Health at a Glance 2021

OECD INDICATORS



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Foreword

Health at a Glance compares key indicators for population health and health system performance across OECD member countries and key emerging economies. This 2021 edition presents the latest comparable data, illustrating differences across countries and over time in terms of health status, risk factors for health, access to and quality of care, and health resources. A special focus is given to the health impact of COVID-19, including both direct and indirect impacts of the virus on people and health systems.

This publication would not have been possible without the contribution of national data correspondents from the countries covered in this report, who provided most of the data and metadata, as well as detailed feedback to a draft of the report. The OECD also recognises the contribution of other international organisations, notably Eurostat and the World Health Organization, for providing data and comments. The European Union provided financial and substantive input. The opinions expressed and arguments employed herein do not necessarily reflect the official views of the OECD member countries, the European Union or other international organisations.

Health at a Glance 2021 was prepared by the OECD Health Division under the co-ordination of Chris James. Chapter 1 was prepared by Chris James and Gabriel Di Paolantonio; Chapter 2 by Michael Mueller, Elina Suzuki, Gabriel Di Paolantonio, Emily Hewlett and Chris James, with research assistance from Julia Aubé; Chapter 3 by Elina Suzuki, Gabriel Di Paolantonio, Emily Hewlett and Chris James; Chapter 4 by Marion Devaux, Alena Piatrova and Elina Suzuki, with input from Michele Cecchini; Chapter 5 by Chris James, Gaëlle Balestat, Marie-Clémence Canaud, Michael Mueller, Caroline Penn, Caroline Berchet, Tiago Cravo Oliveira Hashiguchi and Jillian Oderkirk; Chapter 6 by Katherine de Bienassis, Rie Fujisawa, Frédéric Daniel, Eliana Barrenho, Gabriel Di Paolantonio, Candan Kendir, Philip Haywood, Suzannah Chapman and Silje Rene, with input from Niek Klazinga; Chapter 7 by Michael Mueller, Fan Xiang, Sebastian Klavus, Luca Lorenzoni and David Morgan; Chapter 8 by Gaetan Lafortune, Gaëlle Balestat and Marie-Clémence Canaud; Chapter 9 by Ruth Lopert, Suzannah Chapman, Martin Wenzl, Fan Xiang and Marie-Clémence Canaud; Chapter 10 by Elina Suzuki, Julia Aubé, Marie-Clémence Canaud, Paola Sillitti, Katherine de Bienassis, Michael Mueller, Tiago Cravo Oliveira Hashiguchi and Eileen Rocard, with input from Ana Llena Nozal. The OECD databases used in this publication are managed by Gaëlle Balestat, Marie-Clémence Canaud, Gabriel Di Paolantonio, Rie Fujisawa, David Morgan and Michael Mueller. This publication benefited from comments by Francesca Colombo, Frederico Guanais, Mark Pearson and Stefano Scarpetta. Editorial assistance was provided by Marie-Clémence Canaud, Lucy Hulett, Liv Gudmundson and Lydia Wanstall.

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Reader's guide

Health at a Glance 2021: OECD Indicators compares key indicators for population health and health system performance across the 38 OECD member countries. Candidate and partner countries are also included where possible – Brazil, People's Republic of China (China), India, Indonesia, the Russian Federation (Russia) and South Africa.

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.

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 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. Such resources are also critical in ensuring health systems are resilient to COVID-19 and other emerging health threats. However, such spending will only improve health and health system outcomes if they are spent wisely, with value-for-money considerations also important.

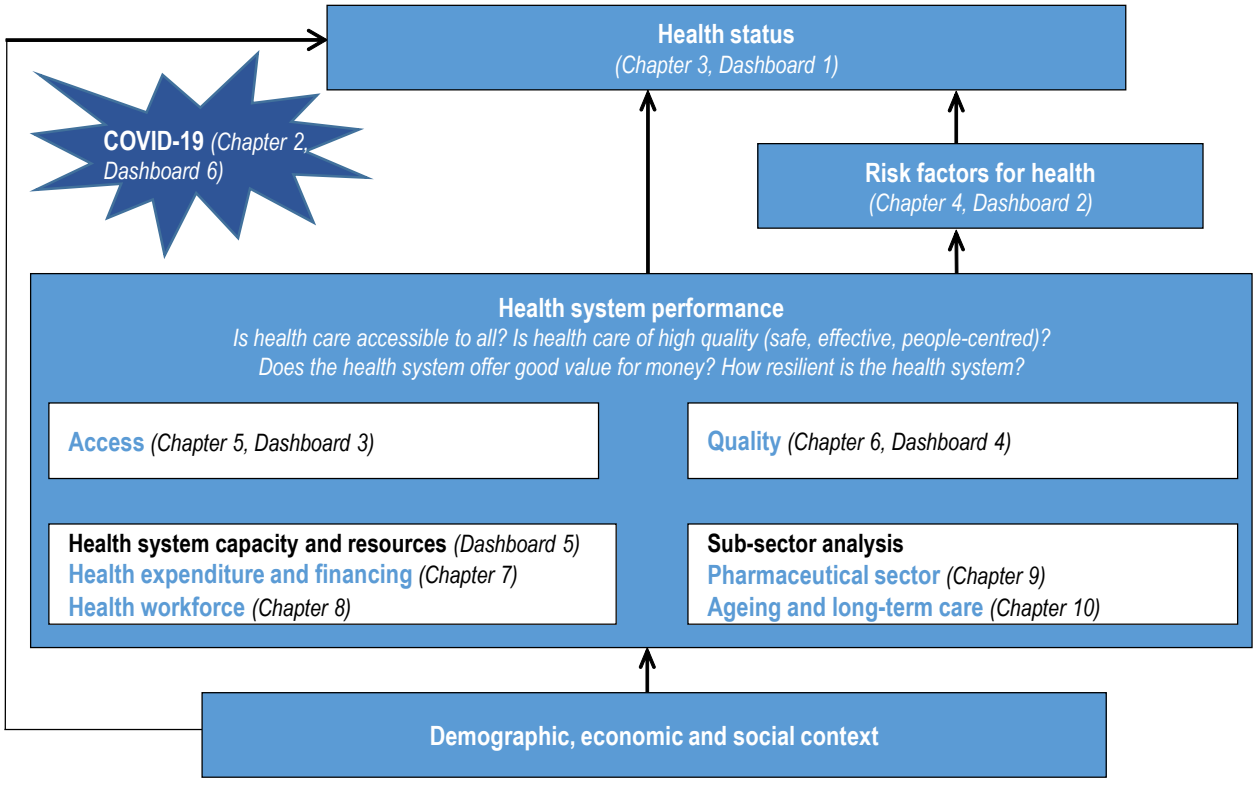
At the same time, many factors outside the health system influence health status, notably income, education and the physical environment in which an individual lives. The demographic, economic and social context also affects the demand for and supply of health services. Finally, the degree to which people adopt healthy lifestyles, a key determinant of health outcomes, depends on both effective health policies and wider socio-economic factors.

Structure of the publication

Health at a Glance 2021 compares OECD countries on each component of this general framework. It is structured around ten chapters. Chapter 1 presents an ***overview of health and health system performance***, based on a subset of core indicators from the report. Chapter 2 analyses the ***health impact of COVID-19*** across OECD countries. This includes indirect impacts such as reduced health service availability and adverse effects on mental health, alongside direct impacts of COVID-19 cases and deaths.

The next eight chapters then provide detailed country comparisons across a range of health and health system indicators. Where possible, time trend analysis and data disaggregated by demographic and socio-economic characteristics, are included. Chapter 3 on ***health status*** highlights variations across countries in life expectancy, the main causes of mortality, mental health, self-assessed health and other indicators of population health. Chapter 4 analyses ***risk factors for health*** such as smoking, alcohol, obesity and environmental health risks. Chapter 5 on ***access*** investigates the affordability, availability and use of services, with special attention given to socio-economic

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



Source: Adapted from and building on 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.

inequalities. 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. Chapter 7 on ***health expenditure and financing*** compares how much countries spend on health, how such spending is financed, and what funds are spent on. Chapter 8 examines the ***health workforce***, particularly the supply and remuneration of doctors and nurses. Chapter 9 takes a closer look at the ***pharmaceutical sector***. Chapter 10 focuses on ***ageing and long-term care***. This includes factors that influence the demand for long-term care, and the availability of high quality health services.

Presentation of indicators

With the exception of the first two chapters, indicators 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. 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 June 2021). 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	Japan	JPN
Austria	AUT	Korea	KOR
Belgium	BEL	Latvia	LVA
Canada	CAN	Lithuania	LTU
Colombia	COL	Luxembourg	LUX
Costa Rica	CRI	Mexico	MEX
Chile	CHL	Netherlands	NLD
Czech Republic	CZE	New Zealand	NZL
Denmark	DNK	Norway	NOR
Estonia	EST	Poland	POL
Finland	FIN	Portugal	PRT
France	FRA	Slovak Republic	SVK
Germany	DEU	Slovenia	SVN
Greece	GRC	Spain	ESP
Hungary	HUN	Sweden	SWE
Iceland	ISL	Switzerland	CHE
Ireland	IRL	Turkey	TUR
Israel	ISR	United Kingdom	GBR
Italy	ITA	United States	USA

Partner country ISO codes

Brazil	BRA
China	CHN
India	IND
Indonesia	IDN
Russia	RUS
South Africa	ZAF

Executive summary

COVID-19 has generated enormous human, social and economic costs, and revealed the underlying fragilities of many health systems to withstand shocks. The pandemic has claimed millions of lives, with many more suffering ill-health as a direct or indirect consequence of the virus. It has placed immense pressure on health care services that were often already overstretched before the pandemic. The pandemic has also shown that effective health spending is an investment, not a cost to be contained: stronger, more resilient health systems protect both populations and economies.

At the same time, additional health spending and COVID-related debt will weigh heavily on budgets, and require careful scrutiny to maximise value for money. Health spending continues to focus predominantly on curative care rather than disease prevention and health promotion, and much more is spent in hospitals than on primary health care. Moving forward, it is imperative to strengthen the resilience and preparedness of health systems, Encouraging signs point to the potential for systemic change, with advances in digital health and better integrated care.

COVID-19 has caused around 2.5 million excess deaths in OECD countries and had a major adverse impact on mental health

- COVID-19 contributed, directly and indirectly, to a 16% increase in the expected number of deaths in 2020 and the first half of 2021 across OECD countries. Life expectancy fell in 24 of 30 countries with comparable data, with drops particularly large in the United States (-1.6 years) and Spain (-1.5 years).
- COVID-19 has disproportionately hit vulnerable populations. More than 90% of recorded COVID-19 deaths have occurred among those aged 60 and over. There has also been a clear social gradient, with disadvantaged people, those living in deprived areas, and most ethnic minorities and immigrants at higher risk of infection and death.
- Vaccinations have reduced the risk of severe illness and death from COVID-19, with the share of people fully vaccinated reaching over 70% in 9 countries and 15 countries starting booster programmes across the OECD for vulnerable groups, as of 18 October. Evidence points to vaccines being somewhat less effective against stopping symptomatic disease from the delta variant, but still highly effective (over 90%) against hospital admissions.
- The mental health impact of the pandemic has been huge, with prevalence of anxiety and depression more than double levels observed pre-crisis in most countries with available data, most notably in Mexico, the United Kingdom and the United States.
- Long COVID-19 has made the road to recovery slow and difficult. In the United Kingdom, for example, 1.1 million people (1.7% of the population) reported long COVID-19 symptoms as of early

September 2021. In the United States, recent research has estimated that 37% of patients suffered from at least one long COVID-19 symptom 4-6 months after diagnosis.

Unhealthy lifestyles and poor environmental conditions continue to worsen quality of life, cut lives short and make populations less resilient to health shocks

- Smoking, harmful alcohol use and obesity are the root cause of many chronic conditions, and increase the risk of people dying from COVID-19.
- Daily smoking rates have decreased in most OECD countries over the last decade, but 17% still smoke daily. Rates reached 25% or more in Turkey, Greece, Hungary, Chile and France.
- People who drink heavily range from 4% to 14% of the population across the OECD countries analysed, yet consume 31% to 54% of alcohol. Harmful drinking is particularly high in Latvia and Hungary.
- Obesity rates continue to rise in most OECD countries, with an average of 60% of adults measured as overweight or obese. Obesity rates are highest in Mexico, Chile and the United States.
- Among adolescents, about 16% of 15-year-olds smoked at least once per month, and over 30% had been drunk at least twice in their lifetime, on average across OECD countries. Just over 18% were overweight or obese, with only 14% achieving WHO recommendations on physical activity.
- Ambient (outdoor) air pollution caused about 29 deaths per 100 000 people on average, and varied more than seven-fold across OECD countries. OECD projections estimate that ambient air pollution may cause between 6 and 9 million premature deaths a year worldwide by 2060.
- Spending on disease prevention remains relatively low, accounting for only 2.7% of all health spending on average.

Despite universal health coverage in most OECD countries, barriers to access persist, with COVID-19 disrupting health care for people with other needs

- COVID-19 has had a major indirect impact on those not infected with the virus. For example, breast cancer screening fell by an average of 5 percentage points in 2020 compared to 2019.
- Waiting times for elective surgeries, already a policy issue in many countries pre-pandemic, increased. The median number of days on a waiting list increased on average by 58 days for hip replacement, and 88 days for knee replacement in 2020, as compared to 2019.
- In-person consultations per capita dropped in seven of eight countries with 2020 data, and by up to 30% in Chile and Spain. However, declines in in-person consultations were offset to some extent by increased teleconsultations.
- Indeed, the pandemic has accelerated the digital transformation of health care across OECD countries. For example, an average of 45% of adults had a medical teleconsultation in 2021. Further, around 60% of adults searched for health information online in 2020, up from 36% in 2010.

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

- Despite improvements in patient safety over time, on average almost half of hospital staff thought that their workplace was not good enough at preventing medical errors.
- Strong primary care systems keep people well and treat most uncomplicated cases. They also relieve pressure on hospitals: avoidable admissions for chronic conditions have fallen in most OECD countries over the past decade, with large improvements in Korea, Lithuania and the Slovak Republic. However, primary care represents only 13% of health spending on average.

- Acute care services continue to improve in their fundamental task of keeping people alive. In almost every OECD country, 30-day mortality following a heart attack or stroke is lower than ten years ago. New data on readmissions, one-year mortality and medication prescriptions after hospitalisation point to slight improvements in the integration of care over time.
- A deeper understanding of quality of care requires measuring what matters to people. Health systems are increasingly asking 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 improved on average by 44% based on the Oxford Hip Score.
- Preliminary data for 2020 indicates that quality of care in primary and acute care settings has often been maintained despite the severe pressures faced, although access to many of these services has been difficult.

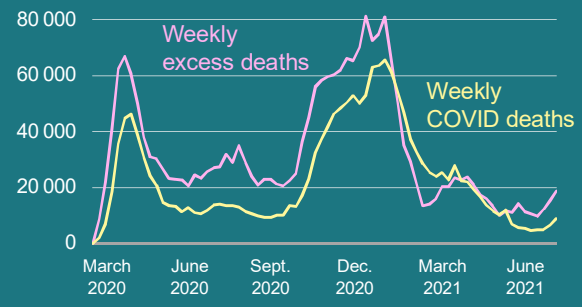
COVID-19 has led to sharp increases in health spending, but health workforce shortages persist

- Prior to the pandemic, spending on health amounted to over USD 4 000 per person on average across OECD countries, reaching almost USD 11 000 in the United States. Inpatient and outpatient services make up the bulk of health spending, typically accounting for 60% of all health spending.
- With the onset of COVID-19, sharp increases in health spending occurred in many countries, notably within Europe. Coupled with reductions in economic activity, the average health spending to GDP ratio jumped from 8.8% in 2019 to 9.7% in 2020. Countries severely affected by the pandemic reported unprecedented increases in the share of GDP allocated to health. The United Kingdom, for example, estimated an increase from 10.2% in 2019 to 12.8% in 2020, while Slovenia anticipated its share of spending on health rising from 8.5% to more than 10%.
- Although the number of doctors and nurses have increased over the past decade in nearly all OECD countries, shortages persist. These shortages have been thrown into sharp relief during the pandemic, with a lack of health and long-term care staff proving to be more of a binding constraint than hospital beds and equipment.
- Population ageing increases demand for health services, with the share of the population aged 65 years and over reaching 17% in 2019. COVID-19 has underscored pre-existing weaknesses in the long-term care sector, including challenges with infection control in facility-based care.

Infographic 1. **Key facts and figures**

COVID-19 has caused around 2.5 million excess deaths in OECD countries

Across 30 OECD countries



Older people and socially disadvantaged groups are more likely to be severely ill or die from the virus.

Vaccines have reduced weekly deaths from COVID-19

In the 12 OECD countries with vaccination rates above 65% (as of mid-October), weekly deaths from COVID-19 have fallen by an average of 86% since late-January 2021.

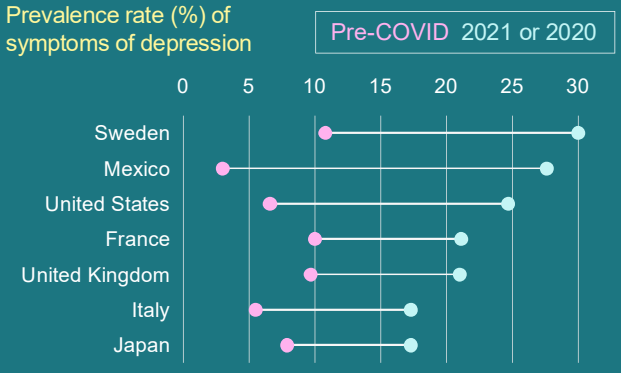


However, vaccination rates remain very low in many developing countries.

Source: Our World in Data.

The mental health impact has been huge

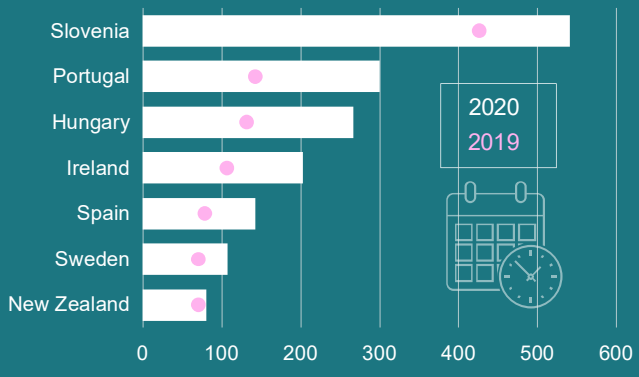
Prevalence of anxiety and depression is more than double the levels observed prior to the pandemic.



Source: National data sources. Note: Sweden, Mexico, Italy and Japan refer to 2020.

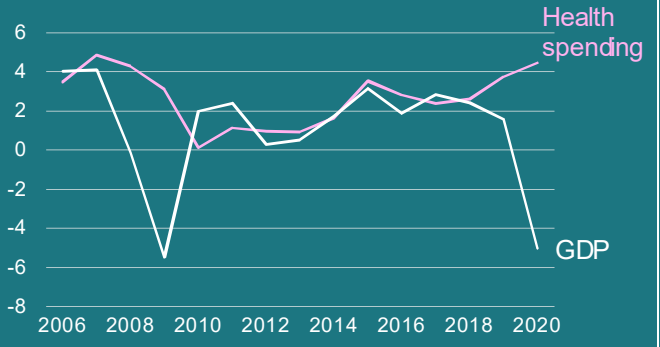
COVID-19 has disrupted health care for people with other needs

Number of days waiting for knee replacement (median)



COVID-19 has led to increases in health spending

Annual % growth in health expenditure and GDP per capita, OECD average



Smoking, harmful drinking & obesity are the root cause of many chronic conditions

Rates among adult population, *OECD average



These factors also increase the risk of people dying from COVID-19.

Chapter 1

Indicator overview: Country dashboards and major trends

This chapter analyses a core set of indicators on health and health systems. Country dashboards and OECD snapshots shed light on how countries compare across six dimensions: health status, risk factors for health, access, quality and outcomes, health system capacity and resources, and on COVID-19. Quadrant charts illustrate how much health spending is associated with access, quality and health outcomes.

Introduction

Health indicators offer an '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 24 core indicators, organised around six dimensions of health and health systems (Table 1.1). These indicators are selected based on how relevant and actionable they are from a policy perspective; as well as the more practical consideration of data availability across countries. The extent to which health spending is associated with health outcomes, access and quality is also explored.

Such analysis does not indicate which countries have the best performing health systems, particularly as only a small subset of the many indicators in Health at a Glance are included here. Rather, this chapter identifies some relative strengths and weaknesses. This can help policy makers 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.

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

Dimension	Indicator
Health status (Chapter 3)	Life expectancy – years of life at birth Avoidable mortality – preventable and treatable 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+), based on sales data Overweight/obese – population with BMI>=25 kg/m2 (% population aged 15+) Ambient air pollution – deaths due to ambient particulate matter, especially PM 2.5 (per 100 000 people)
Access to care (Chapter 5)	Population coverage, eligibility – population covered for core set of services (% population) Population coverage, satisfaction – population satisfied with the availability of quality health care (% population) Financial protection – expenditure covered by compulsory prepayment schemes (% total expenditure) Service coverage – population reporting unmet need for medical care (% population)
Quality of care (Chapter 6)	Safe primary care – antibiotics prescribed (defined daily dose per 1 000 people) Effective primary care – avoidable COPD admissions (per 100 000 people, age-sex standardised) Effective preventive care – mammography screening within the past two years (% of women aged 50-69 years) Effective secondary care – 30-day mortality following AMI (per 100 admissions, age-sex standardised)
Health system capacity and resources (Chapters 5, 7 and 8)	Health spending – total health spending (per capita, USD using purchasing power parities) Doctors – number of practising physicians (per 1 000 people) Nurses – number of practising nurses (per 1 000 people) Hospital beds – number of hospital beds (per 1 000 people)
COVID-19 (Chapter 2)	Excess mortality – excess deaths (per million people, compared to 2015-19) COVID-19 deaths – recorded deaths (per million people) COVID-19 cases – recorded cases (per 100 000 people) COVID-19 vaccinations – fully vaccinated adults (% population)

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

Based on these indicators, *country dashboards* are produced. These compare a country's performance to others countries and to the OECD average. Comparisons are made based on the latest year available. For most indicators, this refers to 2019, or the nearest year if 2019 data are not available for a given country. For the COVID-19 dashboard, comparisons span 2020-21.

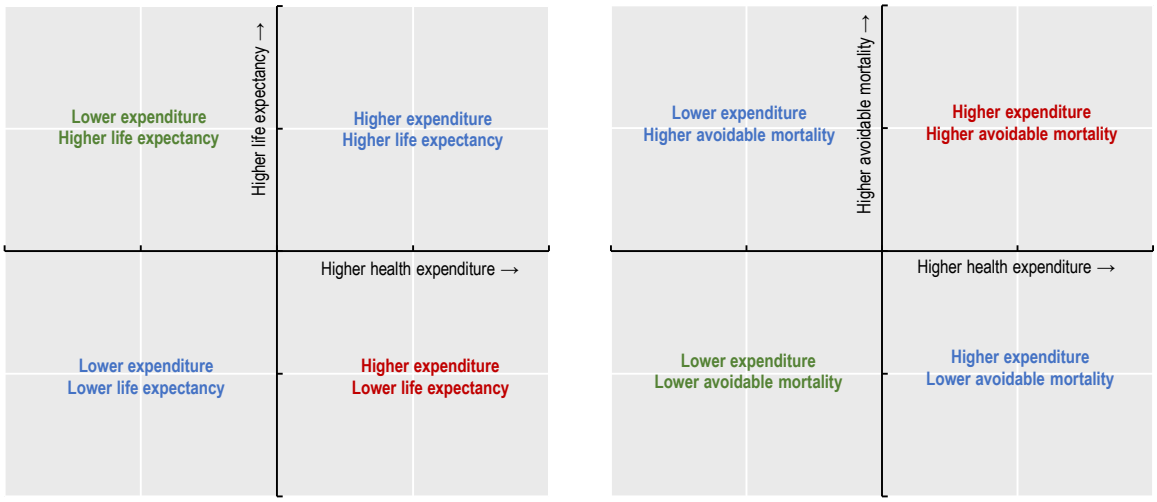
Country classification for each indicator is into one of three colour-coded groups:

- 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 exception to this grouping is for the dashboard on health system capacity and resources (Table 1.6), where indicators cannot be easily classified as showing better or worse performance. Here, lighter and darker shades of blue signal if a country has considerably less or more of a given health care resource than the OECD average.

Accompanying these country dashboards are OECD snapshots and quadrant charts. *OECD snapshots* provide summary statistics for each indicator. *Quadrant charts* illustrate simple associations (not causal relationships) between how much countries spend on health and how effectively health systems function. Figure 1.1 shows the interpretation of each quadrant, taking health outcome variables as an example. Further information on the methodology, interpretation and use of these country dashboards, OECD snapshots and quadrant charts are provided in the boxed text below.

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). 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 (larger than three standard deviations) are excluded from calculations of the standard deviation to avoid statistical distortions.

For a typical indicator, about 65% of 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.

OECD snapshots

For each indicator, the OECD average, highest and lowest values are shown; as are the three countries with the largest improvements over time in terms of changes to absolute values.

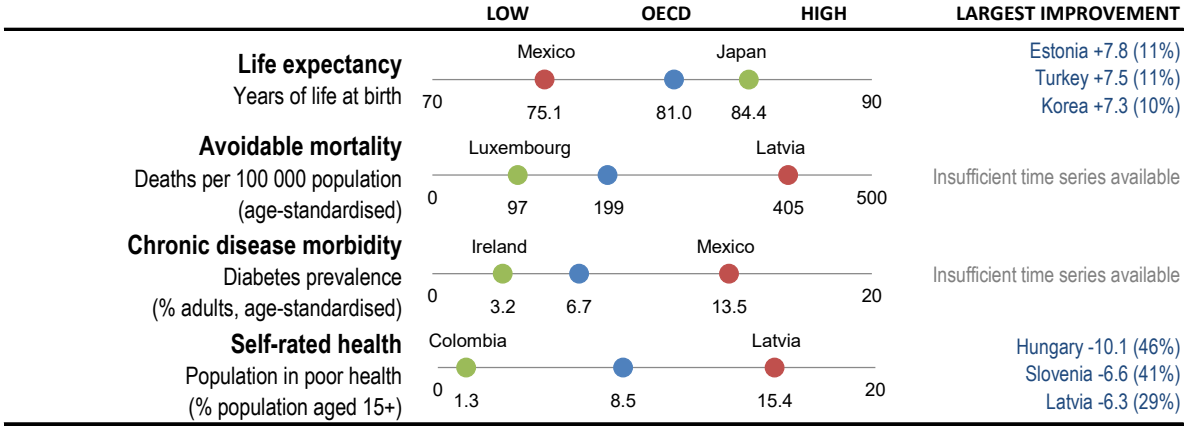
Quadrant charts

Quadrant charts plot health expenditure per capita against another indicator of interest (on health outcomes, quality of care and access). They show the percentage difference of each indicator as compared with the OECD average. The centre of each quadrant chart is the OECD average. Data from the latest available year are used. A limitation is that lagged effects are not taken into account – for example, it may take some years before higher health spending translates into longer life expectancy.

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 presents a snapshot on health status across the OECD and Table 1.2 provides more detailed country comparisons.

Figure 1.2. **Health status across the OECD, 2019 (or nearest year)**



Note: Largest improvement shows countries with largest changes in absolute value over time (% change in brackets).
Source: OECD Health Statistics 2021, IDF Diabetes Atlas 2019.

Japan, Switzerland and Spain lead a large group of 27 OECD countries in which life expectancy at birth exceeded 80 years in 2019. A second group, including the United States and a number of central and eastern European countries, had a life expectancy between 77 and 80 years. Mexico and Latvia had the lowest life expectancy, at less than 76 years. In general, life expectancy has increased for most of the last half-century, despite some slowdown in longevity gain in recent years. However, COVID-19 has had a dramatic effect, with life expectancy in 2020 falling for 24 of 30 OECD countries with comparable data.

Avoidable mortality rates (from preventable and treatable causes) in 2019 were lowest in Luxembourg, where less than 100 per 100 000 people died prematurely. Avoidable mortality rates were also relatively low (under 150 per 100 000 people) in Switzerland, Israel, Iceland, Japan, Italy, Korea, Australia, Sweden, Spain, the Netherlands and Norway. Latvia, Hungary, Mexico, Lithuania and the Slovak Republic had the highest avoidable mortality rates, at over 300 premature deaths per 100 000 people.

Diabetes prevalence in 2019 was highest in Mexico, Turkey, the United States and Germany, with over 10% of adults living with diabetes (age-standardised data). 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.

Almost 9% of adults considered themselves to be in bad health in 2019, on average across the OECD. This ranged from over 15% in Latvia, Korea, Lithuania and Portugal to under 3% in Colombia, New Zealand and Canada. 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.

Investing more into health systems contributes to gains in health outcomes, by offering more accessible and higher quality care. Differences in risk factors such as smoking, alcohol and obesity

Table 1.2. **Dashboard on health status, 2019 (or nearest year)**

	Life expectancy		Avoidable mortality		Chronic disease morbidity		Self-rated health	
	Years of life at birth		Deaths per 100 000 population (age-standardised)		Diabetes prevalence (% adults, age-standardised)		Population in poor health (% population aged 15+)	
OECD	**81.0**		**199**		**6.7**		**8.5**	
Australia	83.0	◉	139	☑	5.6	◉	3.7	☑
Austria	82.0	◉	170	◉	6.6	◉	7.8	◉
Belgium	82.1	◉	173	◉			9.1	◉
Canada	82.1	◉	172	◉	7.6	◉	2.8	☑
Chile	80.6	◉	191	◉	8.6	◉	6.6	◉
Colombia	76.7	☒	237	◉	7.4	◉	1.3	☑
Costa Rica	80.5	◉	209	◉	9.1	☒		
Czech Republic	79.3	◉	234	◉	7.0	◉	10.4	◉
Denmark	81.5	◉	167	◉			8.3	◉
Estonia	78.8	◉	281	☒	4.2	☑	13.3	☒
Finland	82.1	◉	176	◉	5.6	◉	5.6	◉
France	82.9	◉	153	◉	4.8	◉	8.9	◉
Germany	81.4	◉	175	◉	10.4	☒	8.5	◉
Greece	81.7	◉	179	◉	4.7	◉	6.6	◉
Hungary	76.4	☒	374	☒	6.9	◉	11.8	◉
Iceland	83.2	◉	126	☑	5.8	◉	5.9	◉
Ireland	82.8	◉	172	◉	3.2	☑	3.2	☑
Israel	82.9	◉	125	☑	9.7	☒	11.0	◉
Italy	83.6	☑	136	☑	5.0	◉	7.0	◉
Japan	84.4	☑	130	☑	5.6	◉	13.6	☒
Korea	83.3	◉	139	☑	6.9	◉	15.2	☒
Latvia	75.5	☒	405	☒	5.0	◉	15.4	☒
Lithuania	76.4	☒	364	☒	3.8	☑	15.2	☒
Luxembourg	82.7	◉	97	☑	5.0	◉	9.0	◉
Mexico	75.1	☒	366	☒	13.5	☒		
Netherlands	82.2	◉	145	☑	5.4	◉	5.5	◉
New Zealand	82.1	◉	168	◉	6.2	◉	2.6	☑
Norway	83.0	◉	145	☑	5.3	◉	8.6	◉
Poland	78.0	☒	268	☒	6.1	◉	12.8	☒
Portugal	81.8	◉	173	◉	9.8	☒	15.2	☒
Slovak Republic	77.8	☒	322	☒	6.5	◉	12.6	☒
Slovenia	81.6	◉	185	◉	5.9	◉	9.6	◉
Spain	83.9	☑	141	☑	6.9	◉	7.2	◉
Sweden	83.2	◉	140	☑	4.8	◉	5.1	◉
Switzerland	84.0	☑	122	☑	5.7	◉	4.2	☑
Turkey	78.6	◉	216	◉	11.1	☒	10.4	◉
United Kingdom	81.4	◉	188	◉	3.9	☑	7.4	◉
United States	78.9	◉	265	☒	10.8	☒	3.3	☑

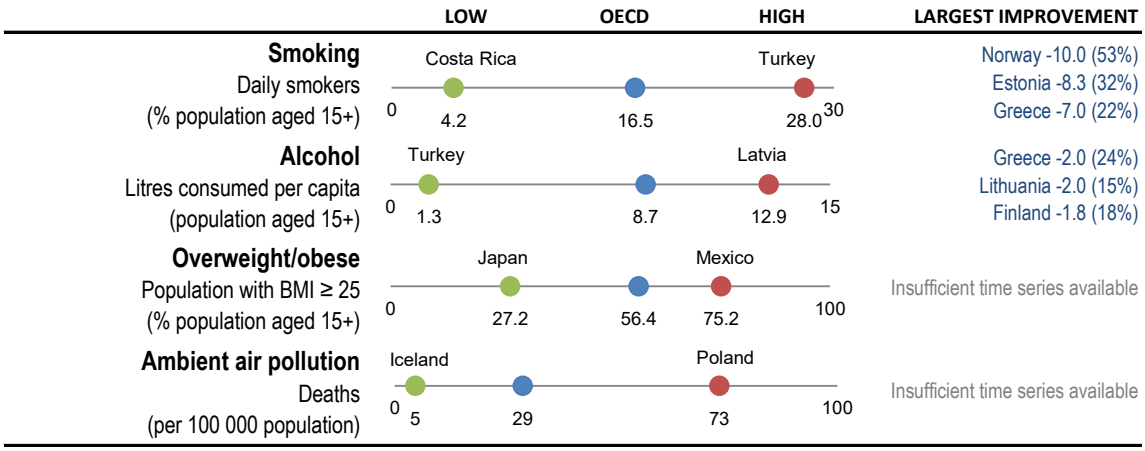
Note: ☑ Better than OECD average; ◉ Close to OECD average; ☒ Worse than OECD average. Hungary, Latvia, Lithuania and Mexico are excluded from the standard deviation calculation for avoidable mortality, while Mexico is excluded from diabetes prevalence.

also explain cross-country variation in health outcomes. Social determinants of health matter too, notably income levels, better education and improved living environments.

