developed by the European Society of Cardiology have also helped optimise treatment. Despite these advances, AMI (or heart attack) remains the leading cause of cardiovascular deaths across EU countries, making further improvements a priority.

A good indicator of acute care quality is the 30-day AMI case-fatality rate. The measure reflects a number of factors from timely transport of patients to effective medical interventions along with patient factors such as AMI severity. Two different calculations exist for this indicator based either on admission data or patient data.

Figure 6.11 shows the case-fatality rates within 30 days of admission for AMI based on admission data. This calculation includes deaths which take place in the admission-hospital and which are reported for 100 admissions. By definition this calculation does not take into account deaths occurring after hospital discharge or transfer. Large variations were observed across EU countries with rates of death ranging from 4.5% of patients admitted to the hospital for AMI in Sweden to 15.4% in Latvia. This range may reflect variations in pre-hospital emergency care, treatment or transfer patterns, case severity, or data definitions. An important reduction in rates can be seen across most countries between 2003 and 2013. The largest reductions between these years were seen in both the Netherlands and Austria which reduced death rates by over 5 percentage points although case fatality rates still remain above the EU average in these two countries. These reductions are also reflected in the EU average which fell from 12.3 in 2003 to 9.7 in 2008 and 7.5 in 2013. This equals a 39% reduction over this ten-year period.

Figure 6.12 shows 30-day case fatality rates based on patient data. This calculation includes fatalities regardless of where they occur. This is a more robust indicator than the admission-based indicator because it records all deaths for relevant patients within 30 days of admission for AMI, irrespective of where the deaths occur (including after discharge or transfer to another hospital) and not just those occurring in the hospital of admission. This contributes to higher and more accurate patient-based rates as compared to the admission-based calculation. They show a 2.5-fold variation between countries, compared with a 3.4-fold variation in the admission-based indicator. But they require data which is not available in all countries. The AMI case-fatality rate based on patient data ranges from 7.5% in Italy to 19.1% in Latvia. Like admission-based rates, there have been significant decreases in rates over the past ten years. Poland showed the highest proportional rate decrease between 2003 and 2013 with a reduction of 46%. EU rates showed a reduction of 35% during this period declining from 15.3% in 2003 to 9.9% in 2013.

These substantial improvements reflect a number of changes including better access to high-quality acute care for heart attack, timely transportation of patients, evidence-based medical interventions, and high-quality specialised health centres such as those capable of percutaneous catheter intervention (OECD, 2015).

Definition and comparability

The case-fatality rate measures the percentage of people aged 45 and over who die within 30 days following admission to hospital for a specific acute condition. Rates based on admission data refer to the deaths occurring in the same hospital as the initial admission. Admissions resulting in a transfer were excluded for all countries except Belgium, Denmark, Hungary, Ireland, Luxembourg, the Netherlands, the Slovak Republic and Sweden. This exclusion generally increases the rate compared with those countries which do not exclude these transfers. Rates based on patient data refer to a death occurring in the same hospital, a different hospital, or out of hospital.

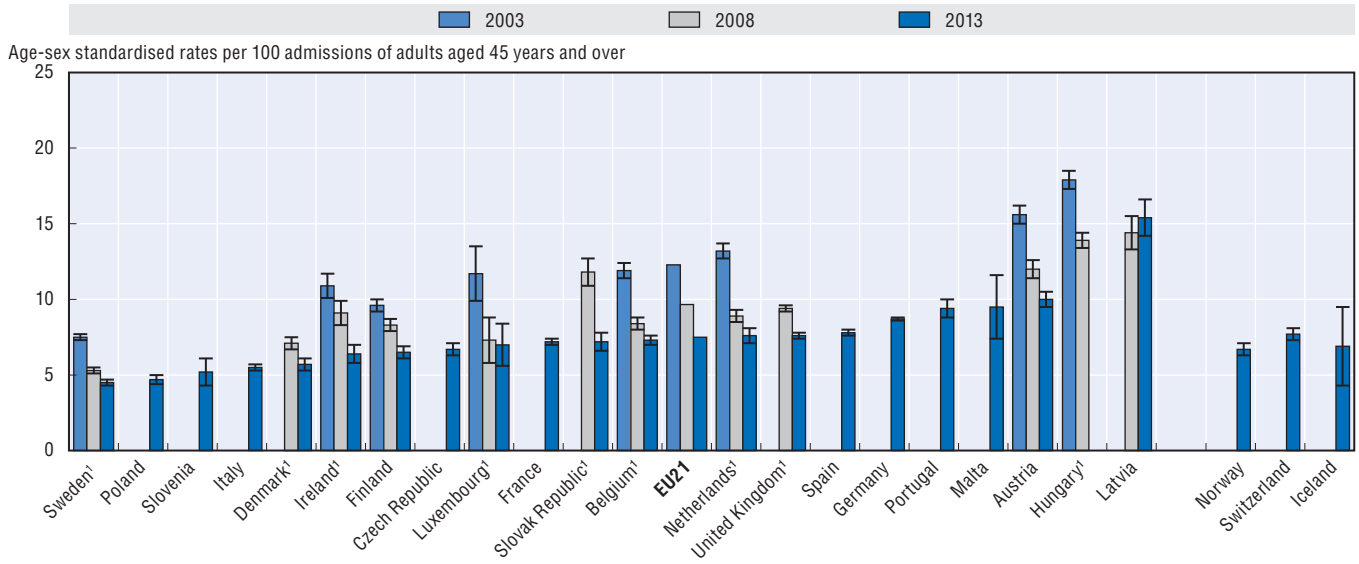
Rates are age-sex standardised to the 2010 OECD population aged 45+ admitted to hospital for a specific acute condition such as AMI and ischemic stroke.

ICD-10 codes for AMI include: I21, I22.

Reference

OECD (2015), *Cardiovascular Disease and Diabetes: Policies for Better Health and Quality of Care*, OECD Publishing, Paris, *http://dx.doi.org/10.1787/9789264233010-en*.

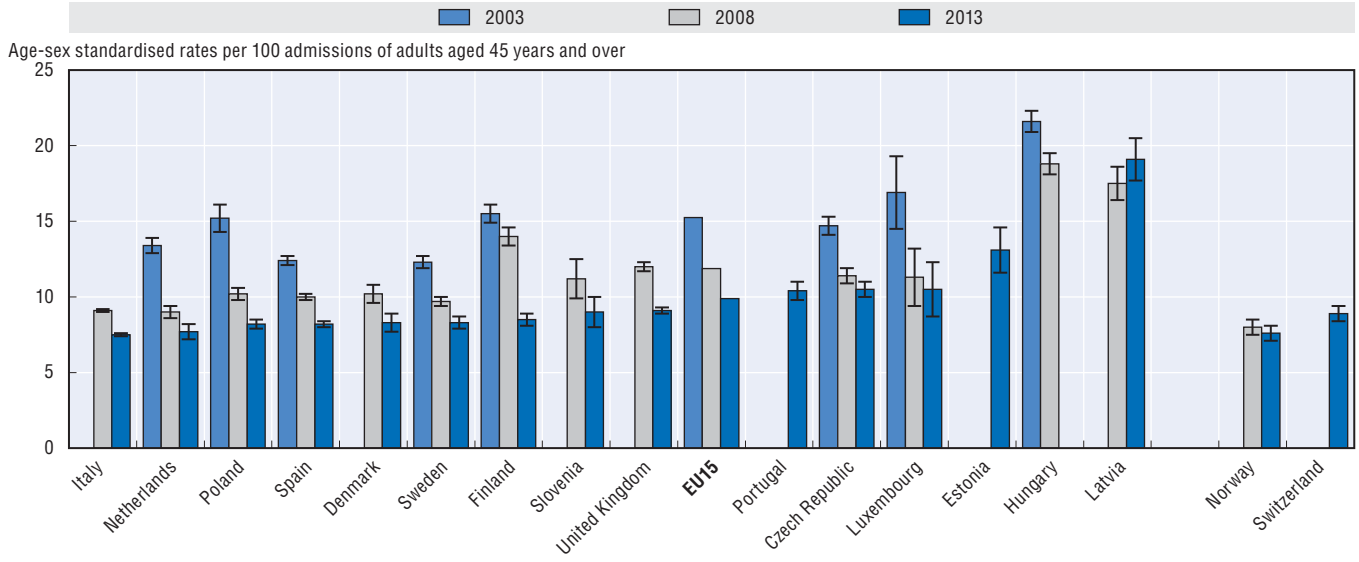
6.11. Thirty-day mortality after admission to hospital for AMI based on admission data, 2003 to 2013 (or nearest years)



Note: 95% confidence intervals represented by H. Three-year average for Iceland and Luxembourg. EU average unweighted.
1. Admissions resulting in a transfer are included.
Source: *OECD Health Statistics 2016.*

StatLink http://dx.doi.org/10.1787/888933429467

6.12. Thirty-day mortality after admission to hospital for AMI based on patient data, 2003 to 2013 (or nearest years)



Note: 95% confidence intervals represented by H. Three-year average for Luxembourg. EU average unweighted.
Source: *OECD Health Statistics 2016.*

StatLink http://dx.doi.org/10.1787/888933429478

Annually, 15 million people worldwide suffer a stroke leading to 5 million deaths and 5 million people permanently disabled (WHO, 2016). Ischemic stroke represents around 85% of all cerebrovascular disease cases. Ischemic stroke occurs when the blood supply to a part of the brain is interrupted, leading to a necrosis (i.e. cell death) of the affected region. Treatment for ischemic stroke has advanced dramatically over the last decade. Clinical trials have demonstrated clear benefits of thrombolytic treatment for ischemic stroke as well as receiving care in dedicated stroke units to facilitate timely and aggressive diagnosis and therapy for stroke victims (Seenan et al., 2007).

Figure 6.13 shows the case-fatality rates within 30 days of admission for ischemic stroke per 100 admissions when the death occurred in the same hospital as the initial stroke admission. Across EU countries, the average death rate in 2013 was 9.4% using this indicator. The case-fatality rates were highest in Latvia (18.4%) and Slovenia (13.2%). The lowest rate of 5.1% was reported in Finland with Italy showing the second lowest rate at 6.2%. These two countries also showed better than average performance for mortality among acute myocardial infarction (AMI) patients. This suggests that certain aspects of acute care may be influencing outcomes for both stroke and AMI patients.

Figure 6.14 shows the case-fatality rates where deaths are recorded regardless of where they occurred. This indicator is more robust because it captures fatalities more comprehensively but requires patient-level data not available in all countries. Although more countries can report the same-hospital measure, an increasing number of countries are investing in their data infrastructure and are able to provide more comprehensive measures. Across the 14 EU countries that reported in- and out-of-hospital case-fatality rates, 12.0% of patients admitted to the hospital for stroke on average died within 30-days after being admitted in 2013. This figure is higher than the same-hospital based indicator because it captures deaths that occur not just in the same hospital but also in other hospitals and out of hospitals.

Between 2003 and 2013, case-fatality rates for ischemic stroke have decreased substantially from 13.5% to 12.0% for patient-based calculations and from 10.4% to 9.4% for admission-based calculations across the European Union. The Netherlands showed the biggest drop in this time period moving from 12.6% to 7.1% for the admission-based indicator and from 14.2% to 9.6% using the patient-based indicator. Between 2008 and 2014 the United Kingdom showed the biggest reductions in rates from 14.8 to 9.2 in admission-based data and 17.0 to 10.6 in patient-based data. Better access to high-quality stroke care, including timely transportation of patients, evidence-based medical interventions and high-quality specialised facilities such as stroke units have helped to reduce 30-day case-fatality rates (OECD, 2015).

Despite the progress seen so far, there is still room to improve implementation of best practice acute care for cardiovascular diseases including stroke across countries. To shorten acute care treatment time, targeted strategies can be highly effective. But to encourage the use of evidence-based advanced technologies in acute care, wider approaches are needed. Adequate funding and trained professionals should be made available, and health care delivery systems should be adjusted to enable easy access to treatment (OECD, 2015).

Definition and comparability

Case-fatality rates are defined in the indicator "Mortality following acute myocardial infarction" in Chapter 6.

ICD-10 codes for stroke include: I63-I64.

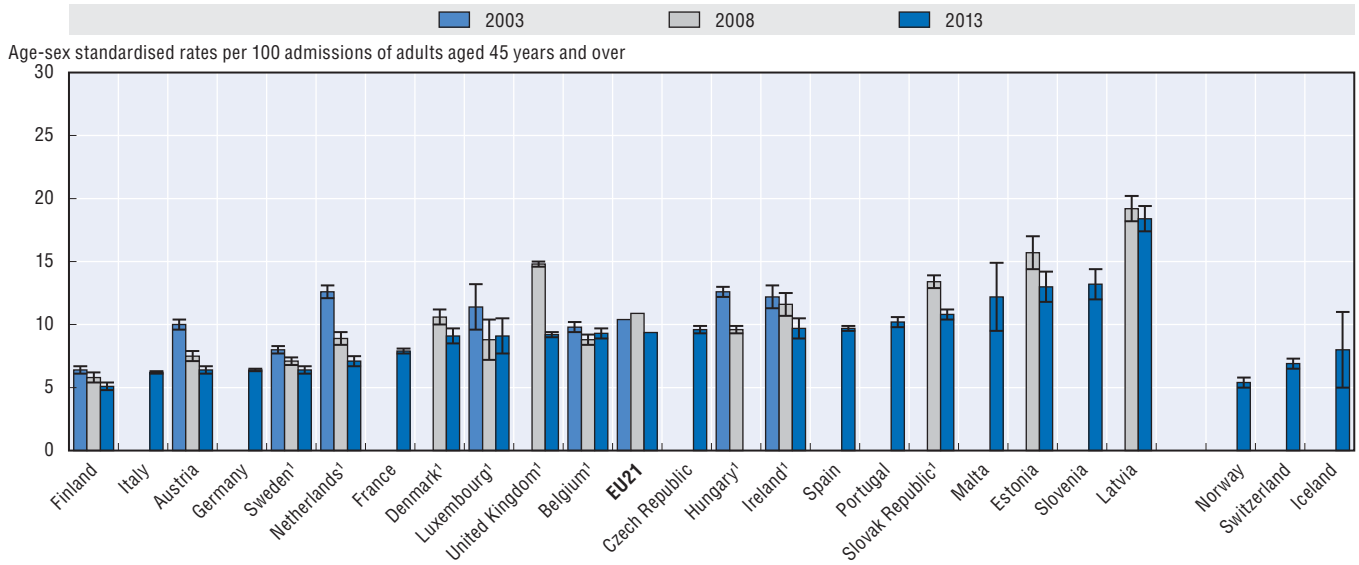
References

OECD (2015), *Cardiovascular Disease and Diabetes: Policies for Better Health and Quality of Care*, OECD Publishing, Paris, *http://dx.doi.org/10.1787/9789264233010-en*.

Seenan, P. et al. (2007), "Stroke Units in Their Natural Habitat: Systematic Review of Observational Studies", *Stroke*, Vol. 38, pp. 1886-1892.

WHO (2016), "Global Burden of Stroke", *The Atlas of Heart Disease and Stroke*, WHO, Geneva.

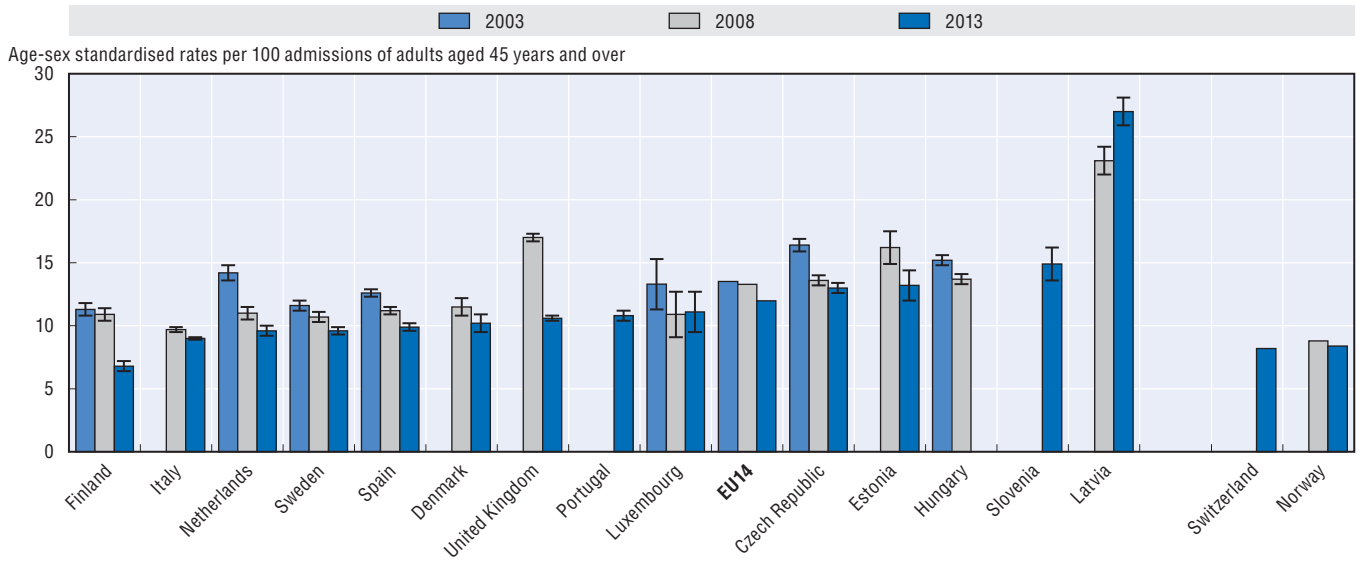
6.13. Thirty-day mortality after admission to hospital for ischemic stroke based on admission data, 2003 to 2013 (or nearest years)



Note: 95% confidence intervals represented by H. Three-year average for Iceland and Luxembourg. EU average unweighted.
1. Admissions resulting in a transfer are included.
Source: *OECD Health Statistics 2016.*

StatLink http://dx.doi.org/10.1787/888933429489

6.14. Thirty-day mortality after admission to hospital for ischemic stroke based on patient data, 2003 to 2013 (or nearest years)



Note: 95% confidence intervals represented by H. Three-year average for Luxembourg. EU average unweighted.
Source: *OECD Health Statistics 2016.*

StatLink http://dx.doi.org/10.1787/888933429490

Cervical cancer is highly preventable if precancerous changes are detected and treated before progression occurs. The main cause of cervical cancer is the human papilloma virus (HPV) which accounts for approximately 95% of all cases (IARC, 2005).

EU countries follow a number of different approaches with regards to the prevention and early diagnosis of cervical cancer. Over half of EU countries have cervical cancer screening organised through population-based programmes but the periodicity and target age groups vary (OECD, 2013). WHO recommends HPV vaccinations as part of national immunisation programmes primarily to girls aged 9-13. Studies show these programmes to be cost-effective and the majority of EU countries have a plan currently in place (WHO, 2014).

Screening rates for cervical cancer range from 25.0% in Latvia to 86.6% in Austria in 2014 and have increased from 63.0% to 64.4% on average across EU countries over the past decade (Figure 6.15). The coverage increase was particularly large in the Slovak Republic where rates almost doubled over this period. In several EU countries screening coverage declined, which may be related to the introduction of HPV vaccinations started in the late 2000s (OECD, 2013).

Cancer survival is one of the key measures of the effectiveness of cancer care systems, taking into account both early detection of the disease and the effectiveness of treatment. Figure 6.16 shows five-year relative survival for cervical cancer. Relative survival in EU countries ranged widely from 70.6% in Italy to 54.5% in Poland in recent years.

Some countries with relatively high screening coverage such as Austria, the United Kingdom or Slovenia had only average or low survival rates. However, all three countries reported below average cervical cancer mortality suggesting low incidence (Figure 6.17).

Mortality rates reflect the effect of cancer care over the past years and the impact of screening, as well as changes in incidence. The mortality rates for cervical cancer declined across EU countries between 2003 and 2013 (Figure 6.17). A number of countries however showed increased mortality including Latvia which reported rates 31% higher than in 2003. Despite progress, cervical cancer remains a priority in a number of countries. Policies focused on both vaccination and screening are still needed in high burden countries.

Definition and comparability

Screening rates are based on surveys or encounter data, which may influence the results. Survey-based results may be affected by recall bias. Programme data are often calculated for monitoring national screening programmes and differences in target population and screening frequency may also lead to variations in screening coverage across countries.

Relative survival is the ratio of the observed survival experienced by cancer patients over a specified period of time after diagnosis to the expected survival in a comparable group from the general population in terms of age, sex and time period. Survival data for Germany and Italy are based on a sample of patients. The number of countries which monitor and report cancer survival is increasing in recent years and another international study (Allemani et al., 2015) also shows that a wide range of countries have cancer registries which enable international comparisons of cancer survival.

Countries use either period analysis or cohort analysis to calculate cancer survival. Period analysis gives an up-to-date estimate of cancer patient survival using more recent incidence and follow-up periods than cohort analysis which uses survival information of a complete five-year follow-up period. The reference periods for diagnosis and follow-up years vary across countries.

Data on cervical cancer screening from Turkey reflect a population of women 30-65. Data on screening from Luxembourg are based on administrative data.

Cancer survival presented here has been age-standardised using the International Cancer Survival Standard (ICSS) population.

See indicator "Mortality from cancer" in Chapter 3 for definition, source and methodology underlying cancer mortality rates.

References

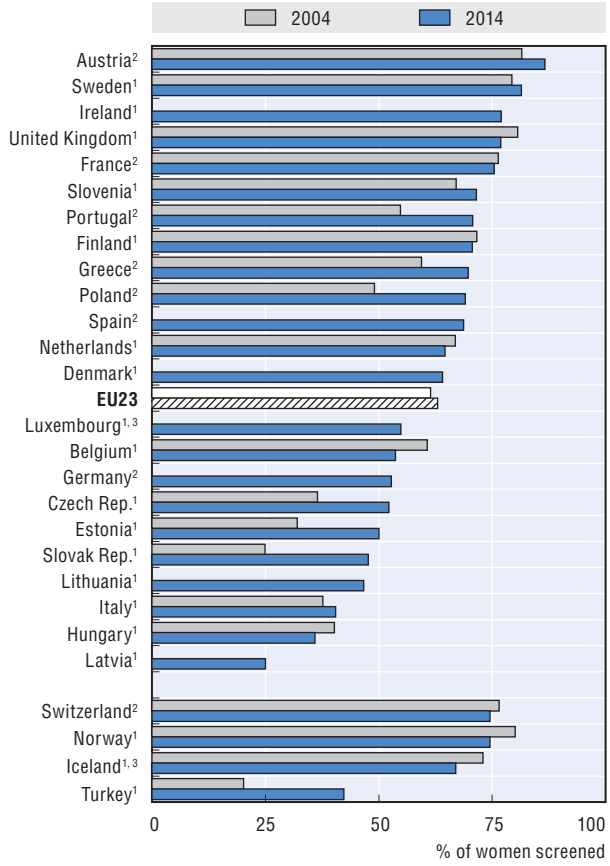
Allemani, C. et al. (2015), "Global Surveillance of Cancer Survival 1995-2009: Analysis of Individual Data for 25 676 887 Patients from 279 Population-based Registries in 67 Countries (CONCORD-2)", *The Lancet*, Vol. 385, pp. 977-1010.

IARC (2005), "Cervix Cancer Screening", *IARC Handbooks of Cancer Prevention*, Vol. 10, International Agency for Research on Cancer (IARC), Lyon.

OECD (2013), *Cancer Care: Assuring Quality to Improve Survival*, OECD Publishing, Paris, *http://dx.doi.org/10.1787/9789264181052-en*.

WHO (2014), "Human Papillomavirus Vaccines: WHO Position Paper, October 2014", *Weekly Epidemiological Record*, Vol. 43, No. 89, pp. 465-492.

6.15. Cervical cancer screening in women aged 20-69, 2004 and 2014 (or nearest years)

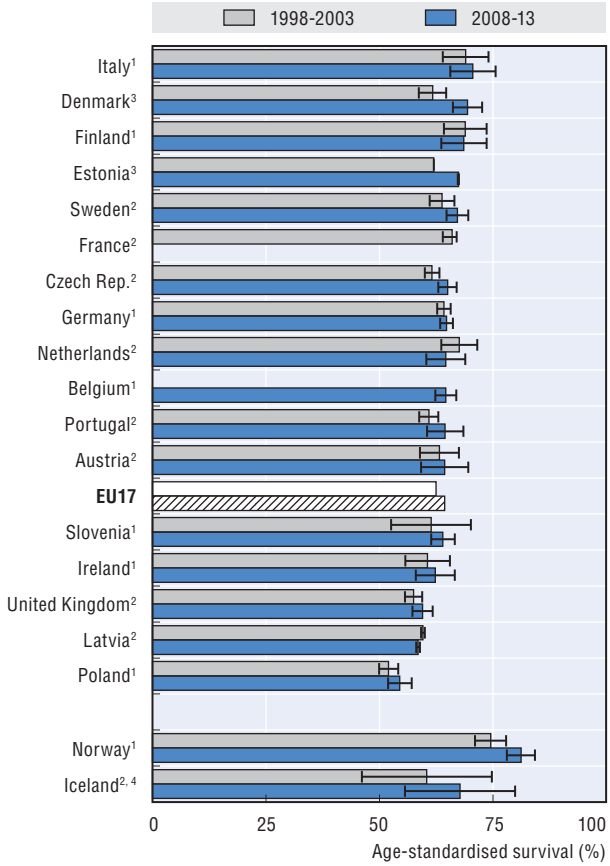


1. Programme.
2. Survey.
3. Three-year average.

Source: OECD Health Statistics 2016.

StatLink http://dx.doi.org/10.1787/888933429504

6.16. Cervical cancer five-year relative survival, 1998-2003 and 2008-13 (or nearest periods)



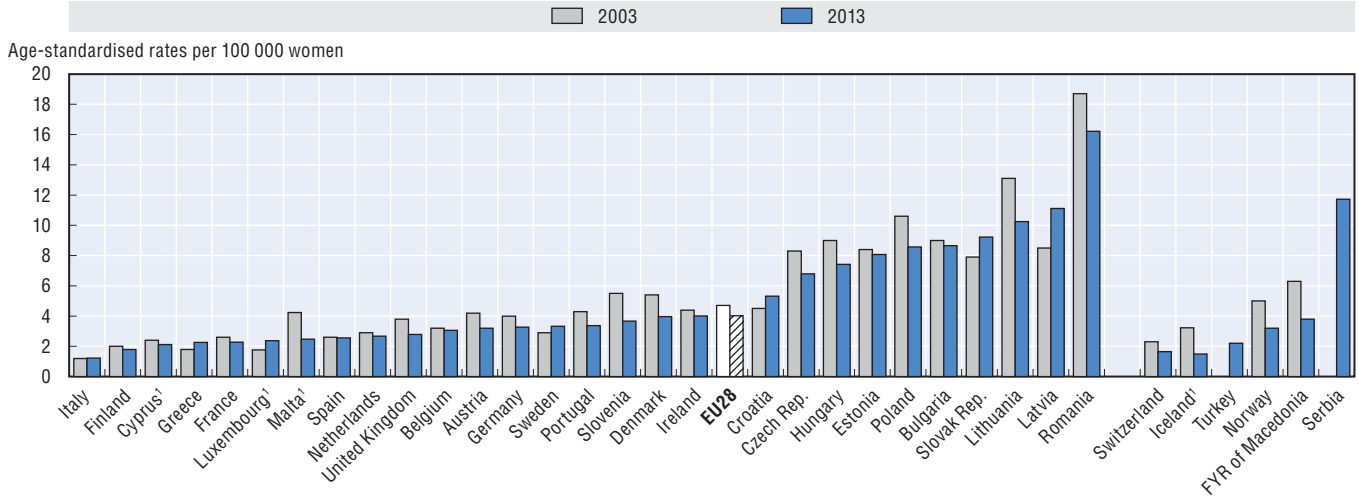
Note: 95% confidence intervals represented by H. EU average unweighted.

1. Period analysis. 2. Cohort analysis.
3. Different analysis methods used for different years.
4. Three-period average.

Source: OECD Health Statistics 2016.

StatLink http://dx.doi.org/10.1787/888933429519

6.17. Cervical cancer mortality, 2003 and 2013 (or nearest years)



1. Three-year average.

Source: Eurostat Database.

StatLink http://dx.doi.org/10.1787/888933429526

Breast cancer is the most prevalent form of cancer in women across EU countries. One in nine women will develop breast cancer at some point in their life and one in thirty will die from the disease. Risk factors that increase a person's chance of getting this disease include age, family history of breast cancer, genetic predisposition, reproductive factors, oestrogen replacement therapy, and lifestyles-related factors including obesity, physical inactivity, diet, and alcohol consumption.

Breast cancer survival is increased with early detection and most EU countries have adopted breast cancer screening programmes. The periodicity and target groups vary across countries however (OECD, 2013). Due to recent progress in treatment outcomes and concerns about false-positive results, over-diagnosis and overtreatment, breast cancer screening recommendations have been re-evaluated in recent years. Based on recent research findings, WHO recommends organised population-based mammography screening (WHO, 2014).

Figure 6.18 shows breast cancer screening rates for women aged 50-69 in 2004 and 2014. Screening rates range from 23% in the Slovak Republic to over 80% in Portugal, Denmark, Finland and Slovenia in 2014. The screening coverage increased substantially among countries with low rates a decade ago, including Poland, the Czech Republic and Lithuania which have more than doubled their screening rates. Overall rates across the European Union rose from 54% to 63%. A number of countries did report lower rates in 2014 than in 2004 including Greece, Italy, Luxembourg, Austria, the Netherlands and Finland.

Breast cancer survival reflects early diagnosis as well as improved treatments. All EU countries have attained five-year relative breast cancer survival of 80% except Estonia and Poland (Figure 6.19). Poland also shows the lowest relative survival for cervical and colorectal cancers (see indicators "Screening, survival and mortality for cervical cancer" and "Survival and mortality for colorectal cancer"). These low rates are correlated with limited care access and relatively fewer numbers of cancer care centres and radiotherapy facilities (OECD, 2013).

Over the last decade, the five-year relative breast cancer survival has improved across all EU countries and rates have increased from 79% to 84% on average between 2003 and 2013. This increase has been particularly noticeable in Eastern Europe where Estonia, the Czech Republic and Latvia have increased rates by 11, 9 and 8 points respectively. This improvement may be related to strengthening of cancer care governance in these countries. For instance, the Czech Republic intensified its effort to detect breast cancer patients early through the introduction of screening programme in 2002 and implemented a National Cancer Control Programme in 2005 to improve the quality of cancer care and cancer survival. This programme focused notably on increased population coverage and access to specialised services (OECD, 2013; OECD, 2014).

Mortality rates have declined in most EU countries over the past decade, with the EU average falling from 37.3 per 100 000 women in 2003 to 33.2 in 2013 (Figure 6.20). These reductions reflect improvements in breast cancer detection and treatment. Significant improvements were seen in both the Czech Republic and Denmark with declines of over 24% during this period. A small number of countries reported increased rates of mortality in 2013, including Poland, Bulgaria, Latvia and the Slovak Republic.

Definition and comparability

Screening rates and survival are defined in indicator "Screening, survival and mortality for cervical cancer" in Chapter 6. See indicator "Mortality from cancer" in Chapter 3 for definition, source and methodology underlying cancer mortality rates.

Data on breast cancer screening from Turkey are based on women 40 to 69. Data on screening from Luxembourg are based on administrative data.

References

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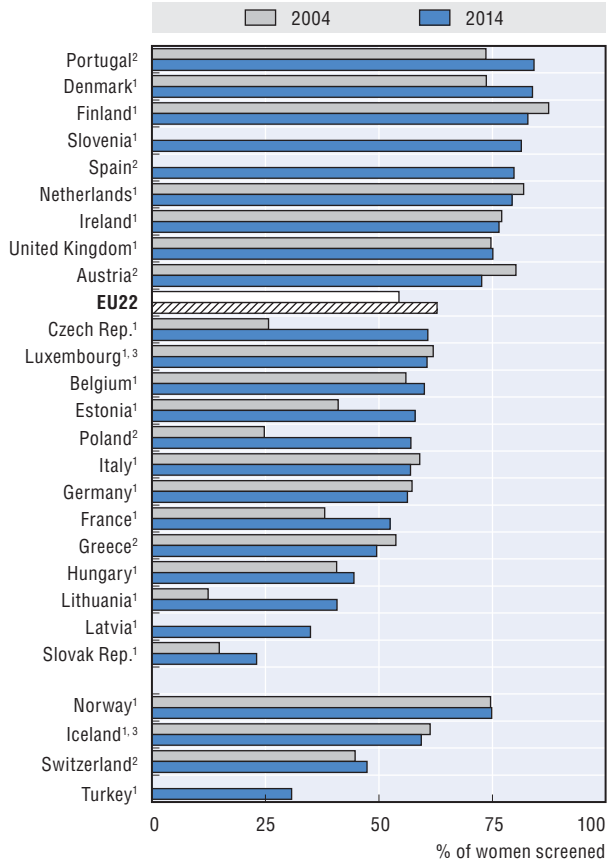
6.18. Mammography screening in women aged 50-69, 2004 and 2014 (or nearest years)

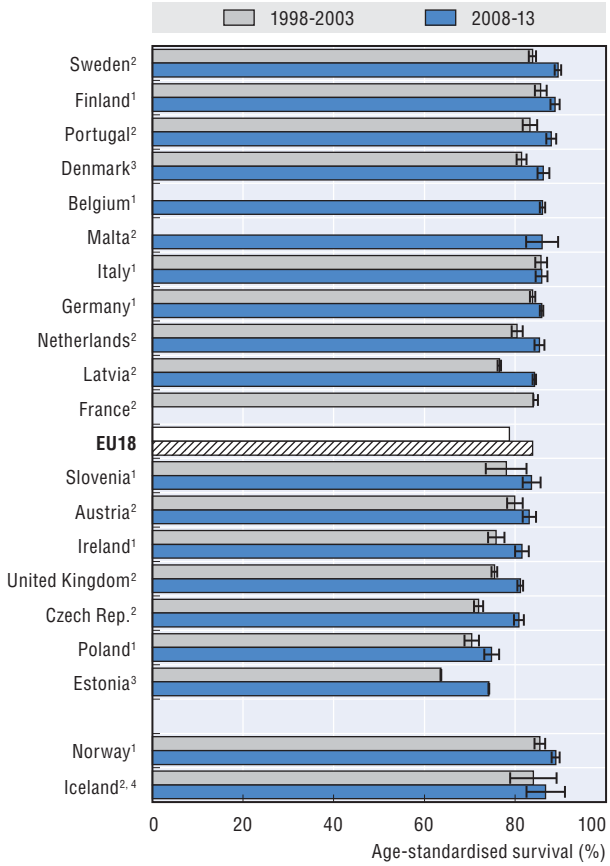


1. Programme.
2. Survey.
3. Three-year average.

Source: OECD Health Statistics 2016.

StatLink http://dx.doi.org/10.1787/888933429530

6.19. Breast cancer five-year relative survival, 1998-2003 and 2008-13 (or nearest periods)



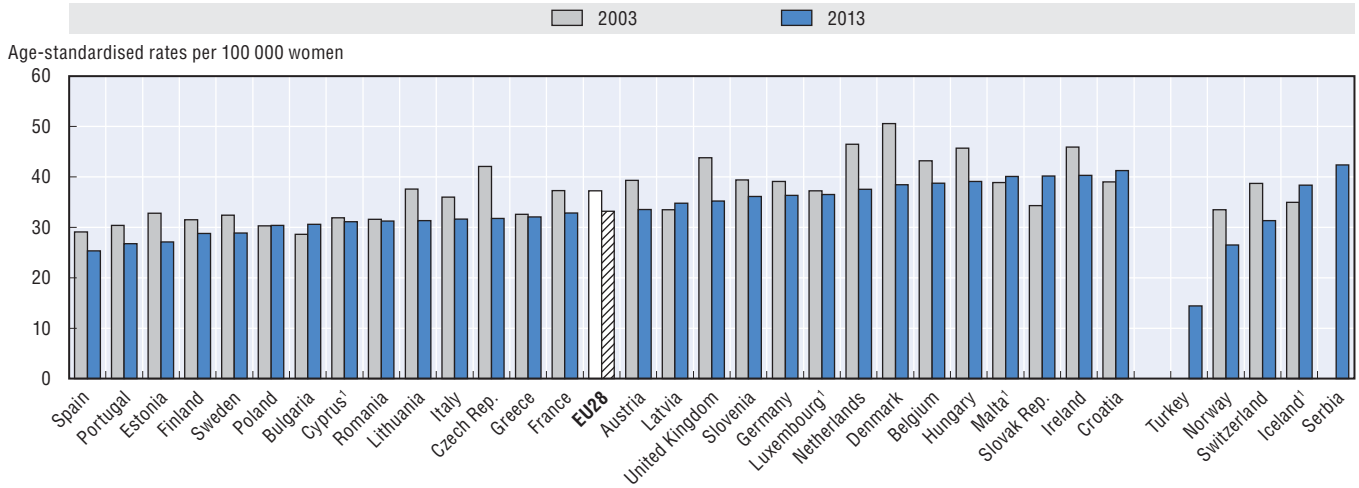
Note: 95% confidence intervals represented by H. EU average unweighted.

1. Period analysis. 2. Cohort analysis.
3. Different analysis methods used for different years.
4. Three-period average.

Source: OECD Health Statistics 2016.

StatLink http://dx.doi.org/10.1787/888933429543

6.20. Breast cancer mortality in women, 2003 and 2013 (or nearest years)



1. Three-year average.

Source: Eurostat Database.

