Health at a Glance 2019

OECD INDICATORS

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Foreword

Health at a Glance compares key indicators for population health and health system performance across OECD members, candidate and partner countries. This 2019 edition presents the latest comparable data across 80 indicators, reflecting differences across countries in health status, risk factors and health-seeking behaviour, access, quality of care, and the financial and physical resources available for health. Alongside indicator-by-indicator analysis, an overview chapter summarises the comparative performance of countries and major trends, including how much health spending is associated with staffing levels, access, quality, and health outcomes. This edition also includes a special chapter on patient-reported outcomes and experiences.

The production of *Health at a Glance* would not have been possible without the contribution of national data correspondents from OECD countries. The OECD gratefully acknowledges their effort in supplying most of the data contained in this publication, as well as their detailed feedback to a draft of the report. Special acknowledgement is extended to members of the Patient-reported Indicator Surveys (PaRIS) Working Groups on mental health, breast cancer care, and hip and knee replacement for their contribution to Chapter 2, especially those individuals from countries, registries and health care organisations that facilitated the provision of patient-reported data. The OECD also recognises the contribution of other international organisations, notably the World Health Organization and Eurostat, for providing data and comments. The European Union provided financial and substantive assistance for work related to PaRIS, but the opinions expressed and arguments employed herein do not necessarily reflect the official views of the OECD member countries or the European Union.

This publication was prepared by the OECD Health Division under the coordination of Chris James. Chapter 1 was prepared by Chris James and Alberto Marino; Chapter 2 by Luke Slawomirski, Ian Brownwood, Emily Hewlett and Rie Fujisawa; Chapter 3 by Chris James, Viviane Azaïs, Eileen Rocard, Yuka Nishina and Emily Hewlett; Chapter 4 by Cristian Herrera, Jane Cheatley, Gabriel Di Paolantonio, Yuka Nishina and Michael Padget; Chapter 5 by Chris James, Michael Mueller, Viviane Azaïs, Alberto Marino and Marie-Clémence Canaud; Chapter 6 by Frédéric Daniel, Michael Padget, Eliana Barrenho, Rie Fujisawa, Luke Slawomirski and Ian Brownwood; Chapter 7 by David Morgan, Michael Mueller, Emily Bourke, Luca Lorenzoni, Alberto Marino and Chris James; Chapter 8 by Karolina Socha-Dietrich, Gaëlle Balestat, Gabriel Di Paolantonio, Emily Bourke and Emily Hewlett; Chapter 9 by Chris James, Gabriel Di Paolantonio, Gaëlle Balestat, Alberto Marino and Caroline Penn; Chapter 10 by Valérie Paris, Ruth Lopert, Suzannah Chapman, Martin Wenzl, Marie-Clémence Canaud and Michael Mueller; Chapter 11 by Elina Suzuki, Leila Pellet, Marie-Clémence Canaud, Thomas Rapp, Eliana Barrenho, Michael Padget, Frédéric Daniel, Gabriel Di Paolantonio, Michael Mueller and Tiago Cravo Oliveira Hashiguchi. The OECD databases used in this publication are managed by Gaëlle Balestat, Emily Bourke, Ian Brownwood, Marie-Clémence Canaud, Frédéric Daniel, David Morgan, Michael Mueller and Michael Padget.

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Executive summary

Health at a Glance 2019 provides the latest comparable data and trends over time on population health and health system performance across OECD members, candidate and partner countries.

Gains in longevity are stalling; chronic diseases and mental ill health affect more and more people

- On average across OECD countries, a person born today can expect to live almost 81 years. But life expectancy gains have slowed recently across most OECD countries, especially in the United States, France and the Netherlands. 2015 was a particularly bad year, with life expectancy falling in 19 countries.
- The causes are multifaceted. Rising levels of obesity and diabetes have made it difficult to maintain previous progress in cutting deaths from heart disease and stroke. Respiratory diseases such as influenza and pneumonia have claimed more lives in recent years, notably amongst older people.
- In some countries the opioid crisis has caused more working-age adults to die from drug-related accidental poisoning. Opioid-related deaths have increased by about 20% since 2011, and have claimed about 400 000 lives in the United States alone. Opioid-related deaths are also relatively high in Canada, Estonia and Sweden.
- Heart attacks, stroke and other circulatory diseases caused about one in three deaths across the OECD; and one in four deaths were related to cancer. Better prevention and health care could have averted almost 3 million premature deaths.
- Almost one in ten adults consider themselves to be in bad health. This reflects in part the burden of chronic diseases – almost a third of adults live with two or more chronic conditions. Mental ill health also takes its toll, with an estimated one in two people experiencing a mental health problem in their lifetime.

Smoking, drinking and obesity continue to cause people to die prematurely and worsen quality of life

- Unhealthy lifestyles – notably smoking, harmful alcohol use and obesity – are the root cause of many chronic health conditions, cutting lives short and worsening quality of life.
- Whilst smoking rates are declining, 18% of adults still smoke daily.
- Alcohol consumption averaged 9 litres of pure alcohol per person per year across OECD countries, equivalent to almost 100 bottles of wine. Nearly 4% of adults were alcohol dependent.

- Obesity rates continue to rise in most OECD countries, with 56% of adults overweight or obese and almost one-third of children aged 5-9 overweight.
- Air pollution caused about 40 deaths per 100 000 people, across OECD countries. Death rates were much higher in partner countries India and China, at around 140 deaths per 100 000 people.

Barriers to access persist, particularly amongst the less well-off

- An estimated one in five adults who needed to see a doctor did not do so, with worse access for the less well-off. Uptake of cancer screening is also lower amongst poorer individuals, even though most OECD countries provide screening programmes at no cost.
- Direct payments by households (out-of-pocket payments) make up just over a fifth of all health spending on average, and over 40% in Latvia and Mexico. Cost concerns lead people to delay or not seek care, with the least well-off three times more likely than wealthier individuals to have unmet need for financial reasons.
- Waiting times and transportation difficulties hinder access in some countries. For example, waiting times for a knee replacement were over a year in Chile, Estonia and Poland.
- Such access constraints occur despite most OECD countries having universal or near-universal coverage for a core set of services. Parts of the explanation are high cost sharing, exclusion of services from benefit packages or implicit rationing of services. Limitations in health literacy, imperfect communication strategies and low quality of care are also contributing factors.

Quality of care is improving in terms of safety and effectiveness, but more attention should be placed on patient-reported outcomes and experiences

- Patient safety has improved across many indicators, but more needs to be done. For example, 5% of hospitalised patients had a health-care associated infection.
- Strong primary care systems keep people well and can treat most uncomplicated cases. They also relieve pressure on hospitals: avoidable admissions for chronic conditions have fallen in most OECD countries, particularly in Korea, Lithuania, Mexico and Sweden.
- In terms of acute care, fewer people are dying following a heart attack or stroke, with Norway and Iceland having low case-fatality rates for both conditions. Alongside adherence to evidence-based medicine, timely care is critical.
- Survival rates for a range of cancers have also improved, reflecting better quality preventive and curative care. Across all OECD countries, for example, women diagnosed early for breast cancer have a 90% or higher probability of surviving their cancer for at least five years.
- A deeper understanding of quality of care requires measuring what matters to people. Yet few health systems routinely ask patients about the outcomes and experiences of their care. Preliminary results show improvements in patient-reported outcomes. For

example, following hip replacement, an individual's quality of life – in terms of mobility, self-care, activity, pain and depression – improved on average by around 20%.

Countries spend a lot on health, but they do not always spend it as well as they could

- Spending on health was about USD 4 000 per person (adjusted for purchasing powers), on average across OECD countries. The United States spent more than all other countries by a considerable margin, at over USD 10 000 per resident. Mexico spent the least, at around USD 1 150 per resident.
- Health expenditure has largely outpaced economic growth in the past, and despite a slowdown in recent years, is expected to do so in the future. New estimates point to health spending reaching 10.2% of GDP by 2030 across OECD countries, up from 8.8% in 2018. This raises sustainability concerns, particularly as most countries draw funding largely from public sources.
- Reforms to improve economic efficiency are critical. Increased use of generics has generated cost-savings, though generics only represent around half of the volume of pharmaceuticals sold across OECD countries. Increases in day surgery, lower hospitalisation rates and shorter stays may also indicate a more efficient use of expensive hospital resources.
- In OECD countries, health and social systems employ more workers now than at any other time in history, with about one in every ten jobs found in health or social care. Shifting tasks from doctors to nurses and other health professionals can alleviate cost pressures and improve efficiency.
- Population ageing increases demand for health services, particularly for long-term care. This places more pressure on family members, particularly women, with around 13% of people aged 50 and over providing informal care at least once a week for a dependent relative or friend. By 2050, the share of the population aged 80 and over will more than double.

Reader's guide

Health at a Glance 2019: OECD Indicators compares key indicators for population health and health system performance across the 36 OECD member countries. Candidate and partner countries are also included where possible – Brazil, People's Republic of China (China), Colombia, Costa Rica, India, Indonesia, the Russian Federation (Russia) and South Africa. On 25 May 2018, the OECD Council invited Colombia to become a Member. At the time of preparation of this publication, the deposit of Colombia's instrument of accession to the OECD Convention was pending and therefore Colombia does not appear in the list of OECD Members and is not included in the OECD zone aggregates.

Data presented in this publication come from official national statistics, unless otherwise stated.

Conceptual framework

The conceptual framework underlying *Health at a Glance* assesses health system performance within the context of a broad view of the determinants of health (Figure 1). It builds on the framework endorsed by the OECD work stream on health care quality and outcomes, which recognises that the ultimate goal of health systems is to improve people's health.

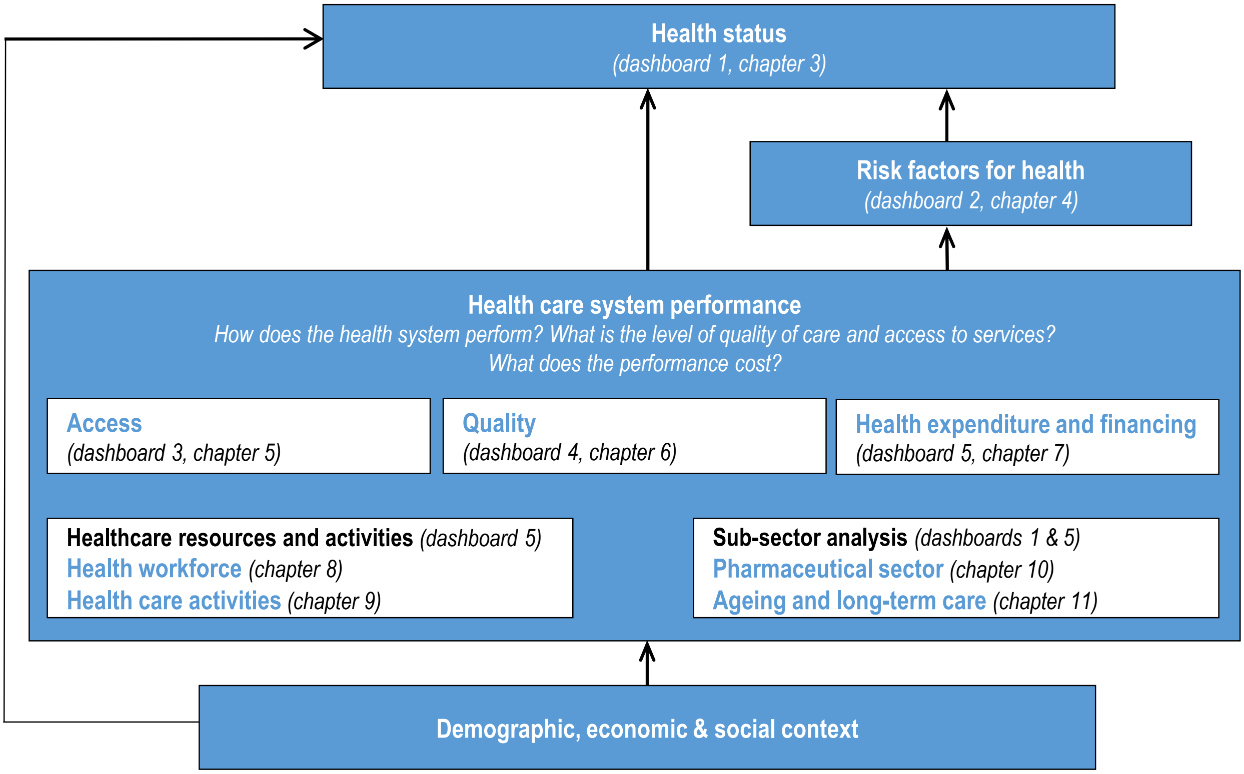
Many factors outside the health system influence health status, notably income, education, the physical environment in which an individual lives, and the degree to which people adopt healthy lifestyles. The demographic, economic and social context also affects the demand for and supply of health services, and ultimately health status.

At the same time, the performance of a health care system has a strong impact on a population's health. When health services are of high quality and are accessible to all, people's health outcomes are better. Achieving access and quality goals, and ultimately better health outcomes, depends critically on there being sufficient spending on health. Health spending pays for health workers to provide needed care, as well as the goods and services required to prevent and treat illness. However, these resources also need to be spent wisely, so that value-for-money is maximised.

Structure of the publication

Health at a Glance 2019 compares OECD countries on each component of this general framework. It is structured around eleven chapters. The first chapter presents an ***overview of health and health system performance***, based on a subset of core indicators from the report. Country dashboards shed light on the relative strengths and weaknesses of OECD countries' health systems, alongside OECD-wide summary data. Linkages between how much a country spends on health and outcomes that matter to people are also illustrated.

Figure 1. **Mapping of Health at a Glance indicators into conceptual framework for health system performance assessment**



Source: Adapted from Carinci, F. et al. (2015), "Towards Actionable International Comparisons of Health System Performance: Expert Revision of the OECD Framework and Quality Indicators", *International Journal for Quality in Health Care*, Vol. 27, No. 2, pp. 137-146.

The second chapter provides a special focus on ***patient-reported outcomes and experiences***, indicators that offer better measures of what matters to patients. It describes the rationale for collecting and using information reported by patients. It also provides preliminary results from a small number of countries in three clinical areas: elective hip and knee replacement; breast cancer care; and mental health.

The next nine chapters then provide detailed country comparisons across a range of health indicators, including where possible time trend analysis and data disaggregated by demographic and socioeconomic characteristics.

Chapter 3 on ***health status*** highlights variations across countries in life expectancy, the main causes of mortality, disease incidence and other indicators of population health. This chapter also includes measures of inequality in health status by education and income level for key indicators such as life expectancy and self-assessed health.

Chapter 4 analyses ***risk factors for health***. The focus is on an individual's health-related behaviours, most of which effective public health and prevention policies can modify. These include the major risk factors for non-communicable diseases of smoking, alcohol and obesity; and new data on opioids use. Healthy lifestyles and population exposure to air pollution and extreme temperatures are also analysed.

Chapter 5 on ***access to care*** investigates the extent to which people can access needed services, with special attention paid to socioeconomic inequalities. Overall measures of population coverage are also presented, as are the financial consequences for households of accessing services.

Chapter 6 assesses ***quality and outcomes of care*** in terms of patient safety, clinical effectiveness and the person responsiveness of care. Indicators across the full lifecycle of care are included, from prevention to primary, chronic and acute care. This includes analysis of prescribing practices, management of chronic conditions, acute care for heart attacks and stroke, mental health, cancer care and prevention of communicable diseases.

Chapter 7 on ***health expenditure and financing*** compares how much countries spend on health per person and in relation to GDP. It then analyses differences in prices paid, the extent to which countries finance health through prepayment schemes or household out-of-pocket payments, and the public-private funding mix. Spending by type of service and health provider are also explored. Finally, projections estimate spending to 2030 under different policy scenarios.

Chapter 8 examines the ***health workforce***, particularly the supply and remuneration of doctors and nurses. The chapter also presents data on the number of new graduates from medical and nursing education programmes. Indicators on the international migration of doctors and nurses compare countries in terms of their reliance on foreign-trained workers.

Chapter 9 on ***health care activities*** describes some of the main characteristics of health service delivery. It starts with the number of consultations with doctors, often the entry point of patients to health care systems. The chapter then compares the use and supply of hospital services, in terms of discharges, number of beds and average length of stay. Utilisation of medical technologies, common surgical procedures, and the increased use of ambulatory surgery are also analysed.

Chapter 10 takes a closer look at the ***pharmaceutical sector***. Analysis of pharmaceutical spending gives a sense of the varying scale of the market in different countries, as does spending on research and development. The number of pharmacists and pharmacies, consumption of certain high-volume drugs, and the use of generics and bio-similars, are also compared.

Chapter 11 focuses on ***ageing and long-term care***. It assesses key factors affecting the demand for long-term care, such as demographic trends and health status indicators for elderly populations. Dementia prevalence and the quality of dementia care is compared, as is the safety of care for elderly populations. Recipients of long-term care, and the formal and informal workers providing care for these people, are also assessed, along with trends in spending and unit costs.

Presentation of indicators

With the exception of the first two chapters, indicators covered in the rest of the publication are presented over two pages. The first page defines the indicator, highlights key findings conveyed by the data and related policy insights, and signals any significant national variation in methodology that might affect data comparability. A few key references are also provided.

On the facing page is a set of figures. These typically show current levels of the indicator and, where possible, trends over time. Where an OECD average is included in a figure, it is the unweighted average of the OECD countries presented, unless otherwise specified. The number of countries included in this OECD average is indicated in the figure, and for charts showing more than one year this number refers to the latest year.

Data 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 figures.

Data sources

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 presented in the online database *OECD Health Statistics* on OECD.Stat at *https://oe.cd/ds/health-statistics*. More information on *OECD Health Statistics* is available at *http://www.oecd.org/health/health-data.htm*.

Population figures

The population figures used to calculate rates per capita throughout this publication come from Eurostat for European countries, and from OECD data based on the *UN Demographic Yearbook* and *UN World Population Prospects* (various editions) or national estimates for non-European OECD countries (data extracted as of early June 2019). Mid-year estimates are used. Population estimates are subject to revision, so they may differ from the latest population figures released by the national statistical offices of OECD member countries.

Note that some countries such as France, the United Kingdom and the United States have overseas territories. These populations are generally excluded. However, the calculation of GDP per capita and other economic measures may be based on a different population in these countries, depending on the data coverage.

OECD country ISO codes

Australia	AUS	Korea	KOR
Austria	AUT	Latvia	LVA
Belgium	BEL	Lithuania	LTU
Canada	CAN	Luxembourg	LUX
Chile	CHL	Mexico	MEX
Czech Republic	CZE	Netherlands	NLD
Denmark	DNK	New Zealand	NZL
Estonia	EST	Norway	NOR
Finland	FIN	Poland	POL
France	FRA	Portugal	PRT
Germany	DEU	Slovak Republic	SVK
Greece	GRC	Slovenia	SVN
Hungary	HUN	Spain	ESP
Iceland	ISL	Sweden	SWE
Ireland	IRL	Switzerland	CHE
Israel	ISR	Turkey	TUR
Italy	ITA	United Kingdom	GBR
Japan	JPN	United States	USA

Partner country ISO codes

Brazil	BRA	India	IND
China (People's Republic of)	CHN	Indonesia	IDN
Colombia	COL	Russia	RUS
Costa Rica	CRI	South Africa	ZAF

Chapter 1

Indicator overview: comparative performance of countries and major trends

This chapter analyses a core set of indicators on health and health systems. Country dashboards shed light on how OECD countries compare across five dimensions: health status, risk factors for health, access, quality and outcomes, and health care resources. OECD snapshots summarise the extent of variation in performance across countries, as well as time trends. Finally, quadrant charts illustrate how much health spending is associated with staffing, access, quality and health outcomes.

Introduction

Health indicators offer a useful 'at a glance' perspective on how healthy populations are and how well health systems perform. This introductory chapter provides a comparative overview of OECD countries across 20 core indicators. It also explores how much health spending is associated with staffing, access, quality and health outcomes.

Such comparative analysis does not indicate which countries have the best performing health systems overall. Rather, it identifies some of the relative strengths and weaknesses of different OECD countries. This can help policymakers determine priority action areas for their country, with subsequent chapters in Health at a Glance providing a more detailed suite of indicators, organised by topic area.

Five dimensions of health and health systems are analysed in this chapter, covering core aspects of population health and health system performance. For each of these dimensions, four summary indicators are analysed (Table 1.1). These indicators are selected from the publication based on how relevant and actionable they are from a public policy perspective; as well as the more practical consideration of data availability across countries.

Table 1.1. **Population health and health system performance: summary indicators**

Dimension	Indicator
Health status (chapters 3 and 11)	Life expectancy – years of life at birth Avoidable mortality – deaths per 100 000 people (age standardised) Chronic disease morbidity – diabetes prevalence (% adults, age standardised) Self-rated health – population in poor health (% population aged 15+)
Risk factors for health (chapter 4)	Smoking – daily smokers (% population aged 15+) Alcohol – litres consumed per capita (population aged 15+) Overweight/obese – population with BMI>=25 kg/m2 (% population aged 15+) Air pollution – deaths due to pollution (per 100 000 population)
Access to care (chapter 5)	Population coverage – population eligible for core services (% population) Financial protection – expenditure covered by prepayment schemes (% total expenditure) Service coverage, primary care – needs-adjusted probability of visiting a doctor (% population aged 15+) Service coverage, preventive care – probability of cervical cancer screening (% population aged 15+)
Quality of care (chapter 6)	Safe prescribing – antibiotics prescribed (defined daily dose per 1 000 people) Effective primary care – avoidable asthma/COPD admissions (per 100 000 people, age-sex standardised) Effective secondary care – 30-day mortality following AMI (per 100 000 people, age-sex standardised) Effective cancer care – breast cancer 5-year net survival (%, age-standardised)
Health care resources (chapters 7-10)	Health spending – per capita (US dollars based on purchasing power parities) Health spending share – as a % of GDP Doctors – number of practising physicians (per 1 000 people) Nurses – number of practising nurses (per 1 000 people)

Note: AMI = acute myocardial infarction (heart attack); BMI = body mass index; COPD = chronic obstructive pulmonary disease.

Based on these indicators, *country dashboards* are produced for each of these five dimensions. These compare a country's performance to others and to the OECD average. Country classification for each indicator is into one of three colour-coded groups:

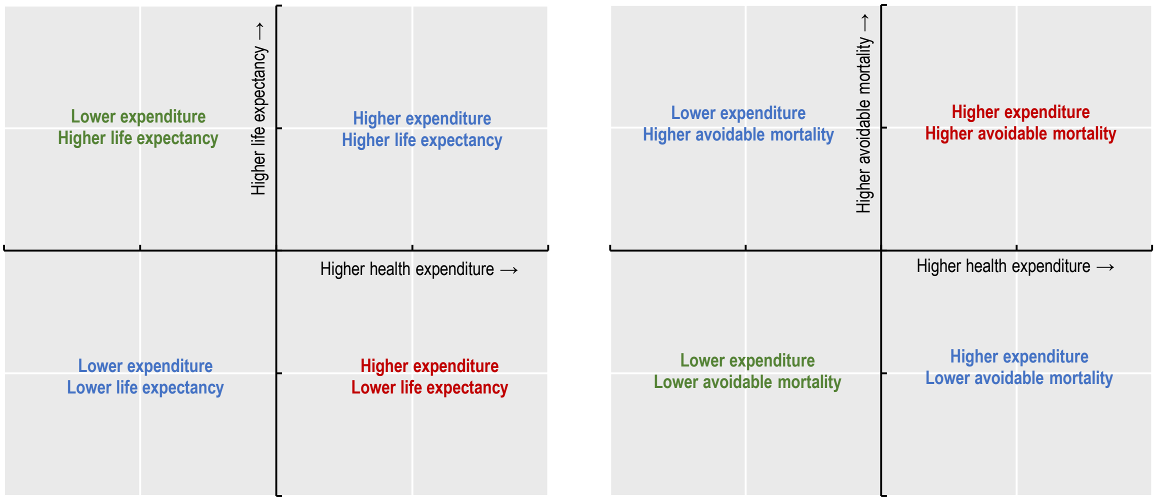
- Blue, when the country's performance is close to the OECD average
- Green, when the country's performance is considerably better than the OECD average
- Red, when the country's performance is considerably worse than the OECD average

The only exception to this grouping is for the dashboard on health care resources (Table 1.6), where indicators cannot be strictly classified as showing better or worse performance. For this reason, the colour coding in this dashboard uses a lighter and darker shade of blue to signal that a country has considerably less or more of a given health care resource than the OECD average.

OECD snapshots provide accompanying summary statistics for each of these indicators. They complement the country dashboards by providing an OECD-wide overview for each indicator. Highest and lowest values per indicator, alongside the OECD average, provide a general sense of the degree of cross-country variation. Countries with comparatively large improvements over time in a given indicator are also shown.

Finally, *quadrant charts* illustrate basic associations between how much countries spend on health and how effectively health systems function. That is, they show the extent to which spending more on health translates into better health outcomes, higher quality of care and improved access to care, across OECD countries; whilst also recognising the importance of major risk factors. The relationship between spending and the number of health professionals is also explored. These quadrant charts only show simple associations at a macro level between indicators rather than causal relationships. That is, their purpose is to stimulate deeper discussions on policy priority setting, by highlighting areas where countries could potentially do better. The centre of each quadrant chart is the OECD average, with health expenditure on the x-axis and the other variable of interest on the y-axis. Figure 1.1 shows the basic interpretation of each quadrant, taking health outcome variables as an example.

Figure 1.1. **Interpretation of quadrant charts: Health expenditure and health outcome variables**



Methodology, interpretation and use

Country dashboards

The classification of countries being close to, better or worse than the OECD average is based on an indicator's standard deviation (a common statistical measure of dispersion). This method is preferred to using a fixed percentage or fixed number of countries per category, since it reflects the degree of variation, i.e. how far a country is from the OECD average. Countries are classified as "close to the OECD average" (blue) whenever the value for an indicator is within one standard deviation from the OECD average for the latest year. Particularly large outliers (values larger than three standard deviations) are excluded from the calculation of the standard deviation in order to avoid statistical distortions. These exclusions are noted under the relevant dashboards.

For a typical indicator, about 65% of the countries (24-25 countries) will be close to the OECD average, with the remaining 35% performing significantly better (green) or worse (red). When the number of countries that are close to the OECD average is higher (lower), it means that cross-country variation is relatively low (high) for that indicator. For example, for obesity rates, 27 countries are close to the OECD average. In contrast, for avoidable mortality, only 16 countries are close to the OECD average.

OECD snapshots

For each indicator, the OECD average, highest and lowest values for the latest available year are shown, corresponding to the data presented in the main chapters of the publication. Countries with comparatively large improvements over time in a given indicator are also shown.

Quadrant charts

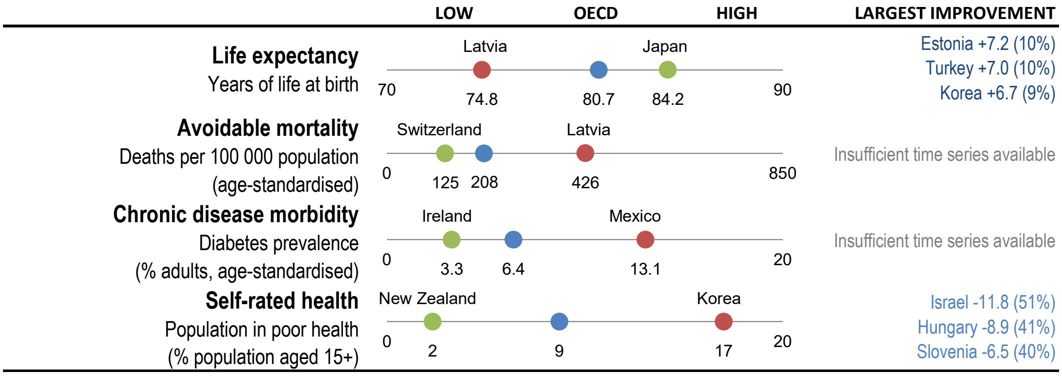
Quadrant charts plot health expenditure per capita against another indicator of interest (on health outcomes, quality of care, access and physical resources). These show the percentage difference of each indicator as compared with OECD averages. The intersection of the axes represents the OECD average for both indicators, so deviations from the midpoint show countries that perform above or below average compared to the OECD average. A simple correlation line is also included. Each country is colour-coded based on a simple (unweighted) risk factors index averaging smoking, alcohol and obesity variables (with blue, green and red having the same interpretation as in country dashboards).

Data from the latest available year are used for both variables in a given quadrant chart. A limitation of this approach is that lagged effects are not taken into account – for example, it may take a few years before higher health spending translates into longer life expectancy, or risk factors translate into higher avoidable mortality rates.

Health status

Four health status indicators reflect core aspects of both the quality and quantity of life. Life expectancy is a key indicator for the overall health of a population; avoidable mortality focuses on premature deaths that could have been prevented or treated. Diabetes prevalence shows morbidity for a major chronic disease; self-rated health offers a more holistic measure of mental and physical health. Figure 1.2 provides a snapshot on health status across the OECD and Table 1.2 provide more detailed country comparisons.

Figure 1.2. **Snapshot on health status across the OECD**



Note: Largest improvement shows countries with largest changes in value over time (% change in brackets).
Source: OECD Health Statistics 2019.

Across these indicators, Japan, Spain, Switzerland and the Netherlands generally have the best overall health outcomes. Hungary, Latvia, Mexico, Poland and the Slovak Republic are consistently below the OECD average for these indicators. Stronger health systems contribute to gains in health outcomes, by offering more accessible and higher quality care. Differences in risk factors such as smoking, alcohol and obesity also explain cross-country variation in health outcomes. Wider determinants of health matter too, notably rising incomes, better education and improved living environments.

Japan, Switzerland and Spain lead a large group of 26 OECD countries in which life expectancy at birth exceeds 80 years. A second group, including the United States and a number of central and eastern European countries, has a life expectancy between 77 and 80 years. Latvia, Lithuania, Mexico and Hungary have the lowest life expectancy, at less than 76 years in 2017. Across the OECD, whilst life expectancy has increased steadily over time, there has been a slowdown in longevity gains in recent years.

Avoidable mortality rates (from preventable and treatable causes) were lowest in Switzerland, Iceland, Japan, Sweden and Norway, where less than 300 per 100 000 people died prematurely. Latvia, Lithuania and Hungary had the highest avoidable mortality rates, at over 800 premature deaths per 100 000 people.

Diabetes prevalence is highest in Mexico, Turkey and the United States, with over 10% of adults living with diabetes (age-standardised data). Age-standardised diabetes prevalence rates have stabilised in many OECD countries, especially in Western Europe, but increased markedly in Turkey. Such upward trends are due in part to rising rates of obesity and physical inactivity, and their interactions with population ageing.

Almost 9% of adults consider themselves to be in bad health, on average across the OECD. This ranges from over 15% in Korea, Lithuania, Latvia and Portugal to under 4% in

Table 1.2. **Dashboard on health status**

	Life expectancy		**Avoidable mortality**		**Chronic disease morbidity**		**Self-rated health**	
	Years of life at birth		Deaths per 100 000 people (age-standardised)		Diabetes prevalence (% adults, age-standardised)		Population in poor health (% population aged 15+)	
OECD	80.7	◉	208	◉	6.4	◉	8.7	◉
Australia	82.6	◉	145	☑	5.1	◉	3.7	☑
Austria	81.7	◉	175	◉	6.4	◉	8.1	◉
Belgium	81.6	◉	172	◉	4.3	☑	8.6	◉
Canada	82.0	◉	176	◉	7.4	◉	3.2	☑
Chile	80.2	◉	206	◉	8.5	☒	6.6	◉
Czech Republic	79.1	◉	245	◉	6.8	◉	10.7	◉
Denmark	81.2	◉	184	◉	6.4	◉	7.5	◉
Estonia	78.2	☒	297	☒	4.0	☑	14.6	☒
Finland	81.7	◉	184	◉	5.8	◉	5.7	◉
France	82.6	◉	154	☑	4.8	◉	8.3	◉
Germany	81.1	◉	186	◉	8.3	☒	8.4	◉
Greece	81.4	◉	187	◉	4.6	☑	10.4	◉
Hungary	75.9	☒	388	☒	7.6	◉	11.9	◉
Iceland	82.7	◉	140	☑	5.3	◉	6.4	◉
Ireland	82.2	◉	172	◉	3.3	☑	3.4	☑
Israel	82.6	◉	134	☑	6.7	◉	10.9	◉
Italy	83.0	◉	143	☑	4.8	◉	5.8	◉
Japan	84.2	☑	138	☑	5.7	◉	14.1	☒
Korea	82.7	◉	159	◉	6.8	◉	17.0	☒
Latvia	74.8	☒	426	☒	4.9	◉	15.5	☒
Lithuania	75.6	☒	385	☒	3.7	☑	16.4	☒
Luxembourg	82.2	◉	152	☑	4.4	☑	9.3	◉
Mexico	75.4	☒	367	☒	13.1	☒	–	
Netherlands	81.8	◉	153	☑	5.3	◉	4.6	☑
New Zealand	81.9	◉	178	◉	8.1	◉	2.3	☑
Norway	82.7	◉	145	☑	5.3	◉	7.2	◉
Poland	77.9	☒	268	☒	5.9	◉	13.6	☒
Portugal	81.5	◉	180	◉	9.9	☒	15.3	☒
Slovak Republic	77.3	☒	323	☒	7.3	◉	11.3	◉
Slovenia	81.1	◉	210	◉	7.3	◉	9.7	◉
Spain	83.4	☑	146	☑	7.2	◉	6.6	◉
Sweden	82.5	◉	144	☑	4.8	◉	5.7	◉
Switzerland	83.6	☑	125	☑	5.6	◉	4.1	☑
Turkey	78.1	☒	257	◉	12.1	☒	9.4	◉
United Kingdom	81.3	◉	189	◉	4.3	☑	7.1	◉
United States	78.6	◉	262	☒	10.8	☒	2.6	☑

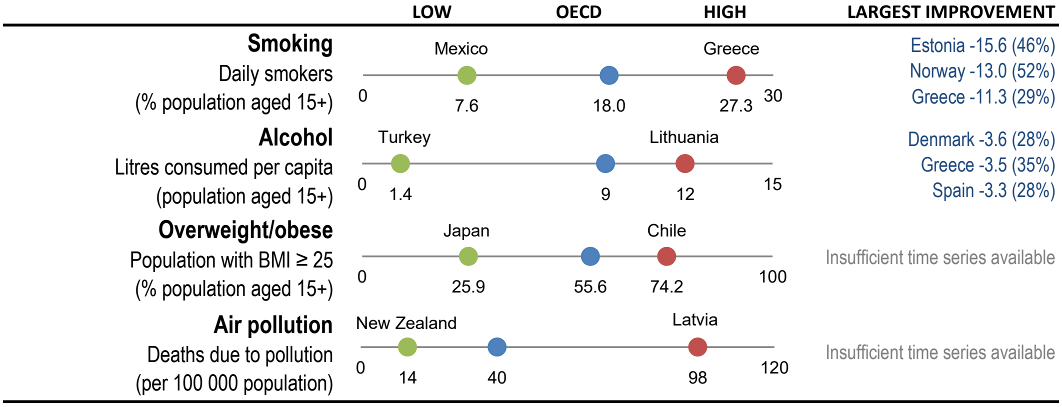
Note: ☑ Better than OECD average; ◉ Close to OECD average; ☒ Worse than OECD average. Hungary, Latvia and Lithuania excluded from the standard deviation calculation for avoidable mortality, while Mexico and Turkey excluded from diabetes prevalence.

New Zealand, the United States, Canada, Ireland and Australia. However, socio-cultural differences, the share of older people and differences in survey design affect cross-country comparability. People with lower incomes are generally less positive about their health as compared with people on higher incomes, in all OECD countries.

Risk factors for health

Smoking, alcohol consumption and obesity are the three major risk factors for non-communicable diseases, contributing to a large share of worldwide deaths. Air pollution is also a critical non-medical determinant of health. Figure 1.3 provides a snapshot on risk factors for health across the OECD and Table 1.3 provides more detailed country comparisons.

Figure 1.3. **Snapshot on risk factors for health across the OECD**



Note: Largest improvement shows countries with largest changes in value over time (% change in brackets).
Source: OECD Health Statistics 2019, WHO Global Health Observatory.

Norway and Sweden perform well across these indicators. Smoking causes multiple diseases – the World Health Organization estimates tobacco smoking kills 7 million people in the world every year. Smoking rates range from over 25% in Greece, Turkey and Hungary, to below 10% in Mexico and Iceland. Daily smoking rates have decreased in most OECD countries over the last decade, from an average of 23% in 2007 to 18% in 2017. In the Slovak Republic and Austria, though, smoking rates have risen slightly.

Alcohol use is a leading cause of death and disability worldwide, particularly in those of working age. Measured through sales data, Lithuania reported the highest consumption (12.3 litres of pure alcohol per person per year), followed by Austria, France, the Czech Republic, Luxembourg, Ireland, Latvia and Hungary, all with over 11 litres per person. Turkey, Israel and Mexico have comparatively low consumption levels (under 5 litres). Average consumption fell in 27 OECD countries since 2007. Harmful drinking is of particular concern in certain countries, notably Latvia, Hungary and the Russian Federation**.**

Obesity is a major risk factor for many chronic diseases, including diabetes, cardiovascular diseases and cancer. Obesity rates have been increasing in recent decades in almost all OECD countries, with an average of 56% of the population being overweight or obese. Obesity rates are considerably higher than the OECD average in Chile, Mexico, the United States, Finland, Portugal and New Zealand. Obesity is lowest in Japan, Korea, and Switzerland. The measure reported here for overweight (including obese) adults is based on both measured and self-reported data. Caution should be taken when comparing countries with reporting differences, since measured data are generally higher.

Air pollution is not only a major environmental threat, but also worsens health. OECD projections estimate that outdoor air pollution may cause 6 to 9 million premature deaths a

Table 1.3. **Dashboard on risk factors for health**

	Smoking		Alcohol		Overweight / obese		Air pollution	
	Daily smokers (% population aged 15+)		Litres consumed per capita (population aged 15+)		Population with BMI ≥ 25 (% population aged 15+)		Deaths due to pollution (per 100 000 people)	
OECD	18.0	◉	8.9	◉	55.6	◉	39.6	◉
Australia	12.4	☑	9.4	◉	65.2	◉	16.8	☑
Austria	24.3	☒	11.8	☒	46.7*	◉	38.7	◉
Belgium	18.9	◉	10.4	◉	51.0	◉	39.4	◉
Canada	12.0	☑	8.1	◉	59.1	◉	14.7	☑
Chile	24.5	☒	7.9	◉	74.2	☒	34.8	◉
Czech Republic	18.4	◉	11.6	☒	55.0	◉	64.3	☒
Denmark	16.9	◉	9.1	◉	51.0*	◉	30.4	◉
Estonia	17.2	◉	10.3	◉	51.3	◉	59.9	☒
Finland	14.0	◉	8.4	◉	67.6	☒	18.7	☑
France	25.4	☒	11.7	☒	49.0	◉	25.2	◉
Germany	18.8	◉	10.9	◉	60.0	◉	45.3	◉
Greece	27.3	☒	6.5	◉	55.0*	◉	76.7	☒
Hungary	25.8	☒	11.1	◉	62.3	◉	82.7	☒
Iceland	8.6	☑	7.7	◉	65.4*	◉	16.9	☑
Ireland	17.0	◉	11.2	◉	62.0	◉	20.2	☑
Israel	16.9	◉	2.6	☑	50.9	◉	23.2	◉
Italy	19.9	◉	7.6	◉	46.0*	◉	48.7	◉
Japan	17.7	◉	7.2	◉	25.9	☑	42.9	◉
Korea	17.5	◉	8.7	◉	33.7	☑	35.0	◉
Latvia	24.1	☒	11.2	◉	54.6	◉	97.8	☒
Lithuania	20.3	◉	12.3	☒	53.3*	◉	82.1	☒
Luxembourg	14.5	◉	11.3	◉	58.1	◉	22.6	◉
Mexico	7.6	☑	4.4	☑	72.5	☒	33.0	◉
Netherlands	16.8	◉	8.3	◉	47.3*	◉	31.3	◉
New Zealand	13.8	◉	8.8	◉	66.6	☒	13.6	☑
Norway	12.0	☑	6.0	☑	46.0*	◉	18.7	☑
Poland	22.7	◉	10.6	◉	53.3*	◉	76.3	☒
Portugal	16.8	◉	10.7	◉	67.6	☒	28.3	◉
Slovak Republic	22.9	◉	9.7	◉	51.5	◉	59.1	☒
Slovenia	18.9	◉	10.1	◉	55.6*	◉	56.8	◉
Spain	22.1	◉	8.6	◉	53.0*	◉	27.1	◉
Sweden	10.4	☑	7.1	◉	48.2*	◉	18.5	☑
Switzerland	19.1	◉	9.2	◉	41.8*	☑	25.2	◉
Turkey	26.5	☒	1.4	☑	64.4	◉	46.2	◉
United Kingdom	17.2	◉	9.7	◉	64.3	◉	32.1	◉
United States	10.5	☑	8.9	◉	71.0	☒	24.1	◉

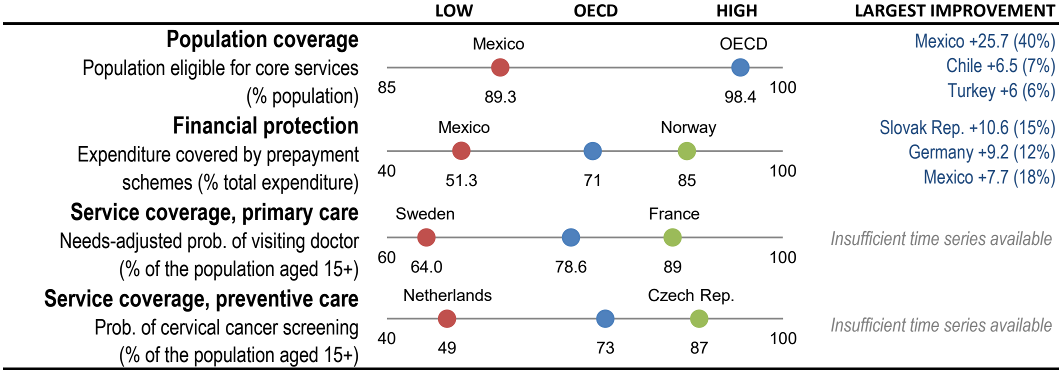
Note: ☑ Better than OECD average; ◉ Close to OECD average; ☒ Worse than OECD average. Hungary, Latvia and Lithuania excluded from standard deviation calculation for air pollution. * Likely under-estimate of obesity as self-reported.

year worldwide by 2060. Death rates in 2016 ranged from over 80 deaths in Latvia, Hungary and Lithuania, to 15 deaths or less per 100 000 people in New Zealand and Canada.

Access to care

Ensuring equitable access is critical for inclusive societies and high performing health systems. Population coverage, measured by the share of the population eligible for a core set of services, offers an initial assessment of access to care. The share of spending covered by prepayment schemes provides further insight on financial protection. The probability of visiting a doctor, adjusted for need, and the share of women aged 20-69 screened for cervical cancer measure use of needed services. Figure 1.4 provides a snapshot on access to care across the OECD and Table 1.4 provides more detailed country comparisons.

Figure 1.4. **Snapshot on access to care across the OECD**



Note: Largest improvement shows countries with largest changes in value over time (% change in brackets).
Source: OECD Health Statistics 2019.

Austria, the Czech Republic, France, Germany and Luxembourg perform well across these indicators, In terms of population coverage, most OECD countries have achieved universal (or near-universal) coverage for a core set of services. However, in seven countries coverage remains below 95% – Chile, Estonia, Hungary, Mexico, Poland, the Slovak Republic and the United States.

Population coverage, though, is not sufficient by itself. The degree of cost sharing applied to those services also affects access to care. Across the OECD, almost three-quarters of all health care costs are covered by government or compulsory health insurance schemes. However, in Mexico, Latvia and Korea less than 60% of all costs are covered by publicly mandated schemes. Mexico, though, has significantly expanded population coverage and financial protection over the last decade.

One in five people report not seeing a doctor despite having medical need. Cross-country differences in utilisation are large, with need-adjusted probabilities of visiting a doctor ranging from around 65% in Sweden and the United States to 89% in France. Excepting Denmark and the Slovak Republic, wealthier individuals are more likely to see a doctor than individuals in the lowest income quintile, for a comparable level of need.

Uptake of cancer screening is also lower amongst the less well-off. This is despite most OECD countries providing screening programmes at no cost. Overall uptake of cervical cancer screening ranged from just under 50% of women aged 20 to 69 in the Netherlands, to over 85% in the Czech Republic and Austria.