Risk factors for health

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

Figure 1.3. **Risk factors for health across the OECD, 2019 (or nearest year)**



Note: Largest improvement shows countries with largest changes in absolute value over time (% change in brackets).
Source: OECD Health Statistics 2021, OECD Environment Statistics 2020.

Smoking causes multiple diseases, with the World Health Organization estimating tobacco smoking kills 8 million people in the world every year. The share of people smoking daily in 2019 ranged from around 25% or more in Turkey, Greece, Hungary, Chile and France to below 10% in Costa Rica, Mexico, Iceland and Norway. Daily smoking rates have decreased in most OECD countries over the last decade, from an average of 21.3% in 2009 to 16.5% in 2019. In the Slovak Republic and Turkey, though, smoking rates have risen slightly.

Alcohol use is a leading cause of death and disability worldwide, particularly among those of working age. Measured through sales data, Latvia reported the highest consumption in 2019 (12.9 litres of pure alcohol per person per year), followed by Austria and the Czech Republic. Turkey, Israel, Costa Rica, Colombia and Mexico have comparatively low consumption levels (under 5 litres). Average consumption fell in 29 OECD countries since 2009. Harmful drinking is of particular concern in certain countries, notably Latvia and Hungary.

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 in 2019. Obesity rates are highest in Mexico, Chile and the United States; and lowest in Japan and Korea. Included here are data for people who are overweight (including obese) using 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 ambient (outdoor) air pollution may cause 6 to 9 million premature deaths a year worldwide by 2060. Premature deaths attributable to ambient particulate matter ranged from over 70 per 100 000 people in Poland and Hungary, to less than 7 deaths per 100 000 people in Iceland, New Zealand and Sweden, in 2019.

Table 1.3. **Dashboard on risk factors for health, 2019 (or nearest year)**

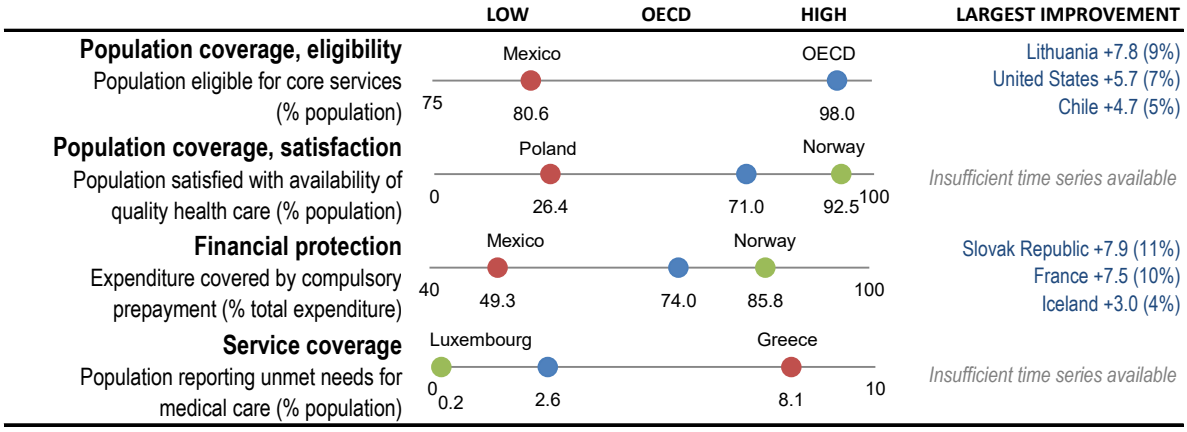
	Smoking		Alcohol		Overweight / obese			Ambient air pollution	
	Daily smokers (% population aged 15+)		Litres consumed per capita (population aged 15+)		Population with BMI ≥ 25 (% population aged 15+)		Self-reported	Deaths (per 100 000 population)	
OECD	**16.5**		**8.7**		**56.4**			**29**	
Australia	11.2	◉	9.5	◉	65.2	◉		7	☑
Austria	20.6	◉	11.6	☒	51.1	◉	*	27	◉
Belgium	15.4	◉	9.2	◉	55.4	◉		30	◉
Canada	10.3	☑	8	◉	59.8	◉	*	10	☑
Chile	24.5	☒	7.1	◉	74.2	☒		31	◉
Colombia			4.1	☑				26	◉
Costa Rica	4.2	☑	3.1	☑				19	◉
Czech Republic	18.1	◉	11.9	☒	58.4	◉	*	59	☒
Denmark	16.9	◉	9.5	◉	48.8	◉	*	22	◉
Estonia	17.9	◉	10.4	◉	51.3	◉		12	◉
Finland	13.0	◉	8.2	◉	67.6	☒		7	☑
France	24	☒	11.4	◉	49.0	◉		20	◉
Germany	18.8	◉	10.6	◉	60.0	◉		32	◉
Greece	24.9	☒	6.3	◉	57.2	◉	*	55	☒
Hungary	24.9	☒	11.4	◉	67.6	☒		72	☒
Iceland	8.2	☑	7.7	◉	65.4	◉	*	5	☑
Ireland	14.0	◉	10.8	◉	61.0	◉		11	☑
Israel	16.4	◉	3.1	☑	50.9	◉		27	◉
Italy	18.6	◉	7.7	◉	46.4	◉	*	41	◉
Japan	16.7	◉	7.1	◉	27.2	☑		31	◉
Korea	16.4	◉	8.3	◉	33.7	☑		43	◉
Latvia	22.6	☒	12.9	☒	58.7	◉		59	☒
Lithuania	18.9	◉	11.1	◉	55.0	◉	*	46	◉
Luxembourg	16.8	◉	11	◉	48.4	◉	*	15	◉
Mexico	7.6	☑	4.4	☑	75.2	☒		29	◉
Netherlands	15.4	◉	8.2	◉	48.4	◉	*	27	◉
New Zealand	12.5	◉	8.8	◉	65.1	◉		6	☑
Norway	9.0	☑	6.1	◉	48.0	◉	*	7	☑
Poland	17.1	◉	11	◉	56.7	◉	*	73	☒
Portugal	14.2	◉	10.4	◉	67.6	☒		20	◉
Slovak Republic	21	◉	10.3	◉	57.7	◉	*	64	☒
Slovenia	17.4	◉	11.1	◉	56.5	◉	*	40	◉
Spain	19.8	◉	10.7	◉	50.2	◉	*	19	◉
Sweden	10.4	☑	7.1	◉	49.1	◉	*	6	☑
Switzerland	19.1	◉	9.3	◉	41.8	☑	*	16	◉
Turkey	28	☒	1.3	☑	64.4	◉		50	☒
United Kingdom	15.8	◉	9.7	◉	64.2	◉		21	◉
United States	10.9	☑	8.9	◉	73.1	☒		15	◉

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

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 and those satisfied with the availability of quality health care, offers an initial assessment of access to care. The proportion of spending covered by prepayment schemes gives further insight on financial protection. The share of populations reporting unmet need for medical care offers a measure of effective service coverage. Figure 1.4 presents a snapshot on access to care across the OECD and Table 1.4 provides more detailed country comparisons.

Figure 1.4. **Access to care across the OECD, 2019 (or nearest year)**



Note: Largest improvement shows countries with largest changes in absolute value over time (% change in brackets). Indicator on population coverage, satisfaction based on 2020 data.
Source: OECD Health Statistics 2021, Gallup World Poll 2020.

In terms of the share of the population eligible for coverage, most OECD countries have achieved universal (or near-universal) coverage for a core set of services. However, in Mexico and the United States, population coverage was below 90% in 2019, with coverage below 95% in a further five countries (Costa Rica, Poland, Hungary, the Slovak Republic and Colombia).

Satisfaction with the availability of quality health services offers further insights on effective coverage. On average across OECD countries, 71% of people were satisfied with the availability of quality health services where they live in 2020. Citizens in Norway, Belgium, the Netherlands and Switzerland were most likely to be satisfied (over 90%). Whereas less than 50% of citizens were satisfied in Poland (26%), Greece (38%), Chile (39%), Colombia (47%) and Mexico (48%).

The degree of cost sharing applied to those services also affects access to care. Across the OECD, around three-quarters of all health care costs were covered by government or compulsory health insurance schemes in 2019. However, in Mexico, less than half of all health spending was covered by publicly mandated schemes; and in Latvia, Portugal, Greece and Korea only around 60% of all costs were covered. Mexico, though, has significantly expanded population coverage and financial protection over the last decade.

In terms of service coverage, on average across 27 OECD countries with comparable data, only 2.6% of the population reported that they had unmet care needs due to cost, distance or waiting times in 2019. However, in Estonia more than 15% of the population reported unmet care needs. Accessibility to health care was also limited in Greece, with around 8% of the population reporting unmet needs for health care. Socioeconomic disparities are significant in most countries, with the income gradient largest in Greece, Turkey, Latvia and Iceland.

Table 1.4. **Dashboard on access to care, 2019 (or nearest year)**

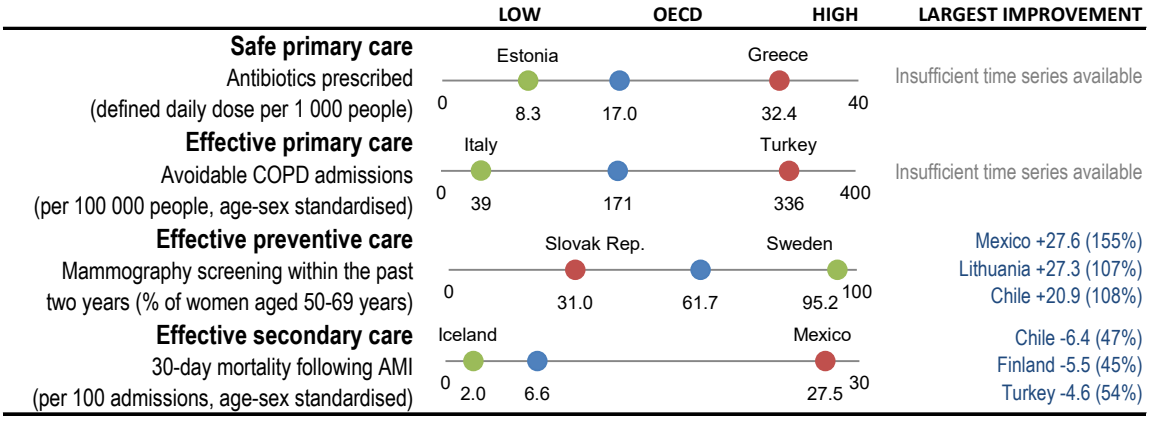
	Coverage: Eligibility		Coverage: Satisfaction		Financial protection		Service coverage	
	Population eligible for core services (% population)		Population satisfied with availability of quality health care (% population)		Expenditure covered by compulsory prepayment (% total expenditure)		Population reporting unmet needs for medical care (% population)	
OECD	**98.0**		**71.0**		**74.0**		**2.6**	
Australia	100	◉	83	◉	66.6	◉		
Austria	99.9	◉	86	◉	75.2	◉	0.3	☑
Belgium	98.6	◉	92	☑	76.8	◉	1.8	◉
Canada	100	◉	78	◉	70.2	◉		
Chile	95.7	◉	39	☒	60.6	◉		
Colombia	94.7	◉	47	☒	77.5	◉		
Costa Rica	91.1	☒	63	◉	73.9	◉		
Czech Republic	100	◉	75	◉	81.8	◉	0.5	☑
Denmark	100	◉	89	☑	83.3	☑	1.8	◉
Estonia	95.0	◉	61	◉	74.5	◉	15.5	☒
Finland	100	◉	85	◉	77.8	◉	4.7	☒
France	99.9	◉	71	◉	83.7	☑	1.2	◉
Germany	100	◉	85	◉	84.6	☑	0.3	☑
Greece	100.0	◉	38	☒	59.8	◉	8.1	☒
Hungary	94.0	☒	62	◉	68.3	◉	1.0	◉
Iceland	100	◉	81	◉	82.9	◉	3.4	◉
Ireland	100	◉	66	◉	74.6	◉	2.0	◉
Israel	100	◉	72	◉	64.8	◉		
Italy	100	◉	61	◉	73.8	◉	1.8	◉
Japan	100	◉	73	◉	83.8	☑		
Korea	100	◉	71	◉	61.0	◉		
Latvia	100	◉			60.8	◉	4.3	◉
Lithuania	98.7	◉	51	☒	66.4	◉	1.4	◉
Luxembourg	100	◉	85	◉	85.0	☑	0.2	☑
Mexico	80.6	☒	48	☒	49.3	☒		
Netherlands	99.9	◉	92	☑	82.6	◉	0.2	☑
New Zealand	100	◉	77	◉	79.2	◉		
Norway	100	◉	93	☑	85.8	☑	0.8	◉
Poland	93.4	☒	26	☒	71.8	◉	4.2	◉
Portugal	100	◉	67	◉	61.0	◉	1.7	◉
Slovak Republic	94.6	◉	58	◉	79.8	◉	2.7	◉
Slovenia	100	◉	85	◉	72.8	◉	2.9	◉
Spain	100	◉	70	◉	70.6	◉	0.2	☑
Sweden	100	◉	82	◉	84.9	☑	1.4	◉
Switzerland	100	◉	91	☑	66.8	◉	0.7	☑
Turkey	98.8	◉	62	◉	77.9	◉	3.0	◉
United Kingdom	100	◉	75	◉	78.5	◉	4.5	☒
United States	89.8	☒	83	◉	82.7	◉		

Note: ☑ Better than OECD average; ◉ Close to OECD average; ☒ Worse than OECD average. Estonia is excluded from standard deviation calculation for unmet needs.

Quality of care

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

Figure 1.5. **Quality of care across the OECD, 2019 (or nearest year)**



Note: Largest improvement shows countries with largest changes in absolute value over time (% change in brackets).
Source: OECD Health Statistics 2021.

The overuse, underuse or misuse of antibiotics and other prescription medicines contribute to increased antimicrobial resistance and represent wasteful spending. The total volumes of antibiotics prescribed in 2019 varied nearly four-fold across countries, with Estonia, Sweden and Germany reporting the lowest volumes, whereas Iceland, Australia and Greece recorded the highest volumes. Across the OECD, the number of antibiotics prescribed has increased slightly over time.

COPD is a condition for which effective treatment at the primary care level is well established – and hospital admissions for this condition may signal quality issues in primary care. Admission rates varied 8-fold across OECD countries with Italy, Mexico and Chile reporting the lowest rates and Turkey, Ireland and Australia having the highest rates in 2019. Cross-country differences are broadly similar, but with some exceptions, for avoidable hospital admissions for asthma, congestive heart failure and diabetes (see Chapter 6).

Breast cancer is the cancer with the highest incidence among women in all OECD countries, and the second most common cause of cancer death among women. Timely mammography screening is critical to identify cases, allowing treatment to start at an early stage of the disease. In 2019, mammography screening was highest in Sweden (95% of women aged 50-69), with Denmark, Spain, Finland and Portugal also having screening rates a little over 80%. Screening rates were lowest in the Slovak Republic, Turkey, Hungary and Latvia (all under 40%). COVID-19 had a large impact on screening programmes, with reductions in screening rates in six of the seven countries with available data for 2020.

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 had by far the highest 30-day mortality following AMI (27.5 deaths per 100 admissions); rates were also relatively high in Latvia in 2019. The lowest rates

Table 1.5. **Dashboard on quality of care, 2019 (or nearest year)**

	Safe primary care		Effective primary care		Effective preventive care		Effective secondary care	
	Antibiotics prescribed (defined daily dose per 1 000 people)		Avoidable COPD admissions (per 100 people, age-sex standardised)		Mammography screening within the past 2 years (% women aged 50-69)		30-day mortality following AMI (per 100 000 admissions, age-sex standardised)	
OECD	**17.0**		**171**		**61.7**		**6.6**	
Australia	32.2	☒	300	☒	54.5	◉	3.2	☑
Austria	12.1	◉	193	◉	74.5	◉	5.2	◉
Belgium	15.9	◉	279	☒	60.2	◉	6.4	◉
Canada	14.2	◉	213	◉	62.0	◉	4.6	☑
Chile			66	☑	40.1	☒	7.2	◉
Colombia			120	◉			5.6	◉
Costa Rica			99	◉				
Czech Republic			134	◉	60.9	◉	7.0	◉
Denmark	13.0	◉	287	☒	83.2	☑	4.5	☑
Estonia	8.3	☑	85	☑	55.9	◉	9.2	☒
Finland	12.6	◉	125	◉	81.3	☑	6.8	◉
France	23.3	☒	120	◉	48.8	◉	5.6	◉
Germany	11.4	◉	250	◉	50.1	◉	8.3	◉
Greece	32.4	☒			65.7	◉		
Hungary	13.3	◉			39.1	☒		
Iceland	24.7	☒	124	◉	59.3	◉	2.0	☑
Ireland	21.0	◉	336	☒	71.6	◉	4.7	◉
Israel	19.6	◉	155	◉	72.1	◉	5.3	◉
Italy	19.8	◉	39	☑	60.7	◉	5.4	◉
Japan	13.1	◉			44.6	☒	9.7	☒
Korea	23.7	☒	152	◉	70.2	◉	8.9	☒
Latvia	12.0	◉	152	◉	39.1	☒	14.4	☒
Lithuania	13.4	◉	194	◉	52.9	◉	9.3	☒
Luxembourg	19.8	◉	181	◉	55.1	◉	8.5	◉
Mexico			65	☑	45.4	☒	27.5	☒
Netherlands	12.3	◉	176	◉	76.1	◉	2.9	☑
New Zealand			298	☒	71.5	◉	4.3	☑
Norway	13.6	◉	221	◉	71.6	◉	3.2	☑
Poland	22.2	◉	121	◉	53.7	◉	4.7	◉
Portugal	17.9	◉	79	☑	80.2	☑	7.3	◉
Slovak Republic	18.0	◉	110	◉	31.0	☒	6.3	◉
Slovenia	11.5	◉	90	☑	76.8	◉	4.2	☑
Spain	23.1	◉	177	◉	81.5	☑	6.5	◉
Sweden	9.2	☑	140	◉	95.2	☑	3.5	☑
Switzerland			141	◉	49.0	◉	5.1	◉
Turkey	12.0	◉	336	☒	36.0	☒	3.9	☑
United Kingdom	15.6	◉	223	◉	75.1	◉	6.6	◉
United States			194	◉	76.5	◉	4.9	◉

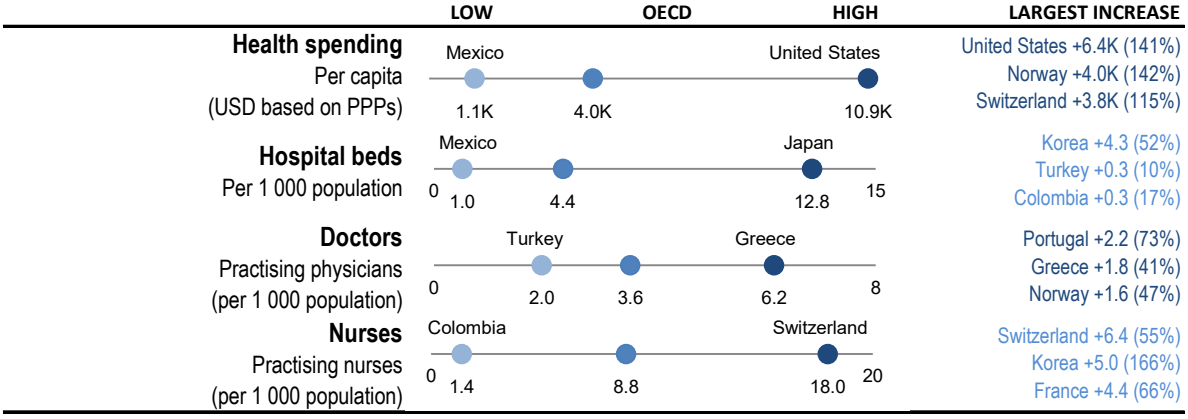
Note: ☑ Better than OECD average; ◉ Close to OECD average; ☒ Worse than OECD average. Latvia and Mexico are excluded from standard deviation calculation for AMI mortality. Effective cancer care reports total data for all available countries in CONCORD-3.

were found in Iceland, the Netherlands, Norway and Australia, at around 3% or less (comparisons based on unlinked data).

Health system capacity and resources

Having sufficient health care resources is critical to a resilient health system. More resources, though, do not automatically translate into better health outcomes – the effectiveness of spending is also important. Health spending per capita summarises overall resource availability. The number of practising doctors and nurses provide further information on the supply of health workers. Hospital beds is an indicator of acute care capacity. Figure 1.6 presents a snapshot on health system capacity and resources across the OECD and Table 1.6 provides more detailed country comparisons.

Figure 1.6. **Health system capacity and resources across the OECD, 2019 (or nearest year)**



Note: Largest increase shows countries with largest changes in absolute value over time (% change in brackets).
Source: OECD Health Statistics 2021.

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 – risk factors for health and the wider social determinants of health are also critical, as is the efficient use of health care resources.

The United States spends considerably more than any other country (almost USD 11 000 per person, adjusted for purchasing power, in 2019), and also spent the most when measured as a share of GDP. Health care spending per capita is also high in Switzerland, Norway and Germany. Mexico, Turkey and Colombia spent 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. With the onset of the COVID-19 pandemic, initial data for 2020 points to a sharp increase in overall health spending, of around 5.1% on average.

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 less than 2.5 per 1 000 population in Turkey, Colombia, Poland and Mexico, to over five in Austria, Portugal and Greece, in 2019. However, numbers in Portugal and Greece are over-estimated as they include all doctors licensed to practise. On average there were just under 9 nurses per 1 000 population in OECD countries in 2019, ranging from less than 3 per 1 000 people in Colombia, Turkey, Mexico and Chile to about 18 in Switzerland and Norway.

The number of hospital beds provides an indication of resources available for delivering inpatient services. The COVID-19 pandemic has highlighted the need to have sufficient hospital beds (particularly intensive care beds), together with sufficient numbers of doctors and nurses. Still, a surplus of beds may cause an exaggeration in their use and therefore costs, notably for patients whose outcomes may not improve from intensive care. Across OECD countries, there were on average 4.4 hospital beds per 1 000 people in 2019. Over half of OECD countries reported between 3

Table 1.6. **Dashboard on health system capacity and resources, 2019 (or nearest year)**

	Health spending		Hospital beds		Doctors		Nurses	
	Per capita (USD based on purchasing power parities)		Per 1 000 population		Practising physicians (per 1 000 population)		Practising nurses (per 1 000 population)	
OECD	**4 087**		**4.4**		**3.6**		**8.8**	
Australia	4 919	◉	3.8	◉	3.8	◉	12.2	◉
Austria	5 705	◉	7.2	↑	5.3	↑	10.4	◉
Belgium	5 458	◉	5.6	◉	3.2	◉	11.1	◉
Canada	5 370	◉	2.5	↓	2.7	◉	10.0	◉
Chile	2 291	↓	2.0	↓	2.6	◉	2.9	↓
Colombia	1 276	↓	1.7	↓	2.3	↓	1.4	↓
Costa Rica	1 600	↓	1.1	↓	3.1	◉	3.4	↓
Czech Republic	3 417	◉	6.6	↑	4.1	◉	8.6	◉
Denmark	5 478	◉	2.6	↓	4.2	◉	10.1	◉
Estonia	2 507	◉	4.5	◉	3.5	◉	6.2	◉
Finland	4 561	◉	3.4	◉	3.2	◉	14.3	↑
France	5 274	◉	5.8	◉	3.2	◉	11.1	◉
Germany	6 518	↑	7.9	↑	4.4	◉	13.9	↑
Greece	2 319	↓	4.2	◉	6.2	↑	3.4	↓
Hungary	2 170	↓	6.9	↑	3.5	◉	6.6	◉
Iceland	4 541	◉	2.8	◉	3.9	◉	15.4	↑
Ireland	5 083	◉	2.9	◉	3.3	◉	12.9	◉
Israel	2 903	◉	3.0	◉	3.3	◉	5.0	◉
Italy	3 653	◉	3.2	◉	4.1	◉	6.2	◉
Japan	4 691	◉	12.8	↑	2.5	↓	11.8	◉
Korea	3 406	◉	12.4	↑	2.5	↓	7.9	◉
Latvia	2 074	↓	5.4	◉	3.3	◉	4.4	↓
Lithuania	2 727	◉	6.4	↑	4.6	↑	7.7	◉
Luxembourg	5 414	◉	4.3	◉	3.0	◉	11.7	◉
Mexico	1 133	↓	1.0	↓	2.4	↓	2.9	↓
Netherlands	5 739	◉	3.1	◉	3.7	◉	10.7	◉
New Zealand	4 212	◉	2.5	↓	3.4	◉	10.2	◉
Norway	6 745	↑	3.5	◉	5.0	↑	17.9	↑
Poland	2 289	↓	6.2	◉	2.4	↓	5.1	◉
Portugal	3 347	◉	3.5	◉	5.0	↑	7.1	◉
Slovak Republic	2 189	↓	5.8	◉	3.6	◉	5.7	◉
Slovenia	3 303	◉	4.4	◉	3.3	◉	10.3	◉
Spain	3 600	◉	3.0	◉	4.4	◉	5.9	◉
Sweden	5 552	◉	2.1	↓	4.3	◉	10.9	◉
Switzerland	7 138	↑	4.6	◉	4.4	◉	18.0	↑
Turkey	1 267	↓	2.9	◉	2.0	↓	2.4	↓
United Kingdom	4 500	◉	2.5	↓	3.0	◉	8.2	◉
United States	10 948	↑	2.8	◉	2.6	◉	12.0	◉

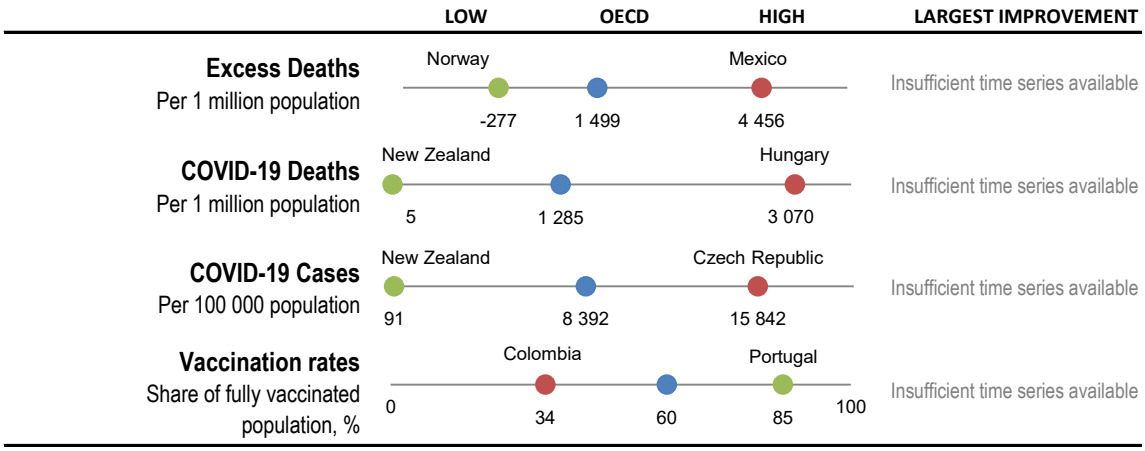
Note: ↑ Above OECD average; ◉ Close to OECD average; ↓ Below OECD average. Chile, Costa Rica, Greece and Portugal include all doctors licensed to practice, resulting in a large over-estimation. Japan and Korea are excluded from the standard deviation calculation for hospital beds. The United States is excluded from standard deviation calculation for HCE per capita.

and 8 hospital beds per 1 000 people. Japan and Korea, though, have more hospital beds (12-13 per 1 000 people), with relatively few beds in Mexico, Costa Rica and Colombia.

COVID-19

The COVID-19 pandemic has claimed millions of lives, with many more suffering ill-health as a direct or indirect consequence of the virus. As of the time of publication, about 250 million cases were reported and almost 5 million people have died from the virus. These figures are underestimates, with many more cases and deaths going undetected. Therefore, alongside COVID-19 cases and COVID-19 deaths, excess mortality – a measure of deaths from all causes over and above what could normally be expected for a given period of time – provides a complementary measure. Excess mortality accounts for unreported COVID-19 deaths and deaths indirectly caused by the virus (see Chapter 2 for methodology used). Figure 1.7 presents a snapshot of COVID-19 across the OECD and Table 1.7 provides more detailed country comparisons, including differences in vaccination rates.

Figure 1.7. **Snapshot on COVID-19 across the OECD, 2020-21**



Note: Data on excess deaths and COVID-19 deaths up to week 26-2021, except for Australia (week 25), Canada (week 22), and Colombia (week 18). Data on COVID-19 cases and vaccination rates up to week 39-2021. See Chapter 2 for methods used to calculate excess deaths.
Source: OECD Health Statistics 2021, ECDC 2021, Our World in Data 2021.

In all but one OECD country, more people died in the 18-month period since January 2020 than on average in the corresponding time period between 2015-19. The excess mortality rate was highest in Mexico (4 456 excess deaths per million people), followed by Poland (3 663), the Czech Republic (3 465), and the Slovak Republic (3 133). Excess deaths were negative in Norway, and relatively low in Korea, Iceland, Denmark, Australia and New Zealand.

Countries with the highest number of reported COVID-19 deaths per population were, in general, countries also experiencing higher excess mortality rates, but with some notable exceptions. Reported COVID-19 death rates up to early October 2021 were highest in Hungary and the Czech Republic. Reported COVID-19 deaths were below 50 deaths per million people in New Zealand, Australia and Korea. Excess mortality was much higher than reported COVID-19 deaths in Mexico and Poland – potentially indicative of underreporting of some COVID-19 fatalities and/or additional deaths due to other factors, including the indirect consequences of the virus. Belgium, Sweden and the United Kingdom recorded substantially higher COVID-19 fatality rates compared to excess mortality. This implies some overestimation of COVID-19 deaths and/or reduced mortality in other areas.

Cumulative reported COVID-19 cases up to early October 2021 exceeded or were approaching 15 000 cases per 100 000 people in the Czech Republic, Israel, the Slovak Republic and Slovenia; but were under 1 000 cases per 100 000 people in New Zealand (91), Australia (437) and Korea (624).

Table 1.7. **Dashboard on COVID-19, 2020-21**

	Excess deaths		COVID-19 deaths		COVID-19 cases		Vaccination rates	
	Per 1 million population		Per 1 million population		Per 100 000 population		Share of population fully vaccinated	
OECD	**1 499**		**1 285**		**8 392**		**60.0**	
Australia	211	☑	36	☑	437	☑	45.6	☒
Austria	1 270	◉	1 180	◉	8 368	◉	60.1	◉
Belgium	1 374	◉	2 186	☒	10 867	◉	72.6	◉
Canada	1 125	◉	699	◉	4 347	◉	71.2	◉
Chile	2 138	◉	1 739	◉	8 669	◉	73.7	☑
Colombia	2 323	◉	2 151	☒	9 754	◉	33.6	☒
Costa Rica			928	◉	10 560	◉	42.6	☒
Czech Republic	3 465	☒	2 838	☒	15 842	☒	55.7	◉
Denmark	195	☑	436	☑	6 190	◉	75.3	☑
Estonia	1 396		956	◉	11 956	◉	53.5	◉
Finland	343	☑	176	☑	2 572	☑	63.4	◉
France	1 374	◉	1 652	◉	10 438	◉	66.1	◉
Germany	925	◉	1 095	◉	5 117	◉	64.2	◉
Greece	1 402	◉	1 188	◉	6 170	◉	59.4	◉
Hungary	2 424	◉	3 070	☒	8 443	◉	58.7	◉
Iceland	188	☑	82	☑	3 284	☑	80.5	☑
Ireland			1 007	◉	7 929	◉	74.2	☑
Israel	766	◉	743	◉	14 925	☒	64.4	◉
Italy	2 151	◉	2 140	☒	7 850	◉	68.3	◉
Japan	787	◉	117	☑	1 347	☑	61.2	◉
Korea	52	☑	40	☑	624	☑	52.7	◉
Latvia	1 209	◉	1 325	◉	8 473	◉	46.4	☒
Lithuania	1 928	◉	1 573	◉	12 171	◉	60.3	◉
Luxembourg	879	◉	1 306	◉	12 510	◉	62.9	◉
Mexico	4 456	☒	1 812	◉	2 857	☑	35.4	☒
Netherlands	1 384	◉	1 020	◉	11 535	◉	67.6	◉
New Zealand	214	☑	5	☑	91	☑	41.5	☒
Norway	-277	☑	148	☑	3 550	☑	67.0	◉
Poland	3 663	☒	1 978	◉	7 670	◉	51.7	◉
Portugal	2 025		1 663	◉	10 405	◉	85.2	☑
Slovak Republic	3 133	☒	2 293	☒	14 828	☒	41.4	☒
Slovenia	2 320	◉	2 268	☒	14 174	☒	48.3	◉
Spain	1 841	◉	1 710	◉	10 490	◉	78.6	☑
Sweden	545	◉	1 420	◉	11 177	◉	64.2	◉
Switzerland	1 069	◉	1 197	◉	9 810	◉	58.4	◉
Turkey			600	◉	8 672	◉	52.9	◉
United Kingdom	1 599	◉	2 232	☒	11 608	◉	66.0	◉
United States	2 559	◉	1 824	◉	13 197	☒	55.2	◉

Note: ☑ Better than OECD average; ◉ Close to OECD average; ☒ Worse than OECD average. Data on excess deaths and COVID-19 deaths up to week 26-2021, except for Australia (week 25), Canada (week 22), and Colombia (week 18). Data on COVID-19 cases and vaccination rates up to week 39-2021. See Chapter 2 for methods used to calculate excess deaths.