StatLink http://dx.doi.org/10.1787/888933429553

Colorectal cancer is the third most commonly diagnosed form of cancer among men after prostate and lung cancers and the second most common form among women (after breast cancer) across EU countries. Incidence varies greatly across the EU region from over 40 cases per 100 000 population in the Slovak Republic, Hungary, Denmark and the Netherlands to less than half this rate in Greece. Several risk factors exist including age, ulcerative colitis, a personal or family history of colorectal cancer or polyps, along with lifestyle factors such as a high-fat, low-fibre diet, lack of physical activity, obesity, tobacco use and alcohol consumption.

Colorectal cancer screening has become increasingly available in recent years and a number of countries have introduced free population-based screening, targeting people in their 50s and 60s (OECD, 2013). Partly due to uncertainties about the cost-effectiveness of screening (Lansdorp-Vogelaar et al., 2010), countries are using different methods (i.e. faecal occult blood test, colonoscopy and flexible sigmoidoscopy). Because screening schedules differ by method, comparing screening coverage across countries can be difficult.

Advances in diagnosis and treatment of colorectal cancer, including improved surgical techniques, radiation therapy and combined chemotherapy along with increased access, have contributed to increased survival over the last decade. All EU countries showed improvement in five-year relative survival for colorectal cancer. On average, five-year colorectal cancer survival improved from 53.0% to 60.3% for people with colorectal cancer during 1998-2003 to 2008-13 respectively (Figure 6.21). The Czech Republic and Latvia showed the highest rate increase, improving by over 10 points, but both remained below the EU average. Germany, Austria, Finland, Sweden and Belgium showed the highest rates of survival at over 64%.

In most EU countries, colorectal cancer survival is higher for women but in Portugal, the Netherlands and Austria men have a slightly higher survival although these differences are not statistically significant (Figure 6.22). The gender difference is the largest in Estonia with a five-year relative survival of 48.4% for males and 55.9% for females. Latvia and Sweden also have a comparatively large difference.

Most countries experienced a decline in mortality of colorectal cancer in recent years, with the average rate across EU countries falling from 35.5 to 31.3 deaths per 100 000 population between 2003 and 2013 (Figure 6.23). The decline was particularly large in the Czech Republic and Austria with a reduction of 30% or more. A few countries did show increased rates including Romania, Bulgaria, Estonia, Croatia and the Slovak Republic. Despite some progress, Central and Eastern European countries, particularly Hungary, the Slovak Republic, Slovenia and the Czech Republic, continue to have higher mortality rates than the EU average.

Across countries, colorectal cancer continues to be an important cause of cancer deaths for both men and women (see indicator "Mortality from cancer" in Chapter 3) and countries will need to make further efforts to promote not only early diagnosis and effective treatment but also healthy lifestyles to reduce its risk factors (see Chapter 4 on "Non-medical determinants").

Definition and comparability

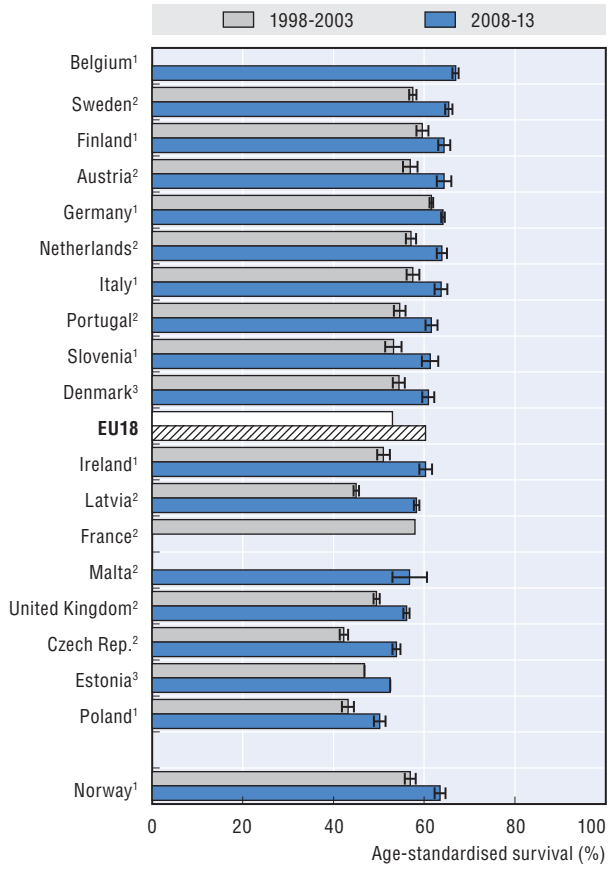
Survival and mortality rates are defined in indicator "Screening, survival and mortality for cervical cancer" in Chapter 6. See indicator "Mortality from cancer" in Chapter 3 for definition, source and methodology underlying cancer mortality rates. Survival and mortality rates of colorectal cancer are based on ICD-10 codes C18-C21 (colon, rectosigmoid junction, rectum, and anus).

References

Lansdorp-Vogelaar, I. et al. (2010), "Cost-effectiveness of Colorectal Cancer Screening: An Overview", *Best Practice and Research Clinical Gastroenterology*, Vol. 24, pp. 439-449.

OECD (2013), *Cancer Care: Assuring Quality to Improve Survival*, OECD Publishing, Paris, *http://dx.doi.org/10.1787/9789264181052-en*.

6.21. Colorectal cancer, five-year relative survival, 1998-2003 and 2008-13 (or nearest periods)

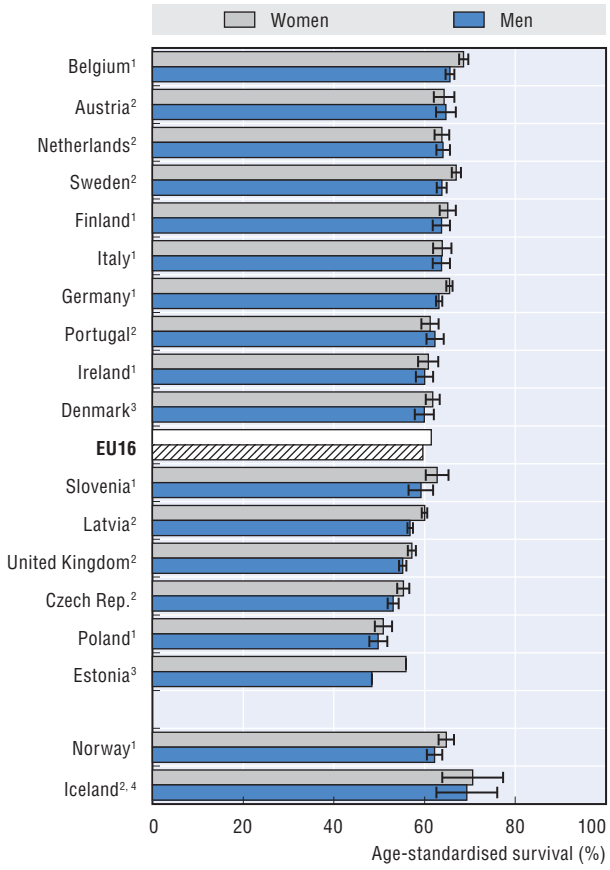


Note: 95% confidence intervals represented by H. EU average unweighted.
1. Period analysis.
2. Cohort analysis.
3. Different analysis methods used for different years.

Source: *OECD Health Statistics 2016.*

StatLink http://dx.doi.org/10.1787/888933429563

6.22. Colorectal cancer, five-year relative survival by gender, 2008-13 (or nearest period)

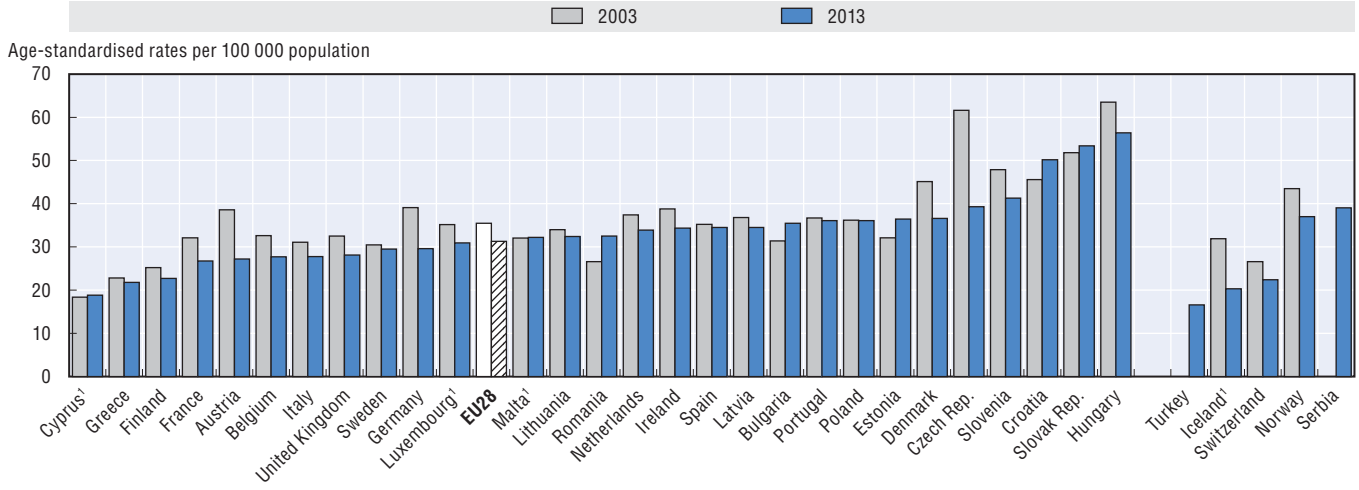


Note: 95% confidence intervals represented by H. EU average unweighted.
1. Period analysis. 2. Cohort analysis.
3. Different analysis methods used for different years.
4. Three-period average.

Source: *OECD Health Statistics 2016.*

StatLink http://dx.doi.org/10.1787/888933429571

6.23. Colorectal cancer mortality, 2003 and 2013 (or nearest years)



1. Three-year average.

Source: *Eurostat Database.*

StatLink http://dx.doi.org/10.1787/888933429583

Each year in the European Union, over 4 million patients acquire a healthcare-associated infection (HAI). These infections are estimated to contribute to roughly 110 000 deaths across Europe, along with substantial morbidity and cost for health systems (ECDC, 2016a).

HAIs are mostly acquired in health care settings as a result of care or contact with the care environment (WHO, 2016). They can include surgical site infections and infections related to use of a medical device among others. At least 20% of healthcare-associated infections are estimated to be avoidable. Compounding the impact of HAIs are infections due to bacteria resistant to antimicrobials. High and inappropriate use of antibiotics and deficiencies in infection prevention and control contribute to antimicrobial resistant HAIs in these environments. Resistant infections can be difficult to treat leading to complications, longer hospital stays, or death.

Figure 6.24 shows the percentage of patients reported by selected hospitals in EU/EEA member states to have a healthcare-associated infection in 2011/12 together with the predicted percentage of patients that would be expected to have an HAI according to a model incorporating differences in patient characteristics. The proportion of observed HAIs ranges from 2.3% in Latvia to 10.8% in Portugal. Romania and Lithuania also showed low proportions of patients with HAIs while Greece and Denmark were both well over the EU average of 5.9%. The majority of EU countries (18/28) showed observed rates of HAIs that were lower than predicted by the model. Along with the lowest observed rates, Latvia also was the country showing the largest difference between the expected and observed values, with an observed rate over 3 percentage points below expected. This difference may be attributed, in part, to overall low use of antibiotics and lower levels of resistance in this country. Clear guidelines and procedures in handling patients with resistant bacteria along with recent improvements in Latvia's hospital system may also play a role (ECDC, 2016b; OECD, 2016). Denmark and Portugal reported the highest rates of HAI, which were 2 and 3 percentage points higher than expected respectively. These results highlight the need for effective infection management in hospitals including antibiotic prescribing guidelines.

Figures 6.25 and 6.26 show the proportions of HAIs by medical specialty and by infection type. Across EU countries, HAI prevalence was highest among patients admitted to Intensive Care Units (ICUs), where 19.5% of patients had at least one HAI compared to an average of 5.2% for other specialty areas. Other high-risk areas were haematology/oncology (16.4%), burns (22.8%), transplant/cancer surgery (12.0%) and digestive tract surgery (10.2%). Across EU countries, patients in medical specialty areas including general medicine, cardiology, oncology and neurology among others represented the majority of HAI cases at over 38%. Surgical specialty areas represented nearly 35% of infections, while intensive care patients accounted for 16% of infections. Geriatrics, paediatrics and the remaining specialty areas together made up 11% of infections. The most common infection types were surgical site infections which accounted for 19.6% of HAIs, pneumonia (19.4%), urinary tract infections (19.0%), bloodstream infections (10.6%) and gastrointestinal infections (7.6%).

Improving rates of HAIs means implementing measures such as ensuring adequate training in infection prevention control in health care staff, provision of specialists in infection prevention, adequate laboratory capacity to ensure diagnostic testing, hand hygiene and basic precautions during invasive procedures, monitoring and feedback of trends and continued implementation of the measures set out in the Council of the European Union's Recommendation on Patient Safety, including the Prevention and Control of Healthcare-Associated Infections (2009/C 151/01).

Definition and comparability

The data presented are based on a point prevalence survey (PPS) of European hospitals conducted in 2011-12 (ECDC, 2013). In countries with a low number of participating hospitals including Austria, Croatia, the Czech Republic, Estonia, Norway, Romania, and a very low number of participating hospitals including Denmark, and Sweden, there was high variability in estimates and potential bias. Although risk adjustment compensated for differences in case mix, including those resulting from less representative samples, it cannot account for selection bias due to low representativeness.

Validation studies carried out in four countries during the national PPS showed an average sensitivity to HAI of 72%, resulting in underestimation of the true HAI prevalence. This was the case particularly in countries with lower national HAI prevalence and/or for which the observed HAI prevalence was lower than expected based on the case mix. Different levels of sensitivity in countries may explain part of the differences in observed versus expected values.

Similar surveys are planned every five years with a 2016-17 survey currently under way.

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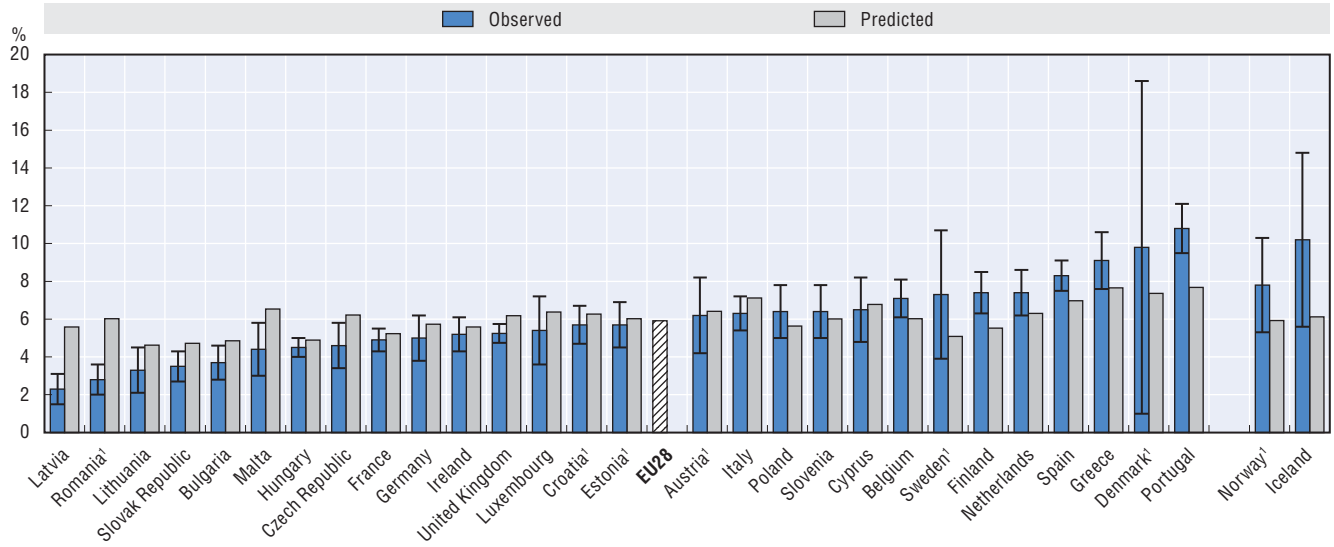
6.24. Observed and predicted percentage of hospitalised patients with at least one healthcare-associated infection, 2011-12



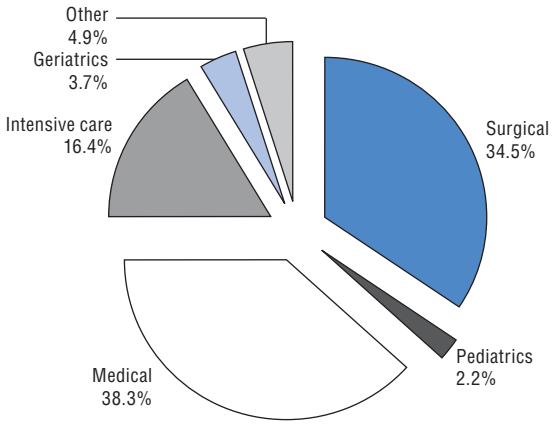
Note: 95% confidence intervals represented by H.

1. Data representativeness is limited in Austria, Croatia, the Czech Republic, Estonia, Norway and Romania and very limited in Denmark and Sweden.

Source: ECDC (2013), Point Prevalence Survey.

StatLink http://dx.doi.org/10.1787/888933429593

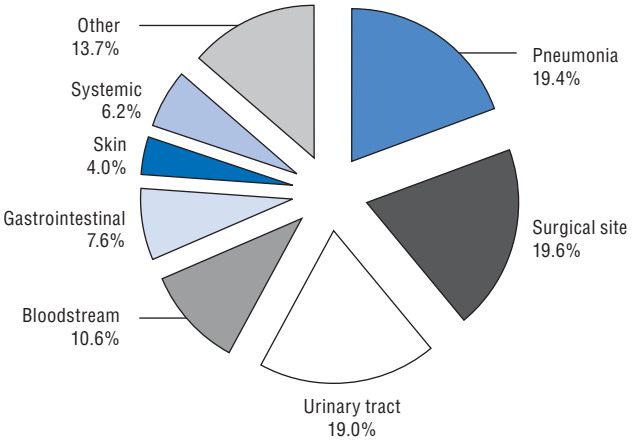
6.25. Percentage of healthcare-associated infections by medical specialty, 2011-12



Source: ECDC (2013), Point Prevalence Survey.

StatLink http://dx.doi.org/10.1787/888933429601

6.26. Percentage of healthcare-associated infections by infection type, 2011-12



Source: ECDC (2013), Point Prevalence Survey.

StatLink http://dx.doi.org/10.1787/888933429619

All EU countries have established vaccination programmes based on the appraisal of the epidemiology of diseases and the availability of vaccines which have been proven to be safe and effective for prophylactic use. Measles, diphtheria and pertussis are highly infectious diseases spread through human contact while tetanus is often acquired through a wound or skin puncture. Effective vaccination is available for all of these diseases and usually managed by the primary health care system (see Chapter 2). These vaccines are part of larger childhood vaccinations efforts across the European Union.

Figures 6.27 and 6.28 show that the overall vaccination of children aged one against diphtheria, tetanus and pertussis (DTP) and measles is high in EU countries. On average, 96% of children received the recommended DTP vaccination and 94% received measles vaccinations in accordance with national immunisation schedules. In EU countries, rates for DTP vaccinations were below 90% only in Austria and Bulgaria. Rates for measles vaccinations were below 90% in Austria, Cyprus, Romania, France and Denmark.

While national coverage rates are high in many countries, some parts of the population remain exposed. From June 2015 to May 2016, 1 800 cases of measles were reported across 28 EU countries. The highest rates were observed in Romania and Lithuania with over 12 and 17 cases of measles per million population respectively (ECDC, 2016a). Most of the Italian cases (365) were reported from January to May 2016. Other countries with a high number of cases were Germany (362), Romania (243) and the United Kingdom (212). More than half of the cases in the EU/EEA (58%) were reported during the first five months of 2016. Several countries, most notably Belgium, France, Germany, Italy, Romania and the United Kingdom reported an increase in the number of cases since the start of the year. A recent measles outbreak in 2014/15 resulted in over 22 000 cases of measles across seven EU countries. The European Regional Verification Commission for Measles and Rubella Elimination highlighted immunisation gaps in young adults in several countries, suggesting that supplemental immunisation activities might be relevant in view of closing immunity gaps (WHO, 2016). Catch-up programmes in older children may be needed to avoid or control measles outbreaks. Such a campaign was successfully conducted in the United Kingdom in 2013.

Figure 6.29 shows the percentage of children aged 1 year old vaccinated for hepatitis B. The hepatitis B virus is transmitted by contact with blood or body fluids of an infected person, by sex or vertically from mother to child. A small proportion of infections become chronic, and these people are at high risk of death from cancer or cirrhosis of the liver. A vaccination has been available since 1982 and is considered to be 95% effective in preventing infection and its chronic consequences. The WHO recommends that all infants should receive their first dose of hepatitis B vaccine as soon as possible after birth (WHO, 2015).

Most countries have followed the WHO recommendation to incorporate hepatitis B vaccine as an integral part of their national infant immunisation programme. Across the European Union, the average immunisation coverage for hepatitis B for children aged one year old was 91%. These rates were as high as 99% in the Czech Republic. However, a number of countries do not require children to be vaccinated, and consequently the rates for these countries are significantly lower. For example, in Denmark, Sweden, and the United Kingdom, vaccination against hepatitis B is not part of the general infant vaccination programme, but is provided to high-risk groups such as children with mothers who are infected by the hepatitis B virus. Other European countries that do not include vaccination against hepatitis B in their infant programmes are Finland, Hungary, Norway and Slovenia.

Larger vaccination efforts among children also include influenza vaccine in nine EU member states (ECDC, 2016b).

Definition and comparability

Vaccination rates reflect the percentage of children who receive the respective vaccination in the recommended timeframe. The age of complete immunisation differs across countries due to different immunisation schedules. For those countries recommending the first dose of a vaccine after age one, the indicator is calculated as the proportion of children less than two years of age who have received that vaccine. Thus, these indicators are based on the actual policy in a given country.

Some countries administer combination vaccines (e.g. DTP for diphtheria, tetanus and pertussis) while others administer the vaccinations separately. Some countries ascertain vaccinations based on surveys and others based on encounter data, which may influence the results.

References

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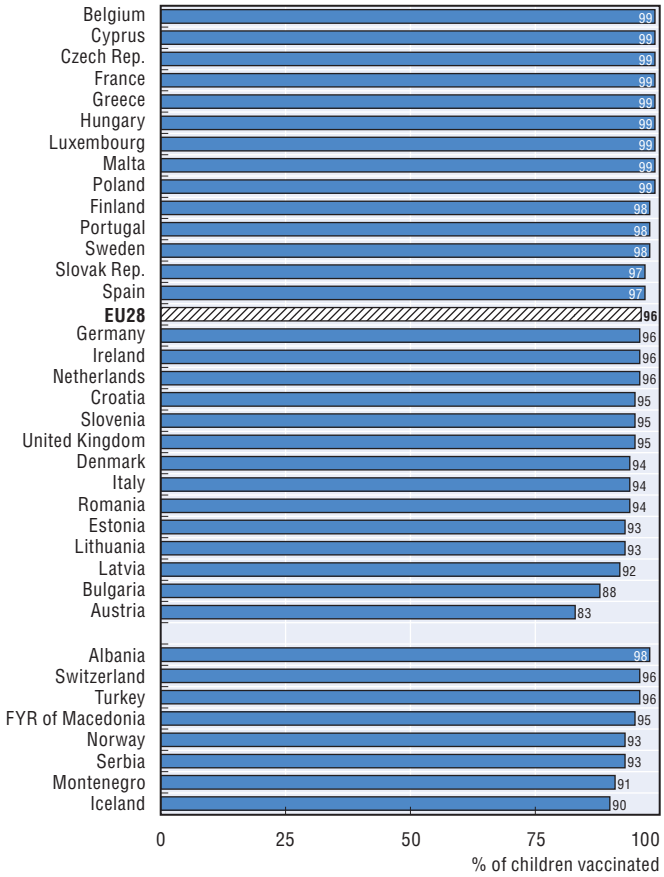
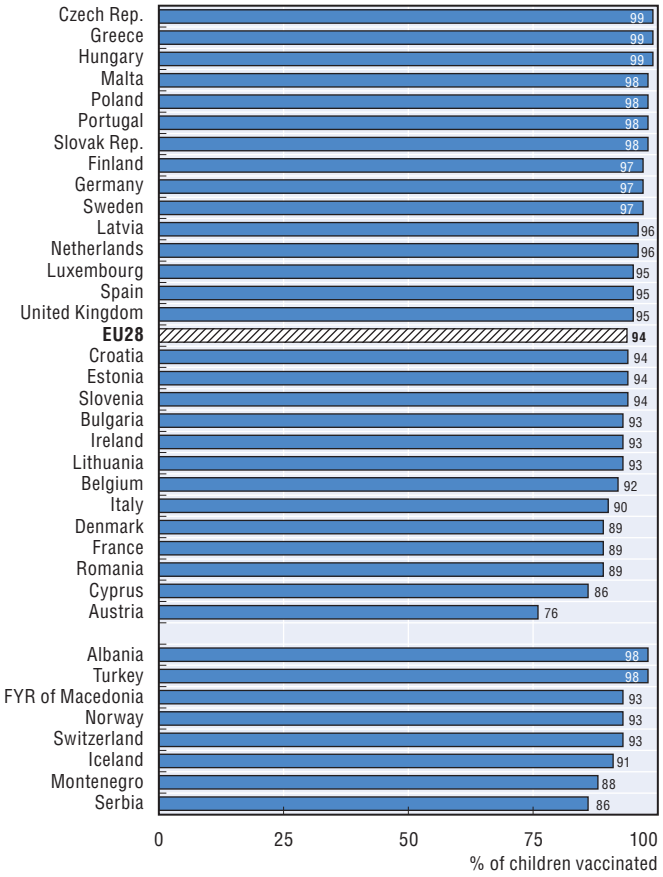
6.27. Vaccination against diphteria, tetanus and pertussis, children aged 1, 2014



Source: WHO/UNICEF.

StatLink http://dx.doi.org/10.1787/888933429625

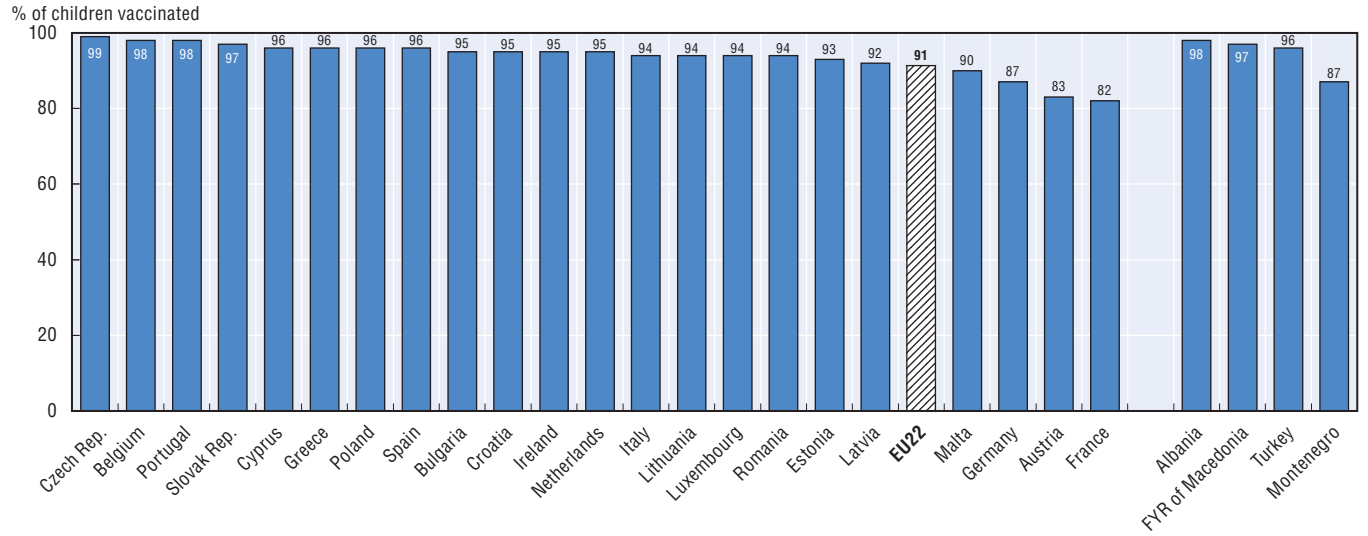
6.28. Vaccination against measles, children aged 1, 2014



Source: WHO/UNICEF.

StatLink http://dx.doi.org/10.1787/888933429639

6.29. Vaccination against hepatitis B, children aged 1, 2014



Source: WHO/UNICEF.

StatLink http://dx.doi.org/10.1787/888933429640

Influenza is a common infectious disease affecting 5-10% of adults and 20-30% of children. Seasonal influenza causes 4-50 million symptomatic cases in the UE/EEA each year, and 15 000-70 000 European citizens die every year of causes associated with influenza (ECDC, 2016). Epidemics of influenza can result in high rates of worker absenteeism and place high demands on health systems from increases in medical visits, hospitalisations, and medication usage including antibiotics. Vaccination has proven to be an effective tool in reducing the burden of seasonal influenza and is usually managed at the primary level of health care (see Chapter 2). Older people are at high risk for serious illness from influenza and WHO recommends vaccination in this group. A review of vaccination drivers and barriers found that among elderly populations, personalised postcards or phone calls were effective in increasing vaccination coverage while barriers included social disadvantage, smoking, and lack of social support (ECDC, 2013). In addition to older people, the European Council recommends influenza vaccination for persons with chronic medical conditions and health care workers. Along with these groups, WHO recommends influenza vaccination also for pregnant women and children.

In 2003, countries participating in the World Health Assembly committed to attaining influenza vaccination coverage among the elderly population of 50% by 2006 and 75% by 2010. A 2009 EU Council Recommendation also set a goal of 75% vaccination coverage of older age groups by the winter of 2014-15 or as soon as possible (European Union, 2009). All EU countries have recommendations for influenza vaccination among older people although the ages vary across countries. A handful of EU countries also recommend vaccination for children or adolescents. Figure 6.30 shows that in 2014, the EU average influenza vaccination rate for people aged 65 and over was 49.5%. There was very high variation across countries with over a 50-fold difference between the highest and lowest rates. Vaccination rates were as low as 1.4% in Estonia, where influenza vaccination is recommended but not free. Latvia also showed low rates at 2.8%. None of the EU countries met the 2010 target of 75% coverage in 2014, with only the United Kingdom (72.8%) and the Netherlands (72.0%) coming close.

Figure 6.31 shows rates of vaccination coverage in 2004 and 2014. Overall vaccination coverage has decreased across the European Union from 57.4 in 2004 to 53.5 in 2014. Notable drops in coverage were seen in Slovenia, with rates of 30% in 2004 dropping to 11% in 2014. The Slovak Republic, Luxembourg, France, Croatia and Italy also showed declines of over 20% during this time period. These decreases may be related to changing vaccination behaviour following the 2009 flu pandemic (also referred to as "swine flu"). Following the increased rates of vaccination across Europe during the pandemic, overall rates lowered to below pre-pandemic levels in subsequent years (Caille-Brillet, 2013).

Significant increases were seen in the Czech Republic, Denmark and Portugal with increases over 30% between 2004 and 2014. The largest increase was seen in Lithuania where rates jumped from 1.8% to 21.1%. Changes over time should be interpreted with some caution because of changes to the way vaccination rates were calculated in some countries (see box on "Definition and comparability"). Progress toward 75% coverage among older adults has been heterogeneous across the European Union and met with a number of issues including a low perception of risk, fear of side effects, and issues of cost among others (ECDC, 2014).

An important aspect in improving vaccination coverage is monitoring, which is necessary to identify gaps and ensure appropriate coverage. Reinforcing this aspect of national programmes is important to guide and improve future efforts.

Definition and comparability

Influenza vaccination rate refers to the number of people aged 65 and older who have received an annual influenza vaccination, divided by the total number of people over 65 years of age. In some countries, the data are for people over 60 years of age.

The main limitation in terms of data comparability arises from the use of different data sources, whether survey or programme, which are susceptible to different types of errors and biases. For example, data from population surveys may reflect some variation due to recall errors and irregularity of administration.

References

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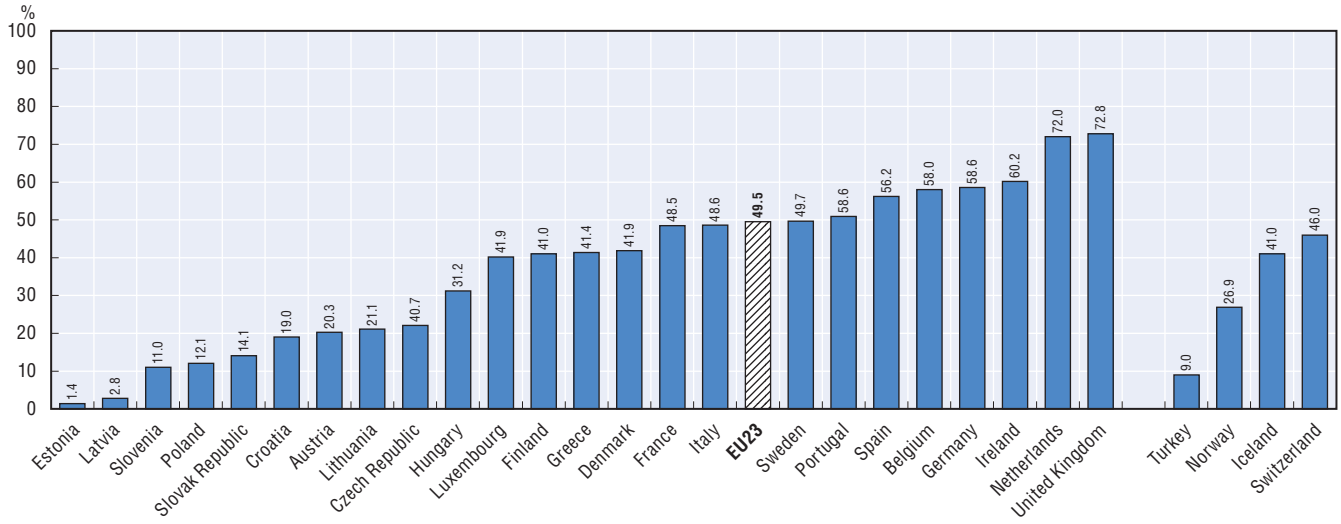
6.30. Influenza vaccination coverage, population aged 65 and over, 2014 (or nearest year)



Source: OECD Health Statistics 2016; Eurostat Database.

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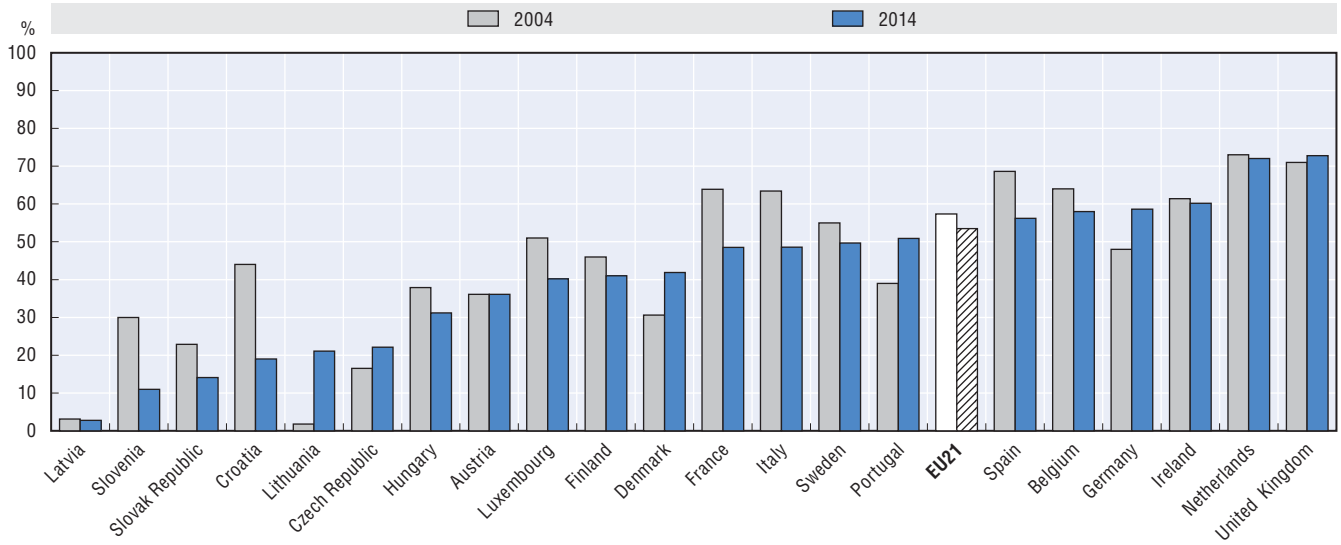
6.31. Influenza vaccination coverage, population aged 65 and over, 2004-14 (or nearest year)



Source: OECD Health Statistics 2016; Eurostat Database.

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Along with a growing prevalence of chronic diseases, management of infectious diseases such as Human Immunodeficiency Virus (HIV) and Tuberculosis remains a priority in many EU countries.

Although HIV is preventable through effective public health measures, significant HIV transmission continues in Europe with nearly 30 000 newly-diagnosed cases of HIV infection reported in EU countries in 2014 (see indicator on new reported cases of HIV in Chapter 3). Furthermore, rates of HIV transmission have risen in certain European countries in recent years (WHO, 2015).