Table 1.4. **Dashboard on access to care**

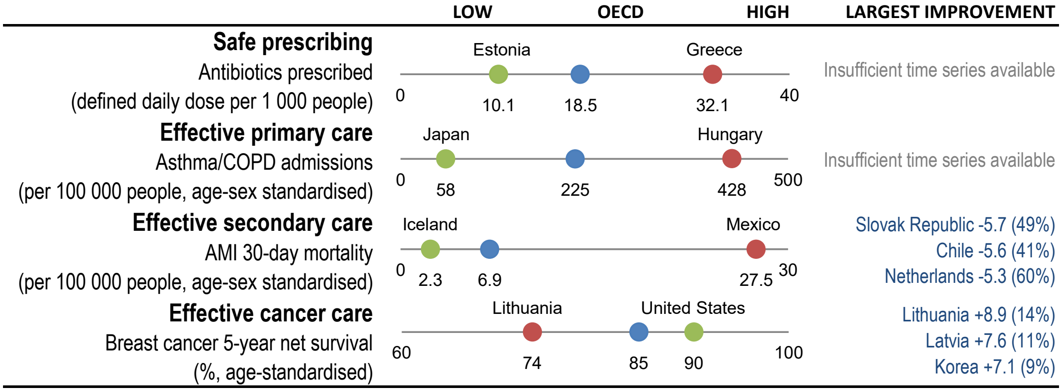
	Population coverage		**Financial protection**		**Service coverage, primary care**		**Service coverage, preventive care**	
	Population eligible for core services (% population)		Expenditure covered by prepayment schemes (% total expenditure)		Needs-adjusted prob. of visiting doctor (% pop 15+)		Prob. of cervical cancer screening (% pop 15+)	
OECD	98.4	◉	71.2	◉	78	◉	73	◉
Australia	100	◉	68.6	◉	–		–	
Austria	99.9	◉	74.0	◉	86	☑	87	☑
Belgium	98.7	◉	77.2	◉	86	☑	76	◉
Canada	100	◉	73.0	◉	75	◉	76	◉
Chile	94.0	☒	50.1	☒	–		72	◉
Czech Republic	100	◉	82.1	◉	85	☑	87	☑
Denmark	100	◉	84.0	☑	81	◉	64	☒
Estonia	94.1	☒	74.7	◉	75	◉	58	☒
Finland	100	◉	76.7	◉	74	◉	79	◉
France	99.9	◉	77.1	◉	89	☑	82	☑
Germany	100	◉	77.7	◉	86	☑	81	◉
Greece	100	◉	60.8	◉	76	◉	76	◉
Hungary	94.0	☒	68.7	◉	84	◉	71	◉
Iceland	100	◉	81.8	◉	75	◉	80	◉
Ireland	100	◉	73.3	◉	75	◉	69	◉
Israel	100	◉	63.6	◉	–		–	
Italy	100	◉	73.9	◉	80	◉	68	◉
Japan	100	◉	84.0	☑	–		–	
Korea	100	◉	57.4	☒	–		–	
Latvia	100	◉	57.2	☒	76	◉	78	◉
Lithuania	98.1	◉	65.5	◉	76	◉	62	☒
Luxembourg	–		84.9	☑	88	☑	84	☑
Mexico	89.3	☒	51.3	☒	–		–	
Netherlands	99.9	◉	81.5	◉	75	◉	49	☒
New Zealand	100	◉	78.6	◉	–		–	
Norway	100	◉	85.5	☑	77	◉	66	◉
Poland	92.6	☒	69.0	◉	80	◉	72	◉
Portugal	100	◉	66.3	◉	86	☑	71	◉
Slovak Republic	94.6	☒	79.9	◉	74	◉	69	◉
Slovenia	100	◉	71.8	◉	71	☒	78	◉
Spain	99.9	◉	70.6	◉	84	◉	69	◉
Sweden	100	◉	83.7	☑	64	☒	81	◉
Switzerland	100	◉	30.5	☒	–		–	
Turkey	99.2	◉	77.7	◉	–		–	
United Kingdom	100	◉	79.4	◉	76	◉	63	☒
United States	90.8	☒	50.2	☒	65	☒	80	◉

Note: ☑ Better than OECD average; ◉ Close to OECD average; ☒ Worse than OECD average.

Quality of care

Good quality care requires health services to be safe, appropriate, clinically effective and responsive to patient needs. Antibiotics prescriptions and avoidable hospital admissions for asthma and chronic obstructive pulmonary disease (COPD) measure the safety and appropriateness of primary care. 30-day mortality following acute myocardial infarction (AMI) and breast cancer survival are indicators of clinical effectiveness of secondary and cancer care. Figure 1.5 provides a snapshot on quality and outcome of care across the OECD and Table 1.5 provides more detailed country comparisons.

Figure 1.5. **Snapshot on quality of care across the OECD**



Note: Largest improvement shows countries with largest changes in value over time (% change in brackets).
Source: OECD Health Statistics 2019.

The overuse, underuse or misuse of antibiotics and other prescription medicines contribute to increased antimicrobial resistance and represent wasteful spending. Total volumes of antibiotics prescribed vary more than three-fold across countries, with Estonia and Sweden reporting the lowest volumes, whereas Italy and Greece report the highest volumes. Across the OECD, the number of antibiotics prescribed has increased slightly over time.

Asthma and COPD are conditions for which effective treatment at the primary care level is well established – and hospital admissions for these conditions may signal quality issues in primary care. Admission rates for asthma vary 12-fold across countries with Mexico, Italy, and Colombia reporting the lowest rates and Latvia, Turkey and Poland reporting rates over twice the OECD average. International variation in admissions for COPD is 15-fold across OECD countries, with Japan, Italy and Mexico reporting the lowest rates and Hungary, Turkey and Australia the highest rates. Combined, there is a lower 7-fold variation across countries for these two respiratory conditions.

Mortality following acute myocardial infarction (AMI) is a long-established indicator of the quality of acute care. It has been steadily declining since the 1970s in most countries, yet important cross-country differences still exist. Mexico has by far the highest 30-day mortality following AMI (28 deaths per 100 admissions); rates are also relatively high in Latvia, Japan, Korea and Estonia. The lowest rates are found in Iceland, Denmark, Norway, Netherlands, Australia and Sweden (all 4% or less).

Breast cancer survival is an important measure of clinical effectiveness, with generally high survival across the OECD. Some of the best survival rates are found in Australia, Japan

Table 1.5. **Dashboard on quality of care**

	Safe prescribing		**Effective primary care**		**Effective secondary care**		**Effective cancer care**	
	Antibiotics prescribed (defined daily dose per 1 000 people)		Avoidable asthma / COPD admissions (per 100 000 people, age-sex standardised)		30-day mortality following AMI (per 100 000 people, age-sex standardised)		Breast cancer 5-year net survival (%, age-standardised)	
OECD	17.8	◉	225	◉	6.9	◉	84.5	◉
Australia	23.5	◉	403	☒	3.8	☑	89.5	☑
Austria	12.1	☑	248	◉	6.2	◉	84.8	◉
Belgium	15.9	◉	291	◉	6.8	◉	86.4	◉
Canada	14.8	◉	253	◉	4.8	◉	88.6	◉
Chile	–		98	☑	8.2	◉	75.5	☒
Czech Republic	19.6	◉	174	◉	6.2	◉	81.4	◉
Denmark	13.9	◉	325	☒	3.2	☑	86.1	◉
Estonia	10.1	☑	122	☑	9.6	☒	76.6	☒
Finland	12.6	◉	182	◉	8.0	◉	88.5	◉
France	23.0	◉	150	◉	5.6	◉	86.7	◉
Germany	12.3	☑	289	◉	8.5	◉	86.0	◉
Greece	32.1	☒	–		–		–	
Hungary	13.4	◉	428	☒	–		–	
Iceland	24.6	☒	201	◉	2.3	☑	89.1	◉
Ireland	24.6	☒	329	☒	5.4	◉	82.0	◉
Israel	20.5	◉	214	◉	5.5	◉	88.0	◉
Italy	28.3	☒	64	☑	5.4	◉	86.0	◉
Japan	–		58	☑	9.7	☒	89.4	☑
Korea	26.5	☒	263	◉	9.6	☒	86.6	◉
Latvia	12.1	☑	242	◉	13.4	☒	76.9	☒
Lithuania	13.6	◉	263	◉	8.6	◉	73.5	☒
Luxembourg	25.3	☒	203	◉	8.5	◉	–	
Mexico	–		85	☑	27.5	☒	–	
Netherlands	14.3	◉	236	◉	3.5	☑	86.6	◉
New Zealand	25.8	☒	363	☒	4.7	◉	87.6	◉
Norway	14.6	◉	244	◉	3.5	☑	87.2	◉
Poland	23.8	◉	236	◉	4.1	☑	76.5	☒
Portugal	16.4	◉	90	☑	7.3	◉	87.6	◉
Slovak Republic	23.6	◉	209	◉	5.9	◉	75.5	☒
Slovenia	19.0	◉	128	◉	4.1	☑	83.5	◉
Spain	12.6	◉	210	◉	6.5	◉	85.3	◉
Sweden	10.2	☑	169	◉	3.9	☑	88.8	◉
Switzerland	–		138	◉	–		86.2	◉
Turkey	16.6	◉	425	☒	6.8	◉	82.1	◉
United Kingdom	17.5	◉	281	◉	7.0	◉	85.6	◉
United States	–		268	◉	5.0	◉	90.2	☑

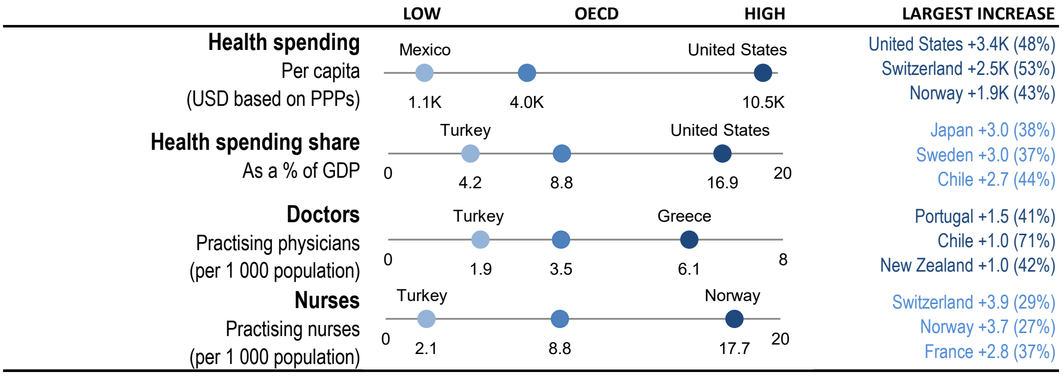
Note: ☑ Better than OECD average; ◉ Close to OECD average; ☒ Worse than OECD average. Mexico excluded from standard deviation calculation for AMI mortality.

and the United States, while rates significantly below the OECD average are found in Chile, Estonia, Latvia, Lithuania, Poland and the Slovak Republic.

Health care resources

Having sufficient health care resources is critical to a well-functioning health system. More resources, though, do not automatically translate into better health outcomes – the effectiveness of spending is also important. Health spending per capita and as a share of GDP summarise overall resource availability. The number of practising doctors and nurses provide further information on the supply of health workers. Figure 1.6 provides a snapshot on health care resources across the OECD and Table 1.6 provide more detailed country comparisons.

Figure 1.6. **Snapshot on health resources across the OECD**



Note: Largest improvement shows countries with largest changes in value over time (% change in brackets).
Source: OECD Health Statistics 2019.

Overall, countries with higher health spending and higher numbers of health workers and other resources have better health outcomes, quality and access to care. However, the absolute amount of resources invested is not a perfect predictor of better outcomes – efficient use of health resources and the wider social determinants of health are also critical. The next section will further investigate the associations between health spending and staffing, access, quality and health outcomes.

The United States spends considerably more than any other country (over USD 10 000 per person, adjusted for purchasing power). Health care spending per capita is also high in Switzerland, Norway and Germany. Mexico and Turkey spend the least, at around a quarter of the OECD average. Health spending has grown consistently across most countries over the past decades, other than a temporary slowdown following the 2008 financial crisis. Rising incomes, new technologies and ageing populations are key drivers of health spending growth.

In terms of health spending as a share of GDP, the United States spends by far the most on health care, equivalent to 16.9% of its GDP - well above Switzerland, the next highest spending country, at 12.2%. Germany, France, Sweden and Japan devote the next highest shares of GDP to health. A large group of OECD countries spanning Europe, but also Australia, New Zealand, Chile and Korea, spend between 8-10% of GDP. A few OECD countries spend less than 6% of their GDP on health care, including Mexico, Latvia, Luxembourg, and Turkey at 4.2%.

A large part of health spending is translated into wages for the workforce. The number of doctors and nurses in a health system is therefore an important way of monitoring how resources are being used. The number of doctors ranged from about two per 1 000

Table 1.6. **Dashboard on health resources**

	Health spending		**Health spending share**		**Doctors**		**Nurses**	
	Per capita (USD based on purchasing power parities)		As a % of Gross Domestic Product (GDP)		Practising physicians (per 1 000 population)		Practising nurses (per 1 000 population)	
OECD	3 994	◉	8.8	◉	3.5	◉	8.8	◉
Australia	5 005	◉	9.3	◉	3.7	◉	11.7	◉
Austria	5 395	◉	10.3	◉	5.2	↑	6.9	◉
Belgium	4 944	◉	10.4	◉	3.1	◉	11.0	◉
Canada	4 974	◉	10.7	◉	2.7	◉	10.0	◉
Chile	2 182	↓	8.9	◉	2.5	↓	2.7	↓
Czech Republic	3 058	◉	7.5	◉	3.7	◉	8.1	◉
Denmark	5 299	◉	10.5	◉	4.0	◉	10.0	◉
Estonia	2 231	↓	6.4	↓	3.5	◉	6.2	◉
Finland	4 228	◉	9.1	◉	3.2	◉	14.3	↑
France	4 965	◉	11.2	↑	3.2	◉	10.5	◉
Germany	5 986	↑	11.2	↑	4.3	◉	12.9	↑
Greece	2 238	↓	7.8	◉	6.1*	↑	3.3	↓
Hungary	2 047	↓	6.6	↓	3.3	◉	6.5	◉
Iceland	4 349	◉	8.3	◉	3.9	◉	14.5	↑
Ireland	4 915	◉	7.1	◉	3.1	◉	12.2	◉
Israel	2 780	◉	7.5	◉	3.1	◉	5.1	◉
Italy	3 428	◉	8.8	◉	4.0	◉	5.8	◉
Japan	4 766	◉	10.9	↑	2.4	↓	11.3	◉
Korea	3 192	◉	8.1	◉	2.3	↓	6.9	◉
Latvia	1 749	↓	5.9	↓	3.2	◉	4.6	↓
Lithuania	2 416	↓	6.8	↓	4.6	↑	7.7	◉
Luxembourg	5 070	◉	5.4	↓	3.0	◉	11.7	◉
Mexico	1 138	↓	5.5	↓	2.4	↓	2.9	↓
Netherlands	5 288	◉	9.9	◉	3.6	◉	10.9	◉
New Zealand	3 923	◉	9.3	◉	3.3	◉	10.2	◉
Norway	6 187	↑	10.2	◉	4.7	↑	17.7	↑
Poland	2 056	↓	6.3	↓	2.4	↓	5.1	◉
Portugal	2 861	◉	9.1	◉	5.0*	↑	6.7	◉
Slovak Republic	2 290	↓	6.7	↓	3.4	◉	5.7	◉
Slovenia	2 859	◉	7.9	◉	3.1	◉	9.9	◉
Spain	3 323	◉	8.9	◉	3.9	◉	5.7	◉
Sweden	5 447	◉	11.0	↑	4.1	◉	10.9	◉
Switzerland	7 317	↑	12.2	↑	4.3	◉	17.2	↑
Turkey	1 227	↓	4.2	↓	1.9	↓	2.1	↓
United Kingdom	4 070	◉	9.8	◉	2.8	◉	7.8	◉
United States	10 586	↑	16.9	↑	2.6	◉	11.7	◉

Note: ↑ Above OECD average; ◉ Close to OECD average; ↓ Below OECD average. United States excluded from standard deviation calculation for both health expenditure indicators. *Includes all doctors licensed to practice, resulting in a large over-estimation.

population in Turkey, Japan, Chile, and Korea, to five or more in Portugal, Austria, and Greece. However, numbers in Portugal and Greece are over-estimated as they include all doctors licensed to practise. There were just under nine nurses per 1 000 population in OECD countries in 2017, ranging from about two per 1 000 in Turkey to more than 17 per 1 000 in Norway and Switzerland.

To what extent does health spending translate into better access, quality and health outcomes, and more health professionals?

Quadrant charts plot the association between health spending and another variable of interest. They illustrate the extent to which spending more on health translates into stronger performance across four dimensions: health outcomes, quality of care, access, and more health professionals. Note, though, that only a small subset of indicators for these four dimensions are compared against health spending. Quadrant charts also show pure statistical correlations, they do not imply causality.

The midpoint of a quadrant chart represents the OECD average, with dots the relative position of countries across health spending and the given indicator analysed. Each country is also colour-coded, based on a simple risk factors index (RFI) of smoking, alcohol and obesity indicators. Green dots indicate countries with a relatively low RFI (e.g. Israel, Norway), blue dots countries with a RFI close to the OECD average, and red dots countries with a relatively high RFI (e.g. Chile, Hungary). The RFI is an unweighted average of these three risk factors. Hence, the United States, for example, is coloured blue despite having high obesity rates, because of relatively low smoking rates and alcohol consumption. See box on "methodology, interpretation and use" for further methodological details.

Health spending and health outcomes

These quadrant charts illustrate the extent to which countries that spend more on health have better health outcomes (noting such associations do not guarantee a causal relationship).

There is a clear positive association between health spending per capita and life expectancy (Figure 1.7). Amongst the 36 OECD countries, 17 countries spend more and have higher life expectancy than the OECD average (top right quadrant). A further 10 countries spend less and have lower life expectancy at birth (bottom left quadrant).

Of particular interest are countries that deviate from this basic relationship. Eight countries spend less than average but achieve higher life expectancy overall (top left quadrant). These countries are Italy, Korea, Portugal, Spain, Slovenia, Greece, Israel and New Zealand. The only country in the bottom right quadrant is the United States, with much higher spending than in all other OECD countries, but lower life expectancy than the OECD average.

Most countries with high overall risk factors (red dots) have lower life expectancy than the OECD average. They are also typically below the trend line, which shows the average spending to life expectancy ratio across OECD countries. The converse generally holds for countries with low risk factors (green dots).

For avoidable mortality, there is also a clear association in the expected direction (Figure 1.8). Amongst 36 countries with comparable data, 16 countries spend more and have lower avoidable mortality rates (bottom right quadrant). A further nine countries spend less and have more deaths that could have been avoided (top left quadrant). Seven countries spend less than average but achieve lower avoidable mortality rates – for example, Italy, Israel and Spain (bottom left quadrant). The United States spends more than the OECD average and has worse avoidable mortality rates. Consistent with life expectancy, countries with higher (lower) risk factors (respectively in red and green dots) typically have higher (lower) avoidable mortality rates.

Figure 1.7. **Life expectancy and health expenditure**

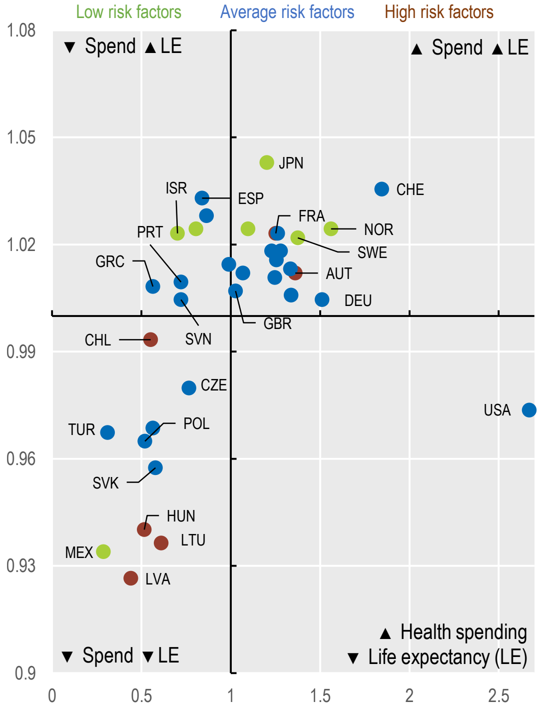
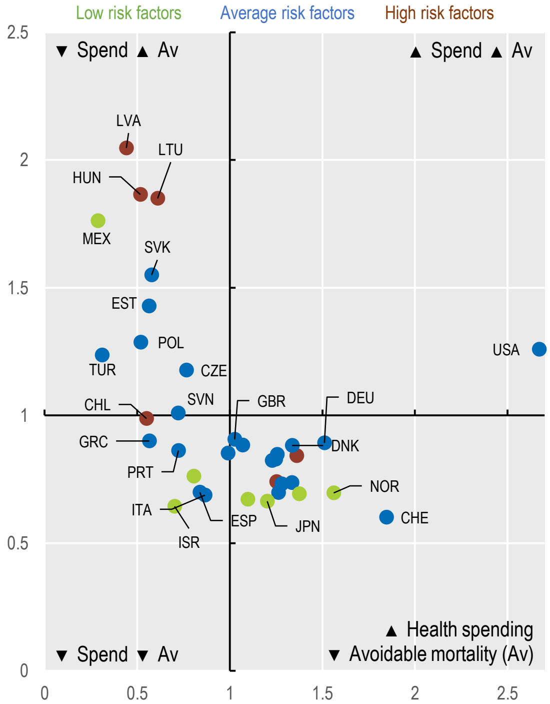


Figure 1.8. **Avoidable mortality (preventable and treatable) and health expenditure**



Health spending, access and quality of care

These quadrant charts illustrate the extent to which countries that spend more on health deliver more accessible and better quality care (noting such associations do not guarantee a causal relationship).

In terms of access, Figure 1.9 shows that universal (or near-universal) coverage of a core set of services can be achieved even with comparatively low health spending levels – for example, Turkey and Latvia spend under USD 2 000 per person (less than half the OECD average) and still achieve universal population coverage.

Still, six of the seven countries with population coverage rates below 95% do spend relatively less – Mexico, Poland, Chile, Estonia, the Slovak Republic and Hungary (bottom left quadrant). The one OECD country with high spending levels and lower population coverage is the United States. Replacing health expenditure per person with spending by government or compulsory insurance, or spending as a share of GDP, results in very similar patterns.

In terms of quality of care, Figure 1.10 shows the relationship between health spending and breast cancer five-year net survival (an indicator reflecting the quality of both prevention and curative care). There is a clear positive association: among 32 OECD countries, 16 countries spend more on health and have better net survival (top right quadrant); and nine countries spend less and have lower net survival (bottom left quadrant). Six countries have relatively high breast cancer survival despite spending less than the OECD average (Israel, Italy, Korea, Portugal, New Zealand and Spain). In Ireland, health spending is almost 25% higher than the OECD average, yet net survival is slightly below the OECD average.

Figure 1.9. **Population coverage for a core set of services and health expenditure**

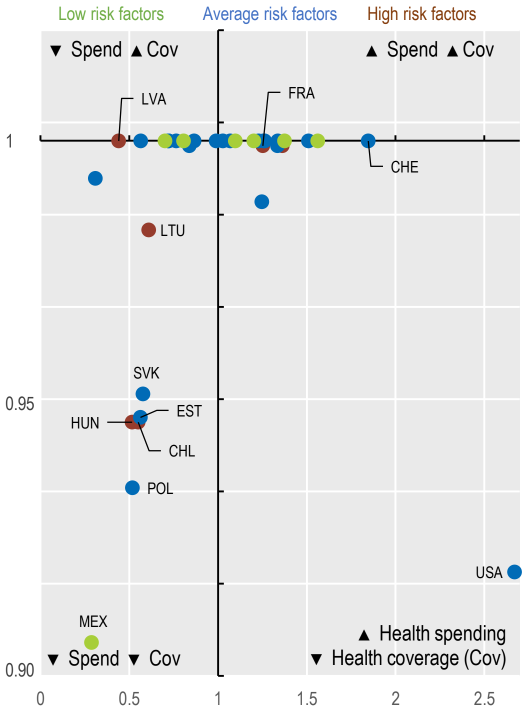
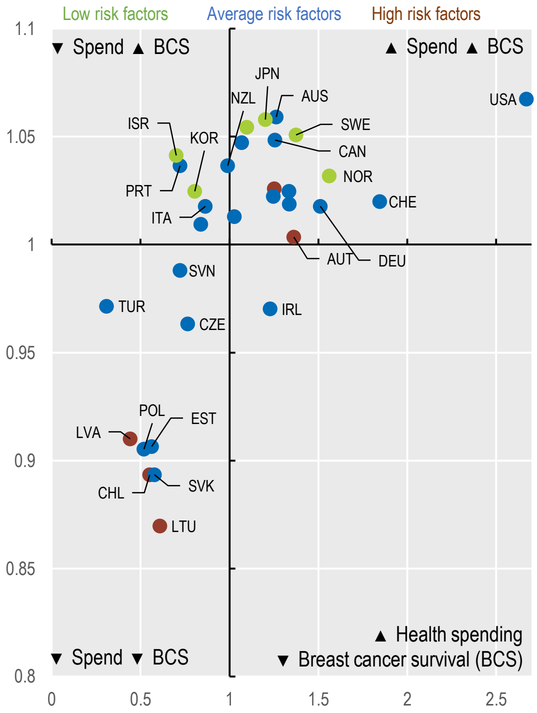


Figure 1.10. **Breast cancer survival and health expenditure**



Health spending and number of health professionals

These quadrant charts illustrate the extent to which countries that spend more on health also have more doctors and nurses (noting such associations do not guarantee a causal relationship).

There is only a weak positive association between spending on health and number of doctors (Figure 1.11). Nine countries spend more than the OECD average yet have fewer doctors (e.g. Canada, Luxembourg, United States); a further six countries spend relatively little yet have more doctors than average (Czech Republic, Greece, Italy, Lithuania, Portugal, Spain). However, numbers in Portugal and Greece are over-estimated as they include all doctors licensed to practise. Such divergences may also reflect differences in remuneration levels, staff composition and the prominence given to nurse practitioners and other health professionals (as compared with doctors).

The positive association between health spending and number of nurses is much more clear-cut (Figure 1.12). Amongst the 36 OECD countries, 16 countries spent more than the OECD average and also had more nurses per 1 000 people. Likewise, 16 countries spent relatively little and had fewer nurses. Only two countries spent less than the OECD average and had more nurses (Slovenia and, to a lesser extent, New Zealand). Two other countries had comparatively high spending but fewer nurses (Austria and the United Kingdom).

Figure 1.11. **Number of doctors and health expenditure**

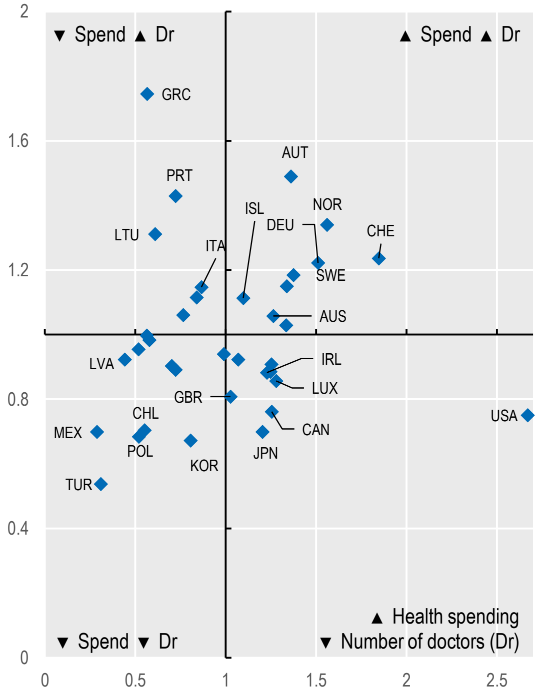
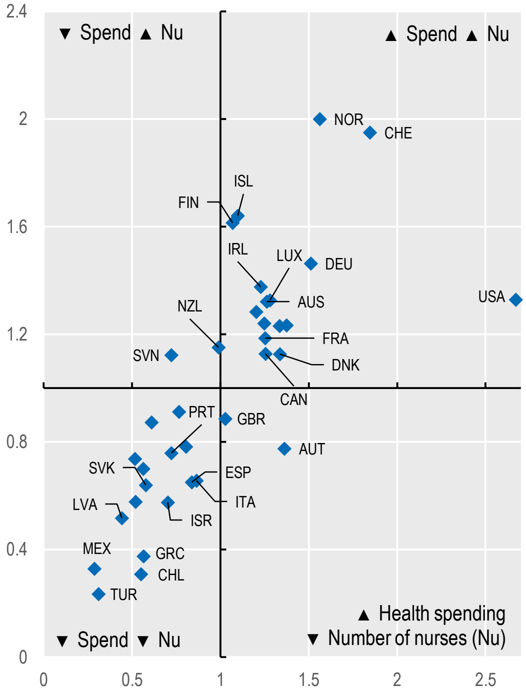


Figure 1.12. **Number of nurses and health expenditure**



Chapter 2

Measuring what matters for people-centred health systems

The key objective of a health system is to improve the health of patients and populations. However, few health systems routinely ask patients about the outcomes and the experience of their care. This chapter presents patient-reported outcomes following hip and knee replacement, and breast cancer surgery, as well as patient-reported experiences of people with mental health problems, from a subset of OECD countries. Patients who underwent joint replacement surgery reported, on average, improved function and quality of life with hip replacements generating slightly higher gains. Women who underwent autologous breast reconstruction surgery reported, on average, better outcomes than women who underwent implant reconstruction. Meanwhile results of a 2016 Commonwealth Fund survey of 11 countries suggest that people with a mental health problem report a worse experience in some aspects of care. Such information is valuable for other health service users, for clinicians, providers, payers and policymakers.

Introduction

The primary objective of any health system, service or organisation is to maximise the health of the individuals and populations they serve, and to do so in an equitable way within budgetary parameters.

Good health is not just important in its own right. It also promotes personal, social and economic well-being. Healthy people create healthy communities and contribute towards a well-functioning, prosperous and more productive society. For example, good health can enhance a person's lifetime earnings by up to 25% (OECD, 2017[1]; OECD, 2018[2]).

Yet very few health systems assess their impacts on health and well-being from the perspective of the people they serve. While the concept of health-related quality of life (QoL) has existed for almost three decades, it is not measured or reported systematically. Performance metrics in health tend to focus principally on inputs and outputs. Outcomes such as life expectancy are important, but they are silent on a range of other things valued by patients, including pain, function and QoL as well as the experience of care itself. This means that the picture of health care and health system performance is missing an essential part.

The patient perspective on the outcomes and experience of their care is essential in driving continuous quality improvement of health services. It is also increasingly relevant in overcoming the broader demographic, epidemiological and economic challenges faced by all health systems. The rise of chronic conditions as the main source of disease burden, coupled with better but also more expensive technologies to manage them and prolong life, heightens the need for a more people-centred approach to both policy and practice. But people-centred health systems remain an empty promise without more information on how health care and health policy actually affect the lives of individual patients.

This chapter presents the results of a preliminary data collection on patient-reported outcomes from a sample of OECD countries. The areas covered are joint replacement surgery and breast cancer surgery. The next section discusses the importance of using patient-reported data in mental health. These areas of work are part of a broader OECD initiative – the Patient-Reported Indicator Surveys (PaRIS) – which aims to promote systematic use of these important metrics in health systems (see *https://www.oecd.org/health/paris.htm*).

A people-centred health system needs to measure what matters to patients

People's assessment of their health, and the outcomes of their care, go beyond whether they survive a disease or medical intervention. A range of inter-related physical and mental health domains including pain, mobility, fatigue, anxiety and depression all contribute to person's health-related QoL. Patients also value their care experience, which includes having one's autonomy respected, feeling invited and empowered to participate in decisions about one's care, and if organisational aspects of the care pathway are well co-ordinated or disjointed and burdensome.

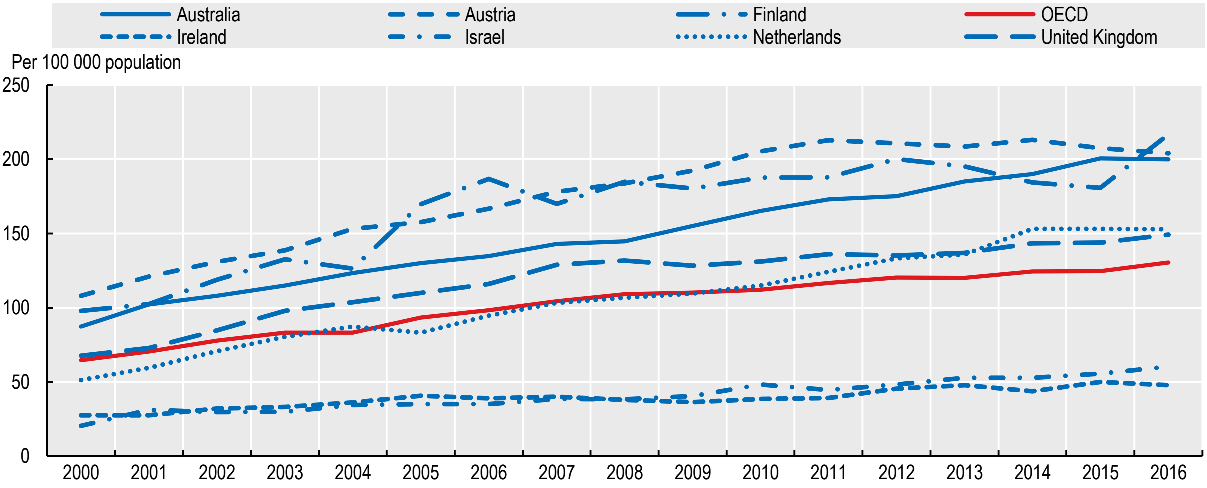
It makes sense to capture this knowledge in a way that is systematic and useful for decision-making. Yet the health sector has been remiss at measuring the effects of its activities on outcomes and experiences as reported by patients. Forward thinking provider organisations, disease registries and in some health systems have been collecting this information for some conditions or procedures. However, coherent and systematic patient reporting across the entire range of health system activities and interventions is not yet in place.

Outputs provide only a partial picture of health system performance

Processes and activities, on the other hand, are routinely collected and reported. While these are an important part of the overall picture, in isolation they reveal quite little about performance, quality and value. For example, the average rate of total knee replacement in OECD countries doubled between 2000 and 2016 (Figure 2.1). Rates also vary up to 5-fold between and within countries (OECD, 2014[3]). Are the increased rates and the variation warranted? Do these operations make a difference to people's lives, or are some of them performed unnecessarily? What is the effect of waiting times for knee replacement, and patient's age at surgery? Are some patients better off choosing other treatments for their symptoms?

Figure 2.1. **Total knee replacement rates have doubled since 2000**

Total knee replacement rates per 100 000 population – adjusted for population ageing – selected countries and OECD average



Note: OECD is age-adjusted rate of countries submitting data. Countries chosen based on data availability over this period.
Source: OECD Health Statistics 2019.

StatLink https://doi.org/10.1787/888934014574

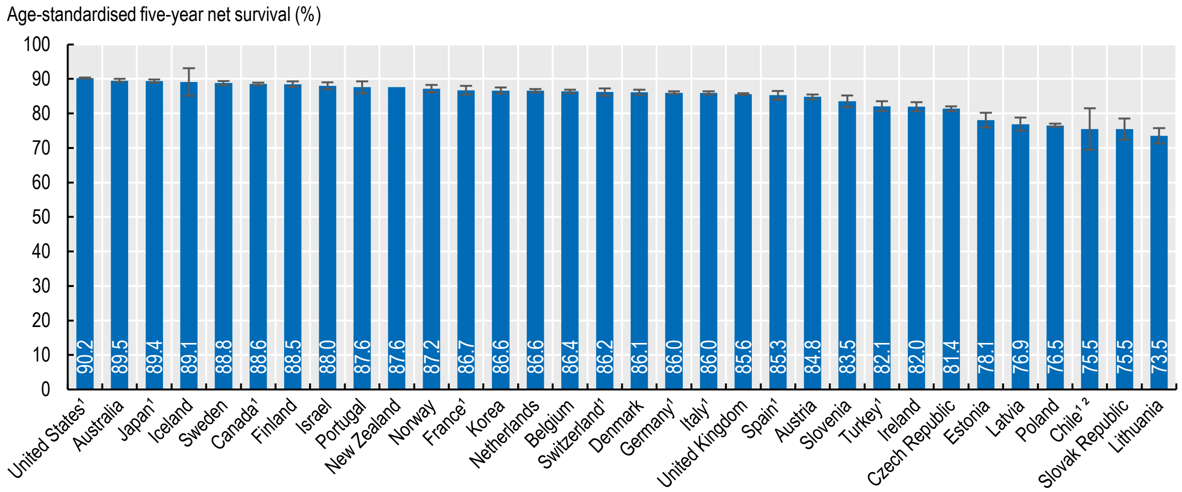
Such questions cannot be answered without knowing care outcomes. Case fatality or hospital re-admission are useful measures but are becoming rare in routine procedures such as joint replacement. They are also silent on other outcomes valued by these patients such as reduction in pain, and increase of mobility and function.

We know how medicine treats diseases but what about the patient's quality of life?

Traditional outcome measures like survival or mortality will remain useful but cannot capture more subtle yet important effects. For example, people diagnosed with cancer value survival highly, but therapeutic success entails more than just survival (Abahussin et al., 2018[4]). Survival and mortality say little about nausea, pain, sleep quality, body image, sexual function, independence and time spent with loved ones. Also, for some conditions, mortality and survival are now similar between OECD countries (Figure 2.2), with little separating the 'best from the rest'. This hinders continued learning about best therapeutic approaches, techniques and interventions (Donovan et al., 2016[5]; Hamdy et al., 2016[6]).

Figure 2.2. **Cancer survival is similar between countries**

Breast cancer age-standardised five-year survival of patients diagnosed from 2010-2014



Note: H lines show 95% confidence intervals. 1. Coverage less than 100% of national population. 2. Survival estimates considered less reliable.

Source: *CONCORD programme, London School of Hygiene and Tropical Medicine.*

StatLink https://doi.org/10.1787/888934014593

That medicine has become quite successful at treating disease should be celebrated. However, continual improvement must include assessment of the impact treatments have on people's lives. This makes outcomes valued by patients a key indicator of success. Men diagnosed with prostate cancer are now very likely to survive this condition. Beyond survival they also highly value preserving erectile function and avoiding incontinence (Nag et al., 2018[7]) – outcomes of significant interest to patients, providers as well as policymakers.

A good care experience contributes to better outcomes and is also an end in itself

In addition to outcomes, *how* people are treated also matters. This includes being treated with respect and compassion and being supported, listened to and involved in decision-making. It also means that care is better integrated across teams who communicate well with each other and with the patient.

A positive care experience is a strong signal of quality care and is instrumental in outcomes achieved, especially for those who manage multiple chronic conditions (Stein et al., 2014[8]; Trzeciak et al., 2016[9]; Luxford, Safran and Delbanco, 2011[10]). In mental health, for example, a positive care experience influences the relationship with the care team, manifesting in better communication, therapeutic continuity, adherence and health outcomes (Wong et al., 2019[11]). But it is also an important end in itself. All patients expect and deserve to be treated with respect. In some sectors, such as palliative care, being cared for with compassion and dignity are among the most important components of care.

Yet despite considerable progress in some specific cases, the care experience is not captured systematically. This needs to change, given the growing importance of this dimension of service delivery.

Shared decision making requires patient-reporting

In the clinical setting, measuring patient-reported metrics helps to focus the health care interaction on the needs of the individual. The discussion moves from 'what's the matter *with* you?' to 'what matters *to* you?' – a critical first step in shared decision making, a core principle of people-centred care. Aggregated patient-reported outcomes can inform care decisions and help choose the right therapeutic option where various interventions (including 'watchful waiting') are available (Veroff, Marr and Wennberg, 2013[12]). People see what the most likely outcomes of an intervention may be and can decide accordingly.

Regular reporting by patients throughout their care journey adds structure and rigour to assessment, decision-making and action. Care can be better tailored to individual needs, and enables a rapid and accurate response to clinical deterioration. For example, reporting of symptoms by patients during chemotherapy has been found to significantly prolong survival and reduce hospitalisation (Basch, 2017[13]; Basch et al., 2017[14]).

Knowledge derived from patient-reported data can be used to develop decision aids and update clinical practice guidelines. It also informs providers on how their work affects patient health and well-being. Patient-reported outcome measures, for example, provide a way to measure clinical progress more objectively. They can complement other metrics to provide a fuller assessment of performance of therapies and services. If implemented well, benchmarking and even public reporting can be a powerful driver of quality improvement (Greenhalgh et al., 2017[15]).

Data generated by patients can also contribute towards assessing the performance of medical products, combination therapies, care pathways, health services and the health system as a whole. Combined with other data, these can furnish researchers, regulators, health technology agencies, payers, researchers and policy makers with the knowledge to make more informed decisions to maximise health system performance, and meet the expectations of patients, citizens and communities (Calvert, O'Connor and Basch, 2019[16]).

Patient-reported measures are robust and reliable

The ability to elicit information from individuals on their health status, quality of life and care experience is now decades old. The available instruments and surveys have undergone rigorous psychometric testing and statistical validation, with results published in the peer-reviewed literature. The field is mature and evidence supports that these instruments reliably measure what is intended (Black, 2013[17]). Box 2.1 outlines the different types of patient-reported outcome and experience measures (PROMs and PREMs) as well as some of the technical aspects of how these are collected, interpreted and used.

In the end, no single data source can provide information for a complete assessment of how a highly complex, adaptive health system performs. Patient-reported data need to be interpreted in the context of other metrics on health system activity and performance. They are not meant to supplant but to complement existing data that are collected in an effort to avoid tunnel vision and generate a more complete picture of performance for all involved: patients, providers, regulators and policy makers. In order for patient-reported

Box 2.1. **Measuring patient-reported outcomes and experiences of care**

Instruments to elicit information from patients on self-reported health status, outcomes and experiences of care typically comprise questionnaires of varying length and format. These are administered in a range of ways (verbally, electronically or on paper). The two main categories of patient-reported outcome measures (PROMs) are condition-specific PROM instruments and health-related Quality of Life (QoL) instruments – commonly termed 'generic' PROMs.

Condition-specific PROMs

These are designed specifically for a condition (e.g. osteoarthritis) or a procedure (e.g. joint replacement). These PROMs are tailored to the symptoms of a specific condition, or those that a specific procedure tries to address. As such their advantage is sensitivity and specificity. Their key limitation is a lack of generalisability – that is, their results cannot be directly compared with results from instruments designed for other conditions or procedures, unless validated mapping algorithms ('crosswalks') exist to convert scores between one and the other.

Health-related QoL instruments ('generic' PROMs)

'Generic' PROMs instruments attempt to capture a broader range of physical and psychosocial domains that are considered important determinants of health-related QoL. Their advantage is that they can be compared across different conditions, procedures and interventions. For this reason they are often used in cost-utility analysis and health technology assessment (HTA).

Patient-reported experience measures (PREMs)

The patient experience is also measured using surveys or questionnaires. These can be administered in various ways and a number of approaches and questions have been developed. Questions can be tailored to a certain setting (e.g. primary, hospital, long-term care) or assess a specific aspect of care (e.g. continuity, autonomy, information provision). PREMs are now sophisticated and anchored to objective events, having moved well beyond the more subjective patient 'satisfaction' surveys of the past. They elicit scaled data across a range of dimensions including accessibility, communication, continuity and confidence. These data are now used to inform assessment and international comparisons of health systems (Schneider W, 2017[18]).

Collecting and using patient-reported data

A range of factors influence the outcomes of care as reported by patients. These factors include behaviour, adherence, age and comorbidities. But more traditional outcome measures such as readmission and mortality are subject to the same confounding variables. All data, whether patient-reported or not, have limitations and should be interpreted with the necessary caution. Like any outcome data that are used for benchmarking, confounders for patient-reported indicators should usually be adjusted in order to enable meaningful comparisons (Nuttall, Parkin and Devlin, 2013[19]).

measures to fulfil their promise in service provision, research and policy, standardisation of methods for data collection, analysis and reporting are essential. This relies heavily on international collaboration (Calvert, O'Connor and Basch, 2019[16]).

Joint replacement rates are rising but are patients reporting improvement?

Each year, over 2.2 million people undergo an elective hip or knee replacement in OECD countries. Knee replacement rates have doubled since the year 2000 (Figure 2.1), while hip replacements have increased by 30%. Inter- and intra-country variation in rates can be as high as 5-fold (OECD, 2014[3]).

Patients typically undergo these procedures to manage symptoms of osteoarthritis such as pain and loss of mobility and function, which have a considerable impact on health-related QoL. Both procedures are invasive and, like all surgery, involve a degree of risk. They require a long period of rehabilitation. They are also expensive. In Australia, for example, they account for over 2% of total health expenditure.[1]

Given that alternative non-surgical ways of managing hip and knee pain exist (physical therapy, exercise and medication) patients should be able to base their decision to proceed with surgery on the expected outcomes including pain, mobility and capacity to perform daily activities following a period of recovery. Payers should expect that the procedures represent value compared to the alternatives.

The orthopaedic community has been among the most active in encouraging the collection of patient-reported data. Nevertheless, national-level reporting is the exception. Most patient-reported data collections are part of regional and local programmes, or voluntary registries covering a subset of a country's providers and hospitals.

A range of instruments measuring dimensions such as pain, function and QoL are in use around the world. Questionnaires are typically completed by the patient pre-surgery and then at a specified time point after the operation (usually 6 or 12 months). The numerical difference between the pre-operative and post-operative scores is the key value of interest.

The OECD has been working with a range of stakeholders and experts, including patients and clinicians, to collect PROM data internationally. Ten programmes across eight countries contributed to a recent pilot data collection. These included national initiatives (England, Netherlands, Sweden), regional (Canada – Alberta and Manitoba, Switzerland – Geneva), sub-national registries (the Australian Clinical Outcomes Registry – ACORN – which collects data from providers in two States) and single hospitals (Coxa hospital, Finland;[2] the Galeazzi Institute Italy). Various PROM instruments are used among the contributing programmes, and the post-operative data were collected at either 6 or 12 months.

Adult patients with a diagnosis of osteoarthritis[3] who underwent a unilateral, primary elective total replacement procedure were included in the data collection. The three most recent years of data were collected and aggregated to provide one result per participating programme.