For vaccination rates, as of early October 2021, Portugal had the highest share of the population fully vaccinated (85.2%), followed by Iceland (80.5%) and Spain (78.6%). Vaccination rates were lowest in Colombia (33.6%) and Mexico (35.4%).

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

Quadrant charts plot the association between health spending and selected indicators of health system goals. They illustrate the extent to which spending more on health translates into stronger performance across three dimensions: health outcomes, quality and access to care. Note though that only a small subset of indicators for these three dimensions are compared against health spending, with quadrant charts showing simple statistical correlations rather than causal links.

Health spending and health outcomes

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

Figure 1.8. **Life expectancy and health expenditure**

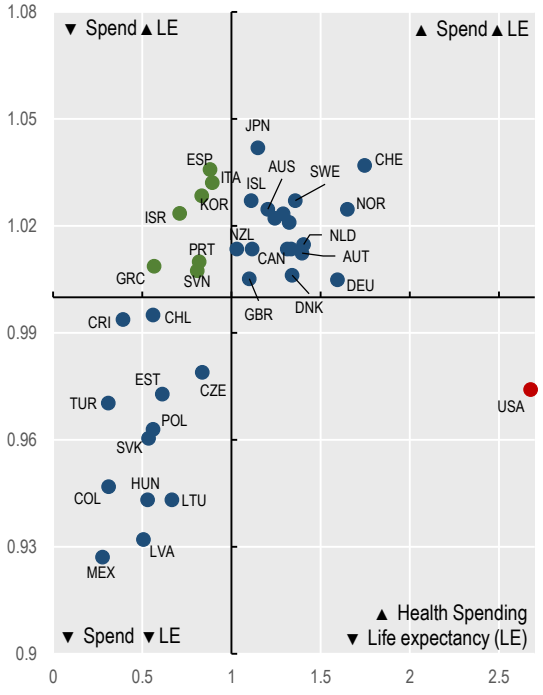
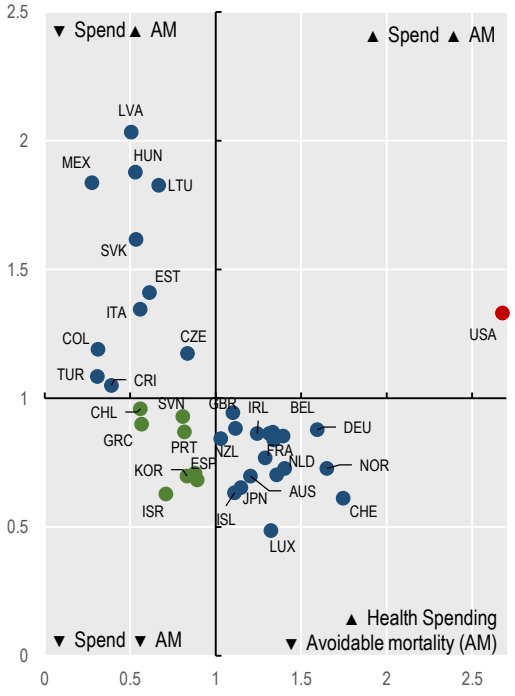


Figure 1.9. **Avoidable mortality (preventable and treatable) and health expenditure**



There is a clear positive association between health spending per capita and life expectancy (Figure 1.8). Amongst the 38 OECD countries, 17 countries spend more and have higher life expectancy than the OECD average (top right quadrant). A further 12 countries spend less and have lower life expectancy at birth (bottom left quadrant).

Of particular interest are countries that deviate from this basic relationship. Seven countries spend less than average but achieve higher life expectancy overall (top left quadrant). This may indicate relatively good value-for-money of health systems, notwithstanding the fact that many other factors also have an impact on health outcomes. These seven countries are Italy, Korea, Portugal, Spain, Slovenia, Greece and Israel. 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.

For avoidable mortality, there is also a clear association in the expected direction (Figure 1.9). Amongst OECD countries, 18 countries spend more and have lower avoidable mortality rates (bottom right quadrant), and 11 countries spend less and have more deaths that could have been avoided (top left quadrant). Eight countries spend less than average but have lower avoidable mortality rates – the seven countries with relatively high life expectancy and low health spending, plus Chile (bottom left quadrant). The United States spends more than the OECD average and has worse avoidable mortality rates.

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 (such associations do not guarantee a causal relationship).

Figure 1.10. **Satisfaction with availability of quality services and health expenditure**

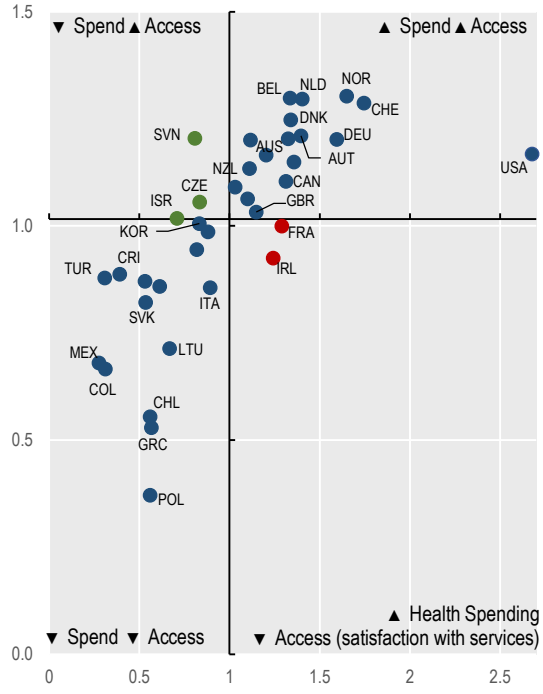
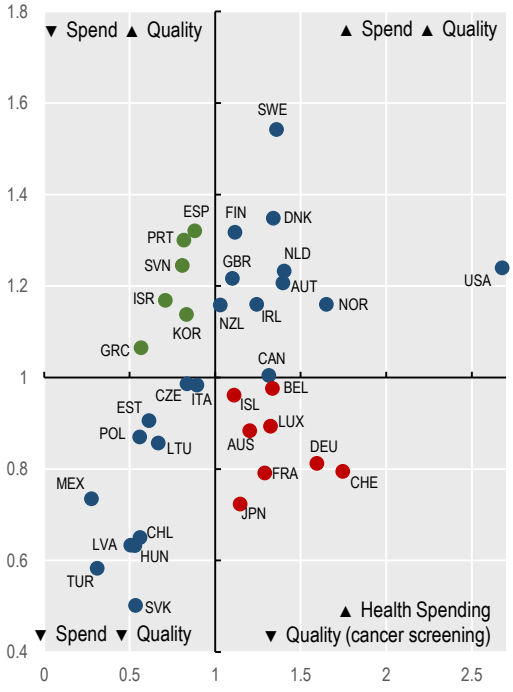


Figure 1.11. **Breast cancer screening and health expenditure**



In terms of access, Figure 1.10 shows a clear positive correlation between the share of the population satisfied with the availability of quality health care where they live and health spending per capita. Amongst the 37 OECD countries with available data, 17 countries spent more and had a higher share of the population satisfied with availability than the OECD average (top right quadrant). The converse was true in 14 countries (bottom left quadrant). In Ireland, health spending was 24% higher than the OECD average, but only 66% of the population were satisfied with the availability of quality health care where they live (compared to 71% being satisfied on average across the OECD). In Slovenia and the Czech Republic, health spending per capita was relatively low, but a noticeably greater share of the population were satisfied with the availability of quality health care, as compared to the OECD average.

In terms of quality of care, Figure 1.11 shows the relationship between health spending and breast cancer screening rates. Whilst there is an overall weak positive correlation between health

spending and the share of women regularly screened, six countries spent less than the OECD average yet had higher cancer screening rates (top left quadrant), with eight countries spending more than the OECD average and having lower cancer screening rates (bottom right quadrant).

Chapter 2

The health impact of COVID-19

Michael Mueller, Elina Suzuki, Gabriel Di Paolantonio, Emily Hewlett and Chris James

The health impact of COVID-19 has been devastating. By mid-October 2021, 240 million people had contracted the virus with nearly 4.9 million dying from it. Moreover, millions of survivors suffer from long-lasting symptoms that prevent a return to normal life. Mental distress has increased substantially. There has also been a clear social gradient to the risk of infection and death from the virus. Furthermore, COVID-19 has disrupted health care for people with other needs. For example, cancer screening was frequently delayed, non-urgent surgeries postponed, emergency department use dropped, and waiting times for elective surgeries increased. Nevertheless, vaccinations have been a game changer in 2021, reducing the risk of severe illness and death. However, vaccination hesitancy among some population groups and waning vaccine effectiveness are an ongoing challenge.

Introduction

The COVID-19 pandemic is the most important global health crisis since the 1918 influenza pandemic. By mid-October 2021, nearly 240 million cases had been reported and nearly 4.9 million people had died from the virus (Johns Hopkins Coronavirus Resource Center, 2021[1]). These figures under-estimate the overall health impact of the pandemic as many cases and deaths go undetected. Furthermore, both the disease and the containment and mitigation measures implemented to slow the spread of the SARS-CoV-2 virus and its variants have had a profound impact on the health and well-being of populations, and more broadly on societies and economies.

Addressing this health emergency has required far-reaching and drastic actions previously unthinkable in many OECD countries. Containment and mitigation policies to reduce the spread of the virus were deployed to varying degrees and duration in many OECD countries to respond to the various surges of contagion since early 2020. At the same time, several efforts were made to scale up health systems capacity to cope with the rise in incidence of severe COVID-19 cases by increasing the number of hospital beds, particularly intensive care capacity, mobilising health workers, and boosting laboratory capacity. Significant investments have been made in IT systems and digital health solutions to better track and trace infections and improve the timeliness and granularity of health data. Massive funds were also deployed into research to fast-track the development of effective vaccines and treatments.

Yet in many OECD countries, early responses to the pandemic did not come with the speed and scale required to tackle such an unprecedented crisis (even if this was in part due to inherent uncertainties about the virus at the time). In subsequent phases of the pandemic, crisis management has generally improved. However, structural weaknesses in preparedness for health emergencies and health system response capacity have been revealed. In its review of the global COVID-19 response, the *Independent Panel for Pandemic Preparedness and Response* noted inadequate funding for and stress testing of pandemic preparedness; a lack of decisive action to enact an aggressive containment strategy; the absence of co-ordinated, global leadership; and slowness of response funding as some of the main shortcomings (Independent Panel for Pandemic Preparedness and Response, 2021[2]). Other independent reviews carried out in Europe or by the G20 point to similar issues (Pan-European Commission on Health and Sustainable Development, 2021[3]; G20, 2021[4]).

The crisis provides an opportunity to learn how to make health systems more resilient for the future, taking stock of the effects of the pandemic and the measures implemented to contain them. This chapter contributes to such efforts by assessing the direct and indirect health impacts of COVID-19 in OECD member countries.

The chapter first describes the direct and overall health repercussions of COVID-19 in OECD countries, including key measures such as COVID-19 infections and deaths, along with population health indicators such as excess mortality and life expectancy, and what is known about 'long COVID'. Special attention is given to how the vaccination rollout and the emergence of virus variants have altered the evolution of the pandemic in 2021. The analysis then focuses on some particularly vulnerable and high-risk groups, including the extent to which there has been a social gradient to infections, illness and death. Finally, the indirect impact of COVID-19 on people's health is

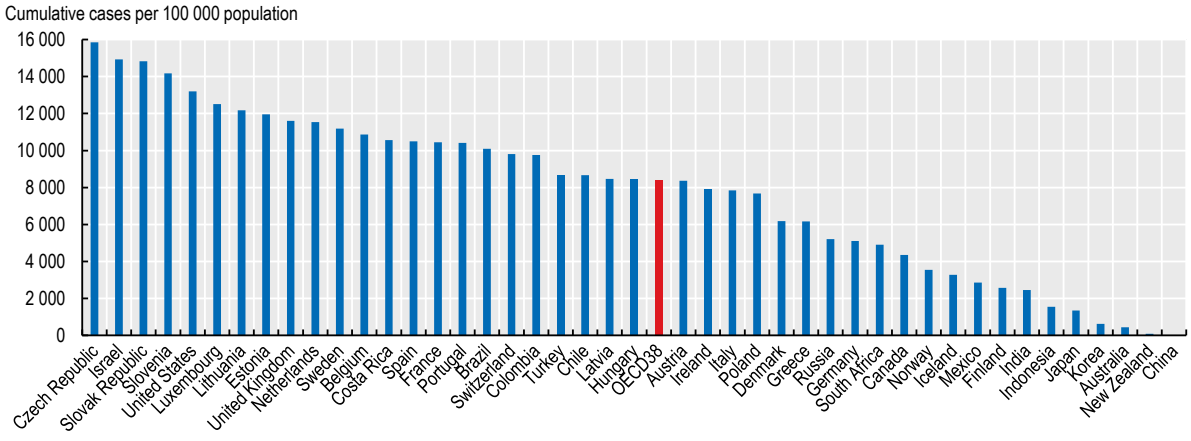
assessed by investigating the adverse effects on mental health, and how access to care for non-COVID-19 patients has been disrupted.

The direct impact of COVID-19

The direct effects of COVID-19 on population health have been dramatic. Across the 38 OECD countries, more than 110 million infections were reported, and more than 2.1 million people have died from the SARS-CoV-2 virus, as of mid-October 2021. This represents slightly less than half of recorded global COVID-19 infections (47%) and fatalities (44%). As many infections are asymptomatic and testing capacity limited in some countries, these figures are large underestimations. An increasing number of seroprevalence studies suggest that the real magnitude of infections has been much greater than officially identified in many regions (Ioannidis, 2021[5]; Byambasuren et al., 2021[6]).

As of early October 2021, cumulative reported COVID-19 cases averaged around 8 400 per 100 000 inhabitants across OECD countries, ranging from nearly 16 000 per 100 000 inhabitants in the Czech Republic to less than 100 in New Zealand (Figure 2.1). Reported COVID-19 deaths rates varied from over 3 000 deaths per million inhabitants in Hungary to 6 deaths per million in New Zealand, with an OECD average of 1 370 (Figure 2.2). Among OECD Key Partner countries, cumulative reported COVID-19 deaths are high in Brazil (2 800 per million inhabitants) but very low in China (3 per million inhabitants).

Figure 2.1. **Cumulative number of reported COVID-19 cases per 100 000 population, January 2020 to early October 2021**



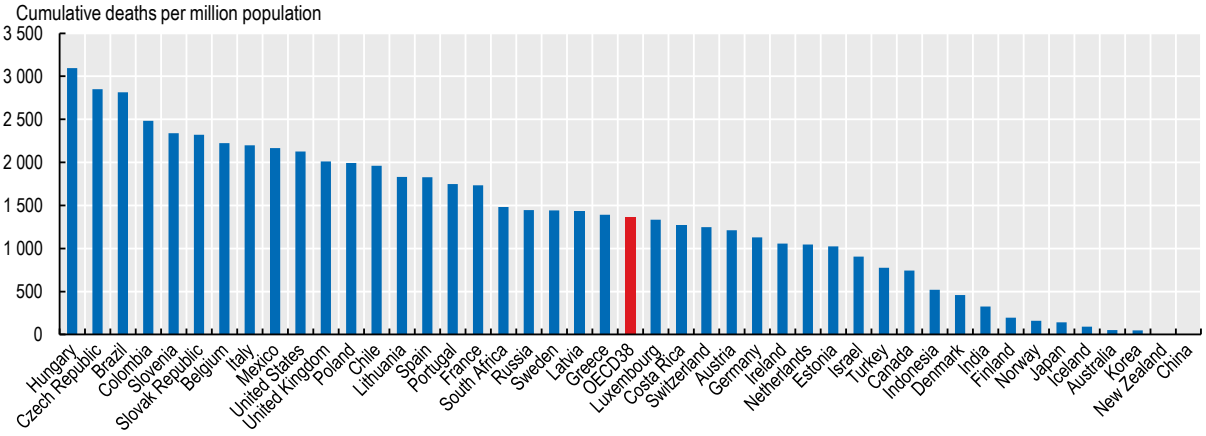
Note: Data are affected by countries' capacity to detect COVID-19 infections – which was particularly limited in many countries at the onset of the crisis – and by the testing strategies applied. Data are included up until calendar week 39/2021. Countries displayed in chart include OECD countries and Key Partner countries Brazil, China, India, Indonesia, Russia and South Africa.
Source: ECDC (2021[7]) "COVID-19 datasets", *https://opendata.ecdc.europa.eu/covid19/nationalcasedeath/*. ECDC data use national data sources for non-European countries.

Deaths peaked in many European OECD countries in late 2020 and early 2021, whereas North and Latin American OECD countries have faced high death rates for most of 2021

Since early 2020, the world has been hit by several peaks in SARS-CoV-2 infections and associated COVID-19 deaths, but the timing and magnitude of these peaks have varied across countries and regions (Figure 2.3 and Figure 2.4).

- Most European OECD countries experienced peaks in infections and deaths in late 2020 and early 2021, with many southern and western European countries also hit hard in March/April 2020. While

Figure 2.2. **Cumulative number of confirmed or suspected COVID-19 deaths per million population, January 2020 to early October 2021**



Note: Depending on the country, data may refer to only confirmed or both confirmed and suspected deaths due to COVID-19. Data are affected by countries' capacity to detect COVID-19 infections and recording, registration and coding practices. Data are included up to calendar week 39/2021. Countries displayed in chart include OECD countries and Key Partner countries Brazil, China, India, Indonesia, Russia and South Africa.
Source: ECDC (2021[7]) "COVID-19 datasets", *https://opendata.ecdc.europa.eu/covid19/nationalcasedeath/*. ECDC data use national data sources for non-European countries.

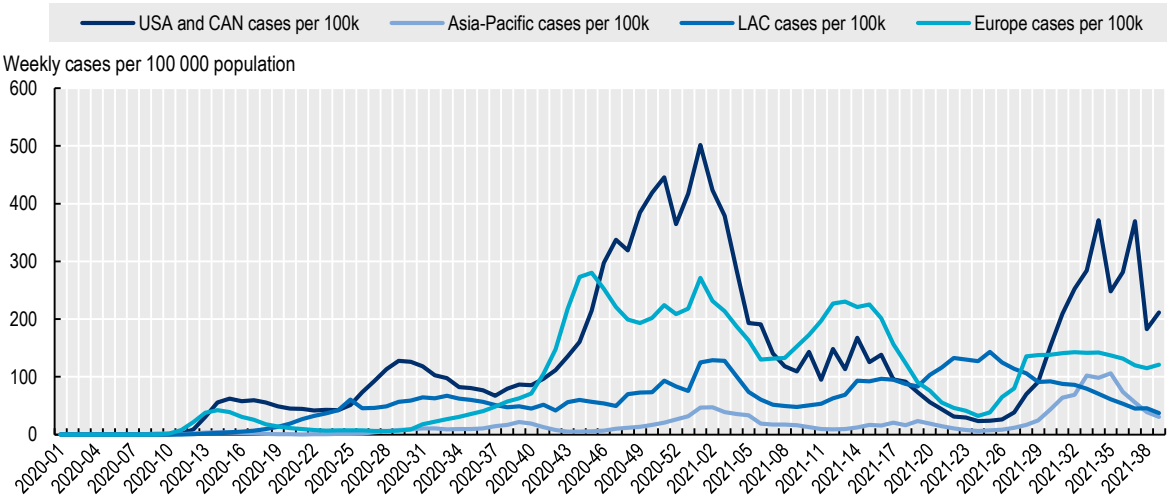
in some European countries infection rates went up again substantially around July 2021, this was not matched by a commensurate increase in mortality.

- In the United States and Canada, disease progression was broadly similar to that seen in Europe for most of 2020 and 2021, but new COVID-19 infections and deaths spiked further in August and September 2021.
- The situation among the OECD countries in Latin America was diverse. Reported infection and death rates peaked in July 2021 for Colombia, but in September 2021 for Costa Rica. Chile recorded its highest mortality rate around mid-2020 with a peak of recorded infections in the second quarter of 2021. Due to low testing rates, data for Mexico is underestimated.[1]
- In the Asia-Pacific OECD countries, both weekly incidence and death rates were low by comparison throughout 2020 and 2021. That said, Australia, Korea and Japan all recorded their infection peaks in the third quarter of 2021.

Differences in the evolution of new COVID-19 infections and deaths across countries reflect variations in containment and mitigation strategies and the timing of their implementation, as well as differences in the capacity of health systems to treat COVID-19 patients and to adapt to the ongoing challenges. Indeed, case fatality rates have generally decreased over the course of the pandemic, with the cumulative rate converging to around 1-2% in most OECD countries by early October 2021. Some of this can simply be explained by increased case detection over time. Vaccination campaigns, along with better disease management and strengthened health system capacity have had a major impact in reducing case fatality rates. Still, factors beyond the immediate control of policy makers – such as geographical characteristics, population demographics, the prevalence of certain risk factors such as obesity – made some countries more susceptible than others to high rates of infection and mortality (OECD, 2020[8]; OECD, 2021[9]; OECD/European Union, 2020[10]; OECD, 2020[11]; OECD/European Union, 2020[10]).

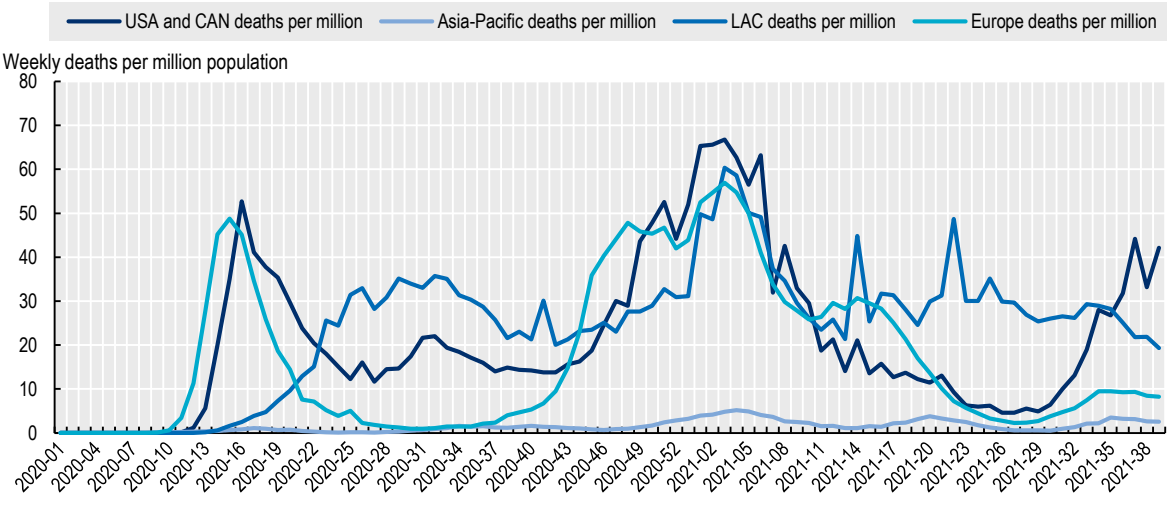
The emergence of "variants of concern" has been a key factor in the evolution of the pandemic. This designation is applied to virus variants that show increased transmissibility and/or virulence, or are associated with a reduced effectiveness of vaccines and treatments, thus posing a greater health risk than the original strain.[2] This is particularly true of the Delta variant. First identified in

Figure 2.3. **Newly reported COVID-19 cases per week, OECD countries grouped by regions, January 2020 to early October 2021**



Note: Data are affected by countries' capacity to detect COVID-19 infections. Regional averages are calculated by dividing the total number of cases by total populations.
Source: ECDC (2021[7]) "COVID-19 datasets", *https://opendata.ecdc.europa.eu/covid19/nationalcasedeath/*. ECDC data use national data sources for non-European countries.

Figure 2.4. **Weekly reported COVID-19 deaths, OECD countries grouped by region, January 2020 to early October 2021**



Note: Regional averages are calculated by dividing the total number of cases by total populations.
Source: ECDC (2021[7]) "COVID-19 datasets", *https://opendata.ecdc.europa.eu/covid19/nationalcasedeath/*. ECDC data use national data sources for non-European countries.

October 2020, it rapidly became the dominant SARS-CoV-2 virus strain by mid-2021 in nearly all OECD countries. The Delta variant appears to be more than twice as transmissible as previous variants and the ancestral strain (CDC, 2021[12]), and leads to more severe infections. Among unvaccinated people, the risk of hospitalisation is around double that of the Alpha variant (Twohig et al., 2021[13]), while the risk of dying is also higher than with previous variants, and more than double that of the original strain (Fisman and Tuite, 2021[14]).

Vaccines have reduced the risk of severe illness and death from COVID-19 in 2021

The rollout of COVID-19 vaccines in 2021 has been a game changer in global efforts to bring the pandemic under control (OECD, 2021[15]). The various vaccines authorised in OECD countries all substantially decrease the risk of symptomatic infection, hospitalisation and death, and reduce (but do not eliminate) transmission when the full course of vaccination is completed. A growing body of research suggests that the real-world effectiveness in preventing symptomatic infection after two doses of either of the two currently available mRNA vaccines (Pfizer-BioNTech and Moderna) is above 85% (Public Health Ontario, 2021[16]; Vaccine Effectiveness Expert Panel, 2021[17]).[3] It is around 80% for the Oxford-AstraZeneca vaccine against the Alpha variant (Vaccine Effectiveness Expert Panel, 2021[17]). Protection against severe disease, hospitalisation and death is even higher (Public Health Ontario, 2021[16]; Vaccine Effectiveness Expert Panel, 2021[17]). Evidence points to vaccines being somewhat less effective in preventing symptomatic infection with the Delta variant but still highly effective in reducing hospitalisation and death (Lopez Bernal et al., 2021[18]; Vaccine Effectiveness Expert Panel, 2021[17]).

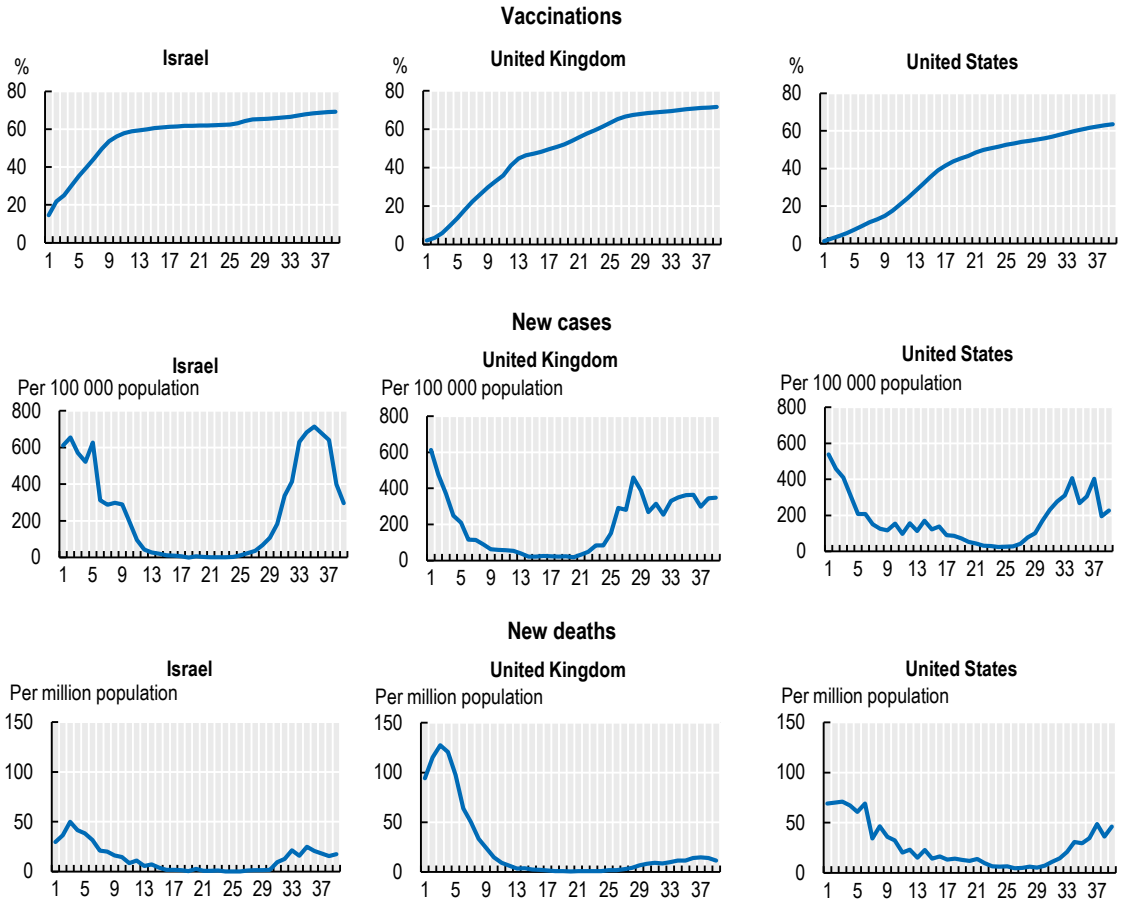
Progress in vaccination has varied markedly across OECD countries, with the proportion of the population fully vaccinated ranging from just under 40% in Colombia and Mexico to 86% in Portugal, as of mid-October 2021 (Our World in Data, 2021[19]). The speed of vaccination roll-out is affected by many factors, including regulatory approval processes, vaccine procurement and distribution strategies, and infrastructure and health workforce capacity. Vaccine hesitancy and resistance among some population groups are also slowing vaccination progress in some countries.

Israel, the United Kingdom and the United States were among the first OECD countries to commence their vaccination campaigns. Rapid roll-out in the early months of 2021, accompanied by containment and mitigation measures, contributed to drastic reductions in new infections and deaths in the first half of 2021 (OECD, 2021[15]). In all three countries, a peak of infections occurred in early January 2021, with infection rates then declining rapidly in the following months (Figure 2.5). Infection rates have increased again since June 2021 in these, and indeed many other OECD countries, as the more infectious Delta variant spread. However, this was generally not accompanied by commensurate increase in the number of COVID-19 deaths. Indeed, in OECD countries with vaccination rates above 65% as of mid-October, weekly deaths from COVID-19 have fallen by an average of 86% since late-January 2021 – as compared with a 55% decrease for OECD countries with lower vaccination rates (among countries registering any COVID-19 deaths).

The increases in COVID-19 infections and deaths starting around June/July 2020 in these three countries and in some other OECD countries have been mainly among the unvaccinated, as vaccination rates have been plateauing at around 60-70% of the population after initially rapid roll-outs. For example, data from France for the last week of September 2021 indicate that the seven-day incidence and mortality rates were eight times higher among the unvaccinated than the fully vaccinated. Moreover, unvaccinated people accounted for 74% of all COVID-19 hospital admissions and 77% of all COVID-19 ICU admissions (DREES, 2021[20]). In Italy, 90% of all COVID-19 deaths between mid-August and mid-September 2021 among people aged 40 to 59 years were among those with no vaccine protection (Instituto Superiore di Sanità, 2021[21]). Similar outcomes have been observed in the United States where, since the spread of the Delta variant, the unvaccinated have had a five times greater risk of infection, a ten times greater risk of hospitalisation, and an eleven times greater risk of death (CDC, 2021[22]).

Nevertheless, the protection that vaccines give against COVID-19 appears to fade over time (Public Health England, 2021[23]; Thomas et al., 2021[24]; Naaber et al., 2021[25]). As a result, by early October 2021, 15 OECD countries had begun providing booster doses for part or all of their vaccinated populations. In most countries these have been limited to selected age groups or at-risk populations, however the proportion of the population that has received a vaccine booster is already

Figure 2.5. **Vaccination progress and weekly new COVID-19 cases and deaths in Israel, the United Kingdom and the United States, 2021 (by calendar week)**



Note: Fully or partly vaccinated. Last data for calendar week 39.
Source: Our World in Data (2021[19]), "Coronavirus (COVID-19) Vaccinations", *https://ourworldindata.org/covid-vaccinations*; ECDC (2021[7]) "COVID-19 datasets", *https://opendata.ecdc.europa.eu/covid19/nationalcasedeath/*.

high in Israel (43%) and Chile (20%) (Our World in Data, 2021[19]). Initial evidence from Israel suggests that booster doses substantially increase protection against symptomatic infection and severe disease among those aged 60 and over (Bar-On et al., 2021[26]). However, this practice remains controversial, in light of limited vaccination progress in other parts of the world, with the World Health Organization calling for a moratorium on booster doses until the end of 2021 to allow all countries to vaccinate at least 40% of their populations (WHO, 2021[27]).

The higher transmissibility of the Delta variant and waning effectiveness of vaccines requires a much higher vaccination rate than originally envisaged to reach 'herd immunity' – if in fact it can be achieved at all. Some public health measures may therefore need to be considered even in countries with high levels of vaccination.