HIV targets the human immune system, weakening it and leaving those affected vulnerable to infections and other health issues including notably tuberculosis or hepatitis C. The most advanced stage of HIV infection is Acquired Immunodeficiency Syndrome (AIDS). Early testing for HIV allows infected individuals to be quickly put on treatment which leads to viral suppression, thus allowing them to continue to lead a normal life and to avoid infecting others.

Figure 6.32 shows the percentage of newly HIV infections diagnosed late. Cyprus and the Czech Republic showed the lowest number of new late diagnosed cases among HIV infections with percentages under 15%. Estonia and Romania reported rates over 38% while Slovenia reported rates of nearly 50%. The average across the EU region was 27.8%. The high rates observed in some countries suggest that screening services need to be improved to identify and treat HIV cases particularly among at-risk populations.

Tuberculosis also remains an important public health issue for some EU countries. Although disease rates have generally fallen over the past decade, notification rates for 2014 indicate further progress is needed (see indicator on tuberculosis notification rate in Chapter 3).

The majority of tuberculosis infections are latent, meaning that they do not lead to symptoms. However, a proportion of infections will become active leading to symptoms such as chest pain, bloody cough and fever. The probability of developing an active form of the disease is much higher in immunocompromised individuals such as those infected with HIV.

Figure 6.33 shows the percentage of new pulmonary culture-confirmed tuberculosis cases with successful treatment outcome after 12 months. Poland showed the lowest success rate of 60.0% while the Slovak Republic reported the highest at 93.9%. The average across the European Union was 74.9%. Success rates are driven by treatment programmes, patient adherence, and the proportion of multi-drug resistant tuberculosis infections.

Drug resistant tuberculosis can occur when the drugs used to treat the condition are misused or mismanaged, including where people do not complete a full course of treatment, providers prescribe the wrong treatment or where proper treatments are not available. Multi-drug resistant tuberculosis requires longer and more intensive treatment and is associated with lower success rates.

Figure 6.34 shows the percentage of newly diagnosis tuberculosis cases classified as multi-drug resistant. A number of countries reported no multi-drug resistant cases including the Czech Republic, Cyprus, Luxembourg, the Slovak Republic, Slovenia, Malta and Croatia. The highest proportions of resistance were reported by Lithuania and Estonia with 14% and 19% multi-drug resistant tuberculosis cases respectively.

In response to effective national plans, including training courses on multi-drug resistant tuberculosis, guidelines for tuberculosis specialists and other care providers and working groups, the EU/EEA countries have shown considerable improvement in care and infection control but further efforts are still needed on this issue.

Definition and comparability

Late diagnosis of HIV cases is defined as patients with a CD4 cell count under 200 per mm^3 of blood at diagnosis (ECDC, 2015). Surveillance systems for HIV are not identical across Europe and differences in data collection methods and testing policies could impact the results and introduce bias in comparisons between countries. Official reports of newly diagnosed cases of HIV do not represent true incidence. Newly reported HIV diagnoses include recently infected individuals as well as those who were infected several years ago but only recently tested for HIV. These reports are also influenced by several factors such as the uptake of HIV testing, patterns of reporting, the long incubation period and a slow progression of the disease. Changes in reporting methods in 2008 in Estonia may explain the large rate decrease seen in this country.

New tuberculosis cases include patients who have never been treated for tuberculosis or have taken anti-tuberculosis drugs for less than one month. All tuberculosis cases are pulmonary tuberculosis cases that have been bacteriologically confirmed. Successful treatment outcomes are defined as the sum of: 1) cured: a pulmonary TB patient with bacteriologically confirmed TB at the beginning of treatment who was smear or culture-negative in the last month of treatment and on at least one previous occasion; and 2) treatment completed, but does not meet the criteria to be classified as cure or treatment failure (a TB patient whose sputum smear or culture is positive at month five or later during treatment) (ECDC, 2016).

New pulmonary culture-positive tuberculosis cases with successful treatment outcomes in a given year are defined as cases where treatment was completed, including those with and without bacteriological evidence of success (cure).

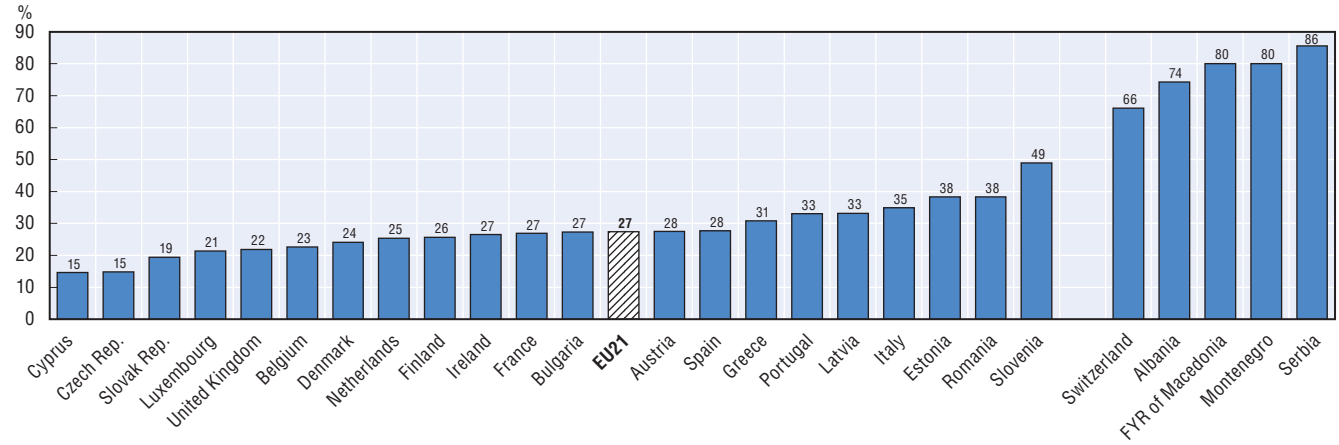
References

ECDC (2016), *Tuberculosis Surveillance and Monitoring in Europe 2016*, Stockholm.

ECDC (2015), *HIV/AIDS Surveillance in Europe 2014*, ECDC, Stockholm.

WHO (2015), *Highest Number of New HIV Cases in Europe Ever*, WHO, Geneva.

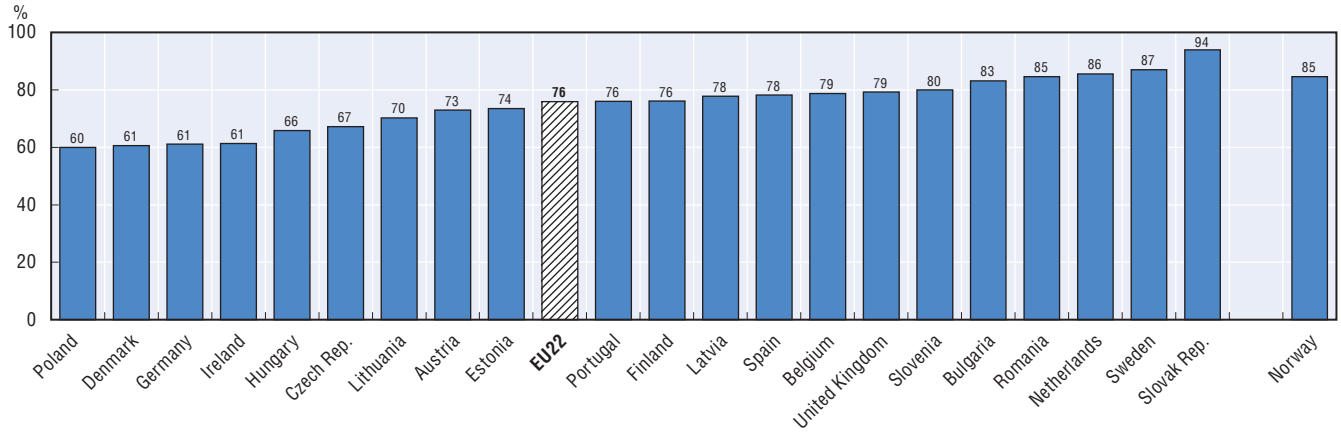
6.32. Percentage of late diagnosis among newly diagnosed HIV cases, 2014



Note: Minimum of 30 HIV cases needed for inclusion. EU average unweighted.
Source: ECDC (2015).

StatLink http://dx.doi.org/10.1787/888933429677

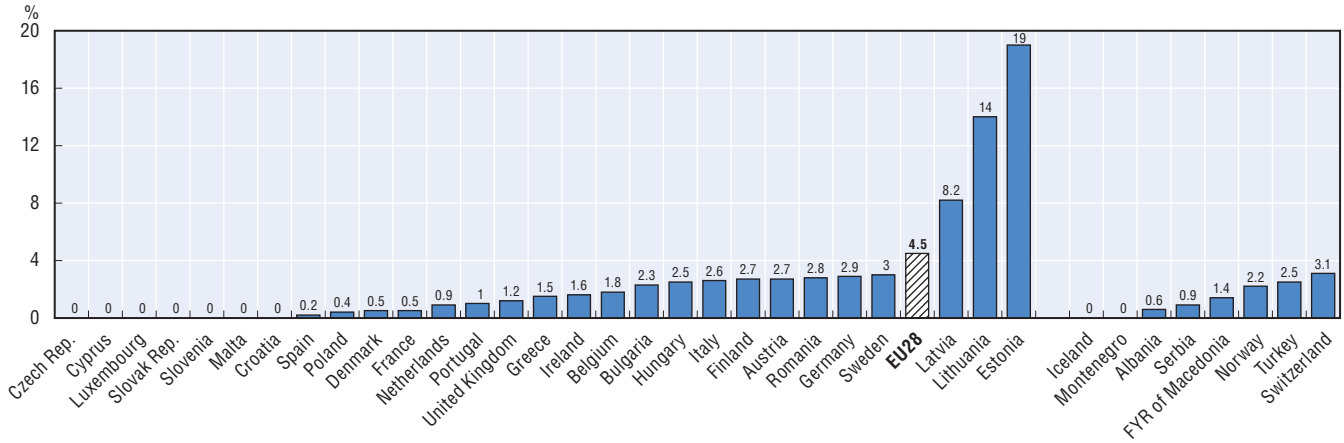
6.33. Percentage of new tuberculosis cases with successful treatment outcome after 12 months, 2013



Note: Minimum of 30 TB cases needed for inclusion. EU average unweighted.
Source: ECDC (2016).

StatLink http://dx.doi.org/10.1787/888933429682

6.34. Estimated percentage of notified new tuberculosis cases with multi-drug resistance, 2014



Note: Minimum of 30 TB cases needed for inclusion. EU average unweighted.
Source: ECDC (2016).

StatLink http://dx.doi.org/10.1787/888933429694

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Chapter 7

Access to care

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Health care coverage enables access to medical goods and services and provides financial protection against unexpected or serious illness. While the share of the population covered by a public or private health insurance provides some indication of financial protection, this is not a complete indicator of accessibility, since the range of services covered and the degree of cost sharing applied to those services vary across countries and will impact on direct out-of-pocket expenditure by patients. Ensuring effective access to health care also requires having a sufficient number of health care providers in different geographic regions in the country and that patients do not have to wait excessively long times to receive services.

Most European countries have achieved universal (or near-universal) coverage of health care costs for a core set of services, which usually include consultations with doctors, tests and examinations and hospital care (Figure 7.1). In most countries, dental care (especially for children) and the purchase of prescribed pharmaceuticals are also at least partially covered (Paris et al., 2016). Four European countries, however, have at least 10% of their population that is not covered for health care costs (Cyprus, Greece, Romania and Bulgaria).

In Bulgaria, Romania and Greece, the share of the population covered has decreased since the onset of the economic crisis. In Bulgaria, a tightening of the law in 2010 made people lose their social health insurance coverage if they fail to pay their contribution (Dimova et al., 2012). However, it is common for uninsured people who need medical care to go to emergency services, where they will be encouraged to get an insurance (without paying any financial penalty for not having had an insurance prior to that).

In Romania, although social health insurance is compulsory, only 86% of the population was covered in 2014. The proportion of the population covered was higher in urban areas (94.9%) than in rural areas (75.8%). The uninsured population include mainly people working in agriculture or those not officially employed in the private sector; self-employed or unemployed who are not registered for unemployment or social security benefits; and Roma people who do not have identity cards, which preclude them from enrolling into the social security system. The uninsured can only access a minimum benefits package, which is strictly enforced. This package covers emergency care, treatment of communicable diseases and care during pregnancy (Vlădescu et al., forthcoming).

In Greece, the economic crisis has reduced health insurance coverage among people who have become long-term unemployed, and many self-employed workers have also decided not to renew their health insurance plan because of reduced disposable income. However, since June 2014, uninsured people are covered for prescribed pharmaceuticals and for free services in primary care and public hospitals, the latter under certain conditions, such as referral by an expert panel (Eurofound, 2014; WHO, 2015). In Cyprus, an estimated 83% of the population were entitled to public health services in 2013, although many are seeking medical care in the private sector and pay out-of-pocket.

Basic primary health coverage, whether provided through public or private insurance, generally covers a defined "basket" of benefits, in many cases with cost sharing. In some countries, additional health coverage can be purchased through private insurance to cover any cost sharing left after basic coverage (complementary insurance), add additional services (supplementary insurance) or provide faster access or larger choice to providers (duplicate insurance). In most European countries, only a small proportion of the population has an additional private health insurance. But in five countries, half or more of the population had a private health insurance in 2014 (Figure 7.2).

In France, nearly all the population (95%) has a *complementary* private health insurance to cover cost sharing in the social security system. A large proportion of the population in Belgium, Slovenia, Croatia and Luxembourg also make use of complementary health insurance. The Netherlands has the largest *supplementary* market (85% of the population), whereby private insurance pays for prescribed pharmaceuticals and dental care that are not covered in the basic package. *Duplicate* markets, providing faster private-sector access to medical services where there are waiting times in public systems, are largest in Ireland (44%), followed by Portugal and Spain.

While the population covered by private health insurance has grown over the past decade in some countries like France, Belgium, Denmark and Germany, there has been a reduction in private health insurance coverage in recent years in other countries like the Netherlands and Ireland (Figure 7.3).

The importance of private health insurance is linked to several factors, including gaps in access to publicly financed services, government interventions directed at private health insurance markets and historical development.

Definition and comparability

Coverage for health care is defined as the share of the population receiving a defined set of health care goods and services under public programmes and through private health insurance. It includes those covered in their own name and their dependents. Public coverage refers both to government programmes, generally financed by taxation, and social health insurance, generally financed by payroll taxes. Take-up of private health insurance is often voluntary, although it may be mandatory by law or compulsory for employees as part of their working conditions. Premiums are generally non-income-related although the purchase of private coverage can be subsidised by the government.

References

Dimova, A. et al. (2012), "Bulgaria: Health System Review", *Health Systems in Transition*, Vol. 14, No. 3.

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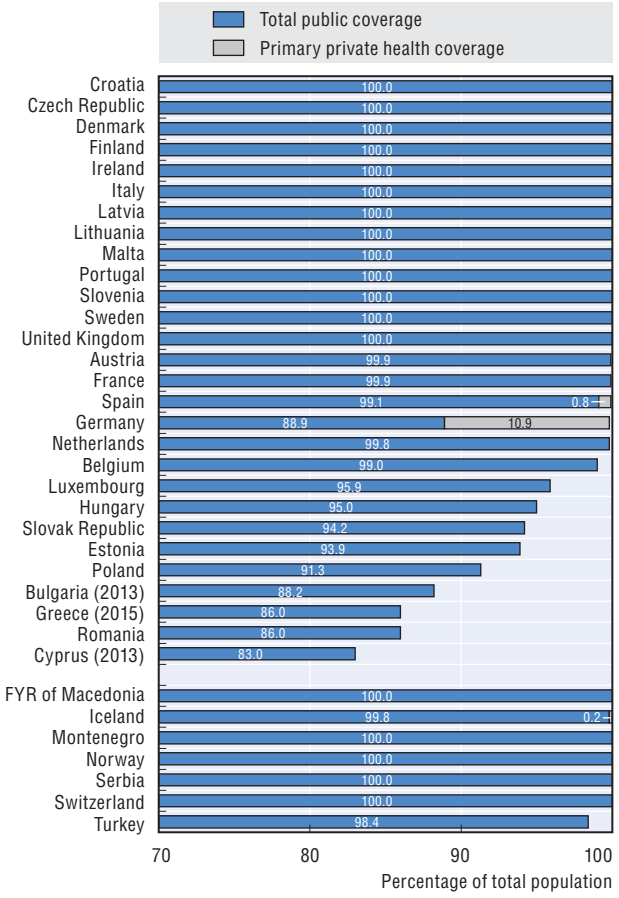
7.1. Health insurance coverage for a core set of services, 2014 (or nearest year)



Source: *OECD Health Statistics 2016*; European Observatory Health Systems in Transition (HiT) Series and Voluntary health insurance in Europe: country experience, Observatory Studies Series, 2016, for non-OECD countries.

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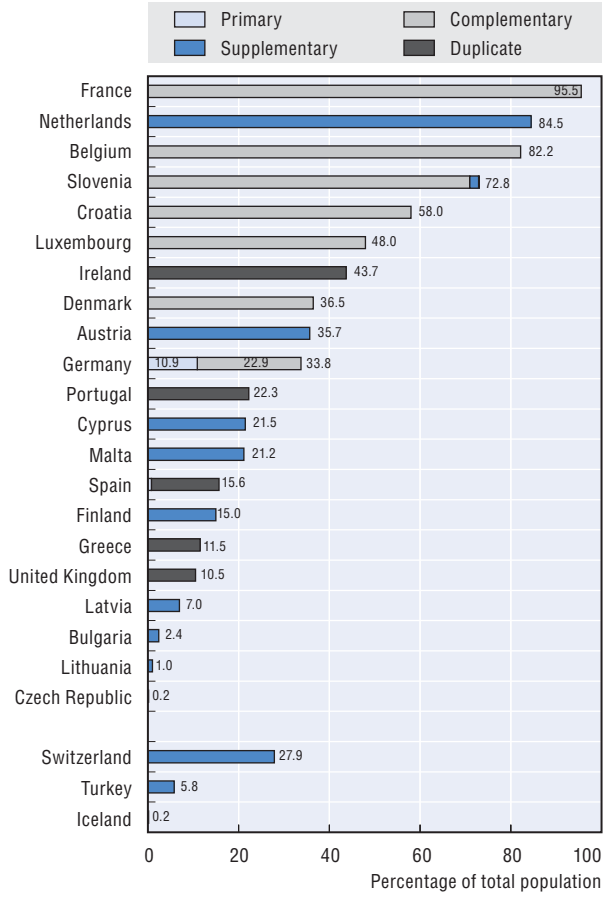
7.2. Private health insurance coverage, by type, 2014 (or nearest year)

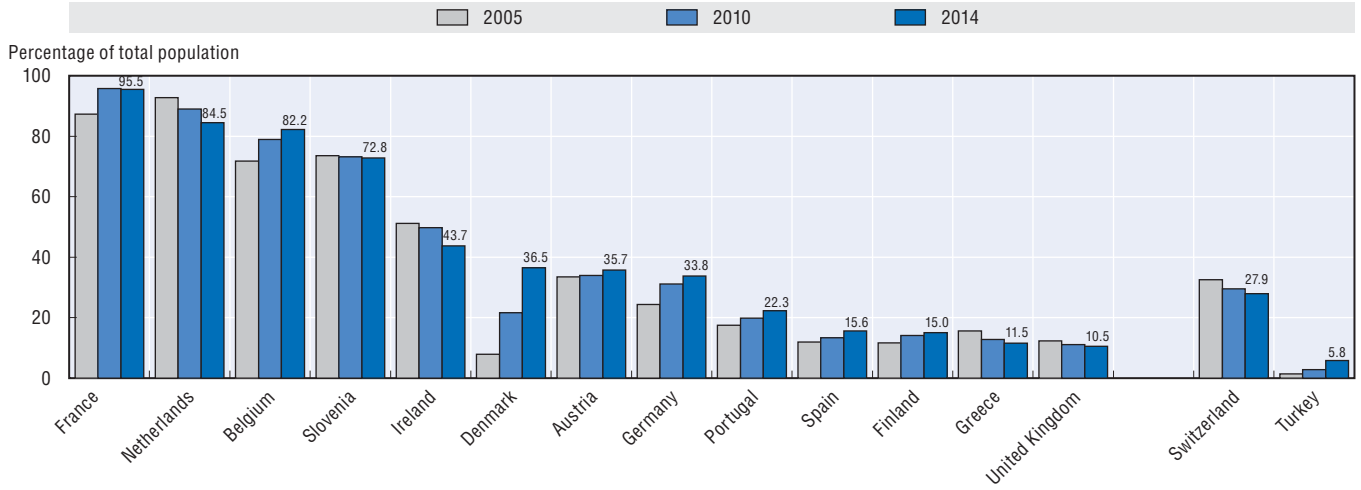


Note: Private health insurance can be both complementary and supplementary in Denmark, Finland and Luxembourg; and duplicate, complementary and supplementary in Slovenia.

Source: *OECD Health Statistics 2016*; European Observatory Health Systems in Transition (HiT) Series and Voluntary health insurance in Europe: country experience, Observatory Studies Series, 2016, for non-OECD countries.

StatLink http://dx.doi.org/10.1787/888933429711

7.3. Evolution in private health insurance coverage, 2005 to 2014



Source: *OECD Health Statistics 2016.*

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All European countries endorse equity of access to health care for all people as an important policy objective. One method of gauging to what extent this objective is achieved is through assessing reports of unmet needs for health care. The problems that people report in obtaining care when they are ill often reflect significant barriers to care.

While people can give a number of reasons for not receiving care, the data reported here focusses on reasons related to health care systems, including financial reasons (too expensive), having to travel too far to receive care and long waiting times. Differences in the reporting of unmet care needs *across* countries may be partly due to differences in social norms and expectations. However, these factors are likely to play a lesser role in explaining any differences among population groups *within* each country. Self-reported unmet care needs must be interpreted in conjunction with other indicators of potential barriers to access, such as the extent of health insurance coverage and the amount of out-of-pocket payments, as well as the actual use of health services.

In all European countries, most of the population reported no unmet care needs related to the financing and delivery of health care systems, according to the 2014 EU Statistics on Income and Living Conditions survey (EU-SILC). However, in some countries, significant proportions of people reported having some unmet medical care needs for financial reasons, geographic reasons or waiting times (Figure 7.4). In Latvia, Estonia and Greece, more than 10% of the population reported an unmet need for a medical examination for at least one of these three reasons, and the burden fell heaviest on low income groups, particularly in Latvia and Greece. One fourth of people in the lowest income group in Latvia reported going without a medical examination when needed in 2014 for one of these three reasons, while this proportion reached one in six people (17%) in Greece. On average across EU countries, four times more people in low income groups reported unmet medical needs for financial, geographic or waiting time reasons as did people in high income groups (6.4% versus 1.5%). The main reason for people in low income groups to report unmet health care needs was that care was too expensive.

A larger proportion of the population indicates unmet needs for dental care than for medical care (Figure 7.5). In many countries, dental care is only partially included (or not included at all) in basic health care coverage, and so must either be paid out-of-pocket or covered through purchasing private health insurance (Paris et al., 2016). People in Latvia reported the highest rates of unmet needs for a dental examination in 2014 (18% of the whole population) for financial, geographic or waiting times reasons, and again this proportion was particularly high among low income people (reaching 37%). Portugal, Greece and Italy also had a substantial proportion of their population reporting unmet needs for dental care, particularly among low income groups. People in Austria, Slovenia, Malta, Luxembourg, the Czech Republic, Germany and the Netherlands reported the lowest rates of unmet dental care needs in 2014 (between 1% and 4% only), according to EU-SILC.

Unmet needs for medical care and dental care due to financial reasons decreased between 2005 and 2008 on average across EU countries, but have gone up at least slightly since 2009 or 2010 (Figures 7.6 and 7.7). The increase in unmet care needs for financial reasons since 2009 or 2010 has been particularly noticeable among people in low income groups, in particular for dental care, where the level of unmet needs among the low income population has gone up to its level of 2005 across the European Union as a whole.

In Greece, the percentage of people reporting some unmet medical care needs for financial reasons has increased since the beginning of the crisis in 2008, rising from around 4% of the population in 2008 to nearly 10% in 2014, according to EU-SILC. This proportion reached more than 16% among people in the lowest income group, up from 7% in 2008. In Portugal, the percentage of people reporting unmet medical care needs for financial reasons also followed a similar trend, albeit at a lower level. The proportion of people in low income groups reporting unmet need for a medical examination went up from 2.2% in 2008 to 6.3% 2014.

Any increase in unmet care needs, particularly among people with low income, may result in poorer health status for the population affected and increase health inequalities.

Definition and comparability

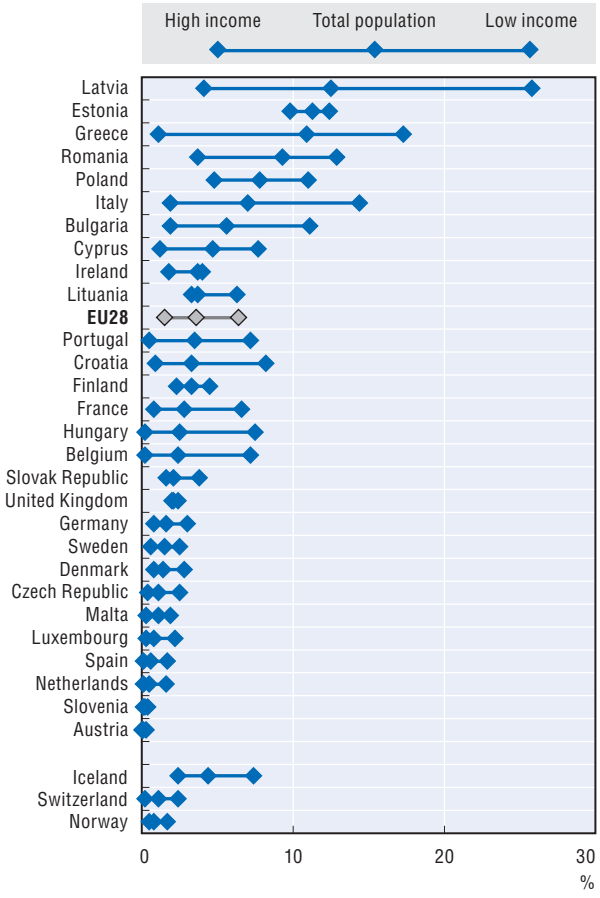
Questions on unmet health care needs are included in the European Union Statistics on Income and Living Conditions survey (EU-SILC). Individuals are asked whether there was a time in the previous 12 months when they felt they needed health care or dental care but did not receive it, followed by a question as to why the need for care was unmet. The data presented here focus on reasons related to the health care system, including that care was too expensive, the distance to travel too far or waiting times too long. Cultural factors may affect responses to questions about unmet care needs. Caution is therefore required in comparing the magnitude of inequalities across countries.

Income quintile groups are computed on the basis of the total equivalised disposable income attributed to each member of the household. The first quintile group represents the 20% of the population with the lowest income, and the fifth quintile group represents the 20% of the population with the highest income.

Reference

Paris, V. et al. (2016), "Health Care Coverage in OECD Countries in 2012", *OECD Health Working Papers*, No. 88, OECD Publishing, Paris, *http://dx.doi.org/10.1787/5jlz3kbf7pzv-en*.

7.4. Unmet need for medical examination for financial, geographic or waiting times reasons, by income quintile, 2014



Source: *Eurostat Database*, based on EU-SILC.

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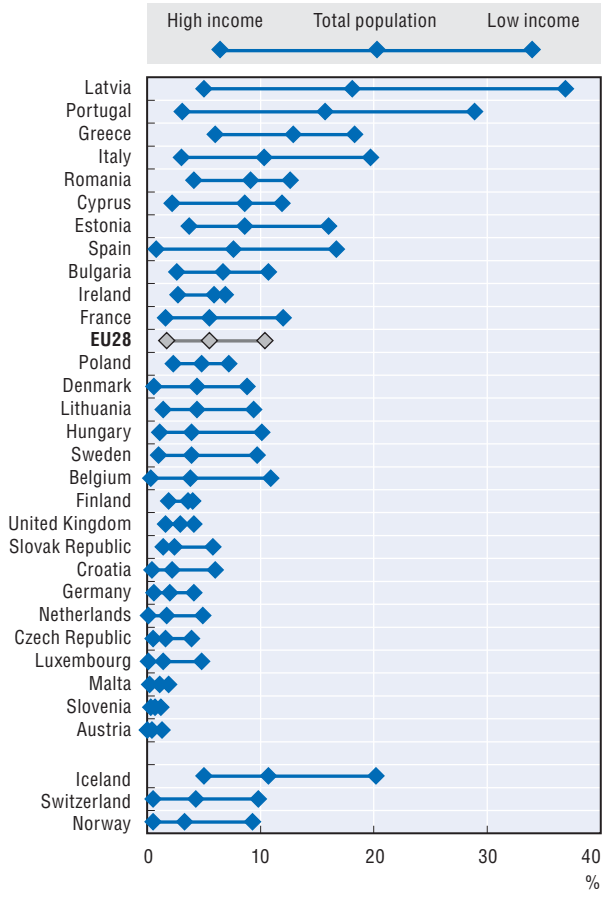
7.5. Unmet need for dental examination for financial, geographic or waiting times reasons, by income quintile, 2014



Source: *Eurostat Database*, based on EU-SILC.

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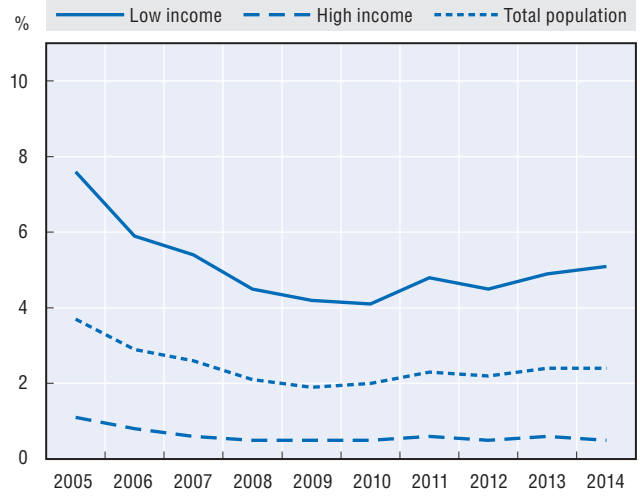
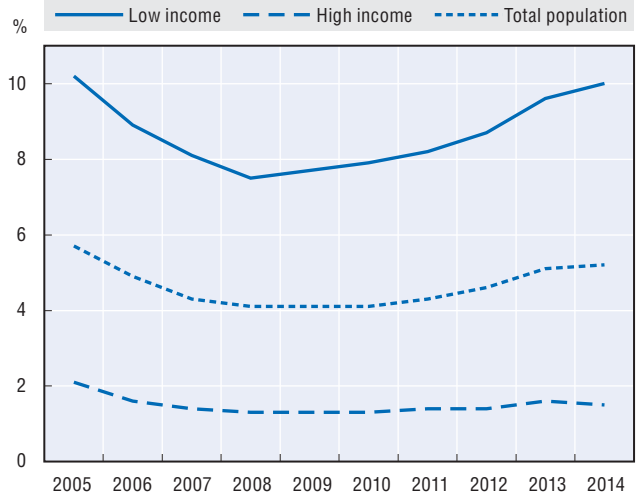
7.6. Change in unmet medical care need for financial reasons, by income quintile, all EU countries, 2005 to 2014



Source: *Eurostat Database*, based on EU-SILC.

StatLink http://dx.doi.org/10.1787/888933429753

7.7. Change in unmet dental care need for financial reasons, by income quintile, all EU countries, 2005 to 2014



Source: *Eurostat Database*, based on EU-SILC.

StatLink http://dx.doi.org/10.1787/888933429763

Financial protection through public or private health insurance substantially reduces the amount that people pay directly for medical care, yet in some countries the burden of out-of-pocket spending can still create barriers to health care access and use: households that face difficulties paying medical bills may delay or even forgo needed health care. In the European Union, 15% of health spending is paid directly by patients, but large differences exist between member states (see indicator "Financing of health care" in Chapter 5).

In contrast to publicly-funded care, out-of-pocket payments rely on the ability to pay. If the financing of health care becomes more dependent on out-of-pocket payments, the burden shifts, in theory, towards those who use services more, and possibly from high to low-income earners, where health care needs are higher. In practice, many countries have policies in place to protect population categories from excessive out-of-pocket payments. These consist in partial or total exemptions for social aid beneficiaries, seniors, or people with chronic diseases or disabilities by capping direct payments, either in absolute terms or as a share of income (Paris et al., 2016).

The burden of out-of-pocket medical spending for households can be measured either by its share of total household income or its share of final household consumption. The share of household consumption allocated to medical spending varied considerably across EU countries in 2014, ranging from 1.5% or less in countries such as Luxembourg, France and the United Kingdom, to 4% or more in Bulgaria, Malta, Cyprus and Greece (Figure 7.8). In total, 2.3% of household spending within the European Union went towards medical goods and services.

Health systems in EU countries differ in the degree of coverage for different health services and goods. In most countries, the degree of coverage is higher for hospital care and doctor consultations than for pharmaceuticals, dental care and eye care (Paris et al., 2016). Taking into account these differences and also the relative importance of these different spending categories, it is not surprising that there are significant variations between EU countries in the breakdown of the medical costs that households have to bear themselves.

In most EU countries, pharmaceuticals and curative care (including both inpatient and outpatient care) are the two main spending items for out-of-pocket expenditure (Figure 7.9). Across the EU, these two components account for nearly 70% of all medical spending paid by households, but the importance varies between countries. In the majority of EU countries, a large part of household out-of-pocket spending is for pharmaceutical drugs. In Central and Eastern European countries such as Romania, Poland, Croatia, Lithuania and Hungary, at least half of out-of-pocket payments are for pharmaceuticals. In some of these countries, in addition to co-payments for prescribed pharmaceuticals, spending on over-the-counter medicines for self-medication is historically high. In Cyprus, Belgium and Greece, payments for inpatient and outpatient curative care account for close to 50% or more of total household spending.

Payments for dental treatment also represent a significant part in household medical spending, accounting for nearly one-fifth of all out-of-pocket expenditure across the European Union. In Spain, Denmark and Estonia, this figure reaches 30% and more. This can at least partly be explained by the lack of public coverage for dental treatment and prosthesis in these countries compared with a more comprehensive coverage for other categories of care.

The significance of therapeutic appliances (eyeglasses, hearing aids, etc.) in household medical spending differs widely, but is as much as 33% in the Netherlands and 28% in Germany. Across the EU, 12% of direct spending of households went to these goods. Much of this relates to eye-care products. In many countries, public coverage is limited to a contribution to the cost of lenses. Frames are often exempt from public coverage leaving private households to bear the full cost if they are not covered by complementary private insurance.

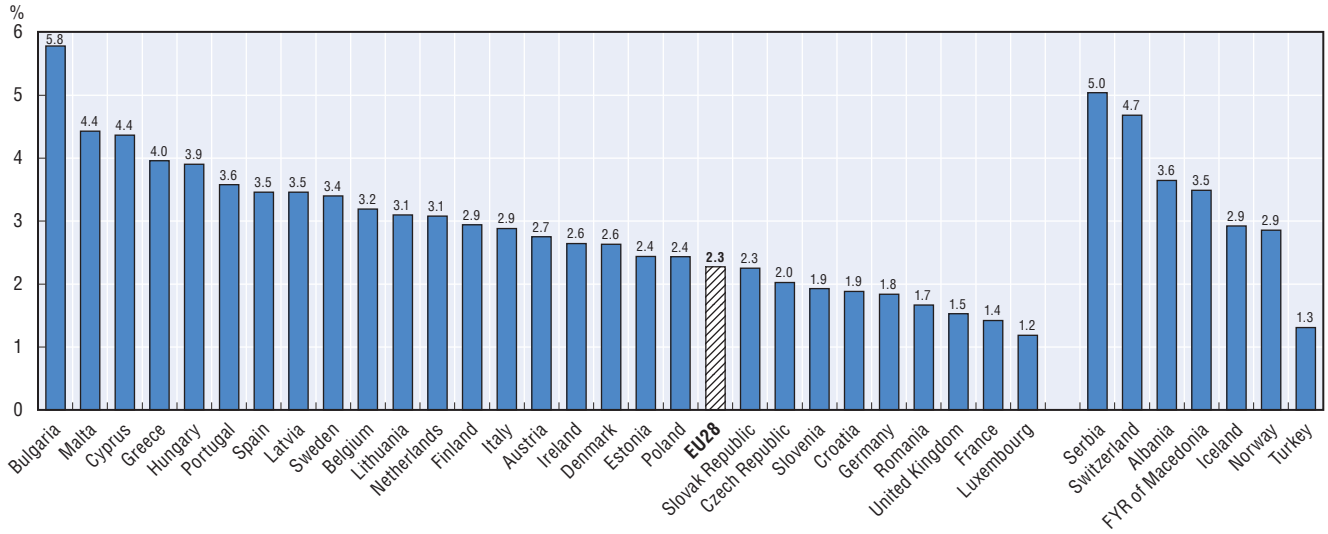
Definition and comparability

Out-of-pocket payments are expenditures borne directly by a patient where neither public nor private insurance cover the full cost of the health good or service. They include cost sharing and other expenditure paid directly by private households and should also include estimations of informal payments to health care providers. Only expenditure for medical spending (i.e. current health spending less expenditure for the health part of long-term care) is presented here, because the capacity of countries to estimate private long-term care expenditure varies widely. Hence, medical spending mainly refers to expenditure for curative and rehabilitative care in inpatient and outpatient settings, dental care, ancillary services, pharmaceuticals and therapeutic appliances.

Reference

Paris, V. et al. (2016), "Health Care Coverage in OECD Countries in 2012", *OECD Health Working Papers*, No. 88, OECD Publishing, Paris, *http://dx.doi.org/10.1787/5jlz3kbf7pzv-en*.