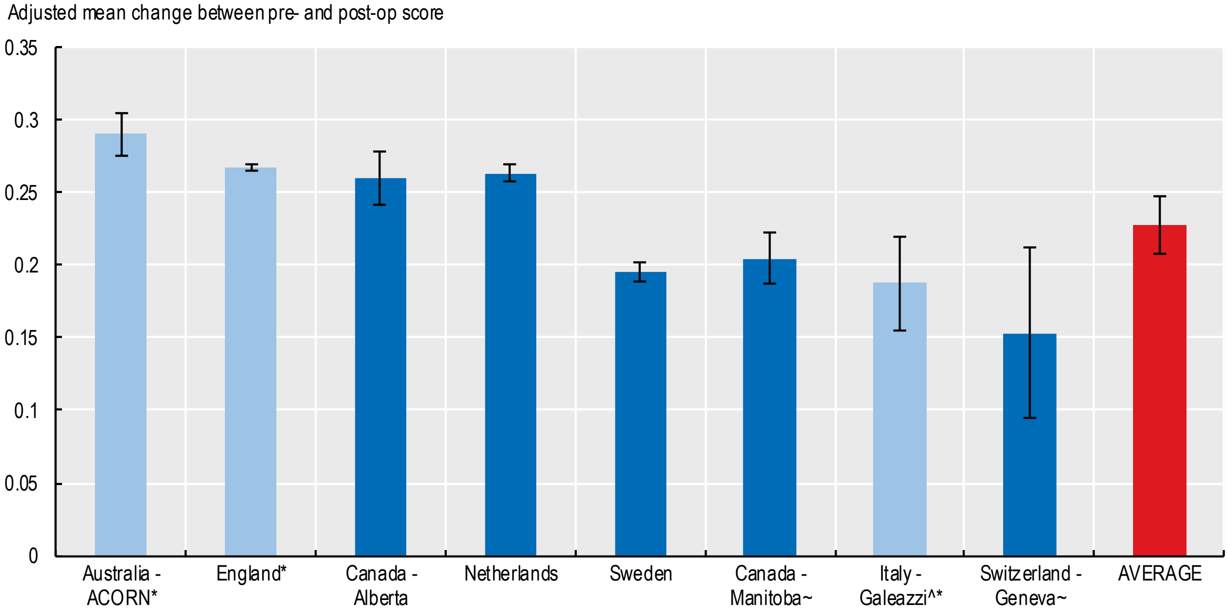
On average, hip replacement patients reported improvement

Hip replacement results derived from the generic instruments (EQ-5D-3L, EQ-5D-5L and SF12) are presented on a common scale – the EQ-5D-3L index with a United States-derived valuation (Shaw JW, 2005[20]). The maximum score on the EQ-5D scale, is 1.0 (denoting optimal health-related QoL) while a negative score suggests health-related QoL rated as worse than death (Box 2.2).

Figure 2.3 presents the average difference between the pre- and post-operative scores[4] – i.e. the mean change in QoL – adjusted for patients' age, sex and pre-operative score (Box 2.2).[5] Results suggest that the average patient in each programme reported improvement in their health-related QoL following a hip replacement. The average mean adjusted change across the programmes was +0.23, which equates to approximately 21% improvement on this index at the respective post-operative time points of 6 or 12 months.[6,7,8]

The adjusted changes between pre-and post-operative scores derived from condition-specific instruments (Oxford Hip Score, HOOS-PS)[9] are presented in Figure 2.4. These need to be displayed on separate axes because algorithms to convert scores from one to the other are not available at present. The Oxford scale ranges from 0 to 48, the HOOS-PS from 0 to 100. In both cases a higher value represents a more desirable outcome.[10] Results suggest, on average, improvement of similar magnitude in all programmes. The average adjusted

Figure 2.3. **Hip replacement: adjusted mean change between pre- and post-operative EQ-5D-3L scores (US valuation), 2013-16 (or nearest years)**



Note: ^ results converted from SF-12v1 instrument; ~converted from SF-12v2 instrument; *6-month post-op collection - lighter shade blue (all others are 12 months). H lines show 95% confidence intervals.
Source: PaRIS Hip/Knee Replacement Pilot Data Collection.

StatLink https://doi.org/10.1787/888934014612

mean change (not shown) was +23 on the Oxford scale and +32 on the HOOS-PS scale, which equates to about 48% and 32% improvement respectively.[11] More condition-specific results are provided in Chapter 6.

Improvements reported following knee replacement were more modest

The adjusted changes between pre-and post-operative knee replacement scores derived from condition-specific instruments are presented in Figure 2.5 (the scales are the same as for hip replacement). On average, patients in each programme reported improvement of similar magnitude. The average adjusted mean change (not shown) was +17 on the Oxford scale and +22 for KOOS-PS,[12] or 36% and 22% improvement respectively (the corresponding values for hip replacement were 48% and 32%).[13]

Knee replacement results derived from generic instruments are presented using the EQ-5D-3L index with US valuation (see Box 2.2). Data derived from EQ-5D-5L and SF-12 scales were converted using validated algorithms (van Hout et al., 2012[21]; Sullivan and Ghushchyan, 2006[22]; Le, 2013[23]). Figure 2.6 shows the mean changes between pre- and post-op scores, adjusted for age, sex and pre-operative score (Box 2.2). On average, patients in each programme reported improvement ranging from +0.08 to +0.22. The average adjusted mean change across all programmes was +0.18 (about 16% improvement).[14] In comparison, as shown above, the hip replacement equivalent value was +0.23 (21%), a statistically significant difference at the 95% level.

The EQ-5D results suggest that – all other things being equal – the average 65-year-old patient undergoing a knee replacement in the contributing programmes gained an additional (incremental) 3.3 quality adjusted life years (QALYs).[15] In other words, the gain

Box 2.2. **The common EQ-5D index and data standardisation**

Different instruments and measures of health-related QoL are used in the participant programmes and countries. Here, data derived from the EQ-5D-5L, and the SF-12 version 1 and version 2 instruments were converted to the EQ-5D-3L scale using validated mapping algorithms (van Hout et al., 2012[21]; Sullivan and Ghushchyan, 2006[22]; Le, 2013[23]).

The EQ-5D instrument

The EQ-5D health-related QoL instrument comprises questions covering five dimensions: mobility, self-care, usual activities, pain/discomfort and anxiety/depression. The patient rates each from 1-3 (on the 3L version) or 1-5 (on the 5L version) with 1 being best and 3 or 5 worst. The output is a five-digit 'health state' – e.g. 11111 (perfect health), 33333 or 55555 (worst possible state for 3L and 5L respectively) and a range of permutations in between.

The health states are converted to a single index by referring to so-called valuations specific to a population or country. These valuations have been determined by asking a sample of that population about how they would rate a particular health state against being in perfect health (1.0) and death (0) using a method called time trade-off (TTO). The resulting function is called a valuation or value set. Currently, over a dozen national valuations exist for the 3L version, but fewer have been completed for the newer 5L. The functions can differ considerably between countries (Zhuo et al., 2018[24]). Some remain above zero, others decline into negative values at the worst possible health states. This means respondents rated these states as worse than death, and were willing to trade off time in good health to avoid that health state.

The EQ-5D was designed to generate quality-adjusted life years (QALYs) - a measure that combines morbidity and mortality and is often used assess the effectiveness of medical interventions. For example, living in a health state of 0.8 on the index for 10 years equates to 8 QALYs.

The EQ-5D-3L index (US valuation) as the common scale

The EQ-5D-3L index was chosen as the common metric because (a) the majority of countries use this instrument; (b) algorithms exist to convert – or map – scores from other generic instruments to the EQ-5D-3L. Score conversions were conducted using patient-level data.

'Native' EQ-5D-3L health state valuations (see above) exist for most participation programmes. A single valuation, rather than a mix of respective native value sets, is preferred because it goes some way to mitigate cultural, demographic, socio-economic and other confounders of self-reported health status (Devlin, 2019[25]). It *de facto* presents results consistent with their underlying health state, and removes the additional variability created by a country's unique valuation of these states.

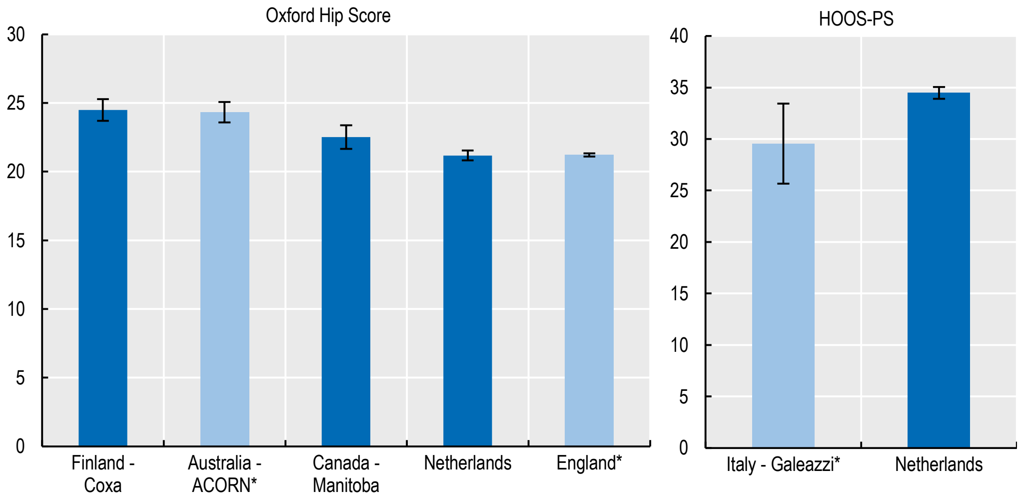
The choice of the US valuation was pragmatic. It was the only 'end point' of the available algorithms to generate EQ-5D-3L scores from the other instruments used by the contributing programmes (van Hout et al., 2012[21]; Sullivan and Ghushchyan, 2006[22]; Le, 2013[23]).

Standardising results to enhance comparability

To enhance comparability and mitigate the effect of demographic and other variables, results shown (derived from both generic and condition-specific tools) were adjusted for age, sex as well as the reported pre-operative PROM score, to a population based on the pooled data of the contributing programmes. Three age categories and two pre-operative score categories were used. Differences between crude and adjusted results were small in the majority of cases. Results were not adjusted for co-morbidity or socio-economic status due to the lack of consistent data.

was the equivalent of 3.3 years with 'full' health-related QoL over the expected remainder of their life compared to the pre-operative status quo (i.e. a 'no intervention alternative). The corresponding figure for hip replacement is higher at 4.3 QALYs (Figure 2.7).[16] The difference between the procedures is consistent with existing literature (Konopka et al., 2018[26]). It should be noted, however, that knee replacement procedures typically have a longer recovery period than hip replacements. This may explain some of the difference.

Figure 2.4. **Adjusted mean change between pre- and post-operative Oxford Hip Score and HOOS-PS scores, 2013-16 (or nearest years)**



Note: *post-op collection at 6 months – lighter shade blue (all others at 12 months); Scales: Oxford 0-48; HOOS-PS 0-100. H lines show 95% confidence intervals.
Source: PaRIS Hip/Knee Replacement Pilot Data Collection.

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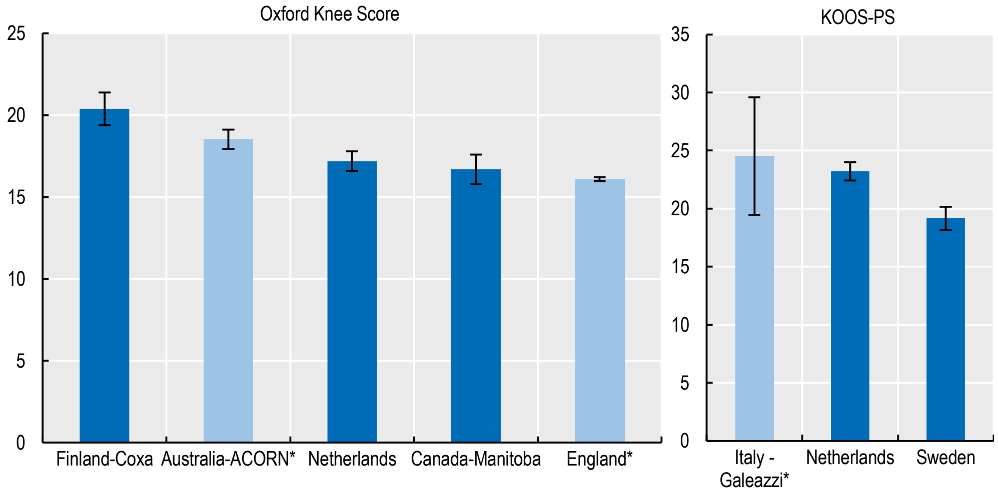
Figure 2.5. **Adjusted mean change between pre- and post-operative Oxford Knee Score and KOOS-PS scores, 2013-16 (or nearest years)**



Note: *post-op collection at 6 months – lighter shade BLUE (all others at 12 months); Scales: Oxford 0-48; KOOS-PS 0-100. H lines show 95% confidence intervals.
Source: PaRIS Hip/Knee Replacement Pilot Data Collection.

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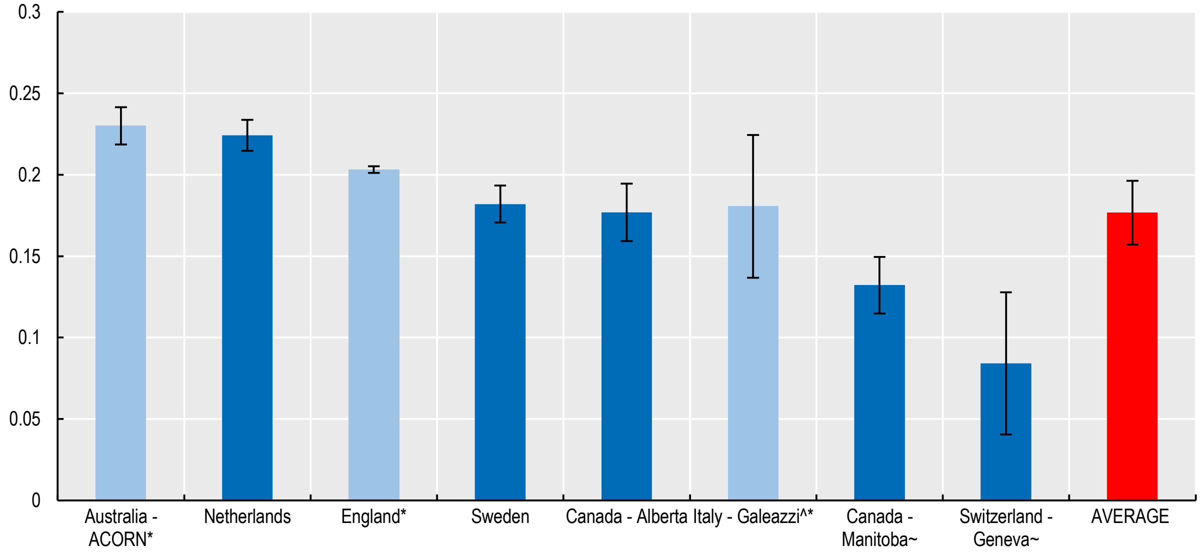
Results should be interpreted with caution

On average, patients undergoing hip or knee replacement procedures in the participating programmes reported an improvement in their symptoms and health-related QoL. This does not mean that all patients improved. In fact, a small but significant proportion reported no change or a worsening in their symptoms and health-related QoL for both procedures across the participating programmes. While this may still be a better

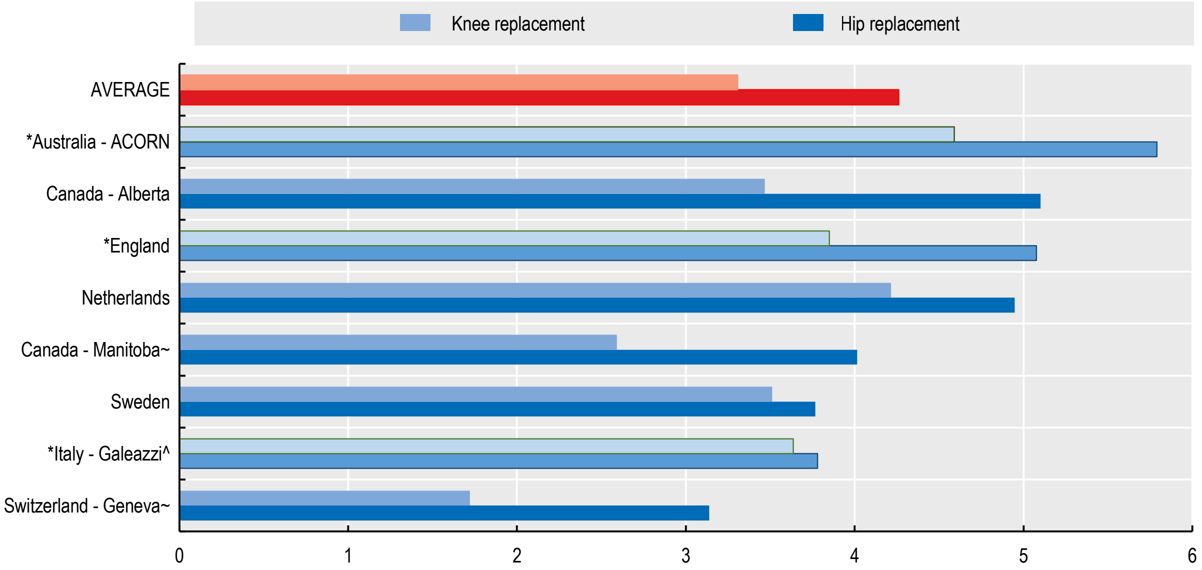
Figure 2.6. **Knee replacement: adjusted mean change between pre- and post-operative EQ-5D-3L scores (US valuation), 2013-16 (or nearest years)**



Note: ^ results converted from SF-12v1 instrument; ~converted from SF-12v2 instrument; *6-month post-op collection – lighter shade green (all others are 12 months). H lines show 95% confidence intervals.
Source: PaRIS Hip/Knee Replacement Pilot Data Collection.

StatLink https://doi.org/10.1787/888934014669

Figure 2.7. **Both hip and knee replacements generate additional QALYs for patients**



Note: ^ results converted from SF-12v1 instrument; ~converted from SF-12v2 instrument; *6-month post-op collection (all others are 12 months).
Source: PaRIS Hip/Knee Replacement Pilot Data Collection.

StatLink https://doi.org/10.1787/888934014688

outcome compared to the counterfactual (the status quo), receiving no intervention is unlikely given the availability of other treatment modalities in most health systems.

Results presented here are, in fact, silent on how the outcomes of hip and knee replacement surgery compare with other, more conservative surgical or non-surgical treatments including exercise therapy and pharmaceuticals. This would require expanding the study cohort to patients who choose non-surgical therapy for joint pain. The literature suggests that non-surgical interventions indeed improve joint pain and function in people suffering from osteoarthritis, although joint replacement (followed by exercise therapy) results in greater patient-reported improvement (Skou, Bricca and Roos, 2018[27]; Skou et al., 2018[28]). However, joint replacement is associated with a higher number of serious adverse events such as infection than non-surgical treatment (Skou et al., 2015[29]).

Although results were standardised for age, sex and pre-operative score, a number of programme-specific variables limit their comparability. The number of patients differ considerably in each programme. Some of the contributing programmes collect post-operative scores at 6 months, others at 12 months. The latter is considered to be the optimal time for post-operative assessment as full recovery is expected 1 year after surgery. It is unknown how outcomes change beyond the respective time points when data are collected post-operatively. Programmes also deploy different modes of collecting data (paper, electronic, telephone) which is known to influence results. The response rates vary between programmes. Despite adjustment for pre-operative score, differences in wait times between countries may also influence results. Finally, results from three programmes were converted from, EQ-5D-5L and SF-12 to the EQ-5D-3L index (US valuation), which may bias the final results.

In addition, results have not been adjusted for casemix and co-morbidities because consistent data were not available across all programs. A range of cultural, demographic and socio-economic factors influence self-reported health status and will also influence the comparability of results, even when a common index and valuation are used.

Better information on breast cancer care outcomes helps patients facing difficult treatment choices

Breast cancer is the most prevalent form of cancer in women worldwide, with about 2.1 million newly diagnosed cases in 2018 accounting for almost 1 in 4 cancer cases among women (Bray et al., 2018[30]). While an increase in the incidence of breast cancer over the past decade has been observed, mortality has declined in most OECD countries. Early diagnosis as well as improved treatments have contributed to this result, with most OECD countries now having 5-year net survival rates of 80% (see earlier discussion and Figure 2.2).

Although surgery is the preferred local treatment for the majority of early breast cancer patients, a range treatment options exist when considering the specific approach for each women's care. For example, primary systemic treatment with chemotherapy or hormonal therapy can improve surgical options by reducing tumour size before surgery. Post-surgical radiation therapy, chemotherapy, and/or hormonal therapy can lower the risk of recurrence of the cancer.

The three main surgical interventions for breast cancer are:

- **Breast conserving therapy (BCT)** involves a surgical operation to remove the cancer while leaving as much of the breast as possible – commonly an option in early-stage cancer. This is the primary surgical choice for breast cancer, with 60%–80% of newly diagnosed cancers amenable to breast conservation at diagnosis or after primary systemic therapy for women in Western Europe (Cardoso et al., 2019[31]).
- **Mastectomy** involves complete removal of the breast surgically and is often undertaken when a woman cannot be treated with breast conserving therapy. However, a woman

may prefer a mastectomy over a breast conserving therapy and women at very high risk of getting a second cancer sometimes have both breasts removed.

- **Breast reconstruction** may be chosen by women who have had mastectomy of their breast to rebuild the shape and look of the breast. The two main types of breast reconstruction are: 1) **implant** reconstruction surgery which involves the insertion of a silicone implant after the removal of the woman's breast tissue; and 2) **autologous** reconstruction surgery, which uses tissue from other parts of the woman's body, such as her belly, back, thighs, or buttocks to rebuild the breast shape. This form of reconstruction is generally considered to look more natural and behave more like natural breast tissue than breast implants.

The choice of treatment and outcomes for women with cancer are influenced by a number of factors including the size and location of the tumour, biology or type and characteristic of the tumour, age, general health status, service availability, related health risks and patient preferences.

As such, the choice of surgical approach can influence a woman's subsequent quality of life. Women diagnosed with breast cancer can therefore face difficult decisions when considering treatment options. While factors such as age, general health status and the size and location of primary tumour are important to clinical decision making, the preferences of the patient are also central to the choice of treatment strategy (Cardoso et al., 2019[31]).

Beyond the overarching objective to stay alive, QoL is also a key consideration. In weighing treatment options, information about the outcomes of other women who have been in similar circumstances can potentially be of great help in the decision making process and ongoing reflection of progress during and after treatment and into survivorship.

The collection and use of PROMs in breast cancer care is growing

Motivated providers and patients across OECD countries are increasingly measuring patient-reported care outcomes to help inform difficult clinical decisions. The utility of such measurement is increasingly appreciated. For example, in the Netherlands breast cancer has been identified as one of the possible priority areas as part of a current national policy effort to measure patient-reported outcomes systematically and implement 'value-based' care (van Egdom et al., 2019[32]). Nevertheless, a variety of different PROM instruments are used, making comparability of outcomes more difficult. In addition, the scale of uptake is still largely localised and isolated to specific initiatives and clinical champions at specific sites.

In an effort to address this emerging priority, the OECD worked with a group of experts (including patients, clinicians, policymakers and industry representatives) and collaborating organisations to understand the current state of the art in breast cancer PROMS and to explore opportunities for international data collections and comparisons.

These efforts have culminated in a preliminary international data collection involving 10 clinical sites from 7 countries (Flinders Medical Centre, Adelaide, Australia; Charité – Universitätsmedizin Berlin, Germany; Erasmus Medical Center, Rotterdam, Netherlands; Capio St Göran Breast Unit, Södersjukhuset Bröstcentrum and Karolinska Univ.sjukhuset Bröst Endokrin och Sarkom, Stockholm, Sweden; Universitätspital Basel, Basel, Switzerland; Manchester University Hospitals NHS Foundation Trust, Manchester, UK; Memorial Sloan Kettering Cancer Center, New York, US and Brigham and Women's Hospital, Boston, US).

The postoperative breast satisfaction scale of the breast conserving therapy and breast reconstruction modules of the Breast Q tool was used. This is an internationally validated instrument used to measure breast surgery outcomes reported by patients (Pusic et al., 2009[33]) (Box 2.3).

The data collection involved women aged 15 years and older who received unilateral breast conserving therapy or a breast reconstruction following a mastectomy during the primary treatment of breast cancer. Women undergoing bilateral breast surgery were excluded, given the possible differential impact this surgery may have on breast satisfaction.

Box 2.3. **Breast Q Postoperative Breast Satisfaction Scales**

The Breast Q suite of tools is one of the more widely used amidst the range of instruments currently in use internationally to measure patient-reported outcomes from breast cancer surgery (Tevis et al., 2018[34]).

The breast satisfaction scales of the Breast Q tools measure body image in terms of a woman's satisfaction with her breasts and asks questions regarding how comfortably bras fit and how satisfied a woman is with her breast area both clothed and unclothed. Postoperative items ask about breast appearance (e.g., size, symmetry, softness), clothing issues (e.g., how bras fit; being able to wear fitted clothes) and location and appearance of scars. There are separate modules for lumpectomies, mastectomies and reconstructions, with each module consisting of multiple separate scales covering such issues as psychosocial wellbeing, sexual wellbeing, physical wellbeing, satisfaction with breasts and satisfaction with care. There are also implant-specific items, including the amount of rippling that can be seen or felt.

The scores from each scale of the breast conserving therapy and reconstruction scales, along with the other Breast Q scales can be transformed to an Equivalent Rasch Transformed Score of 1-100 to allow direct comparison between scales.

See *http://qportfolio.org/breast-q/breast-cancer/* for more details.

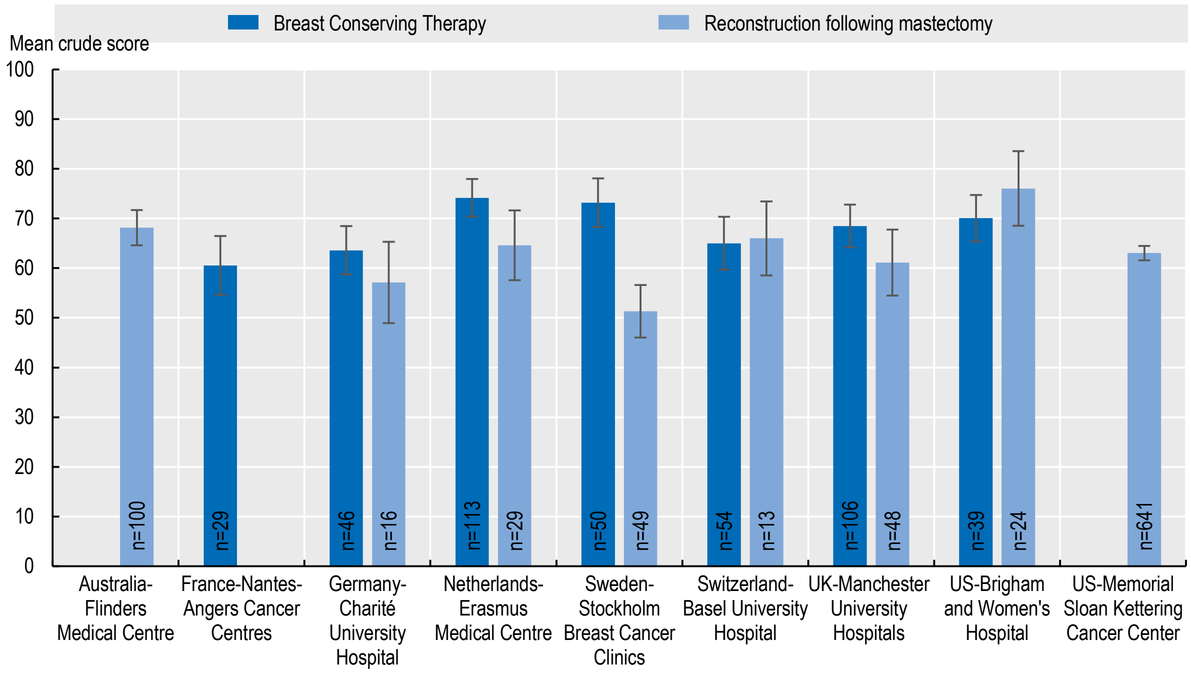
Results suggest higher breast satisfaction outcomes after breast conserving therapy in some, but not all sites

The crude (unadjusted) outcomes scores at 6-12 months following breast conserving therapy, breast reconstruction, and the aggregate of the two are provided in Figure 2.8. Results are from relatively small samples and are not intended to be representative of the outcomes of breast cancer patients across each country. However, they demonstrate the capacity for metrics of this kind to be reported internationally.

Crude data from sites that reported scores for breast conserving therapy and reconstruction suggest that women in most sites may have higher breast satisfaction outcomes after breast conserving therapy, aligning with conventional wisdom in this area (for example (Flanagan et al., 2019[35])). However, in some sites women may have higher satisfaction scores for reconstruction. Further work and more extensive data collection are needed to validate this observation and consider the generalisability of the data outcomes, but these early observations may provide some basis for further sharing and learning of outcomes across sites. For example, follow up beyond 6-12 months may be warranted, given the timing of outcomes for women can vary as a result of differences in the duration and impact of the usual treatment pathways for BCT and breast reconstruction.

A number of personal factors can influence a woman's postoperative satisfaction with the outcomes of her breast cancer surgery, including age, smoking, obesity, tumour burden, education level, cultural background and overall satisfaction with breasts and physical health before surgery. For example, smoking and obesity can impair tissue healing and

Figure 2.8. **Crude PROM scores for breast cancer point to variations in surgical outcomes**



Note: Measurement extended beyond 12 months after surgery for sites in both Sweden and Switzerland. The data labels at the base of the histogram refer to the sample size at each site. H lines show 95% confidence intervals.
Source: PaRIS Breast Cancer PROMS Pilot Data Collection, 2019.

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have a negative impact on implant reconstruction results, including aesthetic outcomes (Kern et al., 2015[36]). These factors are largely outside of the health service's direct influence and their impact should ideally be taken into account when comparing the quality of care across sites. Data were collected from participating sites on key patient variables, including age, smoking and obesity but limitations on sample size and incomplete capacity for reporting by all sites prevented risk-adjusting results for the time being.

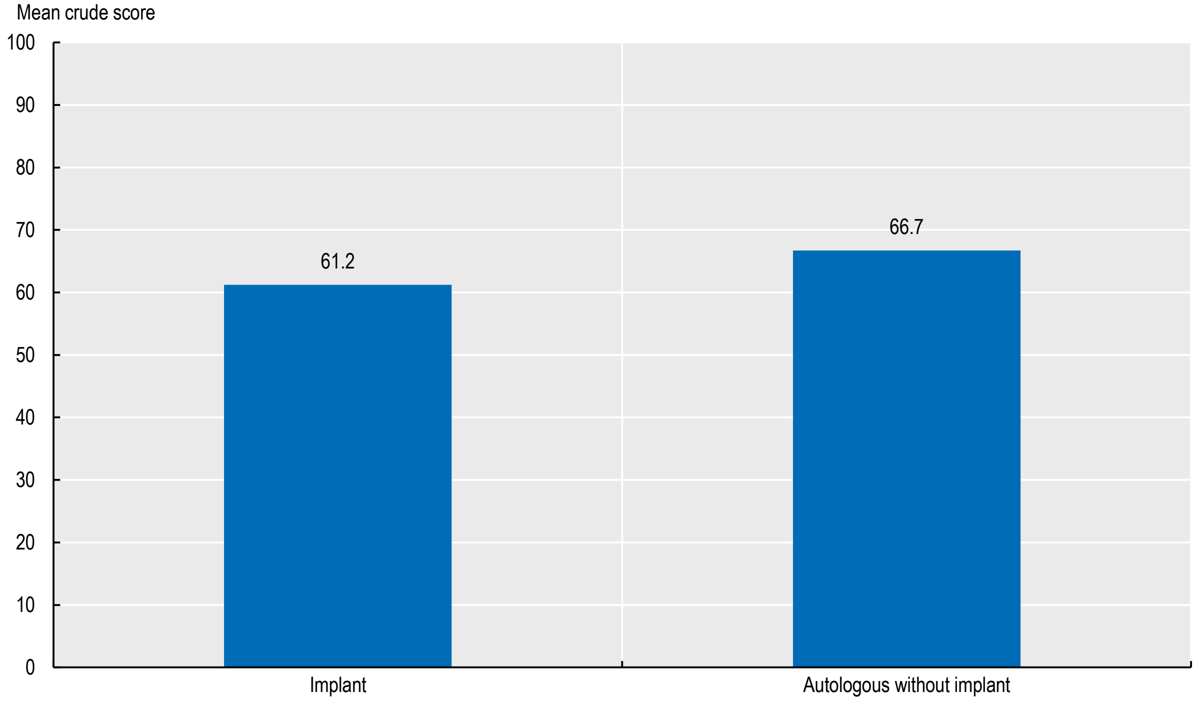
Women report slightly more satisfaction following autologous than implant breast reconstruction

Consolidated crude scores from the participating sites indicate that women are 6% more satisfied with their breasts after autologous reconstruction surgery than women after a breast implant (Figure 2.9). This result aligns with existing evidence (Matros et al., 2015[37]) and can be an important consideration where choice of surgical intervention is possible.

It follows that the variation in breast satisfaction scores presented in Figure 2.8 may be influenced, among other factors, by the proportion of women undergoing autologous reconstruction surgery. Table 2.1 presents the sample size of women and the proportion undergoing autologous reconstruction reported by each site. The proportion ranges from 100% of women receiving autologous reconstructions (Dutch and Swiss sites) to 0% in the Swedish site, where all women would have received implant reconstructions. However, it is likely some sites have not included all women undergoing reconstruction. For example, data may have been only provided by the plastics surgery unit in some sites and so not include the implant reconstructions performed by the breast surgeons and vice versa.

Figure 2.9. **Crude patient-reported outcomes for implants and autologous reconstructions**

Self-reported satisfaction with breasts by type of reconstruction surgery, 2017-18 (or nearest years)



Note: Derived from consolidated data from all 11 participating sites.
Source: PaRIS Breast Cancer PROMS Pilot Data Collection, 2019.

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While no clear relationship between the proportion of women undergoing autologous reconstruction and the overall crude outcomes scores (Figure 2.8) is apparent, further consideration of the factors contributing to the observed wide variation across sites may be warranted, particularly given the conventional wisdom regarding care outcomes. For example, the role of each site within the broader service arrangements for women with breast cancer or the representativeness of the sites' data.

Table 2.1. **Total breast reconstructions and the proportion of autologous reconstructions by site**

	Total breast reconstructions	Autologous reconstructions without implant
	No. of Women	% of total reconstructions
Australia-Flinders Medical Centre	100	57% (57)
Germany-Charité University Hospital	16	19% (3)
Netherlands-Erasmus Medical Centre	29	100% (29)
Sweden-Stockholm Breast Cancer Clinics	49	0% (0)
Switzerland-Basel University Hospital	13	100% (13)
UK-Manchester University Hospitals	48	25% (12)
US-Brigham and Women's Hospital	24	38% (9)
US-Memorial Sloan Kettering Cancer Center	641	24% (153)

Source: PaRIS Breast Cancer PROMS Pilot Data Collection, 2019.

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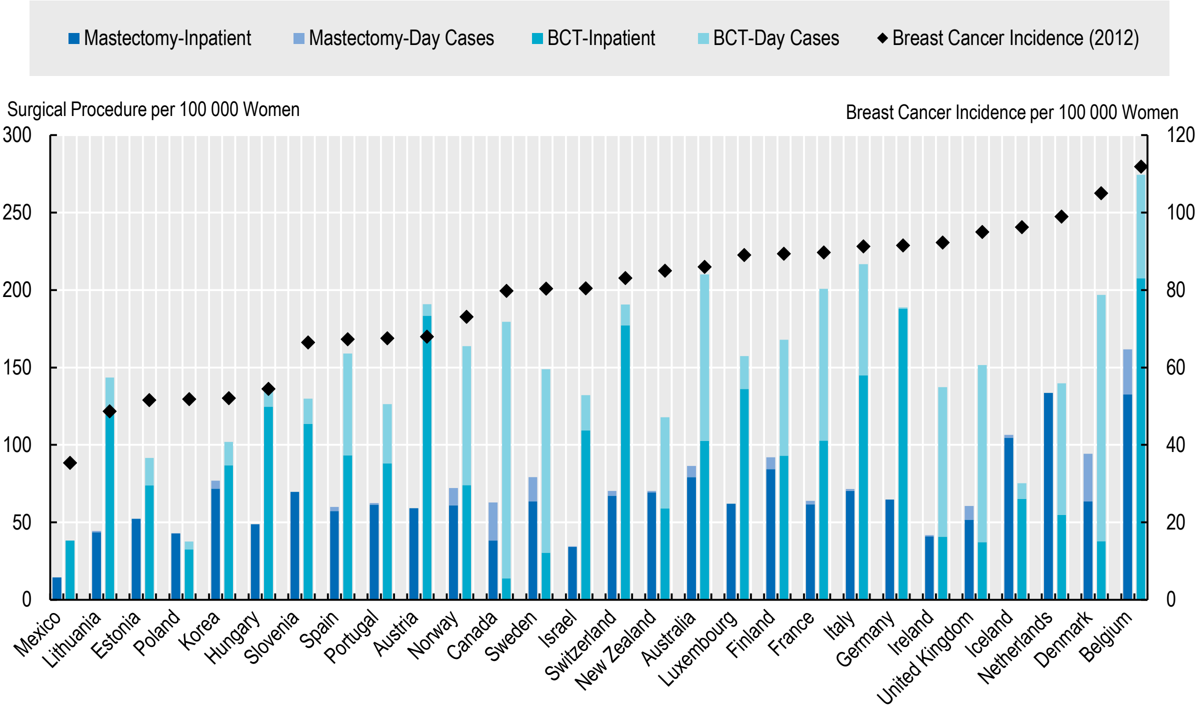
Recent use of PROMs indicates that autologous reconstruction may be cost-effective

Significant variation in treatment pathways and practices persists for women with breast cancer, including the use of different surgical approaches, even in the face of established clinical practice guidelines (Cardoso et al., 2019[31]; OECD, 2013[38]). Figure 2.10 presents the rates, setting and mix of breast conserving therapy and mastectomy surgery across OECD countries. This Figure suggests that different treatment patterns are evident, even across countries showing a very similar level of cancer incidence. Data need of course to be interpreted cautiously as patients' cancer stages, comorbidity and pre-operative patient performance status may also vary.

Figure 2.10. **Breast cancer surgery type and setting (2017) and incidence (2012) per 100 000 women**



Source: OECD Health Statistics 2019.

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Variation in the treatment patterns can also be affected by a number of other factors. For example, regional differences in breast reconstruction surgery in Sweden have recently been attributed to variation in patient information, availability of plastic surgery services and the involvement of women in decision-making (Frisell, Lagergren and de Boniface, 2016[39]).

Treatment choices made by patients in consultation with their clinical teams have not only consequences for survival and QoL, but also financial implications. For example, after a mastectomy a woman faces the choice of whether to have breast reconstruction (as an immediate or delayed procedure) or not and if she proceeds with breast reconstructive surgery, what type of reconstruction she should have. While the outcomes in terms of survival of having a breast reconstruction or not after a mastectomy are generally comparable (Platt et al., 2015[40]), the choice of reconstruction can lead to different outcomes that are important to women, such as quality of life or satisfaction with breasts as well as different costs faced by the women and the health system.

While autologous reconstructions appear to result in better patient outcomes than implant surgery, they tend to be more complex and expensive, raises questions about value for money (Scurci et al., 2017[41]). A recent study in the United States compared the Breast Q scores of patients who had implant and those who underwent autologous reconstructions and calculated the average additional cost for obtaining 1 year of perfect breast-related health for a unilateral autologous reconstruction at just under USD 12 000 in 2010, compared with implant reconstruction, with lower additional costs for younger patients and earlier stage breast cancer (Matros et al., 2015[37]).

Although society's value for a year of perfect breast-related quality of life is unknown, a threshold of USD 50 000 to USD 100 000 for a year in perfect overall health is commonly been used to classify interventions as cost-effective and considered as acceptable for adoption of new technologies or techniques in OECD countries (Cameron, Ubels and Norström, 2018[42]). On this basis, further consideration of the relative cost-effectiveness of autologous reconstructions may be warranted, along with broader economic evaluation of both BCT and breast reconstruction surgery.

Routine collection of data on outcomes that matter for breast cancer patients is useful not only for direct patient care but also for system improvement through better understanding of the impact of different care pathways. They complement traditional measures such as survival, mortality, complications and readmissions. Bringing measures of what matters to patients into the equation creates potential to evaluate alternative modes of treatment both in terms of outcome and value for patients, policy makers and third party payers (Cardoso et al., 2019[31]).

Existing mental health measures say little about experiences and outcomes of care

Mental health is a vital component of individual well-being as well as social and economic participation. However, many OECD countries consider that their mental health care is inadequate. It is estimated that about one in five people experience a mental health problem in any given year, while every second individual will experience a mental health problem in their lifetime (Institute for Health Metrics and Evaluation, 2019[43]). The most common mental health problems are anxiety disorder (5.1% of the population), followed by depressive disorders (4.5%), and drug and alcohol use disorders (2.9%) (ibid.).

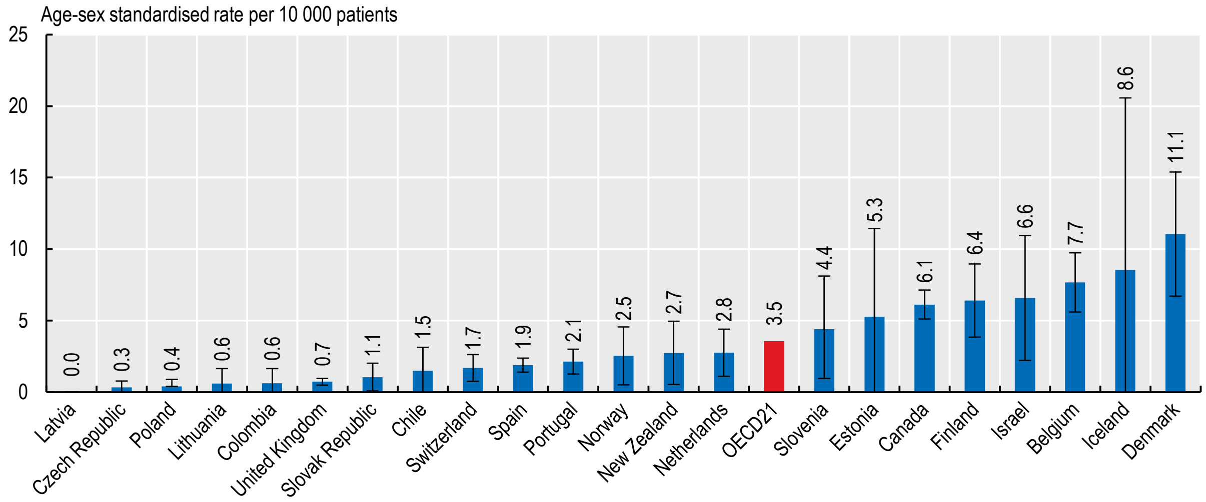
The economic and social costs of mental ill-health are significant. Direct spending on mental health services was estimated to account for around 13% of total health spending – or 1.3% of GDP – across EU countries in 2015 (OECD/EU, 2018[44]). But larger costs are also borne outside of the health system. Lower employment rates and productivity of people with mental health issues incur economic impact equivalent to 1.6% of GDP in EU countries; with greater spending on social security programmes, such as disability benefits or paid sick leave, accounting for a further 1.2% of GDP (OECD/EU, 2018[44]).

Comparable cost estimates have been established in OECD countries beyond the EU. In Australia, for example, the total costs of mental ill-health amount to 4% of GDP, 45% of which are indirect costs (Australian Government - National Mental Health Commission, 2016[45]), Similar figures are reported in Canada and Japan (Sado et al., 2013[46]; Sado et al., 2013[47]; Mental Health Commission of Canada, 2012[48]).

The impact of mental health problems on individuals' lives, and on societies and economies, can be addressed through more effective policies and interventions to prevent and manage them. However, understanding of the impact that mental health care makes on service users' lives is still weak; there is a pressing need to measure the effects and impact of prevention and treatment approaches more consistently and methodically.

Traditional measures say little about the lasting impact that mental health care has on the patient. For example, inpatient suicide is a critical safety measure which indicates when something has gone terribly wrong (Figure 2.11), and is one of the limited measures of care quality that can currently be reported internationally. Thankfully inpatient suicide is very rare, which means for the vast majority of psychiatric patients we do not have a meaningful insight into their experience or outcomes of care.

Figure 2.11. **Inpatient suicide among patients with a psychiatric disorder, 2015-2017**



Note: H line shows 95% confidence intervals. Three year average except for New Zealand.
Source: OECD Health Statistics 2019.

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Patient-reported measures are a critical tool for improving policy and practice in mental health care. An example of how patient-reported measures (in this case PREMs) can shed light on potential problems with mental health care is provided in Box 2.4, which report survey data on the care experience of people who report having been told by a doctor that they have a mental health condition, compared to those who have not.

Collaboration to enhance patient-reporting in mental health

Given the health and economic impact of mental ill-health, it is important to assess the quality and outcomes of care in this area. Existing outcome and process indicators – while very useful in some circumstances – do not provide the entire picture of quality and performance. This information gap impedes efforts to improve care, practice and policy.