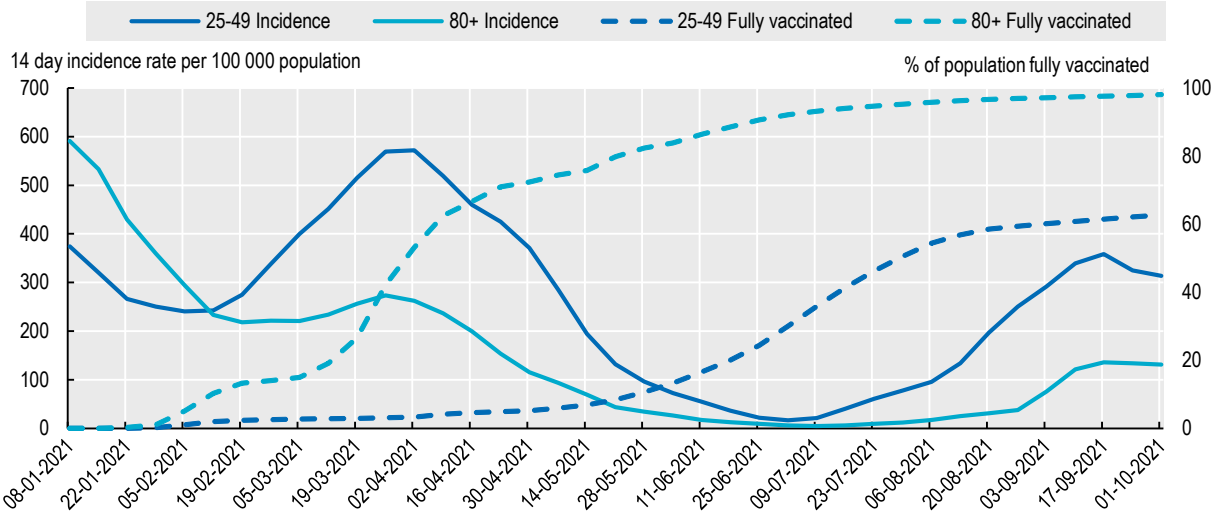
Vaccination campaigns have helped protect older people and other vulnerable groups

Given the step-wise progress in the supply of vaccines and the logistical challenges of rapid vaccine rollout, all OECD countries established clear priorities as to which sections of their populations should benefit first from immunisation. While the precise sequencing of vaccinations differed across countries, older people and other vulnerable groups were consistently given high

priority. By October 2021, nearly all OECD countries had made access to vaccine universal for adults, with adolescents also included in most countries' vaccination campaigns.

The impact of vaccination among vulnerable groups has been clear. In Austria, for example, infection rates have been falling for people aged 80 and over since the beginning of the year and were close to zero in early July 2021, with nearly 93% of this population group fully vaccinated (Figure 2.6). The spread of the Delta variant has increased infection rates again from around July 2021 across all age groups. However, due to the fact that the older population group had a much higher vaccination protection than younger groups, the subsequent increase in infection rates – due to the higher transmissibility of the virus variant and waning vaccine effectiveness – was much more limited in this age group than in younger people. Similar patterns have been observed in Germany, where data demonstrate a much more rapid decline in infections among people aged 80 and over than among younger population groups since January 2021 (Robert Koch Institut, 2021[28]).

Figure 2.6. **Evolution of 14-day incidence rate and progress in vaccination rollout over time, per age group, Austria**



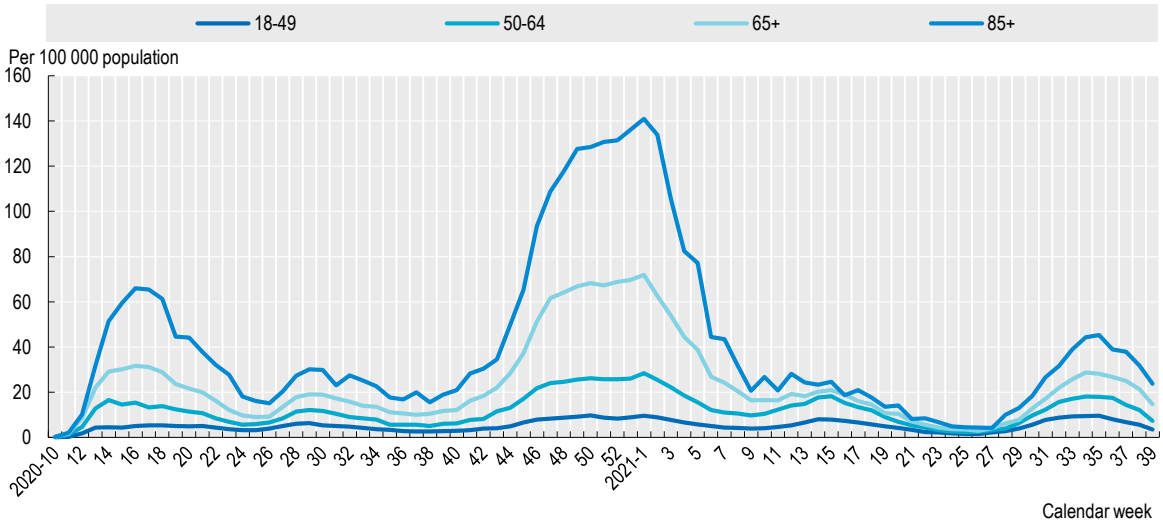
Source: ECDC (2021[7]) "COVID-19 datasets", *https://opendata.ecdc.europa.eu/covid19/nationalcasedeath/*; Our World in Data (2021[19]), "Coronavirus (COVID-19) Vaccinations", *https://ourworldindata.org/covid-vaccinations*.

Progress in vaccination coverage has also contributed to fewer hospital admissions in 2021, particularly among older people. In the United States, for example, hospitalisation rates among people aged 85 and over fell substantially as vaccination campaigns gathered pace (Figure 2.7). By June 2021, hospitalisation rates in this more vulnerable age group became very close to the overall hospitalisation rate across all age groups. Hospitalisation rates increased again from July, due in part to the Delta variant, before peaking in early September. However, while hospitalisation rates among people aged under 50 were at the same level in September as in January, the hospitalisation rate among people aged 85 and older was only a third of the peak in January.

Excess deaths were more than 60% greater than reported COVID-19 deaths in 2020 across OECD countries

Whilst reported COVID-19 deaths are a critical measure to monitor the health impact of the pandemic, international comparability of this indicator has been limited by differences in recording, registration and coding practices across countries. Moreover, factors such as the low availability of

Figure 2.7. **COVID-19-associated weekly hospitalisation rates, by age group, United States, March 2020 to September 2021**



Note: COVID-NET covers hospitals from 14 states.
Source: CDC (2021[29]), "COVID-NET Laboratory-confirmed COVID-19 hospitalizations", *https://covid.cdc.gov/covid-data-tracker/#covidnet-hospitalization-network*.

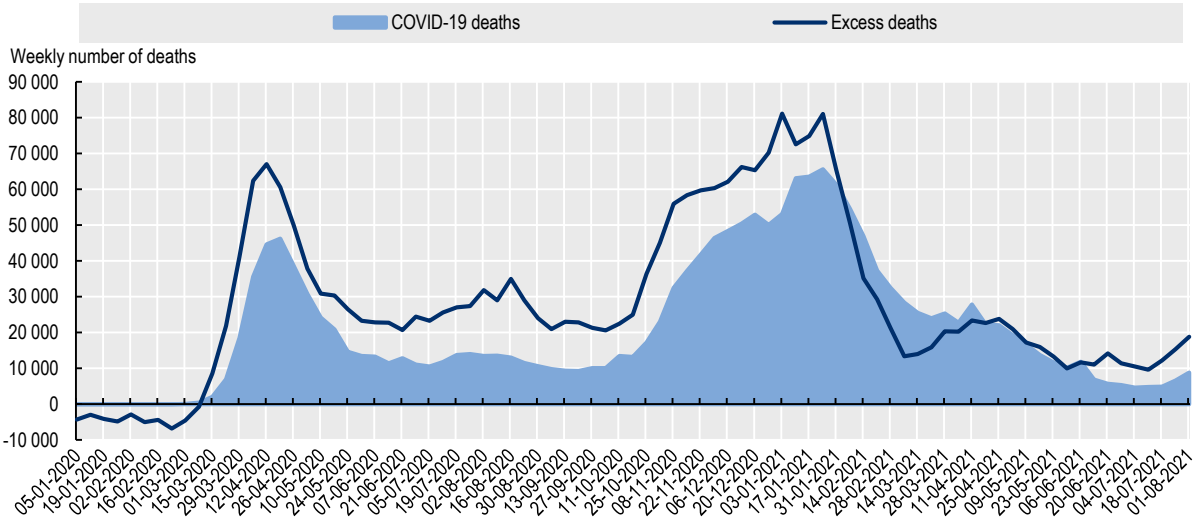
diagnostic tests at the start of the pandemic are likely to have impacted accurate attribution of the causes of death. Therefore, the reported count of deaths due to COVID-19 is likely underestimated to varying degrees across countries.

An analysis of mortality from all causes – and particularly excess mortality, a measure of the total number of deaths over and above what would have normally been expected at a given time of the year – provides a measure of overall mortality that is less affected by the factors mentioned above (Box 2.1). However, it is not a direct measure of COVID-19 deaths, as it captures all excess deaths irrespective of their cause.

Across 30 OECD countries, the total number of excess deaths was much higher than recorded COVID-19 deaths in all weeks from March 2020 until end of 2020 (Figure 2.8). This suggests a substantial underestimation of direct COVID-19 deaths in some countries and also points to a possible increase in mortality for other causes indirectly related to COVID-19. Excess deaths began to decline in late January 2021 and remained below the number of COVID-19 deaths in February and March 2021. One possible explanation is the drastic reduction in the number of influenza-related fatalities compared to the years 2015-19 in many countries in the Northern hemisphere due to social distancing measures. So far, excess mortality in 2021 has been much more moderate and more aligned with the recording of COVID-19 fatalities.

On a country level, excess mortality was positive in all but one country (Norway) in the 18 months between January 2020 and June 2021.[4] The excess mortality rate per million population was particularly high in Mexico (Figure 2.9).[5] Very low excess mortality was recorded in New Zealand, Australia, Denmark, Iceland and Korea. In total, OECD countries recorded around 2.5 million additional deaths, as compared with the average number of deaths over the five preceding years. This means that 16% more people died between January 2020 and June 2021 than would normally have been expected (Annex Table 2.A.1).

Figure 2.8. **Weekly COVID-19 deaths compared to weekly excess deaths in 30 OECD countries, January 2020 to early August 2021**



Note: Data exclude Australia, Canada, Colombia, Costa Rica, Ireland, Japan, Korea, and Turkey.
Source: OECD (2021[30]), OECD Health Statistics, *https://doi.org/10.1787/health-data-en*.

On a global scale, the WHO estimated that the total global excess deaths attributable to COVID-19 in 2020, both directly and indirectly, should amount to at least 3 million (WHO, 2021[31]). This would be 1.2 million more deaths than officially reported as COVID-19 deaths.

Life expectancy decreased in 2020 in 24 out of 30 OECD countries

In all but six OECD countries, the exceptionally high number of deaths in 2020 had an impact on life expectancy. Even before COVID-19, gains in life expectancy had been slowing down markedly in a number of OECD countries over the past decade, largely due to a slowdown in improvements in mortality from cardiovascular diseases, a rise in mortality from dementia and bad flu seasons (Raleigh, 2019[34]). Preliminary data for 2020 suggest that life expectancy dropped in all OECD countries for which data are available, other than in Norway, Japan, Costa Rica, Denmark, Finland and Latvia (Figure 2.10).

The annual reduction was particularly large in the United States (-1.6 years), Spain (-1.5), Lithuania and Poland (both -1.3), as well as in Belgium and Italy (both -1.2). In Italy, Poland, Spain and the United Kingdom life expectancy is now approximately around 2010 levels; in the United States, projected life expectancy in 2020 is more than one year below that of 2010.

Long COVID-19 affects many people

'Long COVID', characterised by symptoms including fatigue, breathlessness, chest pain or anxiety, impedes a return to normal life, with potentially long-lasting social and economic repercussions. While research on this disease is growing, there are still knowledge gaps on the mechanisms by which infection can lead to prolonged symptoms, why particular population groups are at higher risk and how to best treat the disease. A common understanding of how 'long COVID' should be exactly defined is also missing to date. That said, some converging evidence on long COVID-19 has started to emerge.

Box 2.1. **Measuring COVID-19 deaths and all-cause mortality**

Limitations affecting the cross-country comparability of COVID-19 deaths data

For reported COVID-19 deaths, cross-country comparability is affected by different registration practices depending on where the death occurred and the availability of testing (particularly early on in the pandemic), as well as different coding practices. In particular:

- Whether COVID-19 deaths occurring outside of hospitals are fully recorded. For example, Belgium, France and Italy, among others, put in place improved and faster reporting procedures early on to count deaths taking place in other settings, notably care homes.
- Differences in testing capacity across countries and over time, with many countries having faced severe constraints in testing capacities early in the pandemic.
- Coding differences, especially whether suspected cases are counted alongside those confirmed by tests. Belgium, Luxembourg and the United Kingdom are examples of countries including suspected as well as cases confirmed by tests in their data on COVID-19 deaths.
- Whether only deaths with COVID-19 as an underlying cause of death are counted, or whether deaths with COVID-19 as a secondary, contributory cause are also included.

Using excess mortality data to measure the direct and indirect impact of COVID-19

Excess mortality has considerably less cross-country comparability limitations than reported COVID-19 deaths. However, it is not a direct measure of COVID-19 deaths, as it captures all excess deaths irrespective of their cause. National variations in underlying death rates related to various events and evolution of the virus mean that caution is needed when comparing excess mortality at a given point in time. In particular:

- Cross-country differences in other significant events this year and in previous years, such as severe or mild flu seasons, heatwaves and natural disasters, can lead to under- or over-estimates of the impact of COVID-19 on excess mortality. In this chapter, the five-year period (2015-19) is chosen to help limit the impact of any variations. However, by using this five-year period, the expected number of deaths assumes that there is no change either in the size of the population or the age structure.
- Excess mortality is calculated as a net effect and can therefore be negative – that is, fewer people died during the period than compared to previous years. As a result of effective pandemic controls there may be both a low number of COVID-19 deaths and a reduction in other deaths. In such cases, the number of reported COVID-19 deaths is a more accurate indicator of the pandemic's toll (Simonson and Viboud, 2021[32]).
- Differences in the timing of the onset and subsequent waves of COVID-19 can affect comparability over a short-term period.

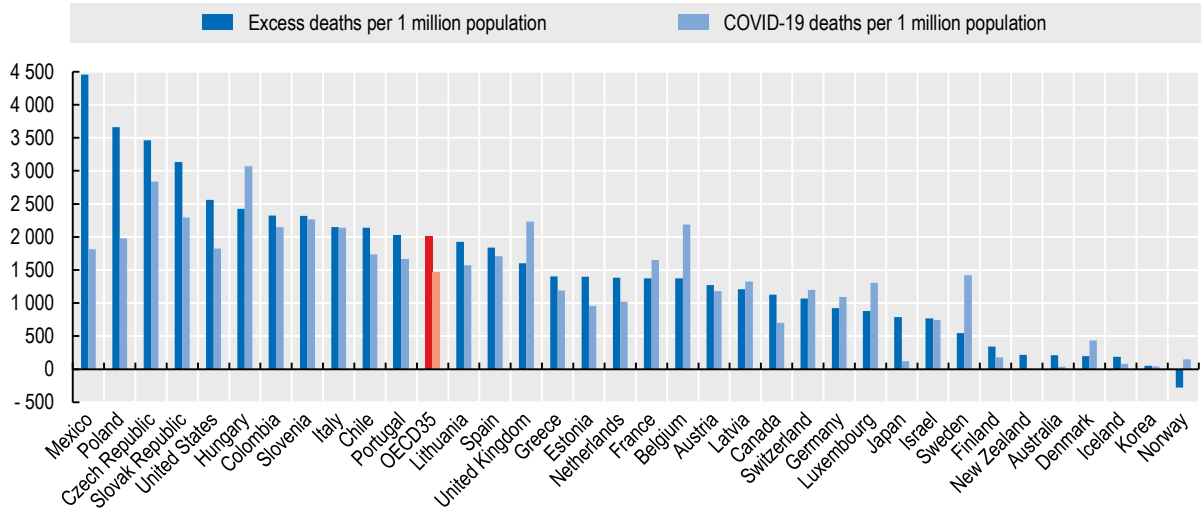
For both COVID-19 and excess deaths, different delays in reporting deaths can impact recent trends as well as cross-country comparisons.

Source: Based on Morgan et al. (2020[33]), "Excess mortality: Measuring the direct and indirect impact of COVID-19", *https://doi.org/10.1787/c5dc0c50-en*.

Results on **prevalence of long COVID-19** differ widely across studies depending on study design, populations analysed and other factors.

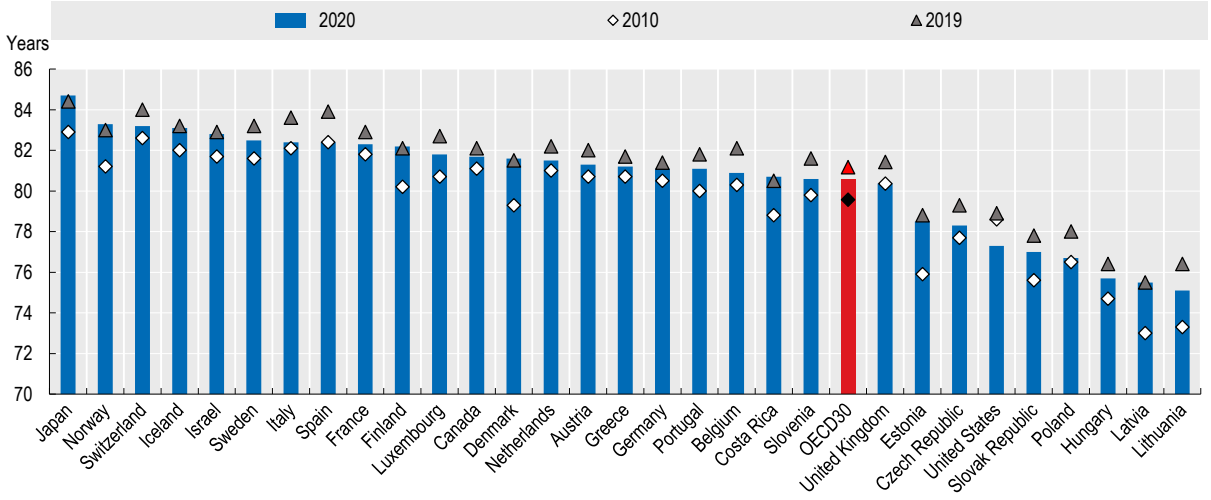
- Research based on some of the largest study populations suggest high prevalence rates. Using linked data from Electronic Health Records from over 270 000 COVID-19 survivors mainly from the United States, Taquet et al. found that 37% of patients suffer from at least one long COVID-19 symptom 4-6 months after diagnosis (Taquet et al., 2021[35]). Analysing a recent wave of their Coronavirus Infection Survey, and based on a similar sample size, the Office of National Statistics estimated that 1.1 million people in the United Kingdom (1.7% of the population) were experiencing self-reported 'long COVID' for more than four weeks after the first suspected COVID-19 infection in early September 2021 (ONS, 2021[36]). Of those, 77% had (or suspected they had) COVID-19 at least 12 weeks before.
- Other small to medium-scale studies also point to long COVID-19 being a major concern. In France, for example, among over 4 000 patients, around 60% of patients hospitalised for

Figure 2.9. **Cumulative excess mortality compared to reported COVID-19 deaths per million population, January 2020 to end of June 2021**



Note: Excess deaths data are not available for Costa Rica, Ireland and Turkey. Data for Australia are only available up to week 25, for Canada up to week 22, and for Colombia up to week 18. Comparator years to calculate excess deaths are 2015-19. Rates are not age-adjusted. Reported COVID-19 deaths can be affected by countries' capacity to detect and record COVID-19 infections and are included in the chart to highlight the important differences with excess mortality in some countries.
Source: OECD (2021[30]), "OECD Health Statistics", *https://doi.org/10.1787/health-data-en*, based on EUROSTAT data and national data.

Figure 2.10. **Life expectancy in 2020, 2019 and 2010, selected OECD countries**



Note: 2020 data are provisional for some countries.
Source: OECD (2021[30]), "OECD Health Statistics", *https://doi.org/10.1787/health-data-en*.

COVID-19 had at least one symptom up to six months after infection, and 25% had at least three symptoms (Ghosn et al., 2021[37]). Smaller studies including people from Rome-Italy (Carfi et al., 2020[38]) and Geneva-Switzerland (Nehme et al., 2021[39]), show broadly consistent results. However, the study of Sudre et al. point to a more limited number of people suffering from long COVID-19, with 2.3% of people infected reporting symptoms lasting 12 weeks or longer (Sudre et al., 2021[40]).

- Indeed, summarising study results across Europe, the United States and China, Rajan et al. concluded that around one-quarter of those with COVID-19 have continuing symptoms 4-5 weeks after testing positive, and about one in ten experience symptoms after 12 weeks (Rajan et al., 2021[41]).

Across different studies, the most common **long COVID-19 symptoms** are fatigue, breathlessness as well as anxiety (COVID-19 Longitudinal Health and Wellbeing National Core Study/ ONS, 2021[42]; Rajan et al., 2021[41]; Taquet et al., 2021[35]; Huang et al., 2021[43]). Among self-reported long COVID-19 cases in the United Kingdom, 19% declare that their ability to carry out day-to-day activities had been limited a lot (ONS, 2021[36]).

Certain population groups appear to be at **higher risk of long COVID-19.** Prolonged symptoms are associated with age and being female (Sudre et al., 2021[40]). Other risk factors include overweight/obesity, prior hospitalisation for COVID-19, and the number of symptoms in the acute phase (Rajan et al., 2021[41]).

Some early evidence also points to a substantial **economic impact** of long COVID-19 due to absence from work or reduced productivity. Analysing the employment status of hospitalised COVID-19 patients in France, Garrigues et al. found that only 69% of those previously working had returned to their workplace 3-4 months after admission (Garrigues et al., 2020[44]).Similar results can be found in a study in the United States (Chopra et al., 2020[45]), where 23% of those previously working could not return to their job for health reasons 60-days after hospital discharge. Among those who returned to work, 26% either worked reduced hours or had modified duties for health reasons.

Addressing long COVID-19 has become a priority in many countries in 2021. In Europe, special treatment guidelines were developed and dedicated post-COVID-19 clinics created to speed up the recovery of long COVID-19 patients (Rajan et al., 2021[41]). The further rollout of the COVID-19 vaccination campaign is expected to reduce the number of new long COVID-19 cases since evidence points to vaccination increasing protection against suffering from long COVID-19 symptoms (Antonelli et al., 2021[46]).

COVID-19 has disproportionately hit vulnerable populations

While COVID-19 poses a threat to the entire population, not all population groups are similarly at risk. Populations exposed to more social interactions – including 'essential' workers such as supermarket staff as well as health and long-term care workers – are more likely to become infected. While age remains the largest risk factor for severe illness or death, people of all ages with certain underlying health conditions – including obesity, cancer, hypertension, diabetes, and chronic obstructive pulmonary disorder – face an elevated risk (Katz, 2021[47]; Sanchez-Ramirez and Mackey, 2020[48]; Tartof et al., 2020[49]). Smoking, harmful alcohol use and obesity also increase the likelihood of dying from COVID-19 (Reddy et al., 2021[50]; Sanchez-Ramirez and Mackey, 2020[48]; WHO, 2020[51]). These risks are not equally distributed: poorer and more disadvantaged people have been at a higher risk of infection, hospitalisation and death throughout much of the pandemic.

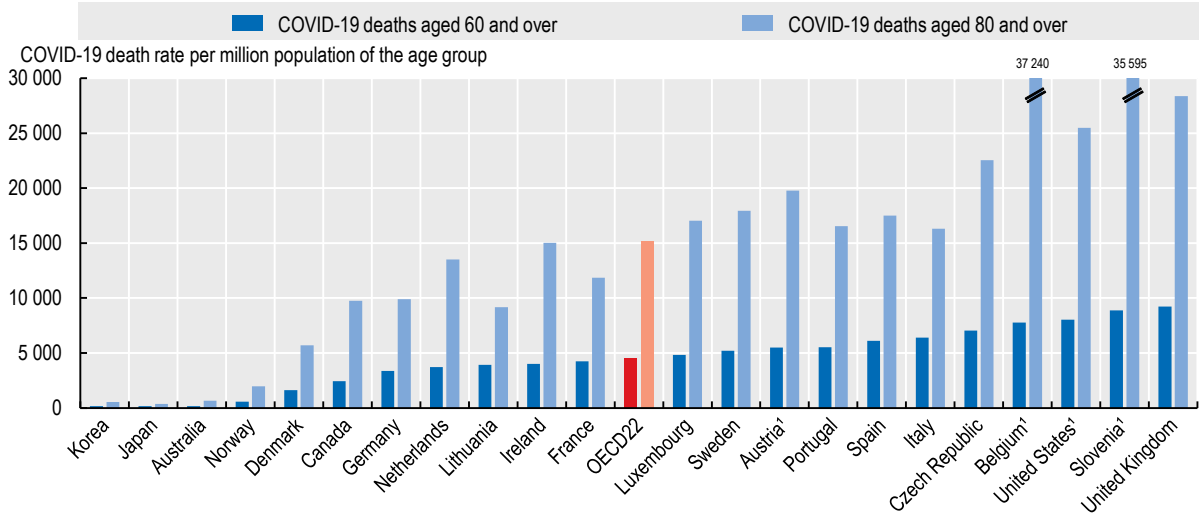
More than 90% of COVID-19 deaths have occurred among people aged 60 years or older

The vast majority of deaths from COVID-19 through early 2021 have occurred in older populations, with 93% occurring among those 60 and over, and close to three-fifths (58%) of all deaths occurring among people 80 or older across 21 OECD countries with comparable data (OECD, forthcoming[52]). Some caution is needed in interpreting death rates by age group, due to differences in coding of COVID-19 deaths that may be particularly significant among older populations where co-morbidities are higher. The impact of COVID-19 mortality among older populations has been

particularly high in Slovenia, the United Kingdom, the United States and Belgium, where more than 2.5% of those aged 80-85 years and over died (Figure 2.11).

Residents of long-term care (LTC) facilities have been especially vulnerable to contracting and dying from COVID-19. The advanced age of many residents, lack of sufficient personal protective equipment (PPE) for residents and care givers (or its insufficient use), and poor infection control meant that many LTC facilities experienced outbreaks that spread rapidly – particularly early in the pandemic.

Figure 2.11. **Confirmed or suspected COVID-19 deaths per million inhabitants among older population groups (through May 2021)**



Note: Data on cumulative deaths up to early May 2021, except for Canada, Italy and the United Kingdom (late April); the Czech Republic, Ireland, Japan, Lithuania and Slovenia (late February). Cross-country differences in coding and reporting affects comparability of results. 1. Data refer to those aged 65 and over and 85 and over for Austria, Belgium, Slovenia and the United States (65+ and 85+). The United Kingdom refers to England and Wales.
Source: COVID-19 INED (2020[53]), "Demographics of COVID-19 deaths", *https://dc-covid.site.ined.fr/en/*, complemented with 2021 OECD Questionnaire on COVID-19 and LTC. Eurostat (2021[54]), "Life expectancy by age and sex", *https://appsso.eurostat.ec.europa.eu/nui/show.do?dataset=demo_mlexpec&lang=en*, and OECD (2021[30]), "OECD Health Statistics", *https://doi.org/10.1787/health-data-en*, for data on demographics (2018).

COVID-19 has exposed and exacerbated existing disparities in society

Socially disadvantaged groups have faced an elevated risk of infection, severe illness and death from the virus. This is due to a higher likelihood of poor working conditions, fewer possibilities to telework, greater exposure to other individuals through more crowded living and working conditions, and a higher prevalence of key risk factors. In particular, emerging evidence from OECD countries has shown that the risk of infection and adverse health effects has been higher among:

- Those living in **deprived areas**, as seen in studies for Belgium, Colombia, Germany, Italy and the United Kingdom (England). For example, in the United Kingdom between March and July 2020, the COVID-19 death rate was 2.2 times higher among people living in the most deprived areas in England as compared to the least deprived areas (ONS, 2020[55]).
- People with **lower incomes**, as documented for Belgium, Korea, Luxembourg, the Netherlands and Sweden. In Belgium, for instance, excess mortality was twice as high for people from the lowest income decile as compared to the highest income decile (Decoster, Minten and Spinnewijn, 2020[56]).

- People with **lower educational attainment**, as observed in Belgium and Sweden. For example, in Sweden men and women with only primary educational attainment had COVID-19 mortality rates 24% and 51% higher than men and women who had completed post-secondary education (Drefahl et al., 2020[57]).
- Most **ethnic minorities** as seen in studies for Brazil, Canada, Mexico, New Zealand, the United Kingdom and the United States. In Brazil, for example, the mortality risk from COVID-19 was 1.5 times higher among the black population, despite a higher incidence rate among the white population (Martins-Filho et al., 2021[58]).
- **Immigrants and their families** as documented for Denmark, France, Italy, Luxembourg, Norway, Sweden and the United Kingdom. For example, in Norway, COVID-19 hospital admission rates were three times higher for people born outside the country (NIPH, 2021[59]).

While the general direction of these observed disparities is clear, there is a wide variation in observed results, due in part to methodological differences such as study design and the timeframe of observation. Table 2.1 provides more in-depth information on evidence on socio-economic and demographic inequalities for key COVID-19 health outcome variables such as infections, hospitalisations and mortality.

Table 2.1. **Impact of socio-economic and demographic inequalities on COVID-19 outcomes, selected studies**

SES indicator	COVID-19 outcomes
Deprivation	• In **Belgium**, excess mortality for the most deprived group was 11% higher during the peak of the first wave and 13% higher during the peak of the second wave, compared to the least deprived population (Bourguignon et al., 2020[60]). • In **Colombia**, the risk of death from COVID-19 was 73% higher among people of low socio-economic status, compared to those of high socio-economic status (Cifuentes et al., 2021[61]). • In **Germany**, while COVID-19 incidence was initially higher in less-deprived areas, this trend eventually reversed as incidence climbed in more deprived areas and declined in areas of low deprivation (Wachtler et al., 2020[62]; Hoebel et al., 2021[63]). • In **Italy**, the incidence rate ratio for COVID-19 between the most deprived and least deprived quintile grew following the lockdown, from 1.14 to 1.47 (Mateo-Urdiales et al., 2021[64]). • In the **United Kingdom**, the COVID-19 death rate was 2.2 times higher in England in the most deprived areas compared to the least deprived areas between March and July 2020 (ONS, 2020[55]). Between March and May 2020, males in the most deprived quintile in England had death rates 2.3 times higher than those in the least deprived quintile, while females in the most deprived quintile had death rates 2.4 times higher than females in the least deprived quintile (Public Health England, 2020[65]). • In the **United States**, the most disadvantaged counties consistently reported higher death rates than more advantaged counties (Chen and Krieger, 2020[66]). A 5% increase in poor housing conditions per county was associated with a 42% increase in relative risk of mortality from COVID-19 (Ahmad et al., 2020[67]).
Income	• In **Belgium**, excess mortality among men and women in the lowest income decile was twice as high as that of people in the highest income decile (Decoster, Minten and Spinnewijn, 2020[56]). • In **Korea**, lower socio-economic status was associated with a 19% increase in the risk of infection with COVID-19 compared with higher socio-economic status (Oh, Choi and Song, 2021[68]). The mortality rate for recipients of Medical Aid was seven times higher than for National Health Insurance Service beneficiaries (Lee et al., 2021[69]). • In **Luxembourg**, COVID-19 cases among low-income groups were more than one-third (37%) higher than among high-income groups, though deaths per population were higher among the high-income group (Berchet, forthcoming[70]). • In the **Netherlands**, the relative mortality risk from COVID-19 was twice as high among households in the lowest income group, compared to households in the highest income group (Statistics Netherlands, 2021[71]). • In **Sweden**, men in the lowest income tertile experienced about 75% higher mortality than men in the highest income tertile, while women in the bottom income tertile experienced 26% higher mortality than women in the highest income tertile (Drefahl et al., 2020[57]).