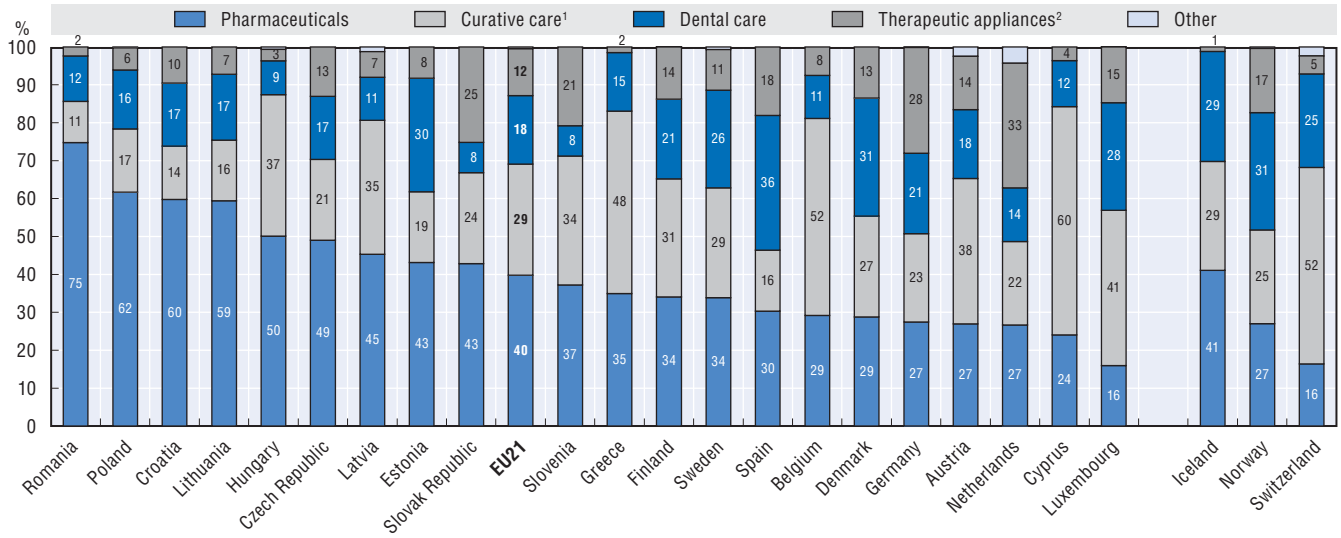
7.8. Out-of-pocket medical spending as a share of final household consumption, 2014 (or nearest year)



Note: This indicator relates to current health spending excluding long-term care (health) expenditure.
Source: *OECD Health Statistics 2016*; *Eurostat Database*.

StatLink http://dx.doi.org/10.1787/888933429776

7.9. Shares of out-of-pocket medical spending by services and goods, 2014 (or nearest year)



Note: This indicator relates to current health spending excluding long-term care (health) expenditure.
1. Including rehabilitative and ancillary services.
2. Including eye care products, hearing aids, wheelchairs, etc.
Source: *OECD Health Statistics 2016*.

StatLink http://dx.doi.org/10.1787/888933429785

Access to medical care requires an adequate number of doctors, with a proper mix between generalists and specialists and a proper distribution in all parts of the country.

The number of doctors per capita varies widely across EU countries (Figure 7.10). In 2014, Greece had the highest number with 6.3 doctors per 1 000 population, but this number is an over-estimation as it includes all doctors who are licensed to practice but may no longer be practicing for various reasons. Following Greece is Austria with 5.1 doctors per 1 000 population. The number of doctors per capita was lowest in Poland and Romania.

Since 2000, the number of physicians per capita has increased in all EU countries, except in France where it has remained stable. On average across EU member states, the density of physicians increased from 2.9 doctors per 1 000 population in 2000 to 3.5 in 2014. The rise in the number of doctors per capita was particularly rapid in Greece, but most of the growth occurred before the economic crisis started in 2008. The growth rate has also been very strong in the United Kingdom, although the number of physicians per capita still remains below the EU average.

Looking at the growth in the absolute number of doctors, there has been a substantial rise since 2000 in most European countries, although the number has stabilised in some countries that were hard hit by the economic crisis that started in 2008 (e.g. Greece and Spain). In the United Kingdom, there were over 50% more doctors employed in 2014 compared with 2000 (Figure 7.11). In the Netherlands also, the number of doctors has increased steadily since 2000, and there were over 40% more doctors in 2014 compared with 2000. In Germany, there were 25% more doctors in 2014 compared with 2000. In France, the growth rate has been more modest, with the number of doctors growing by just over 10%, at the same rate as the population growth.

Many countries have anticipated the current and future retirement of a significant number of doctors by increasing their education and training efforts to make sure that there would be enough new doctors to replace those who are retiring (OECD, 2016; see also indicator on graduates in Chapter 8). Still, there continues to be concerns in many European countries about current or future possible shortages of doctors, notably of certain categories of doctors such as generalists or in some regions.

Whereas the overall number of doctors per capita has increased in nearly all countries, the share of generalists has come down in most countries. On average across EU countries, generalists made up only about 30% of all physicians in 2014. In response to concerns about shortages of generalists, a number of countries have taken steps to increase the number of post-graduate training places in general medicine (OECD, 2016). Several countries have also taken some measures to increase the attractiveness of general practice by improving working conditions (for instance, by promoting group practice) and remunerations. A number of countries have also introduced or extended the roles of other health care providers, such as advanced practice nurses, to respond to growing demands for primary care (Maier et al., forthcoming).

The uneven geographic distribution of physicians is another important concern in many European countries, especially in those countries with remote and sparsely populated areas. The density of physicians is consistently greater in urban regions, reflecting the concentration of specialised services such as surgery and physicians' preferences to practice in urban settings. Differences in the density of doctors between predominantly urban regions and rural regions are highest in the Slovak Republic, the Czech Republic and Greece, driven to a large extent by the strong concentration of doctors in the national capital region (OECD, 2015).

Countries are using a range of policy levers to influence the choice of practice location of physicians, including: 1) providing financial incentives for doctors to work in underserved areas; 2) increasing enrolments in medical education programmes of students coming from specific social or geographic background; 3) regulating the choice of practice location of doctors (for all new medical graduates or targeting more specifically international medical graduates); and 4) re-organising health service delivery to improve the working conditions of doctors in underserved areas, along with finding innovative ways to improve access to care for people living in underserved areas, notably through tele-medicine (Ono et al., 2014).

Definition and comparability

Practising physicians are defined as doctors who are providing care for patients. In some countries, the numbers also include doctors working in administration, management, academic and research positions ("professionally active" physicians), adding another 5-10% of doctors. Greece and Portugal report all physicians entitled to practice, resulting in an even greater overestimation.

References

Maier, C. et al. (forthcoming), "Nurses in Advanced Roles in Primary Care: Policy Levers for Implementation", *OECD Health Working Papers*, OECD Publishing, Paris.

OECD (2016), *Health Workforce Policies in OECD Countries: Right Jobs, Right Skills, Right Places*, OECD Publishing, Paris, *http://dx.doi.org/10.1787/9789264239517-en*.

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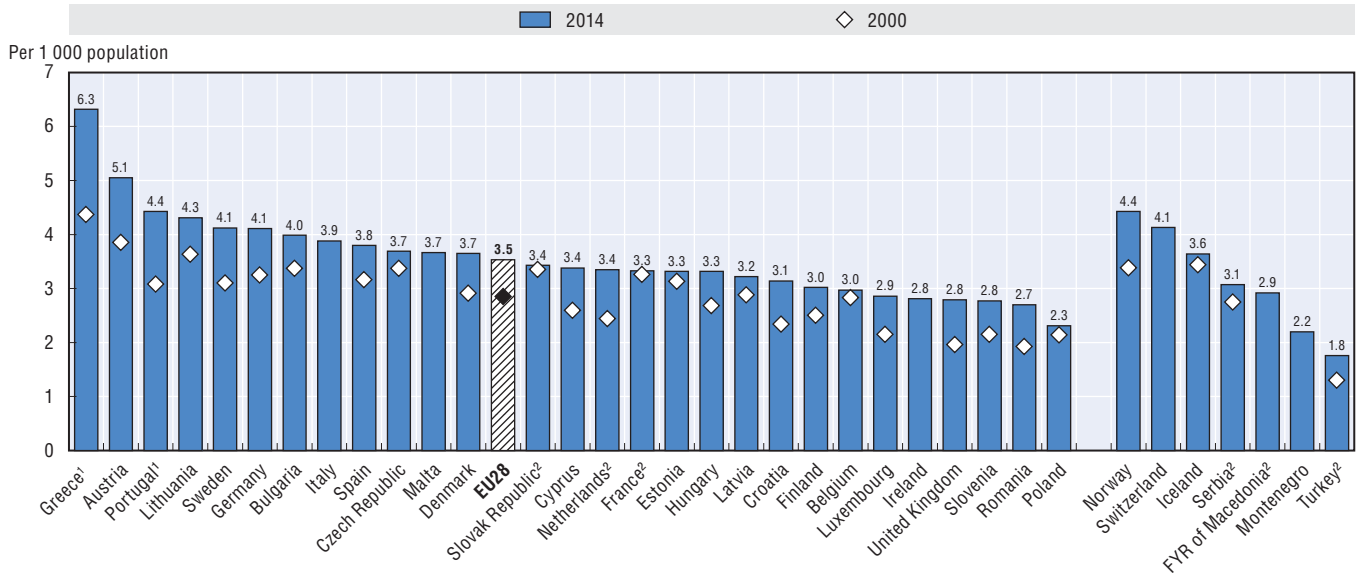
7.10. Practising doctors per 1 000 population, 2000 and 2014 (or nearest year)

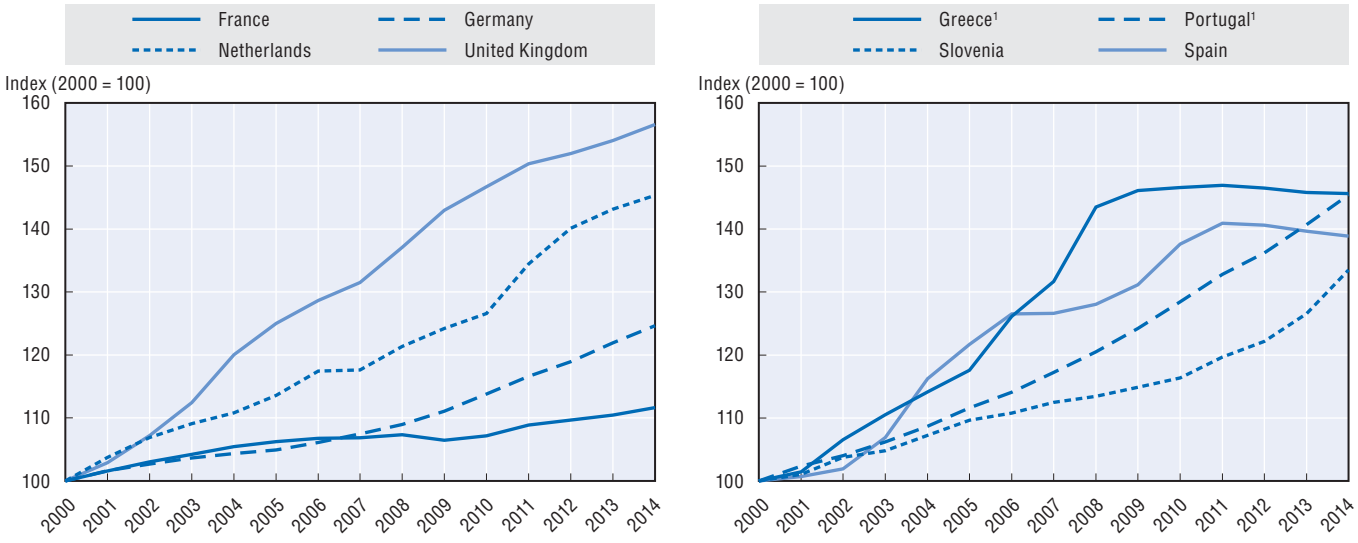


1. Data refer to all doctors licensed to practice, resulting in a large over-estimation of the number of practising doctors (e.g. of around 30% in Portugal).
2. Data include not only doctors providing direct care to patients, but also those working in the health sector as managers, educators, researchers, etc. (adding another 5-10% of doctors).

Source: OECD Health Statistics 2016; Eurostat Database.

StatLink http://dx.doi.org/10.1787/888933429793

7.11. Evolution in the number of doctors, selected EU countries, 2000 to 2014 (or nearest year)



1. Data refer to doctors licensed to practice.

Source: OECD Health Statistics 2016.

StatLink http://dx.doi.org/10.1787/888933429803

In all countries, nurses are the most numerous health professional group. Nurses play a critical role in providing access to care not only in traditional settings such as hospitals and long-term care institutions, but increasingly in primary care (especially in offering care to the chronically ill) and in home care settings. There are concerns in many countries about current or future shortages of nurses, particularly as the demand for nurses is expected to continue to increase with ageing populations while the ageing of the "baby boom" generation of nurses itself is expected to lead to the retirement of many nurses in the coming years. However, many countries have already anticipated this wave of retirement by increasing the training of new nurses, combined with efforts to increase retention rates in the profession (OECD, 2016).

On average across EU countries, there were 8.4 nurses per 1 000 population in 2014, up from 6.9 in 2000 (Figure 7.12). The number of nurses per capita was highest in Denmark, Finland and Germany. In Denmark, 60% of nurses are "professional" (or "qualified") nurses while the other 40% are "associate professional" (or "qualified auxiliary") nurses who are trained at a lower level and perform lower tasks. This is also the case in Switzerland (the European country with the highest number of nurses per capita). In other countries such as France, Italy, Luxembourg and Spain, there are no "associate professional" nurses as such, but a large number of health care assistants (or nursing aids) provide assistance to nurses. Greece had the fewest number of nurses per capita among EU countries (although the number only includes those working in hospital), followed by Bulgaria and Latvia.

Since 2000, the number of nurses per capita has increased in most European countries, except in Latvia and Lithuania where the number of nurses per capita has remained stable (meaning that there has been in effect a reduction in the absolute number of nurses given that the overall population has come down) and the Slovak Republic where the number of nurses has come down both in absolute number and on a per capita basis. The increase was particularly large in Denmark, Finland and France, but also in Malta, Portugal and Spain, although the number per capita still remains below the EU average in these last three countries.

In Malta, a series of measures have been taken to train more nurses domestically and attract more nurses from other countries to address current shortages. The bachelor degree to become a nurse in Malta is free of charge for students, and once students have graduated, they are also encouraged to take more training by taking time off while continuing to receive at least part of their salary. Malta has also accepted that any nurse who has worked in another EU country will have their years of service abroad counted as years of service in the Maltese public sector. It has also implemented family-friendly initiatives such as free childcare and opportunities to work reduced hours. In terms of remuneration, nurses now get the same basic salary as junior doctors after two years of service in nursing.

In 2014, the number of nurses per doctor ranged from more than four in Finland, Denmark and Luxembourg, to about only one nurse per doctor in Bulgaria (Figure 7.13). The average across EU member states was two-and-a-half nurses per doctor. The ratio of nurses per doctor was generally low in Southern European countries such as Spain, Portugal, Greece and Italy, suggesting a possible undersupply of nurses relative to doctors and an inefficient allocation of tasks.

In response to shortages of general practitioners, some countries have introduced or extended advanced roles for nurses to ensure proper access to primary care. Evaluations of the experience with (advanced) nurse practitioners in Finland and the United Kingdom show that they can improve access to care and reduce waiting times, while providing the same quality of care as doctors for a range of patients including those with minor illnesses or requiring routine follow-up. The development of new advanced roles for nurses requires the implementation of more advanced education and training programmes to ensure that they have the right skills and competencies, and also often require legislative and regulatory changes to remove barriers to the extension in their scope of practice (Maier et al., forthcoming).

Definition and comparability

The number of nurses includes those providing services for patients ("practising"), but in some countries also those working as managers, educators or researchers ("professionally active"). In countries where there are different levels of nurses, the data include both "professional" (or "qualified") nurses who have a higher level of education and perform higher level tasks, and "associate professional" (or "qualified auxiliary") nurses who have a lower level of education but are nonetheless recognised and registered as nurses. Health care assistants (or nursing aids) who are not recognised as nurses are excluded. Midwives are excluded, except in some countries where they are at least partly included because they are considered as specialist nurses or for other reasons (Cyprus, Ireland and Spain).

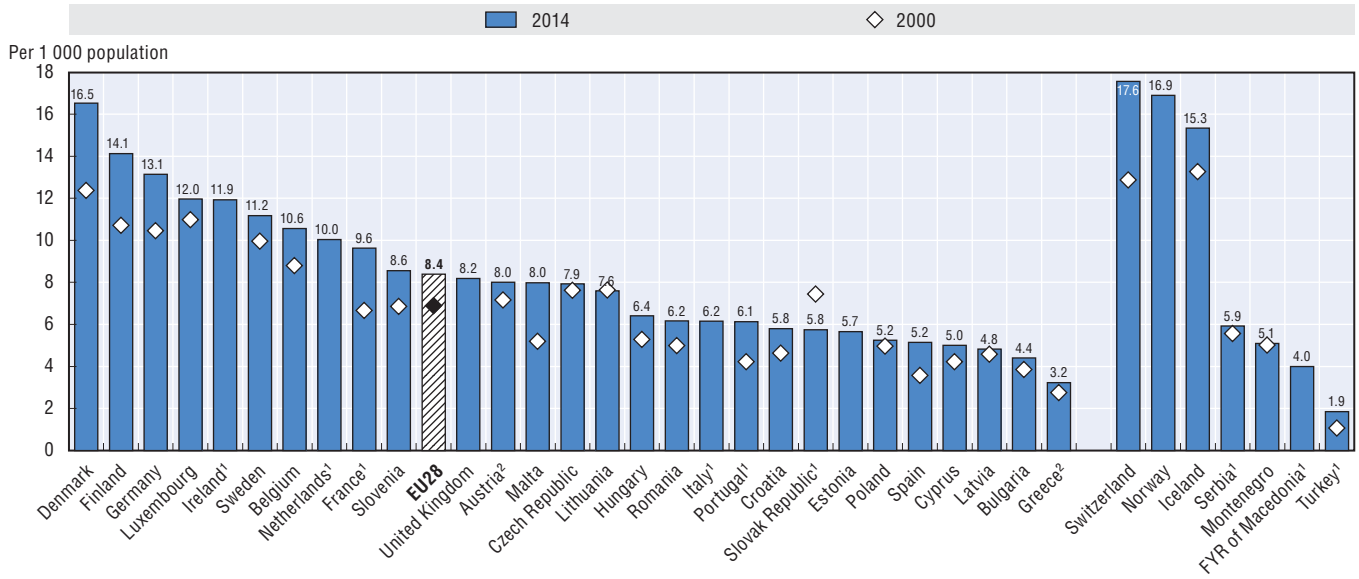
Austria and Greece report only nurses working in hospitals (resulting in an underestimation).

References

Maier, C. et al. (forthcoming), "Nurses in Advanced Roles in Primary Care: Policy Levers for Implementation", *OECD Health Working Papers*, OECD Publishing, Paris.

OECD (2016), *Health Workforce Policies in OECD Countries: Right Jobs, Right Skills, Right Places*, OECD Publishing, Paris, *http://dx.doi.org/10.1787/9789264239517-en*.

7.12. Practising nurses per 1 000 population, 2000 and 2014 (or nearest year)

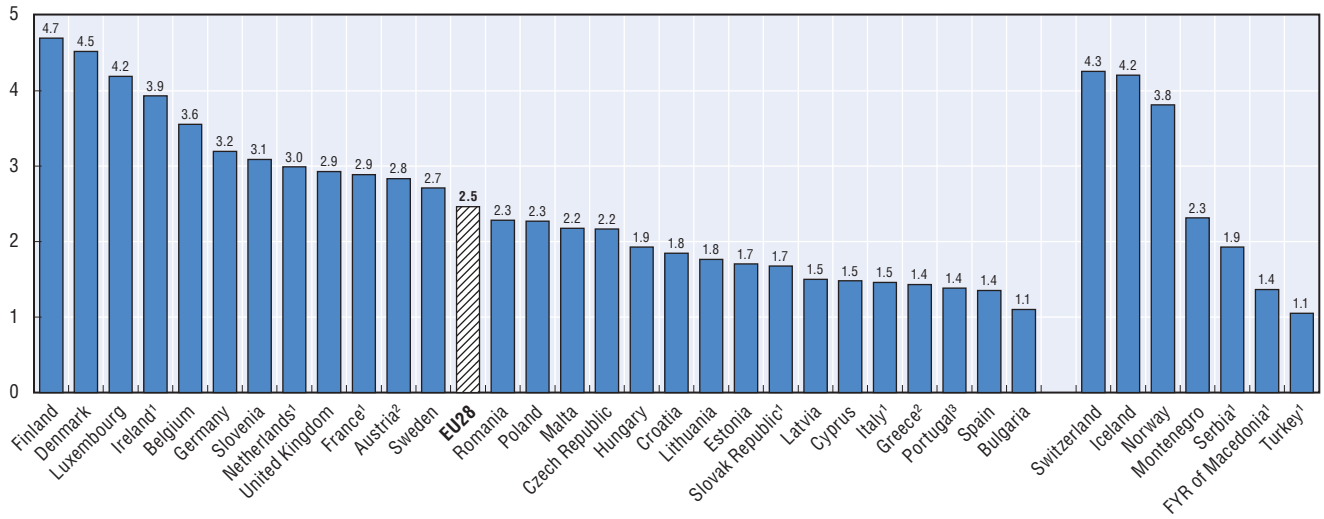


1. Data include not only nurses providing care for patients, but also those working as managers, educators, researchers, etc.
2. Austria and Greece report only nurses employed in hospital.

Source: OECD Health Statistics 2016; Eurostat Database.

StatLink http://dx.doi.org/10.1787/888933429812

7.13. Ratio of nurses to doctors, 2014 (or nearest year)



1. For those countries which have not provided data for practising nurses and/or practising doctors, the numbers relate to the "professionally active" concept for both nurses and doctors.
2. For Austria and Greece, the data refer to nurses and doctors employed in hospital.
3. The ratio for Portugal is underestimated because the numerator refers to professionally active nurses while the denominator includes all doctors licensed to practice.

Source: OECD Health Statistics 2016; Eurostat Database.

StatLink http://dx.doi.org/10.1787/888933429827

Consultations with doctors can take place in doctors' offices or clinics, in hospital outpatient departments or, in some cases, in patients' own homes. In many EU countries (e.g. Denmark, Italy, the Netherlands, Portugal, the Slovak Republic and Spain), patients are required or given incentives to consult a general practitioner (GP) about any new episode of illness. The GP may then refer them to a specialist, if indicated. In other countries, patients may approach specialists directly.

In 2014, the number of doctor consultations per person per year was highest in Hungary, the Slovak Republic and the Czech Republic, and lowest in Sweden, Portugal, Finland and Denmark (Figure 7.14). The EU average is about seven consultations per person per year, with most countries reporting five to eight visits. Cultural factors appear to play a role in explaining some of the variations across countries, but certain health system characteristics also seem to matter. Some countries which pay their doctors mainly by fee-for-service tend to have above-average consultation rates (e.g. the Slovak Republic, the Czech Republic and Germany), whereas other countries that have mostly salaried doctors tend to have below-average rates (e.g. Sweden and Finland).

In Sweden and Finland, the low number of doctor consultations may also be explained partly by the fact that nurses and other health professionals play an important role in primary care centres, lessening the need for consultations with doctors (Delamaire and Lafortune, 2010).

In many European countries, the average number of doctor consultations per person has increased since 2000. This is consistent with the increase in the number of doctors per capita in most countries over that period (see indicator on doctors in this chapter). In the Czech Republic and the Slovak Republic, there has been a reduction in the number of doctor consultations per capita since 2000, although the number still remains well above the EU average.

Information on the number of doctor consultations per person can be used to estimate the annual numbers of consultations per doctor. This indicator is a very crude measure of doctors' productivity, since consultations can vary in length and effectiveness, and because it excludes the work doctors do on hospital inpatients, administration and research. Keeping these reservations in mind, the estimated number of consultations per doctor is highest in Hungary, the Slovak Republic, Poland and the Czech Republic, and lowest in Sweden, followed by Denmark, Austria and Finland (Figure 7.15). However, the duration of consultations with doctors in Sweden tends to be longer than in other countries such as the United Kingdom, the Netherlands and Germany where most consultations last less than 15 minutes (Commonwealth Fund, 2015).

Looking at trends over time in the estimated number of consultations per doctor per year, the number has decreased at least slightly in Sweden, Finland and Austria, as the number of doctors has increased more rapidly than the number of consultations, whereas it has remained relatively stable and at a higher level in Germany and Poland (Figure 7.16). In the Czech Republic, the reduction in the number of consultations per doctor in 2008 was due to a significant reduction in the number of consultations per person starting that year.

Definition and comparability

Consultations with doctors refer to the number of contacts with physicians, including both generalists and specialists. There are variations across countries in the coverage of different types of consultations, notably in outpatient departments of hospitals. The data come mainly from administrative sources, although in some countries (Ireland, Italy, the Netherlands, Spain, Switzerland and the United Kingdom) the data come from health interview surveys. Estimates from administrative sources tend to be higher than those from surveys because of problems with recall and non-response rates.

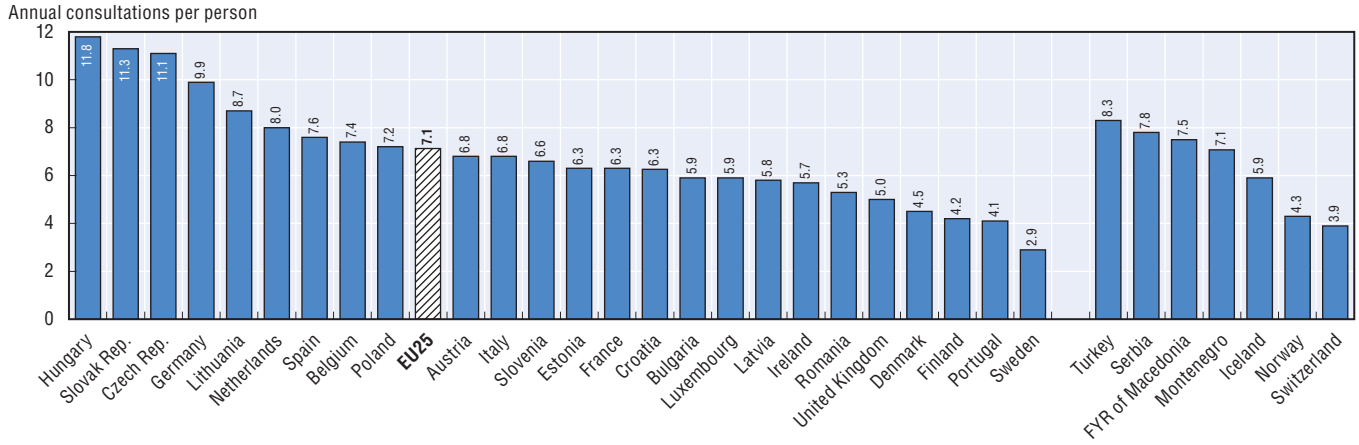
In Hungary, the data include consultations for diagnostic exams, such as CT and MRI scans (resulting in an over-estimation). The data for the Netherlands exclude contacts for maternal and child care. The data for Portugal exclude visits to private practitioners, while those for the United Kingdom exclude consultations with specialists outside hospital outpatient departments (resulting in an under-estimation). In Germany, the data include only the number of cases of physicians' treatment according to reimbursement regulations under the Social Health Insurance Scheme (a case only counts the first contact over a three-month period, even if the patient consults a doctor more often, leading to an under-estimation). Telephone contacts are included in a few countries (e.g. Spain and the United Kingdom). In Turkey, a majority of consultations with doctors occur in outpatient departments in hospitals.

References

Commonwealth Fund (2015), *International Health Policy Survey of Primary Care Doctors*, New York.

Delamaire, M.L. and G. Lafortune (2010), "Nurses in Advanced Roles: A Description and Evaluation of Experiences in 12 Developed Countries", *OECD Health Working Papers*, No. 54, OECD Publishing, Paris, *http://dx.doi.org/10.1787/5kmbrcfms5g7-en*.

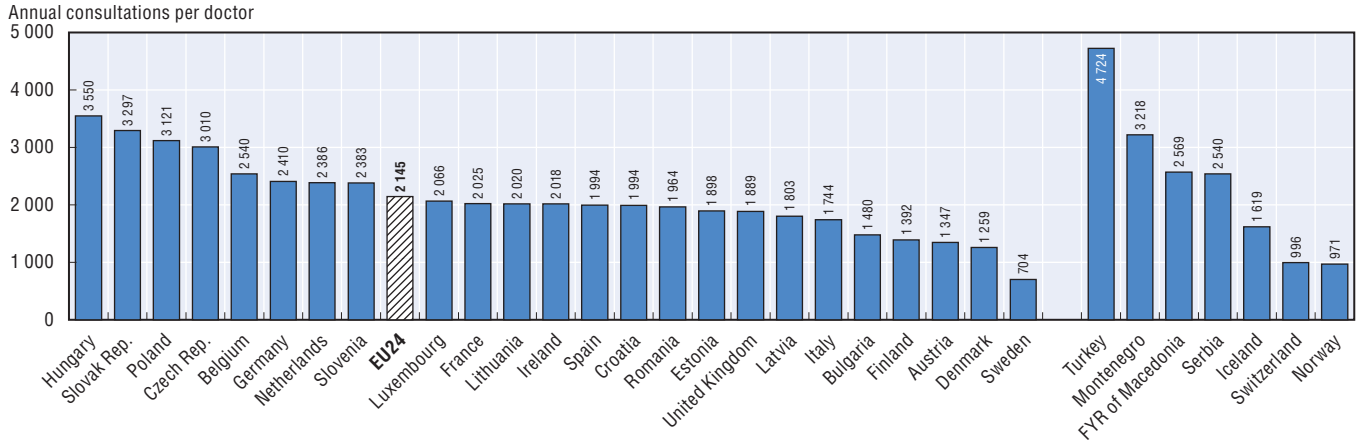
7.14. Number of doctor consultations per person, 2014 (or nearest year)



Source: OECD Health Statistics 2016; Eurostat Database.

StatLink http://dx.doi.org/10.1787/888933429839

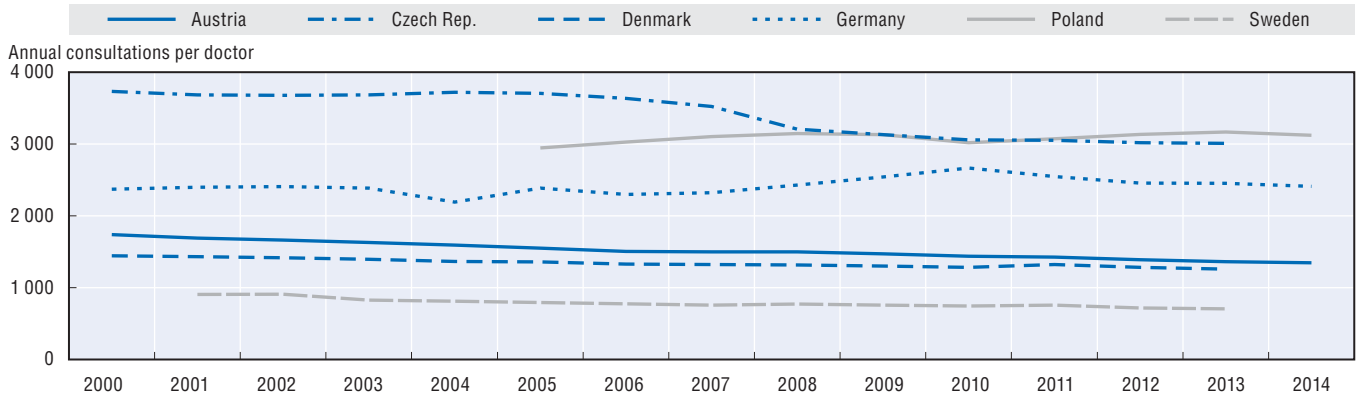
7.15. Estimated number of consultations per doctor, 2014 (or nearest year)



Source: OECD Health Statistics 2016; Eurostat Database.

StatLink http://dx.doi.org/10.1787/888933429844

7.16. Evolution in the estimated number of consultations per doctor, selected EU countries, 2000 to 2014



Source: OECD Health Statistics 2016.

StatLink http://dx.doi.org/10.1787/888933429855

Recent advances in medical imaging technologies are improving diagnosis of a wide range of diseases, but also involve substantial costs in purchasing the equipment and using it. This section presents data on the availability and use of two diagnostic imaging technologies: computed tomography (CT) scanners and magnetic resonance imaging (MRI) units. CT scanners and MRI units help physicians diagnose a range of conditions by producing images of internal organs and structures of the body. Unlike conventional radiography and CT scanning, MRI exams do not expose patients to ionising radiation.

The availability of CT scanners and MRI units has increased rapidly in most European countries over the past two decades. In 2014, Germany, Italy, Greece and Finland had the highest number of MRI units per capita among EU member states, while Denmark, Latvia, Germany and Greece had the highest number of CT scanners per capita. Iceland and Switzerland also have a large number of both MRI and CT scanners on a per capita basis (Figures 7.17 and 7.18). The numbers of MRI units and CT scanners per population were the lowest in Hungary, Romania and the United Kingdom.

There is no general guideline or benchmark regarding the ideal number of CT scanners or MRI units per population. However, if there are too few units, this may lead to access problems in terms of geographic proximity or waiting times. If there are too many, this may result in an overuse of these costly diagnostic procedures, with little if any benefits for patients.

Data on the use of these diagnostic equipment show that the number of MRI exams per capita in 2014 (or nearest year) was highest in Germany, France, Luxembourg and Belgium (Figure 7.19). The number of CT exams per capita was highest in the same group of countries, with the exception of Germany (Figure 7.20).

There are large variations in the use of CT and MRI scanners not only across countries, but also within countries. For example, in Belgium, there was almost a two-fold variation in the use of MRI and CT exams between those provinces with the highest and lowest rates in 2010. In the United Kingdom (England) where the utilisation rate of both types of diagnostic exams is generally much lower, the variation across regions was even greater, with almost a four-fold difference between those Primary Care Trusts (PCTs) that had the highest rates and lowest rates of MRI and CT exams in 2010/11 (OECD, 2014).

Clinical guidelines have been developed in some European countries to promote a rational use of these diagnostic technologies. In the United Kingdom, since the creation of the Diagnostic Advisory Committee by the National Institute for Health and Clinical Excellence (NICE), a number of guidelines have been issued on the appropriate use of MRI and CT exams for different purposes (NICE, 2012).

A 2013 Council Directive (2013/59/EURATOM), which is to be implemented by EU member states in 2018, establishes legal requirements and an appropriate regime of regulatory control designed to provide basic safety standards for protection against the dangers from exposure to ionising radiation, based on the principles of justification, optimisation and dose limitation (European Union, 2013).

Definition and comparability

While the data in most countries cover CT scanners and MRI units installed both in hospitals and the ambulatory sector, the data coverage is more limited in some countries. CT scanners and MRI units outside hospitals are not included in some countries (e.g. Belgium, Portugal and Sweden, as well as Switzerland for MRI units). For the United Kingdom, the data only include scanners in the public sector. For Hungary, the data cover only equipment eligible for public reimbursement.

Similarly, MRI and CT exams performed outside hospitals are not included in some countries (e.g. Austria, Cyprus, Ireland, Portugal, Switzerland and the United Kingdom). Furthermore, MRI and CT exams for Cyprus and Ireland only cover public hospitals. The Netherlands only report data on publicly-financed exams.

References

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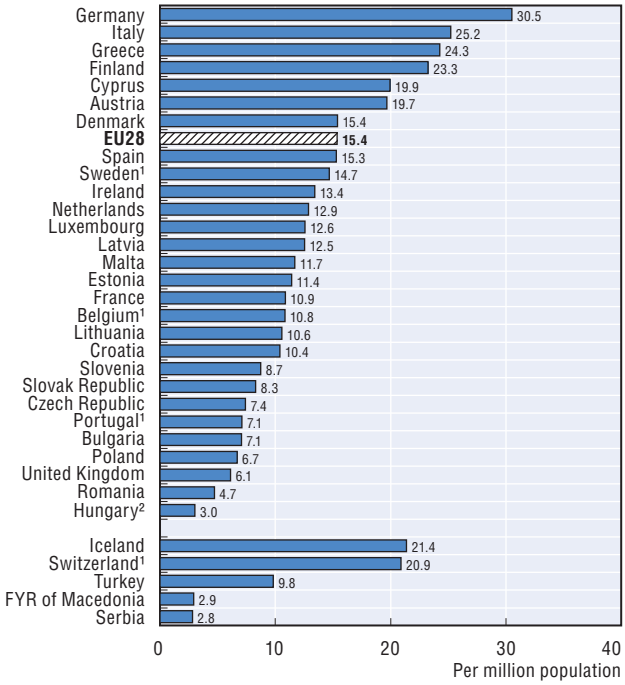
OECD (2014), *Geographic Variations in Health Care Use: What Do We Know and What Can Be Done to Improve Health System Performance?*, OECD Publishing, Paris, *http://dx.doi.org/10.1787/9789264216594-en*.