However, patient-reporting in mental health is still at a relatively nascent stage. Data collection is patchy, and routine reporting and use of the information is far from the norm. As of 2018, only five of the twelve countries surveyed (Australia, Israel, Netherlands, Sweden, United Kingdom – England) reported that PROMs and PREMs were collected regularly in the mental health setting. Only Australia, the Netherlands and England

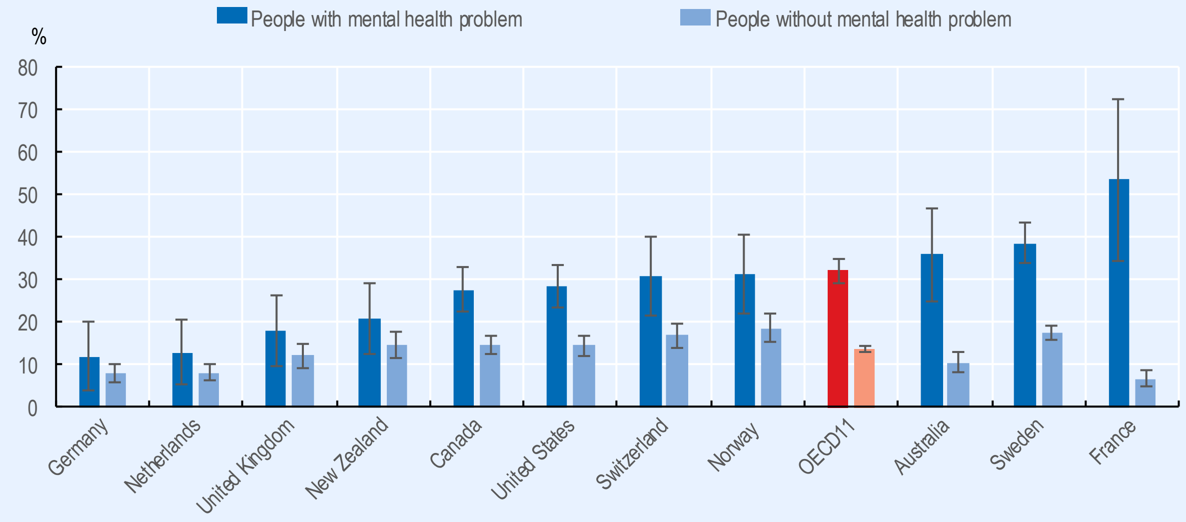
Box 2.4. **The Commonwealth Fund International Health Policy Survey of Adults**

The Commonwealth Fund 2016 International Health Policy Survey of Adults (The Commonwealth Fund, 2016[49]) was conducted in 11 countries - Australia, Canada, France, Germany, the Netherlands, New Zealand, Norway, Sweden, Switzerland, the United Kingdom, and the United States – with a total of 26 863 adults interviewed by phone about their experiences with their country's health care system, their health and well-being.

The survey included the question ***"Have you ever been told by a doctor that you have depression, anxiety or other mental health problems".*** While there are some methodological challenges in using the survey in this way, including around comparability of response groups and sample sizes, comparing responses across all the survey questions for respondents who answered 'yes' with those who responded 'no' to the mental health question can shed light on how people who manage a mental health condition in the participating countries experience their health care journey.

Respondents who answered 'yes' reported similar experiences to the remaining respondents in some areas of care. In others, their reported care experience appears to be inferior. In several countries, for example, people with a mental health problem were significantly more likely to report having received conflicting information from different health care professionals (Figure 2.12). The differences were most pronounced in Australia, Sweden and France.

Figure 2.12. **People who have been told by a doctor that they have depression, anxiety or other mental health problems are more likely to report receipt of conflicting information from health care professionals**



Note: 'People with a mental health problem' are the respondents who answered "yes" to the question "thinking about the past 2 years, when receiving care for a medical problem, was there EVER a time when you received conflicting information from different doctors or health care professionals?" Data limitations. The number of respondents in the 11 countries ranged from 1 000 (Germany) to 7 124 (Sweden). Lowest response rates were observed in Norway (10.9%), Sweden (16.9%), and the United States (18.1%) and the highest were in the New Zealand (31.1%), the Netherlands (32.4%) and Switzerland (46.9%). The sample sizes of respondents who answered 'yes' to the mental health question were therefore small, which is reflected in the large confidence intervals (H refers to 95% confidence intervals). In addition, the mental health survey question does not permit distinguishing between individuals who were suffering from a mental health problem at the time of the survey, and those who had experienced mental ill-health in the past but have since recovered. Cultural and linguistic differences in how the question was interpreted could also influence responses. Results have not been risk-adjusted for co-morbidities and socio-economic status.

Source: OECD analysis based on Commonwealth Fund 2016 International Health Policy Survey (The Commonwealth Fund, 2016[49]).

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reported collecting *and* routinely reporting both. As such, a limited pool of national data exists that are not readily comparable at an international level.

This needs to change, and the OECD has been working with patients, clinicians and policymakers and other experts from 13 countries to develop PREM and PROM data collection standards in mental health to enable international reporting, and foster the capacity to collect and use this important information in OECD countries.

Conclusion

A fundamental objective of health care is to improve the health and wellbeing of patients and populations. Yet, collecting information from patients on how successful health systems are in this endeavour is not the norm. In addition, emerging demographic, epidemiological and financial challenges are increasing the need to orient health systems around the needs of people and communities. This will not be possible without knowledge sourced directly from patients themselves to complement existing information on health system performance.

Results from preliminary data on patient-reported outcomes were presented in the areas of hip/knee replacement and breast cancer care, while work is underway in the area of mental health.

Over 2.2 million patients undergo a hip or a knee replacement each year in OECD countries. Since 2000, age-adjusted knee replacement rates have doubled in OECD countries, while hip replacement rates have grown by a third. The international landscape for collecting outcomes data from people undergoing hip or knee replacement is varied. Nevertheless, ten programmes from eight OECD countries contributed data reported by adult patients following an elective hip or knee replacement procedure. Results suggest that:

- In each country, both hip and knee replacement surgery improved the pain, function and health-related QoL as reported by patients, with results adjusted for age, sex and pre-operative score.
- Greater gains were reported by patients who underwent a hip replacement. If performed at age 65, hip replacement would, on average, generate an additional 4.3 QALYs compared to of 3.3 QALYs for the average knee replacement (although the longer recovery period following knee replacement surgery must be noted).
- Inter-country variation was modest, suggesting that methods to collect and analyse the pilot data were sound.

Public knowledge of these types of results are very important as a way to improve informed decision-making by patients, and to calibrate patients' goals and expectations when deciding to undergo elective procedures. Results also enable policy decisions and assessing the cost-effectiveness, cost-utility and value from the patient perspective. More patient-reported data will enable solid, temporal analysis and inter-country comparisons in the future. It is important that countries harmonise their data collection at national level.

Breast cancer is the most prevalent form of cancer in women worldwide. While an increase in the incidence has been observed over the past decade, most OECD countries display 5-year net survival rates of 80% or higher. A range of surgical interventions can be deployed to treat breast cancer but relatively little is known about their outcomes valued by women such as pain, breast satisfaction and QoL. Ten sites spanning 7 countries participated in a pilot collection of patient-reported outcomes data for women undergoing surgical breast cancer treatment. The preliminary results from this data collection - which have not been risk-adjusted - generate the following tentative observations:

- Postoperative breast satisfaction of women may vary by type of surgery (whether this be a mastectomy or breast conserving therapy) and by the site of surgery, with some sites reporting higher scores for lumpectomies and others higher scores for reconstructions. This may offer additional opportunities for sharing and learning across sites and countries.
- Of the women who had a breast reconstruction after a mastectomy, the women who underwent *autologous* breast reconstruction surgery reported, on average, slightly better outcomes to women who underwent *implant* reconstruction. This aligns with conventional wisdom, providing women with potentially greater assurance in the use of such information to help assess treatment options.
- Autologous reconstruction may be a cost-effective alternative to implant surgery, when the additional costs for an additional year of perfect breast-related health is compared with broadly accepted cost-effectiveness thresholds.

  A number of clinical factors need to be taken into account when considering these observations and ongoing data collection and analytical refinement is required explore their veracity. However, these results illustrate how this type of information derived directly from patients can potentially be very useful for other women when making difficult decisions and trade-offs on the optimal treatment pathway for their individual needs and preferences, providers when assessing the 'success' of various interventions, and payers and policymakers when considering the comparative cost-effectiveness and cost-utility of various treatments.

Mental ill-health exerts a considerable health and economic burden across the world, but systematic collection of patient-reported outcomes and experiences in mental health is at a nascent stage. Despite limitations in the data, the 2016 Commonwealth Fund survey of 11 countries suggests that people with a mental health problem report a worse care experience than those without mental health problems in some aspects of health care, such as receiving consistent information from providers. The OECD is working with international stakeholders including patients, clinicians and policymaker to advance measurement of mental health outcomes and experiences.

Overall, these results demonstrate that presenting valid and comparable results from patient-reported data at international level is eminently possible. However, capacity within and among countries must be increased to collect and report these data in a consistent and harmonised way. OECD will continue to work with countries to promote consistent collection and reporting of these data, in partnership with national and international stakeholders including patients and health care professionals.

Notes

1. Based on 45 600 hip replacements and 49 500 knee replacements reported in 2016 and 2017 respectively, at a 'national efficient price' (NEP) -- the official price paid by the national payer for conducting these procedures in the public sector. The 2019-20 NEP is just under AUD 20 000 for each procedure (*https://www.ihpa.gov.au/publications/national-efficient-price-determination-2019-20*). The overall national figure is likely to be higher because approximately half of procedures are carried out in the private sector where higher prices are typically paid.
2. Coxa hospital has a patient catchment covering an entire region of Finland.
3. With the exception of Galeazzi, which included all principal diagnoses.
4. The value is derived by subtracting the pre-operative score from the post-operative score. A positive value therefore represents an improvement in QoL.

5. Charts showing the average pre- and post-operative results for each participating programme are presented in Chapter 6 (Section: Hip and knee surgery).
6. The degree of improvement was statistically significant at the 95% confidence level in all programmes and in aggregate.
7. The generic and condition-specific scales are not linear – i.e. a change from 0.2 to 0.3 is not necessarily the same magnitude in terms of health-related QoL than 0.7 to 0.8. The percentage improvements are provided for illustrative purposes and should be interpreted cautiously.
8. This does not mean that a joint replacement results in greater health gain than other, more conservative interventions for joint pain, which may be equivalent or even superior in this regard for some patients and on average. This comparison is beyond the scope of this chapter (Section: A good care experience contributes to better outcomes and is also an end in itself).
9. HOOS-PS: Hip disability and Osteoarthritis Outcome Score–Physical Function Shortform.
10. An alternative scoring system exists for both instruments where a *lower* value represents a *better* result.
11. See 6 and 7.
12. KOOS-PS: Knee injury and Osteoarthritis Outcome Score-Physical Function Shortform.
13. See 6 and 7.
14. See 6 and 7.
15. As valued by a US population sample (Shaw JW, 2005).
16. The incremental QALYs are derived by multiplying the adjusted mean change by 20.5 years -- the average life expectancy at age 65 in the countries of the contributing programs , minus one year to account for recovery and rehabilitation (OECD, 2019[50]).

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RESTING ECG
****** BORDERLINE ABNORMAL ******
702:Abnormal Q ?
210:Mild left axis deviation
Check abnormal Q-wave.
P-wave is unclear. Check P-wave.
bserve progress if there is no symptom
ease.
Unconfirmed. MD must review. ****
WED BY
2-1-3 4-2
V1
aVL
V2
aVF
V3

3. HEALTH STATUS

Trends in life expectancy

Life expectancy by sex and education level

Main causes of mortality

Avoidable mortality (preventable and treatable)

Mortality from circulatory diseases

Cancer incidence and mortality

Chronic disease morbidity

Infant health

Mental health

Self-rated health

Trends in life expectancy

Life expectancy has increased in all OECD countries over the last few decades, although gains have slowed in recent years. In 2017, life expectancy at birth was 80.7 years on average across OECD countries, over 10 years higher than it was in 1970 (Figure 3.1).

Japan, Switzerland and Spain lead a large group of 26 OECD countries in which life expectancy at birth exceeds 80 years. A second group, including the United States and a number of central and eastern European countries, has a life expectancy between 77 and 80 years. Latvia, Mexico, Lithuania and Hungary have the lowest life expectancy, at less than 76 years in 2017.

Among OECD countries, Turkey, Korea and Chile have experienced the largest gains since 1970, with increases of 24, 20 and 18 years respectively. Stronger health systems have contributed to these gains, by offering more accessible and higher quality care. Wider determinants of health matter too – notably rising incomes, better education and improved living environments. Healthier lifestyles, influenced by policies within and beyond the health system, have also had a major impact (James, Devaux and Sassi, 2018[1]).

In partner countries, life expectancy remains well below the OECD average except in Costa Rica. Still, levels are converging rapidly towards the OECD average, with considerable gains in longevity since 1970 in India, China, Brazil, Indonesia, Colombia and Costa Rica. There has been less progress in the Russian Federation, due mainly to the impact of the economic transition in the 1990s and a rise in risky health behaviours among men. South Africa has also experienced slow progress, due mainly to the HIV/AIDS epidemic, although longevity gains over the last decade have been more rapid.

A closer look at trends in life expectancy at birth shows a considerable slowdown in gains in recent years. Comparing the last five years (2012-17) with a decade earlier (2002-07), 27 OECD countries experienced slower gains in life expectancy (Figure 3.2). This slowdown was most marked in the United States, France, the Netherlands, Germany and the United Kingdom. Longevity gains were slower for women than men in almost all OECD countries.

Indeed, life expectancy fell on average across OECD countries in 2015 – the first time this has happened since 1970. Nineteen countries recorded a reduction, widely attributed to a particularly severe influenza outbreak that killed many frail elderly people and other vulnerable groups (Figure 3.3). Most of these were European countries, with the exception of the United States and Israel. The largest reductions were in Italy (7.2 months) and Germany (6 months).

The causes of this slowdown in life expectancy gains are multifaceted (Raleigh, 2019[2]). Principal among them is slowing improvements in heart disease and stroke. Rising levels of obesity and diabetes, as well as population ageing, have made it difficult for countries to maintain previous progress in cutting deaths from such circulatory diseases. Respiratory diseases such as influenza and pneumonia have claimed more lives in recent years – most notably in 2015, but also in the winters of 2012-13 and 2016-17. In some countries, particularly the United States and Canada, the opioid crisis has caused more working-age adults to die from drug-related accidental poisoning.

More broadly, economic recessions and related austerity measures, as in the 2008 global economic crisis, have been linked to deteriorating mental health and increased suicide rates, but with a less clear-cut impact on overall mortality (Parmar, Stavropoulou and Ioannidis, 2016[3]). What is clear is that continued gains in longevity should not be taken for granted, with better protection of older people and other at-risk populations paramount to extending life expectancy.

Higher national income is generally associated with greater longevity, particularly at lower income levels. Life expectancy is also, on average, longer in countries that invest more in health systems – although this relationship tends to be less pronounced in countries with the highest health spending per capita (see Chapter 1 for further analysis).

Definition and comparability

Life expectancy at birth measures how long, on average, people would live based on a given set of 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 few decades), actual life spans will be higher than life expectancy calculated with current death rates.

Data for life expectancy at birth comes from Eurostat for EU countries, and from national sources elsewhere. Life expectancy at birth for the total population is calculated by the OECD Secretariat for all OECD countries, using the unweighted average of life expectancy of men and women.

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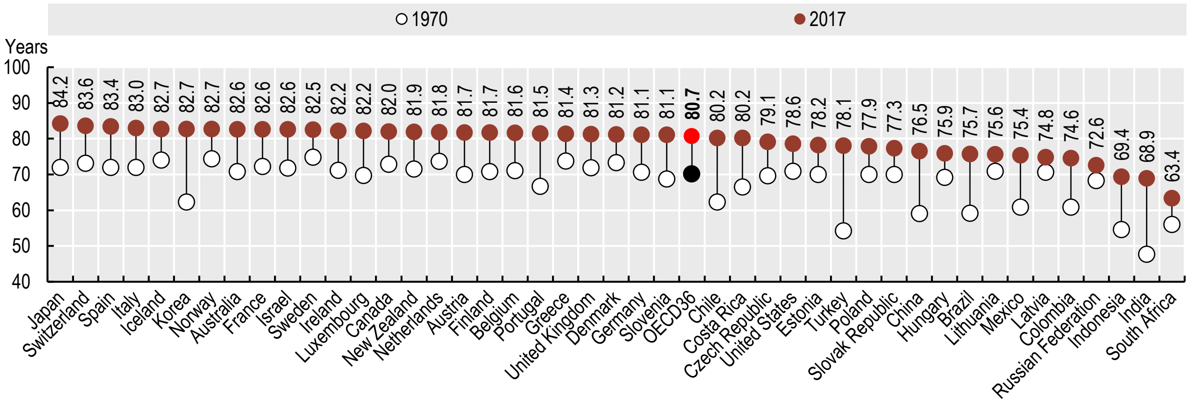
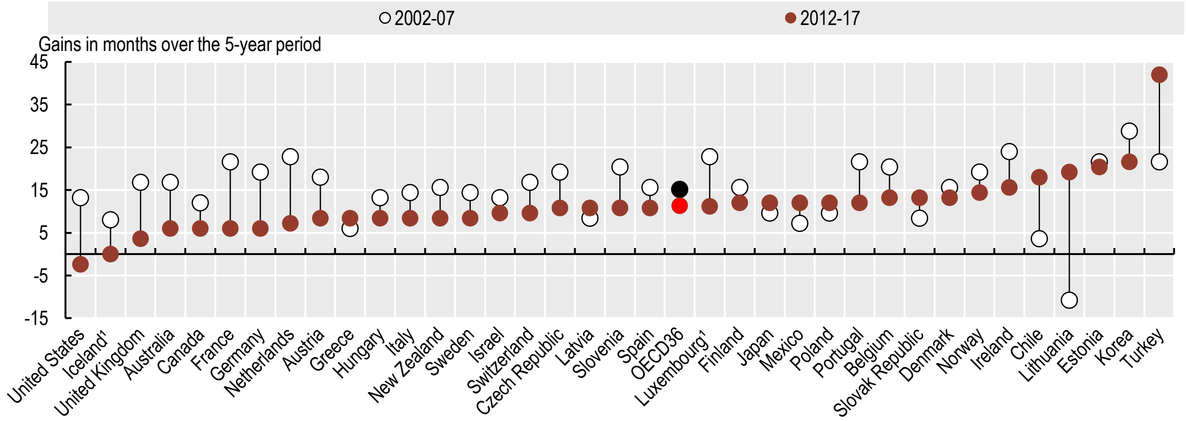
Figure 3.1. **Life expectancy at birth, 1970 and 2017 (or nearest year)**



Source: OECD Health Statistics 2019.

StatLink https://doi.org/10.1787/888934014821

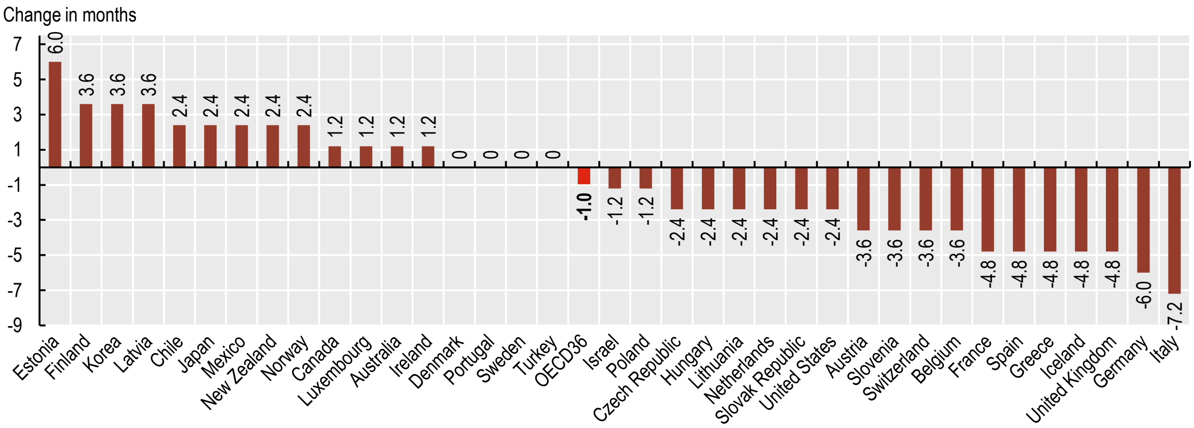
Figure 3.2. **Slowdown in life expectancy gains, 2012-17 and 2002-07**



1. Three-year average.
Source: OECD Health Statistics 2019.

StatLink https://doi.org/10.1787/888934014840

Figure 3.3. **Change in life expectancy at birth, 2014 to 2015**



Source: OECD Health Statistics 2019.

StatLink https://doi.org/10.1787/888934014859

Life expectancy by sex and education level

Women live longer than men do in all OECD and partner countries. This gender gap averaged 5.3 years across OECD countries in 2017 – life expectancy at birth for women was 83.4 years, compared with 78.1 years for men (Figure 3.4). The gender gap in life expectancy, though, has narrowed by one year since 2000, reflecting more rapid gains in life expectancy among men in most countries.

In 2017, life expectancy at birth for men in OECD countries ranged from around 70 years in Latvia and Lithuania to 81 years or higher in Switzerland, Japan, Iceland and Norway. For women, life expectancy reached 87.3 years in Japan, but was less than 80 years in Mexico, Hungary and Latvia.

Gender gaps are relatively narrow in Iceland, the Netherlands, Norway, Sweden, New Zealand, Ireland, the United Kingdom and Denmark – at less than four years. However, there are large gender differences in many central and eastern European countries, most notably in Latvia and Lithuania (around ten years), Estonia (around nine years) and Poland (around eight years). In these countries, gains in longevity for men over the past few decades have been much more modest. This is partly due to greater exposure to risk factors among men – particularly greater tobacco use, excessive alcohol consumption and less healthy diets – resulting in more deaths from heart diseases, cancer and other diseases. For partner countries, the gender gap is around ten years in the Russian Federation, and just over seven years in Colombia, Brazil and South Africa. China and India have small gender gaps, of about three years.

Socioeconomic inequalities in life expectancy are also evident in all OECD countries with available data (Figure 3.5). On average among 26 OECD countries, a 30-year-old with less than an upper secondary education level can expect to live for 5.5 fewer years than a 30-year-old with tertiary education (a university degree or equivalent). These differences are higher among men, with an average gap of 6.9 years, compared with an average gap of 4.0 years among women.

Socioeconomic inequalities are particularly striking among men in many central and eastern European countries (Slovak Republic, Hungary, Poland, Czech Republic, Latvia), where the life expectancy gap between men with lower and higher education levels is over ten years. Gaps in life expectancy by education are relatively small in Turkey, Canada and Sweden.

More deaths amongst prime-age adults (25-64 years) with lower education levels drive much of this education gap in life expectancy. Mortality rates are almost four times higher for less educated prime-age men, and about twice as high for less educated prime-age women, compared to those with tertiary education (analysis based on data from 23 OECD countries). Differences in mortality rates among older men and women, while less marked, remain higher among the less educated, driven mainly by more deaths from circulatory diseases and cancer (Murtin et al, 2017[1]).

Higher smoking rates amongst disadvantaged socioeconomic groups is an important contributor to gaps in life expectancy by education or other measures of socioeconomic status. Other risk factors are also more prevalent among disadvantaged groups, notably excessive alcohol consumption among men, and higher obesity rates for men and women (see indicators in Chapter 4 on “Risk factors for health”).

Definition and comparability

Life expectancy at birth measures how long, on average, people would live based on a given set of age-specific death rates. Data on life expectancy by sex comes from Eurostat for EU countries, and from national sources elsewhere.

For life expectancy by education level, data were provided directly to the OECD for Australia, Austria, Belgium, Canada, Chile, France, Iceland, Israel, Latvia, Mexico, Netherlands, New Zealand, Switzerland, Turkey and the United Kingdom. Data for the remaining European countries were extracted from the Eurostat database. The International Standard Classification of Education (ISCED) 2011 is the basis for defining education levels. The lowest education level – ISCED 0-2 – refers to people who have not completed their secondary education. The highest education level – ISCED 6-8 – refers to people who have completed a tertiary education (a university degree or equivalent).

Not all countries have information on education as part of their deaths statistics. In such cases, data linkage to another source (e.g. a census) containing information on education is required. Data disaggregated by education are only available for a subset of the population for Belgium, the Czech Republic and Norway. In these countries, the large share of the deceased population with missing information about their education level can affect the accuracy of the data.

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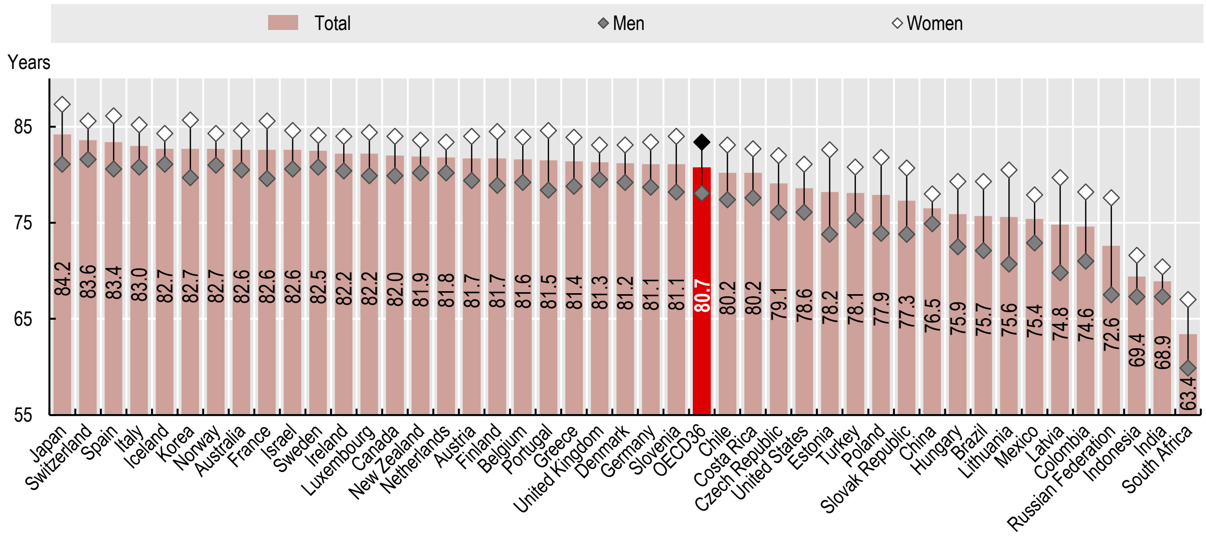
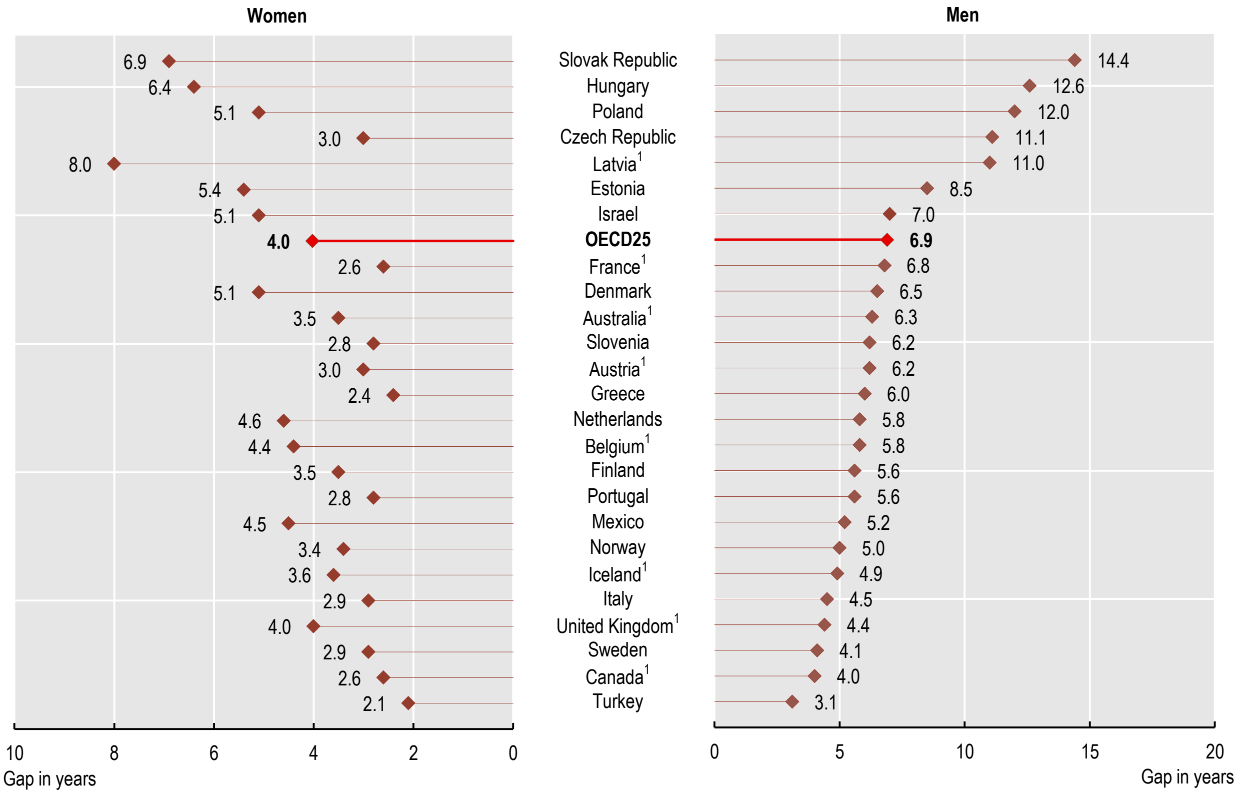
Figure 3.4. **Life expectancy at birth by sex, 2017 (or nearest year)**



Source: OECD Health Statistics 2019.

StatLink https://doi.org/10.1787/888934014878

Figure 3.5. **Gap in life expectancy at age 30 between highest and lowest education level, by sex, latest available year**



1. 2010-12 data. All other data are from 2015-17.
Source: OECD Health Statistics 2019.

StatLink https://doi.org/10.1787/888934014897

Main causes of mortality

Over 10 million people died in 2017 across OECD countries, equivalent to about 800 deaths per 100 000 population (Figure 3.6). All-cause mortality rates ranged from under 600 deaths per 100 000 in Japan to over 1 100 deaths per 100 000 in Latvia, Hungary and Lithuania (age-standardised rates). Among partner countries, mortality rates were highest in South Africa and the Russian Federation (1 940 and 1 417 per 100 000 deaths respectively).

Age-standardised mortality rates were 50% higher for men than women across OECD countries (997 per 100 000 population for men, compared with 655 for women). In Lithuania, Latvia and Hungary there were about 1 500 deaths per 100 000 men. For women, mortality rates were highest in Hungary, Chile and Latvia. Among partner countries, male mortality rates were around 2 400 deaths per 100 000 in South Africa and almost 2 000 in the Russian Federation. These countries also had the highest female mortality rates. Gender gaps are partly due to greater exposure to risk factors – particularly smoking, alcohol consumption and less healthy diets – alongside intrinsic gender differences. Accordingly, men had higher death rates from heart diseases, lung cancers and injuries, among other diseases.

Diseases of the circulatory system and cancer are the two leading causes of death in most countries. This reflects the epidemiological transition from communicable to non-communicable diseases, which has already taken place in high-income countries and is rapidly occurring in many middle-income countries (GBD 2017 Causes of Death Collaborators, 2018[1]). Across OECD countries, heart attacks, strokes and other circulatory diseases caused about one in three deaths; and one in four deaths were related to cancer in 2017 (Figure 3.7). Population ageing largely explains the predominance of deaths from circulatory diseases – with deaths rising steadily from age 50 and above.

Respiratory diseases were also a major cause of death, accounting for 10% of deaths across OECD countries. Chronic obstructive respiratory disease (COPD) alone accounted for 4% of all deaths. Smoking is the main risk factor for COPD, but occupational exposure to dusts, fumes and chemicals, and air pollution in general are also important risk factors.

External causes of death were responsible for 6% of deaths across OECD countries, particularly road traffic accidents and suicides. Road traffic accidents are a particularly important cause of death among young adults, whereas suicide rates are generally higher among middle-aged and older people.

Looking at other specific causes, Alzheimer's and other dementias accounted for 9% of all deaths, and were a more important cause of death among women. Diabetes represented 3% of all deaths across OECD countries. The main causes of death differ between socio-economic groups, with social disparities generally larger for the most avoidable diseases (Mackenbach et al., 2015[2]).

Definition and comparability

Mortality rates are based on the number of deaths registered in a country in a year divided by the population. Rates have been directly age-standardised to the 2010 OECD population (available at *http://oe.cd/mortality*) to remove variations arising from differences in age structures across countries and over time. The source is the World Health Organization (WHO) Mortality Database.

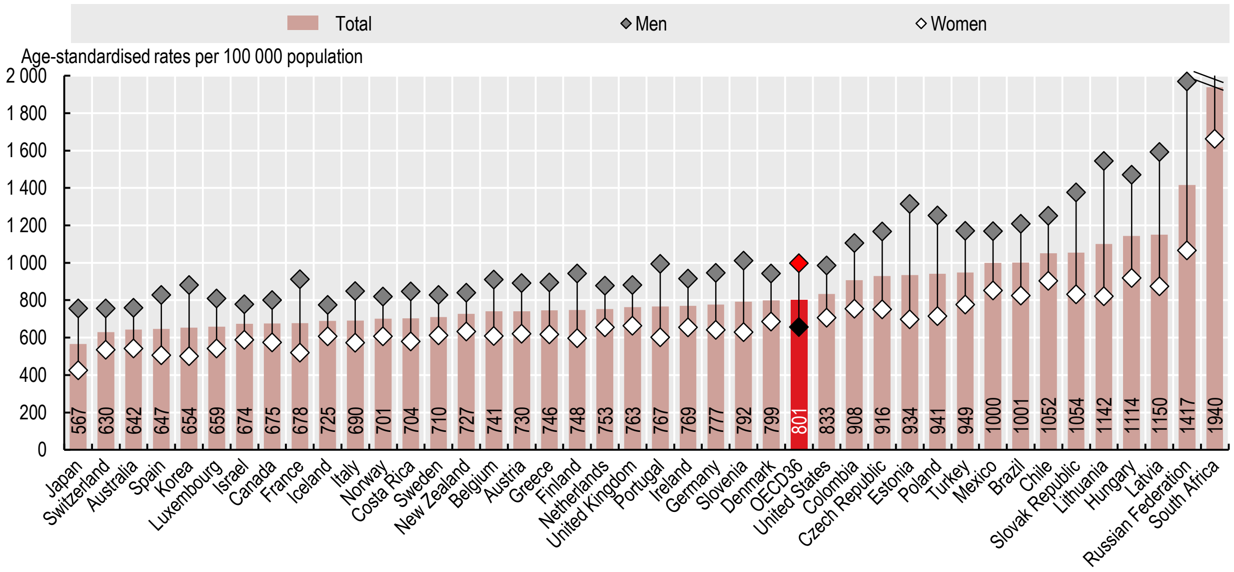
Deaths from all causes are classified to ICD-10 codes A00-Y89, excluding S00-T98. The classification of causes of death defines groups and subgroups. Groups are umbrella terms covering diseases that are related to each other; subgroups refer to specific diseases. For example, the group diseases of the respiratory system comprises four subgroups: influenza, pneumonia, chronic obstructive pulmonary diseases and asthma. Charts are based on this grouping, except for Alzheimer's and other dementias. These were grouped together (Alzheimer's is classified in Chapter G and other dementias in Chapter F).

References

[1] GBD 2017 Causes of Death Collaborators (2018), "Global, regional, and national age-sex-specific mortality for 282 causes of death in 195 countries and territories, 1980–2017: a systematic analysis for the Global Burden of Disease Study 2017", *The Lancet*, Vol. 392/10159, pp. 1736-1788.

[2] Mackenbach, J. et al. (2015), "Variations in the relation between education and cause-specific mortality in 19 European populations: A test of the 'fundamental causes' theory of social inequalities in health", *Social Science and Medicine*, Vol. 127, pp. 51-62.

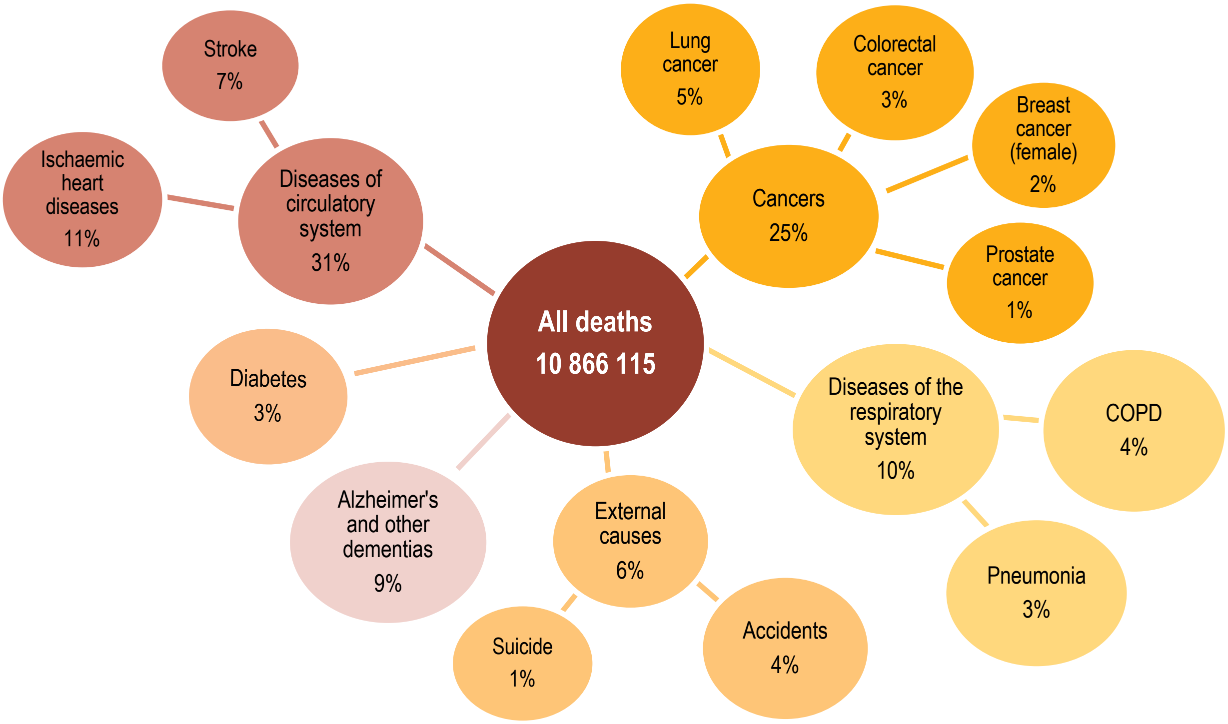
Figure 3.6. **All-cause mortality rates, by gender, 2017 (or nearest year)**



Source: OECD Health Statistics 2019.

StatLink https://doi.org/10.1787/888934014916

Figure 3.7. **Main causes of mortality across OECD countries, 2017 (or nearest year)**



Note: Other causes of death not shown in the figure represent 15% of all deaths.
Source: OECD Health Statistics 2019.

StatLink https://doi.org/10.1787/888934014935

Avoidable mortality (preventable and treatable)

Indicators of avoidable mortality can provide a general "starting point" to assess the effectiveness of public health and health care systems in reducing premature deaths from various diseases and injuries. However, further analysis is required to assess more precisely different causes of potentially avoidable deaths and interventions to reduce them.

In 2017, almost 3 million premature deaths across OECD countries could have been avoided through better prevention and health care interventions. This amounts to over one quarter of all deaths. Of these deaths, about 1.85 million were considered preventable through effective primary prevention and other public health measures, and over 1 million were considered treatable through more effective and timely health care interventions.

Some cancers that are preventable through public health measures were the main causes of preventable mortality (32% of all preventable deaths), particularly lung cancer (Figure 3.8). Other major causes were external causes of death, such as road accidents and suicide (25%); heart attack, stroke and other circulatory diseases (19%); alcohol and drug-related deaths (9%); and some respiratory diseases such as influenza and chronic obstructive pulmonary disease (8%).

The main treatable cause of mortality is circulatory diseases (mainly heart attack and stroke), which accounted for 36% of premature deaths amenable to treatment. Effective, timely treatment for cancer, such as colorectal and breast cancers, could have averted a further 26% of all deaths from treatable causes. Diabetes and other diseases of the endocrine system (9%) and respiratory diseases such as pneumonia and asthma (9%) are other major causes of premature deaths that are amenable to treatment.

The average aged-standardised mortality rate from preventable causes was 133 deaths per 100 000 people across OECD countries. Premature deaths ranged from under 96 per 100 000 in Israel, Switzerland, Japan, Italy, Spain and Sweden to over 200 in Latvia, Hungary, Lithuania and Mexico (Figure 3.9). Higher rates of premature death in these countries were mainly due to much higher mortality from ischaemic heart disease, accidents and alcohol-related deaths, as well as lung cancer in Hungary.

The mortality rates from treatable causes across OECD countries was much lower, at 75 per 100 000 population. It ranged from less than 50 in Switzerland, Iceland, Norway, Korea, France and Australia, to over 130 deaths per 100 000 people in Latvia, Mexico, Lithuania and Hungary. Ischaemic heart diseases, strokes and some types of treatable cancers (e.g. colorectal and breast cancers) were the main drivers in Latvia, Lithuania and Hungary, countries with some of the highest treatable mortality rates.

Preventable mortality rates were 2.6 times higher among men than among women across OECD countries (197 per 100 000 population for men, compared with 75 for women). Similarly, mortality rates from treatable causes were about 40% higher among men than women, with a rate of 87 per 100 000 population for men compared with 62 for women. These gender gaps are explained by higher mortality rates among men, which are in part linked to different exposure to risk factors such as tobacco smoking (see indicator Main causes of mortality).

Definition and comparability

Based on the 2019 OECD/Eurostat definitions, preventable mortality is defined as causes of death that can be mainly avoided through effective public health and primary prevention interventions (i.e. before the onset of diseases/injuries, to reduce incidence). Treatable (or amenable) mortality is defined as causes of death that can be mainly avoided through timely and effective health care interventions, including secondary prevention and treatment (i.e. after the onset of diseases, to reduce case-fatality).

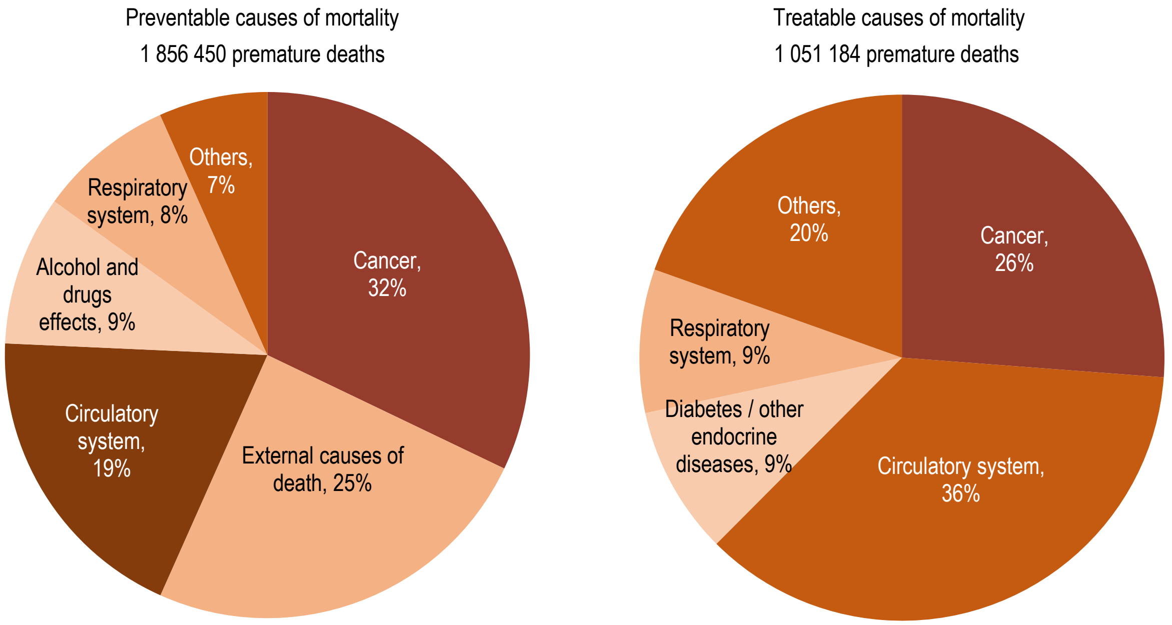
The two current lists of preventable and treatable mortality were adopted by the OECD and Eurostat in 2019. The attribution of each cause of death to the preventable or treatable mortality category was based on the criterion of whether it is predominantly prevention or health care interventions that can reduce it. Causes of death that can be both largely prevented and also treated once they have occurred were attributed to the preventable category on the rationale that if these diseases are prevented, there would be no need for treatment. In cases when there was no strong evidence of predominance of preventability or treatability (e.g. ischaemic heart disease, stroke, diabetes), the causes were allocated on a 50%-50% basis to the two categories to avoid double-counting the same cause of death in both lists. The age threshold of premature mortality is set at 74 years for all causes (OECD/Eurostat, 2019[1]).

Data come from the WHO Mortality Database and the mortality rates are age-standardised to the OECD 2010 Standard Population (available at *http://oe.cd/mortality*).