Table 2.1. **Impact of socio-economic and demographic inequalities on COVID-19 outcomes, selected studies** *(cont.)*

SES indicator	COVID-19 outcomes
Education	• In **Germany**, people with low educational attainment were at a higher risk of developing severe COVID-19: 69.8% were at a higher risk of severe COVID-19, compared with 40.9% of those with high educational attainment. • In **Belgium**, older adults who did not finish primary school experienced mortality rates from COVID-19 nearly 40% higher than those who had completed higher education (Decoster, Minten and Spinnewijn, 2020[56]). • In **Sweden**, men and women with primary educational attainment had COVID-19 mortality rates 24% and 51% higher than men and women who had completed post-secondary education, while men and women with secondary educational attainment had mortality rates 25% and 38% higher than those who had completed post-secondary schooling (Drefahl et al., 2020[57]). The impact of education was stronger among younger populations and women at all ages (National Board of Health and Welfare, 2021[73])
Ethnicity	• In **Brazil**, the mortality risk from COVID-19 was 1.5 times higher among the black population, despite a higher incidence rate among the white population, and Black and Pardo Brazilians admitted to hospital were at a 1.3-1.5 times higher risk of mortality compared with white Brazilians (Martins-Filho et al., 2021[58]). • In **Canada**, the mortality rate from COVID-19 in communities with the highest proportion of visible minorities was about twice as high as in communities with the lowest proportion (Subedi, Greenberg and Turcotte, 2020[74]). • In **Mexico**, Indigenous people had higher odds of dying than non-Indigeneous people,with hospitalised Indigenous patients at 1.13 times higher risk of dying of COVID-19 than non-Indigenous patients (Ibarra-Nava et al., 2021[75]). • In **New Zealand**, the odds of more severe outcomes were more than twice (2.15) as high for people of Asian ethnicity, and nearly three (2.76) times as high for people of Pacific ethnicity, compared with those of European and other ethnicity (Jefferies et al., 2020[76]). • In the **United Kingdom**, black African males had a COVID-19 mortality rate 3.7 times higher than that of white British males during the first wave of the pandemic. During the second wave, ethnic minorities remained at an elevated risk of dying, but differences for most groups (excluding people of Bangladeshi and Pakistani descent) were smaller than during the initial wave of the pandemic (ONS, 2021[77]). • In the **United States**, the risk of hospitalisation for COVID-19 was 2.8-3.5 times higher, and the risk of mortality 2.0-2.4 times higher, for American Indian, Native Alaskan, Hispanic, Latino, Black and African-American people compared with non-Hispanic white residents (Centers for Disease Control and Prevention, 2021[78]).
Migration	• In **Denmark** (capital region), immigrants from non-European countries and their descendants had 26% of all COVID-19 infections, despite representing just 13% of the population in the region (Statens Serum Institut, 2020[79]). • In **France**, mortality among those born in France increased by 22% in March-April 2020 compared with the same period in 2019, but by 54% among those born in the Maghreb, 91% among those born in Asia, and 114% among those born in non-Maghreb African countries (Papon and Robert-Bobée, 2020[80]). • In **Italy**, people from countries with a low Human Development Index (HDI) were 1.39 times more likely to be hospitalised, and 1.32 times more likely to die, than people born in Italy (Fabiani et al., 2021). • In **Luxembourg**, people born abroad were 1.18 more likely to be infected with COVID-19, though excess mortality among foreign-born residents was 57% that of the Luxembourg-born population (Berchet, forthcoming[70]). • In **Norway**, COVID-19 hospital admission rates were three times higher for people born outside of the country (and more than 15 times higher for individuals born in Pakistan and Somalia), compared with those born in Norway (NIPH, 2021[59]). • In **Sweden**, excess mortality between March and May 2020 among those aged 65 and over was more than ten times higher among immigrants from Iraq, Somalia and Syria (220%), compared to those born in Sweden, Europe, or North America (Hansson et al., 2020[81]). The mortality risk from COVID-19 for people from the Middle East and Northern Africa was more than 3 times higher for males and 2 times higher for females, compared with people born in Sweden (Drefahl et al., 2020[57]). • In the **United Kingdom**, excess mortality rose more dramatically among people born outside the country than those born within it. Compared with the average of recent years, deaths between March and May 2020 were 1.7 times higher among those born in the United Kingdom, but more than three times higher among individuals born in Eastern and Southern Africa, the Middle East, Southeast Asia and the Caribbean, and 4.5 times higher among migrants from Central and Western Africa (Public Health England, 2020[65]).

The impact of socio-economic disparities on COVID-19 infection and outcomes has evolved over the course of the pandemic. Evidence from Austria, Germany and New Zealand suggests that in many cases the pandemic began in communities of higher socio-economic status, but over time shifted to impact harder communities of lower socio-economic status (Wachtler et al., 2020[62]; Hoebel et al., 2021[63]; The Austrian National Public Health Institute, 2021[83]). In the United Kingdom (England), socio-economic disparities in outcomes were particularly dramatic during the first peak of the pandemic, but have somewhat attenuated for certain groups, including people of Black Caribbean and Black African descent (ONS, 2021[77]).

In addition to COVID-19 health outcomes there is some evidence that the speed of vaccination rollout also varied across population groups. In France, those living in the most deprived areas had consistently lower vaccination rates than those living in the least deprived areas, across all age groups, by end of September 2021; and this difference was most pronounced in the age group 20-39 (67% vs 81% with at least partial coverage) (Assurance Maladie, 2021[84]). In the United States, the CDC data tracker highlighted lower full vaccination coverage among the black population compared to whites or those of Asian ethnicity in mid-October 2021 (CDC, 2021[85]).

Health and long-term care workers were hard hit by the pandemic early on, and wider effects on their well-being may have lasting impacts

Health and LTC workers have been on the frontline throughout the COVID-19 pandemic, and much more exposed to the virus than other professions. In particular, those working in inpatient facilities and nursing homes have been found to be at the highest risk (Nguyen et al., 2020[86]). The impact on health and LTC workers was most acute in 2020, due to a lack of adequate PPE early in the pandemic. Based on limited data submitted by countries in their "Case Report Forms", WHO reports that health workers represented 8% of all COVID-19 cases in 2020 globally[6] (WHO, 2021[87]). This share was around 10% in the first three months of the pandemic but declined to 2.5% as of September 2020. Among the dozen OECD countries where epidemiological monitoring reports were accessible, Mexico is the country where health workers have been most affected. By late September 2021, more than 278 000 infected health workers were reported in the country with more than 4 400 deaths (Gobierno de México, 2021[88]). Health workers represent around 8% of all recorded infections and close to 2% of all reported COVID-19 casualties in the country. By comparison, in the Netherlands, the share of health workers among all recorded infections is similar (10%) but they account for a much lower proportion of all deaths (0.2%) (RIVM, 2021[89]). Data should be interpreted cautiously, though, particularly when comparing across countries, notably due to differing testing capacities and definitions of health workers.

The pandemic has also affected the next generation of health workers, which may be felt by health systems in the years to come. Medical studies have frequently been disrupted, with in-person classes moving online and clinical experience in some cases cancelled to reduce the risk of infection among students (Ferrel and Ryan, 2020[90]). Postponements of clinical rotations in hospitals for students may create waiting lists and backlogs for medical students to specialise, as has already been reported in Costa Rica.

The impact of the pandemic on the personal health of health workers went frequently beyond the higher likelihood of COVID-19 infection. Sustained pressure due to high workloads further affected the well-being of many health and social care workers, with reported high rates of poor mental health, burn-out, anxiety, depression and stress (Box 2.2) (Greenberg et al., 2020[91]; Heesakkers et al., 2021[92]; Denning et al., 2021[93]).

Health and LTC workers were prioritised in vaccination campaigns in all countries to protect themselves and their patients. Yet vaccination progress has been slow for some health occupations in some countries. In the United States, research has found that as of March 2021 while 75% of

physicians in LTC facilities were already fully vaccinated, rates were much lower among nurses (57%) and aides (46%) in the same settings (Lee et al., 2021[94]). Similar findings were observed in France, where by mid-July 2021 doctors (76%) were more likely to be at least partly vaccinated than nurses (62%) or nursing aides (55%) (Santé Publique France, 2021[95]). To improve the uptake of vaccination a number of countries including France and Italy have mandated the compulsory vaccination of health workers.

Box 2.2. **Caring for COVID-19 patients has impacted the mental health of health care workers**

The mental health impact of the pandemic has been particularly hard for the doctors, nurses, long-term care workers, and other health care workers working in close proximity to patients. Healthcare workers have reported high rates of anxiety, depression, burnout, and turnover since the onset of the pandemic. In a survey of the workforce across the European Union, 70% of workers in the health sector – more than any other sector of the workforce – report that they believed their job put them at risk of COVID-19 infection (Eurofound, 2020[96]).

- In a March 2020 survey of health care workers in **Italy**, close to half (49%) exhibited symptoms of post-traumatic stress syndrome and one-quarter symptoms of depression. Frontline workers had significantly higher odds of exhibiting post-traumatic stress syndrome than those who did not report working with COVID-19 patients (Rossi et al., 2020[97]).
- An April 2020 survey of health care professionals in **Spain** found that close to three-fifths of respondents reported symptoms of anxiety (59%) and/or post-traumatic stress disorder (57%), with close to half (46%) exhibiting symptoms of depression (Luceño-Moreno et al., 2020[98]).
- In England (**United Kingdom**), nearly half of respondents to the NHS staff survey (44%) reported feeling unwell due to work-related stress over the previous year, a 9% increase from 2019 (NHS, 2021[99]).
- In the **United States**, a survey of frontline health workers found that more than three-fifths (62%) reported that the stress or worry over COVID-19 affected their mental health negatively, and close to half (49%) reported that the stress had affected their physical health (Kirzinger et al., 2021[100]). Almost one-third of respondents reported needing or having received mental health services due to the pandemic (Kirzinger et al., 2021[100]).
- There is some evidence suggesting that nurses may have experienced more negative mental health impacts from the pandemic than doctors (De Kock et al., 2021[101]). A survey of 33 national nursing associations (NNAs) found that three-fifths reported sometimes or regularly receiving reports from nurses about mental health distress linked to the pandemic (International Council of Nurses, 2020[102]).

The longer-term impacts of COVID-19 on health systems and society are still emerging

The need to prepare for and accommodate the onslaught of COVID-19 patients severely disrupted and tested health systems over the course of the pandemic. Patients with other health care needs have seen their access to services reduced. Fear of the pandemic and the social distancing policies implemented to contain the virus have had an impact on the mental well-being of many people, in particular young people and health workers. At the same time, measures to limit the spread of the virus also had some positive "side-effects" on some health outcomes (Box 2.3).

Box 2.3. **Public health measures to limit the spread of the SARS-CoV-2 virus and associated behavioural changes also had some positive effects on health**

To slow down the spread of the SARS-CoV-2 virus OECD countries deployed a wide range of containment and mitigation policies, including social distancing, compulsory wearing of face coverings in many public places, travel

Box 2.3. **Public health measures to limit the spread of the SARS-CoV-2 virus and associated behavioural changes also had some positive effects on health** *(cont.)*

restrictions, closures of schools and non-essential businesses and implementation of curfews and full lock-downs. These measures contributed to positive effects on some health outcomes:

- Schranz et al. found for Germany a ***reduction of notified infections*** for measles (-86%), malaria (-73%) and HIV (-22%) and other infectious diseases between March and July 2020, compared to the same time period in 2019 (Schranz et al., 2021[103]), likely to be related to social distancing measures.
- In the European Union, ***road traffic deaths decreased*** by 17% (or 4 000 fewer deaths) in 2020 compared to 2019 (European Commission, 2021[104]).
- The COVID-19 pandemic increased awareness of infectious diseases overall and in many countries this will have contributed to an increase in the ***uptake of influenza vaccination*** for the populations at risk. In Italy, the share of those aged 65 and over getting vaccinated increased from 54.6% to 65.3% in flu season 2020-21 compared to the previous season (Ministero della Salute, 2021[105]). In England, this proportion increased from 72.4% to 80.9% (Public Health England, 2021[106]).
- ***Air quality improved*** in many parts of the world in 2020. In South Asia and South America, for example, mean PM2.5 concentration (fine particles which can cause severe health effects since they can penetrate deep into the respiratory tract) dropped by around 30-40% during full lock-down compared with the same periods in 2015-19 (WMO, 2021[107]).

The mental health impact has been enormous

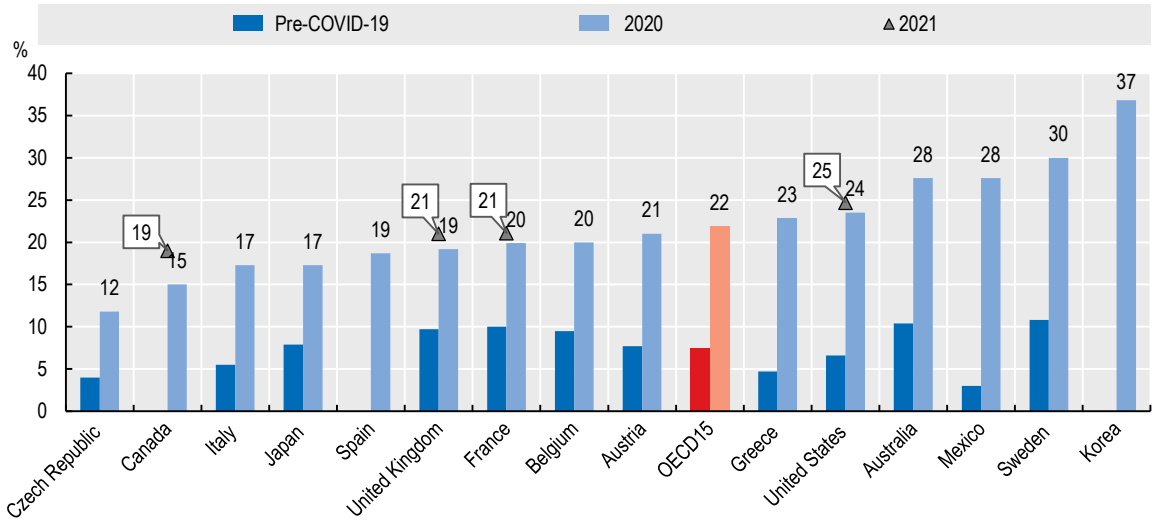
The COVID-19 crisis has had a significant and negative impact on population mental health. Throughout the pandemic, the risk factors for poor mental health – financial insecurity, unemployment, and fear – have increased. At the same time, protective factors – social connection, employment and educational engagement, access to physical exercise, daily routine, and access to health services – have decreased. In many countries, population mental distress increased when the first impacts of the COVID-19 crisis were felt in March-April 2020, including the rise in infections, hospitalisations, deaths, social distancing and other measures such as school and workplace closures.

- The prevalence of anxiety and depression in early 2020 was double or more the level observed in previous years in a number of countries, including Belgium, France, the United Kingdom and the United States (Figure 2.12) (OECD, 2021[108]).
- A survey by the Commonwealth Fund in August 2020 found that at least 10% of adults reported experiencing stress, anxiety, or great sadness that was difficult to cope with alone, since the outbreak started (Commonwealth Fund, 2020[109]).

As the crisis has continued, the impact on population mental health has not been stable. A correlation between increases in mental distress, the strictness of lockdown measures, and increases in COVID-19 cases and deaths can be observed across multiple countries.

- In France, the United Kingdom, and the United States, prevalence of symptoms of anxiety and depressions increased during periods when there were peaks in COVID-19 infections and deaths, and when there were increased containment measures in place (Santé Publique France, 2021[110]; Public Health England, 2021[111]; National Center for Health Statistics, 2021[112]).
- In the Netherlands, participants in a study tracking mental health across the pandemic reported the poorest mental health status in the first two quarters of 2021 (CBS, 2021[113]). In Australia, cases of COVID-19 saw peaks at the start of the pandemic in March 2020, again in August 2020, and during the summer period in 2021.
- One in five Australians reported high or very high levels of mental distress in June 2021 (20%), with similar levels in March 2021 (20%) and November 2020 (21%) (Australian Institute of Health and

Figure 2.12. **National estimates of prevalence of depression or symptoms of depression amongst adults pre-COVID-19, 2020 and 2021**



Note: To the extent possible, 2020 prevalence estimates were taken from March-April 2020, and 2021 estimates were taken from March-April 2021. The survey instruments used to measure depression and population samples differ between countries and in some cases across years, which limits direct comparability. Most national surveys cover the adult population over age 18.
Source: National data sources reported in OECD (2021[108]), "Tackling the mental health impact of the COVID-19 crisis: An integrated, whole-of-society response", *https://doi.org/10.1787/0ccafa0b-en*.

Welfare, 2021[114]). Levels of mental distress were also higher in States that were most affected by COVID-19 cases and lockdown measures (ibid).

- A EUROFOUND survey measuring mental well-being in EU countries found that risk of depression was highest amongst all age groups in early 2021 than at any other stage of the crisis up to that date (Eurofound, 2021[115]).

Mental distress was particularly felt by socially disadvantaged groups and young people

Some population groups' mental health has been particularly affected by the COVID-19 crisis, specifically people with less secure employment, lower educational status, lower income and young people.

In the United Kingdom, for example, higher anxiety scores were consistently reported amongst people with lower education or lower income in the 20 weeks since March 2020 (Fancourt, Steptoe and Bu, 2021[116]). However, trends in changing mental health status and socio-economic status (SES) are not consistent across all populations. It has been difficult to assess whether the mental health of people of lower SES has worsened faster or more compared to population averages. For example, in the United States, an April 2020 survey found persons with higher SES reported sharper declines in life satisfaction and bigger increases in depressive symptoms than people with lower SES compared to survey results in 2019.

Self-reported mental health issues are also more prevalent among young people compared to other age groups across many OECD countries (OECD, 2021[117]). The higher share of young people experiencing anxiety and depression is not consistent with data from recent years, and suggests that the mental health of young people has been disproportionately affected during the COVID-19 crisis. In 2014, the proportion of 15-24 year-olds reporting chronic depression was

estimated at 3.6% across the European Union, which is much lower than among the general population (6.9%) (Eurostat, 2014[118]).

- Data from Belgium, France and the United States show that prevalence of symptoms of anxiety and depression was around 30% to 80% higher among young people than the general population in March 2021.
- In Canada, a survey in May 2020 found that 27% of 15-24 year-olds were experiencing moderate to severe symptoms of anxiety, significantly above the 19% share among 25-64 year-olds (Statistics Canada, 2020[119]).
- In Japan, 31% of 20-29 year-olds were experiencing symptoms of depression, compared to 18% of older adults, based on survey responses from July 2020 (Fukase et al., 2021[120]).

The COVID-19 crisis disrupted delivery of mental health services globally. A WHO survey in the second quarter of 2020 found that more than 60% of countries worldwide reported disruptions in mental health services (WHO, 2020[121]). Some signs point to both increased demand for mental health support in OECD countries, and an increase in unmet need for mental health care. In a Commonwealth Fund survey conducted between March-May 2020, among those reporting a need for mental health care, 68% of adults in the United Kingdom and 69% of adults in the United States reported not being able to obtain such care (Commonwealth Fund, 2020[109]). In the Netherlands, during the first lockdown in 2020 there was a decrease in demand for GP care for anxiety and depressive disorders, and the rate of GP contacts remained lower than in previous years even after the relaxation of lockdown measures. However, during the second lockdown starting December 2020, there was an increase in the demand for care for depressive and anxiety disorders (NIVEL, 2021[122]).

Containment measures led to some increase in unhealthy lifestyle behaviours and domestic violence

The containment and mitigation policies implemented across most countries have had a detrimental impact on lifestyles for many. Such lifestyle changes can have lasting consequences on people's health.

- While no significant change in alcohol consumption was reported between 2019 and 2020 in four of the five OECD countries with available data, a recent OECD analysis on the impact of the COVID-19 pandemic on people's drinking habits found that a larger proportion of people increased the frequency of drinking (OECD, 2021[123]). Among those with the greatest increase in alcohol consumption were women, parents of young children, people with higher income and those with anxiety and depressive symptoms.
- Recent research also tentatively suggests a decrease in physical activity and an increase in sedentary behaviour during lockdowns (Stockwell et al., 2021[124]).
- The impact of the pandemic on smoking appears to be mixed, with some smokers increasing their daily consumption of cigarettes, but others – notably older persons, as in France and Japan – reducing consumption, possibly due to the association between smoking and worse COVID-19 outcomes (see Chapter 4).

The containment and mitigation policies undertaken by many countries severely restricted movement and often confined people to their homes for extended periods of time. These restrictions limited the ability of many, especially women and children, to leave abusive homes, seek external help, or be proactively helped by others, and appears to have contributed to significant increases in the frequency and severity of domestic violence against women and children in many countries.

In France, official estimates indicate that domestic violence reports surged by more than 30% in the first ten days of the March 2020 lockdown, while reports from Canada, Germany, Spain, the

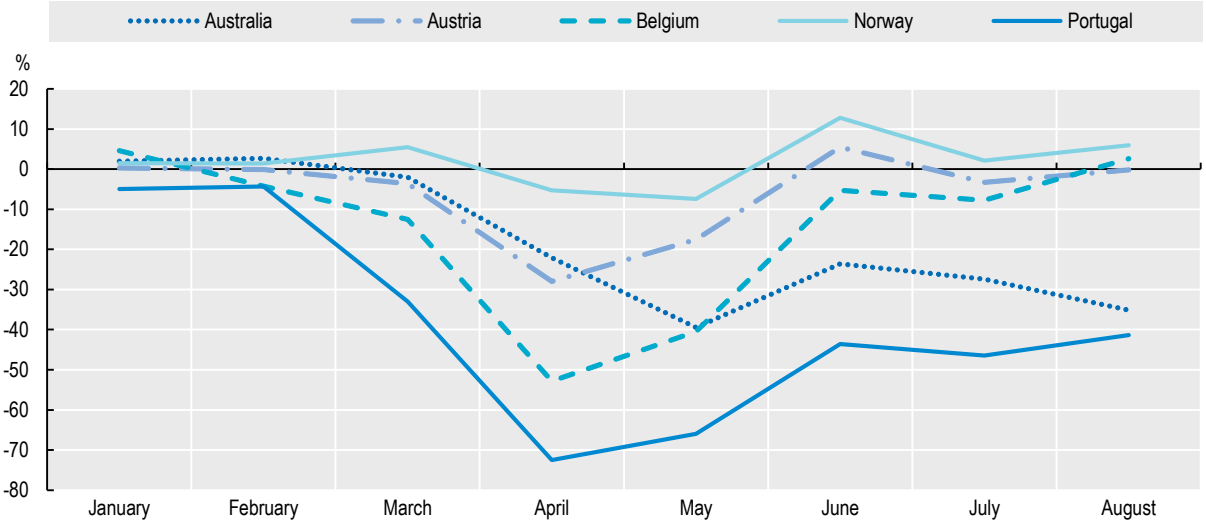
United Kingdom and the United States indicated that the need for emergency shelter grew during the pandemic as domestic violence increased (UN Women, 2020[125]). In London (United Kingdom), Metropolitan Police reported that between mid-March and mid-June 2020, domestic abuse increased by 16% by family members and by nearly 9% by current partners, but declined by 9% among former partners (Suleman et al., 2021[126]). While data from one metropolitan region cannot be extrapolated to the country, the trend in increasing domestic abuse by current partners and family members, and declining abuse from former partners, underscores the impact that restrictions on movement related to COVID-19 have likely had on domestic violence.

Key in-person primary care services declined in the second quarter of 2020 but telemedicine use rose steeply

During the initial phase of the COVID-19 pandemic, tightening restrictions across health and other sectors meant that many essential health services were postponed or foregone entirely. In-person primary care consultations dropped, with the number of consultations with general practitioners falling 66% in Portugal, about 40% in Australia, 18% in Austria and 7% in Norway in May 2020, compared with the same month in 2019 (Figure 2.13). Australia's continued decline in face-to-face GP consultations in July and August 2020 likely reflects the trajectory of the pandemic in the country, where cases peaked in the Southern hemisphere during the winter months of July and August 2020. Preliminary data from eight OECD countries indicate that in-person doctor consultations fell in all but one country in 2020 (see Chapter 5). Data on in-person consultations should be interpreted with caution, as in many countries a decline in in-person visits was at least partly offset by an expansion of telehealth services.

Figure 2.13. **Monthly change in total number of in-person GP consultations, 2020 vs 2019, selected OECD countries**

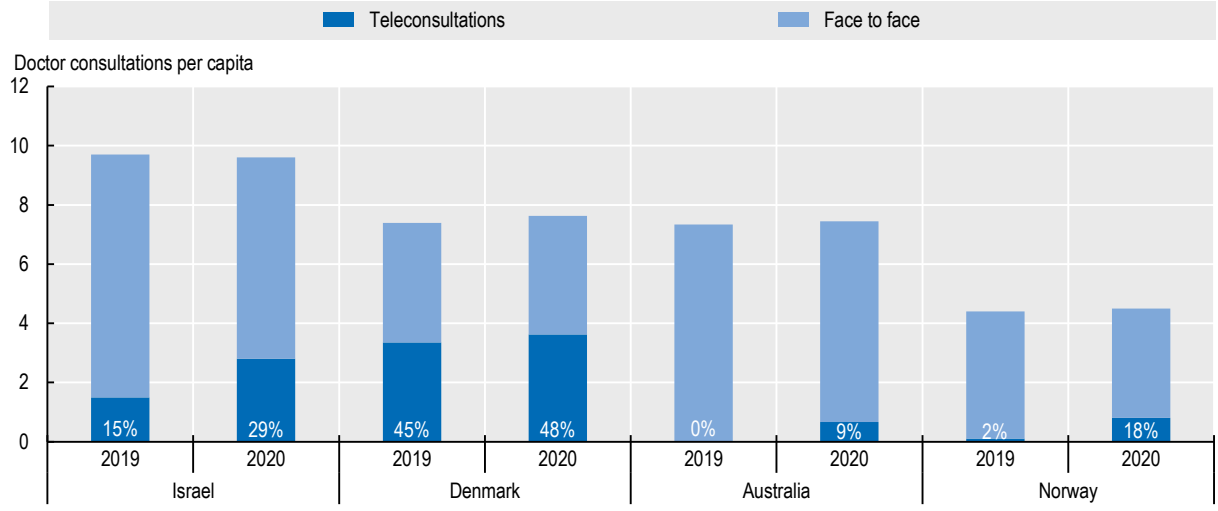
Total number of in-person General Practitioner (GP) consultations per month in 2020 compared with same month in 2019



Note: Data exclude telehealth services and only refer to face-to-face consultations and home visits.
Source: Australian Institute of Health and Welfare (2020[127]), "Impacts of COVID-19 on Medicare Benefits Scheme and Pharmaceutical Benefits Scheme service use", *https://www.aihw.gov.au/reports/health-care-quality-performance/covid-impacts-on-mbs-and-pbs/data*; Helsedirektoratet (2020[128]), "Konsultasjoner hos fastleger ", *https://www.helsedirektoratet.no/statistikk/statistikk-om-allmennlegetjenester/konsultasjoner-hos-fastleger*; INAMI (2020[129]), "Monitoring COVID-19: L'impact de la COVID-19 sur le remboursement des soins de santé", *https://www.inami.fgov.be/fr/publications/Pages/rapport-impact-covid19-remboursement-soins-sante.aspx*; Leitner (2021[130]), "Number of e-Card consultations: Analysis of eCard consultations during the pandemic/during the lockdown in 2020", Serviço Nacional de Saúde (2021[131]) "Consultas Médicas nos Cuidados de Saúde Primários", *https://transparencia.sns.gov.pt/explore/dataset/evolucao-das-consultas-medicas-nos-csp/export/?sort=tempo*.

Full-year data from four countries indicate that the number of doctor consultations (from both General Practitioners and specialists) per capita did not markedly change between 2019 and 2020 in some countries (Figure 2.14). In Australia, Israel, and Norway, a rise in the number of teleconsultations per capita helped make up for a decline in in-person visits. In general, teleconsultation services have expanded in all countries (Box 2.4). While the pandemic clearly pushed the uptake of telehealth services, the extent to which teleconsultations were able to compensate for the declines in in-person visits across a wider set of countries is not yet clear. As with the uptake of other digital tools, the use of digital technologies for health has not been evenly distributed across the population, with certain groups – including older adults, those with lower incomes, and people with lower educational attainment – less likely to seek out health information online (see Chapter 5). While telemedicine can help to overcome certain access barriers – such as for people living in remote communities – it is possible that the uptake of digital services during the pandemic may also exacerbate certain inequalities that preceded the pandemic.

Figure 2.14. **Doctor consultations (in all settings) per capita, 2019 and 2020**



Source: OECD (2021[30]), "OECD Health Statistics", *https://doi.org/10.1787/health-data-en*; OECD ad-hoc data collection on teleconsultations 2021.

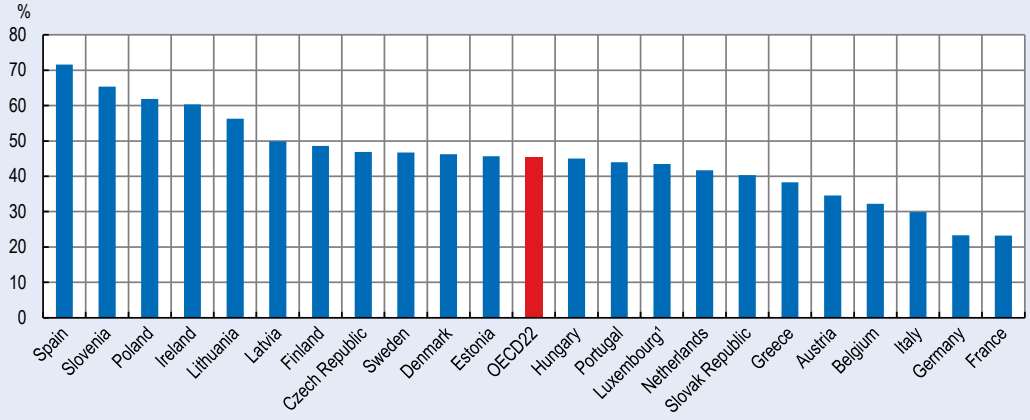
Many patients living with chronic conditions encountered serious disruptions in in-person care during the pandemic. Two studies surveying disruptions in care for chronic conditions, covering 163 and 47 countries respectively, both found hypertension and diabetes to be the two conditions most disrupted or impacted by COVID-19 (Chudasama et al., 2020[132]; WHO, 2020[133]). In Portugal, for example, the number of foot exams for diabetes care declined by 24% between 2019 and 2020, while in a nationally representative sample in the United States, two-fifths of adults living with at least one chronic health condition reported to have delayed or forgone care during the pandemic (Gonzalez et al., 2021[134]; Serviço Nacional de Saúde, 2021[135]).

A temporary disruption of service use can also be observed with childhood vaccination. Brazil recorded a 20% decline in childhood vaccination coverage in April-May 2020 compared with January-February 2020, while the United Kingdom recorded a 7% drop in hexavalent vaccination and a 20% drop in MMR in the three weeks following the introduction of social distancing measures, compared with the same period in 2019 (McDonald et al., 2020[139]; Silveira et al., 2021[140]). Yet coverage data from countries with data availability for the full year, including Belgium, Greece and Ireland, indicate that there was little overall change in coverage for key immunisations such as measles in 2020 compared with 2019 (WHO, 2021[141]). In England, for example, 12-month coverage for the

Box 2.4. **Widespread use of telehealth services**

Across 22 OECD European countries, close to half (45%) of adults reported by February-March 2021 that they had received medical consultation services from a doctor either online or by telephone (Figure 2.15). In Canada, 47% of respondents reported having used telehealth services to receive advice from a doctor since the start of the pandemic in May 2020 (Canadian Medical Association, 2020[136]). In Australia, one in seven adults in April 2021 had used a telehealth service (including making online bookings, e-Prescriptions, and consulting health information online) over the four preceding weeks (Australia Bureau of Statistics, 2021[137]). In Costa Rica, one-third of consultations in 2020 took place via teleconsultation, with a similar proportion (34%) reported for the first eight months of 2021.

Figure 2.15. **Nearly half of adults across 22 OECD EU countries reported having an online or telephone consultation during the pandemic**



Note: Proportion of respondents who reported having received online health care (medical consultation online or by telephone) from a doctor since the start of the pandemic. Results based on an online survey, may not be representative of the entire population.
1. Data for Luxembourg is of low reliability.
Source: Eurofound (2020[138]), "Living, working and COVID-19 dataset", *https://www.eurofound.europa.eu/fr/data/covid-19/quality-of-public-services*.

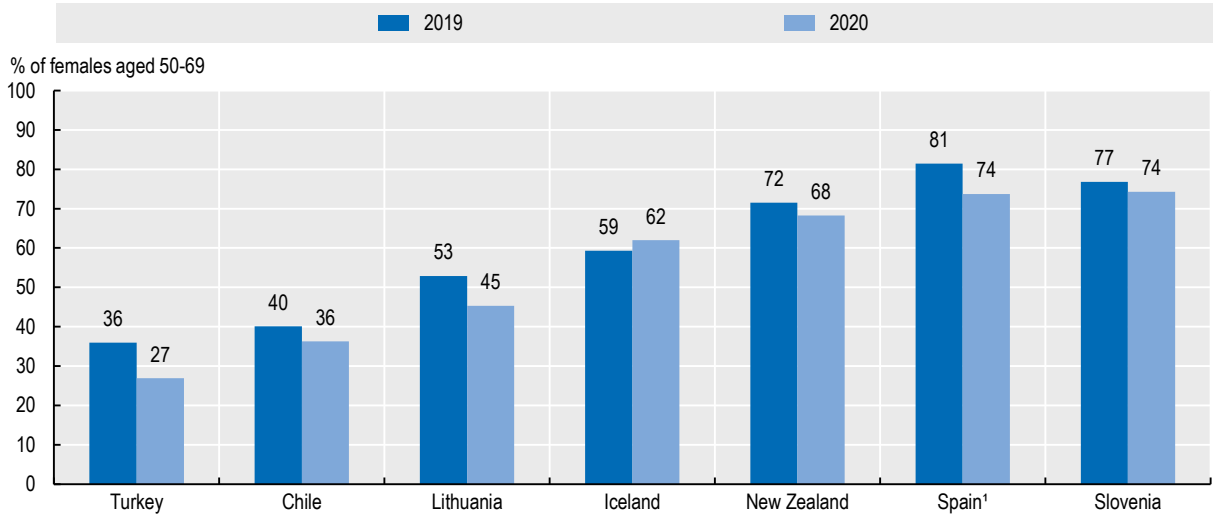
hexavalent vaccination dropped by just 0.1% in 2020 compared to 2019 (Public Health England, 2021[142]). This suggests that in most OECD countries, any delays in ensuring children were vaccinated according to the recommended schedule were short-lived and without a lasting impact on coverage. The impact on immunisation campaigns in low- and middle-income countries is likely to be much more significant, with possibly important negative consequences for child health outcomes and the spread of vaccine-preventable diseases.