7.17. MRI units, 2014 (or nearest year)

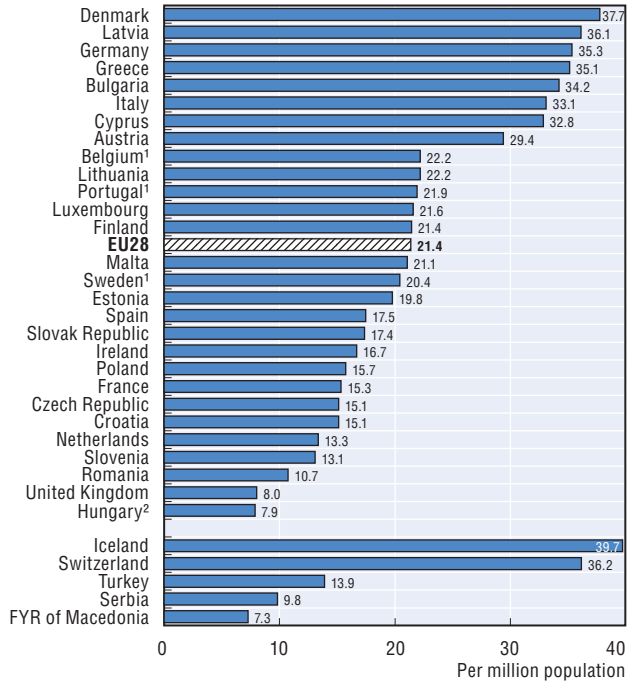


1. Equipment outside hospital not included.
2. Only equipment eligible for public reimbursement.

Source: OECD Health Statistics 2016; Eurostat Database.

StatLink http://dx.doi.org/10.1787/888933429862

7.18. CT scanners, 2014 (or nearest year)

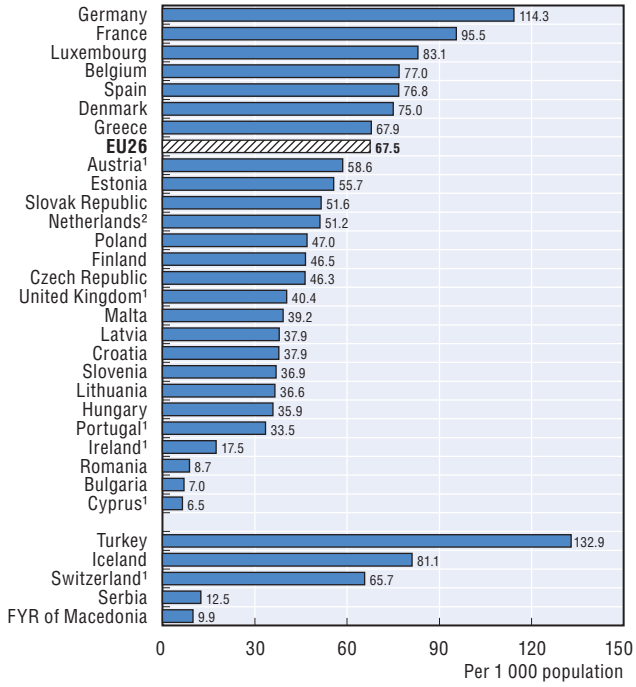


1. Equipment outside hospital not included.
2. Only equipment eligible for public reimbursement.

Source: OECD Health Statistics 2016; Eurostat Database.

StatLink http://dx.doi.org/10.1787/888933429875

7.19. MRI exams, 2014 (or nearest year)

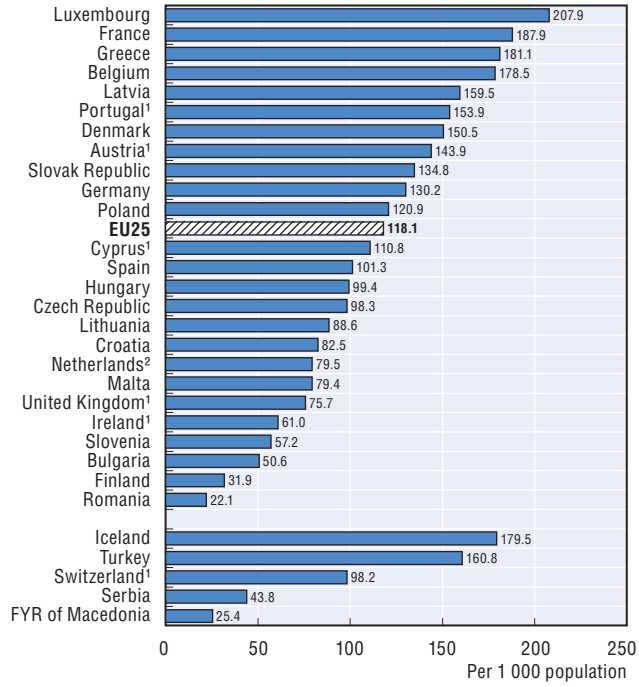


1. Exams outside hospital not included (in Cyprus and Ireland, exams in private hospital also not included).
2. Exams privately-funded not included.

Source: OECD Health Statistics 2016; Eurostat Database.

StatLink http://dx.doi.org/10.1787/888933429883

7.20. CT exams, 2014 (or nearest year)



1. Exams outside hospital not included (in Cyprus and Ireland, exams in private hospital also not included).
2. Exams privately-funded not included.

Source: OECD Health Statistics 2016; Eurostat Database.

StatLink http://dx.doi.org/10.1787/888933429896

The number of hospital beds provides an indication of the resources available for delivering services to inpatients in hospitals. This section presents data on the total number of hospital beds, including those allocated for curative care, rehabilitative care, long-term care and other types of care. It does not capture the capacity of hospitals to provide same-day emergency or elective interventions.

Since 2000, the number of hospital beds per population has decreased in all EU countries, except Bulgaria. On average across EU member states, the number fell from 6.7 beds per 1 000 population in 2000 to 5.2 in 2014, a reduction of over 20% on a per capita basis (Figure 7.21). This reduction in the number of hospital beds has been accompanied by a reduction in average length of stays (see indicator in Chapter 8) and, in some countries, a reduction in hospital admissions and discharges (see the following indicator in this chapter). The reduction in the number of hospital beds has been particularly pronounced in Finland, Latvia and the Slovak Republic.

In all countries, progress in medical technologies has enabled a move to same-day surgery and a reduced need for long hospitalisation. In many countries, the financial and economic crisis which started in 2008 also provided a further stimulus to reduce hospital capacity as part of policies to reduce public spending on health (European Observatory on Health Systems and Policies, 2012).

In 2014, Germany and Austria had the highest number of hospital beds per capita, with around eight beds per 1 000 population (Figure 7.21). The high supply of hospital beds in these two countries is associated with a large number of hospital admissions/discharges, as well as long average length of stays in Germany. Sweden, Ireland, the United Kingdom and Denmark had a relatively low number of hospital beds (although the data in the United Kingdom and Ireland do not include beds in private hospitals).

In most countries, the vast majority of hospital beds are allocated for curative care and rehabilitative care (Figure 7.22). However, in some countries, a significant proportion of beds are allocated for long-term care. For example, in Finland, 30% of hospital beds are allocated for long-term care, because local governments (municipalities) use beds in health care centres (which are defined as hospitals) to respond to some of the needed institution-based long-term care. In Hungary and the Czech Republic, about 25% of hospital beds are devoted to long-term care, while this proportion reached about 20% in Estonia and Spain.

The number of beds in public hospitals has decreased in most countries over the past decade, but in some cases this was accompanied by an increase in the number of beds in private for-profit hospitals. For example, in Germany, the number of beds in public hospitals fell from about 330 000 in 2002 to 270 000 in 2014, while the number of beds in private for-profit hospitals increased from about 170 000 in 2002 to 200 000 in 2014. In France also, the number of beds in public hospitals decreased substantially from about 320 000 in 2000 to 260 000 in 2014, but there was only a modest increase in the number of beds in private for-profit hospitals which rose from 96 000 to 98 000 during that period (Figure 7.23).

Definition and comparability

Hospital beds include all beds that are regularly maintained and staffed and are immediately available for use. They include beds in general hospitals, mental health and substance abuse hospitals, and other specialty hospitals. Beds in nursing and residential care facilities are excluded.

Curative care beds accommodate patients where the principal intent is to do one or more of the following: cure illness or provide definitive treatment of injury, perform surgery, relieve symptoms of illness or injury (excluding palliative care), reduce severity of illness or injury, protect against exacerbation and/or complication of illness and/or injury which could threaten life or normal functions, perform diagnostic or therapeutic procedures, manage labour (obstetric).

Rehabilitative care beds accommodate patients where the principal intent is to stabilise, improve or restore impaired body functions.

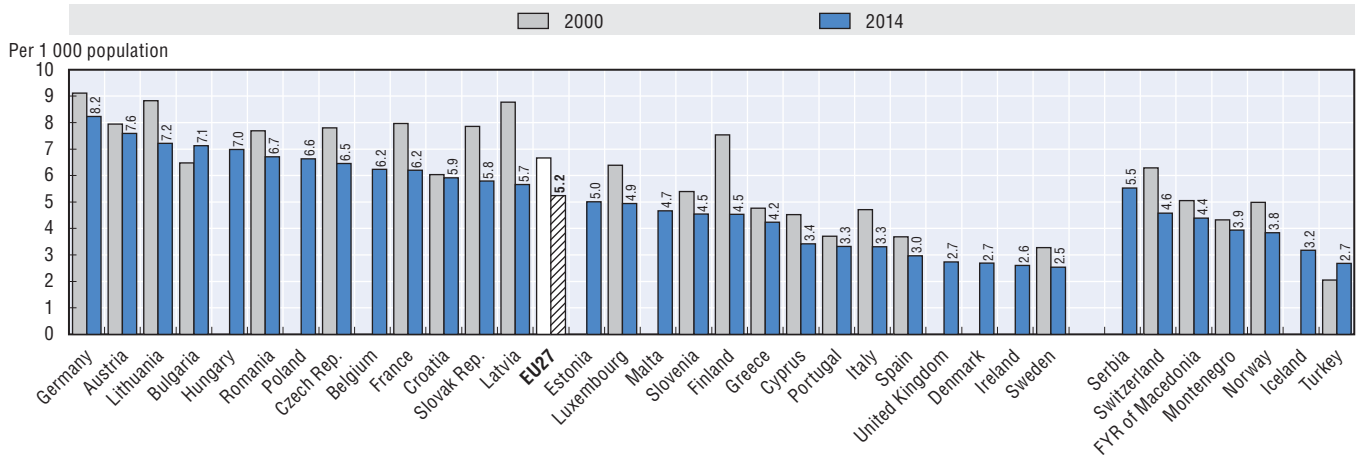
Long-term care beds are hospital beds accommodating patients requiring long-term care due to chronic impairments and a reduced degree of independence in activities of daily living. They include beds in long-term care departments of general hospitals, beds for long-term care in specialty hospitals and beds for palliative care.

Data for some countries do not cover all hospitals. In the United Kingdom, data are restricted to public hospitals only. In Ireland, data refer to publicly-funded acute hospitals only.

Reference

European Observatory on Health Systems and Policies (2012), *Eurohealth – Health Systems and the Financial Crisis*, Vol. 18, No. 1.

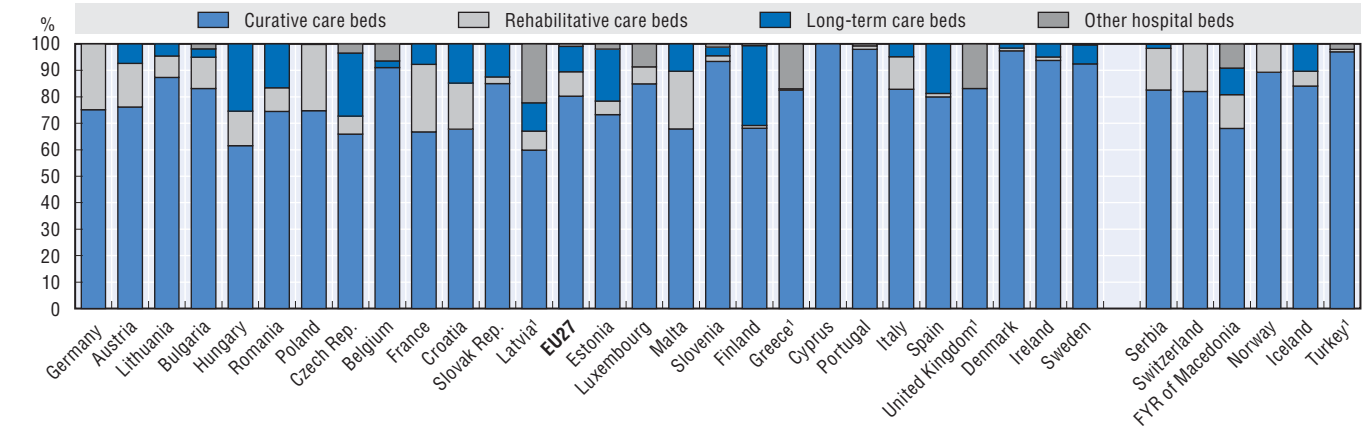
7.21. Hospital beds per 1 000 population, 2000 and 2014 (or nearest year)



Source: *OECD Health Statistics 2016*; *Eurostat Database*.

StatLink http://dx.doi.org/10.1787/888933429902

7.22. Hospital beds by function of health care, 2014 (or nearest year)



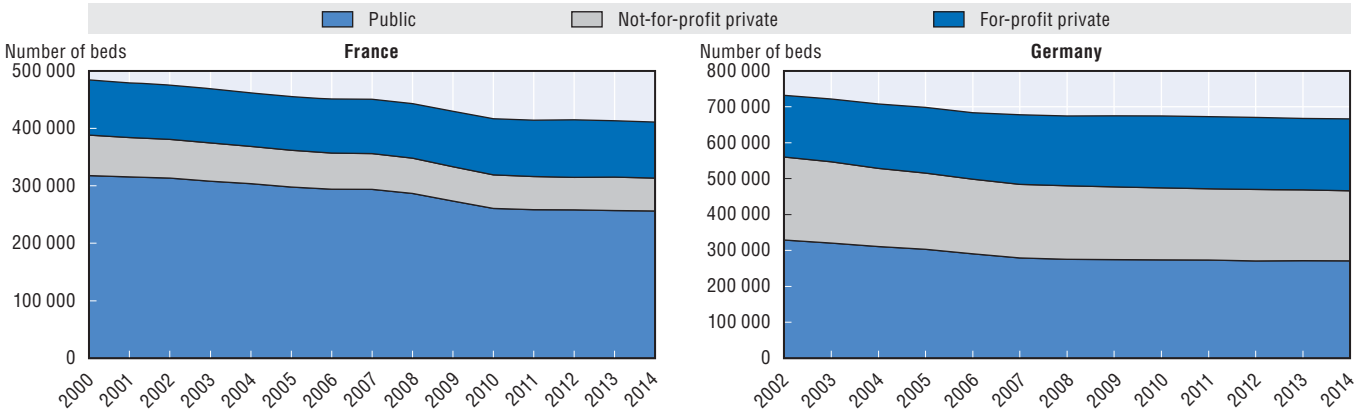
Note: Countries are ranked from highest to lowest total number of hospital beds per capita.

1. In Latvia, Greece, the United Kingdom and Turkey, psychiatric care beds are reported in "other beds" rather than in the more specific categories.

Source: *OECD Health Statistics 2016*; *Eurostat Database*.

StatLink http://dx.doi.org/10.1787/888933429913

7.23. Hospital beds by type of hospital, selected EU countries, 2000 to 2014 (or nearest year)



Source: *OECD Health Statistics 2016*.

StatLink http://dx.doi.org/10.1787/888933429924

Hospital discharge rates measure the number of patients who leave a hospital after staying at least one night. Together with the average length of stay, they are important indicators of hospital activities. Hospital activities are affected by a number of factors, including the demand for hospital services, the capacity of hospitals to treat patients, the payment and reimbursement systems, the ability of the primary care sector to prevent avoidable hospital admissions, and the availability of post-acute care settings to provide rehabilitative and long-term care services.

In 2014, hospital discharge rates were the highest in Bulgaria, Austria and Germany, with rates more than 50% higher than the EU average (Figure 7.24). They were the lowest in Portugal and Spain. While differences in the clinical needs of patients may explain some of these variations in admission and discharge rates, these variations also likely reflect differences in clinical practices and payment systems. In general, countries that have a greater number of hospital beds also tend to have higher discharge rates. For example, the number of hospital beds per capita in Austria and Germany is more than two-times greater than in Portugal and Spain (see the previous indicator in this chapter), and discharge rates are also more than two-times greater.

Hospital discharge rates have decreased in most EU countries since 2008, with the exception of Bulgaria, Germany, Poland, the Slovak Republic and Slovenia where discharge rates have increased.

Trends in hospital discharges reflect the interaction of several factors. Demand for hospitalisation may grow as populations age, given that older population groups account for a disproportionately high percentage of hospital discharges. For example, in Austria and Germany, over 40% of all hospital discharges in 2014 were for people aged 65 and over, more than twice their share of the population. However, population ageing alone may be a less important factor in explaining trends in hospitalisation rates than changes in medical technologies and clinical practices. The diffusion of new medical interventions often gradually extends to older population groups, as interventions become safer and more effective for people at older ages. But the diffusion of new medical technologies may also involve a reduction in hospitalisation if it involves a shift from procedures requiring overnight stays in hospitals to same-day procedures (see indicator on the development of ambulatory surgery in Chapter 8).

Hospital discharge rates vary not only across but also within countries. In several European countries (e.g. Finland, Germany, Italy, Portugal, Spain and the United Kingdom), hospital medical admissions (excluding admissions for surgical interventions) vary by more than two-fold across different regions in the country (OECD, 2014).

In general across EU countries, the main conditions leading to hospitalisation in 2014 were circulatory diseases, pregnancy and childbirth, injuries and other external causes, diseases of the digestive system, respiratory diseases and cancers.

Bulgaria and Lithuania had the highest discharge rate for circulatory diseases in 2014, followed by Germany, Austria and Hungary (Figure 7.25). The high rates in Bulgaria, Lithuania and Hungary are associated with many people having heart and other circulatory diseases (see indicator on mortality from heart disease and stroke in Chapter 3). This is not the case in Germany and Austria.

Austria, Germany and Greece have the highest discharge rates for cancer, followed by Hungary and Bulgaria (Figure 7.26).

Definition and comparability

Discharge is defined as the release of a patient who has stayed at least one night in hospital. It includes deaths in hospital following inpatient care. Same-day separations are usually excluded, with the exception of the Slovak Republic which includes some same-day separations.

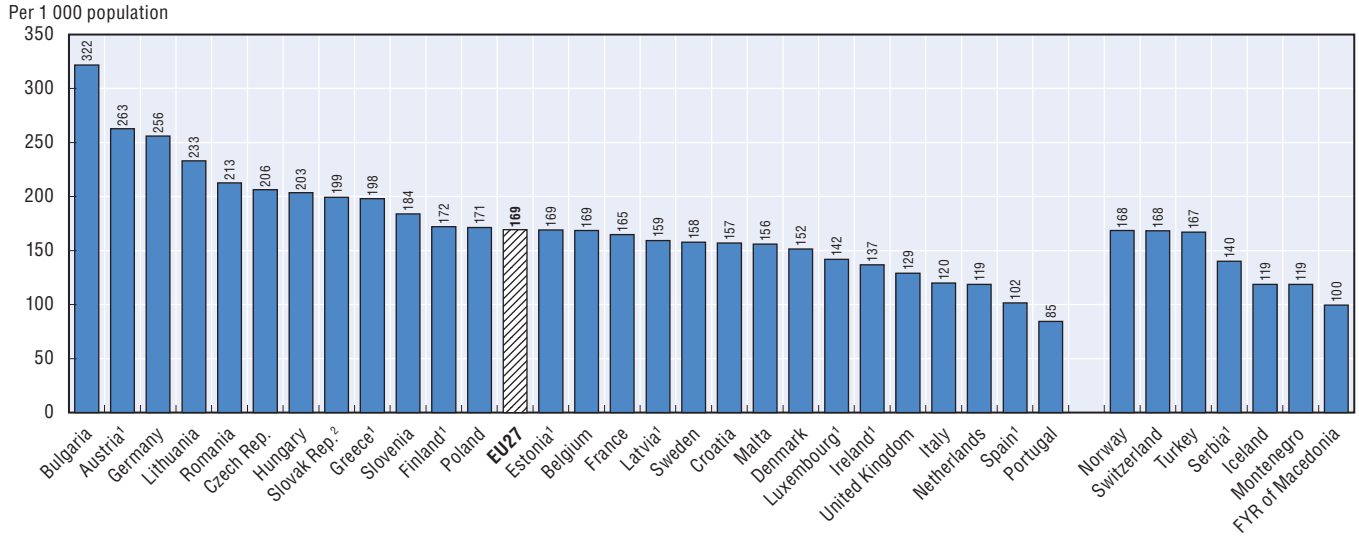
Healthy babies born in hospitals are excluded completely (or almost completely) from hospital discharge rates in several countries (e.g. Austria, Estonia, Finland, Greece, Ireland, Latvia, Luxembourg, Serbia, Spain). These comprise between 3% and 10% of all discharges.

Data for some countries do not cover all hospitals. In Ireland, Latvia and the United Kingdom, data are restricted to public or publicly-funded hospitals only. Data for Portugal relate only to public hospitals on the mainland. Data for Cyprus are not shown as they only include discharges from public hospitals, resulting in a large under-estimation given that most hospitals are private. Data for Belgium, Ireland and the Netherlands include only acute care/short-stay hospitals, also resulting in some under-estimation.

Reference

OECD (2014), *Geographic Variations in Health Care Use: What Do We Know and What Can Be done to Improve Health System Performance?*, OECD Publishing, Paris, *http://dx.doi.org/10.1787/9789264216594-en*.

7.24. Hospital discharges per 1 000 population, 2014 (or nearest year)

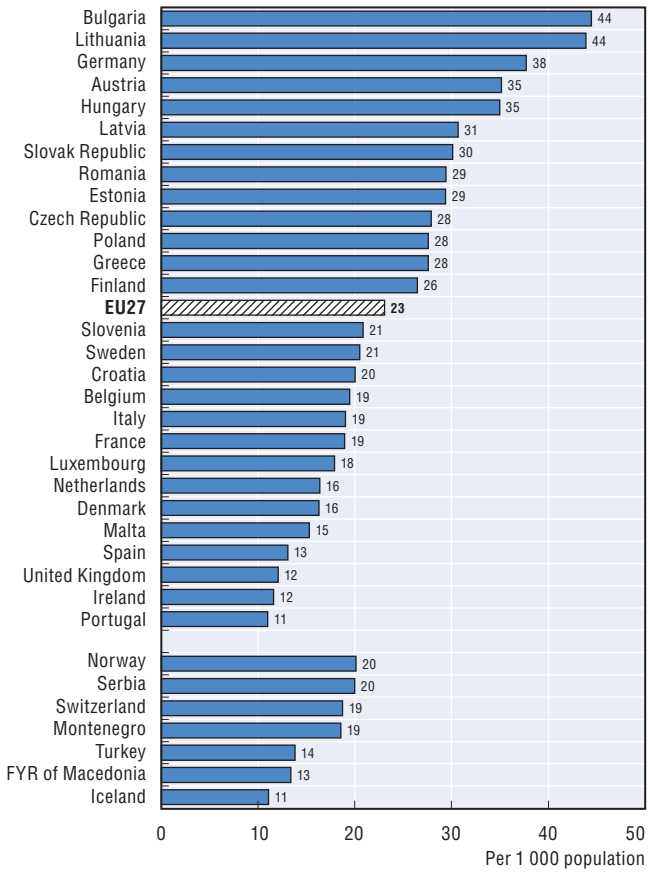


1. Excludes discharges of healthy babies born in hospital (between 3-10% of all discharges).
2. Includes same-day discharges.

Source: OECD Health Statistics 2016; Eurostat Database.

StatLink http://dx.doi.org/10.1787/888933429934

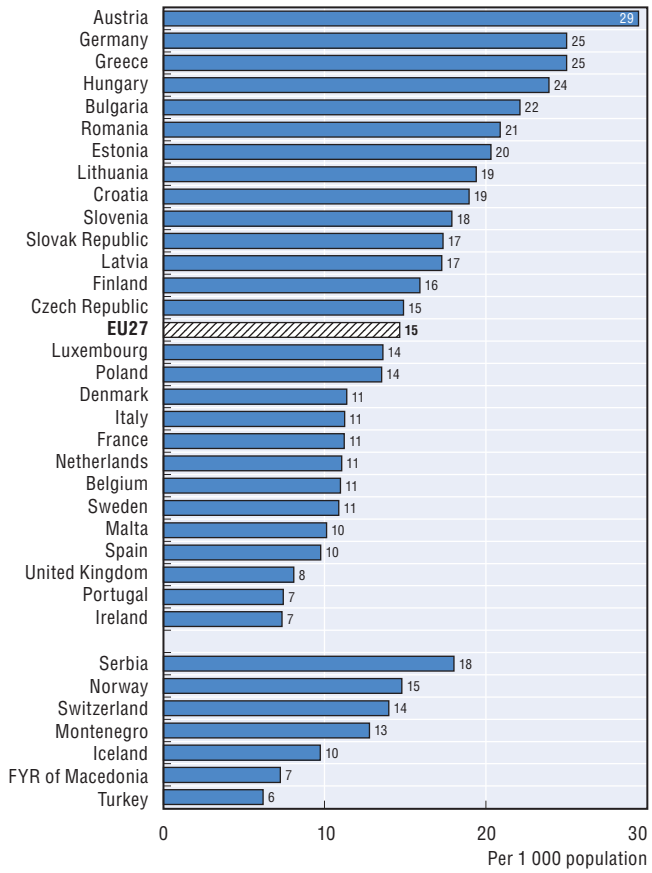
7.25. Hospital discharges for circulatory diseases per 1 000 population, 2014 (or nearest year)



Source: OECD Health Statistics 2016; Eurostat Database.

StatLink http://dx.doi.org/10.1787/888933429948

7.26. Hospital discharges for cancers per 1 000 population, 2014 (or nearest year)



Source: OECD Health Statistics 2016; Eurostat Database.

StatLink http://dx.doi.org/10.1787/888933429953

Heart diseases are a leading cause of hospitalisation and death in European countries (see indicator on mortality from heart diseases and stroke in Chapter 3). Coronary artery bypass graft and angioplasty have revolutionised the treatment of ischemic heart diseases in the past few decades. A coronary bypass is an open-chest surgery involving the grafting of veins and/or arteries to bypass one or multiple obstructed arteries. A coronary angioplasty is a much less invasive procedure involving the threading of a catheter with a balloon attached to the tip through the arterial system to distend the coronary artery at the point of obstruction; the placement of a stent to keep the artery open accompanies the majority of angioplasties.

In 2014, Germany had the highest rates of revascularisation procedures overall and of coronary angioplasty more specifically, followed by Austria, Croatia and Lithuania (Figure 7.27).

A number of reasons can explain cross-country variations in the rate of coronary bypass and angioplasty, including: 1) differences in the capacity to deliver and pay for these procedures; 2) differences in clinical treatment guidelines and practices; and 3) differences in coding and reporting practices.

However, the large variations in the number of revascularisation procedures across countries do not seem to be closely related to the incidence of ischemic heart disease (IHD), as measured by IHD mortality (see indicator on mortality from heart diseases in Chapter 3). For example, IHD mortality in Germany is *below* the EU average, but Germany has by far the highest rate of revascularisation procedures.

National averages can hide important variations in utilisation rates within countries. For example, in Germany, the rate of coronary bypass surgery and angioplasty is nearly three times higher in certain regions compared with others. There are also wide variations in the use of these revascularisation procedures across regions in other countries such as Finland, France and Italy (OECD, 2014).

The use of angioplasty has increased rapidly over the past 20 years in most European countries, overtaking coronary bypass surgery as the preferred method of revascularisation around the mid-1990s – about the same time that the first published trials of the efficacy of coronary stenting began to appear. In most EU countries, angioplasty now accounts for more than 80% of all revascularisation procedures (Figure 7.28). In Denmark however, only 70% of all revascularisation procedures are angioplasties, a proportion that has remained stable over the past decade.

Coronary angioplasty is an expensive intervention, but it is much less costly than a coronary bypass surgery because it is less invasive. The estimated price of an angioplasty on average across EU countries was about EUR 4 900 in 2014 compared with EUR 12 400 for a coronary bypass. Hence, for patients who would otherwise have received bypass surgery, the introduction of angioplasty has not only improved outcomes but has also decreased costs. However, because of the expansion of surgical interventions, overall costs have risen.

Definition and comparability

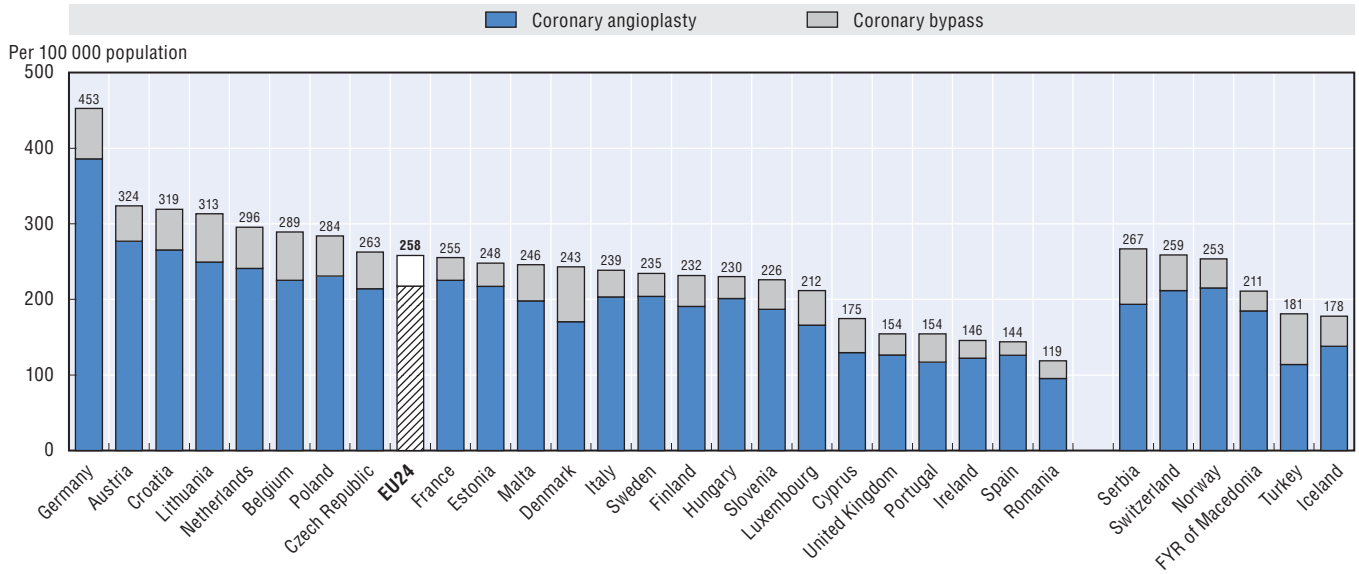
The data for most countries cover both inpatient and day cases, with the exception of Iceland and Switzerland where they only include inpatient cases, resulting in some under-estimation in the number of coronary angioplasties (this limitation in data coverage does not have any significant effect on the number of coronary bypasses since nearly all patients are staying at least one night in hospital after this operation). Some of the variations across countries may also be due to the use of different classification systems and different codes for reporting these two procedures.

In Ireland and the United Kingdom, the data only include activities in publicly-funded hospitals, resulting in an under-estimation (it is estimated that approximately 15% of all hospital activity in Ireland is undertaken in private hospitals). Data for Cyprus and Portugal relate only to public hospitals (in the case of Portugal, public hospitals on the mainland only). Data for Spain only partially include activities in private hospitals.

Reference

OECD (2014), *Geographic Variations in Health Care Use: What Do We Know and What Can Be done to Improve Health System Performance?*, OECD Publishing, Paris, *http://dx.doi.org/10.1787/9789264216594-en*.

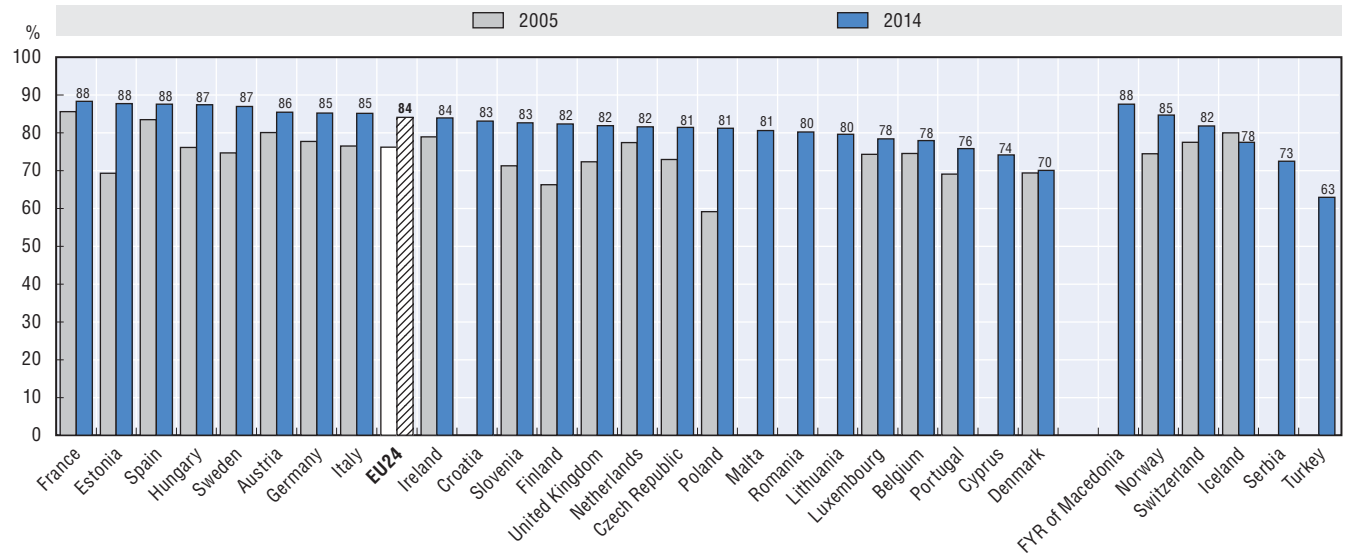
7.27. Coronary revascularisation procedures, 2014 (or nearest year)



Note: Some of the variations across countries are due to different classification systems and recording practices.
Source: *OECD Health Statistics 2016*; *Eurostat Database*.

StatLink http://dx.doi.org/10.1787/888933429966

7.28. Coronary angioplasty as a share of total revascularisation procedures, 2005 and 2014 (or nearest year)



Note: Revascularisation procedures include coronary bypass and angioplasty.
Source: *OECD Health Statistics 2016*; *Eurostat Database*.

StatLink http://dx.doi.org/10.1787/888933429975

Significant advances in surgical treatments have provided effective options to reduce the pain and disability associated with certain musculoskeletal conditions. Joint replacement surgery (hip and knee replacement) is considered the most effective intervention for severe osteoarthritis, reducing pain and disability and restoring some patients to near normal function.

Osteoarthritis is one of the ten most disabling diseases in developed countries. Worldwide estimates are that 10% of men and 18% of women aged over 60 years have symptomatic osteoarthritis, including moderate and severe forms (WHO, 2014). Age is the strongest predictor of the development and progression of osteoarthritis. It is more common in women, increasing after the age of 50 especially in the hip and knee. Other risk factors include obesity, physical inactivity, smoking, excess alcohol and injuries. While joint replacement surgery is mainly carried out among people over age 60, it is also increasingly performed among people at younger ages.

In 2014, Germany, Austria, Belgium and Finland had the highest rates of hip replacement among EU countries. Hip replacement rates were also very high in Switzerland and Norway (Figure 7.29). These countries were also those that had the highest rates of knee replacement (Figure 7.30). Differences in population structure may explain part of these variations across countries, and age standardisation reduces to some extent the variations across countries. Still, large differences persist and the country ranking does not change significantly after age standardisation (McPherson et al., 2013; OECD, 2014).

National averages can mask important variations in hip and knee replacement rates within countries. In Germany, France and Italy, the rate of knee replacement is more than two times higher in certain regions compared with others, even after age standardisation (OECD, 2014).

The number of hip and knee replacements has increased in recent years in most European countries, although the volume of knee replacements generally still remains below that of hip replacements (Figures 7.31 and 7.32). In Austria, the number of hip replacement per 100 000 population increased by about 25% between 2002 and 2014, while the knee replacement rate increased by nearly 70%. The growth rate for both interventions was lower in Germany, where these surgical activity rates appear to have stabilised in recent years, but at a high level.

The growing volume of hip and knee replacement is contributing to health expenditure growth since these are expensive interventions. In 2014, the estimated price of a hip replacement on average across EU countries was about EUR 5 600, while the price of a knee replacement was in the same range at about EUR 5 700.

Definition and comparability

Hip replacement is a surgical procedure in which the hip joint is replaced by a prosthetic implant. It is generally conducted to relieve arthritis pain or treat severe physical joint damage following hip fracture.

Knee replacement is a surgical procedure to replace the weight-bearing surfaces of the knee joint to relieve the pain and disability of osteoarthritis. It may also be performed for other knee diseases such as rheumatoid arthritis.

Classification systems and registration practices vary across countries which may affect the comparability of the data. While most countries include both total and partial replacement, some countries only include total hip replacement (e.g. Estonia where about 20% of all cases are partial replacement). In Ireland and the United Kingdom, the data only include activities in publicly-funded hospitals (it is estimated that approximately 15% of all hospital activity in Ireland is undertaken in private hospitals). Data for Cyprus and Portugal relate only to public hospitals (in the case of Portugal, public hospitals on the mainland only). Data for Spain only partially include activities in private hospitals.

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OECD (2014), *Geographic Variations in Health Care Use: What Do We Know and What Can Be done to Improve Health System Performance?*, OECD Publishing, Paris, *http://dx.doi.org/10.1787/9789264216594-en*.