References

[1] OECD/Eurostat (2019), "Avoidable mortality: OECD/Eurostat lists of preventable and treatable causes of death", *http://www.oecd.org/health/health-systems/Avoidable-mortality-2019-Joint-OECD-Eurostat-List-preventable-treatable-causes-of-death.pdf*.

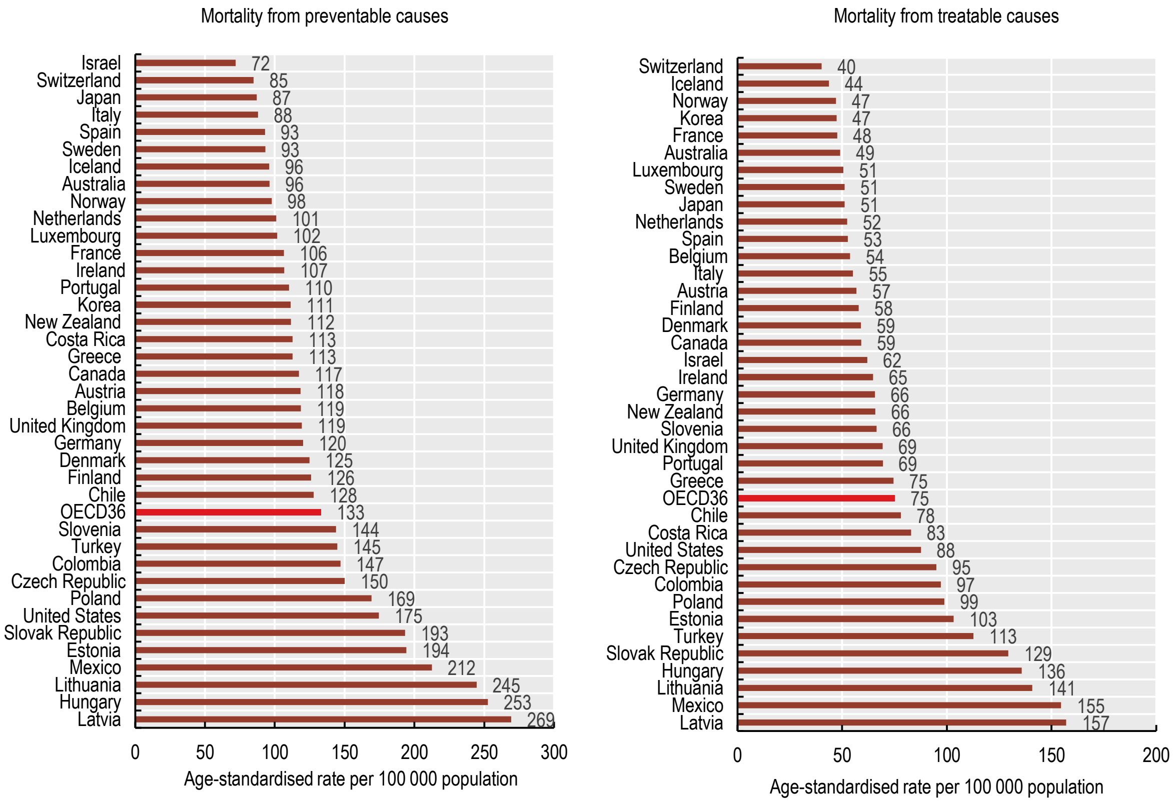
Figure 3.8. **Main causes of avoidable mortality, OECD countries, 2017 (or nearest year)**



Note: The 2019 OECD/Eurostat list of preventable and treatable causes of death classifies specific diseases and injuries as preventable and/or treatable. For example, lung cancer is classified as preventable; whereas breast and colorectal cancers are classified as treatable.
Source: OECD calculations, based on WHO Mortality Database.

StatLink https://doi.org/10.1787/888934014954

Figure 3.9. **Mortality rates from avoidable causes, 2017 (or nearest year)**



Source: OECD calculations, based on WHO Mortality Database.

StatLink https://doi.org/10.1787/888934014973

Mortality from circulatory diseases

Circulatory diseases – notably heart attack and stroke – remain the main cause of mortality in most OECD countries, accounting for almost one in three deaths across the OECD. While mortality rates have declined in most OECD countries over time, population ageing, rising obesity and diabetes rates may hamper further reductions (OECD, 2015[1]). Indeed, slowing improvements in heart disease and stroke are one of the principal causes of a slowdown in life expectancy gains in many countries (Raleigh, 2019[2]).

Heart attacks and other ischaemic heart diseases (IHDs) accounted for 11% of all deaths in OECD countries in 2017. IHDs are caused by the accumulation of fatty deposits lining the inner wall of a coronary artery, restricting blood flow to the heart. Mortality rates are 80% higher for men than women across OECD countries, primarily because of a greater prevalence of risk factors among men, such as smoking, hypertension and high cholesterol.

Among OECD countries, central and eastern European countries have the highest IHD mortality rates, particularly in Lithuania where there are 383 deaths per 100 000 people (age-standardised). Rates are also very high in the Russian Federation. Japan, Korea and France have the lowest rates among OECD countries, at about one quarter of the OECD average and less than a tenth of rates in Lithuania and the Russian Federation (Figure 3.10).

Since 2000, IHD mortality rates have declined in nearly all OECD countries, with an average reduction of 42%. Declines have been most marked in France, Denmark, the Netherlands, Estonia and Norway, where rates fell by over 60%. Mexico is the one country where IHD mortality rates have increased; this is closely linked to increasing obesity rates and diabetes prevalence. Survival rates following a heart attack are also much lower in Mexico than in all other OECD countries (see indicator on “Mortality following acute myocardial infarction” in Chapter 6).

Stroke (or cerebrovascular disease) was the underlying cause of 7% deaths across the OECD in 2017. Disruption of the blood supply to the brain causes a stroke. As well as causing many deaths, strokes have a significant disability burden. Mortality rates are particularly high in Latvia and Lithuania, at over double the OECD average. Rates are also high in the partner countries such as South Africa and the Russian Federation (Figure 3.11).

Mortality rates from stroke have fallen in all OECD and partner countries since 2000, with an average reduction of 47%. Declines have been slower in the Slovak Republic and Chile, however, at less than 15%. For strokes, as for IHD, a reduction in certain risk factors – notably smoking – has contributed to fewer deaths, alongside improved survival rates following an acute episode, reflecting better quality of care (see indicators on “Mortality following ischaemic stroke” and “Mortality following acute myocardial infarction (AMI)” in Chapter 6).

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 directly age-standardised to the 2010 OECD population (available at *http://oe.cd/mortality*) to remove variations arising from differences in age structures across countries and over time. The source is the WHO Mortality Database.

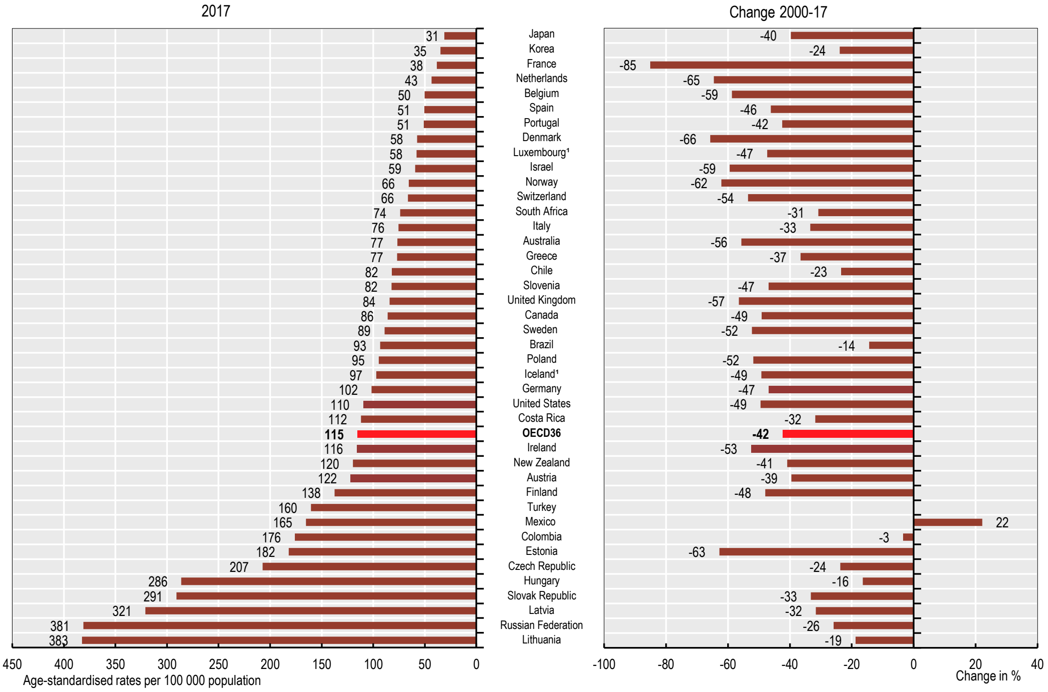
Deaths from ischaemic heart disease are classified to ICD-10 codes I20-I25, and cerebrovascular disease to I60-I69.

References

[1] 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*.

[2] Raleigh, V. (2019), “Trends in life expectancy in EU and other OECD countries: Why are improvements slowing?”, *OECD Health Working Papers*, No. 108, OECD Publishing, Paris, *https://doi.org/10.1787/223159ab-en*.

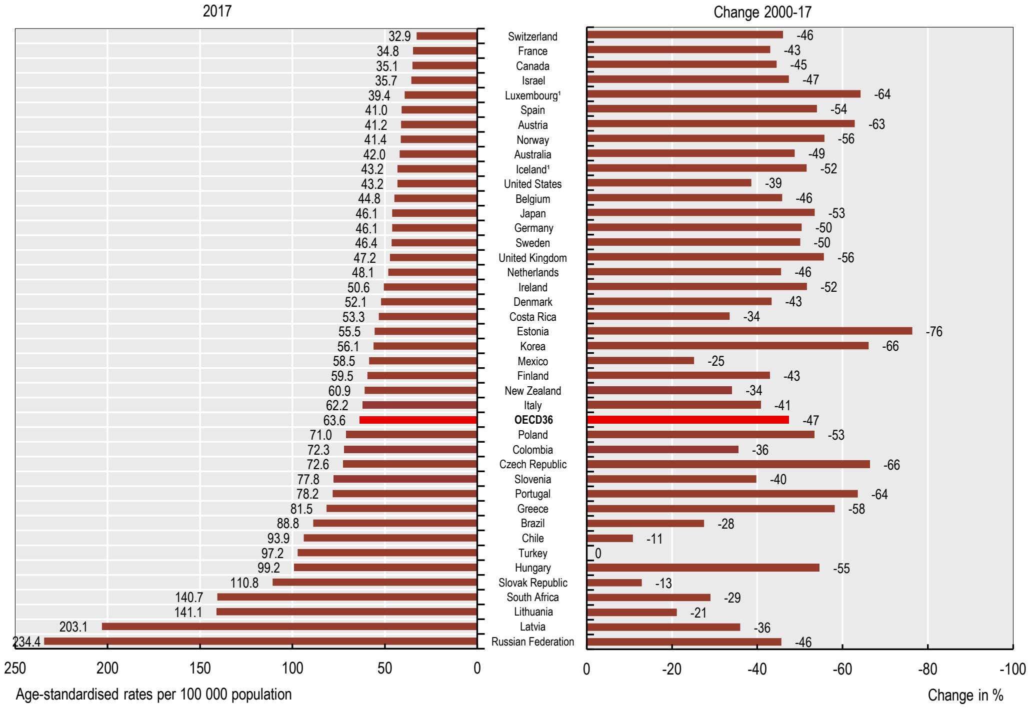
Figure 3.10. **Heart attacks and other ischaemic heart disease mortality, 2017 and change 2000-17 (or nearest year)**



1. Three-year average.
Source: OECD Health Statistics 2019.

StatLink https://doi.org/10.1787/888934014992

Figure 3.11. **Stroke mortality, 2017 and change 2000-17 (or nearest year)**



1. Three-year average.
Source: OECD Health Statistics 2019.

StatLink https://doi.org/10.1787/888934015011

Cancer incidence and mortality

Cancer is the second leading cause of mortality in OECD countries after circulatory diseases, accounting for 25% of all deaths in 2017. Further, there was an estimated 7.5 million newly diagnosed cases of cancer across the OECD. Common cancers are lung cancer (21.5%), colorectal cancer (11%), breast cancer (14.5% among women) and prostate cancer (9.4% amongst men). These four represent more than 40% of all cancers diagnosed in OECD countries. Mortality rates from cancer have fallen in all OECD countries since 2000, although across the OECD the decline has been more modest than for circulatory diseases.

Cancer incidence rates vary across OECD countries, from over 400 new cases per 100 000 people in Australia and New Zealand, to around 200 cases or fewer in Mexico and Chile (Figure 3.12). Cancer incidence is also comparatively low in all partner countries. Cross-country variations in incidence rates, though, reflect differences not only in new cancers occurring each year but also differences in national cancer screening policies, quality of cancer surveillance and reporting. High rates in Australia and New Zealand are mainly driven by the high incidence of non-melanoma skin cancer.

Mortality rates from cancer averaged 201 deaths per 100 000 people across the OECD (Figure 3.13). They were highest in Hungary, the Slovak Republic and Slovenia (above 240); lowest in Mexico, Turkey and Korea (165 or less). Among partner countries with comparable data, cancer mortality rates were also comparatively low in Colombia, Costa Rica and Brazil.

Earlier diagnosis and treatment significantly increase cancer survival rates. This partly explains why, for example, Australia and New Zealand have below average mortality rates despite having the highest rates of cancer incidence. In both countries, five-year net survival from common cancers is also above the OECD average (see various indicators on survival following cancer in Chapter 6).

Cancer incidence rates are higher for men than women in all OECD and partner countries; cancer mortality rates are also higher for men except in Mexico, Iceland, Indonesia and India. Greater prevalence of risk factors among men – notably smoking and alcohol consumption – drive much of this gender gap in cancer incidence and mortality.

Lung cancer is the main cause of death for both men and women, with smoking the main risk factor. It accounts for 25% of cancer deaths among men and 17% among women (Figure 3.14). Colorectal cancer is a major cause of death for men and women (second main cause for men and third for women, accounting for about 10% of cancer-related deaths for each sex). Apart from age and genetic factors, a diet high in fat and low in fibre, lack of physical activity, obesity, smoking and alcohol consumption all increase the risk of developing the illness.

Breast cancer is the second most common cause of cancer mortality in women (14.5% of deaths). While incidence rates for breast cancer have increased over the past decade, mortality has declined or stabilised, indicative of earlier diagnosis and treatment, and consequently higher survival rates (see indicator on "Breast cancer outcomes" in Chapter 6). Prostate cancer is the third most common cause of cancer mortality among men, accounting for just over 10% of all cancer-related deaths.

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. Differences in the quality of cancer surveillance and reporting across countries may affect the comparability of data. Rates have been age-standardised based on Segi's world population to remove variations arising from differences in age structures across countries and over time. Data come from the International Agency for Research on Cancer (IARC), GLOBOCAN 2018. These data may differ from national estimates due to differences in methodology. The incidence of all cancers is classified to ICD-10 codes C00-C97.

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 directly age-standardised to the 2010 OECD population (available at *http://oe.cd/mortality*). The source is the WHO Mortality Database.

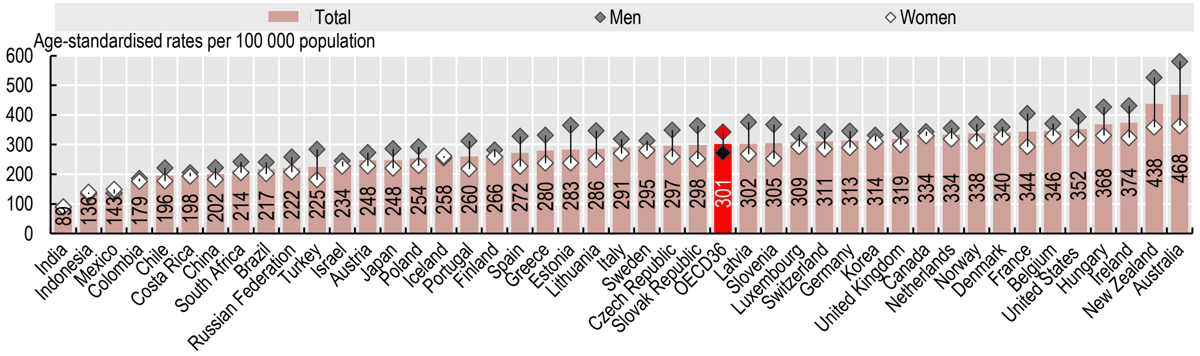
Deaths from all cancers are classified to ICD-10 codes C00-C97. The international comparability of cancer mortality data can be affected by differences in medical training and practices as well as in death certification across countries.

References

[1] GLOBOCAN (2018), *Cancer Today*, *https://gco.iarc.fr/today/home*.

[2] OECD (2013), *Cancer Care: Assuring Quality to Improve Survival*, OECD Health Policy Studies, OECD Publishing, Paris, *https://doi.org/10.1787/9789264181052-en*.

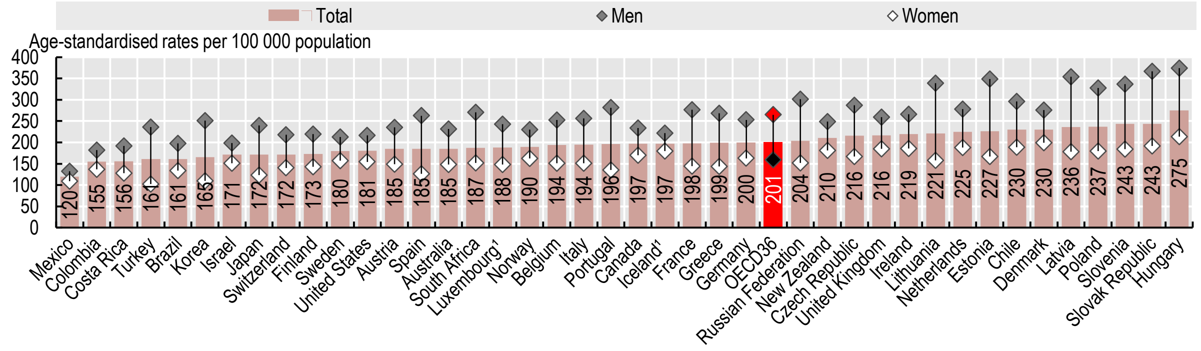
Figure 3.12. **All cancer incidence by sex, 2018 (estimated)**



Source: International Agency for Research on Cancer (IARC), GLOBOCAN 2018.

StatLink https://doi.org/10.1787/888934015030

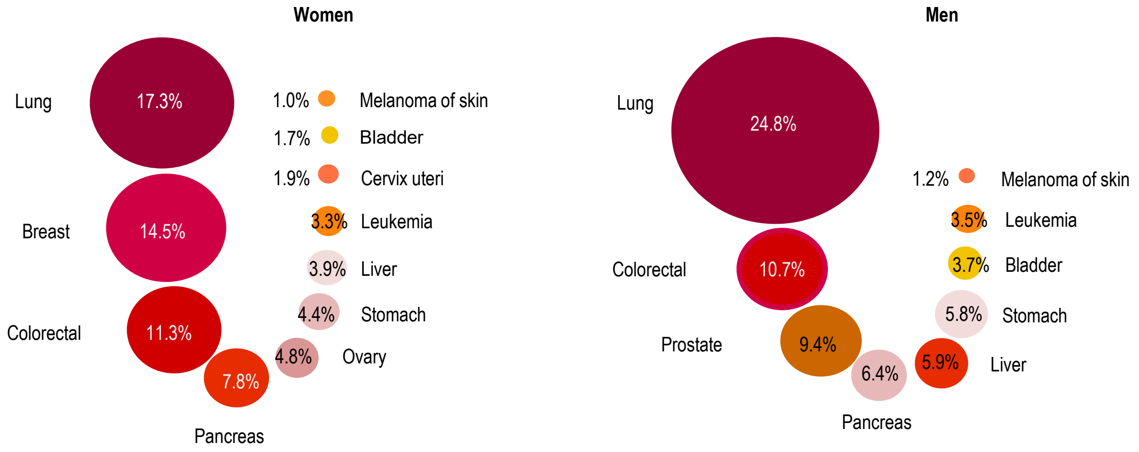
Figure 3.13. **Cancer mortality, by sex, 2017 (or nearest year)**



1. Three-year average.
Source: OECD Health Statistics 2019.

StatLink https://doi.org/10.1787/888934015049

Figure 3.14. **Main causes of cancer mortality across OECD countries, by sex, 2017 (or nearest year)**



Note: Proportion of the sums of cancer-related deaths across OECD countries, by sex.
Source: OECD Health Statistics 2019.

StatLink https://doi.org/10.1787/888934015068

Chronic disease morbidity

Chronic diseases such as cancer, heart attack and stroke, chronic respiratory problems and diabetes are not only the leading causes of death across OECD countries. They also represent a major disability burden amongst the living. Many chronic diseases are preventable, by modifying major risk factors such as smoking, alcohol use, obesity and physical inactivity.

Almost one third of people aged 15 years and over reported living with two or more chronic conditions, on average across 27 OECD countries (Figure 3.15). In Germany and Finland, this figure rises to almost one in two. Multi-morbidity is far more common among older age groups – on average, 58% of adults aged 65 or over reported living with two or more chronic diseases, and this figure rises to 70% or more in Portugal, Poland, Hungary, the Slovak Republic and Germany. This compares with 24% for people aged less than 65 years reporting two or more chronic conditions.

Socioeconomic disparities are also large: on average across OECD countries, 35% of people in the lowest income quintile report two or more chronic conditions, compared with 24% of people in the highest income quintile (Figure 3.16). This income gradient is largest in Hungary, Slovenia and Latvia.

Diabetes is a chronic condition with a particularly large disability burden, causing cardiovascular disease, blindness, kidney failure and lower limb amputation. It occurs when the body is unable to regulate excessive glucose levels in the blood. In 2017, about 98 million adults – or 6.4% of the adult population – were living with diabetes across OECD countries (Figure 3.17). In addition, a further 39 million adults were estimated to have undiagnosed diabetes (International Diabetes Federation, 2017[1]).

Among OECD countries, diabetes prevalence is highest in Mexico, Turkey and the United States, with over 10% of adults living with diabetes (age-standardised data). For partner countries, diabetes prevalence is also high in India and China, at around 10%.

Age-standardised diabetes prevalence rates have stabilised in many OECD countries, especially in western Europe, but have increased markedly in Turkey and most partner countries. Such upward trends are due in part to rising rates of obesity and physical inactivity, and to their interactions with population ageing (NCD Risk Factor Collaboration, 2016[2])

Diabetes is much more common among older people, and slightly more men than women have the condition. Diabetes also disproportionately affects those from disadvantaged socio-economic groups. The economic burden of diabetes is substantial. In OECD countries an estimated USD 572 billion was spent on treating diabetes and preventing complications (International Diabetes Federation, 2017[1]).

Definition and comparability

Data on multiple chronic diseases come from three different sources: Eurostat's European Health Interview Survey (EHIS-2) for European countries; the Medical Panel Expenditures Survey (MEPS) 2016 for the United States; and the Canadian Community Health Survey (CCHS) 2015-16 for Canada. The following chronic diseases and conditions are available in each survey:

- EHIS-2: asthma (1), chronic bronchitis/COPD/ emphysema (2), heart attack and chronic consequences (3), coronary heart disease (4), hypertension (5), stroke and chronic consequences (6), arthrosis, low back disorder (7), neck disorder (8), diabetes (9), allergy (10), cirrhosis of the liver (11), urinary incontinence (12), kidney problems (13) and depression (14).
- MEPS and CCHS: (1) – (6), (9) and (14).

As fewer conditions are available for both Canada and the United States, multi-morbidity prevalence is mechanically lower for these countries, and thus not comparable with European data.

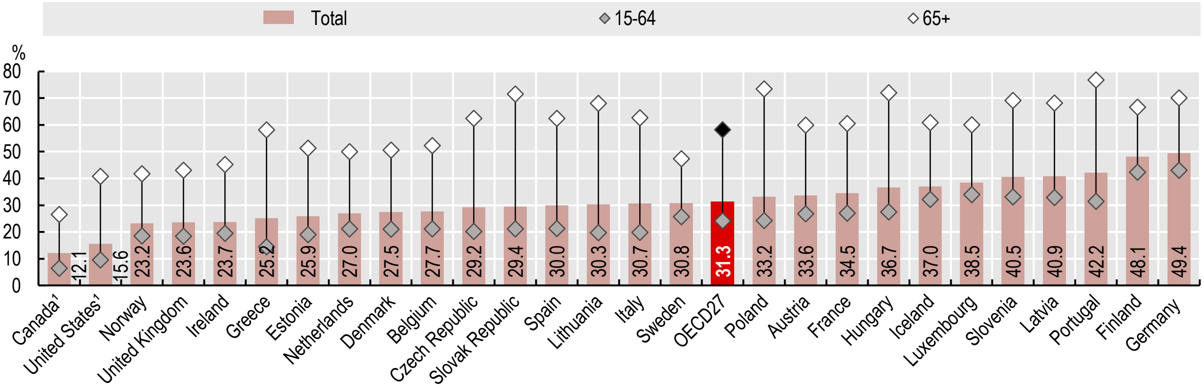
Sources and methods used by the International Diabetes Federation (IDF) are outlined in the Diabetes Atlas, 8th edition (International Diabetes Federation, 2017). The IDF produces estimations based on a variety of sources that met several criteria for reliability. The majority were national health surveys and peer-reviewed articles. Age-standardised rates were calculated using the world population based on the distribution provided by the WHO. Adult population here covers those aged between 20 and 79 with Type 1 or Type 2 diagnosed diabetes.

References

[1] International Diabetes Federation (2017), *IDF Diabetes Atlas, 8th edition*, International Diabetes Federation, Brussels.

[2] NCD Risk Factor Collaboration (2016), "Worldwide trends in diabetes since 1980: a pooled analysis of 751 population-based studies with 4.4 million participants", *Lancet*, Vol. 387, pp. 1513-1530, *http://dx.doi.org/10.1016/S0140-6736(16)00618-8*.

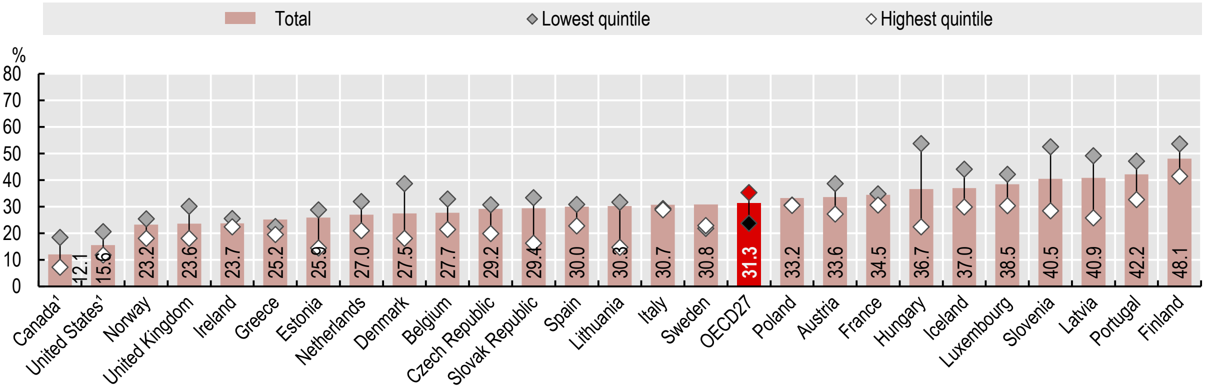
Figure 3.15. **People living with two or more chronic diseases, by age, 2014**



1. Results not directly comparable with those for other countries, due to differences in the variable definition (8 chronic conditions considered instead of 14), resulting in a downward bias.
Source: EHIS-2 2014 and other national health surveys.

StatLink https://doi.org/10.1787/888934015087

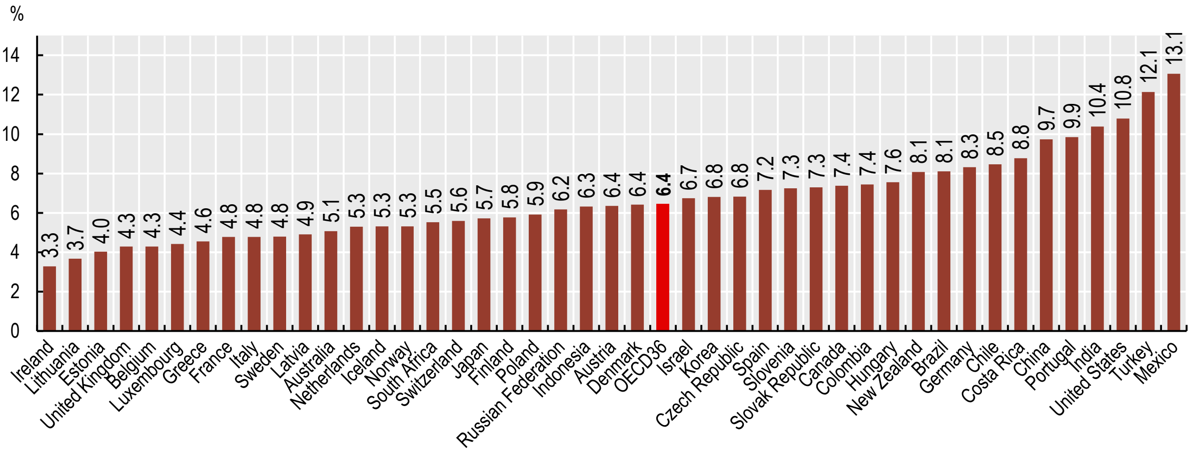
Figure 3.16. **People living with two or more chronic diseases, by income level, 2014**



1. Results not directly comparable with those for other countries (see note in Figure 3.15).
Source: EHIS-2 2014 and other national health surveys.

StatLink https://doi.org/10.1787/888934015106

Figure 3.17. **Type I and II diabetes prevalence among adults, 2017 (or nearest year)**



Source: IDF Diabetes Atlas, 8th Edition, 2017.

StatLink https://doi.org/10.1787/888934015125

Infant health

Inadequate living conditions, extreme poverty and socioeconomic factors affect the health of mothers and newborns. However, effective health systems can greatly limit the number of infant deaths, particularly by addressing life-threatening issues during the neonatal period. Around two-thirds of deaths during the first year of life occur before an infant reaches 28 days (neonatal mortality), primarily from congenital anomalies, prematurity and other conditions arising during pregnancy. For deaths beyond these first critical weeks (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.

Infant mortality rates are low in most OECD countries, at less than five deaths per 1 000 live births in all countries except Mexico, Turkey and Chile (Figure 3.18). Within OECD countries, though, infant mortality rates are often higher among indigenous populations and other vulnerable groups – as observed in Australia, Canada, New Zealand and the United States (Smylie et al., 2010[1]). In partner countries, infant mortality remains above 20 deaths per 1 000 live births in India, South Africa and Indonesia, and above ten deaths in Colombia and Brazil. Infant mortality rates have fallen in all OECD and partner countries since 2000, with reductions generally largest in countries with historically the highest rates.

Despite this progress in reducing infant deaths, the increasing numbers of low birthweight infants are a concern in some OECD countries. On average, one in 15 babies born in OECD countries (6.5% of all births) weighed less than 2 500 grammes at birth in 2017 (Figure 3.19). Low birthweight infants have a greater risk of poor health or death, require a longer period of hospitalisation after birth, and are more likely to develop significant disabilities later in life. Risk factors for low birthweight include maternal smoking, alcohol consumption and poor nutrition during pregnancy, low body mass index, lower socio-economic status, having had in-vitro fertilisation treatment and multiple births, and a higher maternal age. The increased use of delivery management techniques such as induction of labour and caesarean delivery, which have contributed to increased survival rates of low birthweight infants, may also explain the rise in their numbers.

Japan, Greece and Portugal have the greatest share of low birthweight infants among OECD countries. There are fewer low birthweight infants in the Nordic (Iceland, Finland, Sweden, Norway, Denmark) and Baltic (Estonia, Latvia, Lithuania) countries. In 23 of the 36 OECD countries, the proportion of low birthweight infants has increased since 2000, most markedly in Korea. Among partner countries, Indonesia and Colombia have a high share.

Definition and comparability

The 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 mortality rates may be due to variations in registering practices for very premature infants. While some countries register all live births including very small babies with low odds of survival, several countries apply a minimum threshold of a gestation period of 22 weeks (or a birth weight threshold of 500 grammes) for babies to be registered as live births (Euro-Peristat, 2018[2]). To remove this data comparability limitation, data presented in this section are based on a minimum threshold of 22 weeks' gestation period (or 500 g birth weight) for a majority of OECD countries that have provided these data. However, the data for ten countries (Australia, Canada, Greece, Ireland, Italy, Lithuania, Luxembourg, Mexico, Norway and Portugal) continue to be based on all registered live births (i.e. with no minimum threshold of gestation period or birthweight), resulting in potential over-estimation.

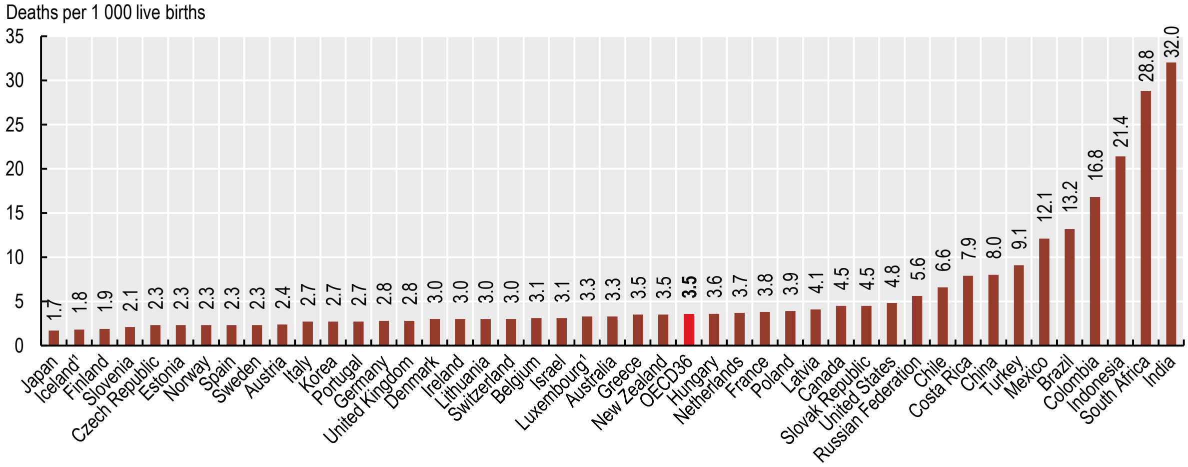
Low birth weight is defined by WHO as the weight of an infant at birth of less than 2 500 g (5.5 pounds) irrespective of the gestational age. This threshold is based on epidemiological observations regarding the increased risk of death to the infant. Despite the widespread use of this 2 500 g limit for low birth weight, physiological variations in size occur across different countries and population groups, and these need to be taken into account when interpreting differences (Euro-Peristat, 2018[2]). The number of low weight births is expressed as a percentage of total live births.

References

[2] Euro-Peristat (2018), *European Perinatal Health Report: Core indicators of the health and care of pregnant women and babies in Europe in 2015*.

[1] Smylie, J. et al. (2010), “Indigenous birth outcomes in Australia, Canada, New Zealand and the United States – an overview”, *Open Womens Health*, Vol. 4, pp. 7-17.

Figure 3.18. **Infant mortality, 2017 (or nearest year)**

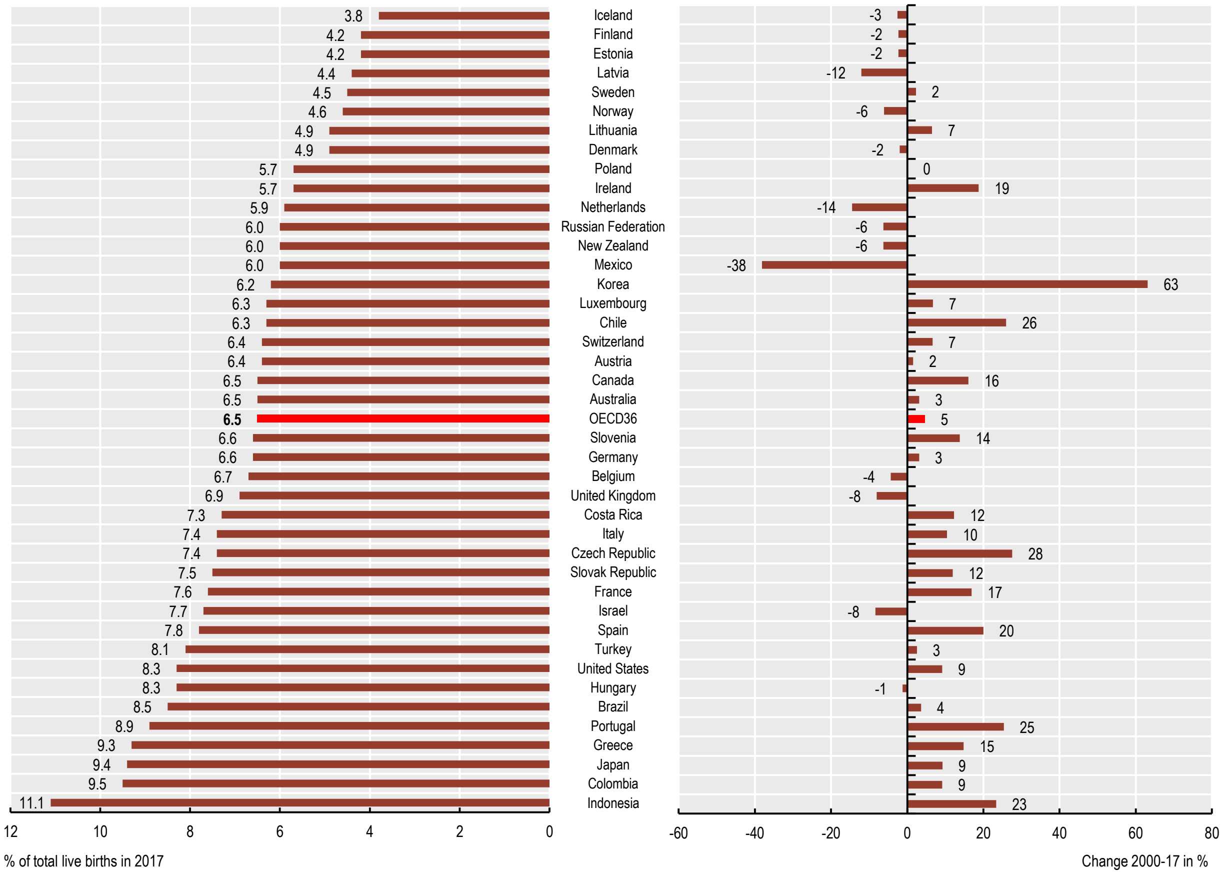


1. Three-year average (2015-17).

Source: OECD Health Statistics 2019.

StatLink https://doi.org/10.1787/888934015144

Figure 3.19. **Low birthweight infants, 2017 and change 2000-17 (or nearest year)**



Source: OECD Health Statistics 2019.

StatLink https://doi.org/10.1787/888934015163

Mental health

Good mental health is vital for people to be able to lead healthy, productive lives, but an estimated one in two people experience a mental health problem in their lifetime (OECD, 2015[1]). When people are living with a mental health problem it can have a significant impact on their daily life, contributing to worse educational outcomes, higher rates of unemployment, and poorer physical health. Figure 3.22 shows the impact of peoples' health on their daily activities and ability to work; people who reported a mental health problem were significantly more likely to say that their health had a negative impact on their daily life. In Norway and France, more than 50% of respondents who had been told by a doctor that they had a mental health problem felt that their ability to work or daily activities were limited. More can be done to help people participate in activities that matter to them, even if they have a mental health problem, including promoting timely access to treatment and integrating mental health and employment services.

Without effective treatment or support, mental health problems can have a devastating effect on people's lives, and can even lead to death by suicide. While there are complex social and cultural reasons affecting suicidal behaviours, suffering from a mental health problem also increases the risk of dying from suicide (OECD/EU, 2018[2]). A higher suicide rate also contributes to a significantly higher rate of overall mortality for people with serious mental disorders, as discussed in Chapter 6. In 2017, there were 11.2 deaths by suicide per 100 000 population in OECD countries. Figure 3.20 shows that suicide rates were lowest in Turkey and Greece, where there were fewer than five deaths by suicide per 100 000 population in 2017. Korea and Lithuania had the highest suicide rate, with 24.6 and 24.4 deaths per 100 000 population, respectively. The rate of suicide was higher among men than women in all countries; in Lithuania, the suicide rate among men was more than five times higher than that for women.

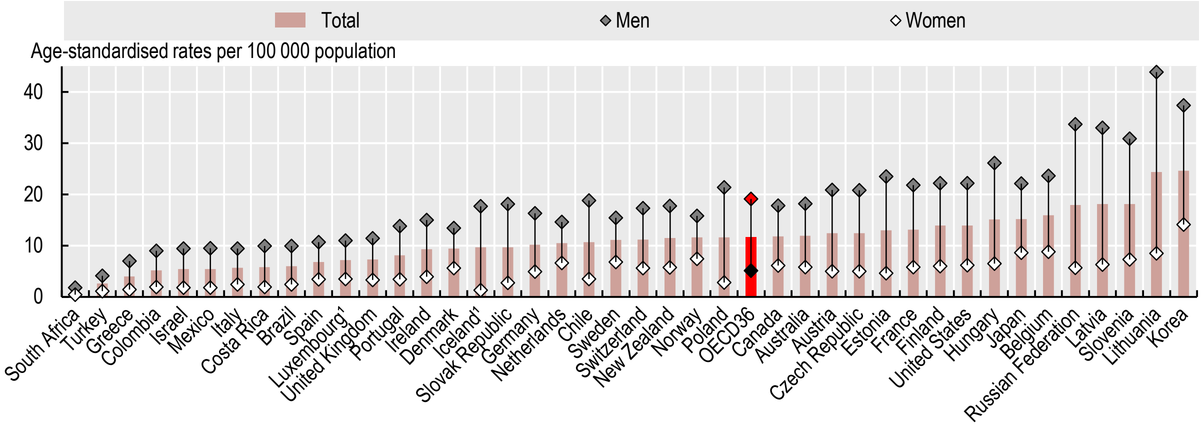
Suicide rates have decreased in almost all OECD countries, falling by more than 30% between 1990 and 2017. In some countries, the declines have been significant, including in Finland, Switzerland and Slovenia, where suicide rates have fallen by more than 40%. Other countries such as Chile and Korea saw suicide peaks in the past decade followed by a decline in more recent years (Figure 3.21). In Switzerland, suicide has fallen by 48% since 1990; rates of 'assisted suicide' are rising, mainly in older people, but since 2009 assisted suicides have been excluded from overall suicide data, explaining the sharp decline the year the reporting changed. Switzerland has taken steps to reduce deaths by suicide, such as introducing a suicide prevention action plan in 2016 that included providing fast access to mental health support, seeking to reduce stigma around suicide, and raising awareness of suicide risks. Finland, where a particularly significant decline in suicide was seen in the early 1990s, has recently moved away from stand-alone suicide prevention plans and includes suicide reduction in broader mental health strategies, focusing on improving treatment for mental illness, and implementing a network for coordinating suicide prevention (OECD/EU, 2018[2]).

Definition and comparability

The registration of suicide is a complex procedure, affected by factors such as how intent is ascertained, who is responsible for completing the death certificate, and cultural dimensions including stigma. Caution is therefore needed when comparing rates between countries. Age-standardised mortality rates are based on numbers of deaths divided by the size of the corresponding population. The source is the WHO Mortality Database; suicides are classified under ICD-10 codes X60-X84, Y870.

Figure 3.22 uses data from the Commonwealth Fund 2016 International Health Policy Survey of Adults. It is possible to identify adults who responded "yes" to "Have you ever been told by a doctor that you have depression, anxiety or other mental health problems" and track their responses to other survey questions. This figure shows the rate of responses to the question "Does your health keep you from working full-time or limit your ability to do housework or other daily activities?". Respondents who answered "yes" to this question are identified as "with a mental health problem" and those who responded "no" as "no mental health problem". Respondents identified as "no mental health problem" may have another health problem. The data have shortcomings, including some low response rates and a limited sample size (see also Box 2.4 in Chapter 2). Interpretation of questions may be different across countries; further, it is not known whether respondents were living with a mental health problem at the time of responding, and self-reported prevalence can be affected by stigma around mental health problems. The rate at which respondents reported having been told they had a mental health problem was fairly consistent with national prevalence estimates except for France, where respondents were significantly less likely to report a mental health problem than other national estimates suggest.