Many countries experienced initial declines in cancer screening, which risk worsening health outcomes over time

Preventive screening for cancers, including mammography and colonoscopy, represents an important component of prevention programmes, with earlier cancer detection strongly associated with higher survival rates (see Chapter 6). Data indicate that cancer screening and referral were significantly delayed during the pandemic. Across seven OECD countries with comparable annual data, the proportion of women screened for breast cancer within the last two years fell by an average of 5 percentage points in 2020, compared with 2019 (Figure 2.16).

Figure 2.16. **The proportion of women screened for breast cancer within the last two years fell in 2020 compared to 2019**

Percentage of women aged 50-69 screened for breast cancer within the last two years, 2020



1. Spain is based on survey data with the comparator year being 2017 instead of 2019. All other countries based on programme data.
Source: OECD (2021[30]), "OECD Health Statistics", *https://doi.org/10.1787/health-data-en*.

The decline in preventive cancer screenings was particularly acute during the initial months of the pandemic:

- In Italy, screening rates for breast cancer (-54%) and cervical cancer (-55%) fell substantially between January and May 2020 compared to the same period in 2019, and remained lower for the full year as compared to 2019 (OECD/European Observatory on Health Systems and Policies, forthcoming[143]).
- Screenings for colorectal cancer dropped by 58% in the Czech Republic in April 2020, and by 34% in Austria between January and July 2020, compared to the same months in 2019 (OECD/ European Observatory on Health Systems and Policies, forthcoming[144]).
- In Australia, screening for breast cancer among women aged 50-69 fell by 20% between January and September 2020, compared to the same months of 2018. The decline was particularly large between March and May 2020, when BreastScreen services were paused (Australian Institute of Health and Welfare, 2021[145]). However, weekly screening between end-July and mid-September 2020 exceeded the numbers performed during the corresponding weeks of 2018, suggesting that any declines related to the pandemic are likely temporary.
- In France, breast cancer screening dropped markedly in the second quarter of 2020 (-56% compared to Q2/2019). From September onwards, though, screening activity exceeded levels seen in previous years, with weekly screening in January and May 2021 13% above corresponding numbers in 2019 (OECD/European Observatory on Health Systems and Policies, forthcoming[146]).

Delays and reductions in cancer screening have a negative impact on mortality due to associated delays in cancer diagnosis. Delays in cancer diagnosis and access to diagnostic services during the pandemic were reported in many OECD countries, including Australia, Belgium, Canada (Ontario), Denmark, Finland, France, Ireland, Italy, Korea, the Netherlands, Slovenia and Sweden. Delaying surgical treatment for cancer by four weeks has previously been estimated to increase the risk of

death by about 7%, while a delay of systemic therapy (such as chemotherapy) or radiotherapy by four weeks may increase the risk of death by up to 13% (Hanna et al., 2020[147]).

- Data from Australia indicate that the pandemic introduced disruptions to cancer care beyond preventive screening programs. Compared with the same period in 2019, surgeries related to breast cancer fell by 6% between January and September 2020, with colorectal surgeries also declining by 4% over this period. The most notable decreases for surgical procedures occurred in the early months of the pandemic (Cancer Australia, 2020[148]). Diagnostic procedures for suspected cancers also declined at the start of the pandemic.
- In Belgium, as a result of disruption in cancer care during the pandemic, the number of new cancer diagnoses between March and September 2020 was 5 000 below what would normally have been expected (Belgian Cancer Registry, 2020[149]).
- During the first half of 2021 in the Netherlands, the number of new cancer diagnoses was 6% higher than the average in the corresponding period for 2017-19, in line with expected increases due to demographic trends. The increase in diagnoses may also reflect a catch-up effect from diagnoses that were not made in 2020 (Netherlands Comprehensive Cancer Organisation, 2021[150]).

Emerging evidence has begun to indicate the substantial impact delays in screening and diagnosis may have on survival. In the United Kingdom (England), diagnostic delays have been projected to increase five-year mortality for four types of cancer by about 5% (lung cancer) to 16% (colorectal cancers) (Maringe et al., 2020[151]).

With non-urgent elective surgeries postponed during the pandemic, waiting times increased and surgeries declined

To increase health systems' capacity and address the COVID-19 surge, many countries postponed non-urgent elective surgeries. As a consequence, the amount of time patients spent on waiting lists for many surgeries increased. Across seven OECD countries with available data, waiting times for three elective surgeries – cataract surgery, hip replacement surgery, and knee replacement surgery – all increased across each country in 2020 compared with 2019 (Figure 2.17). For patients on waiting lists for surgery, the median number of days spent on the waitlist before undergoing the procedure increased in 2020 by 88 days for knee replacement, 58 days for hip replacement, and 30 days for cataract surgery, compared to 2019.

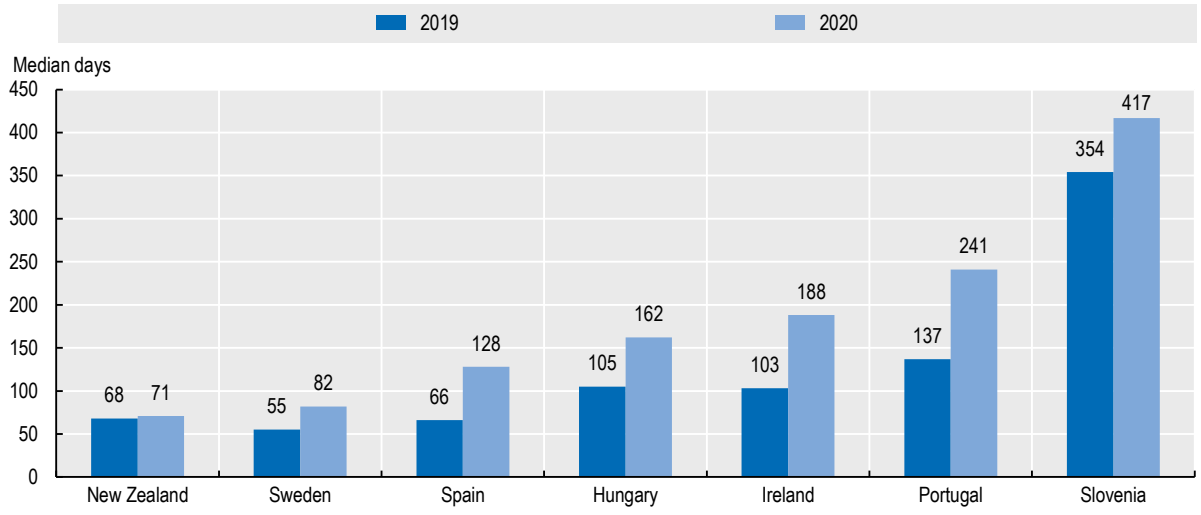
The number of elective surgeries requiring inpatient stays, such as hip or knee replacements, dropped in many countries in 2020, with declines of more than 25% in the number of knee replacements in the Czech Republic and Italy (Figure 2.18). Similar declines were also observed for hip replacement and cataract surgery (see Chapter 5).

While the first months of the pandemic have had the greatest impact on increasing waiting times and reducing completed treatment pathways, subsequent peaks in COVID-19 hospitalisations have also further disrupted care but to a lesser extent. In the United Kingdom, for example, treatment activity fell dramatically between March and May 2020, before falling again between November 2020 and January 2021 – though far less than during the initial drop (The Health Foundation, 2021[152]). Addressing the backlog of patients with need for elective intervention will be challenging, particularly in countries which have more limited hospital capacity, and may require sustained additional resources.

Overall inpatient hospital activity has also decreased, particularly for cardiac care

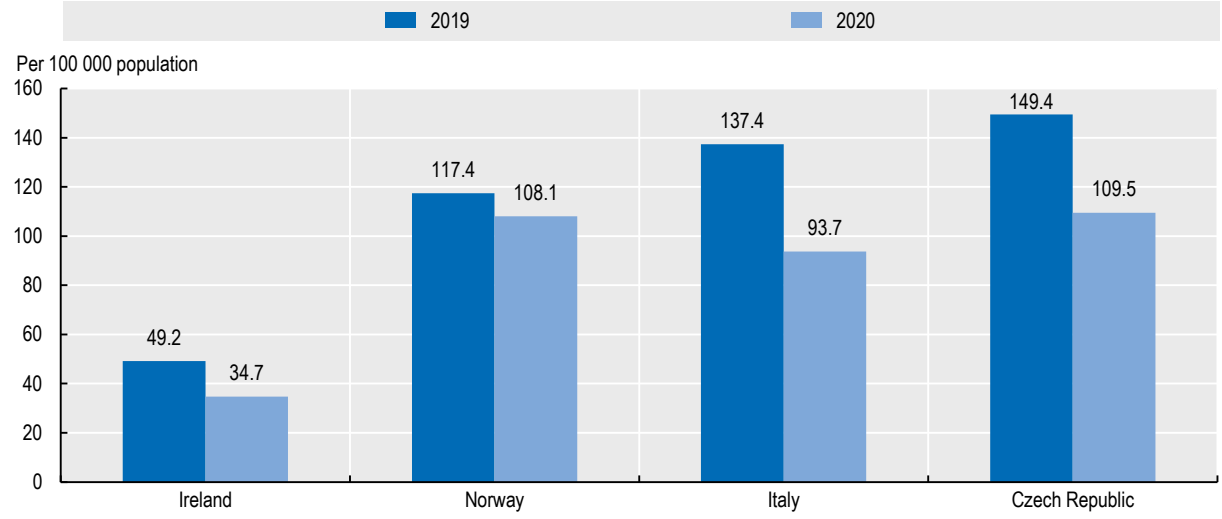
In anticipation of and responding to COVID-19 patients needing hospital-based care, many countries increased the number of available hospital beds by redesigning hospital discharge policies and postponing planned admissions for non-urgent care. As a result, across five OECD countries with

Figure 2.17. **Waiting times of patients on the list for hip replacement surgery increased during the pandemic**



Source: OECD (2021[30]), "OECD Health Statistics", *https://doi.org/10.1787/health-data-en*.

Figure 2.18. **Knee replacement surgery, selected OECD countries, 2019-20**

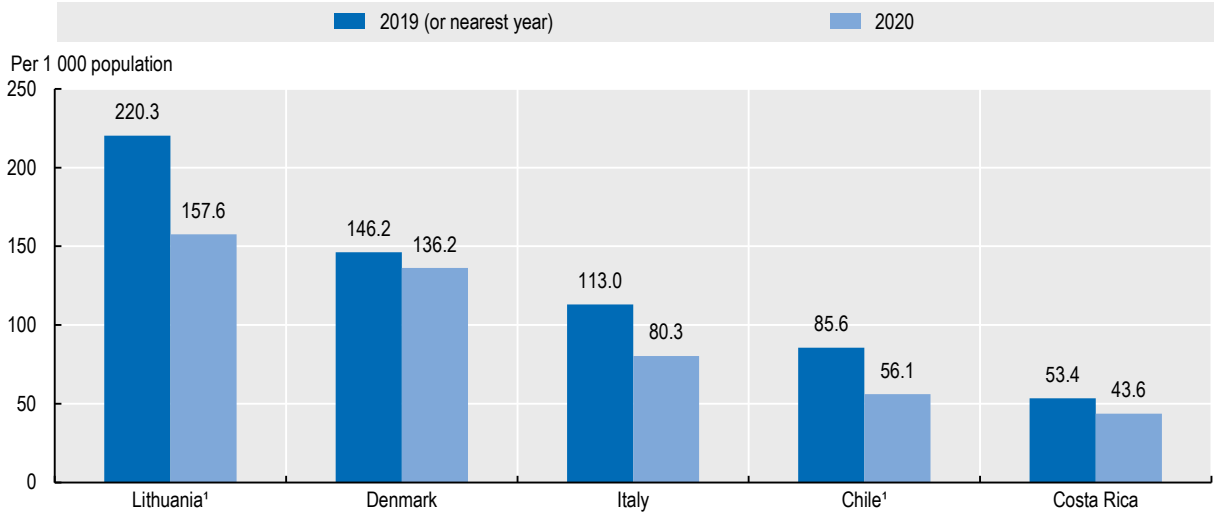


Source: OECD (2021[30]), "OECD Health Statistics", *https://doi.org/10.1787/health-data-en*.

available data, overall inpatient admissions fell in all countries between 2019 and 2020, with reductions ranging from about 7% in Denmark to about 30% or more in Lithuania, Italy and Chile (Figure 2.19).

Many OECD countries also observed declines in emergency visits and admissions. Overall, emergency attendance declined in 2020 by more than 20% in Canada (24%), Portugal (28%) and the United Kingdom (England) (21%) compared to 2019 (Canadian Institute for Health Information, 2021[153]; Serviço Nacional de Saúde, 2021[154]; NHS, 2021[155]). Drops in activity were particularly pronounced in March and April 2020. In the Netherlands, emergency room visits declined by 25% from March to June 2020, while emergency visits due to injuries fell by 14% in 2020, compared to 2016 (Stam and Blatter, 2021[156]; Toet, Sprik and Blatter, 2020[157]). Comparing the time period

Figure 2.19. **Hospital discharge rates, 2019 vs 2020**



1. Excludes discharges of healthy babies born in hospital (3-10% of all discharges).
Source: OECD (2021[30]), "OECD Health Statistics", *https://doi.org/10.1787/health-data-en*.

July 2019 to June 2020 with July 2018 to June 2019, the reduction in emergency visits was smaller in Australia (-1.4%) (Australian Institute of Health and Welfare, 2021[158]). Nonetheless, a substantial decline in average daily visits (-38%) could be observed between early March and early April 2020 compared to the corresponding weeks in 2019.

Visits for cardiac and cerebrovascular events fell, with some evidence of worse outcomes.

- Data from the first months of the health crisis indicate that hospital admissions for cardiovascular events, including acute myocardial infarction and stroke, initially declined by 40% or more in many countries, including Austria, Brazil, France, Germany, Greece, Spain, the United Kingdom and the United States (Garcia et al., 2020[159]; Huet et al., 2020[160]; Mafham et al., 2020[161]; Metzler et al., 2020[162]; Oikonomou et al., 2020[163]).
- While hospital admissions for cardiovascular events declined at the beginning of the pandemic, case fatality and complication rates for myocardial infarction appear to have increased dramatically since (De Rosa et al., 2020[164]; Primessnig, Pieske and Sherif, 2021[165]). These changes are likely associated with the reduction in hospital visits among patients with milder cardiovascular events. Admitted patients were recorded to have more severe cases than during the same period in 2019, with higher risk of complication and worse short-term and mortality outcomes (Primessnig, Pieske and Sherif, 2021[165]).

Survival rates for cardiac arrests occurring out of hospital also declined, though caution must be taken in interpreting the data, as studies have often focused on one region or city and are not nationally representative. Out-of-hospital survival after cardiac arrest declined by 50% in Victoria (Australia) between March and May 2020 compared to the same period in 2017-19, while 30-day survival rates fell by more than half in London (United Kingdom) in March-April 2020 compared to the previous year (Ball et al., 2020[166]; Fothergill et al., 2021[167])

At least some of the drivers of this increase in mortality are likely associated with disruptions to the care pathways due to health systems constraints and restrictions, including increases in ambulance response times and increases in time to implement critical interventions (Scquizzato et al., 2020[168])

While the economic fallout of the pandemic was dramatic across most OECD countries in 2020, the subsequent recovery has been fast but uneven

The public health crisis and the unprecedented measures to reduce the spread of the SARS-CoV-2 virus had a substantial negative impact on overall economic activity around the world. The world's Gross Domestic Product (GDP) contracted by 3.4% in 2020 following restrictions in travel and trade, the closure of manufacturers, construction sites, non-essential retailers, hotels, restaurants, and many other industries (OECD, 2021[169]). In many countries, the year 2020 marked the greatest economic decline in generations, also surpassing the effects of the economic and financial crises of 2008/09. With the exception of Ireland and Turkey, economic activity slowed down in all OECD countries in 2020. Declines were particularly pronounced in Spain (-10.8%), the United Kingdom (-9.8%) and Italy (-8.9%). These countries were also severely affected by a high number of cases between March to May 2020, requiring them to take drastic measures to tackle the pandemic.

Explaining the heterogeneity of trends in GDP growth in 2020 is complex, as economic development is influenced by many different factors. Yet, the size of the travel and tourism sector is generally the biggest single explanatory factor in the effects of the pandemic on economic activity (OECD, 2021[170]). This helps explain why Iceland and Greece (countries where this sector accounts for more than 20% of GDP) observed a significant economic downturn in 2020, albeit recording low to medium excess mortality. This has had a bigger impact than the extent of lockdowns or epidemiological outcomes. Other factors explaining differences in economic performance include the overall composition of the economy, since not all sectors or industries were similarly affected, and the trade orientation of countries. Finally, all OECD countries took a vast array of emergency budgetary measures to protect jobs and incomes, but the timing and the magnitude of these stimulus packages differed (OECD, 2021[171]).

Global economic recovery in 2021 has been fast with a projected GDP growth of 5.7%, and expected strong growth in many OECD countries such as Turkey (8.4%), Spain (6.8%) and the United Kingdom (6.7%), facilitated by the rapid vaccination rollout in many advanced economies (OECD, 2021[169]). However, the recovery has been uneven so far, as many emerging economies and low and middle income countries lag behind vaccination progress. Delays in vaccination will prevent countries from fully resuming economic activity, affecting not only domestic growth but also global supply chains, with knock-on effects for other economies. The evolution of the pandemic brings further uncertainties for economic recovery related to, for example, the emergence of new virus variants that could potentially lead to a re-introduction of stricter social distancing measures.

Eighteen months into the pandemic – where do we stand?

COVID-19 has had a devastating health impact, ending many lives prematurely and causing prolonged ill-health. It has disproportionately affected older populations and people with certain health conditions or behavioural risk factors. There has also been a clear social gradient, with COVID-19 amplifying existing inequalities. Across the OECD, more than 2.1 million COVID-19 deaths were reported until mid-October 2021, with the actual death toll directly or indirectly caused by COVID-19 much higher. Moreover, more than 110 million infections with the SARS-CoV-2 virus were recorded in OECD countries, in many cases requiring hospital treatment or even intensive care. Around one in ten infected people continue to suffer from symptoms more than three months after infection.

Rapid rollout of vaccination campaigns have reduced the risk of severe illness and death from COVID-19 in 2021 across OECD countries. Yet, in light of emerging evidence on waning vaccine effectiveness over time and persistent vaccination hesitancy in some countries, a continuation of some containment and mitigation measures is likely to remain in place. A number of countries have also started to administer booster doses with a focus on the most vulnerable population groups. At the

same time, ensuring global access to vaccines, especially to low and middle income countries is critical to tackling the pandemic and stopping millions of preventable deaths. Surge capacity that can be quickly and flexibly deployed when needed – both in terms of hospital and intensive care capacity as well as health workforce – will improve the ability of health systems to respond to unexpected shocks.

COVID-19 has also severely disrupted health care for people with other illnesses. Mounting evidence shows how a wide range of health services have and continue to be affected by the pandemic. Access to health services for non-COVID-19 patients was particularly disrupted at the beginning of the outbreak, as capacity was reoriented to tackle the surge of COVID-19 patients. In many countries, GP consultations, cancer screening, emergency department use and hospital admissions for cardiovascular events fell, while waiting times for elective surgery increased.

It remains to be seen how such indirect impacts will translate into lasting negative health outcomes. In some countries, disruption of essential health or preventive services appears to have been only temporary, implying that health systems were capable of adapting to the crisis quickly. This refers for example to replacing face-to-face visits with teleconsultations or to increasing cancer screening activity in the second half of 2020 and 2021 to (partly) compensate for cancellations during the first COVID-19 peak. Yet, it is too early to know the full impact. Further, the burden of mental ill-health has been far from temporary, with a risk that COVID-19 will mentally scar many people for years to come. Mental health and cancer are also two areas where delays to health care can have particularly severe adverse health effects. Increased attention should therefore be given to address the backlog of cancer screening and referrals. For mental health, support services need to be strengthened and maintained, with services tailored towards the needs of different population groups.

Overall, this analysis of the health impact of COVID-19 has demonstrated the immense pressure the pandemic has placed on people's health and health systems. The health crisis has in turn led to a major economic crisis, with the potential for long-term repercussions across society. Looking forward, targeted health investments are needed to strengthen pandemic preparedness and broader system resilience. The returns from such investments extend beyond the benefits of fewer lives lost. More resilient health systems are also at the core of stronger, more resilient economies and societies.

Notes

1. Reported infection rates in Mexico have been low. However, given the low testing rates in Mexico (in early June 2021 the country carried out only 0.07 tests per day per 1 000 population compared with 3.4 in Chile or 1.2 in Colombia), actual infections rates are likely to be much higher.
2. As of October 2021, the World Health Organization (WHO) has identified four "variants of concern" (WHO, 2021[173]). These are the Alpha and Beta variants (both designated in December 2020), the Gamma variant (designated in January 2021) and the Delta variant (designated in May 2021).
3. Most OECD countries are using the Pfizer-BioNTech, Moderna (mRNA vaccines) or the Oxford-AstraZeneca products as the principal vaccines in COVID-19 immunisation campaigns.
4. However, it needs to be borne in mind that excess mortality can be caused by various factors such as severe flu seasons or heatwaves. In some countries that record positive excess mortality in 2020 and 2021, this will include other factors than COVID-19.
5. Given that the reported COVID-19 deaths are much lower, this suggests a substantial underestimation of COVID-19 mortality in the country.
6. Health and social workers represent around 7% of the global workforce.

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ANNEX 2.A

Data on excess mortality and COVID-19 deaths

Annex Table 2.A.1. **Excess mortality and COVID-19 deaths in OECD countries, cumulative by end of June 2021**

Country	Total number of COVID-19 deaths	COVID-19 deaths per million population	Total number of excess deaths	Excess deaths per million population	Percentage increase in total deaths (compared to average of 2015-19)
Australia	910	36	5 369	211	2.58%
Austria	10 505	1 180	11 306	1 270	9.07%
Belgium	25 193	2 186	15 830	1 374	9.39%
Canada	26 368	699	42 458	1 125	10.57%
Chile	33 249	1 739	40 862	2 138	25.70%
Colombia	109 466	2 151	118 191	2 323	37.80%
Costa Rica	4 726	928	N/A	N/A	N/A
Czech Republic	30 348	2 838	37 050	3 465	21.76%
Denmark	2 537	436	1 136	195	1.38%
Estonia	1 270	956	1 855	1 396	7.83%
Finland	974	176	1 894	343	2.31%
France	111 190	1 652	92 507	1 374	10.01%
Germany	91 031	1 095	76 945	925	5.37%
Greece	12 737	1 188	15 024	1 402	8.02%
Hungary	29 996	3 070	23 679	2 424	11.83%
Iceland	30	82	68	188	1.99%
Ireland	5 000	1 007	N/A	N/A	N/A
Israel	6 428	743	6 628	766	9.64%
Italy	127 649	2 140	128 279	2 151	12.92%
Japan	14 842	117	99 541	787	4.94%
Korea	2 028	40	2 659	52	4.04%
Latvia	2 528	1 325	2 307	1 209	5.27%
Lithuania	4 395	1 573	5 386	1 928	8.69%
Luxembourg	818	1 307	550	879	8.64%
Mexico	233 689	1 813	574 527	4 456	54.79%
Netherlands	17 755	1 020	24 084	1 384	10.43%
New Zealand	26	5	1 031	214	0.83%
Norway	794	148	-1 489	-277	-2.39%
Poland	75 085	1 978	139 024	3 663	22.57%
Portugal	17 117	1 663	20 848	2 025	12.16%
Slovak Republic	12 514	2 293	17 098	3 133	20.83%
Slovenia	4 753	2 268	4 862	2 320	15.64%
Spain	80 934	1 710	87 123	1 841	13.49%
Sweden	14 667	1 420	5 630	545	4.12%
Switzerland	10 305	1 197	9 196	1 069	8.98%
Turkey	49 924	600	N/A	N/A	N/A
United Kingdom	151 912	2 232	108 843	1 599	11.67%
United States	603 766	1 824	846 949	2 559	19.85%
OECD total	1 927 459	1 406	2 567 250	2 010	15.51%
OECD average	N/A	1 285	N/A	1 499	11.79%

Note: No excess deaths data for Costa Rica, Ireland and Turkey. Data go up to week 26-2021, except for Australia (week 25), Canada (week 22), and Colombia (week 18).
Source: OECD (2021[30]), "OECD Health Statistics", *https://doi.org/10.1787/health-data-en*, based on EUROSTAT data and national data.


RESTING ECG
****** BORDERLINE ABNORMAL ******
702:Abnormal Q ?
210:Mild left axis deviation
Check abnormal Q-wave.
P-wave is unclear. Check P-wave.
Unconfirmed. MD must review. ****
2-1-3 4-2
V1
aVL
V2
aVF
V3



3. HEALTH STATUS

Trends in life expectancy

Life expectancy by sex and education level

Excess mortality

Main causes of mortality

Avoidable mortality (preventable and treatable)

Mortality from circulatory diseases

Cancer incidence and mortality

Chronic conditions

Infant, child and adolescent health

Mental health

Self-rated health

Trends in life expectancy

Life expectancy has increased in all OECD countries over the past 50 years, but progress has slowed over the last decade. Furthermore, the COVID-19 pandemic led to life expectancy falling in most OECD countries in 2020 (see Chapter 2 for an in-depth analysis of the health impact of COVID-19).

In 2019, life expectancy at birth was 81 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 27 OECD member 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. Mexico, Latvia, Lithuania, Hungary and Colombia have the lowest life expectancy, at less than 77 years in 2019.

Among OECD member countries, Turkey (+24 years), Korea (+21) and Chile (+18) have experienced the largest gains in life expectancy since 1970. Stronger health systems have contributed to these increases, 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, 2017[1]).

In partner countries, life expectancy remains well below the OECD average. Still, levels are converging rapidly towards the OECD average, with considerable gains in longevity since 1970 in India, the People's Republic of China (China), Brazil and Indonesia. There has been less progress in the Russian Federation (Russia), 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.

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).

COVID-19 is expected to have a major impact on life expectancy, due to the exceptionally high number of deaths this pandemic has caused. Indeed, OECD countries recorded around 1.7 million excess deaths, compared with the average number of deaths over the five preceding years (see indicator "Excess mortality"). In 2020, life expectancy fell in all OECD countries for which data are available, other than Norway, Japan, Costa Rica, Denmark, Finland and Latvia (Figure 3.2). The annual reduction reached one year or more in nine countries, and was particularly large in the United States (-1.6 years) and Spain (-1.5 years).

Even before COVID-19, gains in life expectancy had been slowing down markedly in a number of OECD countries over the last decade. 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.

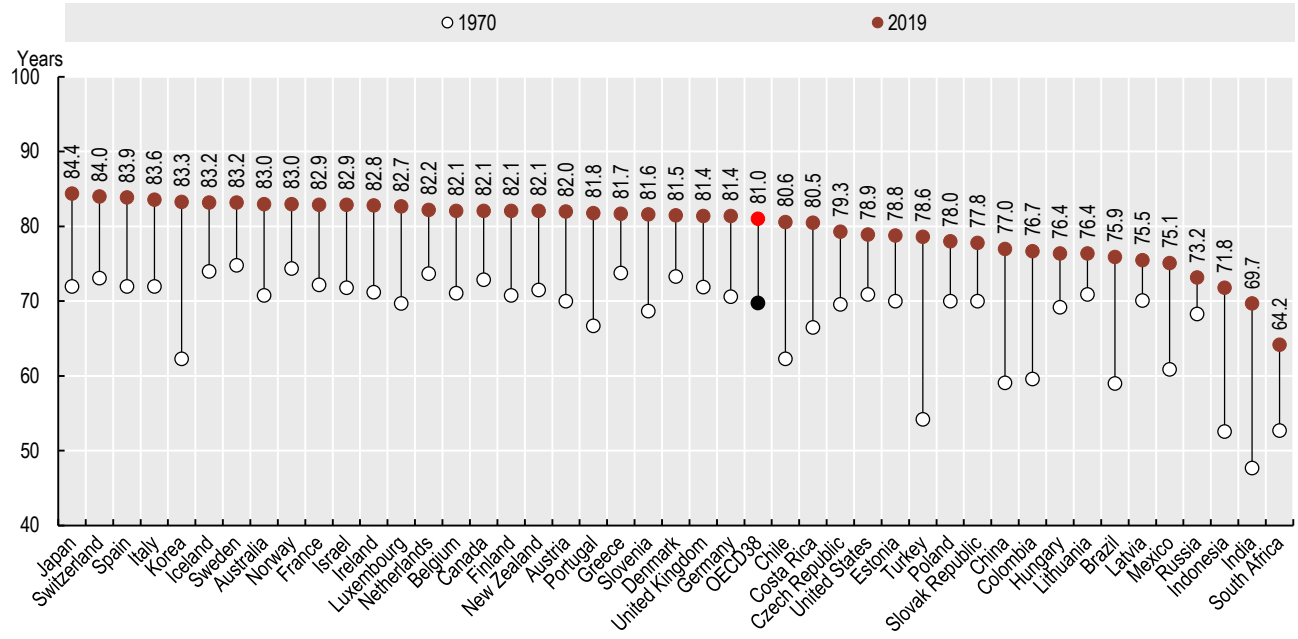
The causes of this slowdown in life expectancy gains over time are multi-faceted (Raleigh, 2019[2]). Principal among them is slowing improvements in heart disease and stroke. Rising levels of obesity and diabetes, as well as population ageing, have made it difficult for countries to maintain previous 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.

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 come from Eurostat for European Union (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.

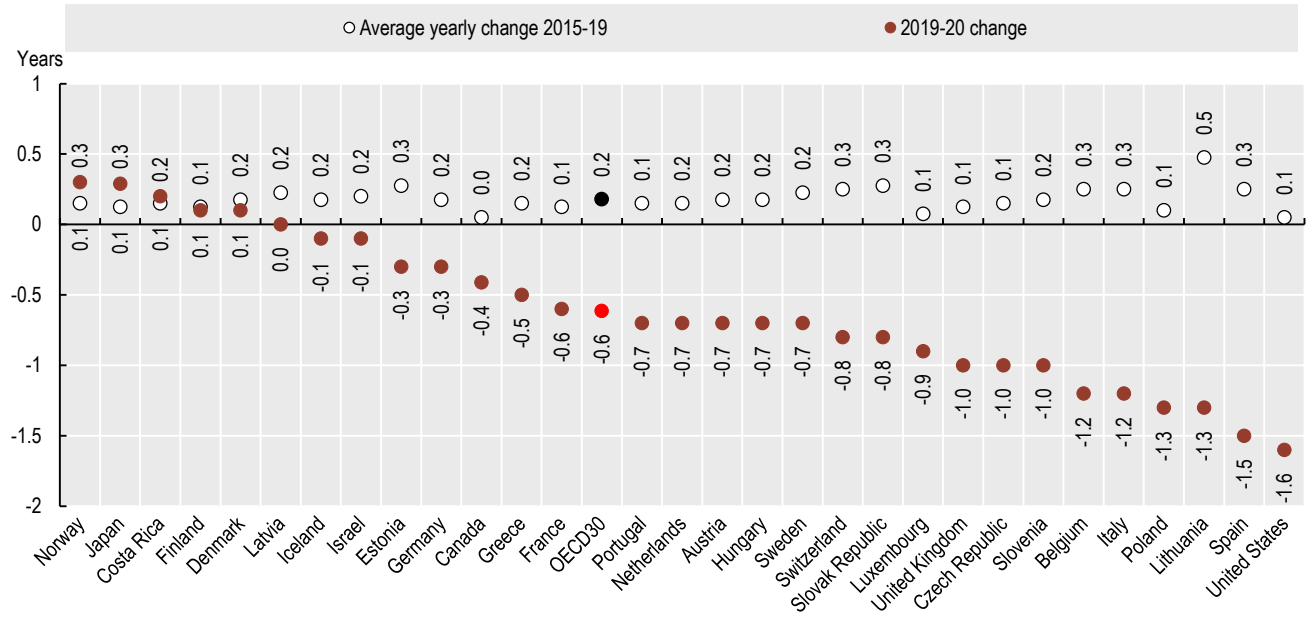
Figure 3.1. **Life expectancy at birth, 1970 and 2019 (or nearest year)**



Source: OECD Health Statistics 2021.

StatLink https://stat.link/a2sx4j

Figure 3.2. **Reductions in life expectancy during the pandemic**



Note: 2020 data are provisional for some countries.
Source: OECD Health Statistics 2021.

StatLink https://stat.link/gsdvzk

Life expectancy by sex and education level

Women live longer than men in all OECD member and partner countries. This gender gap averaged 5.3 years across OECD countries in 2019 – life expectancy at birth for women was 83.6 years, compared with 78.3 years for men (Figure 3.3). The gender gap in life expectancy has narrowed by one year since 2000, however, reflecting more rapid gains in life expectancy among men in most countries.

In 2019, life expectancy at birth for men in OECD member countries ranged from around 71 years in Latvia and Lithuania to 81 years or higher in Switzerland, Japan, Iceland, Sweden, Italy, Norway, Spain and Israel. For women, life expectancy reached 87.4 years in Japan, but was less than 80 years in Mexico, Hungary and Colombia.

Gender gaps are relatively narrow in Iceland, the Netherlands, Sweden, Norway, New Zealand, Switzerland, the United Kingdom, Israel and Ireland – at less than four years. However, there are large gender differences in many central and eastern European countries – most notably in Lithuania and Latvia (over 9 years), Estonia (8.5 years) and Poland (7.8 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 OECD partner countries, the gender gap stands at ten years in Russia, and around seven years in Brazil and South Africa. China (4.4 years) and India (2.5 years) have smaller gender gaps.