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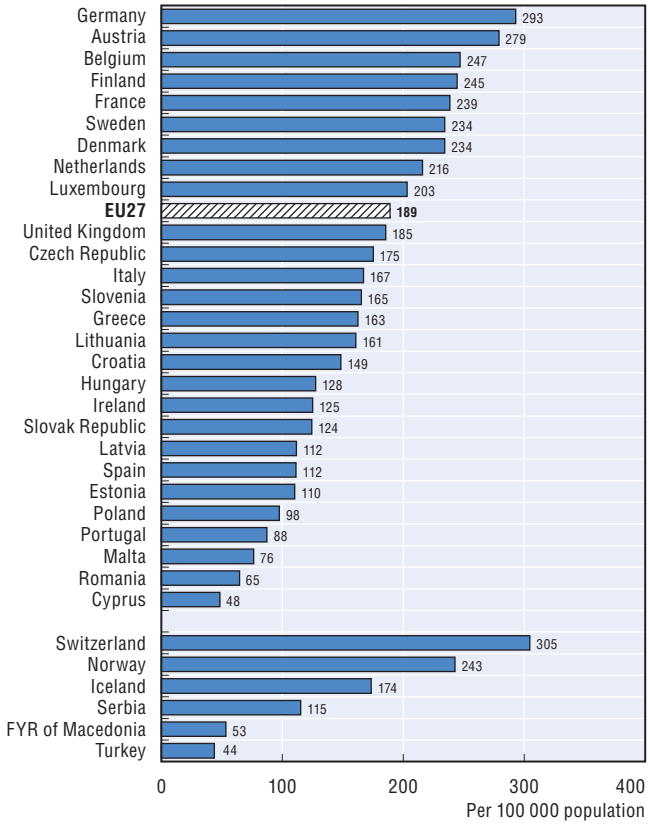
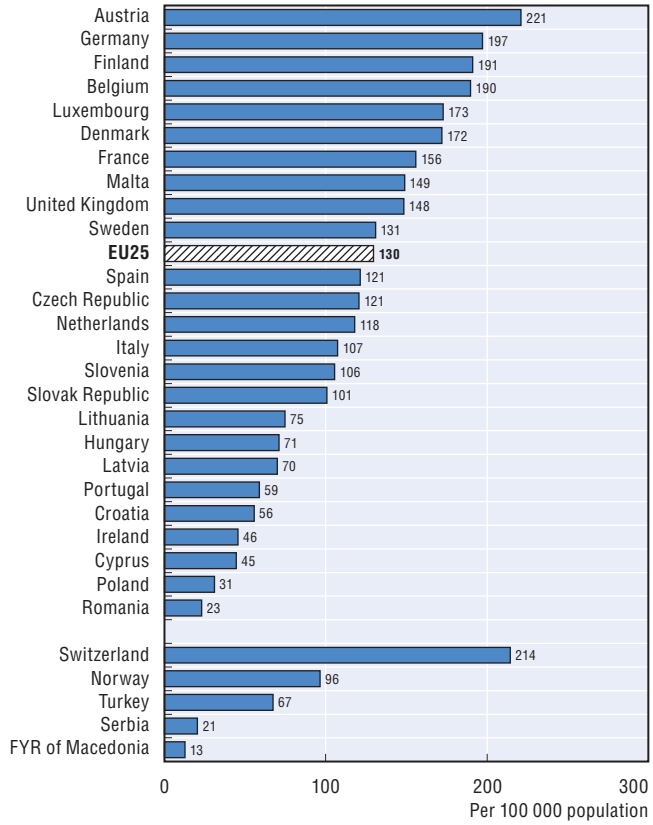
7.29. Hip replacement surgery, 2014 (or nearest year)



Source: OECD Health Statistics 2016; Eurostat Database.

StatLink http://dx.doi.org/10.1787/888933429985

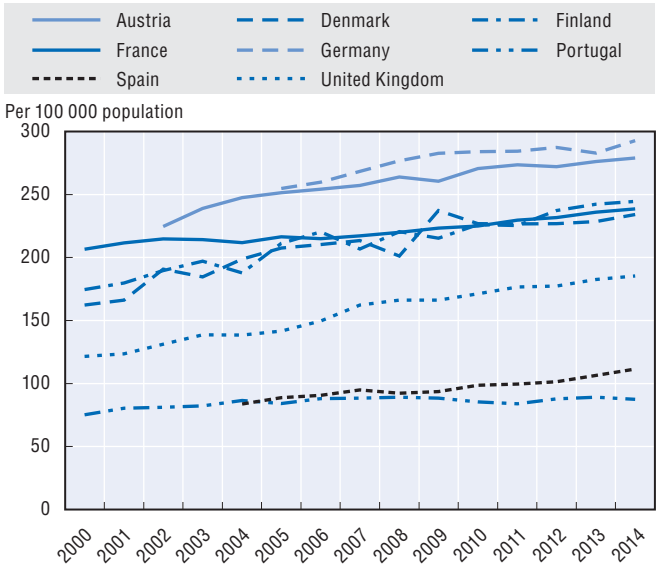
7.30. Knee replacement surgery, 2014 (or nearest year)



Source: OECD Health Statistics 2016; Eurostat Database.

StatLink http://dx.doi.org/10.1787/888933429994

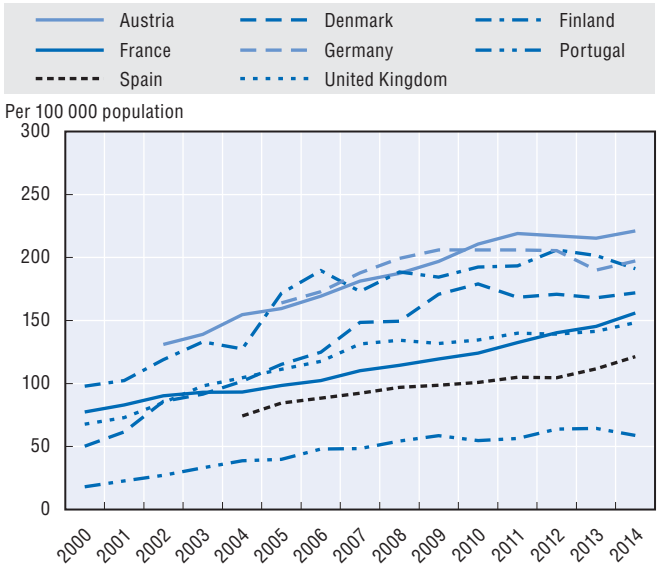
7.31. Trend in hip replacement surgery, 2000-14, selected countries



Source: OECD Health Statistics 2016.

StatLink http://dx.doi.org/10.1787/888933430004

7.32. Trend in knee replacement surgery, 2000-14, selected countries



Source: OECD Health Statistics 2016.

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Long waiting times for elective (non-emergency) surgery are an important policy issue in many European countries as they generate dissatisfaction for patients because the expected benefits of treatments are postponed, and the pain and disability remain while waiting. Whereas long waiting times are considered an important policy issue in many countries, this is not the case in others (e.g. Belgium, France, Germany, Luxembourg).

Waiting times are the result of a complex interaction between the demand and supply of health services, where doctors play a critical role on both sides. The demand for elective surgery is determined by the health needs of the population, progress in medical technologies (including the growing possibilities to perform many procedures as day surgery), patient preferences (including their weighting of the expected benefits and risks), and the extent of cost sharing for patients. However, doctors play a crucial role in converting the demand for better health from patients in a demand for medical care. On the supply side, the availability of different categories of surgeons, anaesthesists and other staff involved in surgical procedures, as well as the supply of the required medical and hospital equipment influence surgical activity rates.

The measure presented here focuses on waiting times from the time that a specialist adds a patient to the waiting list to the time that the patient receives the treatment. Both the average waiting times and the median are presented. Because some patients wait for very long times, the average is usually greater than the median.

In 2014/15, the average waiting times for cataract surgery ranged from about 40 days in the Netherlands, to about 100 days in Portugal, Spain and Finland, up to over 400 days in Poland (Figure 7.33). The average (or median) waiting times for cataract surgery have come down over the past few years in some countries, such as Denmark and Estonia (although it still remains relatively high in Estonia). In Portugal, Spain and the United Kingdom, waiting times fell between 2006 and 2010, but have increased since 2010.

In 2014/15, the average waiting times for hip replacement were only around 40 days in the Netherlands, but around 150 days in Hungary, Spain and Norway, and over 365 days in Poland (Figure 7.34). The median waiting times were about 40 days in Denmark and 50 days in Italy, while they reached over 200 days in Poland and Estonia. Waiting times for hip replacement in the United Kingdom fell sharply between 2006 and 2010, but have remained stable since then. In Portugal and Spain, following significant reductions between 2006 and 2010, waiting times for hip replacement have increased since 2010.

Waiting times for knee replacement have come down over the past few years in some countries such as the Netherlands and Estonia, although they still remain very long in Estonia (Figure 7.35). In the United Kingdom, waiting times for knee replacement followed the same pattern as for hip replacement, falling markedly between 2006 and 2010, but remaining stable since then. In 2014/15, the median waiting times for knee replacement were longest in Poland and Estonia.

Over the past decade, waiting time guarantees have become the most common policy tool to tackle long waiting times in several countries. This has been the case in Finland where a National Health Care Guarantee was introduced in 2005 and led to a reduction in waiting times for elective surgery (Jonsson et al., 2013). In England, since April 2010, the NHS Constitution has set out a right to access certain services within maximum waiting times or for the NHS to take all reasonable steps to offer a range of alternative providers if this is not possible, including a right to start non-emergency treatment within a maximum of 18 weeks from referral if that is what the patient wants and is clinically appropriate (Smith and Sutton, 2013). These guarantees are only effective if they are enforced. There are two main approaches to enforcement: setting waiting time standards and holding providers accountable for achieving these standards; or allowing patients to choose alternative health providers (including the private sector) if they have to wait beyond a maximum amount of time (Siciliani et al., 2013a).

Definition and comparability

There are at least two ways of measuring waiting times for elective procedures (Siciliani et al., 2013b): 1) measuring the waiting times for patients treated in a given period; or 2) measuring waiting times for patients still on the list at a point in time. The data reported here relate to the first measure (data based on the second measure are available in the *OECD Health Database*). The data come from administrative databases (not surveys). The management of administrative data can vary across countries: in some countries, patients who refuse on several occasions to receive the procedure are removed from the list, while they continue to be kept on the list in other countries (e.g. Estonia). Waiting times are reported both in terms of the average and the median. The median is the value which separates a distribution in two equal parts (meaning that half the patients have longer waiting times and the other half lower waiting times). Compared with the average, the median minimises the influence of outliers (patients with very long waiting times).

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Siciliani, L., M. Borowitz and V. Moran (2013a), *Waiting Time Policies in the Health Sector: What Works?*, OECD Health Policy Studies, OECD Publishing, Paris, *http://dx.doi.org/10.1787/9789264179080-en*.

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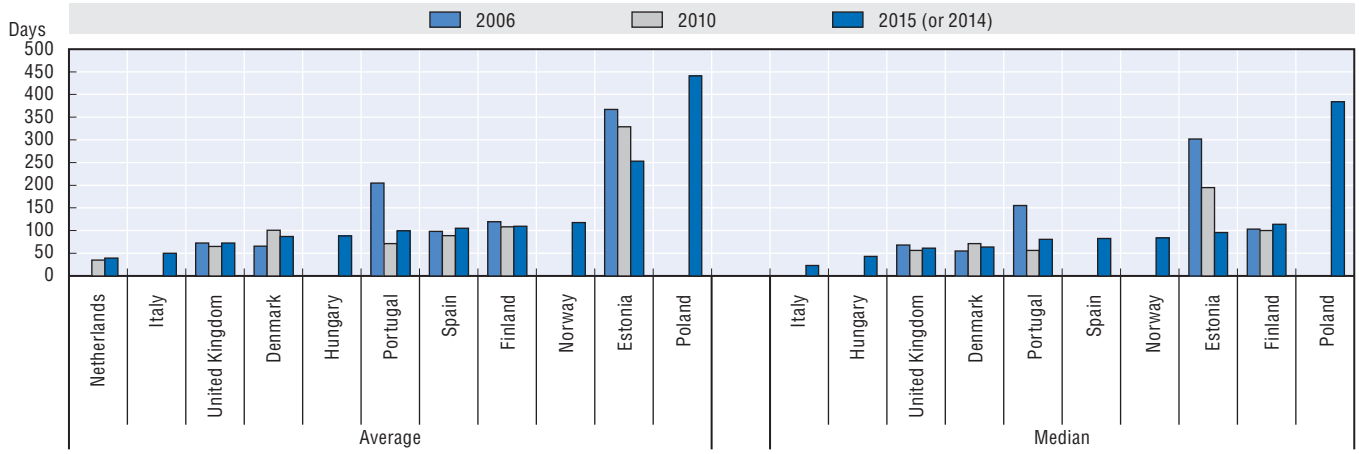
Smith, P. and M. Sutton (2013), "United Kingdom", Part II, Chapter 16 in *Waiting Time Policies in the Health Sector: What Works?*, OECD Publishing, Paris, *http://dx.doi.org/10.1787/9789264179080-19-en*.

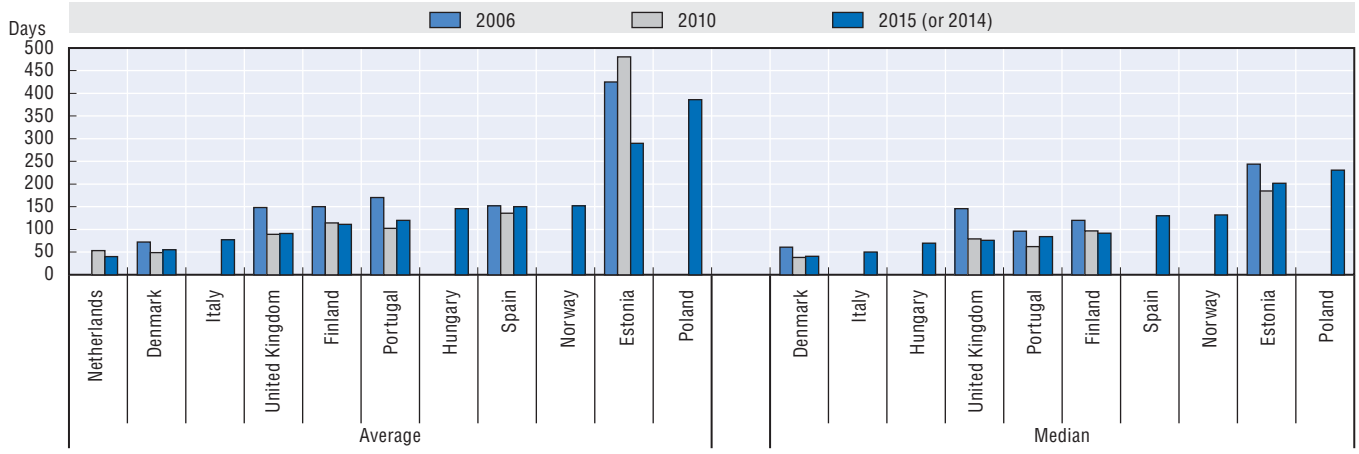
7.33. Cataract surgery, waiting times from specialist assessment to treatment, 2006 to 2014/15



Source: OECD Health Statistics 2016.

StatLink http://dx.doi.org/10.1787/888933430022

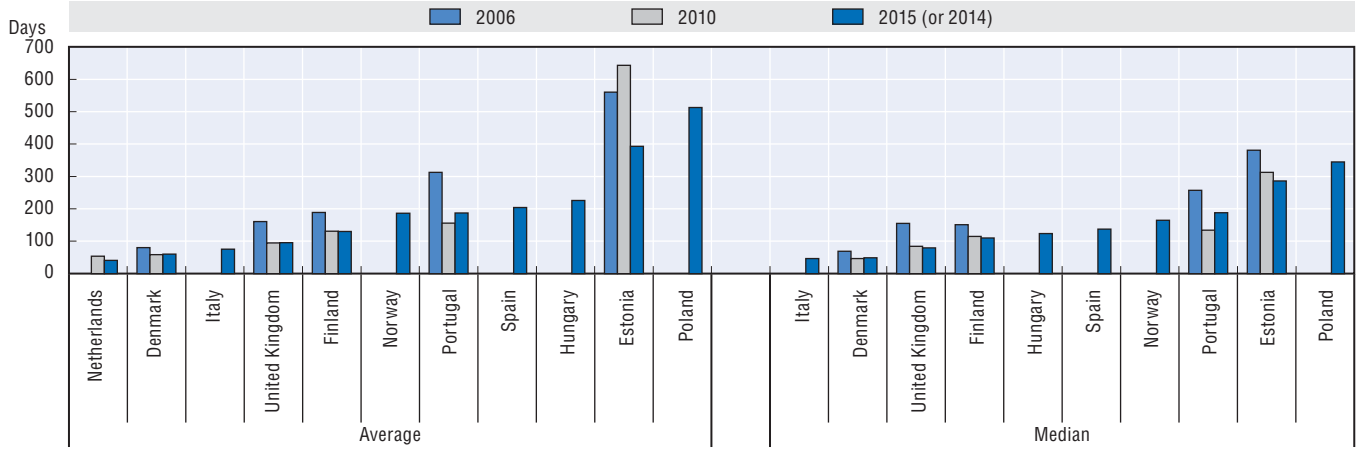
7.34. Hip replacement, waiting times from specialist assessment to treatment, 2006 to 2014/15



Source: OECD Health Statistics 2016.

StatLink http://dx.doi.org/10.1787/888933430033

7.35. Knee replacement, waiting times from specialist assessment to treatment, 2006 to 2014/15



Source: OECD Health Statistics 2016.

StatLink http://dx.doi.org/10.1787/888933430047

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Chapter 8

Resilience, efficiency and sustainability of health systems

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Demographic change, rising chronic disease and multi-morbidity, along with fiscal pressures, are challenging the medium- and long-term sustainability of European health systems. In order to meet these challenges, health services must become more effective and efficient. Health care is an information-intensive endeavour, and adoption of digital technology and eHealth (see definition in the box below) can enable such improvement. While health system digitalisation is complex, and can be costly, the potential longer-term benefits in promoting efficiency gains must also be considered. These include improved quality of care, better planning and resource allocation, and enhancing the evidence base for health service delivery and policy making.

A 2013 European Commission survey examined the adoption of eHealth in general practice. Figure 8.1 shows the composite scores for the surveyed countries. Denmark achieved the highest score (2.49 out of a possible 4), followed by Spain (2.17), Norway (2.16), Estonia (2.13), the Netherlands (2.12), Finland (2.09) and the United Kingdom (2.07). Lithuania and Latvia had the lowest scores. These results suggest room for improvement in all countries. While basic forms of electronic health records (EHR) are now available to over 90% of GPs on average across EU countries, more advanced features are limited – most notably exchange of health information with patients and other providers. Adoption levels for TeleHealth and for patient access to their health record remained low. Adoption was influenced by GPs' characteristics and attitudes, particularly by perceived impacts and barriers. These principally concern the lack of resources and financial incentives, of data interoperability, and of sound regulatory frameworks (European Commission, 2013).

A survey of eHealth adoption in European hospitals was also conducted in 2013. The averages for EU member states (based on a maximum score of 1) were 0.44 for eHealth *deployment*, and 0.30 for *availability and use* (Figure 8.2). These results also suggest room for improvement as no country was close to the optimal score of 1. Hospitals in the Nordic countries achieved higher scores on both indicators. Hospitals in Eastern and Southern Europe had lower scores. Larger hospitals and public hospitals recorded higher scores on both indicators. Overall, these results reveal gaps in governance with regard to data security, privacy and interoperability. Only 57% of hospitals reported having a strategic plan for eHealth. There has been a modest increase in many countries' eHealth *deployment* score compared with the results of a similar survey in 2010 (Deloitte/IPSOS, 2011). Results improved for dimensions related to the infrastructure and integration and, more modestly, to the information flow. On the other hand, privacy and security results worsened in the 2013 survey. Countries with lower 2010 results showed the greatest improvement across the two surveys (European Commission, 2014).

Based on these results, improvement in the adoption of digital technology in both the primary care and the hospital sectors is needed across Europe to fulfil the vision set out in the European Commission eHealth Strategy (European Commission, 2016).

Definition and comparability

eHealth is defined as "the application of information and communications technologies across the whole range of functions that affect the health sector" (European Commission, 2012). This broad definition covers a variety of digital applications, processes and platforms including: electronic health record (EHR) systems, TeleHealth (remote medical consultation), smartphone "apps", remote monitoring devices and biosensors, and computer algorithms and analytical tools to inform decision making. These essentially aim to use digital technology to improve the collection, management and distribution of data and information. As such, eHealth can be applied at all levels of the health system – from clinical situations to macro-level resource allocation.

The results presented here are based on European Commission surveys related to the adoption of eHealth in primary care and hospital settings. For the primary care survey, a random sample of 9 196 general practitioners (GPs) was interviewed across EU countries, and Iceland, Norway, and Turkey in early 2013. Using factor analysis, composite measures were created for four main dimensions: 1) EHR; 2) health information exchange; 3) TeleHealth; and 4) patients' electronic access to their health information (European Commission, 2013). The four measures were aggregated into the composite index presented here – with 4 being the highest possible score. The sampling error for this survey ranged from ±4% to ±13% between countries. This should be considered when interpreting the results.

For the hospital survey, also conducted in 2013, a representative sample of 1 643 hospitals from EU countries, along with Iceland and Norway, was surveyed. Two composite indicators were generated from the results: 1) *Deployment* dealing with four "core" eHealth dimensions: digital infrastructure; application and integration; information flows and health information exchange; security and privacy. 2) *Availability and Use* concerning digital applications and functionalities: the EHR; clinical decision support tools; TeleHealth (European Commission, 2014). The highest possible score for each composite indicator was 1. A similar survey was conducted in 2010, but with a much smaller sample (844) and only examining the *deployment* dimension (Deloitte/IPSOS, 2011).

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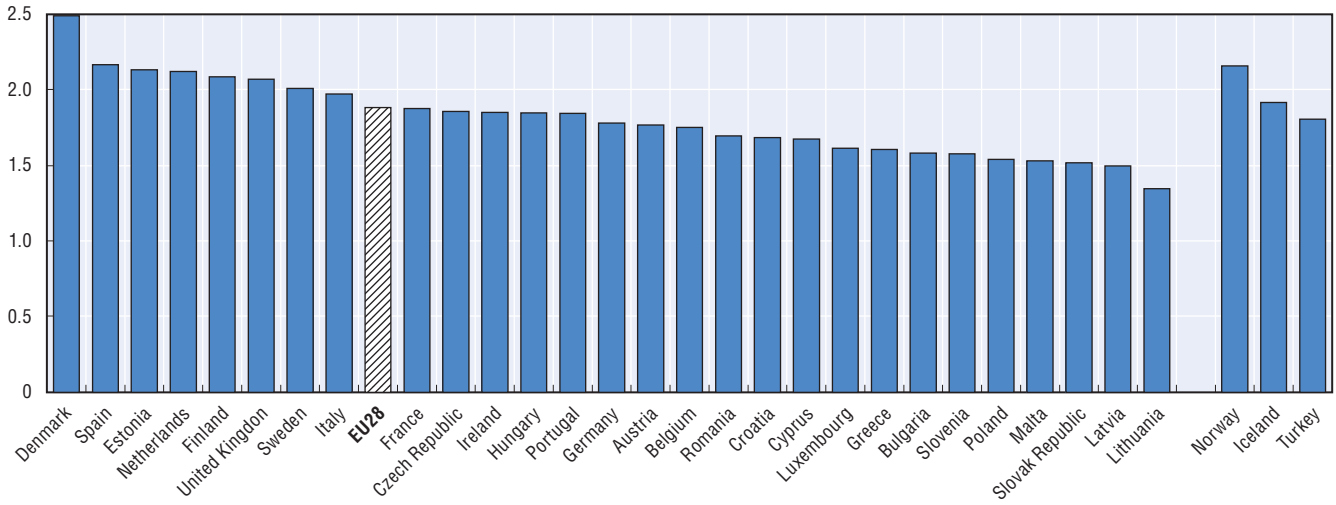
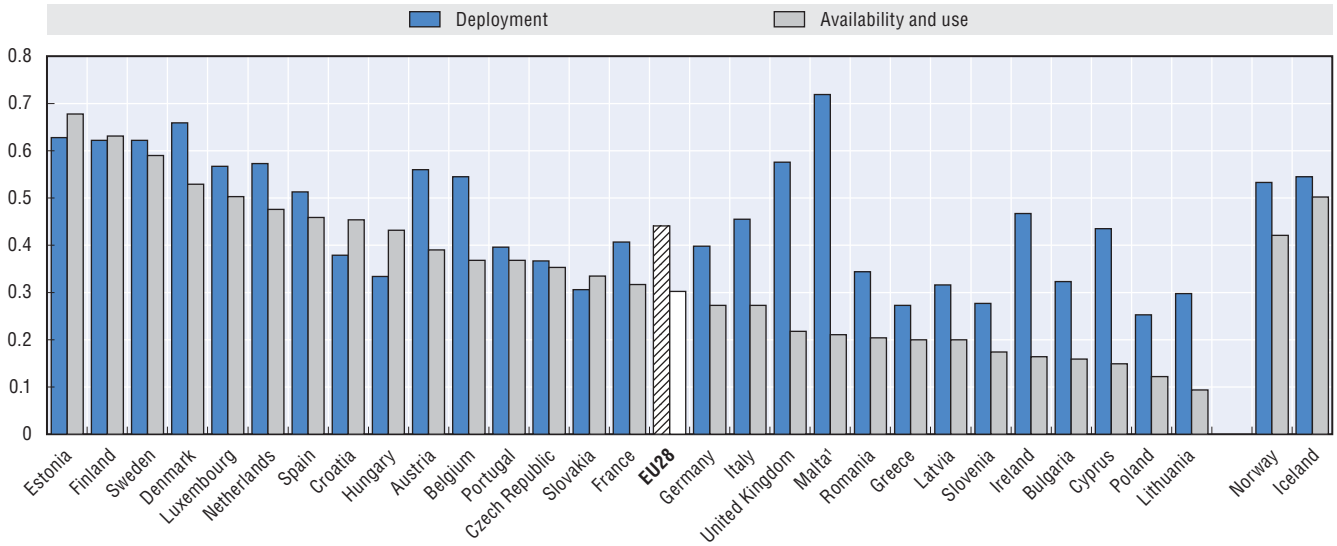
8.1. Composite index of eHealth adoption among general practitioners, 2013



Note: The maximum score for this indicator is 4.
Source: European Commission (2013), "Benchmarking Deployment of eHealth Among General Practitioners".

StatLink http://dx.doi.org/10.1787/888933430057

8.2. Composite indicators of eHealth adoption in hospitals, 2013



Note: The maximum score for these indicators is 1.
1. In Malta, the data refer to one hospital only.
Source: European Commission (2014), "European Hospital Survey: Benchmarking Deployment of eHealth Services".

StatLink http://dx.doi.org/10.1787/888933430069

Although health systems remain a highly labour-intensive sector, capital has been an increasingly important factor of production of health services over recent decades, as reflected for example by the growing importance of diagnostic and therapeutic equipment or the expansion of information and communications technology (ICT) in health care (see previous indicator on eHealth adoption in general practice and hospitals). However, the level of resources invested in infrastructure, equipment and ICT tends to fluctuate more with economic cycles than current spending on health services, as investment decisions are often more discrete and can more easily be postponed or brought forward depending on economic circumstances.

In 2014, the European Union as a whole allocated 0.5% of its GDP on *capital* spending in the health sector (Figure 8.3). This is equivalent to about 5% of the money allocated to *current* spending on health services and medical goods (see the indicator on health expenditure as a share of GDP in Chapter 5). As with current spending, there are both differences in the current levels of investment expenditure between countries and in the recent trends observed following the economic crisis.

In proportion of its GDP, Belgium spent the most on capital investment in the health sector in 2014 with more than 0.8% of its GDP allocated to such expenditure, followed by a group of countries including Austria, Germany, Denmark and France that all spent more than 0.6% of their GDP. Around half the EU countries spent between 0.25% and 0.5% of their GDP on capital investment. At the lower end, Romania and Greece invested only around 0.1% of their GDP on capital infrastructure and equipment in the health sector.

By its nature, capital spending fluctuates more than current spending from year to year in line with capital projects on construction (i.e. building of hospitals and other health care facilities) and investment programmes on new equipment (e.g. medical and ICT equipment), but decisions on capital spending also tend to be more affected by economic cycles, with spending on health system infrastructure and equipment often being a prime target for reduction or postponement in economic downturns. While capital spending grew strongly in the EU as a whole prior to the crisis – overall capital spending rose by 20% between 2005 and 2007 in real terms – it fell by more than 10% over the next six years (up to 2013) to bring spending almost back to pre-crisis levels (Figures 8.4 and 8.5).

Fluctuations in capital spending often reflect, but to a higher degree, fluctuations in current spending on health. Following the economic crisis, capital spending continued to increase fairly steadily in countries like Austria, Belgium and Sweden. On the other hand, a number of European countries have seen severe reductions in capital spending. In Greece, spending in 2014 was only at around 30% of its 2005 level, with most of the fall from 2009 onwards. In Italy, investment has also fallen quite sharply since 2010. While Portugal and Spain had seen rapid increases in capital spending up to 2009/10, there have also been sharp reductions in the subsequent years such that capital spending by 2013 was at a level close to or below that in 2005.

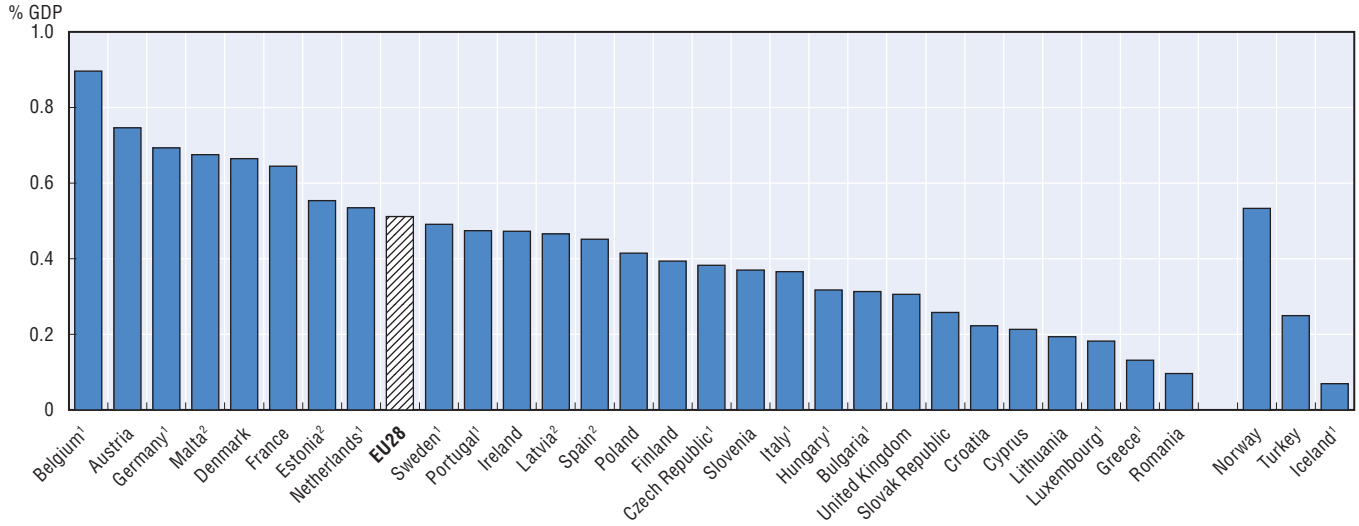
In making capital investment decisions, policy makers need to carefully assess not only the short-term costs, but also the potential benefits in the short, medium and longer term. Slowing down investment in health infrastructure and equipment may also reduce the capacity to treat patients and contribute to increases in waiting times for different types of services.

Definition and comparability

Gross fixed capital formation in the health sector is measured by the total value of the fixed assets that health providers have acquired during the accounting period (less the value of the disposals of assets) and that are used repeatedly or continuously for more than one year in the production of health services. The breakdown by assets includes infrastructure (e.g. hospitals, clinics, etc.), machinery and equipment (including diagnostic and surgical machinery, ambulances, and ICT equipment), as well as software and databases.

Gross fixed capital formation is reported by many countries under the System of Health Accounts. It is also reported under the National Accounts broken down by industrial sector according to the International Standard Industrial Classification (ISIC) Rev. 4 using Section Q: Human health and social work activities or Division 86: Human health activities. The former is normally broader than the SHA boundary while the latter is narrower.

8.3. Gross fixed capital formation in the health care sector as a share of GDP, 2014 (or nearest year)

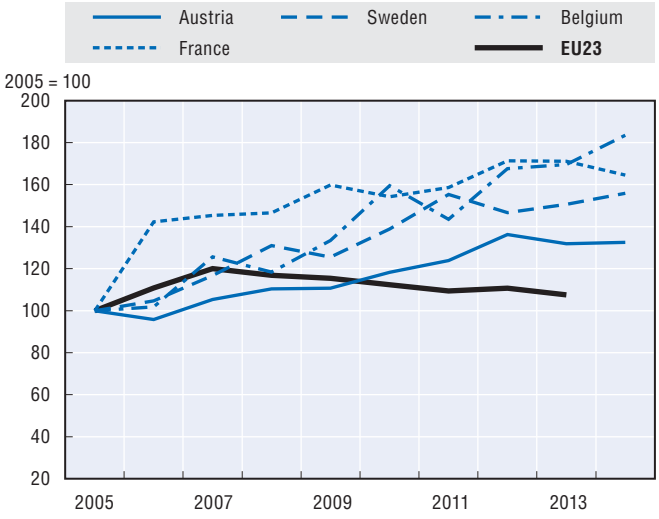


1. Refers to gross fixed capital formation in ISIC 86: Human health activities (ISIC Rev. 4).
2. Refers to gross fixed capital formation in ISIC Q: Human health and social work activities (ISIC Rev. 4).

Source: OECD Health Statistics 2016; OECD National Accounts; *Eurostat Database*.

StatLink http://dx.doi.org/10.1787/888933430070

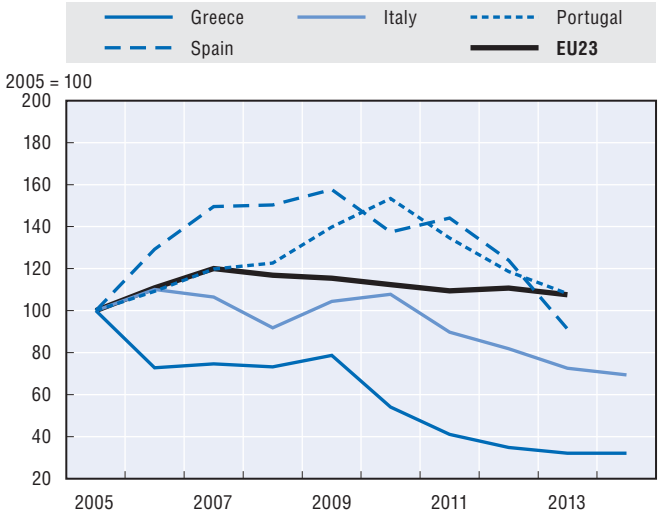
8.4. Gross fixed capital formation, selected European countries, 2005-14



Source: OECD Health Statistics 2016; OECD National Accounts; *Eurostat Database*.

StatLink http://dx.doi.org/10.1787/888933430081

8.5. Gross fixed capital formation, selected Southern European countries, 2005-14



Source: OECD Health Statistics 2016; OECD National Accounts; *Eurostat Database*.

StatLink http://dx.doi.org/10.1787/888933430096

All EU countries see the development of generic markets as a good opportunity to increase efficiency in pharmaceutical spending, but many do not fully exploit the potential of generics (Figure 8.6). In 2014, generics accounted for more than 70% of the volume of pharmaceuticals sold in the United Kingdom, Germany, the Netherlands and the Slovak Republic, while they represented less than 20% of the market in Luxembourg, Italy and Greece.

Some of the differences in generic uptake can be explained by market structures, notably the number of off-patent medicines, and by prescribing practices, but generic uptake also very much depends on policies implemented by countries (EGA, 2011; Vogler, 2012). Several countries have expanded their efforts to encourage generic uptake since the onset of the economic crisis in 2008.

Prescribing in International Non-proprietary Names (INN) is permitted in most EU countries and is mandatory in a few countries (e.g. Estonia since 2010, Portugal and Spain since 2011 and France since 2015). Similarly, pharmacists are allowed to substitute brand-name drugs with generics in a majority of EU countries. While generic substitution is mandatory in some countries (e.g. Denmark, Finland, Spain, Sweden, Italy), the United Kingdom has high generic penetration without any substitution mandate.

Financial incentives for physicians, pharmacists and patients have been implemented to boost the development of generic markets. For instance, France (in 2009 and 2012) introduced incentives for GPs to prescribe generics through a pay-for-performance scheme.

Pharmacies are often paid through mark-ups based on the price of medicines. This disincentive to substitute a generic for a more expensive drug has been addressed in some countries. France guarantees pharmacists an equivalent mark-up, while pharmacists in Switzerland receive a fee for generic substitution. In several countries, pharmacists have the obligation to inform patients about the possibility of a cheaper alternative.

Patients have a financial interest to choose cheaper drugs when their co-payment is lower for generic drugs than its equivalent. This is generally the case in all systems using reference prices (or fixed reimbursement amount) for clusters of products. In Greece, patients choosing originator over generic drugs are now required to pay for the difference. In France, since 2010, patients refusing generic substitution have to pay in advance for their drugs and are reimbursed later.