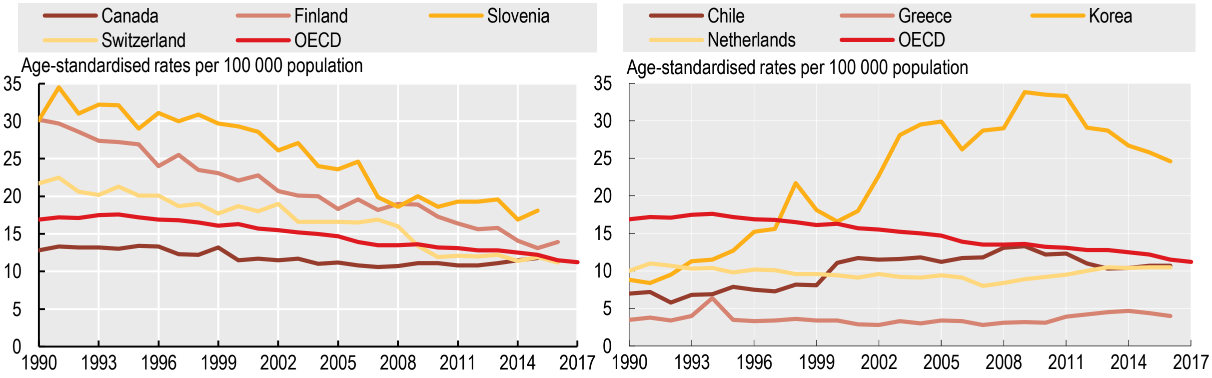
Figure 3.20. **Suicide rates, 2017 (or nearest year)**



1. Three-year average.
Source: OECD Health Statistics 2019.

StatLink https://doi.org/10.1787/888934015182

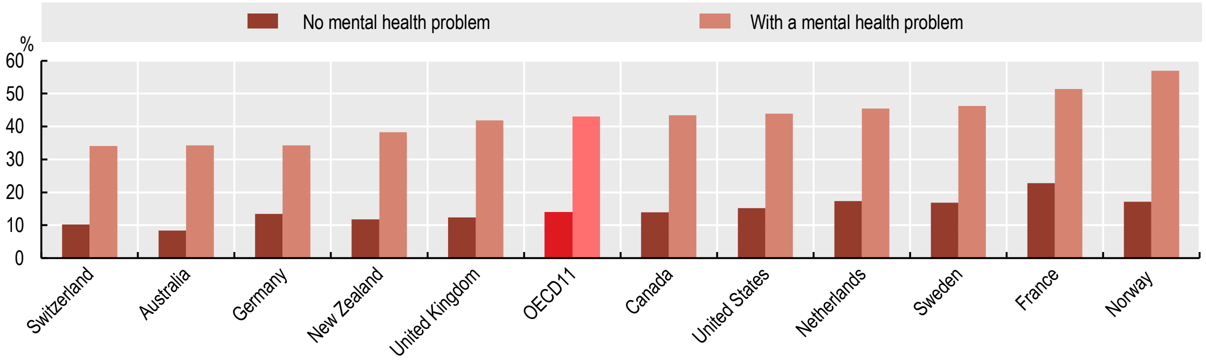
Figure 3.21. **Trends in suicide, selected OECD countries, 1990-2017 (or nearest year)**



Source: OECD Health Statistics 2019.

StatLink https://doi.org/10.1787/888934015201

Figure 3.22. **People whose health kept them from working full-time or limited their daily activities, 2016**



Source: Commonwealth Fund International Health Policy Survey 2016.

StatLink https://doi.org/10.1787/888934015220

Self-rated health

How individuals assess their own health provides a holistic overview of both physical and mental health. By adding such a perspective on quality of life, it complements life expectancy and mortality indicators that only measure survival. Further, despite its subjective nature, self-rated health has proved to be a good predictor of future health care needs and mortality (Palladino et al., 2016[1]).

Most OECD countries conduct regular health surveys that include asking respondents how, in general, they would rate their health. For international comparisons, socio-cultural differences across countries may complicate cross-country comparisons of self-assessed health. Differences in the formulation of survey questions, notably in the survey scale, can also affect comparability of responses. Finally, since older people generally report poorer health and more chronic diseases than younger people do, countries with a larger proportion of elderly people are likely to have a lower proportion of people reporting that they are in good health.

With these limitations in mind, almost 9% of adults consider themselves to be in poor health, on average across OECD countries (Figure 3.23). This ranges from over 15% in Korea, Lithuania, Latvia and Portugal to under 4% in New Zealand, the United States, Canada, Ireland and Australia. However, the response categories used in OECD countries outside Europe and Asia are asymmetrical on the positive side, which introduces a comparative bias to a more positive self-assessment of health (see the box on "Definition and comparability"). Korea, Japan and Portugal stand out as countries with high life expectancy, but relatively poor self-rated health.

People with lower incomes are generally less positive about their health than people on higher incomes, in all OECD countries (Figure 3.24). Almost 80% of adults in the highest income quintile rate their health as good or very good, compared with just under 60% of adults in the lowest income quintile, on average across the OECD. Socio-economic disparities are particularly marked in Latvia, Estonia, the Czech Republic and Lithuania, with a percentage point gap of 40 or more between adults on low and high incomes. Differences in smoking, harmful alcohol use and other risk factors are likely to explain much of this disparity in these countries. Socio-economic disparities are relatively low in New Zealand, Greece, Italy, Australia and France, at less than 10 percentage points.

Self-rated health tends to decline with age. In many countries, there is a particularly marked decline in how people rate their health when they reach their mid-forties, with a further decline after reaching retirement age. Men are also more likely than women to rate their health as good.

Definition and comparability

Self-rated health reflects an individual's overall perception of his or her health. Survey respondents are typically asked a question such as: "How is your health in general?". Caution is required in making cross-country comparisons of self-rated health for at least three reasons. First, self-rated health is subjective, and responses may be systematically different across and within countries because of socio-cultural differences. Second, as self-rated health generally worsens with age, countries with a greater share of older people are likely to have fewer people reporting that they are in good health. Third, there are variations in the question and answer categories used in survey questions across countries. In particular, the response scale used in the United States, Canada, New Zealand, Australia and Chile is asymmetrical (skewed on the positive side), including the response categories: "excellent, very good, good, fair, poor". In most other OECD countries, the response scale is symmetrical, with response categories: "very good, good, fair, poor, very poor". This difference in response categories may introduce a comparative bias to a more positive self-assessment of health in those countries that use an asymmetrical scale.

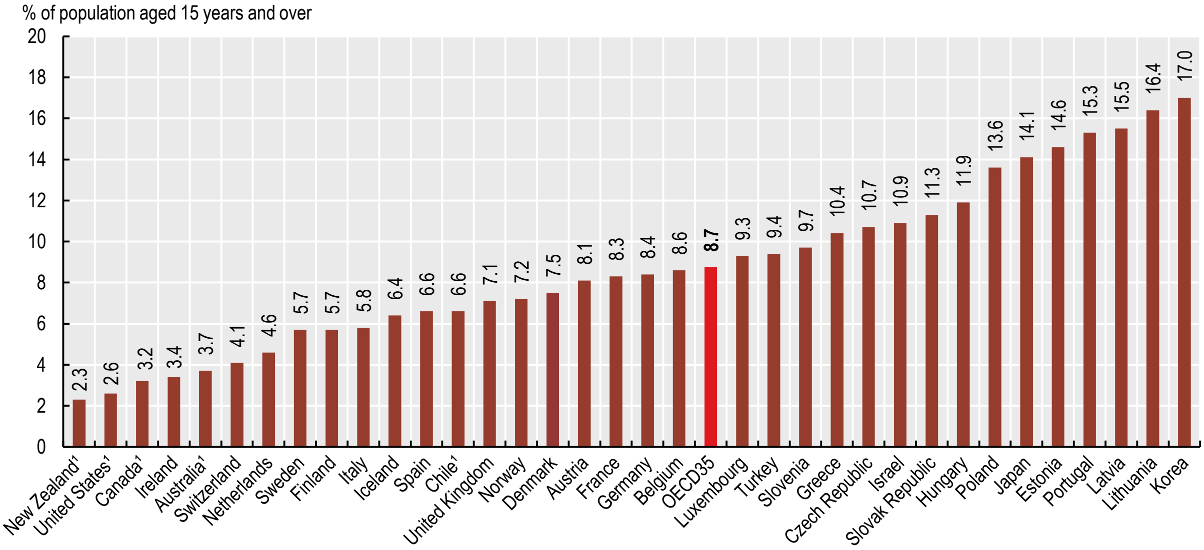
Self-rated health by income level is reported for the first quintile (lowest 20% of income group) and the fifth quintile (highest 20%). Depending on the surveys, the income may relate to either the individual or the household (in which case the income is equivalised to take into account the number of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

References

[2] Lumsdaine, R. and A. Exterkate (2013), "How survey design affects self-assessed health responses in the survey of health, ageing and retirement in Europe", *European Economic Review*, Vol. 63, pp. 299-307.

[1] Palladino, R. et al. (2016), "Associations between multimorbidity, healthcare utilisation and health status: evidence from 16 European countries", *Age and Ageing*, Vol. 45, pp. 431-435.

Figure 3.23. **Adults rating their own health as bad or very bad, 2017 (or nearest year)**

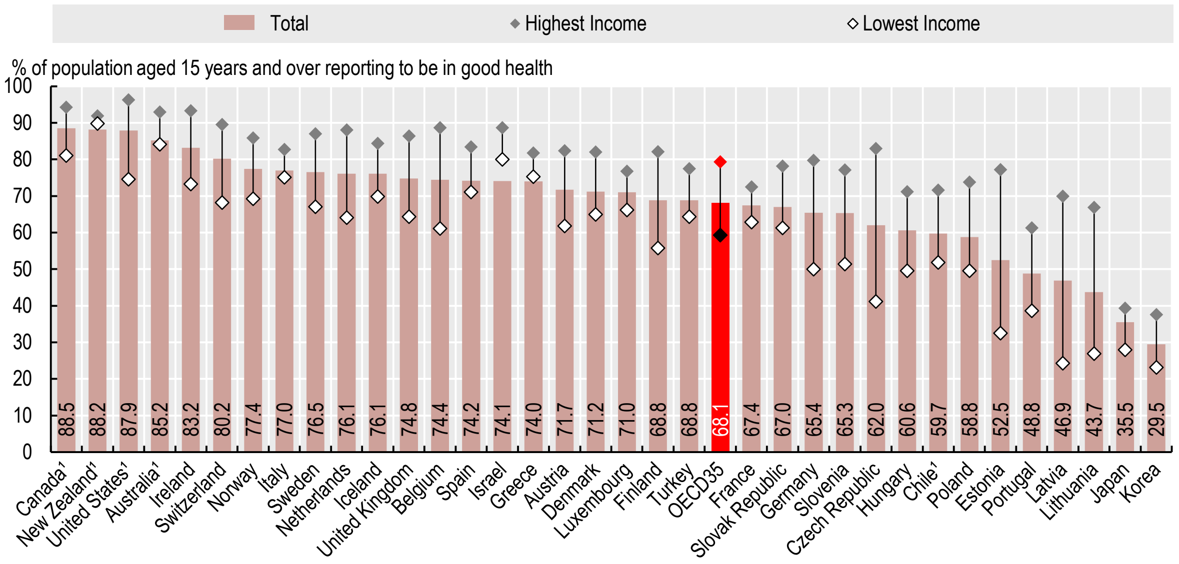


1. Results for these countries are not directly comparable with those for other countries, due to methodological differences in the survey questionnaire resulting in a bias towards a more positive self-assessment of health.

Source: OECD Health Statistics 2019 (EU-SILC for European countries).

StatLink https://doi.org/10.1787/888934015239

Figure 3.24. **Adults rating their own health as good or very good, by income quintile, 2017 (or nearest year)**



1. Results for these countries are not directly comparable with those for other countries, due to methodological differences in the survey questionnaire resulting in a bias towards a more positive self-assessment of health.

Source: OECD Health Statistics 2019 (EU-SILC for European countries).

StatLink https://doi.org/10.1787/888934015258

4. RISK FACTORS FOR HEALTH

Smoking among adults

Alcohol consumption among adults

Opioids use

Diet and physical activity among adults

Overweight and obesity among adults

Overweight and obesity among children

Air pollution and extreme temperatures

Smoking among adults

Smoking is a leading cause of multiple diseases, including cancers, heart attacks and stroke, and respiratory diseases such as chronic obstructive pulmonary disease. Smoking among pregnant woman increases the risk of low birth weight and premature delivery. The WHO estimates that tobacco smoking kills 7 million people in the world every year, of which more than 1.2 million deaths are due to second-hand smoke and 65 000 are children (WHO, 2017[1]). Of these deaths, just over half took place in four countries – China, India, the United States, and the Russian Federation. Over recent decades, smoking caused the largest share of overall years of healthy life lost in 15 OECD countries, and ranked second in further 16 OECD countries (Forouzanfar et al., 2016[2])

Across OECD countries, 18% of adults smoke tobacco daily (Figure 4.1). Smoking rates range from over 25% in Greece, Turkey, Hungary and France to below 10% in Mexico and Iceland. In key partner countries, rates are very high in Indonesia (40%) and the Russian Federation (30%); and 10% or less in Costa Rica. Men smoke more than women in all countries except Iceland – on average across the OECD, 23% of men smoke daily compared with 14% among women. The gender gap in smoking rates is comparatively high in Korea and Turkey, as well as in Indonesia, China and the Russian Federation. Among men, rates are highest in Indonesia (76%), the Russian Federation (50%), China (48%) and Turkey (40%); and below 10% in Costa Rica and Iceland. For women, rates are the highest in Austria, Greece, Chile, France and Hungary (over 20%). Less than 5% of women smoke in China, India, Costa Rica, Korea, Mexico and Indonesia.

Daily smoking rates have decreased in most OECD countries over the last decade, from an average of 23% in 2007 to 18% in 2017 (Figure 4.2). In the Slovak Republic and Austria, though, smoking rates have risen slightly. Smoking rates also increased in Indonesia. Greece reduced smoking rates the most, followed by Estonia, Iceland and Norway.

People with a lower education level are more likely to smoke in all countries except Greece, with an average gap of 8 percentage points in 2017 (Figure 4.3). Education gaps are largest in Estonia and Hungary (about 16 percentage points), and relatively small in Portugal, Bulgaria, Lithuania, and Turkey (less than 2 percentage points).

Raising taxes on tobacco is one of the most effective ways to reduce tobacco use. Tobacco prices in most OECD countries contain more than 50% of taxes. Health warnings on packages, bans on promotional and misleading information, and restricted branding are other key tobacco control policies. Awareness raising and support for smokers, including nicotine replacement treatment and smoking cessation advice, also help reduce smoking.

Definition and comparability

The proportion of daily smokers is defined as the percentage of the population aged 15 years and over who report smoking tobacco every day. Other forms of smokeless tobacco products, such as snuff in Sweden, are not taken into account. This indicator is more representative of the smoking population than the average number of cigarettes smoked per day. Most countries report data for the population aged 15 and older, but there are some exceptions as highlighted in the data source of the OECD Health Statistics database.

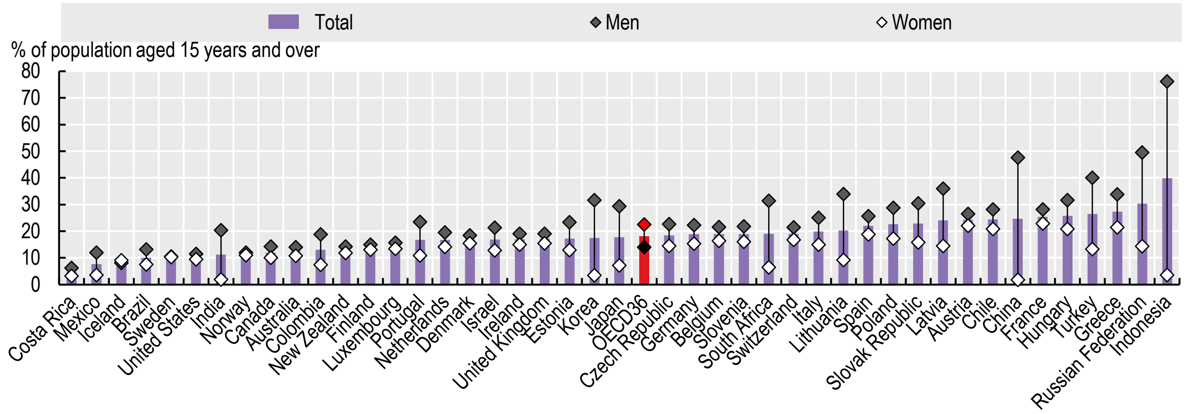
Data for differences in daily smoking by education level comes from the European Health Interview Survey in 2014 in EU countries. The United States and Canada reported the data respectively from the Medical Expenditure Panel Survey (MEPS) in 2016 and Canadian Community Health Survey (CCHS) 2015-2016. The latter reflects only daily cigarette smoking.

References

[2] Forouzanfar, M. et al. (2016), “Global, regional, and national comparative risk assessment of 79 behavioural, environmental and occupational, and metabolic risks or clusters of risks, 1990–2015: a systematic analysis for the Global Burden of Disease Study 2015”, *The Lancet*, Vol. 388/10053, pp. 1659-1724, *http://dx.doi.org/10.1016/s0140-6736(16)31679-8*.

[1] WHO (2017), *WHO report on the global tobacco epidemic, 2017*.

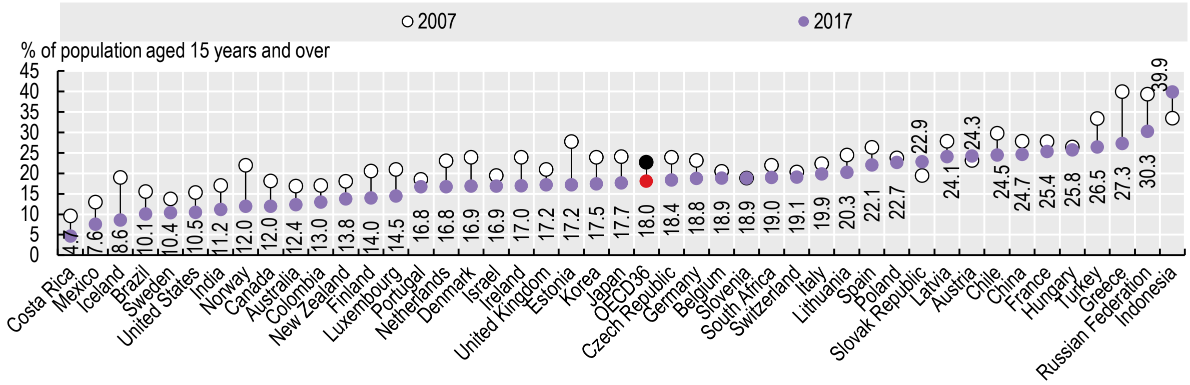
Figure 4.1. **Adult population smoking daily by sex, 2017 (or nearest year)**



Source: OECD Health Statistics 2019.

StatLink https://doi.org/10.1787/888934015277

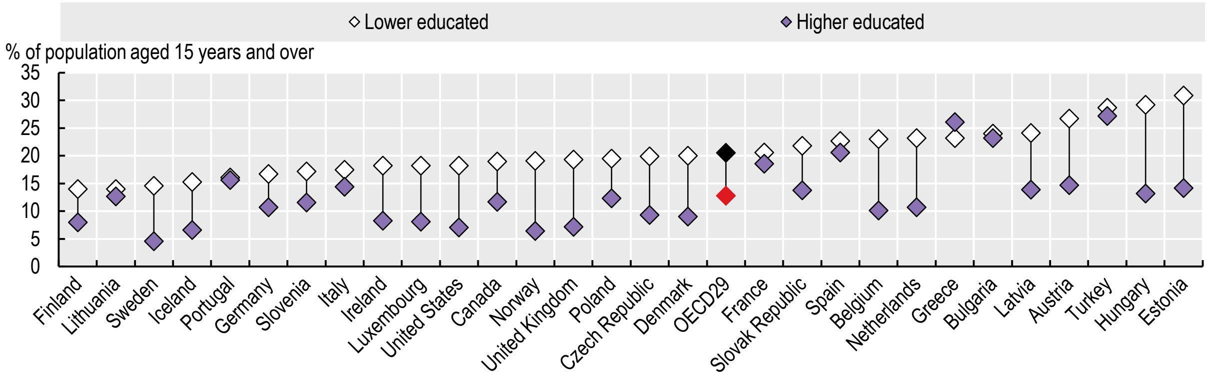
Figure 4.2. **Adult population smoking daily, 2007 and 2017 (or nearest years)**



Source: OECD Health Statistics 2019.

StatLink https://doi.org/10.1787/888934015296

Figure 4.3. **Difference in daily smoking between highest and lowest education level, 2016 (or nearest year)**



Source: EHIS 2014 for Europe; MEPS 2016 for the United States; and CCHS 2015-2016 for Canada.

StatLink https://doi.org/10.1787/888934015315

Alcohol consumption among adults

Alcohol use is a leading cause of death and disability worldwide, particularly in those of working age. It accounted for an estimated 7% of male and 2% of female deaths worldwide in 2016 (Griswold et al., 2018[1]). High alcohol intake is a major risk factor for heart diseases and stroke, liver cirrhosis and certain cancers, but even low and moderate alcohol consumption increases the long-term risk of these diseases. Alcohol also contributes to more accidents and injuries, violence, homicide, suicide and mental health disorders than any other psychoactive substance, particularly among young people.

Measured through sales data, overall alcohol consumption averaged 8.9 litres per person across OECD countries in 2017, down from 10.2 litres in 2007 (Figure 4.4). Lithuania reported the highest consumption (12.3 litres), followed by Austria, France, the Czech Republic, Luxembourg, Ireland, Latvia and Hungary, all with over 11 litres per person. Turkey, Israel and Mexico have comparatively low consumption levels (under 5 litres per person). Among key partners, consumption was relatively high in the Russian Federation (11.1 litres) and low in Indonesia, India, Costa Rica and Colombia (less than 5 litres). Average consumption fell in 27 OECD countries between 2007 and 2017, with the largest reductions in Israel, Estonia, Greece and Denmark (by 3 litres or more). Consumption also fell markedly in the Russian Federation (by 7 litres). However, alcohol consumption increased by more than 1 litre per person in China and India, and by over 0.5 litres per person in Chile.

While overall consumption per capita helps 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 disease. On average across OECD countries, 3.7% of adults were alcohol dependent in 2016 (Figure 4.5). In all countries, men are more likely to be alcohol dependent, with 6% of men and 1.6% of women alcohol dependent on average. Dependence is most common in Latvia, Hungary, and Russian Federation (more than 9% of adults). In these three counties, gender gaps are also high, with the share of alcohol dependent men about five times higher than for women.

The share of dependent drinkers does not always correlate with overall alcohol consumption levels, reflecting differences in consumption patterns and diagnosis of alcohol dependence. France, for instance, had the third highest alcohol consumption in 2017, yet rates of alcohol dependence below the OECD average. Conversely, the United States has a high share of alcohol dependence in 2016 (7.7%), but recorded consumption is at the OECD average.

Policies addressing harmful alcohol use include broad-based strategies and ones that target heavy drinkers. All OECD countries apply taxes to alcoholic beverages, but the level of taxes differs greatly. In addition, some countries have implemented new forms of pricing policies, such as minimum pricing of one alcohol unit in Scotland. Advertising regulations exist in most OECD countries, but law enforcement and the forms of media included in these regulations (e.g. printed newspapers, billboards, the internet and TV) varies. In Norway, Lithuania and Sweden, for instance, there are complete bans on TV adverts, including on social media, while other countries set partial limitations. Controls on the physical availability, drinking age and hours of sale; and drink-driving rules are other commonly used policies (OECD, 2015[1]).

Definition and comparability

Recorded alcohol consumption is defined as annual sales of pure alcohol in litres per person aged 15 years and over (with some exceptions highlighted in the data source of the OECD Health Statistics database). 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. 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 estimated as the mean of alcohol consumption in France and Germany.

Alcohol dependence is coded as F10.2 in ICD-10 among adults aged over 15 years old during a given calendar year. The numerator is the number of adults between 18 and 65 years with a diagnosis of F10.2 during a calendar year. The denominator is the mid-year resident population over 15 years during the same calendar year. The WHO also reports alcohol use disorders among people aged 15 years and over as a prevalence over 12 months, which includes both alcohol dependence and harmful use of alcohol coded as F10.1 in ICD-10.

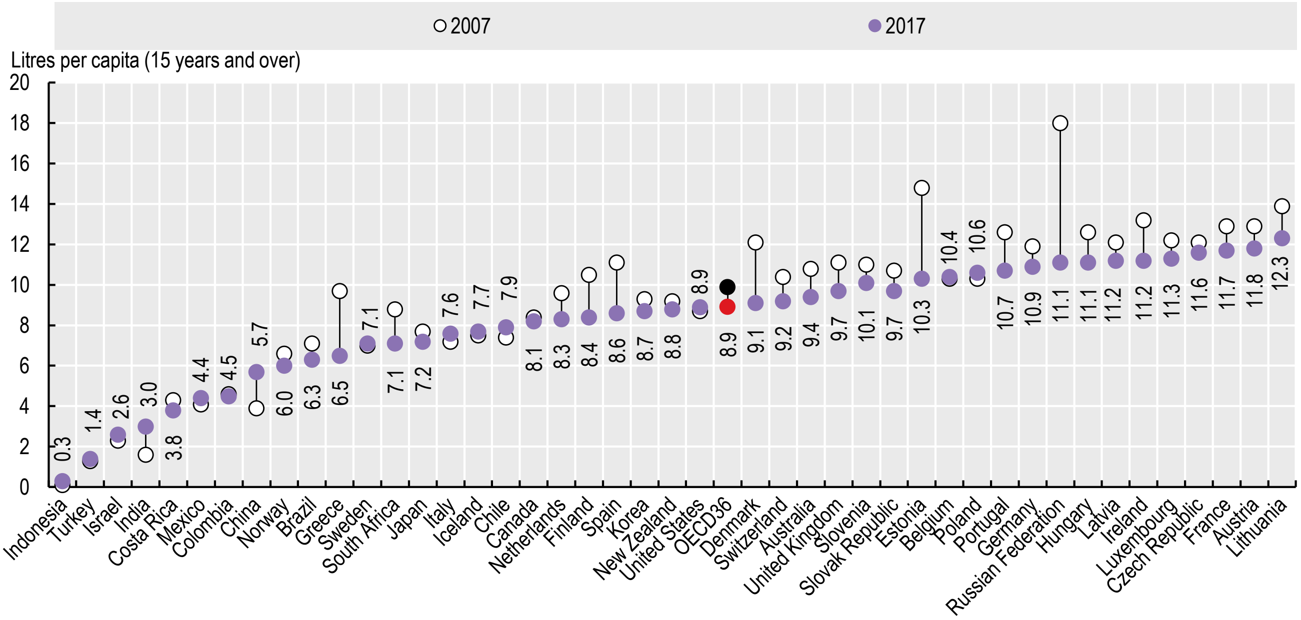
References

[2] Griswold, M. et al. (2018), “Alcohol use and burden for 195 countries and territories, 1990–2016: a systematic analysis for the Global Burden of Disease Study 2016”, *The Lancet*, Vol. 392/10152, pp. 1015-1035, *http://dx.doi.org/10.1016/S0140-6736(18)31310-2*.

[1] OECD (2015), *Tackling Harmful Alcohol Use: Economics and Public Health Policy*, OECD Publishing, Paris, *https://dx.doi.org/10.1787/9789264181069-en*.

[3] WHO (2018), *Global status report on alcohol and health*.

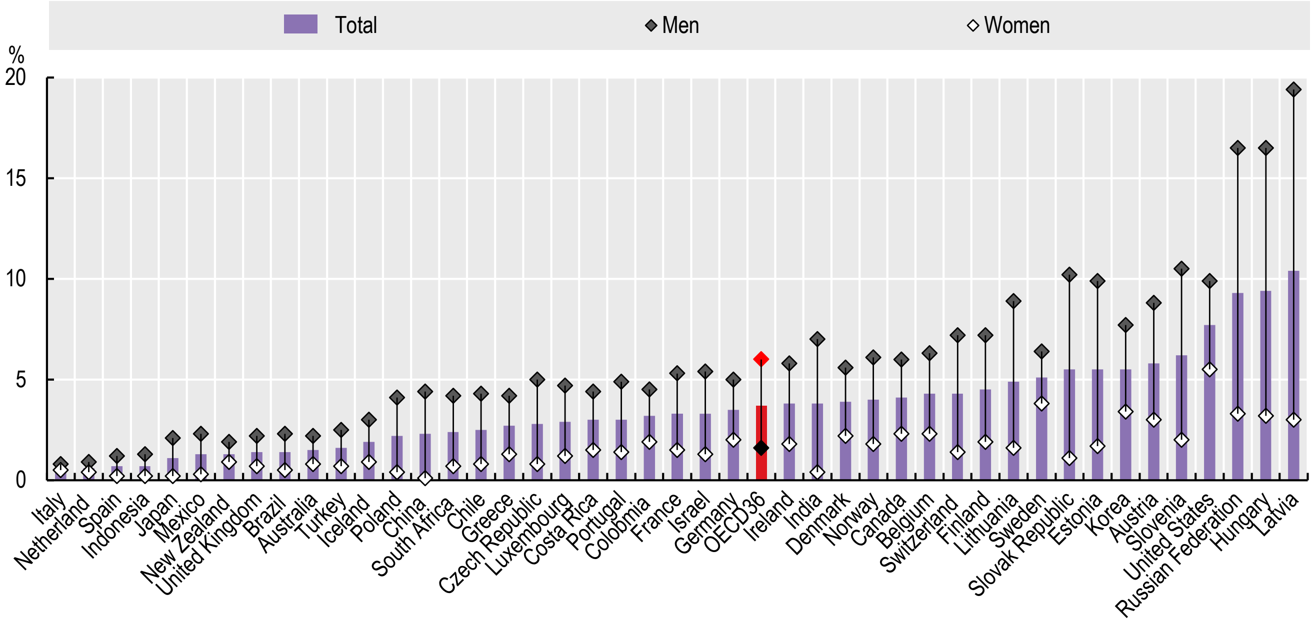
Figure 4.4. **Recorded alcohol consumption among adults, 2007 and 2017 (or nearest year)**



Source: OECD Health Statistics 2019.

StatLink https://doi.org/10.1787/888934015334

Figure 4.5. **Share of dependent drinkers, by sex, 2016**



Source: Global Status Report on Alcohol and Health, WHO 2018.

StatLink https://doi.org/10.1787/888934015353

Opioids use

Opioids are a narcotic pain medication that have become the cornerstone therapy for treatment of moderate to severe pain in many high-income countries. In parallel, illicit opioid use for nonmedical purposes has created illegal, increasingly commercialised global markets. Canada and the United States have experienced an opioid crisis in recent years, fuelled by growth in the consumption of synthetic opioids such as fentanyl and carfentanil. Problematic opioid use is also spreading in Australia and some European countries, due to growing prescription rates (see indicator on "Safe primary care – prescribing" in Chapter 6) and the development of a dynamic illegal drug supply market (OECD, 2019[1]).

For prescription opioids, whilst there is insufficient access in many low- and middle-income countries, the reality in OECD countries is quite different, where the availability of analgesic opioids has been steadily growing. The United States has the highest availability of analgesic opioids among OECD countries, followed by Germany and Canada, while Mexico, Chile and Colombia show the lowest numbers. The sharpest increases occurred in the 2000s: between 2002-04 and 2005-07 analgesic opioids availability grew on average by 59% and over the decade by almost 110%. More recently, the growth rate dropped to 5.4% on average between 2011-13 and 2014-16. In absolute terms, availability per person increased the most in Israel, the United Kingdom, Germany; the sharpest falls were in the United States, Denmark and Luxembourg (Figure 4.6).

Opioid-related deaths is a key indicator that reflects the impact of problematic use of the drug, both of legally prescribed drugs and illegal drugs (e.g. heroin). On average across 25 OECD countries for which data are available, there were 26 opioid-related deaths per million inhabitants in 2016 (Figure 4.7). However, death rates were over five times higher in the United States (131 opioid-related deaths), followed closely by Canada (120). Opioid-related deaths have increased by about 20% since 2011, with large increases in the United States, Sweden, Canada, England and Wales, and Lithuania. In the United States, almost 400 000 people died from an opioid overdose between 1999 and 2017, with the opioid crisis contributing to the first decline in life expectancy observed in over half a century.

Countries are implementing several strategies to address the problematic use of opioids, with comprehensive approaches across different sectors, covering health, social services, law enforcement, data systems and research. Countries have aimed to improve opioid prescribing through evidence-based clinical guidelines, training, surveillance of opioid prescriptions, and regulation of marketing and financial relationships with opioid manufacturers. Educational materials and awareness interventions have been developed for both at-risk patients and the general public. For patients with opioid use disorder, there has been increased coverage for long-term medication-assisted therapy combined with specialised services for infectious diseases and psychosocial interventions. Many countries have also implemented harm minimisation interventions such as overdose reversal medications, needle and syringe programmes and medically supervised consumptions centres. Research initiatives to boost innovation in pain relief and opioid use disorders treatments have also been launched (OECD, 2019[1]).

Definition and comparability

Availability of analgesic opioid is defined as amounts that each country's competent national authority estimates are needed and used annually, including reporting of medicines destroyed, losses during manufacture, etc. This information is verified by the International Narcotics Control Board using data from export and import notifications. The S-DDD is a technical unit of measurement. It is not a recommended prescription dose. It recognises that no internationally agreed standard doses exist for opioid medicines and therefore provides a rough measure to rank opioid use of countries. Levels of use, expressed in S-DDD per million inhabitants per day, are calculated with the following formula: annual use divided by 365 days, divided by the population in millions of the country or territory during the year, divided by the defined daily dose (Berterame et al., 2016[2]). Analgesic opioids include codeine, dextropropoxyphene, dihydrocodeine, fentanyl, hydrocodone, hydromorphone, morphine, ketobemidone, oxycodone, pethidine, tilidine and trimeperidine. It does not include illicit opioids. Those data do not directly reflect the consumption of analgesic opioids in countries, but the general availability for different purposes, of which the largest component is for medical use.

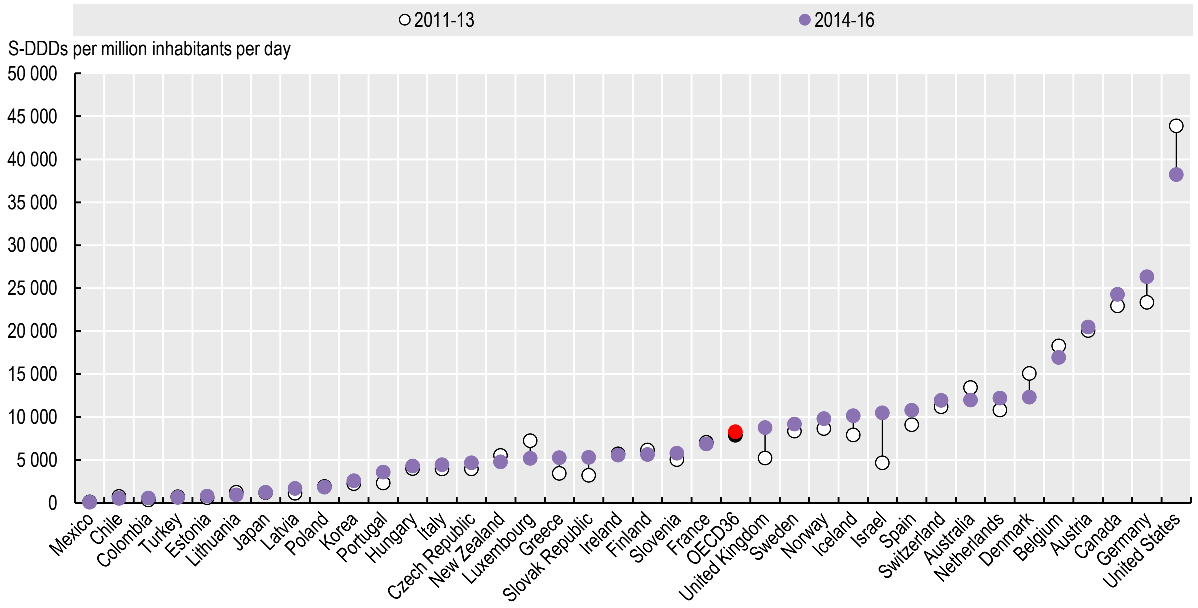
Opioid-related deaths for European countries are collected and shared with the OECD by the European Monitoring Centre for Drugs and Drug Addiction (EMCDDA). This was complemented with data contributed directly from countries to the OECD using an adapted version of the EMCDDA's data questionnaire.

References

[2] Berterame, S. et al. (2016), "Use of and barriers to access to opioid analgesics: a worldwide, regional, and national study", *The Lancet*, Vol. 387/10028, pp. 1644-1656, *http://dx.doi.org/10.1016/S0140-6736(16)00161-6*.

[1] OECD (2019), *Addressing Problematic Opioid Use in OECD Countries*, OECD Health Policy Studies, OECD Publishing, Paris, *https://dx.doi.org/10.1787/a18286f0-en*.

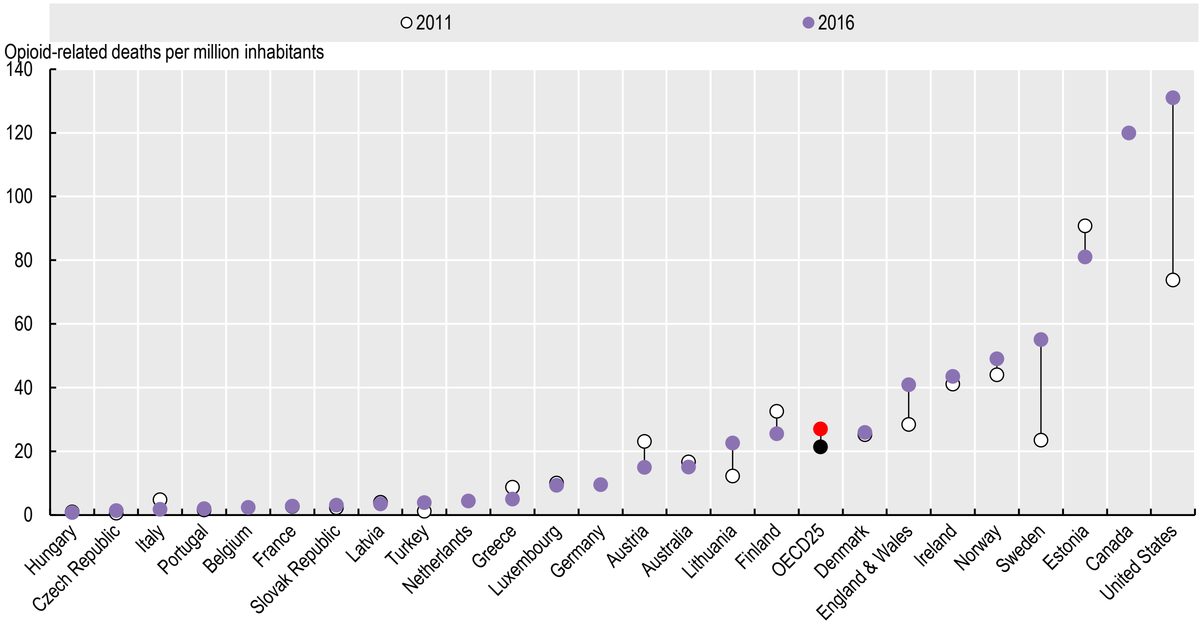
Figure 4.6. **Availability of analgesic opioids, 2011-13 and 2014-16**



S-DDD: Defined daily doses for statistical purposes.
Source: INCB 2018.

StatLink https://doi.org/10.1787/888934015372

Figure 4.7. **Opioid-related deaths, 2011 and 2016 (or nearest year)**



Note: Canada's data corresponds to 2018.
Source: EMCDDA for European countries and country responses to OECD opioid data questionnaire 2018.

StatLink https://doi.org/10.1787/888934015391

Diet and physical activity among adults

A healthy diet is associated with improved health outcomes. Adults who follow a diet rich in fruits and vegetables and low in fat, sugars and salt/sodium are at a lesser risk of developing one or more cardiovascular diseases and certain types of cancer (Graf and Cecchini, 2017[1]). Healthy diet may also reduce the likelihood of being overweight or obese. In 2017, inadequate fruit and vegetable consumption led to an estimated 3.9 million deaths worldwide (Global Burden of Disease Collaborative Network, 2018[2]).

On average across OECD countries, over half (57%) of all adults consumed at least one piece of fruit per day in 2017 (Figure 4.8). Values for this metric are highest in Australia, Spain, New Zealand and Italy (greater than 75%). Conversely, Chile, Finland and Latvia recorded values below 40%. In all countries except Spain, women are more likely to consume fruit daily. This gender gap in fruit consumption was largest in Finland and Austria, with over a 20 percentage point difference.

The share of populations consuming vegetables daily was similar: 60% of adults, on average across the OECD. Countries with the highest rate of vegetable consumption are Australia, Korea, New Zealand and the United States, all of which recorded values greater than 90% (Figure 4.9). At the other end of the spectrum, this figure fell below 35% in Germany and the Netherlands. As with fruit consumption, women are more likely than men to eat at least one portion of vegetables per day (65% of women v 54% of men, on average). Daily vegetable consumption was higher among women than men in all countries other than Korea and the United States (where gender differences were minimal).

Physical activity is also important for leading a healthy lifestyle. Regular physical activity is associated with significant benefits such as improved bone and functional health, and reduced risk of various non-communicable diseases and depression (Warburton and Bredin, 2017[3]). Advances in technology in areas such as transport, communication and entertainment have contributed to declines in physical activity (Graf and Cecchini, 2017[1]).

About two in three adults (66%) meet the recommended guidelines for moderate physical activity, on average across 23 OECD countries (Figure 4.10). Adults are most likely to be sufficiently active in Sweden, Iceland, Norway and Denmark (over 75% of adults). Conversely, less than half of the adult population in Italy and Spain engage in the recommended amount of moderate physical activity. Other than Denmark, men are more likely to be physically active than women in all 23 OECD countries with comparable data.

Definition and comparability

Fruit and vegetable consumption are defined as the proportion of adults who consume at least one fruit or vegetable per day, excluding juice and potatoes. Estimates for fruit and vegetable consumption are derived from national health surveys and are self-reported (with some differences in reporting periods, see country-specific notes in OECD.Stat on definitions, sources and methods for further details).

Data for Australia, Korea and New Zealand are derived from quantity-type questions. Values for these countries may therefore be overestimated. Most countries report data for the population aged 15 years and over, with some exceptions as highlighted in the data source of the OECD Health Statistics database.

The indicator of moderate physical activity is defined as completing 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). Walking for transportation is not included.

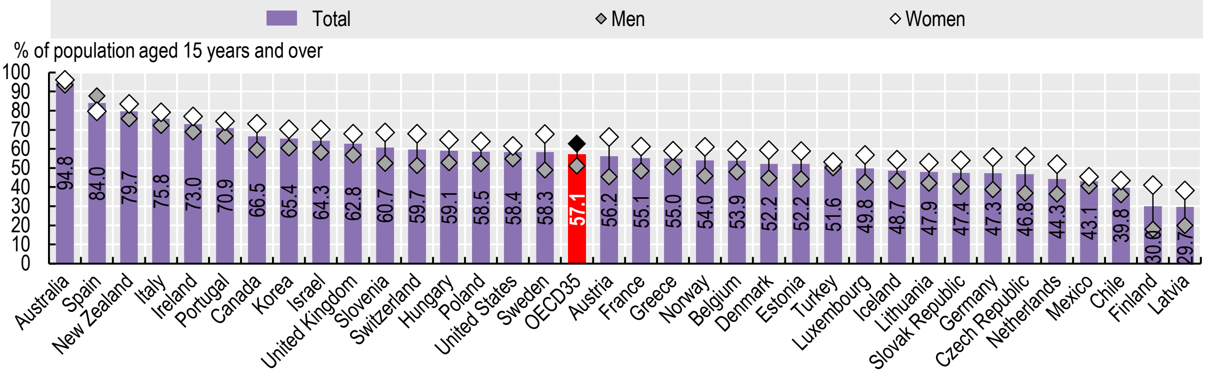
References

[2] Global Burden of Disease Collaborative Network (2018), *Global Burden of Disease Study 2017 (GBD 2017) Results*, Seattle, United States: Institute for Health Metrics and Evaluation (IHME).

[1] Graf, S. and M. Cecchini (2017), “Diet, physical activity and sedentary behaviours: Analysis of trends, inequalities and clustering in selected OECD countries”, *OECD Health Working Papers No. 100*, OECD Publishing, Paris, *https://doi.org/10.1787/54464f80-en*.

[3] Warburton, D. and S. Bredin (2017), “Health benefits of physical activity”, *Current Opinion in Cardiology*, Vol. 32/5, pp. 541-556, *http://dx.doi.org/10.1097/hco.0000000000000437*.

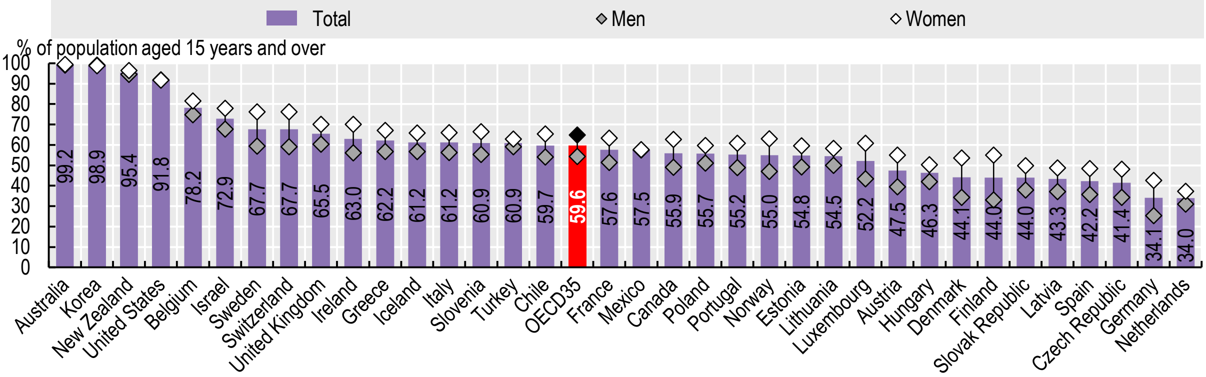
Figure 4.8. **Daily fruit consumption among adults by sex, 2017 (or nearest year)**



Source: OECD Health Statistics 2019.