Socio-economic inequalities in life expectancy are also evident in all OECD countries with available data (Figure 3.4). On average among 24 OECD countries, a 30-year-old with less than an upper secondary education level can expect to live for 5.2 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 6.5 years, compared with an average gap of 3.9 years among women.

Socio-economic inequalities are particularly striking among men in many central and eastern European countries (Slovak Republic, Latvia, Poland, Hungary), 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 Italy and Sweden.

More deaths among 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[4]).

Higher smoking rates among disadvantaged socio-economic groups are an important contributor to gaps in life expectancy by education or other measures of socio-economic 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 Chapter 4 for an in-depth analysis of risk factors for health). Finally, although the data shown here are pre-pandemic, emerging evidence has shown a clear social gradient in COVID-19 deaths, which will have direct knock-on effects on inequalities in life expectancy (see Chapter 2 for further discussion and related references).

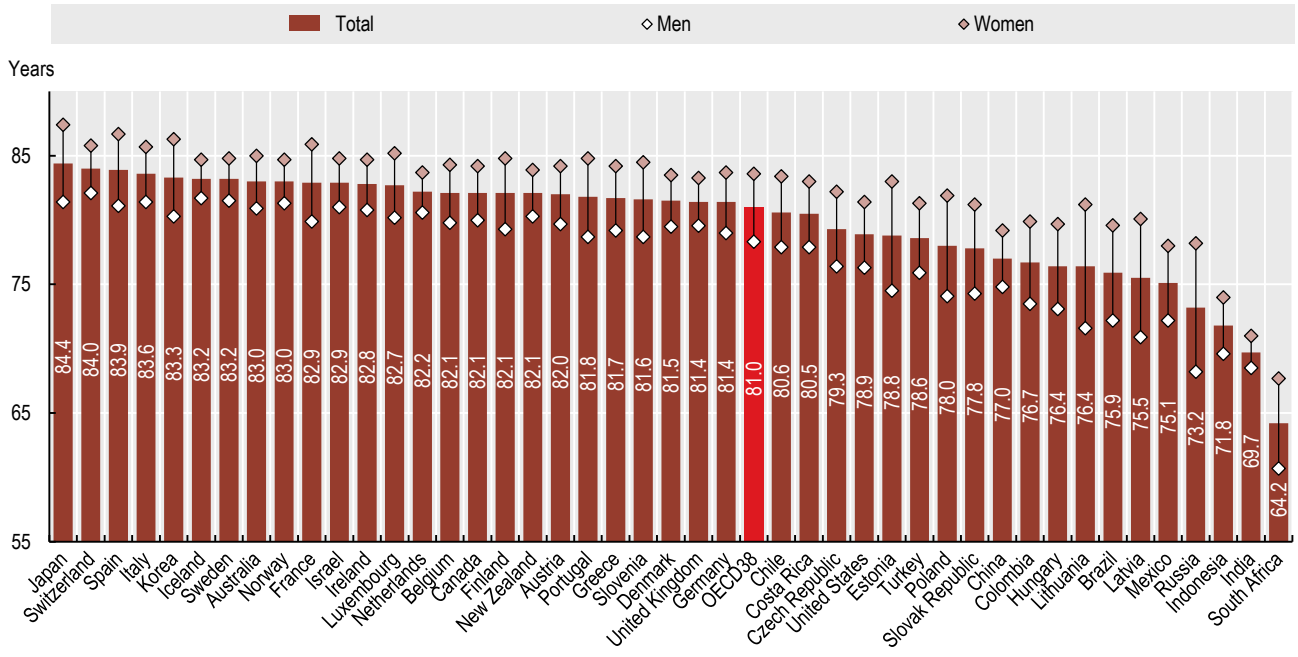
Definition and comparability

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 come 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, the Netherlands, Switzerland 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 mortality statistics. In such cases, data linkage to another source (such as 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.

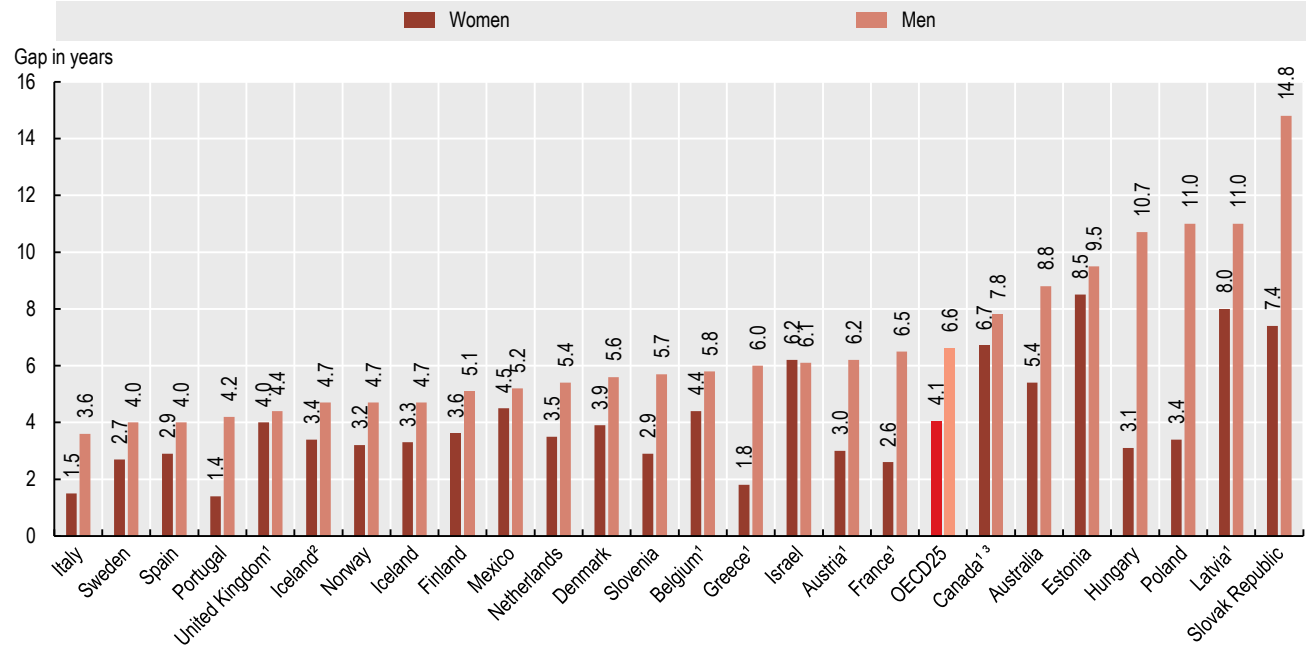
Figure 3.3. **Life expectancy at birth by sex, 2019 (or nearest year)**



Source: OECD Health Statistics 2021.

StatLink https://stat.link/9i5vuf

Figure 3.4. **Gap in life expectancy at age 30 between people with the highest and lowest education levels, 2019 (or nearest year)**



1. 2010-13 data. All other data are from 2016-19. 2. Three-year average (2017-19). 3. Data at age 25.
Source: OECD Health Statistics 2021, Eurostat.

StatLink https://stat.link/ow5sam

Excess mortality

Excess mortality measures whether, and if so to what extent, the total number of deaths from all causes is over and above what could normally be expected for a given period of time. Here, deaths in 2020 are compared against the average over the previous five years. Excess mortality has been particularly useful in providing a fuller understanding of the impact of COVID-19 across countries, since it is unaffected by country-specific variations in the recording of COVID-19-specific deaths, and accounts for both deaths directly attributable to COVID-19 and deaths indirectly linked to the virus (Morgan et al., 2020[5]). For example, there may have been more deaths in 2020 than would have normally been expected due to health systems not being able to cope with other conditions. This may be counterbalanced to some extent by potentially fewer fatalities from traffic and workplace accidents, and a reduction in the number of deaths from other infectious diseases.

In 2020, across 36 OECD countries with available data, over 1.8 million excess deaths were recorded, compared with the average number of deaths over the five previous years. This represents an 11% increase in the number of deaths, on average – equivalent to 1 334 additional deaths per million population.

More people died in 2020 compared with the average of the previous five years (numbers adjusted for population growth) in all but four OECD countries. Excess mortality in 2020 was highest in Mexico, where a 52% increase in overall mortality was recorded compared to the previous five years (Figure 3.5). Excess deaths were also relatively high in Colombia (28% higher), Poland (22%) and the United States (21%), and a further 16 countries experienced mortality rates between 10% and 20% higher in 2020 than in the preceding five years. By contrast, there were fewer deaths compared to the five-year average in New Zealand, Australia, Iceland and Norway – all countries experiencing relatively few COVID-19 deaths.

Across the OECD as a whole, excess deaths were higher than recorded COVID-19 deaths in all weeks from March 2020 until the end of 2020, with peaks in April and December (based on weekly data for 33 OECD countries). Preliminary data for 2021 point to a continued trend of excess mortality in OECD countries. Excess mortality was noticeably higher than COVID-19 mortality in Mexico, Poland, Lithuania, Portugal, the Slovak Republic and the United States. This may reflect additional deaths in 2020 indirectly caused by COVID-19 or by unrelated factors, but could also point to potential under-reporting of some COVID-19 deaths, particularly in the absence of widespread testing early on in the pandemic. In contrast, Belgium, Denmark, Luxembourg and Sweden recorded higher COVID-19 fatality rates than excess deaths, implying reduced mortality from other causes or a broader definition of COVID-19-related deaths with high case identification in some countries (see Chapter 2 for further analysis of these data and links to COVID-19 references).

Examining excess mortality rates across age groups is important in the context of COVID-19. The vast majority of COVID-19 deaths have occurred in older population groups (as well as among those with certain chronic conditions, such as cardiovascular diseases and diabetes). These are also population groups with the highest underlying risk of mortality. Disaggregating excess mortality by age provides insights into the extent to which deaths among people of different age groups were higher than in previous years. In all but three of the 26 OECD countries with comparable age-disaggregated data, the number of deaths in the population aged 65 and over was higher than expected, with 15% more deaths than average in Belgium, Italy, Poland, Spain and Slovenia.

While over half of the countries saw increased mortality rates for either or both those aged 45-64 and those aged 0-44, there were notable differences across countries (Figure 3.6). Australia, Latvia, Italy, Sweden and Lithuania saw a marked decrease in deaths among the 0-44 age group, possibly as a result of the reduction in mobility and contacts. By contrast, Finland, Germany, the Netherlands and Poland saw a more than 5% increase in deaths among this age group, though the mortality rate in this age group remains small. In the United States, deaths among the 0-44 age group were more than 20% higher than expected, and higher than the excess mortality of the population aged 65 and over, which could also be due to underlying trends in other causes of death (Rossen et al., 2020[6]).

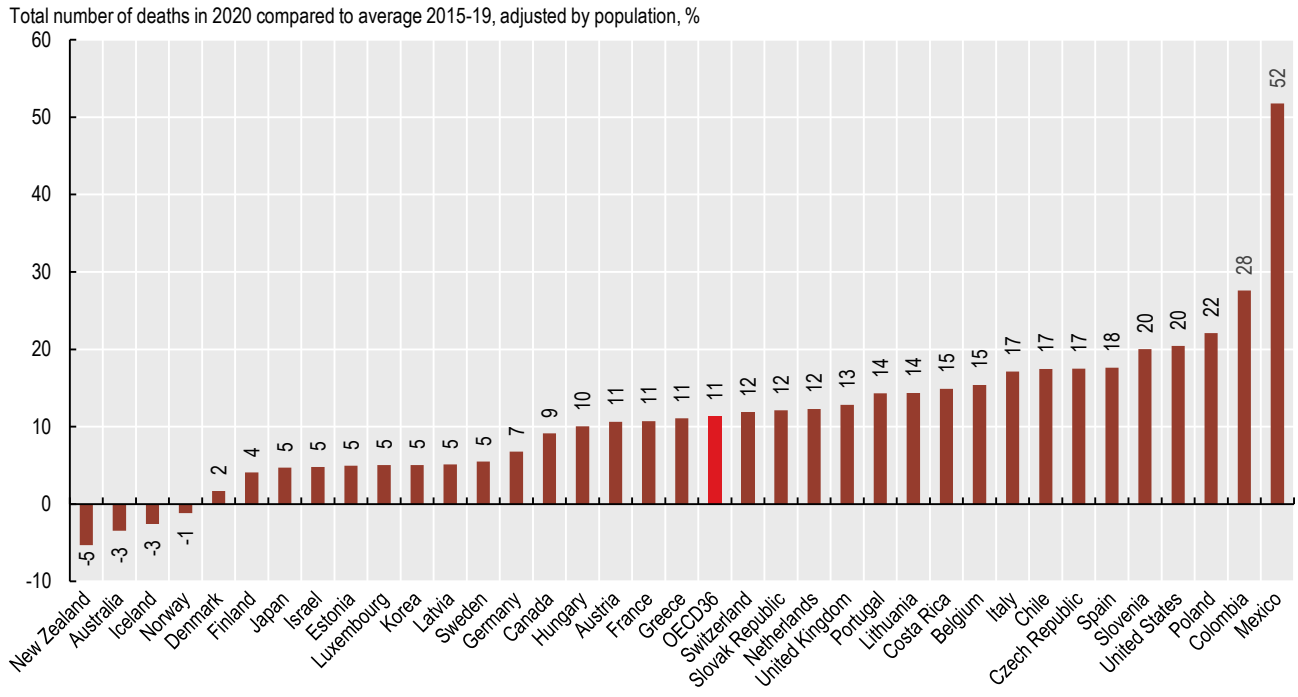
Definition and comparability

Excess mortality is defined here as the total number of deaths from all causes in 2020, compared to the average annual number of deaths over the previous five years. Figures are adjusted for population growth in age groups over time. This adjusted baseline could still be considered a somewhat conservative estimate of the expected number of deaths, since an ageing population would also be expected to push up the number of deaths observed each year. Excess mortality is reported as a percentage increase (or decrease).

National variations in underlying death rates related to various events mean that caution is needed when comparing excess mortality at a given point in time. For example, significant country-specific events such as severe flu seasons, heatwaves and natural disasters during the previous five years may have had a large influence on the number of deaths, affecting the underlying average. However, choosing a five-year comparator period (2015-19) helps to mitigate such variations.

Variations in the onset and duration of the various waves of the COVID-19 pandemic will have an impact on analysing the linkages between COVID-19 deaths and excess mortality across countries. Nevertheless, taking the whole of 2020 as an overall timeframe is considered a suitable period of analysis to examine differences in the initial evolution of COVID-19 in OECD countries.

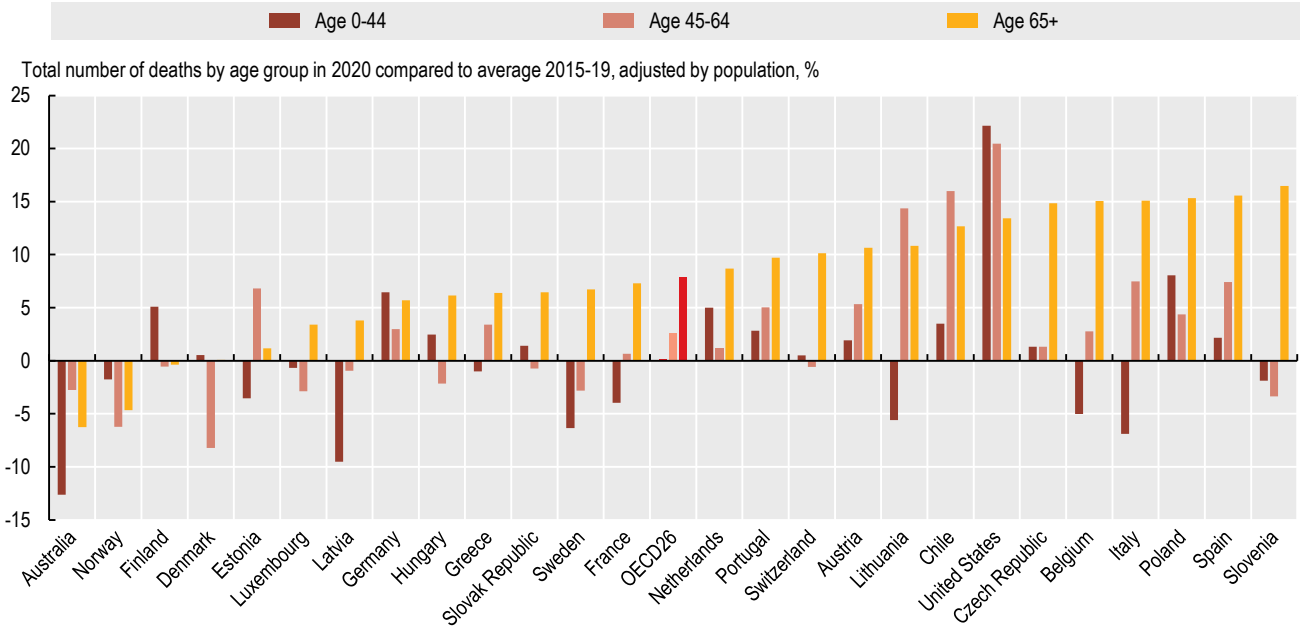
Figure 3.5. **Excess mortality, 2020**



Note: 2020 all-cause mortality data for New Zealand do not include infant deaths.
Source: OECD Health Statistics 2021.

StatLink https://stat.link/0juo4r

Figure 3.6. **Excess mortality by age group, 2020**



Source: OECD Health Statistics 2021.

StatLink https://stat.link/98npdf

Main causes of mortality

In 2019, over 11 million people died across OECD countries – equivalent to 770 deaths per 100 000 population (Figure 3.7). Diseases of the circulatory system and cancer were 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 (Roth et al., 2018[7]). Across OECD countries in 2019, heart attacks, strokes and other circulatory diseases caused about one in three deaths; one in four deaths were related to cancer. Population ageing largely explains the predominance of deaths from circulatory diseases – with deaths rising steadily from age 50.

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

External causes of death were responsible for 7% of deaths across OECD countries – notably 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. Further, in some countries, notably the United States and Canada, the opioid crisis has caused more working-age adults to die from drug-related accidental poisoning.

Looking at other specific causes, Alzheimer's and other dementias accounted for 9% of all deaths; they were a more important cause of death among women than men. 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[8]).

All-cause age-standardised mortality rates in 2019 ranged from under 600 deaths per 100 000 in Japan and Korea to over 1 000 deaths per 100 000 in Latvia, Hungary, the Slovak Republic and Lithuania (Figure 3.8). Among OECD partner countries, mortality rates were highest in South Africa (1 940 per 100 000 deaths) and Russia (1 232 per 100 000).

Age-standardised mortality rates were 50% higher for men than women across OECD countries (956 per 100 000 population for men, compared with 631 for women). In Lithuania, Latvia and Hungary there were over 1 400 deaths per 100 000 men. For women, mortality rates were highest in Hungary, Latvia, Mexico and the Slovak Republic. Among OECD partner countries, male mortality rates were around 2 400 deaths per 100 000 in South Africa and over 1 600 in Russia. 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 cancer and injuries, among other diseases.

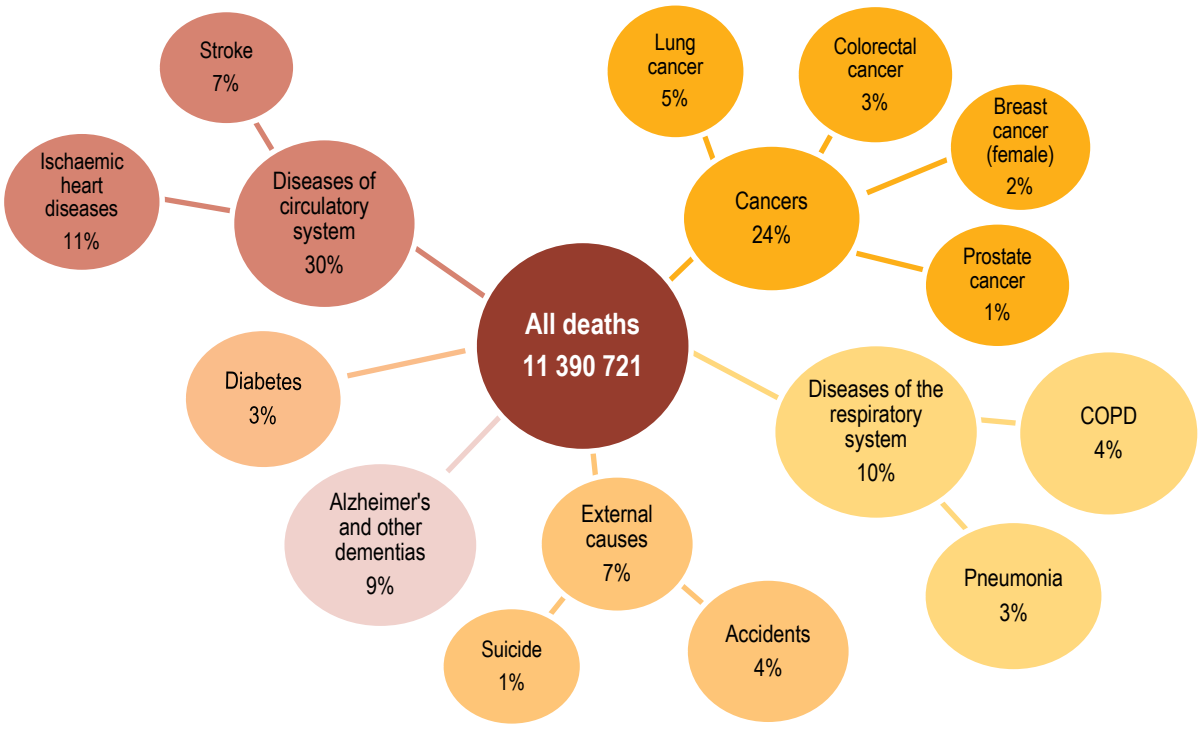
Note that this section analyses the main causes of mortality in 2019, the most recent year for which detailed cause-of-death data are available across OECD countries. In 2020 and beyond, the COVID-19 pandemic will have a large effect on these indicators. For example, COVID-19 was the third leading cause of mortality in the United States in 2020 (Health System Tracker, 2021[9]). Indeed, because of COVID-19, there have been far more deaths overall in 2020 and 2021 than in previous years (see Chapter 2 for an in-depth analysis of the health impact of COVID-19).

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. Note this results in some age-standardisation differences with other population standards used by, for example, the World Health Organization (WHO) and the European Union (EU). The source for mortality rates is the WHO Mortality Database.

Deaths from all causes are classified as International Classification of Diseases, tenth revision (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, COPD and asthma. Charts are based on this grouping, except for Alzheimer's and other dementias. These were grouped together (Alzheimer's is classified in group G and other dementias in group F).

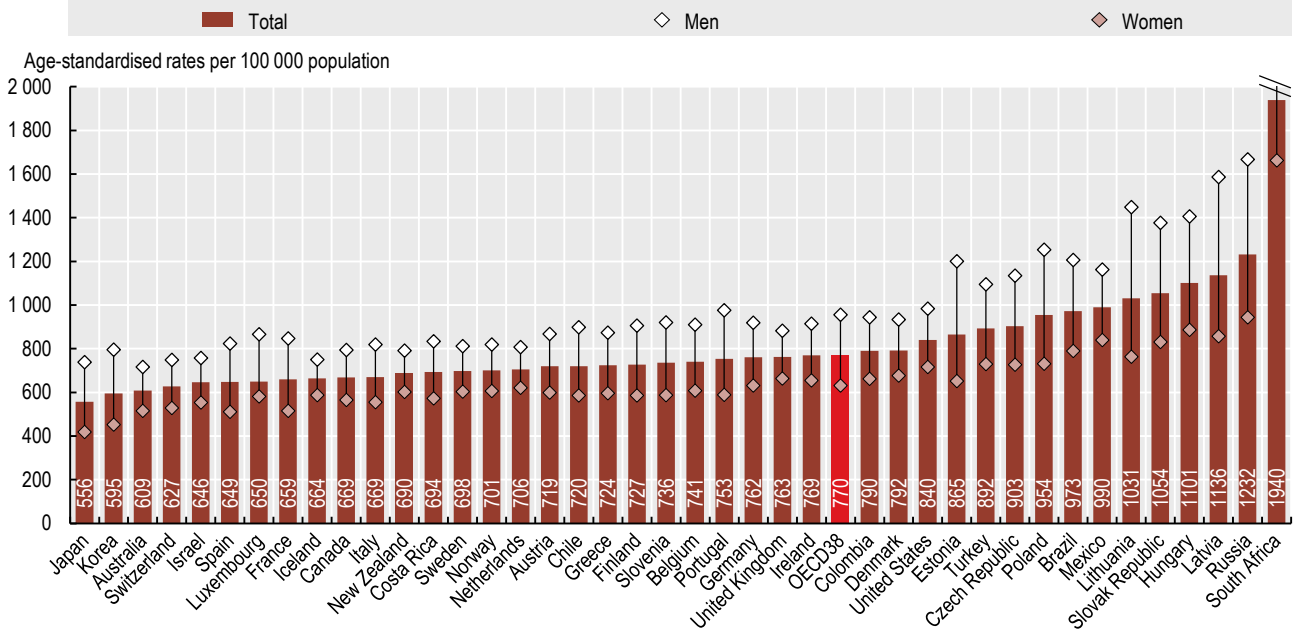
Figure 3.7. **Main causes of mortality across OECD countries, 2019 (or latest year)**



Note: Other causes of death not shown in the figure represent 17% of all deaths.
Source: OECD Health Statistics 2021.

StatLink https://stat.link/m2k8za

Figure 3.8. **All-cause mortality rates, by sex, 2019 (or latest year)**



Source: OECD Health Statistics 2021.

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Avoidable mortality (preventable and treatable)

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

In 2019, across OECD countries, over 3 million premature deaths amongst people aged under 75 years could have been avoided through better prevention and health care interventions. This amounts to over one-quarter of all deaths. Of these deaths, about 1.9 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 in 2019 (31% of all preventable deaths) – particularly lung cancer (Figure 3.9). Other major causes were injuries, such as road accidents and suicide (21%); heart attack, stroke and other circulatory diseases (19%); alcohol and drug-related deaths (14%); and some respiratory diseases such as influenza and COPD (8%).

The main treatable cause of mortality in 2019 was 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 27% of all deaths from treatable causes. Respiratory diseases such as pneumonia and asthma (9%) and diabetes and other diseases of the endocrine system (8%) are other major causes of premature death that are amenable to treatment.

The average age-standardised mortality rate from preventable causes was 126 deaths per 100 000 people across OECD countries. It ranged from 90 or fewer per 100 000 in Luxembourg, Israel, Iceland, Switzerland, Japan, Italy and Spain to over 200 in Latvia, Hungary, Lithuania and Mexico (Figure 3.10). 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.

Mortality rates from treatable causes across OECD countries were much lower, at an average of 73 per 100 000 population. They ranged from fewer than 50 deaths per 100 000 people in Switzerland, Korea, Iceland, Australia, Norway, Japan, France, Sweden and the Netherlands, to over 130 in Mexico, Latvia, Lithuania and Hungary. Ischaemic heart diseases, strokes and some types of treatable cancers (including 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 2.5 times higher among men than among women across OECD countries (185 per 100 000 population for men compared with 73 for women). Similarly, mortality rates from treatable causes were about 36% higher among men than women, with a rate of 86 per 100 000 population for men compared with 63 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" and Chapter 4 for an in-depth analysis of risk factors for health).

Note that this section analyses the main causes of mortality in 2019. In 2020 and beyond, the COVID-19 pandemic will have a large impact on avoidable mortality. As well as COVID-19 deaths that might have been avoided with more timely policy interventions, this also includes indirect effects caused by the disruptions to preventive and curative health care.

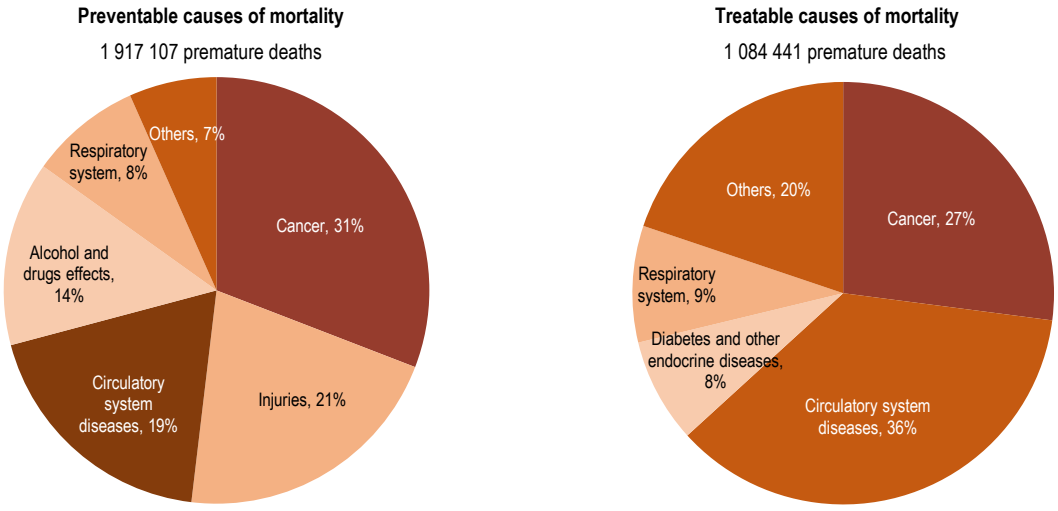
Definition and comparability

Based on the 2019 OECD/Eurostat definitions, preventable mortality is defined as causes of death amongst people aged under 75 years that can be mainly avoided through effective public health and primary prevention interventions (i.e. before the onset of disease/injury, 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 disease, 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 (as with ischaemic heart disease, stroke and diabetes), the causes were allocated on a 50:50 basis to the two categories to avoid double-counting of 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[10]).

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*).

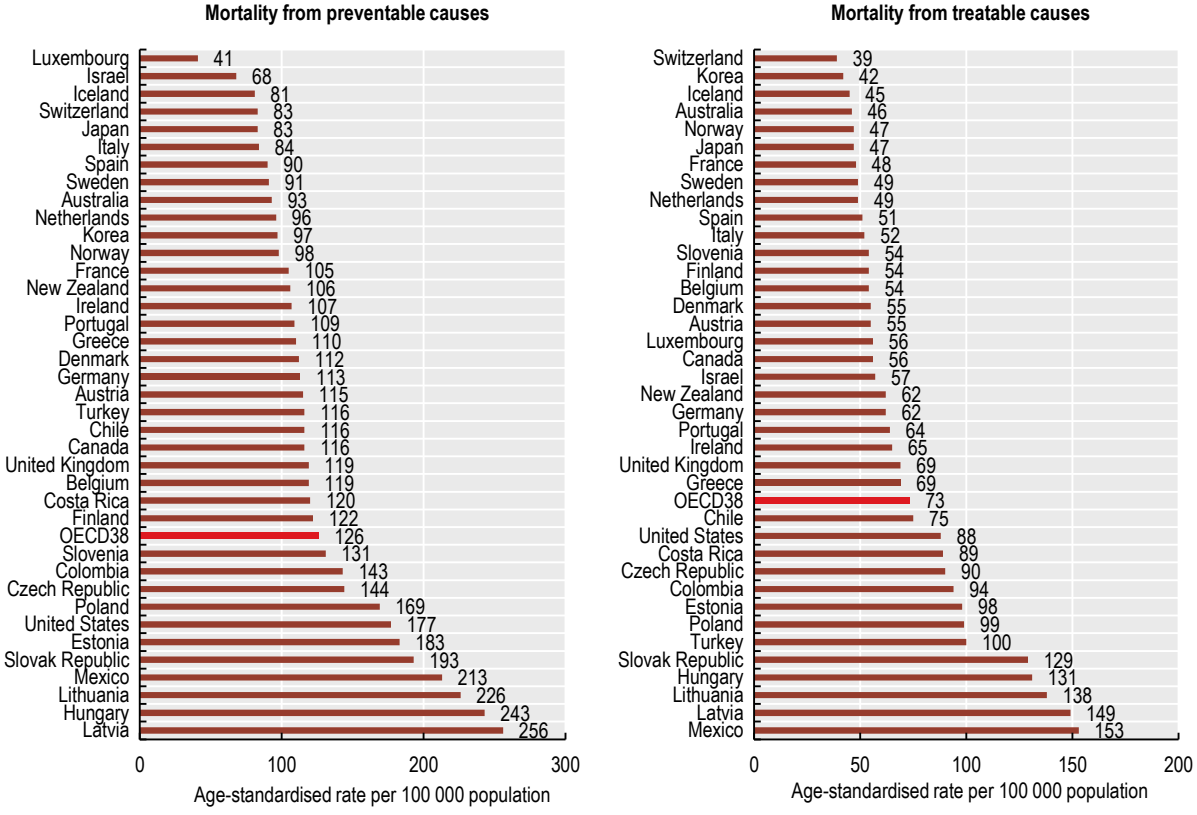
Figure 3.9. **Main causes of avoidable mortality across OECD countries, 2019**



Note: The 2021 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 the WHO Mortality Database.

StatLink https://stat.link/ym4b5h

Figure 3.10. **Mortality rates from avoidable causes, 2019**



Source: OECD Health Statistics 2021.

StatLink https://stat.link/cmyjfg

Mortality from circulatory diseases

Circulatory diseases – notably heart attack and stroke – were the main cause of mortality in most OECD countries in 2019, 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[11]). Indeed, prior to the COVID-19 pandemic, slowing improvements in heart disease and stroke were one of the principal causes of a slowdown in life expectancy gains in many countries (Raleigh, 2019[2]). Furthermore, COVID-19 may indirectly contribute to more deaths from circulatory diseases, owing to disruptions to acute, primary and preventive care.