These policies, associated with patent expiries of several blockbusters in recent years, have contributed to the increase in the generic market share observed over the past decade (Figure 8.7). In Portugal, the generic market grew from virtually zero in 2000 to 41% in volume and 24% in value in 2014. In Spain, the generic reimbursed market share reached 48% in volume and 22% in value in 2014, up from 3% only in 2000. Beyond encouraging generic uptake, it is also important to promote the lowest possible price for generics. Figure 8.6 suggests, for instance, that the differential price between brand-name and generic drugs is much higher in the United Kingdom and Germany than in Austria.

One way to exert pressure on generic prices is tendering, which has been used in the Netherlands and Germany with some success. Many countries, however, prefer regulating the price of generics at market entry by reference to the price of the originator (a practice known as "generic price linkage"). Several countries have recently increased this gap. For example, France and Greece increased the gap between originator and generic prices to 40% and 60% respectively (Belloni et al., 2016).

Definition and comparability

A generic is defined as a pharmaceutical product which has the same qualitative and quantitative composition in active substances and the same pharmaceutical form as the reference product, and whose bioequivalence with the reference product has been demonstrated. Generics can be classified in branded generics (generics with a specific trade name) and unbranded generics (which use the international non-proprietary name and the name of the company).

Countries were requested to provide data for the whole market; however many countries provided data covering only the community pharmaceutical market or the reimbursed pharmaceutical market (see figure notes).

The share of generic market expressed in value can be the turnover of pharmaceutical companies, the amount paid for pharmaceuticals by third-party payers, or the amount paid by all payers (third-party and consumers). The share of generic market in volume can be expressed in defined daily doses (DDDs) or as a number of packages/boxes or standard units.

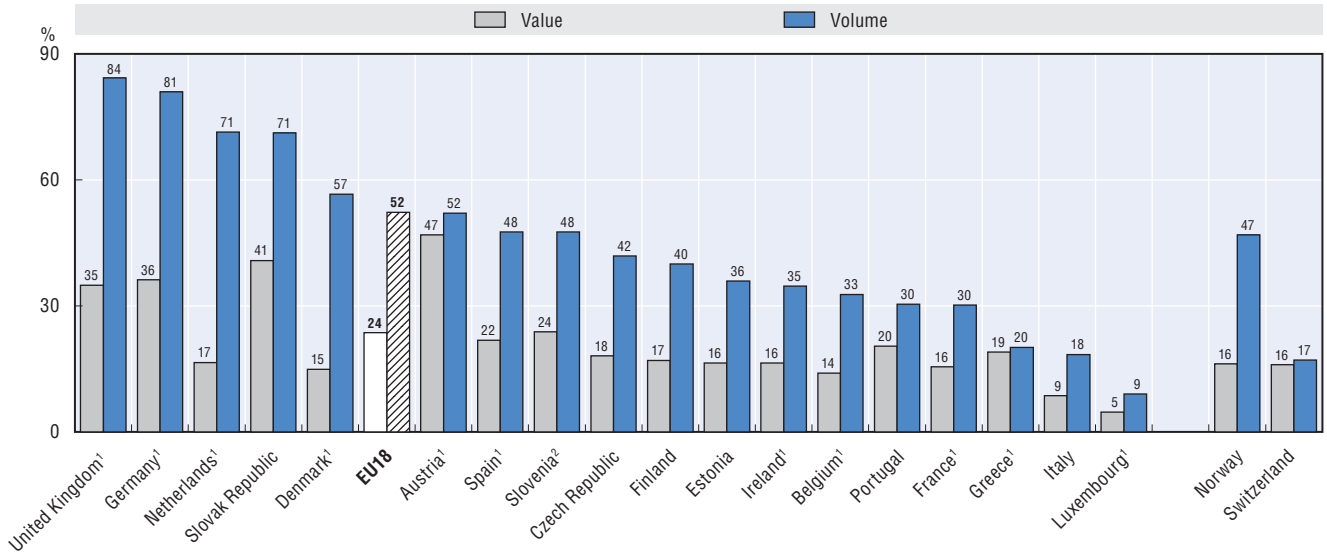
References

Belloni, A., Morgan, D. and Paris, V. (2016), "Pharmaceutical Expenditure and Policies: Past Trends and Future Challenges", *OECD Health Working Papers*, No. 87, OECD Publishing, Paris, *http://dx.doi.org/10.1787/5jm0q1f4cdq7-en*.

EGA (2011), *Market Review – The European Generic Medicines Markets*, European Generic Medicines Association.

Vogler, S. (2012), "The Impact of Pharmaceutical Pricing and Reimbursement Policies on Generic Uptake: Implementation of Policy Options on Generics in 29 European Countries – An Overview", *Generics and Biosimilars Initiative Journal*, Vol. 1, No. 2, pp. 44-51.

8.6. Share of generics in the total pharmaceutical market, 2014 (or nearest year)

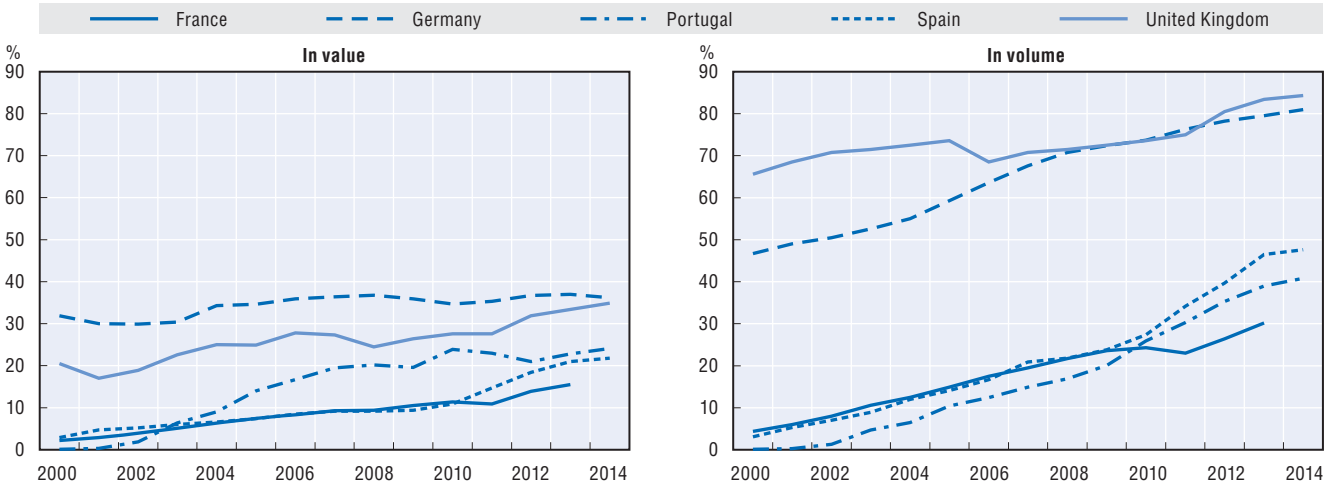


1. Reimbursed pharmaceutical market.
2. Community pharmacy market.

Source: OECD Health Statistics 2016.

StatLink http://dx.doi.org/10.1787/888933430104

8.7. Trend in share of generics in the reimbursed pharmaceutical market, selected countries, 2000 to 2014



Source: OECD Health Statistics 2016.

StatLink http://dx.doi.org/10.1787/888933430119

The number of surgical procedures carried out on a same-day basis has increased markedly in EU countries over the past few decades. Advances in medical technologies, particularly the diffusion of less invasive surgical interventions and better anaesthetics, have made this development possible. These innovations have improved patient safety and health outcomes, and have also in many cases reduced the unit cost per intervention by shortening the length of stay in hospitals. However, the impact of the rise in same-day surgeries on health spending depends not only on changes in their unit cost, but also on the growth in the volume of procedures performed. There is also a need to take into account any additional cost related to post-acute care and community health services following these interventions.

Cataract surgery and tonsillectomy provide good examples of high-volume surgeries which are now carried out mainly on a same-day basis in many EU countries.

Day surgery now accounts for over 95% of all cataract surgeries in a dozen of EU countries (Figure 8.8). However, the use of day surgery is still relatively low in some Central and Eastern European countries such as Romania, Croatia, Poland and Lithuania, where they still account for less than half of all cataract surgeries. While this may be partly explained by limitations in the data coverage of outpatient activities in hospital or outside hospital, this may also reflect more advantageous reimbursement for inpatient stays or constraints on the development of day surgery. In countries like Hungary, the government recently abolished the budget cap on the number of same-day surgery that can be performed in hospital, which is expected to lead to further increases in the number of cataract and other surgeries performed as day cases.

The number of cataract surgeries performed on a same-day basis has grown very rapidly since 2000 in many countries, such as Portugal and Austria (Figure 8.8). Whereas fewer than 10% of cataract surgeries in Portugal were performed on a same-day basis in 2000, this proportion has increased to 96% in 2014. In Austria, the share of cataract surgeries performed as day cases increased from 1% only in 2000 to 72% in 2014. The number of cataract surgeries carried out as ambulatory cases has also increased rapidly in France, Ireland, Italy and Luxembourg.

Tonsillectomy is one of the most frequent surgical procedures on children, usually performed in cases where the child suffers from repeated or chronic infections of the tonsils or from breathing problems or obstructive sleep apnea due to large tonsils. Although the operation is performed under general anaesthesia, it is now carried out mainly as a same-day surgery in several countries, with children returning home the same day (Figure 8.9). This is the case in Finland, Sweden, Belgium, the Netherlands and Portugal, where more than half of all tonsillectomies are now performed on a same-day basis. In other countries like Slovenia, Hungary, Cyprus, Austria and Lithuania, virtually all tonsillectomies continue to be performed with at least one night of stay in hospital. These large differences in the share of same-day surgery may reflect variations in the perceived risks of postoperative complications, but probably the most important factor is simply a tradition of keeping children for at least one night in hospital after the operation.

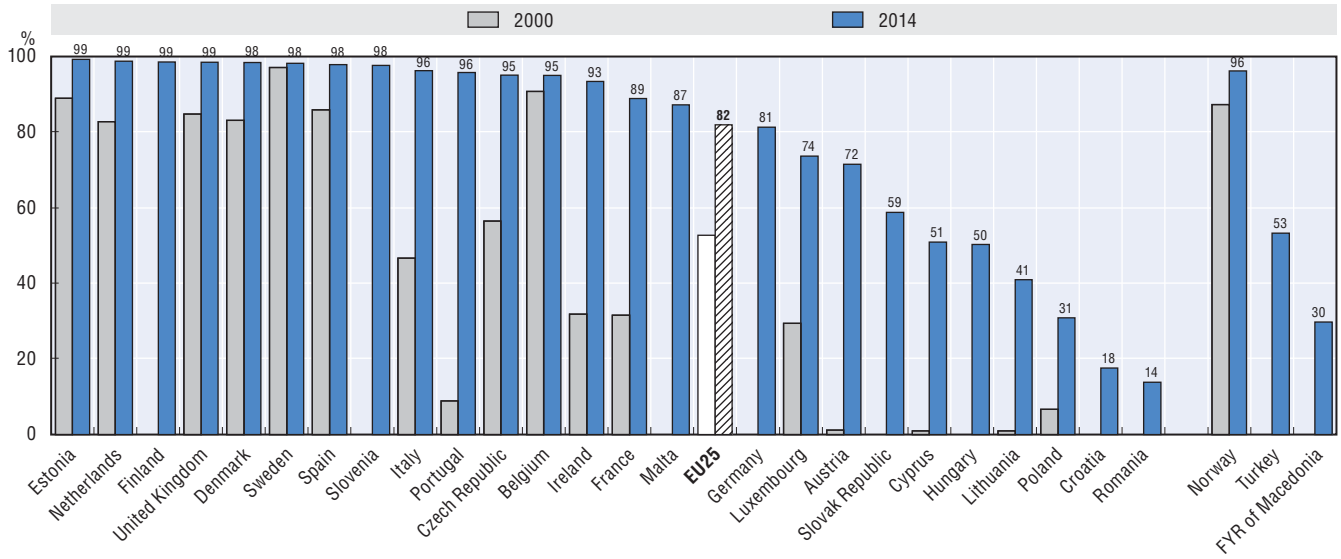
In some countries, there has been a strong rise in the share of tonsillectomy performed as day surgery since 2000, while in others there has been virtually no movement. Beyond Finland which is now leading the way, the share of same-day surgery has increased rapidly since 2000 in Sweden, Portugal, the United Kingdom, Denmark, Italy and, to a lesser extent, in Spain also. On the other hand, in France, there has been virtually no increase in the share of day surgery for tonsillectomy since 2000. There appears to be ample room for further growth in day surgery for tonsillectomy in most countries to reduce cost without affecting the health outcomes of people (mainly children) undergoing this operation.

Definition and comparability

Cataract surgery consists of removing the lens of the eye because of the presence of cataracts which are partially or completely clouding the lens, and replacing it with an artificial lens. It is mainly performed on elderly people. Tonsillectomy consists of removing the tonsils, glands at the back of the throat. It is mainly performed on children.

The data for several countries do not include outpatient cases in hospital or outside hospital (i.e. patients who are not formally admitted and discharged), leading to some under-estimation. In Ireland and the United Kingdom, the data only include cataract surgeries carried out in public or publicly-funded hospitals. Data for Portugal relate only to public hospitals on the mainland. Data for Spain only partially include activities in private hospitals.

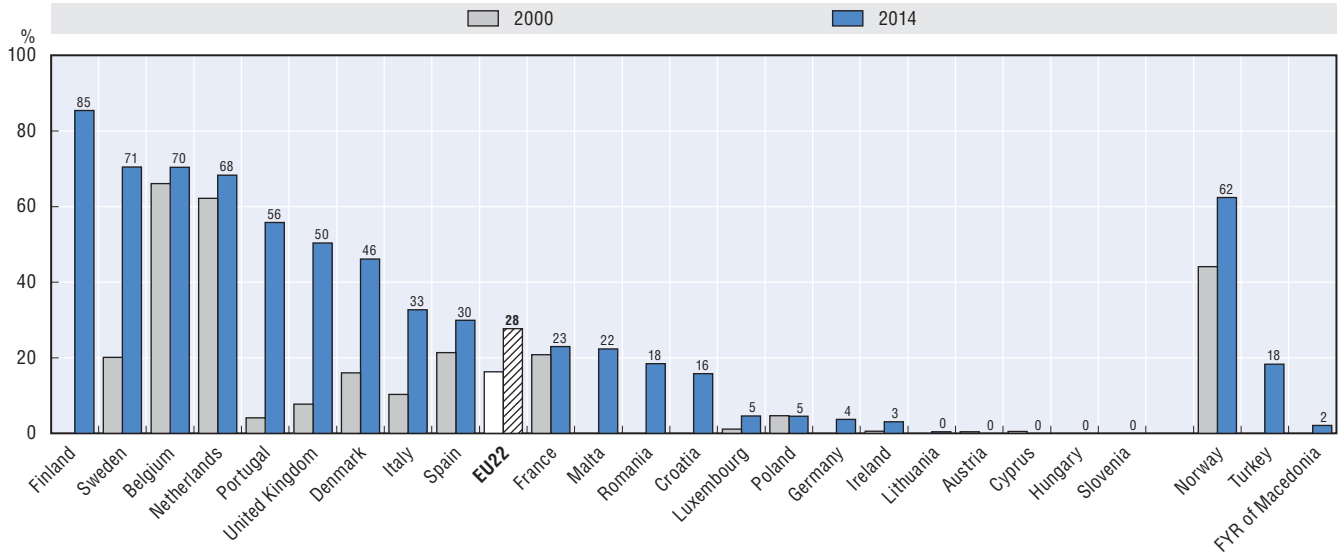
8.8. Share of cataract surgeries carried out as ambulatory cases, 2000 and 2014 (or nearest year)



Source: OECD Health Statistics 2016; Eurostat Database.

StatLink http://dx.doi.org/10.1787/888933430129

8.9. Share of tonsillectomy carried out as ambulatory cases, 2000 and 2014 (or nearest year)



Source: OECD Health Statistics 2016; Eurostat Database.

StatLink http://dx.doi.org/10.1787/888933430137

The average length of stay in hospitals is often regarded as an indicator of efficiency. All other things being equal, a shorter stay will reduce the cost per discharge and shift care from inpatient to less expensive post-acute settings. However, shorter stays tend to be more service intensive and more costly per day. Too short a length of stay may also cause adverse effects on health outcomes, or reduce the comfort and recovery of the patient. If this leads to a greater readmission rate, costs per episode of illness may fall only slightly, or even rise.

In 2014, the average length of stay in hospitals for all causes was the lowest in Denmark, Bulgaria and Sweden (Figure 8.10). It was highest in Finland, France, Hungary, the Czech Republic and Germany. The high average length of stay in Finland is due to a large proportion of beds allocated for convalescent patients and long-term care (see indicator on hospital beds in Chapter 7). Focusing only on stays in acute care units, the average length of stay in Finland is not greater, indeed it is even lower than in several other European countries.

The average length of stay in hospitals has decreased over the past decade in most EU countries, falling from almost ten days in 2000 to eight days in 2014 on average across EU member states. It fell particularly quickly in some countries that had relatively long stays in 2000 (e.g. Bulgaria, Croatia, Latvia, the Slovak Republic and the United Kingdom). The sharp reduction in Bulgaria has coincided with a substantial reduction in the number of hospital beds per capita since 2000, while hospital admission rates for short stays have increased (see indicator on hospital beds and hospital discharges in Chapter 7).

Focusing on average length of stay for specific diseases or conditions can remove some of the effect of different case mix and severity. Figure 8.11 shows that the average length of stay for a normal delivery in EU countries ranges from less than two days in the United Kingdom, the Netherlands and Ireland, to five days in Croatia, Hungary and the Slovak Republic. The length of stay for a normal delivery has become shorter in nearly all countries, dropping from five days in 2000 to about three days in 2014 on average in EU member states.

The average length of stay following acute myocardial infarction (AMI or heart attack) was around seven days on average in EU countries in 2014 (Figure 8.12). It was lowest in Bulgaria, Denmark, Sweden and the Slovak Republic (less than five days) and highest in Germany (over ten days).

Several factors can explain these cross-country variations in average length of stay in general. Differences in the clinical need of patients may obviously play a role, but these variations also likely reflect differences in clinical practices and payment systems. The combination of an abundant supply of beds with the structure of hospital payments may provide hospitals with incentives to keep patients longer. A growing number of countries (e.g. France, Germany, Poland) have moved to prospective payment methods often based on diagnosis-related groups (DRGs) to set payments based on the estimated cost of hospital care for different patient groups in advance of service provision. These payment methods have the advantage of encouraging providers to reduce the cost of each episode of care, notably by reducing the length of stay.

Most countries are seeking to reduce the average length of stay in hospital whilst maintaining or improving the quality of care. A diverse set of policy options are available to achieve these twin aims. Strategic reductions in hospital bed numbers alongside the development of community care services can shorten the average length of stay, such as seen in Denmark's quality-driven reforms of the hospital sector (OECD, 2013). Other options include promoting the take-up of less invasive surgical procedures, changes in hospital payment methods, the expansion of early discharge programmes which enable patients to return to their home to receive follow-up care, and support for hospitals to improve the co-ordination of care across diagnostic and treatment pathways.

Definition and comparability

Average length of stay (ALOS) refers to the average number of days that patients spend in hospital. It is generally measured by dividing the total number of days stayed by all inpatients during a year by the number of admissions or discharges. Day cases are excluded.

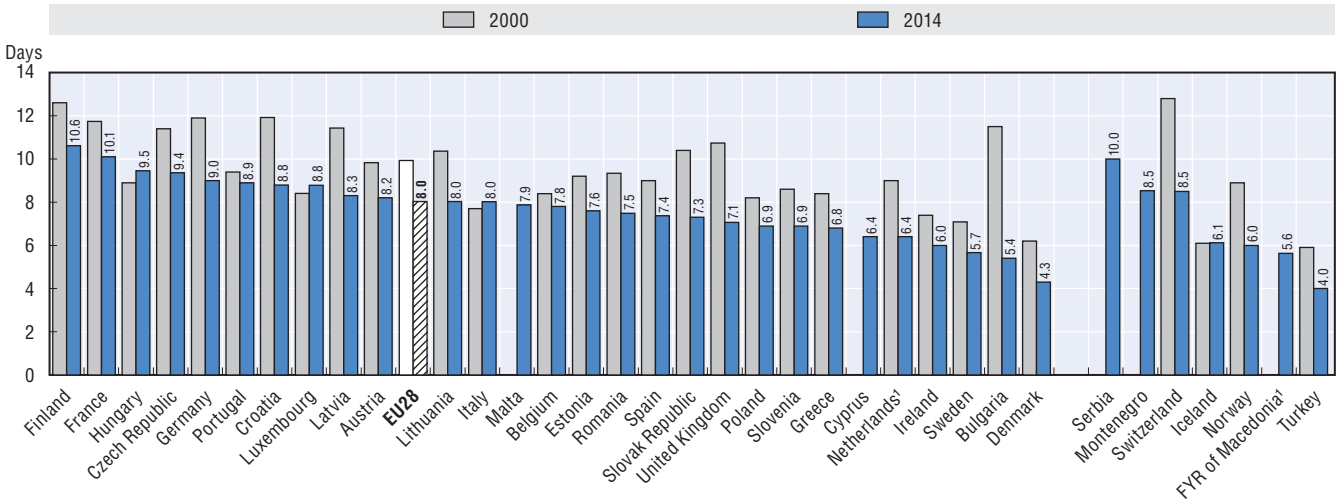
The data cover all inpatient cases (including not only curative/acute care cases) for most countries, with the exception of the Netherlands where the data refer to curative/acute care only (resulting in an under-estimation).

Discharges and average length of stay of healthy babies born in hospitals are excluded in several countries (e.g. Austria, Cyprus, Estonia, Finland, Greece, Ireland, Latvia, Luxembourg, Spain), resulting in a slight over-estimation of average length of stay compared with other countries.

Reference

OECD (2013), *OECD Reviews of Health Care Quality: Denmark 2013 – Raising Standards*, OECD Publishing, Paris, *http://dx.doi.org/10.1787/9789264191136-en*.

8.10. Average length of stay in hospital, 2000 and 2014 (or nearest year)

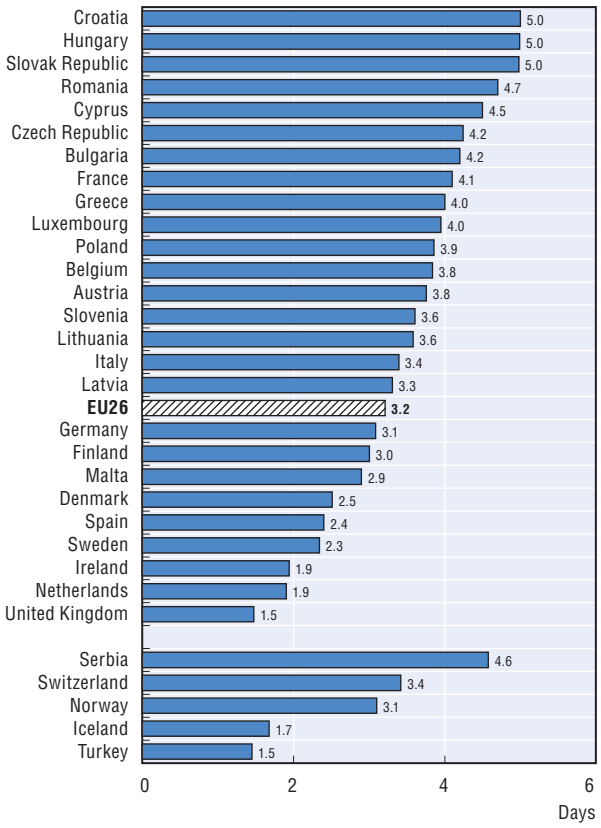


1. Data refer to average length of stay for curative (acute) care (resulting in an under-estimation).

Source: OECD Health Statistics 2016; Eurostat Database.

StatLink http://dx.doi.org/10.1787/888933430145

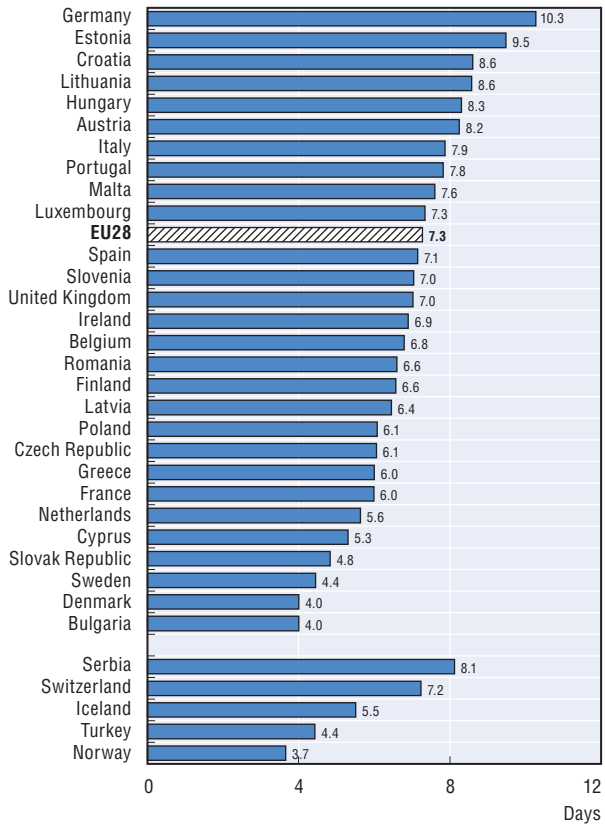
8.11. Average length of stay for normal delivery, 2014 (or nearest year)



Source: OECD Health Statistics 2016; Eurostat Database.

StatLink http://dx.doi.org/10.1787/888933430159

8.12. Average length of stay for acute myocardial infarction (AMI), 2014 (or nearest year)



Source: OECD Health Statistics 2016; Eurostat Database.

StatLink http://dx.doi.org/10.1787/888933430161

One of the main policy levers that countries can use to adjust the supply of health workers to projected demand is to change the number of students admitted to medical, nursing and other health-related education programmes. However, the effect of these policies are not felt immediately, as it takes several years to train new doctors (about 8-10 years) and nurses (about three years for general nurses going to university).

Most EU countries have increased the number of students admitted in medical and nursing education programmes since 2000 in response to concerns about possible shortages arising from the retirement of the "baby boom" generation of doctors and nurses and greater health care needs of ageing populations. However, there remain large variations across countries in the number of new medical and nursing graduates relative to their population size; this may reflect differences in projected demand and/or supply.

In 2014, there were on average about 12 new medical graduates per 100 000 population across EU countries (Figure 8.13). This proportion was highest in Malta and Ireland, whereas Greece, Poland and France had the lowest number of new medical graduates relative to their population. In Ireland, the number of medical graduates increased strongly in 2013 and 2014 due at least partly to the opening of new Graduate Entry Programmes a few years earlier, allowing students with an undergraduate degree in another discipline to obtain a medical degree in four years only.

The number of medical graduates has increased since 2000 in most EU countries, though at different paces (Figure 8.15). In Portugal, the number of medical graduates increased by two-and-a-half times between 2000 and 2014, rising from about 600 to more than 1 500 in 2014. In the United Kingdom, the number of medical graduates nearly doubled between 2000 and 2014, reflecting an effort to increase the domestic supply and rely less on foreign-trained doctors. Most of the increase in admission in medical schools occurred between 2000 and 2004. In France, the number of medical graduates increased steadily since 2006 following a large increase in the *numerus clausus* between 2000 and 2006. However, the number of graduates should stabilise in the coming years, as student admission quotas have remained fairly stable over the past few years.

There has also been a strong rise in the number of medical graduates in Hungary, the Czech Republic and Poland. This sharp increase can be explained partly by the growing number of international students choosing these countries to purse their medical studies. This growing internationalisation of medical education makes it more difficult for national governments to set their own domestic *numerus clausus* policies independently from decisions taken in other countries (OECD, 2016).

Many EU countries have also taken steps over the past decade to increase the number of students in nursing schools in response to concerns about current or possible future shortages of nurses. In 2014, there were on average nearly 40 new nursing graduates per 100 000 population across EU countries (Figure 8.14). Romania and Denmark had the highest number of new nursing graduates relative to their population, with more than 90 new nurses per 100 000 population. In Romania, most nursing graduates are however lower level nurses. This contrasts with the situation in Bulgaria, which had the lowest number of nursing graduates per capita, but where all nursing graduates are trained to a level equivalent to university degree.

Since 2000, the number of nursing graduates has increased in most EU countries, but at different rates (Figure 8.16). In France, the number of graduates from nursing schools increased by 85% between 2000 and 2014, although the number has remained stable in recent years. The *numerus clausus* set by the French Ministry of Health to control entry in nursing education programmes increased substantially in the academic year of 2000/01 when the annual quota was increased by over 40%, driven by a projected diminution in the supply of nurses resulting from the reduction of working time to 35 hours per week and a more general concern about the anticipated retirement of a large number of nurses.

In Germany also, there has been a large increase in the number of nurse graduates in recent years, related at least partly to a greater offer of registered nurse training programmes in several universities, in addition to the programmes traditionally offered in vocational nursing schools (Cassier-Woidasky, 2013).

Definition and comparability

Medical graduates are defined as the number of students who have graduated from medical schools in a given year. In Denmark, the data refer to the number of new doctors receiving an authorisation to practice, which can result in an over-estimation if these include some foreign-trained doctors.

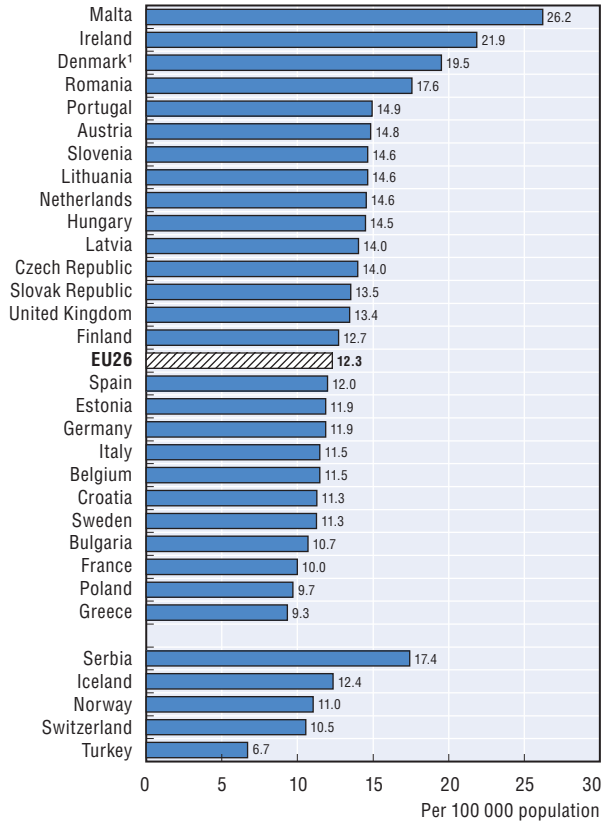
Nursing graduates refer to the number of students who have obtained a recognised qualification required to become a licensed or registered nurse. They include graduates from both higher level and lower level nursing programmes. The data for Denmark are based on the number of new nurses receiving an authorisation to practice, which can result in an over-estimation if these include some foreign-trained nurses.

References

Cassier-Woidasky, A.K. (2013), Nursing Education in Germany – Challenges and Obstacles in Professionalisation, DHBW, Stuttgart.

OECD (2016), *Health Workforce Policies in OECD Countries: Right Jobs, Right Skills, Right Places*, OECD Publishing, Paris, *http://dx.doi.org/10.1787/9789264239517-en*.

8.13. Medical graduates per 100 000 population, 2014 (or nearest year)



1. In Denmark, data refer to new doctors receiving an authorisation to practice (over-estimation if it includes foreign-trained doctors).

Source: OECD Health Statistics 2016; Eurostat Database.

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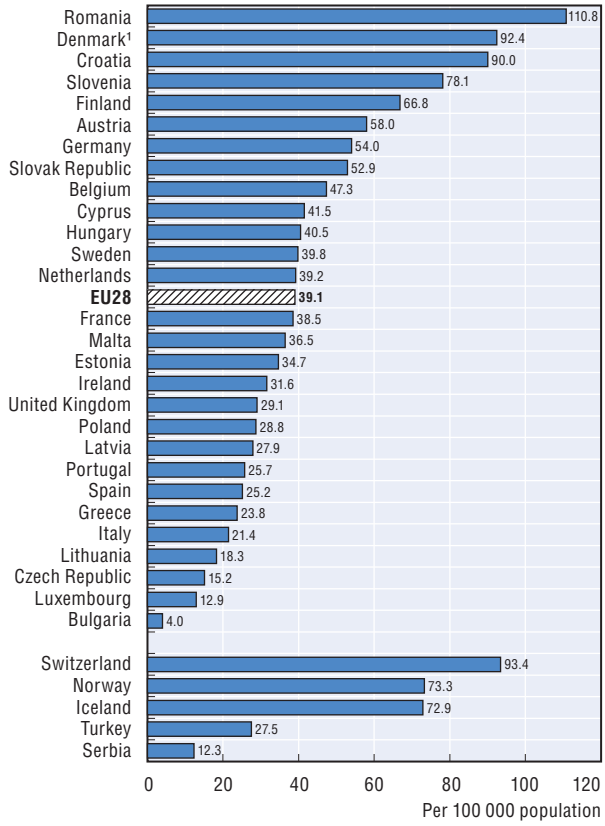
8.14. Nursing graduates per 100 000 population, 2014 (or nearest year)

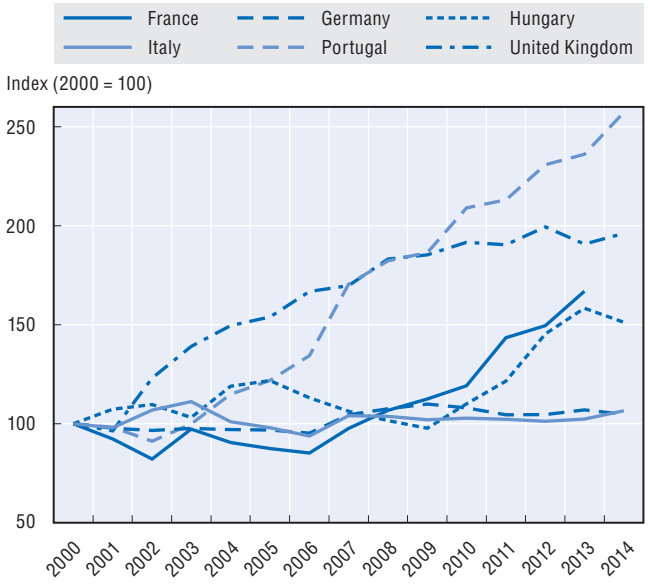


1. In Denmark, data refer to new nurses receiving an authorisation to practice (over-estimation if it includes foreign-trained nurses).

Source: OECD Health Statistics 2016; Eurostat Database.

StatLink http://dx.doi.org/10.1787/888933430186

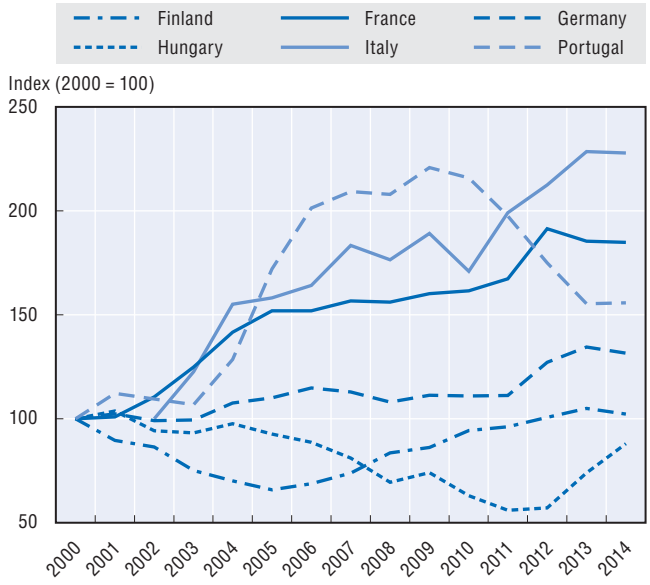
8.15. Evolution in the number of medical graduates, selected EU countries, 2000 to 2014



Source: OECD Health Statistics 2016.

StatLink http://dx.doi.org/10.1787/888933430191

8.16. Evolution in the number of nursing graduates, selected EU countries, 2000 to 2014



Source: OECD Health Statistics 2016.

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Health and long-term care expenditure in EU member states has increased rapidly up until the 2008 economic and financial crisis. At the same time, three-quarters of health spending on average is financed from public sources. Given that health and long-term care expenditure represents a sizeable share of government spending, it is often difficult to exempt it from any comprehensive budgetary consolidation efforts. In many countries, there are concerns that ageing populations may lead to growing health and long-term care spending while at the same time reducing the share of the working-age population to finance these public spending, creating pressures around the fiscal sustainability of health and long-term care systems (OECD, 2015).

Projections of both public expenditure on health and long-term care are regularly carried out by the Ageing Working Group of the Economic Policy Committee, using the European Commission services' models (EC and EPC, 2014). In both health and long-term care projection models, a series of scenarios tests the potential impact of different determinants of public spending (including both demographic and non-demographic factors) to indicate how each may contribute to the evolution of public spending over the next 50 years. The results presented here are based on the baseline (or reference) scenario, which uses a certain set of assumptions to examine possible future trends in public spending on health and long-term care.

In the baseline scenario for health care expenditure, some of the main assumptions include that half of the future gains in life expectancy will be spent in good health and that the income elasticity of health care spending will converge from 1.1 in 2013 to 1 in 2060. The main result of the 2015 projection exercise, based on these and other assumptions, is an increase of public spending on health of 0.9 percentage point of GDP in total among the 28 EU countries by 2060 (Figure 8.17). Public expenditure on health is projected to rise by only 0.1 percentage point in Belgium and Lithuania, while it may rise by more than 2 percentage points of GDP in Portugal and Malta (EC and EPC, 2015).