StatLink https://doi.org/10.1787/888934015410

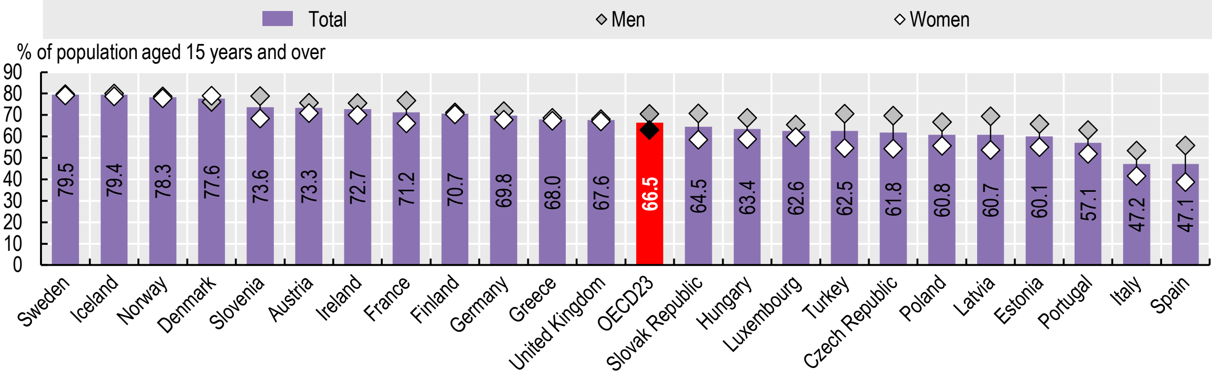
Figure 4.9. **Daily vegetable consumption amongst adults by sex, 2017 (or nearest year)**



Source: OECD Health Statistics 2019.

StatLink https://doi.org/10.1787/888934015429

Figure 4.10. **Moderate weekly physical activity among adults by sex, 2014**



Source: Eurostat EHIS 2014.

StatLink https://doi.org/10.1787/888934015448

Overweight and obesity among adults

Being overweight, including pre-obesity and obesity, is a major risk factor for various non-communicable diseases including diabetes, cardiovascular diseases and certain cancers. High consumption of calories-dense food and increasingly sedentary lifestyles have contributed to growing global obesity rates. The rate of growth has been highest in early adulthood and has affected all population groups, in particular women and those with lower levels of education (Afshin et al., 2017[1]). High body mass index (BMI) has been estimated to cause 4.7 million deaths worldwide (Global Burden of Disease Collaborative Network, 2018[2])

Based on measured data, 58% of adults were overweight or obese in 2017 on average across 23 OECD countries with comparable data (Figure 4.11). For Chile, Mexico and the United States this figure exceeds 70%. Conversely, in Japan and Korea, less than 35% of adults were overweight or obese. The remaining 13 OECD countries include self-reported data, with rates ranging from 42% in Switzerland to 65% in Iceland. These estimates, though, are less reliable and typically lower than those based on measured data. For both measured and self-reported data, men are more likely than women to be overweight.

The proportion of overweight adults has been gradually increasing in most OECD countries since the early 2000s, including in countries where rates are relatively low (Figure 4.12). In Japan and Korea, this proportion has increased by 2.1 and 4.2 percentage points, respectively, between 2000 and 2017. In countries with relatively high rates of adults overweight, this figure ranged from 2.3 percentage points in Canada to 11.9 in Chile.

Adults with a low level of education are more likely to be overweight than those with a tertiary education level or above in all 27 OECD countries examined (Figure 4.13). The difference in the proportion of overweight adults by education level was greatest in Luxembourg, Spain and France, where the gap was greater than 15 percentage points.

OECD member countries have implemented a suite of regulatory and non-regulatory initiatives to reduce overweight population rates. Prominent examples include mass media campaigns to promote the benefits of healthy eating; promotion of nutritional education and skills; ‘sin’ taxes on energy-dense food and drink items to discourage consumption; food labelling to communicate nutritional value; and agreements with the food industry to improve the nutritional value of products. Policymakers are also exploring initiatives that address the social determinants of being overweight. For example, the *Healthy Food Financing Initiative* in the United States aims to improve access to healthy foods in underserved areas. Despite these efforts, the overweight epidemic has not been reversed, highlighting the issue’s complexity (OECD, 2019[3]).

Definition and comparability

Overweight is defined as abnormal or excessive accumulation of fat, which presents a risk to health. The most frequently used measure is 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 WHO classifications, adults over age 18 with a BMI greater than or equal to 25 are defined as pre-obese, and those with a BMI greater than or equal to 30 as obese. Data come from national sources – in a few instances these may differ from data shown in the OECD 2019 report on obesity, which uses data from the WHO Global Health Observatory, with age-standardised estimates and other methodological differences. Overweight includes both pre-obesity and obesity. BMI measurements are the same for both genders and adults of all ages. Data for BMI can also be collected using self-reported estimates of height and weight. BMI estimates based on self-reported data are typically lower and less reliable than those based on measured data.

For Figure 4.13, the lowest level of education refers to people with less than a high-school diploma, while the highest refers to people with a university or other tertiary diploma.

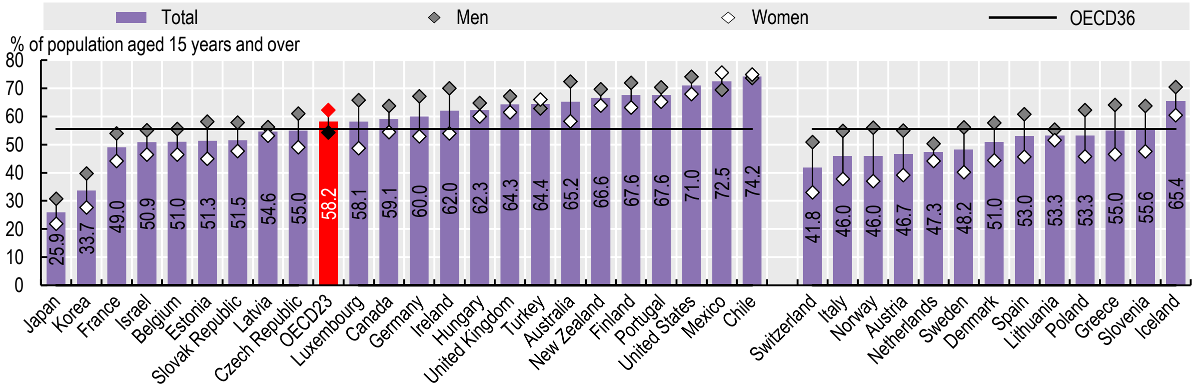
References

[1] Afshin, A. et al. (2017), “Health Effects of Overweight and Obesity in 195 Countries over 25 Years.”, *The New England Journal of Medicine*, *http://dx.doi.org/10.1056/NEJMoa1614362*.

[2] Global Burden of Disease Collaborative Network (2018), *Global Burden of Disease Study 2017 (GBD 2017) Results*, Seattle, United States: Institute for Health Metrics and Evaluation (IHME).

[3] OECD (2019), *The Heavy Burden of Obesity: The Economics of Prevention*, OECD Publishing, Paris, *https://doi.org/10.1787/67450d67-en*.

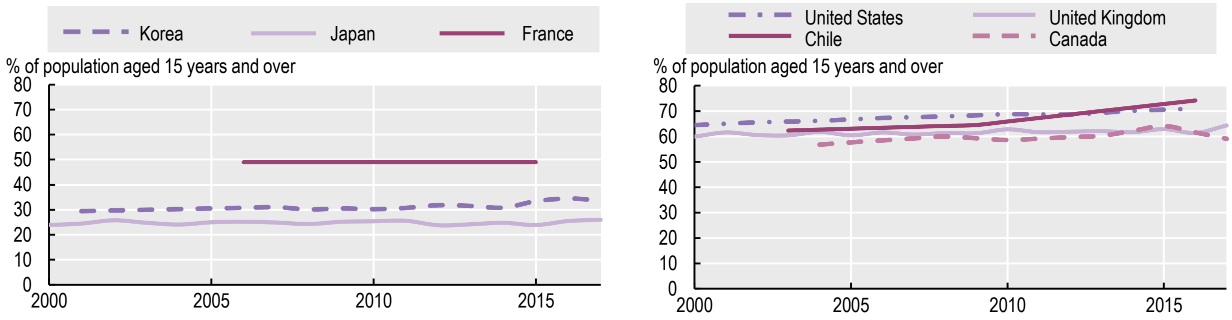
Figure 4.11. **Overweight including obesity among adults by sex, measured and self-reported, 2017 (or nearest year)**



Note: Left- and right-hand side estimates utilise measured and self-reported data, respectively. OECD36 average includes both data types.
Source: OECD Health Statistics 2019.

StatLink https://doi.org/10.1787/888934015467

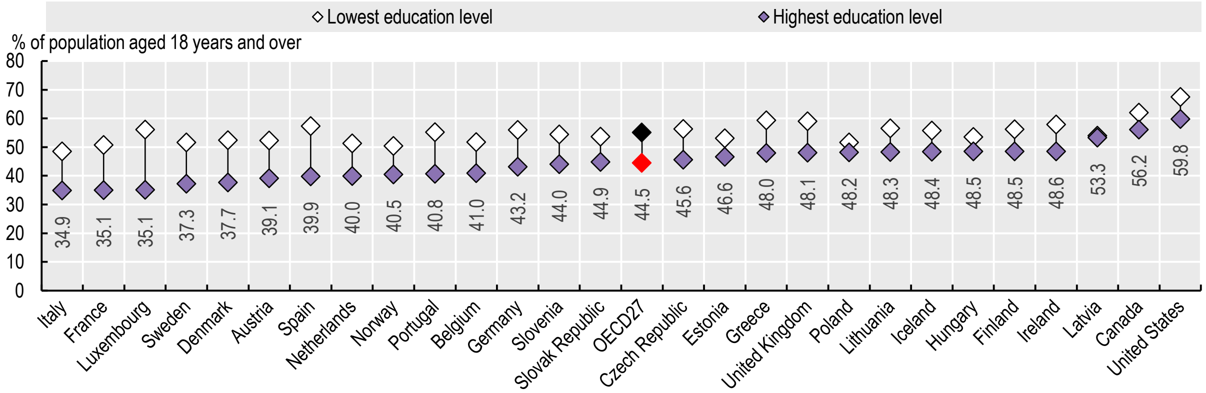
Figure 4.12. **Evolution of overweight including obesity in selected countries, measured, 2000-17 (or nearest year)**



Note: Linear interpolation was used to impute values where data was missing.
Source: OECD Health Statistics 2019.

StatLink https://doi.org/10.1787/888934015486

Figure 4.13. **Difference in overweight including obesity by education level, self-reported, 2014**



Source: EHIS2 and OECD estimates based on national health survey data.

StatLink https://doi.org/10.1787/888934015505

Overweight and obesity among children

Childhood overweight rates, including pre-obesity and obesity, have been growing worldwide. Environmental factors, lifestyle preferences, genetic makeup and culture all can cause children to be overweight. Obese children are at greater risk of developing hypertension and metabolic disorders. Psychologically, obesity can lead to poor self-esteem, eating disorders and depression. Further, obesity may act as a barrier for participating in educational and recreational activities. Childhood obesity is particularly concerning as it is a strong predictor of obesity in adulthood, which is linked to diabetes, heart disease and certain types of cancer (Bösch et al., 2018[1]; OECD, 2019[2]).

Almost one-third (31%) of children aged 5-9 years living in OECD countries are overweight (Figure 4.14). In the United States, Italy, New Zealand and Greece this figure exceeds 40%. Conversely, in Japan, Estonia, Lithuania, Switzerland and Latvia, rates are below 25%. The proportion of overweight boys exceeds that of girls in 38 of the 43 OECD and partner countries examined. Countries with the greatest disparity between genders are China, Korea, Poland, the Czech Republic and the Slovak Republic (above a 10 percentage point difference). The gap between boys and girls is small in Portugal and the United Kingdom (less than 1 percentage point).

The rate of overweight children increased from 20.5% to 31.4% across 35 OECD countries between 1990 and 2016 (Figure 4.15). Only in Belgium did this rate fall, albeit marginally. Growth was greatest in Hungary, Poland, Turkey, Slovenia and the Slovak Republic whose rates increased by more than 100%. At the other end of the spectrum, Sweden, Israel, Iceland, Japan and Denmark recorded growth rates at or below 25%. Similar trends were found in non-OECD countries. Growth in these countries was typically higher, which reflects their relatively low starting value. For example, the proportion of overweight and obese children in Indonesia, South Africa and India grew by over 600%; however, their starting values were just 2.4%, 2.3%, and 1%, respectively.

Childhood obesity is a complex issue and its causes are multi-faceted. Consequently, the response has been to implement a suite of complementary policies involving government, community leaders, schools, health professionals and industry. Commonly used policies to alter individual behaviours or the obesogenic environment include tightened regulation of advertising of unhealthy foods and drinks targeted at children; improved access to parks and playgrounds; food reformulation policies; and price interventions to promote a healthy lifestyle (OECD, 2019[2]).

Definition and comparability

Childhood overweight and obesity rates were calculated using body mass index (BMI). BMI is calculated by dividing weight in kilograms by height in metres squared.

A child is considered overweight if their BMI is one standard deviation above the median, according to the World Health Organization child growth standards. A child whose BMI is two standard deviations above the median is classified as obese.

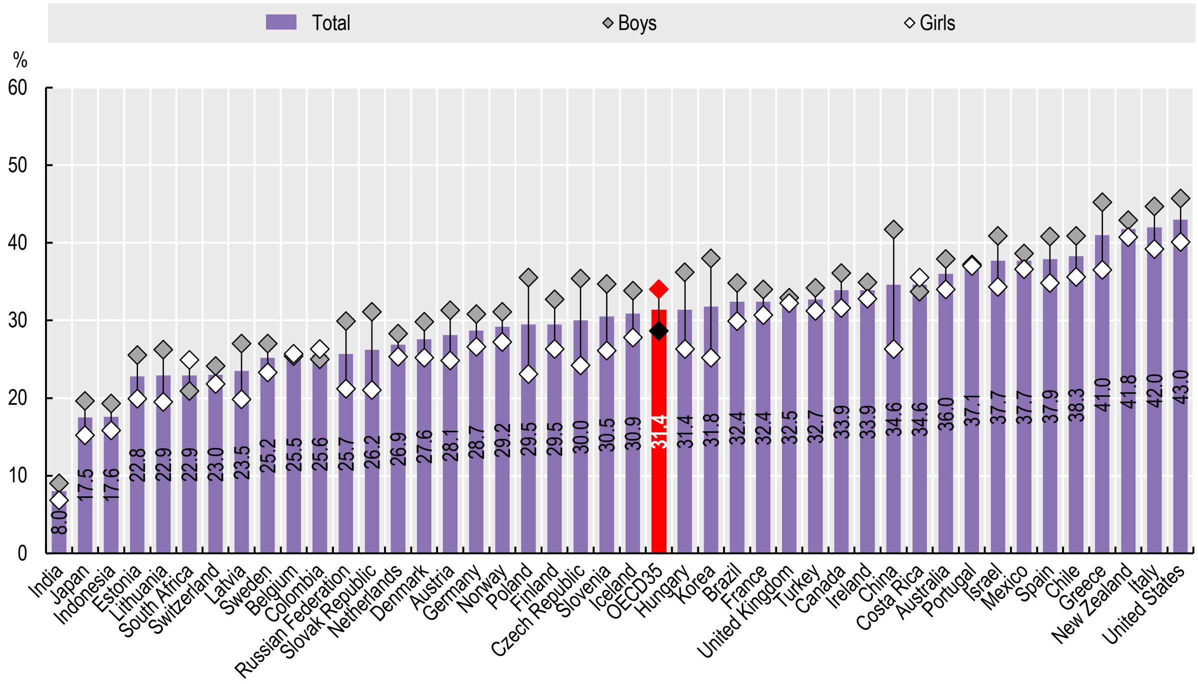
References

[1] Bösch, S. et al. (2018), *Taking Action on Childhood Obesity*, World Health Organization & World Obesity Federation, Geneva, *https://apps.who.int/iris/bitstream/handle/10665/274792/WHO-NMH-PND-ECHO-18.1-eng.pdf?ua=1*.

[2] OECD (2019), *The Heavy Burden of Obesity: The Economics of Prevention*, Organisation for Economic Cooperation and Development, Paris, *https://doi.org/10.1787/67450d67-en*.

[3] OECD (2017), *Obesity Update*, OECD, Paris, *https://www.oecd.org/els/health-systems/Obesity-Update-2017.pdf*.

Figure 4.14. **Overweight including obesity among 5-9 year olds by sex, 2016**



Source: WHO Global Health Observatory.

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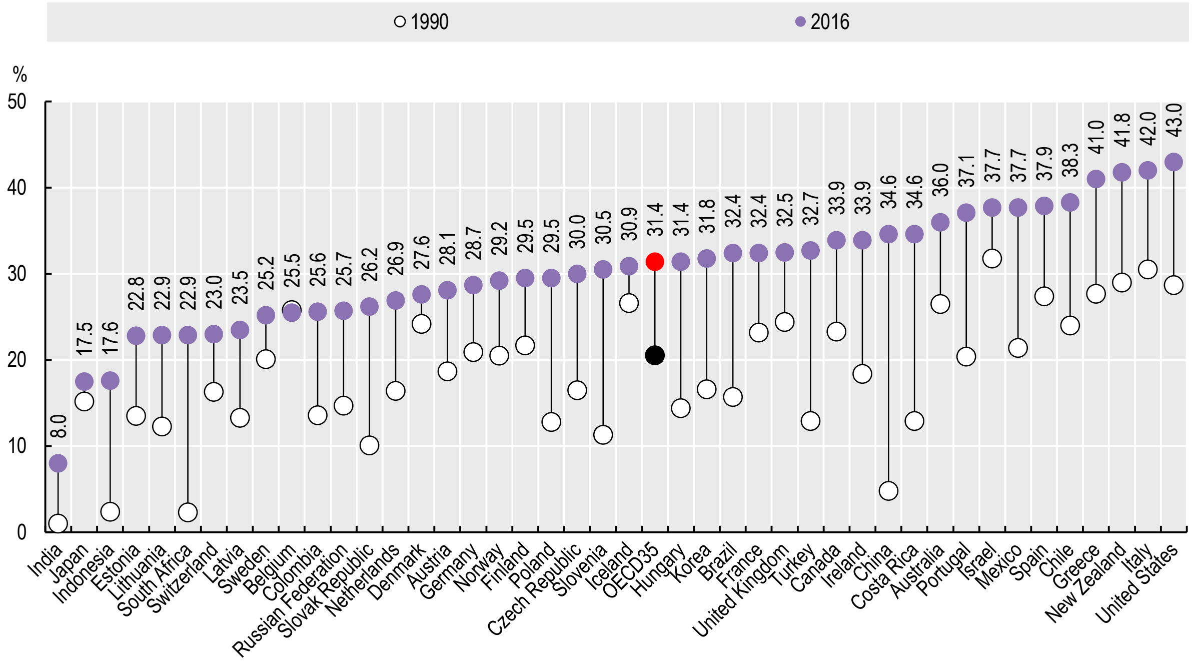
Figure 4.15. **Change in overweight including obesity among 5-9 year olds, 1990-2016**



Source: WHO Global Health Observatory.

StatLink https://doi.org/10.1787/888934015543

Air pollution and extreme temperatures

Climate change is one of the biggest challenges of present and future generations. It is linked to different types of environment distress, including air pollution and extreme temperatures. Air pollution is already a major cause of death and disability today, and its future impact is likely to be even greater without adequate policy action. Projections have estimated that outdoor air pollution may cause 6 to 9 million premature deaths a year worldwide by 2060, and cost 1% of global GDP as a result of sick days, medical bills and reduced agricultural output (OECD, 2015[1]).

Among OECD countries, ambient (outdoor) and household (indoor) air pollution caused about 40 deaths per 100 000 people in 2016 (Figure 4.16). Death rates ranged from over 80 deaths per 100 000 in Latvia, Hungary and Lithuania, to 15 deaths or less in New Zealand and Canada. In partner countries, death rates were particularly high in India and China (around 140 deaths per 100 000 people), and also higher than most OECD countries in the Russian Federation and Indonesia.

Extreme temperatures are also a consequence of climate change. Both extreme heat and cold can cause health problems and lead to death, as has been experienced in some OECD countries in recent decades. Extreme cold has generally had a greater impact on mortality than heatwaves, particularly in Eastern Europe and Nordic countries. Still, heatwaves have caused significant numbers of deaths in certain years. For instance, the record warm summer of 2003 caused around 80 000 deaths in Europe and the heatwaves in the summer of 2015 caused more than 3 000 deaths in France alone.

Death rates due to cold extreme temperatures are far higher in Lithuania, Latvia and Estonia than other OECD countries, with over 1 400 deaths per million people since 2000 (Figure 4.17). Although these high death rates are clearly linked to the naturally cold climates in these countries, they should not be viewed as inevitable – for example, Canada, Iceland and Norway had less than 80 deaths per million people over the same period. Evidence suggests that these deaths might be also linked to excessive alcohol use. For instance, in Finland among the deaths due to extreme cold in 2015-2017, 46% of men and 24% of women were alcohol-intoxicated.

Extreme heat caused 82 deaths per million people in Japan, followed by rates of 39 in France, 28 in Belgium and 21 in the United States since 2000. Whilst the total number of deaths due to cold temperatures has remained relatively stable since 2000, deaths from extreme heat have been on an upward trend, with two peaks in 2003 and 2010 (Figure 4.18).

Inter-sectoral policies are needed to address the impact of climate change. Countries can start planning to address pollution and its impacts on health, for instance, by creating partnerships with various international, national and local stakeholders, including local city authorities and ministries of industry, environment, transport, and agriculture. Bottled gas, for instance, can be used to replace solid fuels for cooking in order to address indoor pollution deaths. Reducing crop burning and lowering emissions from motor vehicles and industries would lower ambient air pollution. Health systems can also contribute, by preparing for new diseases that can develop with new climate conditions; promoting consumption of sustainably grown and sourced food; and reducing the carbon footprint of health facilities. In addition, health providers can reduce the environmental footprint in hospitals and in nursing homes by encouraging healthier food consumption, waste reduction and efficient energy use (Landrigan et al., 2018[2]; OECD, 2017[3]).

Definition and comparability

Household (indoor) air pollution results from polluting fuel used mainly for cooking. Ambient (outdoor) air pollution results from emissions from industrial activity, households, cars and trucks, which are complex mixtures of air pollutants, many of which are harmful to health. Of all of these pollutants, fine particulate matter has the greatest effect on human health. Polluting fuels include solid fuels such as wood, coal, animal dung, charcoal, crop wastes and kerosene. Attributable mortality is calculated by first combining information on the increased (or relative) risk of a disease resulting from exposure, with information on how widespread the exposure is in the population (e.g. the annual mean concentration of particulate matter to which the population is exposed). Applying this fraction to the total burden of disease (e.g. cardiopulmonary disease expressed as deaths or DALYs), gives the total number of deaths that results from exposure to household or ambient air pollution.

Data on fatalities due to extreme temperature events come from national registries on deaths by cause collected in the WHO Mortality Database. Deaths due to exposure to excessive natural heat (ICD code X30) and exposure to excessive natural cold (X31) were selected.

Note that for both air pollution and deaths from extreme temperatures, data are based on WHO estimates, which may differ from national data.

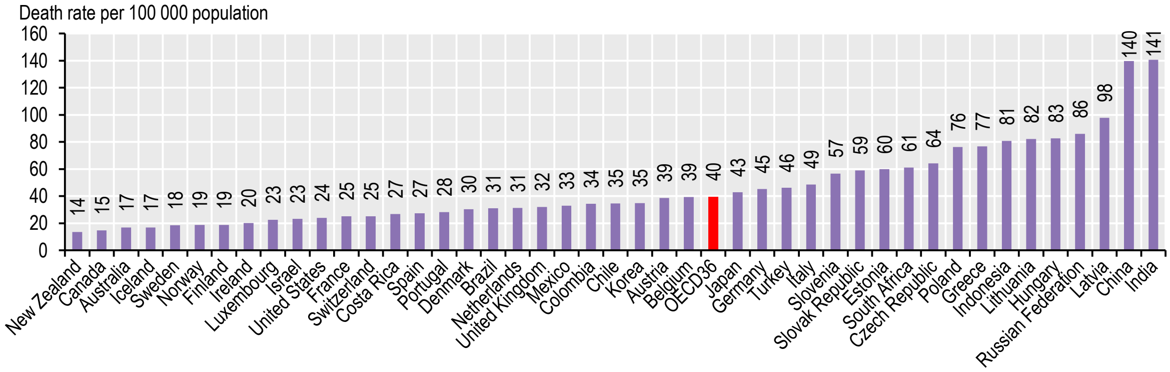
References

[2] Landrigan, P. et al. (2018), “The Lancet Commission on pollution and health”, *The Lancet*, Vol. 391/10119, pp. 462-512, *http://dx.doi.org/10.1016/s0140-6736(17)32345-0*.

[3] OECD (2017), *Healthy people, healthy planet – The role of health systems in promoting healthier lifestyles and a greener future*, Organisation for Economic Cooperation and Development, OECD, Paris, *http://www.oecd.org/health/healthy-people-healthy-planet.htm*.

[1] OECD (2015), *The Economic Consequences of Climate Change*, OECD Publishing, Paris, *https://dx.doi.org/10.1787/9789264235410-en*.

Figure 4.16. **Ambient and household air pollution attributable death rate, 2016**



Source: Global Health Observatory data repository, WHO.

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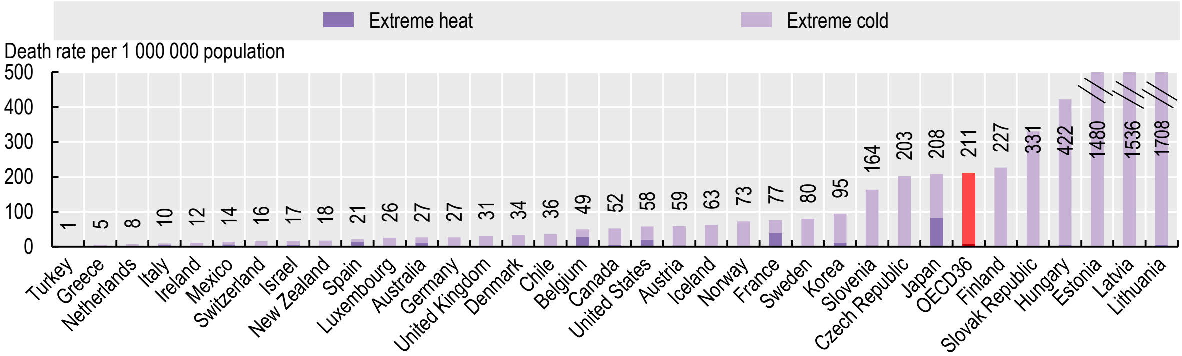
Figure 4.17. **Cumulative death rate due to extreme heat and extreme cold temperatures, 2000-17**

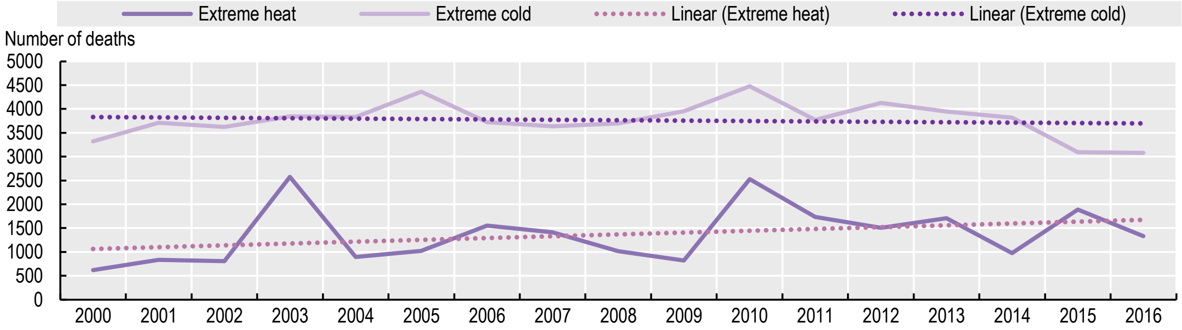


Note: Lithuania, Latvia and Estonia show cumulative death rates higher than 500 per 1 000 000. The graph is truncated at this level to allow better comparability.

Source: WHO Mortality Database.

StatLink https://doi.org/10.1787/888934015581

Figure 4.18. **Number of deaths due to extreme heat and extreme cold temperatures in OECD36, 2000-16**



Source: WHO Mortality Database.

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5. ACCESS TO CARE

Population coverage for health care

Extent of health care coverage

Use of primary care services

Unmet need for health care

Financial hardship and out-of-pocket expenditure

Geographic distribution of doctors

Waiting times for elective surgery

Population coverage for health care

The share of a population covered for a core set of health services offers an initial assessment of access to care and financial protection. However, it is only a partial measure of accessibility and coverage, focusing on the number of people covered. Universal health coverage also depends on the range of services covered and the degree of cost sharing for these services. Such services also need to be of sufficient quality. Indicators in this chapter focus on access and different dimensions of coverage, while Chapter 6 provides indicators on quality and outcomes of care.

Most OECD countries have achieved universal (or near-universal) coverage for a core set of health services, which usually include consultations with doctors, tests and examinations, and hospital care (Figure 5.1). National health systems or social health insurance have typically been the financing schemes for achieving universal health coverage. A few countries (the Netherlands, Switzerland) have obtained universality through compulsory private health insurance – supported by public subsidies and laws on the scope and depth of coverage. In Greece, a new law in 2016 closed the coverage gap for the 10% of the population who were previously uninsured.

Population coverage for core services remains below 95% in seven OECD countries, and is lowest in Mexico, the United States and Poland. Mexico has expanded coverage since 2004, but gaps remain. In the United States, the uninsured tend to be working-age adults with lower education or income levels – the share of people uninsured decreased sharply from about 13% in 2013 to 9% in 2015 (United States Census Bureau, 2018[1]), but has remained relatively unchanged since then. In Poland, the majority of uninsured are citizens living abroad. In Ireland, though coverage is universal, less than half of the population are covered for the cost of GP visits.

In some countries, citizens can purchase additional health coverage through voluntary private insurance. This can cover any cost sharing left after basic coverage (complementary insurance), add further services (supplementary insurance) or provide faster access or larger choice of providers (duplicate insurance). Eight OECD countries have additional private insurance coverage for over half of the population (Figure 5.2). In France, nearly all of the population (96%) have complementary insurance to cover cost sharing in the social security system – with public subsidies making it free or at reduced rates for poor households. Complementary insurance is also widely used in Belgium, Slovenia and Korea. Israel and the Netherlands have the largest supplementary market (over 80% of the population), whereby private insurance pays for dental care, physiotherapy, certain prescription drugs and other services not publicly reimbursed. Duplicate private health insurance, providing faster private sector access to medical services where there are waiting times in public systems, are largest in Ireland and Australia. In the United States, 8% of the population has complementary private health insurance. This is in addition to the 55% of the population with primary private health insurance.

Over the last decade, the population covered by additional private health insurance has increased in 18 of 27 OECD countries with comparable data, though these increases have often been small. Changes have been most marked in Korea, Denmark, Slovenia and Finland (Figure 5.3). Note that in Slovenia increases were mainly due to one insurance company adding free supplementary health insurance to its insurance portfolio. Several factors determine how additional private health insurance evolves, notably the extent of gaps in access to publicly financed services and government interventions directed at private health insurance markets.

Definition and comparability

Population coverage for health care is defined here as the share of the population eligible for a core set of health care services – whether through public programmes or primary private health insurance. The set of services is country-specific but usually includes consultations with doctors, tests and examinations, and hospital care. Public coverage includes both national health systems and social health insurance. On national health systems, most of the financing comes from general taxation, whereas in social health insurance systems, financing typically comes from a combination of payroll contributions and taxation. Financing is linked to ability-to-pay. Primary private health insurance refers to insurance coverage for a core set of services, and can be voluntary or mandatory by law (for some or all of the population). Additional private health insurance is always voluntary. Private insurance premiums are generally not income-related, although the purchase of private coverage may be subsidised by government.

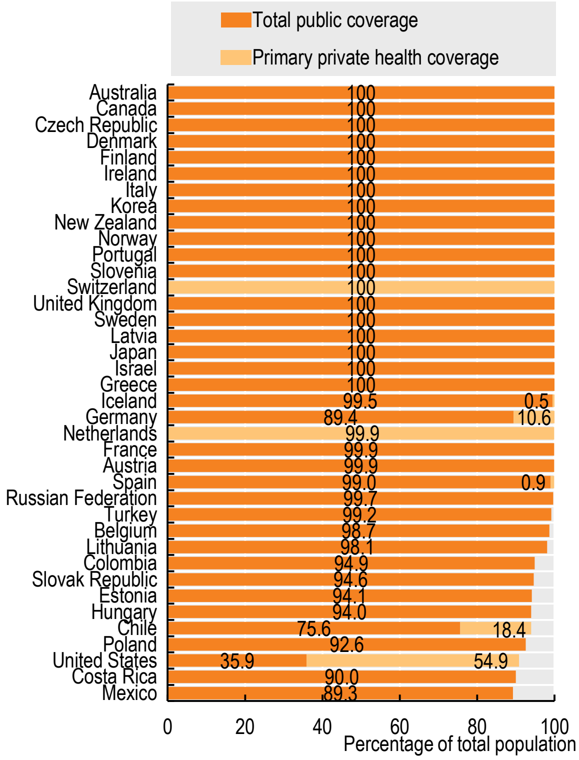
References

[3] OECD (2016), *OECD Reviews of Health Systems: Mexico*, OECD Publishing, Paris, *https://doi.org/10.1787/9789264230491-en*.

[2] OECD/European Observatory on Health Systems and Policies (forthcoming), *Greece, Ireland, Poland, Country Health Profiles 2019, State of Health in the EU*.

[1] United States Census Bureau (2018), *Health Insurance Coverage in the United States*.

Figure 5.1. **Population coverage for a core set of services, 2017 (or nearest year)**



Source: OECD Health Statistics 2019.

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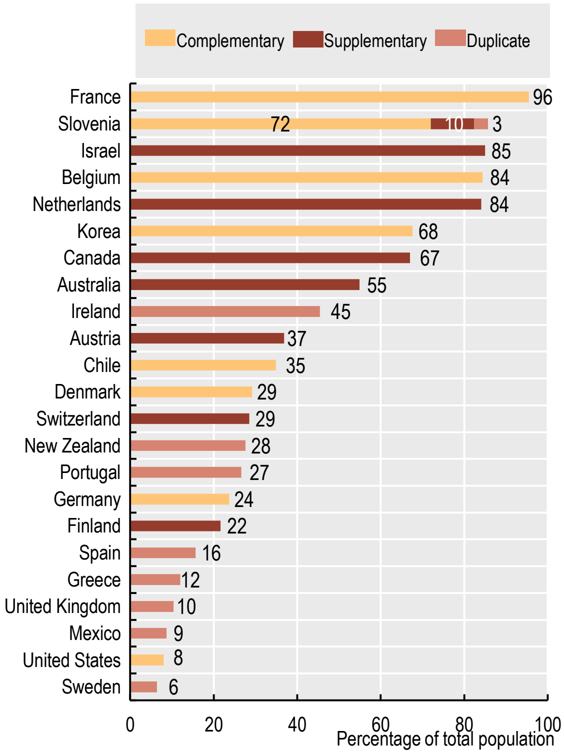
Figure 5.2. **Voluntary private health insurance coverage by type, 2017 (or nearest year)**

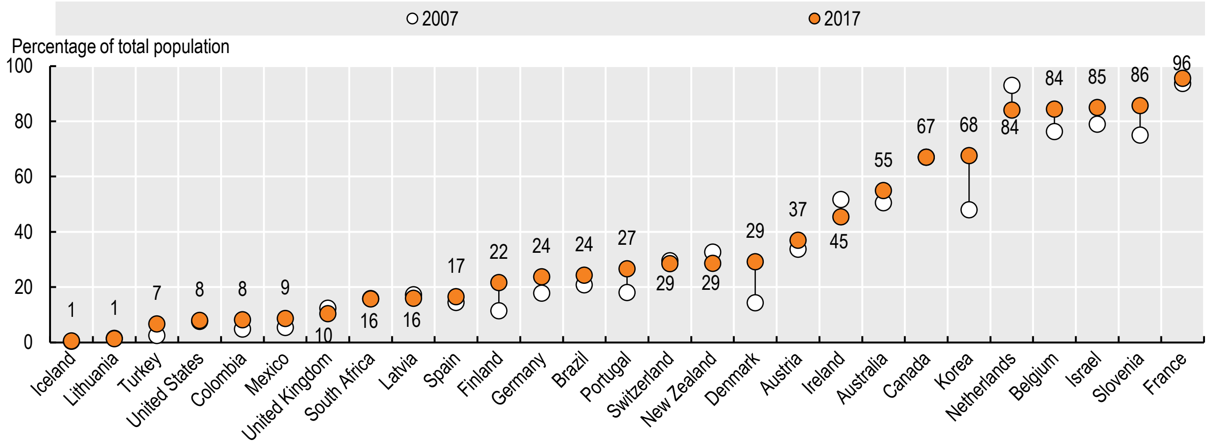


Note: Private health insurance can be both duplicate and supplementary in Australia; complementary and supplementary in Denmark and Korea; and duplicate, complementary and supplementary in Israel and Slovenia. In the United States, 55% of the population also has primary private health insurance.

Source: OECD Health Statistics 2019.

StatLink https://doi.org/10.1787/888934015638

Figure 5.3. **Trends in private health insurance coverage, 2007 and 2017 (or nearest year)**



Source: OECD Health Statistics 2019.

StatLink https://doi.org/10.1787/888934015657

Extent of health care coverage

In addition to the share of the population entitled to core health services, the extent of health care coverage is defined by the range of services included in a publicly defined benefit package and the proportion of costs covered. Figure 5.4 assesses the extent of overall coverage, as well as coverage for selected health care services, by computing the share of expenditure covered under government schemes or compulsory health insurance. Differences across countries in the extent of coverage can be due to specific goods and services being included or excluded in the publicly defined benefit package (e.g. a particular drug or medical treatment); different cost-sharing arrangements; or some services only being covered for specific population groups in a country (e.g. dental treatment).

On average across OECD countries, almost three-quarters of all health care costs were covered by government or compulsory health insurance schemes. This share rose above 80% in ten countries (Norway, Germany, Japan, Denmark, Luxembourg, Sweden, France, the Czech Republic, Iceland, the Netherlands). However, in Mexico, Latvia and Korea less than 60% of all costs are covered by publicly mandated schemes. Coverage is also comparatively low in the Russian Federation.

Inpatient services in hospitals are more comprehensively covered than any other type of care. Across the OECD, 88% of all inpatient costs are borne by government or compulsory insurance schemes. In many countries, patients have access to free acute inpatient care or only have to make a small co-payment. As a result, coverage rates are near 100% in Sweden, Norway, Iceland and Estonia. Only in Korea, Mexico, Greece, Australia and Ireland is the financial coverage for the cost of inpatient care 70% or lower. In some of those countries, patients frequently choose treatment in private facilities where coverage is not (fully) included in the public benefit package.

More than three-quarters of spending on outpatient medical care in OECD countries are borne by government and compulsory insurance schemes (77%). Coverage ranged from under 60% in Korea and Italy, to over 90% in the Slovak Republic, Denmark and the Czech Republic. Outpatient primary and specialist care are generally free at the point of service, but user charges may still apply for specific services or if non-contracted private providers are consulted. This is for example the case in Denmark, where 92% of total costs are covered but user charges exist for visits to psychologists and physiotherapists, and the United Kingdom (85%), where care provision outside of NHS commissioned services are not covered.

Public coverage for dental care costs is far more limited across the OECD due to restricted service packages (frequently limited to children) and higher levels of cost-sharing. On average only around 30% of dental care costs are borne by government schemes or compulsory insurance. More than half of dental spending is covered in only three OECD countries (Japan, Germany and the Slovak Republic). In Greece and Spain, dental care costs for adults without any specific entitlement are not covered. Voluntary health insurance may play an important role in providing financial protection when dental care is not comprehensively covered in the benefit package (e.g. the Netherlands).

Coverage for pharmaceuticals is also typically less comprehensive than for inpatient and outpatient care: across the OECD, around 57% of pharmaceutical costs are covered by government or compulsory insurance schemes. This share is less than 40% in Lithuania, Iceland, Poland, Canada and Latvia. Coverage is most generous in Germany (84%), followed by France (80%) and Ireland (78%). Over-the-counter medications – which by their nature are not usually covered by public schemes – play an important role in some countries (see indicator “Pharmaceutical Expenditure” in Chapter 10).

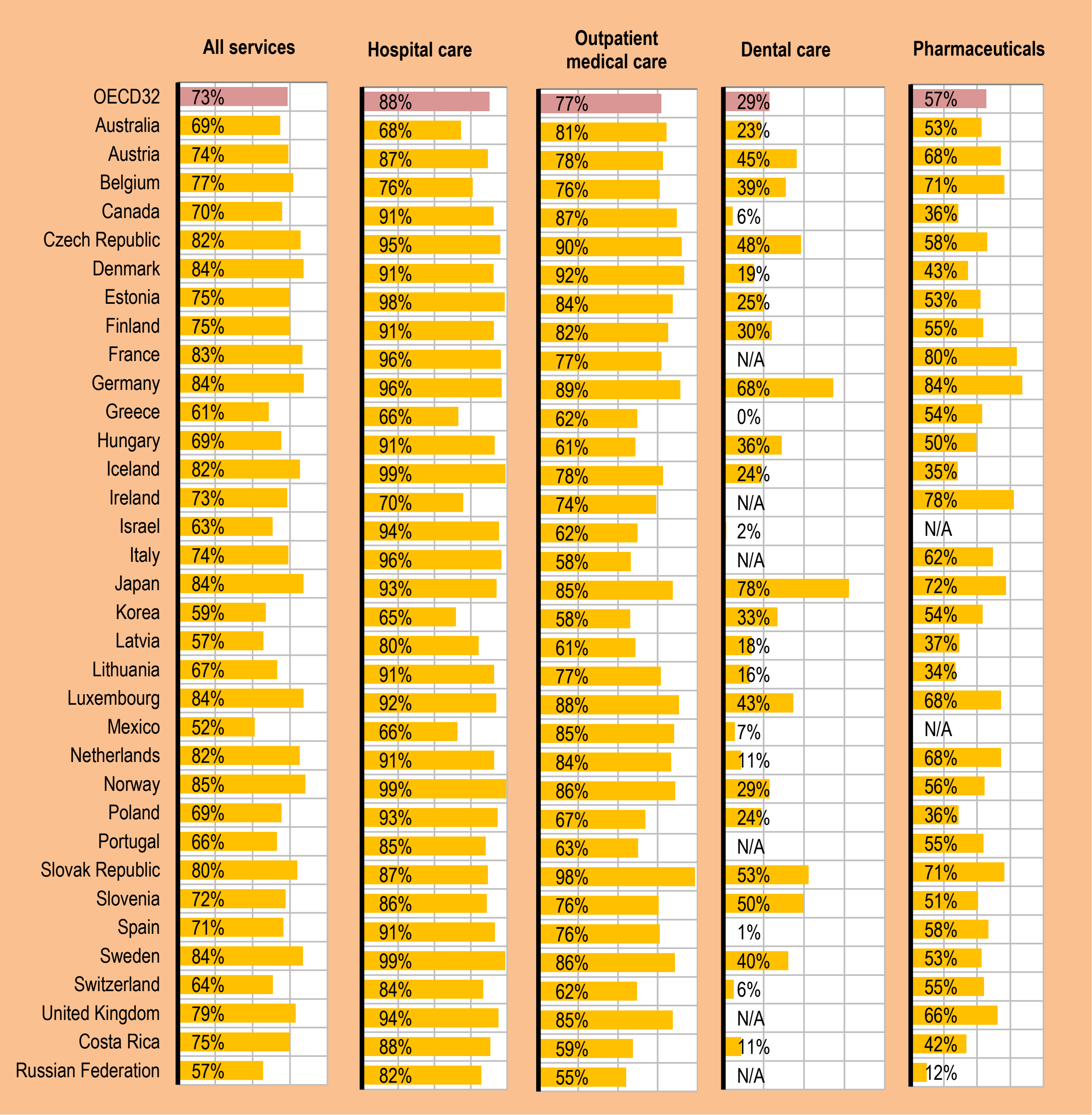
Definition and comparability

Health care coverage is defined by the share of the population entitled to services, the range of services included in a benefit package and the proportion of costs covered by government schemes and compulsory insurance schemes. Coverage provided by voluntary health insurance and other voluntary schemes such as charities or employers is not considered. The core functions analysed here are defined based on definitions in the System of Health Accounts 2011. Hospital care refers to inpatient curative and rehabilitative care in hospitals, outpatient medical care to all outpatient curative and rehabilitative care excluding dental care, pharmaceuticals to prescribed and over-the-counter medicines including medical non-durables.

Comparing the shares of the costs covered for different types of services is a simplification. For example, a country with more restricted population coverage but a very generous benefit basket may display a lower share of coverage than a country where the entire population is entitled to services but with a more limited benefit basket.

Figure 5.4. **Extent of coverage in OECD countries, 2017 (or nearest year)**

Government and compulsory insurance spending as proportion of total health spending by type of care



Source: OECD Health Statistics 2019.

StatLink https://doi.org/10.1787/888934015676

Use of primary care services

Primary care services are the main entry point into health systems. Indicators on the use of such services therefore provide a critical barometer of accessibility, with data disaggregated by income illustrating the degree of inequalities in access.

In terms of access to a doctor, on average just under 80% of individuals aged 15 or over reported visiting a doctor in the past year, adjusting for need (Figure 5.5). Note that need is modelled, rather than measured directly (see definition and comparability box). Furthermore, the probability of visiting a doctor may be lower in some countries because people make greater use of other types of health professionals, such as nurses. Notwithstanding these issues, cross-country differences in utilisation are large, with need-adjusted probabilities of visiting a doctor ranging from around 65% in Sweden and the United States to 89% in France.

Socioeconomic inequalities in accessing a doctor are evident within almost all OECD countries. Excepting Denmark and the Slovak Republic, wealthier individuals are more likely to see a doctor than individuals in the lowest income quintile, for a comparable level of need. Pro-rich inequalities in doctor access are highest in Finland and the United States (over 15 percentage-points difference) but practically non-existent in the United Kingdom, Ireland and the Netherlands. Income inequalities in accessing doctors are much more marked for specialists than for general practitioners (OECD, 2019 [1]).

For dental care, only 63% of individuals aged 15 or over reported visiting a dentist in the past year, on average across 27 OECD countries (Figure 5.6). This is partly due to benefit design: public coverage for dental care is much lower than for hospital care or doctor consultations in many OECD countries (see indicator on “Extent of health care coverage”). Overall access to dental care ranged from 41% of people visiting a dentist in the United States, to 93% in Ireland. Socioeconomic disparities are large – on average, there is an almost 20 percentage-point difference in visits between high and low-income groups (72% of wealthier individuals visited a dentist, compared with 54% among those from the lowest income quintile). Inequalities are largest in Canada, Portugal and the United States (over 30 percentage-point difference); but almost zero in Ireland.

Uptake of cancer screening is also lower amongst the less well-off. This is despite most OECD countries providing screening programmes at no cost. For example, on average 79% of wealthier women had a Pap smear test for cervical cancer, as compared with 65% amongst women from the lowest income quintile (Figure 5.7). Wealthier people also have greater access to screening for both breast and colorectal cancer, though inequalities are less marked than for cervical cancer. Screening for cervical cancer is disproportionately low among the bottom income group in Sweden and Norway (over 30 percentage-point gap between income quintiles), but relatively equal in Ireland, Chile and Iceland. Overall uptake of cervical cancer screening ranged from just under 50% in the Netherlands, to over 85% in the Czech Republic and Austria. This applies to women aged 20 to 69 with a screening interval of three years. Note that some countries (e.g. the Netherlands) offer screening amongst a narrower age group and less frequently. This may result in lower screening rates but not necessarily worse performance. Countries offering nationwide population-based screening programmes have more equal access, as compared with countries where cancer screening happens in a more ad-hoc manner (Palencia, 2010[2])

Such observed problems in accessing health services, particularly for the less well-off, occur despite most OECD countries having universal or near-universal coverage for a core set of services (see indicator on “Population coverage for health care”). Part of the explanation are high cost sharing, exclusion of some services from benefit packages or implicit rationing of services. Limitations in health literacy, imperfect communication strategies, and low quality of care are also contributing factors.

Definition and comparability

The health care module of the European Health Interview Survey (EHIS) and of national surveys allows respondents to report on their utilisation of health care services, whether they have visited a GP, specialist or dentist in the past year, as well as their use of various screening services.

The probability of visiting a doctor is defined as having seen a GP or a specialist in the past year. However, the volume of care a person receives in itself does not accurately measure access, as people have varying health care needs. Need is not measured directly. Rather, predicted needs are modelled, and then the probability of visiting a doctor is adjusted by this value (see O’Donnell (2008[3]) for further methodological details). Here, four categorical variables are used to model predicted need: age, sex, self-rated health and activity limitations.

Cervical cancer screening is defined as the proportion of women aged 20-69 who have undergone a Pap smear test in the past 3 years.

References

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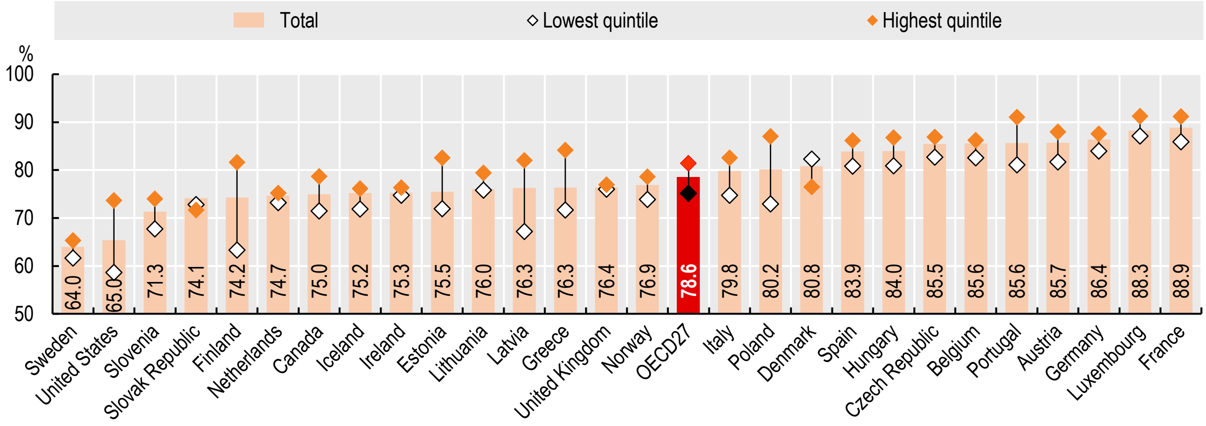
[1] OECD (2019), *Health for everyone? Social Inequalities in Health and Health Systems*, OECD Health Policy Studies, OECD Publishing, Paris, *https://doi.org/10.1787/3c8385d0-en*.

[2] Palencia, L. (2010), “Socio-economic inequalities in breast and cervical cancer screening practices in Europe: influence of the type of screening program”, *International Journal of Epidemiology*, Vol. 39/3, pp. 757-765.

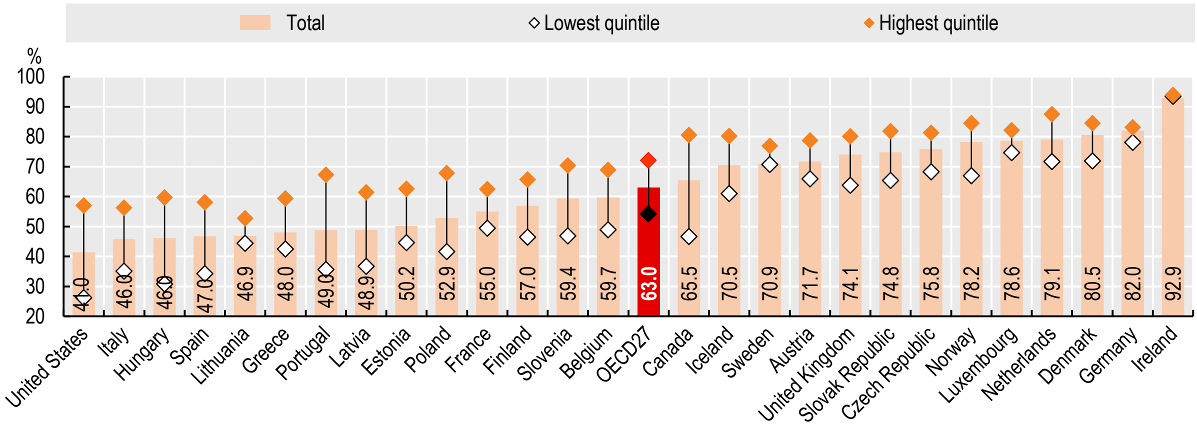
Figure 5.5. **Need-adjusted probability of visiting a doctor, by income, 2014**



Source: OECD estimates based on EHIS-2 and other national survey data.

StatLink https://doi.org/10.1787/888934015695

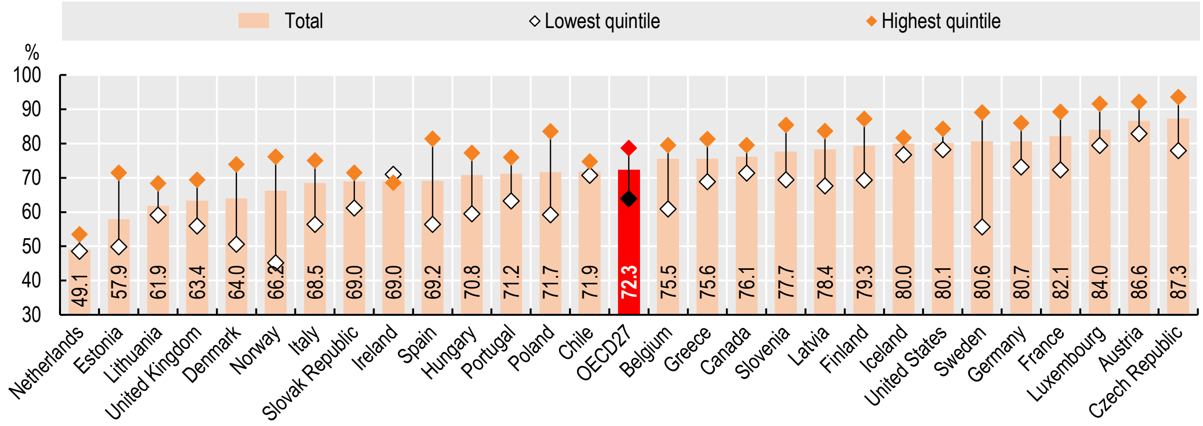
Figure 5.6. **Share of the population who visited a dentist, by income, 2014**



Source: OECD estimates based on EHIS-2 and other national survey data.

StatLink https://doi.org/10.1787/888934015714

Figure 5.7. **Share of women aged 20-69 screened for cervical cancer, by income, 2014**



Source: OECD estimates based on EHIS-2 and other national survey data.

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Unmet need for health care

People should be able to access health services when they need to, irrespective of their socio-economic circumstances. This is a fundamental principle underpinning all health systems across the OECD. Yet a quarter of individuals aged 18 or older report unmet need (defined as forgoing or delaying care) because limited availability or affordability of services compromise access, on average across 23 OECD countries. People may also forgo care because of fear or mistrust of health service providers. Strategies to reduce unmet need, particularly for the less well-off, need to tackle both financial and non-financial barriers to access (OECD, 2019[1]).

Looking specifically at availability of services, just over 20% of respondents reported unmet need due to waiting times and/or transportation difficulties (Figure 5.8). The share of the population delaying or forgoing care is comparatively high in Luxembourg, Italy, Ireland and Iceland (above 30%); but much lower in Norway (5%) and the Slovak Republic (7%). In response to this accessibility constraint, telemedicine initiatives are becoming more popular in many OECD countries (Hashiguchi Cravo Oliveira, forthcoming[2]). Socioeconomic disparities are significant: on average, 23% of people from the lowest income quintile report availability-related unmet need compared with 18% for richer individuals. This income gradient is largest in Finland, Italy and Portugal. In Slovenia, Poland and Estonia, richer individuals report slightly more unmet need than the less well-off, with results driven by the better-off being more likely to report waiting times as a cause of unmet need.

In terms of affordability, 17% of respondents delayed or did not seek needed care because the costs were too high for them (Figure 5.9). Across countries, unmet need due to such financial reasons ranged from less than 7% of the population in the Netherlands, the Czech Republic, the United Kingdom and Norway, to over 30% in Estonia, Ireland and Latvia. Affordability-related inequalities are more marked than inequalities related to availability of services. On average, 28% of people in the lowest income quintile forgo care for financial reasons compared with 9% for richer individuals. That is, the least well-off are three times more likely than the better-off to have unmet need for financial reasons.

Amongst people aged 65 or older, affordability constraints are slightly less marked than for the population as a whole. The proportion of cost-related reported unmet need is lower among older people, on average (14% compared to 17% across the OECD) and in most countries (17 out of 23). Income inequalities are also less marked among older individuals. Although older people from the top income quintile report similar levels of forgone care to the overall top quintile (8% and 9% respectively), older people from the bottom income quintile report significantly lower levels on average (20% compared to 27%).

Definition and comparability

The health care module of the European Health Interview Survey (EHIS) and of national surveys allows respondents to report on their utilisation of health care services, as well as potential barriers experienced when trying to access these services. The probability of reporting an unmet need due to availability issues is based on two of the available variables: unmet need due to long waiting lists or to physical accessibility (distance or transportation). The probability to report forgone care due to financial reasons aggregates unmet need for four different types of service (medical, dental and mental health services, and prescription drugs). Respondents who reported not having a health care need in the past 12 months were excluded from the sample. Probabilities thus reflect the proportion of people reporting an unmet need, among individuals that have reported a need, satisfied or not (rather than the total population surveyed). This leads to higher estimates than surveys where unmet needs are calculated as a share of the total population – as is done, for example, with the EU-SILC survey.

References

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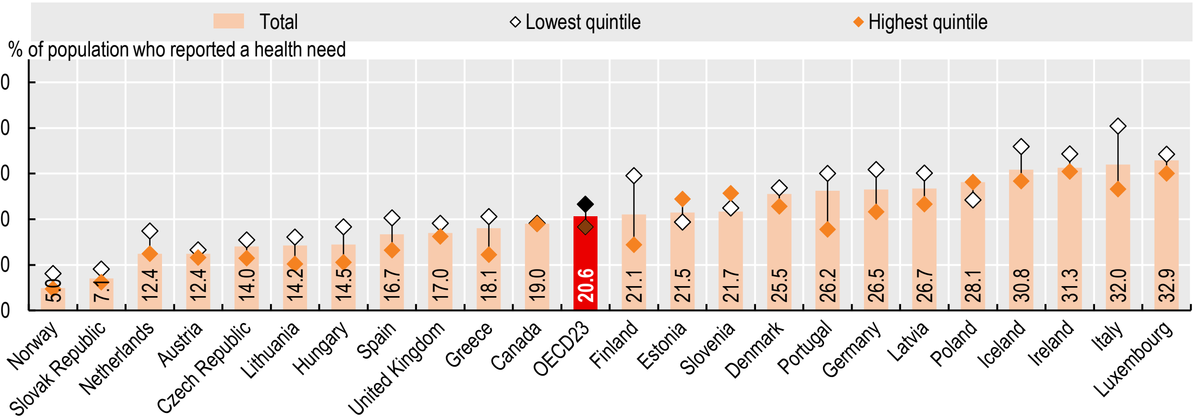
[1] OECD (2019), *Health for Everyone? Social inequalities in health and health systems*, OECD Publishing, Paris, *https://doi.org/10.1787/3c8385d0-en*.

Figure 5.8. **Population forgoing or postponing care because of limited availability, by income, 2014**



Source: OECD estimates based on EHIS-2 and other national health survey data.

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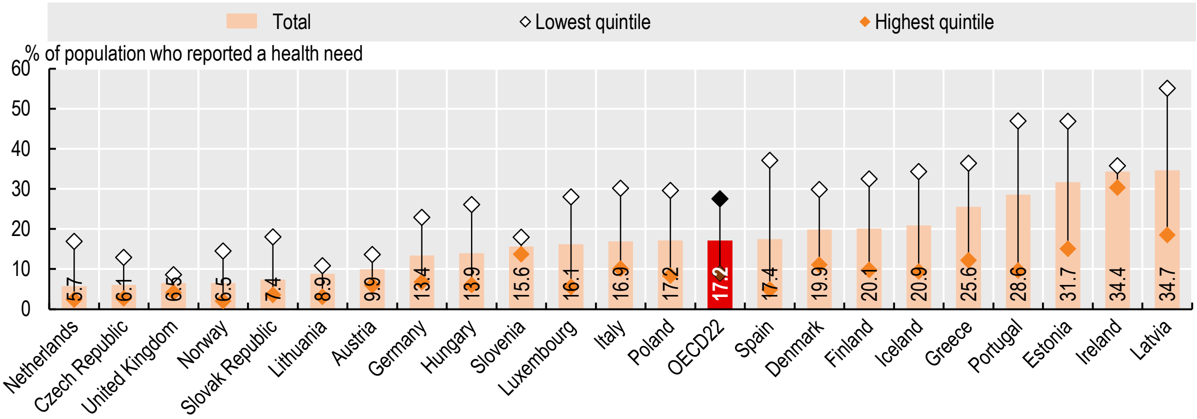
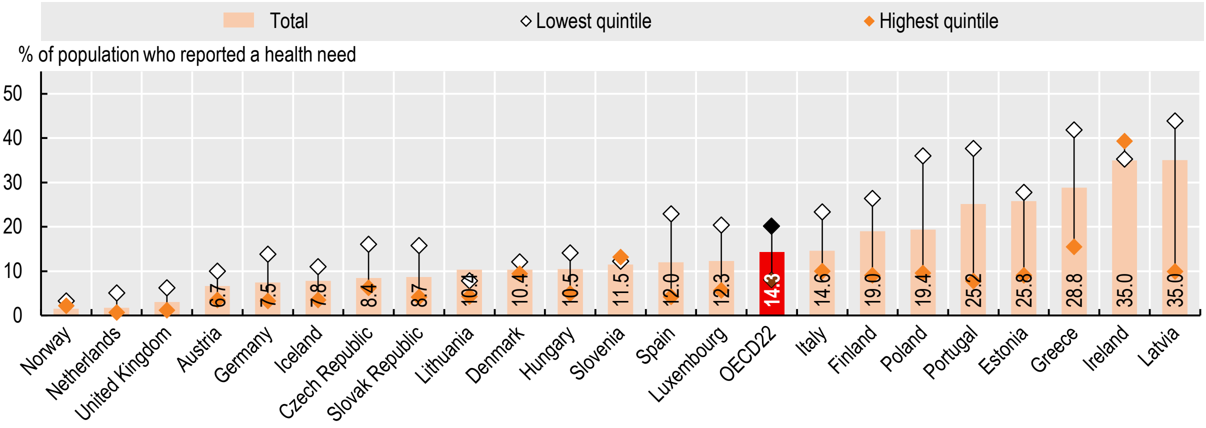
Figure 5.9. **Population forgoing care because of affordability, by income, 2014**



Source: OECD estimates based on EHIS-2.

StatLink https://doi.org/10.1787/888934015771

Figure 5.10. **Adults over 65 forgoing or postponing care because of affordability, by income, 2014**



Source: OECD estimates based on EHIS-2.

StatLink https://doi.org/10.1787/888934015790

Financial hardship and out-of-pocket expenditure

Where health systems fail to provide adequate financial protection, people may not have enough money to pay for health care or meet other basic needs. As a result, lack of financial protection can reduce access to health care, undermine health status, deepen poverty and exacerbate health and socio-economic inequalities. On average across OECD countries, just over a fifth of all spending on health care comes directly from patients through out-of-pocket (OOP) payments (see indicator “Financing of health care”). People experience financial hardship when the burden of such OOP payments is large in relation to their ability to pay. Poor households and those who have to pay for long-term treatment such as medicines for chronic illness are particularly vulnerable.

The share of household consumption spent on health care provides an aggregate assessment of the financial burden of OOP expenditure. Across OECD countries, about 3% of total household spending was on health care goods and services, ranging from around 2% in France, Luxembourg and Slovenia, to more than 5% in Korea and nearly 7% in Switzerland (Figure 5.11).

Health systems in OECD countries differ in the degree of coverage for different health goods and services (see indicator “Extent of health care coverage”). Household spending on pharmaceuticals and other medical goods was the main health care expense for people, followed by spending on outpatient care (Figure 5.12). These two components typically account for almost two-thirds of household spending on health care. Household spending on dental care and long-term health care can also be high, averaging 14% and 11% of OOP spending on health respectively. Inpatient care plays only a minor role (9%) in the composition of OOP spending.

The indicator most widely used to measure financial hardship associated with OOP payments for households is the incidence of catastrophic spending on health (Cylus et al., 2018[1]). This varies considerably across OECD countries, from fewer than 2% of households experiencing catastrophic health spending in France, Sweden, the United Kingdom, Ireland, the Czech Republic and Slovenia, to over 8% of households in Portugal, Poland, Greece, Hungary, Latvia and Lithuania (Figure 5.13). Across all countries, poorer households (i.e. those in the bottom consumption quintile) are most likely to experience catastrophic health spending, despite the fact that many countries have put in place policies to safeguard financial protection.

Countries with comparatively high levels of public spending on health and low levels of OOP payments typically have a lower incidence of catastrophic spending. However, policy choices are also important, particularly around coverage policy (WHO Regional Office for Europe, 2018[2]). Population entitlement to publicly financed health care is a prerequisite for financial protection, but not a guarantee of it. Countries with a low incidence of catastrophic spending on health are also more likely to exempt poor people and frequent users of care from co-payments; use low fixed co-payments instead of percentage co-payments, particularly for outpatient medicines; and cap the co-payments a household has to pay over a given time period (e.g. Austria, the Czech Republic, Ireland and the United Kingdom).

Definition and comparability

Out-of-pocket (OOP) 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 ideally include estimations of informal payments to health providers.

Catastrophic health spending is an indicator of financial protection used to monitor progress towards universal health coverage (UHC). It is defined as OOP payments that exceed a predefined percentage of the resources available to a household to pay for health care. Household resources available can be defined in different ways, leading to measurement differences. In the data presented here, these resources are defined as household consumption minus a standard amount representing basic spending on food, rent and utilities (water, electricity, gas and other fuels). The threshold used to define households with catastrophic spending is 40%. Microdata from national household budget surveys are used to calculate this indicator.

References

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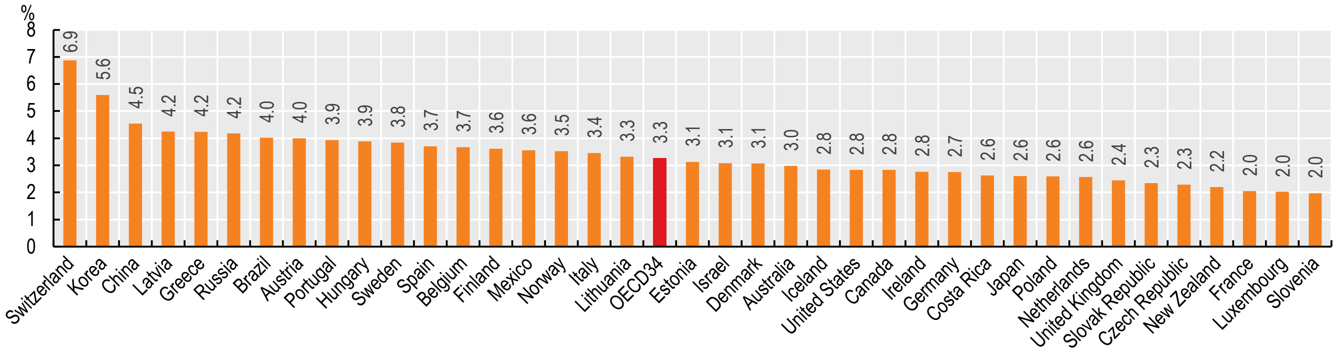
[2] WHO Regional Office for Europe (2019). “Can people afford to pay for health care? New evidence on financial protection in Europe”, WHO Regional Office for Europe, Copenhagen.

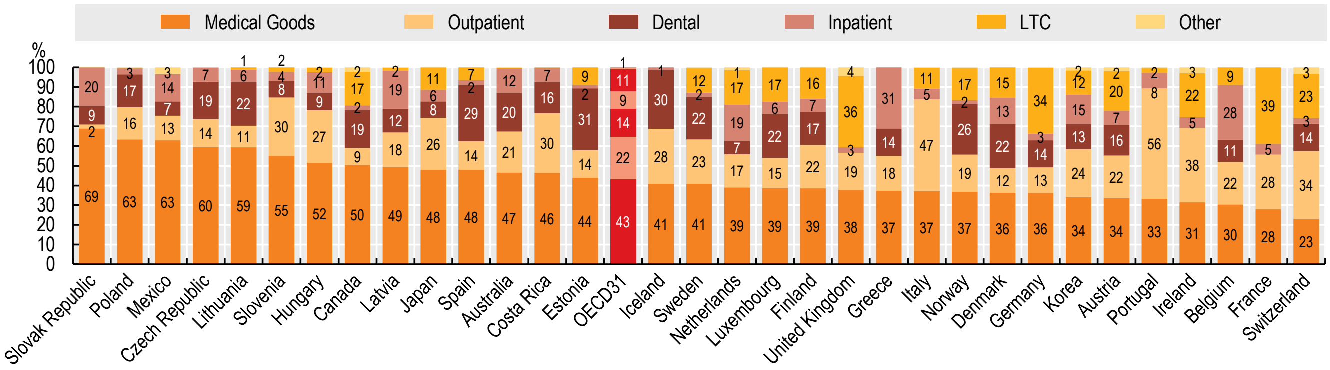
Figure 5.11. **Out-of-pocket spending as share of final household consumption, 2017 (or nearest year)**



Source: OECD Health Statistics 2019, OECD National Accounts Database.

StatLink https://doi.org/10.1787/888934015809

Figure 5.12. **Out-of-pocket spending on health, by type of services, 2017 (or nearest year)**

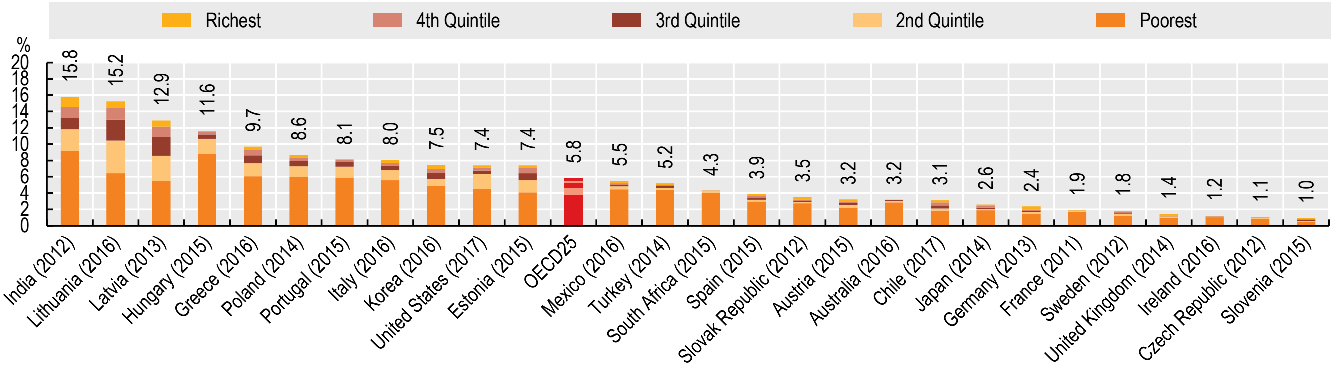


Note: The "Medical Goods" category includes pharmaceuticals and therapeutic appliances. The "Other" category includes preventive care, administrative services and services unknown.

Source: OECD Health Statistics 2019.

StatLink https://doi.org/10.1787/888934015828

Figure 5.13. **Share of households with catastrophic health spending by consumption quintile, latest year available**



Source: WHO Regional Office for Europe, 2019.

StatLink https://doi.org/10.1787/888934015847

Geographic distribution of doctors

Access to medical care requires an adequate number and equitable distribution of doctors in all parts of the country. Concentration of doctors in one region and shortages in others can lead to inequities in access such as longer travel or waiting times. The uneven distribution of doctors and the difficulties in recruiting and retaining doctors in certain regions is an important policy issue in most OECD countries, especially in countries with remote and sparsely populated areas, and those with deprived rural and urban regions.

The overall number of doctors per capita varies widely across OECD countries from around two per 1 000 population in Turkey, Korea and Poland, to five or higher in Portugal, Austria and Greece (see indicator on "Doctors" in Chapter 8). Beyond these cross-country differences, the number of doctors per capita also varies widely across regions within the same country. 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 urban regions and rural regions are highest in the Slovak Republic, Hungary and Portugal, notwithstanding differential definition of urban and rural regions across countries. The distribution of physicians between urban and rural regions was more equal in Japan and Korea, but there are generally fewer doctors in these two countries (Figure 5.14). Growing urbanisation will likely further widen existing geographic disparities in access to doctors.

Within predominantly urban areas, capital cities are typically capturing most of the physician supply (Figure 5.15). This is particularly evident in Austria, the Czech Republic, Greece, Portugal, the Slovak Republic and the United States. Differences between the capital region and the second region with highest density are largest in the United States and the Slovak Republic, with Washington D.C. and the Bratislava region having nearly twice as many physicians per capita as Massachusetts and East Slovakia (the second most dense), respectively. This usually results in higher dispersion between small regions for these countries, with the United States showing a nearly five-fold difference in physician density; and almost three-fold differences for the Slovak Republic and Greece. In contrast, Australia, Belgium and Korea show only around a 20% difference in physician densities between regions.

Doctors may be reluctant to practice in rural regions due to concerns about their professional life (including their income, working hours, opportunities for career development, isolation from peers) and social amenities (such as educational options for their children and professional opportunities for their spouse). A range of policy levers can be used to influence the choice of practice location of physicians. These include: 1) the provision of financial incentives for doctors to work in underserved areas; 2) increasing enrolments in medical education programmes of students coming from specific social or geographic backgrounds or decentralising the location of medical schools; 3) regulating the choice of practice location of doctors (for new medical graduates or foreign-trained doctors); and 4) re-organising service delivery to improve the working conditions of doctors in underserved areas.

Many OECD countries provide different types of financial incentives to attract and retain doctors in underserved areas, including one-time subsidies to help them set up their practice and recurrent payments such as income guarantees and bonus payments. A number of countries have also introduced measures to encourage students from under-served regions to enrol in medical schools. The effectiveness and cost of different policies to promote a better distribution of doctors can vary significantly, with the impact depending on the characteristics of each health system, the geography of the country, physician behaviours, and the specific policy and programme design. Policies should be designed with a clear understanding of the interests of the target group in order to have any significant and lasting impact (Ono, Schoenstein and Buchan, 2014[1]).

Definition and comparability

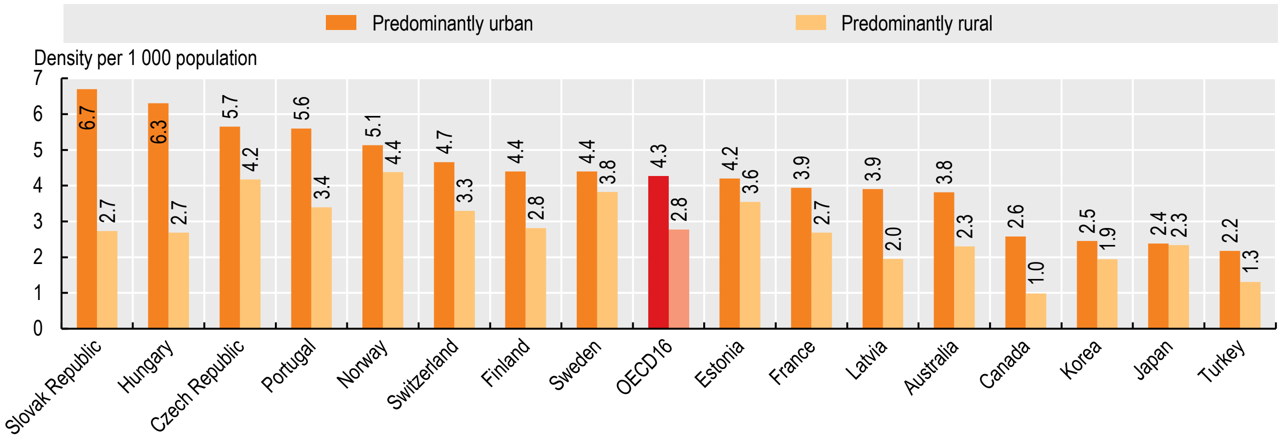
Regions are classified in two territorial levels. The higher level (Territorial Level 2) consists of large regions corresponding generally to national administrative regions. These broad regions may contain a mix of urban, intermediate and rural areas. The lower level is composed of smaller regions classified as predominantly urban, intermediate or rural regions, although there are variations across countries in the classification of these regions. Note that overseas territories are generally excluded from calculations. All data on geographic distributions come from the OECD Regional Database.

References

[2] OECD (2016), *Health Workforce Policies in OECD Countries: Right Jobs, Right Skills, Right Places*, OECD Health Policy Studies, OECD Publishing, Paris, *https://dx.doi.org/10.1787/9789264239517-en.*

[1] Ono, T., M. Schoenstein and J. Buchan. (2014), "Geographic Imbalances in Doctor Supply and Policy Responses", *OECD Health Working Papers*, No. 69, OECD Publishing, Paris, *http://dx.doi.org/10.1787/5jz5sq5ls1wl-en.*

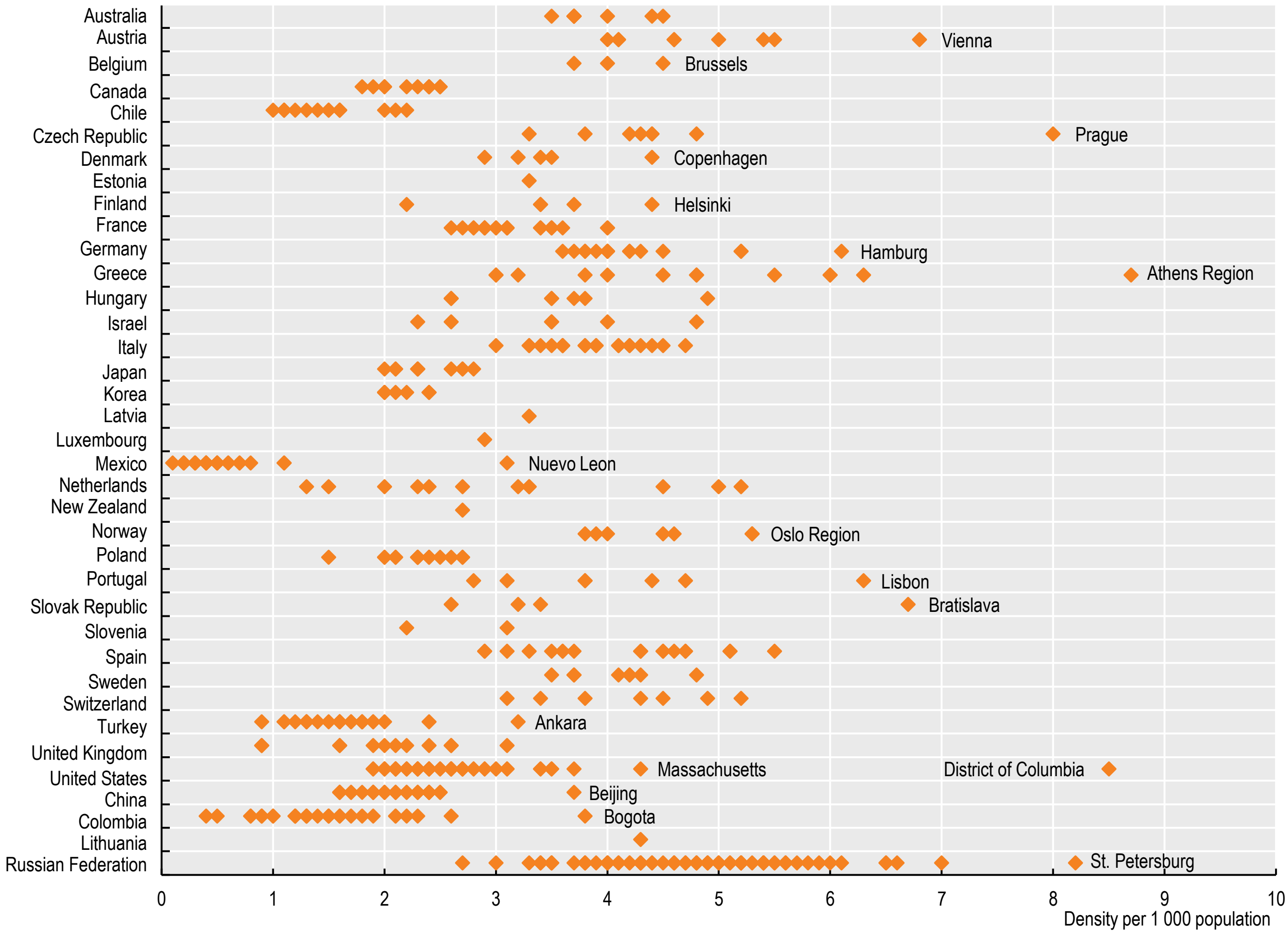
Figure 5.14. **Physician density, rural vs urban areas, 2016 (or nearest year)**



Source: OECD Regional Statistics Database 2019.

StatLink https://doi.org/10.1787/888934015866

Figure 5.15. **Physician density across localities, by level 2 regions, 2016 (or nearest year)**



Source: OECD Regional Statistics Database 2019.

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Waiting times for elective surgery

Long waiting times for elective (non-emergency) surgery cause dissatisfaction for patients, because they postpone the expected benefits of treatment, and pain and disability remain. Waiting times are the result of a complex interaction between the demand and supply of health services, with doctors playing a critical role on both sides. Demand for health services and elective surgeries is determined by the health status of the population, progress in medical technologies (including the simplification of many procedures, such as cataract surgery), patient preferences, and the burden of cost-sharing for patients. However, doctors play a crucial role in the decision to operate on a patient or not. On the supply side, the availability of surgeons, anaesthetists and other staff in surgical teams, as well as the supply of the required medical equipment, affect surgical activity rates.

The measure reported here refers to the waiting time from when a medical specialist adds a patient to the waiting list for the procedure, to the moment the patient receives treatment. Both mean and median waiting times are reported. Since a number of patients wait for very long times, the median is consistently and considerably lower than the mean, and might therefore represent a better measure for the central tendency of this indicator. The significant difference between the two measures, especially in countries such as Chile, Estonia, and Poland, highlights the presence of problematic groups of patients who wait significantly longer than others to receive treatment.

In 2017, the median waiting time for cataract surgery was less than 50 days in Italy, Hungary, Denmark, and Sweden (Figure 5.16). Countries with the largest waiting times include Estonia and Poland, with median waits of about seven months and over a year respectively. Over the past decade, waiting times increased in some countries, such as Canada and Portugal; in Spain waits decreased, while in New Zealand they remained relatively stable.

For hip replacement, the median waiting time was less than 50 days in Denmark and Italy (Figure 5.17). There were very long median waiting times of eight months or more in Estonia, Poland and Chile. Over the past five years, some countries, such as Finland, Hungary and Denmark, observed a decline in median waiting times for hip replacement, while Estonia saw a sharp increase.

Waiting times for knee replacement follows the patterns of hip replacement but with higher waiting times on average, with Estonia, Poland and Chile also having by far the longest waiting times (Figure 5.18). The median waiting time across the OECD sample is 114 days, more than 30 days above those of cataract surgery and 20 days above those of hip replacement. In Australia, median waiting times slightly increased over time to reach 200 days, while Portugal remained relatively unchanged since 2007. Hungary and Denmark saw reductions in the past decade.

Waiting time guarantees have become the most common policy tool to tackle long waiting times in several countries, but these guarantees are only effective if well enforced (Siciliani, Borowitz and Moran, 2013[1]). Denmark has used maximum waiting times, together with patient choice of provider, to reduce waiting times since the late 2000s. The maximum waiting time guarantee was reduced from two months to one month in 2007, combined with free choice of provider. Under this scheme, if the hospital can foresee that the guarantee will not be fulfilled, the patient can choose another public or private hospital. If the treatment is outside of the region's own hospitals, the expenses are covered by the region where the patient lives.

In Hungary, waiting times for many elective surgeries have also been reduced in recent years. Specific objectives were set to reduce waiting times to under 60 days for minor surgery and under 180 days for major surgery, for all patients. To achieve this, the government adopted new laws and regulations on the management of waiting lists, developed an online waiting list system at the national level to monitor the situation in real-time, provided additional payment to reduce waiting times in selected areas or hospitals, and encouraged a reallocation of patients from providers with longer waiting times to those with shorter waiting times.

Definition and comparability

Two different measures of waiting times for elective procedures are commonly used: 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 on the second measure are available in the OECD Health Database). Data come from administrative databases rather than surveys.

Waiting times are reported in terms of both the mean and the median. The median is the value that separates a distribution in two equal parts (i.e. half the patients have longer waiting times, the other half have shorter waiting times). Compared with the average (mean), the median minimises the influence of outliers, i.e. patients with very long waiting times. Waiting times are over-estimated in Norway because they start from the data when a doctor refers a patient for specialist assessment up to the treatment, whereas in other countries they start only when a specialist has assessed the patient and decided to add the person on the waiting list up to the treatment.

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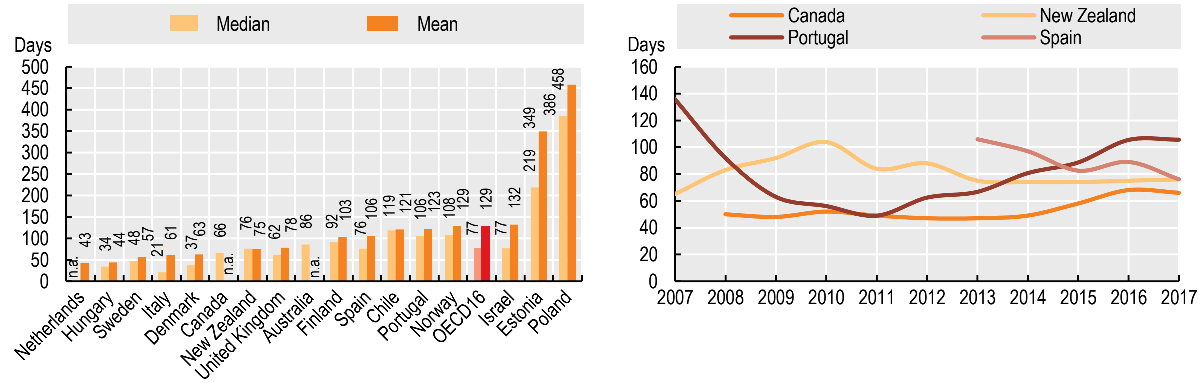
Figure 5.16. **Cataract surgery waiting times, averages and selected trends, 2017**



Source: OECD Health Statistics 2019.

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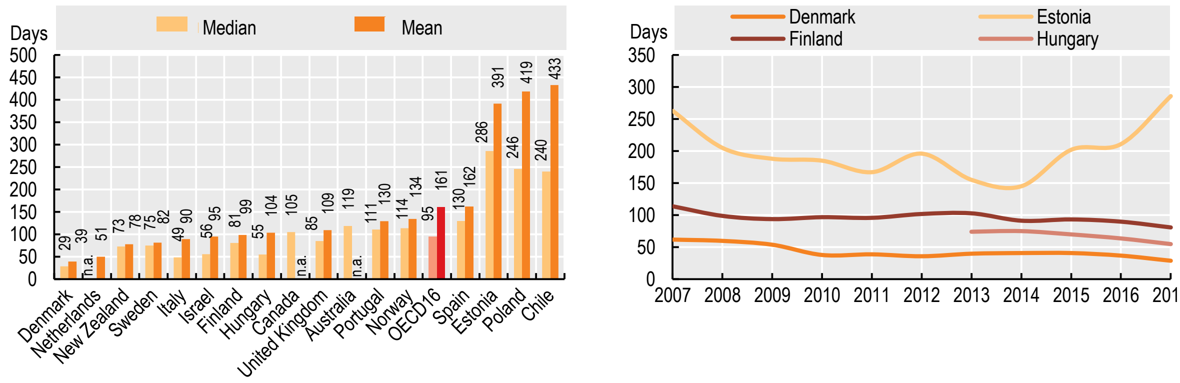
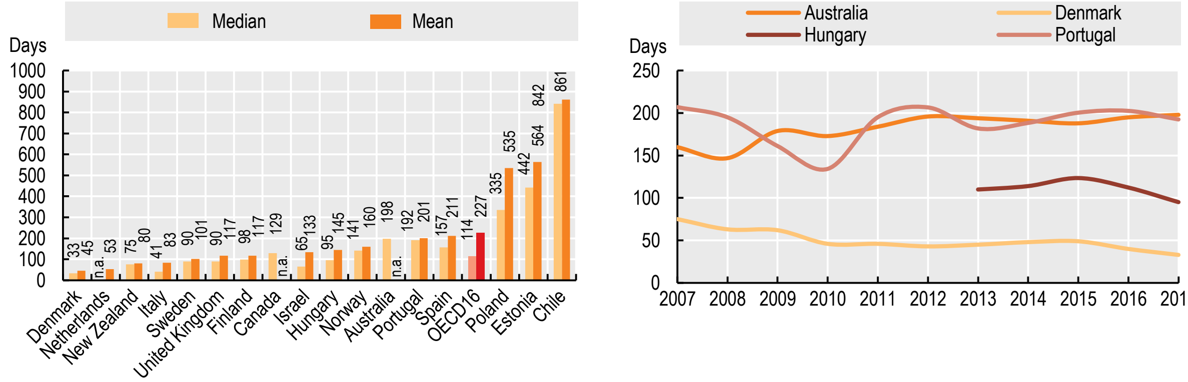
Figure 5.17. **Hip replacement waiting times, averages and selected trends, 2017**



Source: OECD Health Statistics 2019.

StatLink https://doi.org/10.1787/888934015923

Figure 5.18. **Knee replacement waiting times, averages and selected trends, 2017**



Source: OECD Health Statistics 2019.

StatLink https://doi.org/10.1787/888934015942