Long-term care expenditure represents a growing share of GDP in many EU countries and as such is an important item for the long-term sustainability of public finances. The EC projection model includes a number of determinants of long-term care expenditure, including in the baseline scenario the assumption again that half of the projected gains in life expectancy will be spent in good health (without disability). The main result from the baseline scenario is a projected increase in public spending on long-term care of 1.1 percentage points in total across the 28 EU countries, up from 1.6% of GDP in 2013 to 2.7% of GDP in the European Union by 2060 (Figure 8.18). The results vary widely across countries, from only 0.1 percentage point of GDP in Croatia and Latvia up to as much as 3.0 percentage points of GDP in the Netherlands (EC and EPC, 2015).

OECD studies have shown that different policy and institutional factors (such as financing mechanisms, decentralisation, organisation of health provision, etc.) can have a substantial impact on the growth in public spending on health care (de la Maisonneuve et al., 2016).

Definition and comparability

Public expenditure on health is defined as the "core" health care categories [SHA 1.0 categories (HC.1 to HC.9), excluding long-term nursing care (HC.3), but including capital investment in health (HC.R.1)]. It excludes private expenditure in the form of direct out-of-pocket payments by households and private health insurance.

Long-term care is defined as a range of services required by persons with reduced degree of functional capacity (physical or cognitive) and who are consequently dependent for an extended period of time on help with basic and/or instrumental activities of daily living. Basic activities of daily living (ADL) or personal care services are frequently provided in combination with help with basic medical services such as nursing care, prevention, rehabilitation or services of palliative care. Instrumental activities of daily living (IADL) or assistance care services are mostly linked to home help (Colombo et al., 2011).

The data, methodology and assumptions used for the health and long-term care expenditure projections are explained in detail in the 2014 report of the European Commission (DG ECFIN) and the Economic Policy Committee (Ageing Working Group). The "reference scenario" is used as the baseline scenario when calculating the overall budgetary impact of ageing. The EU averages are weighted according to GDP.

The OECD also produces forecasts of public spending on health and long-term care, covering OECD member states and major emerging economies. The European Commission model is used here because of its exhaustive coverage of EU countries.

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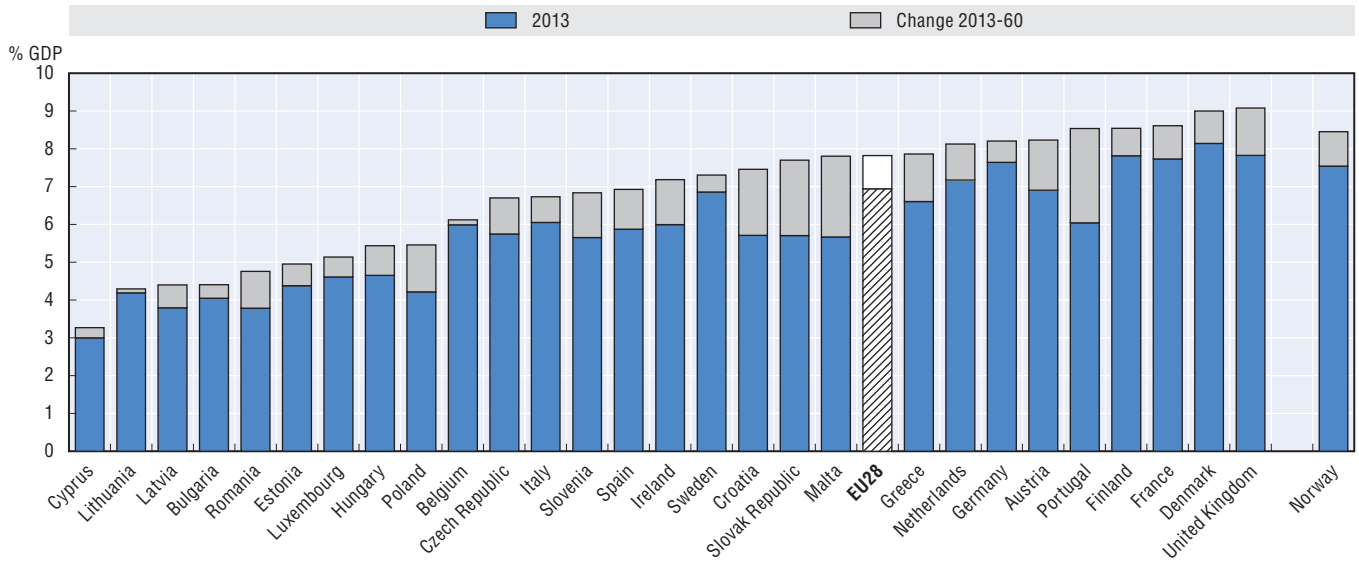
8.17. Public spending on health care as a percentage of GDP, 2013 to 2060

Baseline scenario

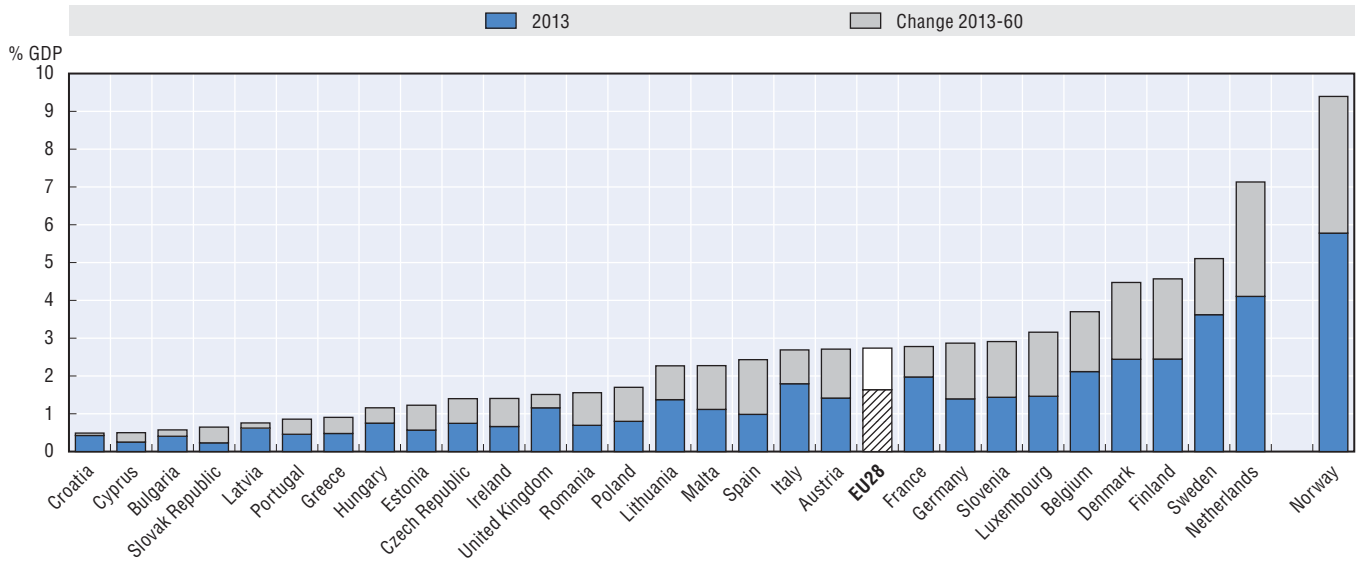


Note: The EU28 total is weighted by GDP.
Source: EC and EPC (2015).

StatLink http://dx.doi.org/10.1787/888933430212

8.18. Public spending on long-term care as a percentage of GDP, 2013 to 2060

Baseline scenario



Note: The EU28 total is weighted by GDP.
Source: EC and EPC (2015).

StatLink http://dx.doi.org/10.1787/888933430224

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Statistical annex

Table A.1. **Total population, mid-year, thousands, 2000 to 2015**

	2000	2005	2010	2011	2012	2013	2014	2015
Austria	8 012	8 228	8 363	8 392	8 430	8 479	8 542	8 638
Belgium	10 251	10 479	10 896	11 048	11 128	11 183	11 206	11 249
Bulgaria	8 170	7 659	7 396	7 348	7 306	7 265	7 224	7 178
Croatia	4 468	4 312	4 296	4 283	4 269	4 254	4 236	4 208
Cyprus	694	739	829	851	864	862	853	848
Czech Republic	10 255	10 211	10 474	10 496	10 511	10 514	10 525	10 546
Denmark	5 340	5 419	5 548	5 571	5 592	5 615	5 643	5 683
Estonia	1 397	1 355	1 331	1 327	1 323	1 318	1 315	1 315
Finland	5 176	5 246	5 363	5 388	5 414	5 439	5 462	5 480
France	60 762	63 001	64 819	65 128	65 439	65 745	66 152	66 538
Germany[1]	82 212	82 469	81 777	80 275	80 426	80 646	80 983	81 680
Greece	10 806	10 987	11 121	11 105	11 045	10 965	10 892	10 826
Hungary	10 211	10 087	10 000	9 972	9 920	9 893	9 866	9 843
Ireland	3 805	4 160	4 560	4 577	4 587	4 598	4 617	4 644
Italy	56 942	57 969	59 277	59 379	59 540	60 234	60 789	60 731
Latvia	2 368	2 239	2 098	2 060	2 034	2 013	1 994	1 978
Lithuania	3 500	3 323	3 097	3 028	2 988	2 958	2 932	2 905
Luxembourg	436	465	507	518	531	543	556	570
Malta	381	404	415	416	419	423	427	432
Netherlands	15 926	16 320	16 615	16 693	16 755	16 804	16 865	16 940
Poland	38 259	38 165	38 043	38 063	38 063	38 040	38 012	37 986
Portugal	10 290	10 503	10 573	10 558	10 515	10 457	10 401	10 358
Romania	22 443	21 320	20 247	20 148	20 058	19 984	19 909	19 815
Slovak Republic	5 389	5 373	5 391	5 398	5 408	5 413	5 419	5 424
Slovenia	1 989	2 000	2 049	2 053	2 057	2 060	2 062	2 064
Spain	40 568	43 653	46 577	46 743	46 773	46 620	46 481	46 444
Sweden	8 872	9 030	9 378	9 449	9 519	9 600	9 696	9 799
United Kingdom	58 893	60 401	62 766	63 259	63 700	64 128	64 559	65 054
EU28 (total)	**487 813**	**495 517**	**503 808**	**503 525**	**504 614**	**506 055**	**507 619**	**509 175**
Albania	3 061	3 142	..	..	..	2 897	2 894	2 889
FYR of Macedonia	2 026	2 037	2 055	2 059	2 061	2 064	2 067	2 070
Iceland	281	297	318	319	321	324	327	331
Montenegro	605	613	619	620	621	621	622	622
Norway	4 491	4 623	4 889	4 953	5 019	5 080	5 137	5 190
Serbia	7 516	7 441	7 291	7 234	7 199	7 164	7 131	7 095
Switzerland	7 184	7 437	7 825	7 912	7 997	8 089	8 189	8 281
Turkey	65 809	68 435	73 142	74 224	75 176	76 148	77 182	78 218

1. Data for 2015 are provisional and subject to revisions.
Source: Eurostat Database (data extracted in August 2016).

StatLink http://dx.doi.org/10.1787/888933430243

Table A.2. **Share of the population aged 65 and over, 1st January, 1960 to 2015**

	1960	1970	1980	1990	2000	2010	2011	2012	2013	2014	2015
Austria	12.1	14.0	15.5	14.8	15.4	17.6	17.6	17.8	18.0	18.2	18.5
Belgium	11.9	13.3	14.3	14.8	16.7	17.1	17.0	17.3	17.5	17.8	18.0
Bulgaria	7.4	9.4	11.7	13.0	16.2	18.2	18.5	18.9	19.2	19.6	20.0
Croatia	..	..	..	..	16.1	17.9	17.8	17.9	18.2	18.5	18.8
Cyprus	6.4	..	10.8	10.7	11.2	12.4	12.5	12.8	13.3	14.0	14.6
Czech Republic	9.5	12.0	13.6	12.5	13.8	15.3	15.6	16.2	16.8	17.3	17.8
Denmark	10.5	12.1	14.3	15.6	14.8	16.3	16.8	17.3	17.8	18.2	18.6
Estonia	10.5	11.6	12.5	11.6	14.9	17.5	17.5	17.7	18.1	18.4	18.8
Finland	7.2	9.0	11.9	13.3	14.8	17.0	17.5	18.1	18.7	19.3	19.9
France	11.6	12.9	13.9	14.0	16.2	17.1	17.2	17.6	17.5	18.0	18.4
Germany[1]	10.7	13.0	15.5	15.2 |	16.2	20.7	20.6	21.0	21.1	20.8	21.0
Greece	9.3	11.1	13.0	13.6	17.3	19.0	19.3	19.7	20.1	20.6	20.9
Hungary	8.9	11.5	13.5	13.2	15.0	16.6	16.8	16.9	17.2	17.6	17.9
Ireland	11.1	11.1	10.7	11.4	11.1	11.2	11.5	11.9	12.2	12.6	13.0
Italy	9.2	10.7	13.1	14.7	18.1	20.4	20.5	20.8	21.0	21.4	21.7
Latvia	..	11.9	13.0	11.8	14.9	18.3	18.5	18.7	18.9	19.1	19.4
Lithuania	..	6.7	7.0	10.8	13.7	17.3	17.9	18.1	18.2	18.4	18.7
Luxembourg	10.8	12.4	13.6	13.3	14.2	13.8	13.7	13.8	13.8	13.9	14.2
Malta	..	..	8.4	10.3	12.1	14.9	15.7	16.4	17.1	17.8	18.5
Netherlands	8.9	10.1	11.4	12.7	13.5	15.3	15.5	16.2	16.8	17.3	17.8
Poland	5.8	8.2	10.1	9.9	12.1	13.6	13.6	14.0	14.4	14.9	15.4
Portugal	7.8	9.2	11.1	13.2	16.0	18.3	18.7	19.1	19.4	19.9	20.3
Romania	..	8.5	10.2	10.3	13.2	16.2	16.2	16.2	16.3	16.6	17.0
Slovak Republic	6.7	9.1	10.5	10.2	11.4	12.4	12.6	12.8	13.1	13.5	14.0
Slovenia	..	..	10.8	10.6	13.8	16.5	16.5	16.8	17.1	17.5	17.9
Spain	8.2	9.5	10.8	13.4	16.7	16.8	17.1	17.4	17.7	18.2	18.5
Sweden	11.6	13.5	16.2	17.7	17.3	18.0	18.4	18.7	19.0	19.3	19.6
United Kingdom	11.6	12.9	14.9	15.7	15.8	16.2	16.4	16.7	17.1	17.4	17.7
EU28 (total)	**9.8**	**11.3**	**13.1**	**13.7**	**15.7**	**17.5**	**17.6**	**18.0**	**18.2**	**18.5**	**18.9**
Albania	..	..	..	..	..	..	..	..	..	12.0	12.5
FYR of Macedonia	..	..	..	..	9.8	11.6	11.7	11.8	12.0	12.4	12.7
Iceland	7.9	8.7	9.8	10.5	11.5	12.0	12.3	12.6	12.9	13.1	13.5
Montenegro	..	..	..	..	12.2	12.9	12.8	12.9	13.1	13.3	13.7
Norway	10.9	12.8	14.6	16.3	15.2	14.8	15.0	15.3	15.6	15.8	16.1
Serbia	..	..	..	..	16.0	17.1	17.2	17.3	17.6	18.1	18.5
Switzerland	10.1	11.2	13.8	14.5	15.2	16.7	16.8	17.1	17.3	17.5	17.8
Turkey	3.5	4.3	4.7	4.2	5.4	7.0	7.2	7.3	7.5	7.6	8.0

| Break in series.
1. Population figures for Germany prior to 1991 refer to West Germany.
Source: Eurostat Database (data extracted in May 2016).

StatLink http://dx.doi.org/10.1787/888933430253

Table A.3. **Crude birth rate, per 1 000 population, 1960 to 2015**

	1960	1970	1980	1990	2000	2010	2011	2012	2013	2014	2015
Austria	17.9	15.0	12.0	11.8	9.8	9.4	9.3	9.4	9.4	9.6	9.8
Belgium	16.8	14.7	12.6	12.4	11.4	11.9	11.6	11.5	11.2	11.1	10.9
Bulgaria	17.8	16.3	14.5	12.1	9.0	10.2	9.6	9.5	9.2	9.4	9.2
Croatia	18.4	13.8	14.8	11.6	9.8	10.1	9.6	9.8	9.4	9.3	8.9
Cyprus	26.2	19.2	20.4	18.3	12.2	11.8	11.3	11.8	10.8	10.9	10.8
Czech Republic	13.4	15.0	14.9	12.6	8.9	11.2	10.4	10.3	10.2	10.4	10.5
Denmark	16.6	14.4	11.2	12.3	12.6	11.4	10.6	10.4	10.0	10.1	10.2
Estonia	16.7	15.8	15.0	14.2	9.4	11.9	11.1	10.6	10.3	10.3	10.6
Finland	18.5	14.0	13.2	13.1	11.0	11.4	11.1	11.0	10.7	10.5	10.1
France	17.9	16.7	14.9	13.4	13.1	12.8	12.5	12.4	..	..	..
Germany[1]	17.4	13.3	10.1	11.5 |	9.3	8.3	8.3	8.4	8.5	8.8	9.0
Greece	18.9	16.5	15.4	10.0	9.6	10.3	9.6	9.1	8.6	8.5	8.5
Hungary	14.7	14.7	13.9	12.1	9.6	9.0	8.8	9.1	9.0	9.5	9.4
Ireland	21.5	21.8	21.7	15.1	14.4	16.5	16.2	15.7	15.0	14.6	14.2
Italy	18.1	16.7	11.3	10.0	9.5	9.5	9.2	9.0	8.5	8.3	8.0
Latvia	16.7	14.6	14.1	14.2	8.6	9.4	9.1	9.8	10.2	10.9	11.1
Lithuania	22.5	17.7	15.2	15.4	9.8	9.9	10.0	10.2	10.1	10.4	10.8
Luxembourg	16.0	13.0	11.4	12.9	13.1	11.6	10.9	11.3	11.3	10.9	10.7
Malta	26.2	17.6	17.7	15.2	11.5	9.4	10.0	9.8	9.5	9.8	10.0
Netherlands	20.8	18.3	12.8	13.2	13.0	11.1	10.8	10.5	10.2	10.4	10.0
Poland	22.6	16.8	19.6	14.4	9.9	10.9	10.2	10.1	9.7	9.9	9.7
Portugal	24.1	20.8	16.2	11.7	11.7	9.6	9.2	8.5	7.9	7.9	8.3
Romania	19.1	21.1	17.9	13.6	10.4	10.5	9.7	10.0	9.1	9.7	9.3
Slovak Republic	21.7	17.8	19.1	15.1	10.2	11.2	11.3	10.3	10.1	10.2	10.3
Slovenia	17.6	15.9	15.7	11.2	9.1	10.9	10.7	10.7	10.2	10.3	10.0
Spain	21.7	19.5	15.2	10.3	9.8	10.4	10.1	9.7	9.1	9.2	9.0
Sweden	13.7	13.7	11.7	14.5	10.2	12.3	11.8	11.9	11.8	11.9	11.7
United Kingdom	17.5	16.2	13.4	13.9	11.5	12.9	12.8	12.8	12.1	12.0	11.9
EU28 (total)	**..**	**16.3**	**14.0**	**12.4**	**10.6**	**10.7**	**10.5**	**10.4**	**10.0**	**10.1**	**10.0**
Albania	43.3	32.5	26.5	25.1	16.7	..	..	..	12.3	12.4	11.5
FYR of Macedonia	31.7	23.2	21.0	18.8	14.5	11.8	11.1	11.4	11.2	11.4	11.1
Iceland	28.0	19.7	19.8	18.7	15.3	15.4	14.1	14.1	13.4	13.4	12.5
Montenegro	..	..	..	..	15.2	12.0	11.6	12.0	12.0	12.1	11.9
Norway	17.3	16.7	12.5	14.4	13.2	12.6	12.2	12.0	11.6	11.5	11.4
Serbia	..	..	..	..	9.8	9.4	9.1	9.3	9.2	9.3	9.3
Switzerland	17.7	16.1	11.7	12.5	10.9	10.3	10.2	10.3	10.2	10.4	10.2
Turkey	..	..	..	..	21.1	17.2	16.7	17.0	16.8	17.3	16.9

Note: Crude birth rate is defined as the number of live births per 1 000 population.
| Break in series.
1. Population figures for Germany prior to 1991 refer to West Germany.
Source: Eurostat Database (data extracted in August 2016).

StatLink http://dx.doi.org/10.1787/888933430262

Table A.4. **Fertility rate, number of children per women aged 15-49, 1960 to 2014**

	1960	1970	1980	1990	2000	2010	2011	2012	2013	2014
Austria	2.69	2.29	1.65	1.46	1.36	1.44	1.43	1.44	1.44	1.46
Belgium	2.54	2.25	1.68	1.62	1.64	1.84	1.81	1.79	1.74	1.72
Bulgaria	2.31	2.17	2.05	1.82	1.26	1.57	1.51	1.50	1.48	1.53
Croatia	..	..	..	..	..	1.55	1.48	1.51	1.46	1.46
Cyprus	..	..	..	2.41	1.64	1.44	1.35	1.39	1.30	1.31
Czech Republic	2.11	1.91	2.10	1.89	1.14	1.49	1.43	1.45	1.46	1.53
Denmark	2.54	1.95	1.55	1.67	1.77	1.87	1.75	1.73	1.67	1.69
Estonia	1.98	2.17	2.02	2.05	1.36	1.72	1.61	1.56	1.52	1.54
Finland	2.71	1.83	1.63	1.79	1.73	1.87	1.83	1.80	1.75	1.71
France	2.74	2.48	1.95	1.78	1.87	2.02	2.00	1.99	1.97	1.98
Germany[1]	2.37	2.03	1.56	1.45	1.38	1.39	1.39	1.41	1.42	1.47
Greece	2.23	2.40	2.23	1.39	1.25	1.48	1.40	1.34	1.29	1.30
Hungary	2.02	1.97	1.92	1.84	1.33	1.26	1.24	1.34	1.34	1.41
Ireland	3.76	3.87	3.23	2.12	1.90	2.06	2.04	2.01	1.96	1.95
Italy	2.41	2.42	1.68	1.36	1.26	1.41	1.39	1.42	1.39	1.37
Latvia	1.94	2.02	1.90	2.01	1.25	1.36	1.33	1.44	1.52	1.65
Lithuania	..	2.40	1.99	2.03	1.39	1.50	1.55	1.60	1.59	1.63
Luxembourg	2.28	1.98	1.50	1.62	1.78	1.63	1.51	1.57	1.55	1.50
Malta	..	..	1.99	2.04	1.70	1.36	1.45	1.43	1.38	1.42
Netherlands	3.12	2.57	1.60	1.62	1.72	1.80	1.76	1.72	1.68	1.71
Poland	2.98	2.20	2.28	1.99	1.37	1.38	1.30	1.30	1.26	1.29
Portugal	3.10	2.83	2.18	1.56	1.56	1.39	1.35	1.28	1.21	1.23
Romania	..	..	2.43	1.83	1.31	1.59	1.47	1.52	1.41	1.52
Slovak Republic	3.07	2.40	2.31	2.09	1.29	1.40	1.45	1.34	1.34	1.35
Slovenia	2.18	2.21	2.11	1.46	1.26	1.57	1.56	1.58	1.55	1.58
Spain	2.86	2.90	2.22	1.36	1.23	1.37	1.34	1.32	1.27	1.32
Sweden	2.20	1.94	1.68	2.14	1.55	1.98	1.90	1.91	1.89	1.88
United Kingdom	2.72	2.43	1.90	1.83	1.64	1.92	1.91	1.92	1.83	1.81
EU28 (total)	**2.61**	**2.35**	**1.92**	**1.66**	**1.46**	**1.60**	**1.57**	**1.58**	**1.54**	**1.57**
Albania	..	..	..	..	..	..	..	..	..	1.78
FYR of Macedonia	..	..	..	..	1.88	1.56	1.46	1.51	1.49	1.52
Iceland	4.26	2.81	2.48	2.31	2.08	2.20	2.02	2.04	1.93	1.93
Montenegro	..	..	..	..	..	1.70	1.65	1.72	1.73	1.75
Norway	2.91	2.50	1.72	1.93	1.85	1.95	1.88	1.85	1.78	1.76
Serbia	..	..	..	..	1.48	1.40	1.40	1.45	1.43	1.46
Switzerland	2.44	2.10	1.55	1.59	1.50	1.54	1.52	1.53	1.52	1.54
Turkey	6.40	5.00	4.63	3.07	2.27	2.08	2.05	2.11	2.10	2.18

1. Population figures for Germany prior to 1991 refer to West Germany.

Source: Eurostat Database (data extracted in May 2016).

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Table A.5. **GDP per capita in 2014 and average annual growth rates, 2007 to 2015**

	GDP per capita in EUR PPP	Annual growth rate per capita in real terms							
	2014	2007/08	2008/09	2009/10	2010/11	2011/12	2012/13	2013/14	2014/15
Austria	35 620	1.2	-4.1	1.7	2.5	0.3	-0.5	-0.1	0.6
Belgium	32 301	0.0	-3.1	1.8	0.4	-0.6	-0.5	0.9	1.1
Bulgaria	12 804	6.4	-3.6	0.7	2.2	0.8	1.9	2.1	3.3
Croatia	16 108	2.1	-7.3	-1.5	0.0	-1.9	-0.7	0.1	1.9
Cyprus	22 398	1.1	-4.6	-1.3	-2.1	-3.9	-5.7	-1.4	2.2
Czech Republic	23 494	1.9	-5.4	2.0	1.8	-0.9	-0.5	2.6	4.4
Denmark	34 226	-1.3	-5.6	1.2	0.7	-0.4	-0.7	0.7	0.7
Estonia	20 939	-5.2	-14.6	2.7	7.9	5.6	1.9	3.2	1.2
Finland	30 280	0.3	-8.7	2.5	2.1	-1.9	-1.2	-1.1	0.4
France	29 347	-0.4	-3.4	1.5	1.6	-0.3	0.1	-0.1	1.0
Germany	34 522	1.3	-5.4	4.2	3.6	2.1	0.0	1.2	1.4
Greece	19 938	-0.6	-4.6	-5.6	-9.0	-6.8	-2.5	1.3	0.1
Hungary	18 648	1.0	-6.4	1.0	2.0	-1.2	2.2	4.0	3.1
Ireland	36 742	-4.1	-6.6	-0.1	2.2	-0.1	1.2	4.8	7.5
Italy	26 356	-1.7	-5.9	1.4	0.4	-3.1	-2.9	-1.3	0.7
Latvia	17 522	-2.6	-12.9	-1.8	8.2	5.3	4.1	3.3	3.1
Lithuania	20 601	3.7	-13.9	3.8	8.5	5.2	4.6	3.9	2.0
Luxembourg	73 264	-2.6	-7.1	3.8	0.3	-3.2	2.0	1.6	2.4
Malta	23 563	2.7	-3.2	3.0	1.4	2.1	3.3	2.6	6.0
Netherlands	35 919	1.3	-4.3	0.9	1.2	-1.4	-0.5	1.1	1.7
Poland	18 798	4.2	2.8	3.9	5.0	1.6	1.3	3.4	3.7
Portugal	21 401	0.1	-3.1	1.9	-1.7	-3.6	-0.6	1.5	1.7
Romania	15 159	10.3	-6.3	-0.2	1.6	1.1	3.9	3.3	4.0
Slovak Republic	21 078	5.6	-5.6	5.0	2.7	1.4	1.3	2.4	3.5
Slovenia	22 623	3.1	-8.6	0.8	0.4	-2.9	-1.2	2.9	2.8
Spain	25 021	-0.5	-4.4	-0.4	-1.4	-2.7	-1.3	1.7	3.3
Sweden	33 706	-1.3	-6.0	5.1	1.9	-1.0	0.4	1.3	3.6
United Kingdom	30 012	-1.4	-5.0	1.1	0.7	0.6	1.2	2.3	1.8
EU28 (total)	**27 486**	**0.1**	**-4.7**	**1.8**	**1.5**	**-0.4**	**-0.1**	**1.0**	**1.8**
Albania	8 307	..	..	..	..	..	..	2.1	..
FYR of Macedonia	10 098	5.3	-0.5	3.1	2.2	-0.6	2.8	3.4	3.6
Iceland	32 972	-0.4	-5.0	-3.4	1.7	0.7	3.4	0.8	3.4
Montenegro	11 202	..	..	..	..	-2.8	3.4	1.7	..
Norway	48 890	-0.9	-2.9	-0.6	-0.3	1.4	-0.2	1.1	1.0
Serbia	10 193	5.8	-2.7	1.0	2.2	-0.5	3.1	-1.4	1.0
Switzerland	44 301	1.0	-3.3	1.9	0.7	0.1	0.6	0.7	..
Turkey	14 486	-0.6	-6.1	7.5	7.2	0.8	2.9	1.5	3.3

Note: EU28 displays a weighted average and is calculated based on total GDP divided by the total population of the 28 EU member states.
Source: Eurostat Database; *OECD National Accounts Database*.

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Table A.6. **Health expenditure per capita in 2015 and average annual growth rates, 2007 to 2015**

	Health expenditure per capita in EUR PPP	Annual growth rate per capita in real terms[1]							
	2015	2007/08	2008/09	2009/10	2010/11	2011/12	2012/13	2013/14	2014/15[2]
Austria	3 789	2.9	1.0	1.4	0.4	2.6	-0.2	0.9	1.4
Belgium	3 481	4.1	4.7	0.0	2.2	0.5	1.4	0.9	0.5
Bulgaria	1 108	9.0	2.0	9.5	2.3	6.9	4.9	10.5	1.1
Croatia	1 109	5.7	-1.6	-0.6	..	-1.8	-4.8	-8.0	1.0
Cyprus	1 576	14.6	2.5	..	0.8	-3.5	-2.3	-2.5	1.7
Czech Republic	1 850	7.7	8.5	-3.1	2.5	-0.1	..	0.5	2.5
Denmark	3 773	0.9	6.2	-1.4	-1.4	0.0	-0.3	..	1.1
Estonia	1 348	7.6	..	-0.6	-0.8	5.3	5.0	5.8	4.1
Finland	2 988	3.5	0.2	2.4	3.0	1.8	1.0	-1.0	1.7
France	3 342	0.9	3.3	0.6	1.5	0.6	1.2	1.2	-0.2
Germany	4 003	3.3	3.8	3.0	0.9	2.7	1.6	2.1	1.9
Greece	1 663	..	..	-4.7	-12.6	-11.9	-4.7	-4.0	-0.9
Hungary	1 371	-0.6	-4.4	4.8	2.3	-2.3	-0.6	2.0	1.2
Ireland	3 922	11.9	7.9	0.6	-4.7	2.2	..	1.4	-0.3
Italy	2 476	3.1	-1.4	1.1	-0.9	-3.0	-3.4	..	0.7
Latvia	1 030	-5.0	-4.8	-1.8	-1.8	2.5	3.5	5.1	4.8
Lithuania	1 364	13.2	0.8	-3.8	3.4	1.9	2.1	5.2	6.5
Luxembourg[3]	6 023	2.5	5.2	-0.8	..	3.3	..	..	..
Malta	2 449	0.2	-1.1	2.6	..	5.9	2.4	1.5	3.8
Netherlands	3 983	3.7	3.0	2.7	1.7	2.1	0.0	0.5	0.2
Poland	1 259	13.5	6.1	..	1.9	1.0	..	3.0	1.9
Portugal	1 967	3.2	2.4	1.2	-4.6	-5.5	-3.3	0.3	0.3
Romania	816	11.5	-0.5	3.8	-3.3	0.1	-0.5	3.2	1.3
Slovak Republic	1 539	..	7.9	2.9	-2.4	4.4	0.0	..	4.0
Slovenia	1 983	8.0	-0.3	0.8	0.2	-0.8	-0.9	0.5	0.5
Spain	2 366	5.3	3.5	-0.1	-0.5	-2.7	-2.4	2.7	2.4
Sweden	3 937	1.6	1.2	-0.3	..	1.4	1.9	2.0	2.5
United Kingdom	3 084	1.8	4.7	-1.6	0.9	1.2	..	1.6	0.7
EU28 (total)	**2 781**	**4.3**	**2.9**	**0.9**	**0.1**	**0.1**	**-0.4**	**1.8**	**1.2**
Albania[4]	492	..	..	..	..	..	..	5.9	..
FYR of Macedonia[4]	654	4.6	-2.2	4.6	-1.2	1.7	-8.1	10.8	..
Iceland	3 126	0.2	-1.6	-6.2	-0.3	1.3	3.5	1.9	2.3
Montenegro[4]	698	..	..	..	3.2	1.6	-8.3	-0.4	..
Norway	4 681	3.7	2.0	-0.3	2.8	2.1	1.1	3.1	3.4
Serbia[4]	1 049	6.2	-4.1	2.9	-1.5	1.2	5.4	0.3	..
Switzerland	5 354	2.5	2.7	..	2.1	3.7	2.3	2.6	1.5
Turkey	791	-0.8	-1.0	-1.2	1.2	-0.7	5.4	1.6	6.2

Note: EU28 displays the total health spending divided by the total population.

1. Using national currency units at 2010 GDP price level.
2. Growth rates for 2014/2015 are preliminary, either estimated by national authorities or projected by the OECD Secretariat.
3. For Luxembourg, population data refer only to the total insured resident population, which is somewhat lower than the total population.
4. Latest data refer to 2014.

Source: *OECD Health Statistics 2016*; *Eurostat Database*; WHO, *Global Health Expenditure Database*.

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Table A.7. **Health expenditure, percentage of GDP, 2000 to 2015**

	2000	2005	2010	2011	2012	2013	2014	2015
Austria	9.2	9.6	10.1	9.9	10.1	10.1	10.3	10.4e
Belgium	7.9 |	9.0	9.9	10.1	10.2	10.4	10.4	10.4e
Bulgaria	..	6.9	7.2	7.2	7.6	7.9	8.5	8.3e
Croatia	..	6.9	8.2 |	7.6	7.6	7.3	6.7	6.6e
Cyprus	..	5.4 |	6.4	6.6	6.6	6.9	6.8	6.8e
Czech Republic	5.7 |	6.4	6.9	7.0	7.1 |	7.8	7.7	7.5e
Denmark	8.1 |	9.1	10.4	10.2	10.3	10.3 |	10.6	10.6e
Estonia	5.2	5.0 |	6.3	5.8	5.8	6.0	6.1	6.3p
Finland	6.9	8.0	8.9	9.0	9.3	9.5	9.5	9.6p
France	9.5 |	10.2 |	10.7	10.7	10.8	10.9	11.1	11.0e
Germany	9.8	10.2	11.0	10.7	10.8	10.9	11.0	11.1p
Greece	7.2	9.0 |	9.9	9.5	8.9	8.7	8.3	8.2e
Hungary	6.8 |	8.0	7.6	7.6	7.5	7.3	7.2	7.0e
Ireland	5.9	7.7	10.6	9.9	10.1 |	10.5	10.1	9.4e
Italy	7.6	8.4	9.0	8.8	8.8	8.8 |	9.1	9.1e
Latvia	5.9 |	5.9	6.2	5.6	5.4	5.4	5.5	5.6e
Lithuania	6.4 |	5.6	6.8	6.5	6.3	6.1	6.2	6.5e
Luxembourg	5.9	7.3	7.1 |	6.2	6.7	6.5	6.3	7.2p
Malta	..	8.8	8.3 |	9.6	10.0	9.9	9.8	9.6e
Netherlands	7.1 |	9.4	10.4	10.5	10.9	10.9	10.9	10.8p
Poland	5.3 |	5.8 |	6.4	6.2	6.2 |	6.5	6.4	6.3e
Portugal	8.4	9.4	9.8	9.5	9.3	9.1	9.0	8.9p
Romania	..	5.5	5.7	5.4	5.4	5.2	5.1	5.0e
Slovak Republic	5.3 |	6.6 |	7.8	7.4	7.7	7.6 |	7.0	7.0e
Slovenia	8.1 |	8.0	8.6	8.5	8.7	8.8	8.5	8.4p
Spain	6.8 |	7.7	9.0	9.1	9.1	9.0	9.1	9.0e
Sweden	7.4 |	8.3	8.5 |	10.7	10.9	11.1	11.2	11.1p
United Kingdom	6.3	7.4	8.5	8.4	8.5 |	9.9	9.9	9.8e
EU28 (total)	**..**	**8.7**	**9.6**	**9.5**	**9.6**	**9.9**	**10.0**	**9.9e**
Albania	..	6.3	5.3	5.7	5.6	5.7	5.9	..
FYR of Macedonia	..	8.0	6.8	6.6	6.8	6.0	6.5	..
Iceland	9.0 |	9.2	8.8	8.6	8.7	8.8	8.9	8.8p
Montenegro	..	8.5	6.9	6.9	7.2	6.4	6.2	..
Norway	7.7 |	8.3	8.9	8.8	8.8	8.9	9.3	9.9p
Serbia	..	8.7	10.1	9.7	9.9	10.1	10.3	..
Switzerland	9.3	10.3 |	10.5	10.6	11.0	11.2	11.4	11.5p
Turkey	4.7	5.1	5.3	5.0	5.0	5.1	5.1	5.2e

Note: Data for 2015 are preliminary. GDP data extracted in mid-June 2016. EU28 displays total health spending divided by total GDP of the 28 EU member states.
| Break in series.
e Estimation by the OECD Secretariat.
p Country estimation.
Source: OECD Health Statistics 2016; *Eurostat Database*; WHO, *Global Health Expenditure Database*.

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