In 2019, heart attacks and other ischaemic heart diseases (IHDs) accounted for 11% of all deaths in OECD countries. 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 had the highest IHD mortality rates – particularly in Lithuania, where there were 340 deaths per 100 000 people (age-standardised). Rates were also very high in Russia. Korea, Japan, France and the Netherlands had the lowest rates among OECD countries, at about one-third of the OECD average and around one-tenth of the rates in Lithuania and Russia (Figure 3.11). Between 2000 and 2019, IHD mortality rates declined in nearly all OECD countries, with an average reduction of 47%. Declines were most marked in France, Estonia, the Netherlands, Israel, Norway and Australia, where rates fell by over 60%. Mexico is the one country where IHD mortality rates 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 “Mortality following acute myocardial infarction (AMI)” in Chapter 6).

Cerebrovascular diseases (or strokes) were the underlying cause of 7% deaths across OECD countries in 2019. 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 were particularly high in Latvia, at more than triple the OECD average. Rates were also high in partner countries such as South Africa and Russia (Figure 3.12). The gender gap in (age-standardised) mortality rates from stroke is not as large as the gap for IHDs.

Mortality rates from stroke have fallen in all OECD member and partner countries since 2000, with an average reduction of 52%. Declines have been slower in the Slovak Republic, however, at less than 15%. For strokes, as for IHDs, 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 “Mortality following ischaemic stroke” and “Mortality following acute myocardial infarction (AMI)” in Chapter 6).

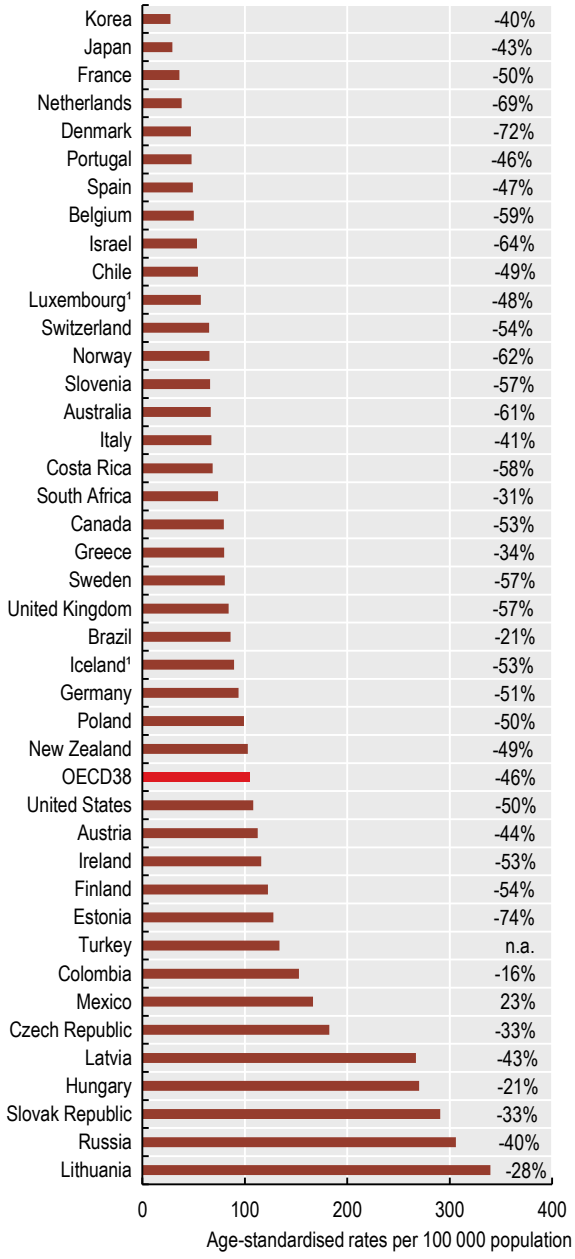
There are wide socio-economic inequalities in mortality from circulatory diseases in most OECD countries, largely reflecting socio-economic differences in major risk factors. Many of these deaths could be prevented, but trends in several risk factors are heading in the wrong direction. While smoking rates have fallen overall, cholesterol, blood pressure, low physical activity, obesity and diabetes are on the rise in many OECD countries (OECD/The King's Fund, 2020[12]). A number of public health, fiscal and regulatory measures can incentivise citizens to adopt healthier lifestyles, thereby reducing the burden of cardiovascular diseases on societies.

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 IHDs are classified as ICD-10 codes I20-I25, and from cerebrovascular diseases as codes I60-I69.

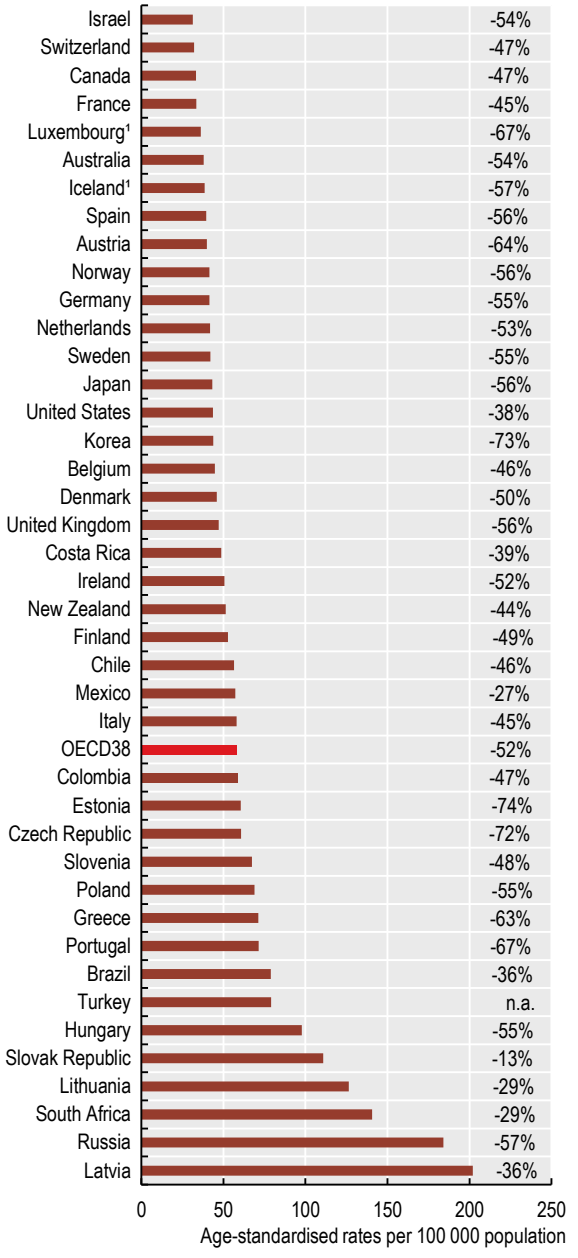
Figure 3.11. **Heart attacks and other ischaemic heart disease mortality, 2019 and change 2000-19 (or nearest year)**



Note: Data label shows percentage change between 2000 and 2019.
1. Three-year average.
Source: OECD Health Statistics 2021.

StatLink https://stat.link/

Figure 3.12. **Stroke mortality, 2019 and change 2000-19 (or nearest year)**



Note: Data label shows percentage change between 2000 and 2019.
1. Three-year average.
Source: OECD Health Statistics 2021.

StatLink https://stat.link/o9tasv

Cancer incidence and mortality

Cancer was the second leading cause of death in OECD countries after circulatory diseases, accounting for 24% of all deaths in 2019. Leading causes of cancer-related mortality included lung cancer (21%), colorectal cancer (11%), breast cancer (15% among women) and prostate cancer (10% among men). These four represent 44% of all cancers diagnosed in OECD countries. Mortality rates from cancer have fallen in all OECD countries since 2000, although on average the decline has been more modest than for circulatory diseases.

Lung cancer is the main cause of death for both men and women, accounting for 24% of cancer deaths among men and 17% among women (Figure 3.13). Smoking represents the main risk factor for lung cancer. Colorectal cancer is also a major cause of death for both men and women, representing 11% of cancer-related deaths for both sexes. Widespread screening programmes for colorectal cancers for older populations have led to declining incidence of colorectal cancer among older adults. In recent years, however, many OECD countries have observed a rising incidence of colorectal cancer among younger patients. Apart from age and genetic factors, exposure to ultraviolet radiation, 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 (14.6% of deaths). While incidence rates for breast cancer have increased over the past decade, mortality rates have declined or stabilised – indicative of earlier diagnosis and treatment – and consequently survival rates are higher (see indicator on "Breast cancer care" in Chapter 6). Prostate cancer is the third most common cause of cancer mortality among men, accounting for 10% of all cancer-related deaths.

Cancer incidence rates vary across OECD member countries, from over 400 new cases per 100 000 people in Australia and New Zealand to fewer than 200 cases in Mexico, Chile, Colombia and Costa Rica (Figure 3.14). Cancer incidence is also comparatively low in all OECD partner countries. Cross-country variations in incidence rates, however, reflect differences not only in new cancers occurring each year but also 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 melanoma skin cancer.

Mortality rates from cancer averaged 191 deaths per 100 000 people across OECD countries in 2019 (Figure 3.14). Mortality rates were highest in Hungary, the Slovak Republic and Latvia (above 230) and lowest in Mexico, Turkey and Colombia (fewer than 145).

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 indicators "Breast cancer care" and "Survival for other major cancers" in Chapter 6).

Cancer incidence rates are higher for men than women in all OECD member 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.

The COVID-19 pandemic severely disrupted programmes across OECD countries for earlier cancer diagnosis and treatment, with falls in screening for breast and colorectal cancers observed in many countries (see Chapter 2 for further analysis). The long-term impact of the pandemic on cancer care will probably only be seen in the medium term, with the possibility of declines in survival rates associated with pandemic-related delays in diagnosis and treatment.

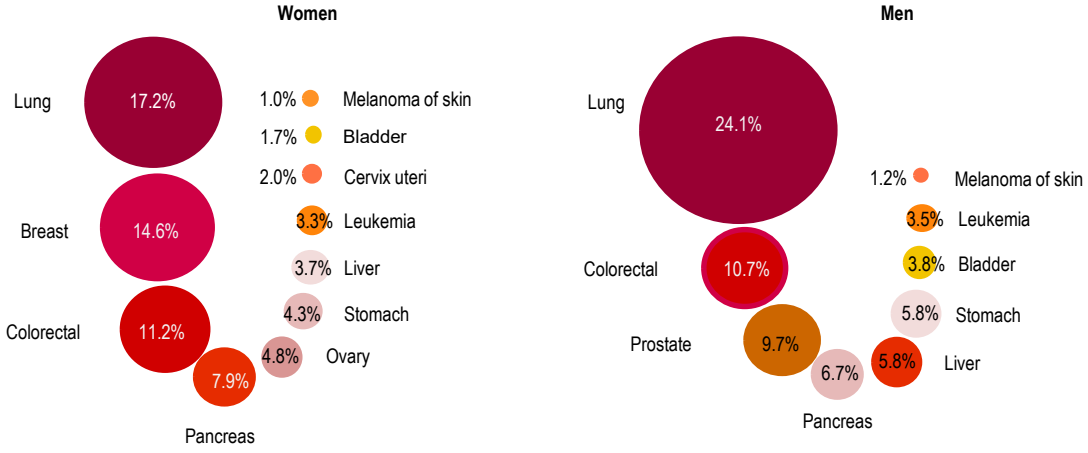
Definition and comparability

Cancer incidence rates are based on numbers of new cases of cancer registered in a country in a year divided by the population. Data include non-melanoma skin cancer and come from the International Agency for Research on Cancer (IARC) (GLOBOCAN, 2018[13]). These data may differ from national estimates owing to differences in methodology. Differences in the quality of cancer surveillance and reporting across countries may further affect the comparability of data. The incidence of all cancers is classified as ICD-10 codes C00-C97. Cancer mortality rates have been age-standardised based on the OECD population to remove variations arising from differences in age structures across countries and over time, while incidence rates were age-standardised based on Segi's world population.

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 as 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.

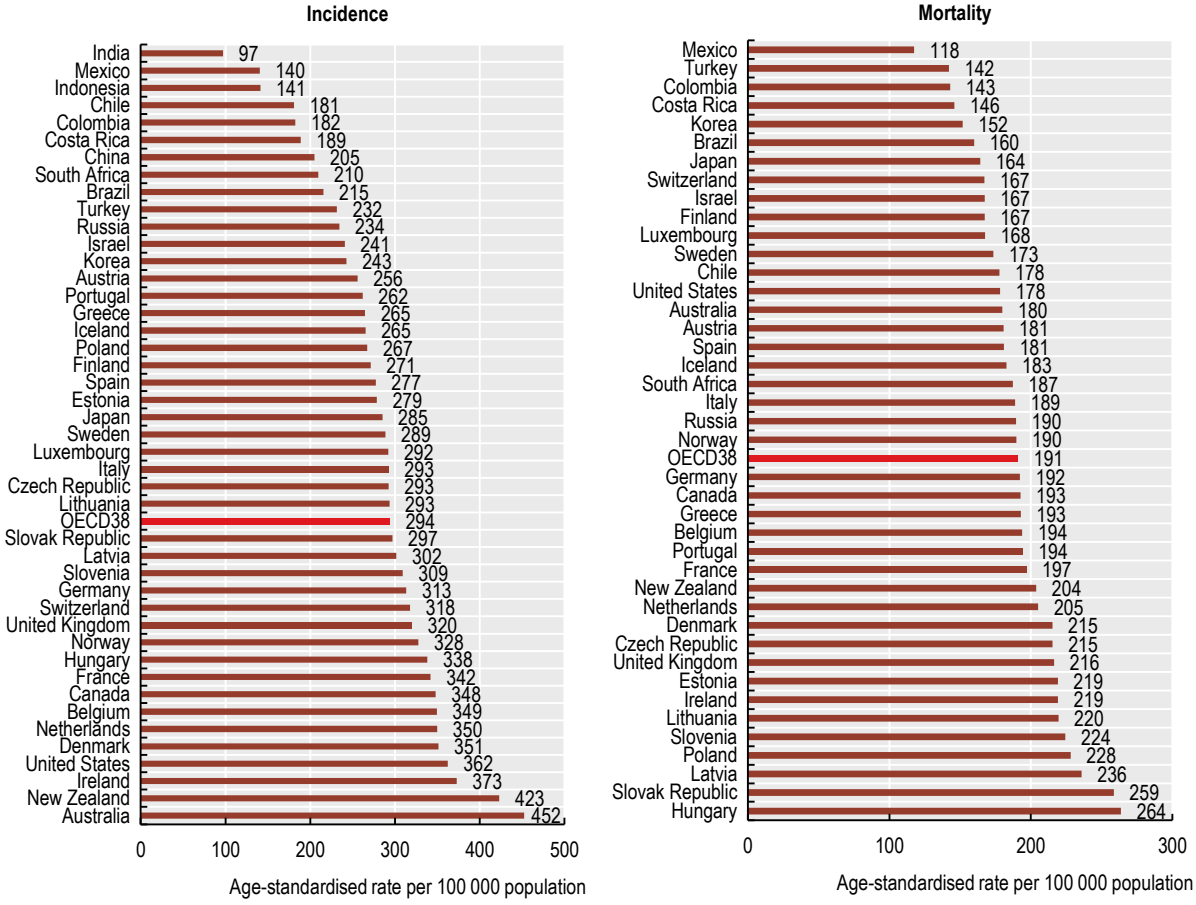
Figure 3.13. **Main causes of cancer mortality across OECD countries, by sex, 2019**



Source: OECD Health Statistics 2021.

StatLink https://stat.link/2d4t7v

Figure 3.14. **Cancer incidence (estimated), 2020, and mortality, 2019**



Source: IARC GLOBOCAN 2020, OECD Health Statistics 2021.

StatLink https://stat.link/hkenr4

Chronic conditions

Chronic conditions such as cancer, chronic respiratory problems and diabetes are not only the leading causes of death across OECD countries. They also represent a major disability burden among the living. Many chronic conditions are preventable, by modifying major risk factors such as smoking, alcohol use, obesity and physical inactivity. The COVID-19 pandemic has also underscored the impact of chronic conditions on health outcomes from other diseases. Chronic conditions representing a high burden of morbidity across OECD countries – including diabetes, COPD, cardiovascular conditions and cancer – have also been associated with a higher risk of developing more serious COVID-19 illness, hospitalisation and death.

More than one-third of people aged 16 and over reported living with a longstanding illness or health problem on average across 26 OECD countries in 2019 (Figure 3.15). This figure rises to nearly one in two in Finland, while one in four or fewer adults reported having a longstanding illness or health problem in Luxembourg, Greece and Italy. As populations age, the prevalence of chronic conditions – including multimorbidity – rises. Health systems increasingly need to be prepared to deliver high-quality chronic care management to meet the needs of ageing populations.

Socio-economic disparities are also large: on average across OECD countries, 43% of people in the lowest income quintile report a longstanding illness or health problem compared with 26% of people in the highest income quintile (Figure 3.15). This income gradient is largest in Latvia, the Czech Republic and Ireland, where people in the lowest income quintile are more than two and a half times as likely to report having at least one longstanding illness or health problem compared with people in the highest income quintile. The income gradient is smallest in Iceland, Italy and France, where individuals in the lowest income quintile are only about 20% more likely to report living with a longstanding illness or health problem compared with individuals in the highest income quintile.

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 2019, 6.7% of the adult population were living with diabetes across OECD countries (Figure 3.16). In addition, a further 39 million adults were estimated to have undiagnosed diabetes (International Diabetes Federation, 2017[14]).

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

Age-standardised diabetes prevalence rates have stabilised in many OECD member countries, especially in western Europe, but have increased markedly in Turkey and most OECD partner countries. Such upward trends are due in part to rising rates of obesity, poor nutrition and physical inactivity, as well as to their interactions with population ageing (NCD Risk Factory Collaboration, 2016[15]).

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[14]).

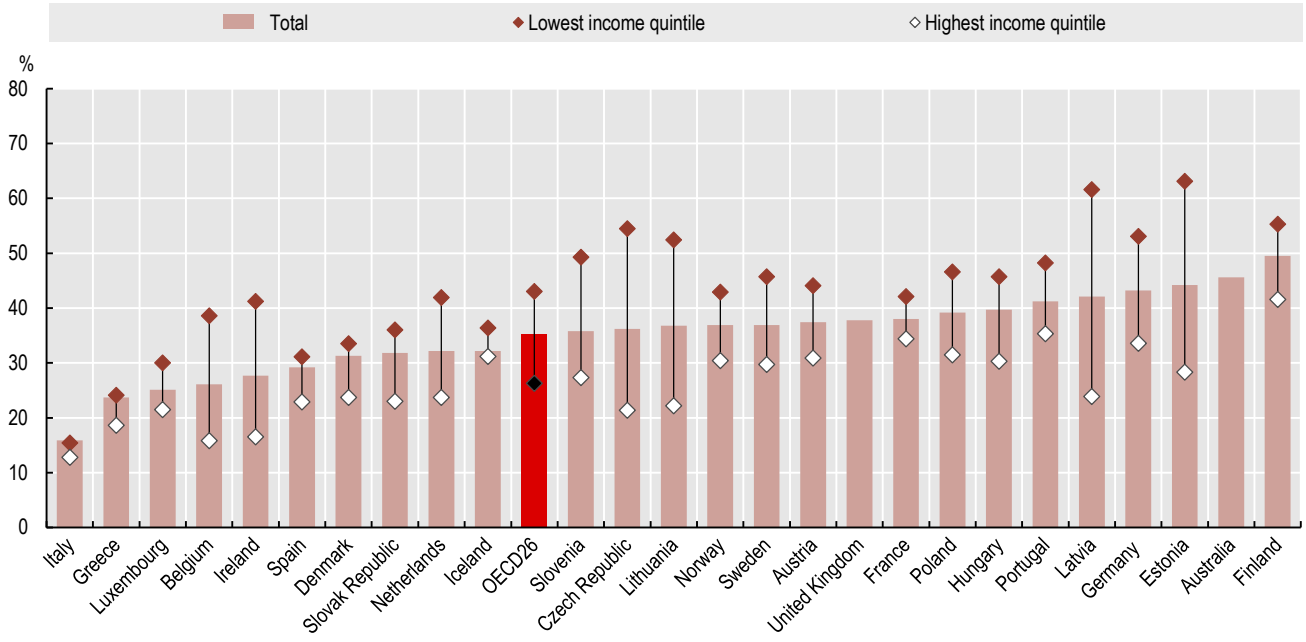
Definition and comparability

Data related to longstanding illnesses or health problems is based on the results of the European Union Statistics on Income and Living Conditions instrument (EU-SILC). The comparability of data on longstanding illnesses and health problems is limited by the fact that the indicator is derived from self-reported data, which can be affected by people's subjective assessment of their health and by social and cultural factors.

The sources and methods of the Non-communicable Disease (NCD) Risk Factor Collaboration are described in the *Lancet* article and appendix (NCD Risk Factory Collaboration, 2016[15]). Sources were selected among population-based studies that had collected data on measurement of diabetes biomarkers for type 1 or type 2 diabetics. Prevalence in sources was converted to meet the definition of diagnosed diabetes as defined in the WHO Global Monitoring Framework for NCDs. Bayesian hierarchical models were then applied to estimate trends in prevalence. The adult population covers those aged 18 and over.

The sources and methods used by the International Diabetes Federation (IDF) are outlined in the Diabetes Atlas, 8th edition (International Diabetes Federation, 2017[14]). 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. This can lead to an underestimation of prevalence compared to age-standardisation based on the OECD population. Adult population here covers those aged between 20 and 79 with diagnosed type 1 or type 2 diabetes.

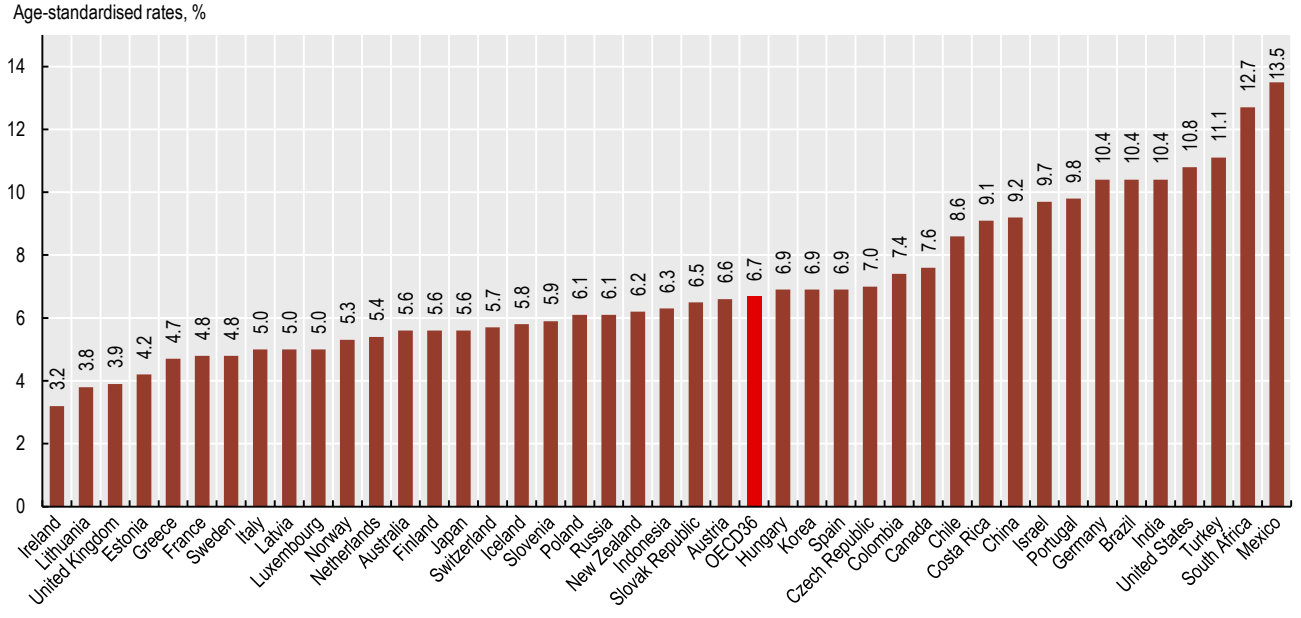
Figure 3.15. **People reporting a longstanding illness or health problem, by income quintile, 2019 (or nearest year)**



Notes: Data for Australia refer to people aged 18 and over living with at least one chronic condition, and refer to 2017-18.
Source: EU-SILC 2021 and national health surveys.

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Figure 3.16. **Type 1 and type 2 diabetes prevalence among adults, 2019 (or nearest year)**



Source: IDF Diabetes Atlas, ninth edition, 2019.

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Infant, child and adolescent health

Inadequate living conditions, extreme poverty and socio-economic 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, birth defects, infections and accidents. Child mortality rates – referring to deaths among children before the age of five – have fallen dramatically in recent decades, with the majority of deaths among children occurring during infancy.

Infant mortality rates are low in most OECD countries, although seven member countries reported at least five deaths per 1 000 live births: the Slovak Republic, the United States, Chile, Costa Rica, Turkey, Mexico and Colombia (Figure 3.17). Within OECD member countries, however, infant mortality rates are often higher among indigenous populations, ethnic minority populations and other vulnerable groups – as observed in Australia, Canada, New Zealand and the United States (Smylie et al., 2010[16]). In OECD partner countries, infant mortality remains above 20 deaths per 1 000 live births in Indonesia, South Africa and India, and above ten deaths in Brazil. Infant mortality rates have fallen in all OECD member and partner countries since 2000, with reductions generally largest in countries with the highest rates historically. Despite this progress in reducing infant deaths, an increasing number of low-birthweight infants presents a concern in some OECD countries. 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.

The rise in risk factors for chronic disease among children and adolescents – including low physical activity, poor nutrition and smoking – can negatively affect health behaviours and outcomes in adulthood. For a significant number of children, however, poor health begins even earlier than adulthood. Mental health problems, for example, represent the biggest burden of disease for young people, with a prevalence at least as high among children as among adults, and half of all mental illnesses developing by the age of 14 (OECD, 2018[17]). Intervening early is critical to mitigate the development of poor health and its impact on the development and long-term health of young people.

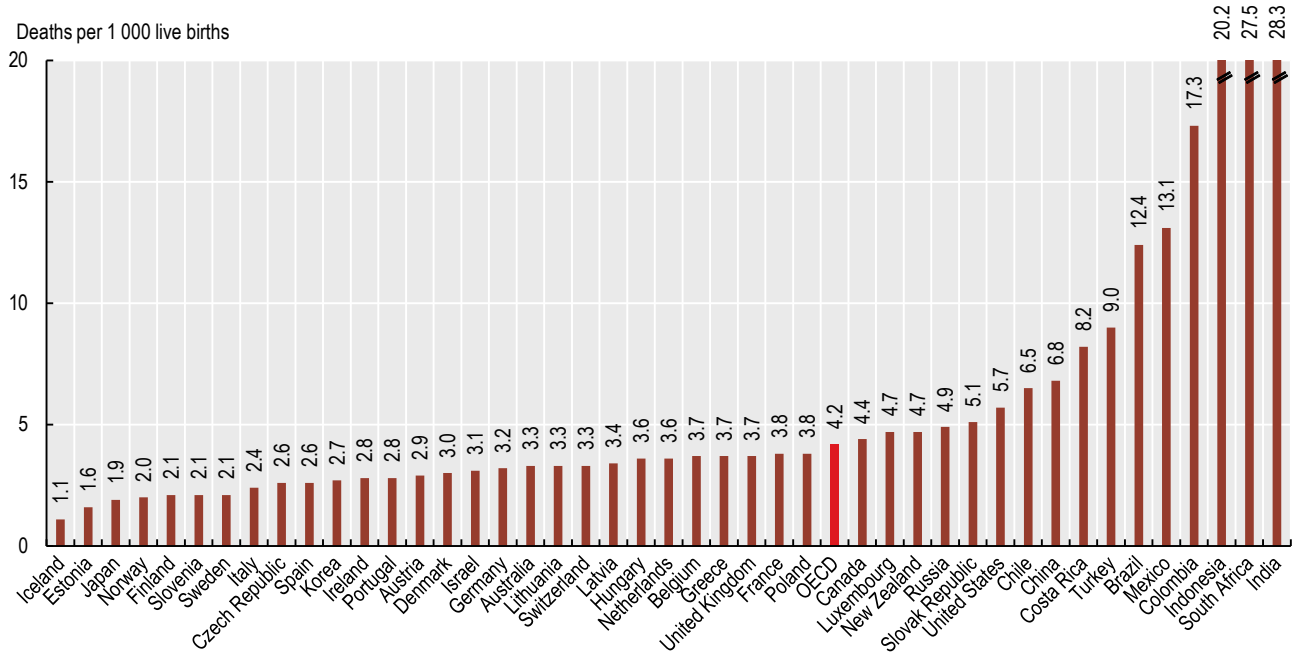
Across 27 OECD countries, an average of 28% of 11-year-olds and 41% of 15-year-olds reported multiple health complaints – including symptoms of both poor physical and mental health – more than once a week (Figure 3.18). In Norway, Slovenia and Spain, fewer than one in five 11-year-olds reported having multiple health complaints more than once a week. By age 15, at least three in ten adolescents reported having multiple health complaints more than once a week, even among the best-performing countries of Spain, Germany and the Netherlands. Multiple health complaints were reported by 36% of 11-year-olds in the Slovak Republic, France and Sweden, and by 45% of 11-year-olds in Italy. By age 15, nearly or more than half of adolescents reported multiple health complaints in Sweden, Poland, Greece and Italy, including three in five 15-year-olds in Italy. At both ages and across all OECD countries with available data, girls were more likely to report living with multiple health complaints more than once a week than boys.

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 birthweight threshold of 500g) for babies to be registered as live births (Euro-Peristat Project, 2018[18]). To remove this data comparability limitation, data presented in this section are based on a minimum threshold of 22 weeks' gestation (or 500g birthweight) for a majority of OECD countries that have provided these data. However, data for ten countries (Australia, Canada, Greece, Ireland, Italy, Lithuania, Luxembourg, Mexico, Norway and Portugal) continue to be based on all registered live births (with no minimum threshold of gestation period or birthweight), resulting in potential overestimation.

Data come from the Health Behaviour in School-aged Children (HBSC) surveys of 2013-14 and 2017-18. Data are drawn from school-based samples of 1 500 in each age group (11-, 13- and 15-year-olds) in most countries. Participants were asked whether and how often they had experienced different health conditions (headache, stomach ache, backache, feeling low, feeling irritable or bad tempered, feeling nervous, difficulties in getting to sleep and feeling dizzy) over the previous six months. Children who reported more than one health complaint more than once per week over the previous six months were considered to have reported multiple health complaints. The comparability of data is limited by the fact that the indicator is derived from self-reported data, which can be affected by people's subjective assessment of their health and by social and cultural factors.

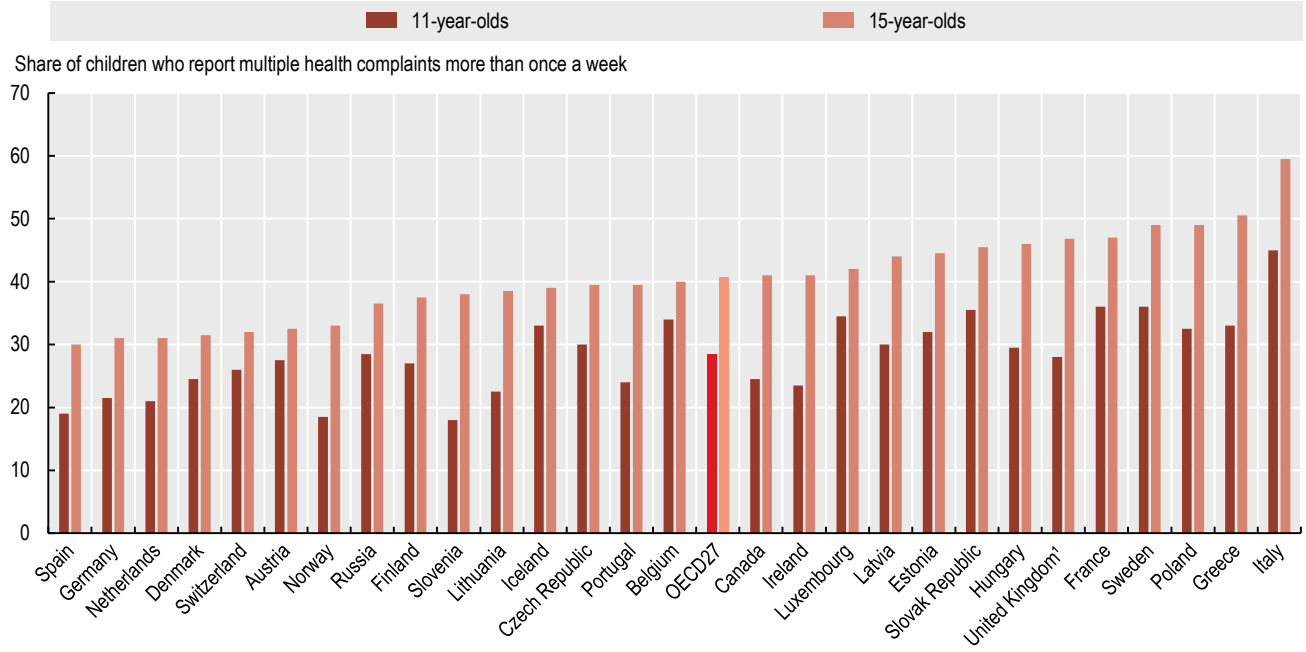
Figure 3.17. **Infant mortality, 2019 (or nearest year)**



Source: OECD Health Statistics 2021.

StatLink https://stat.link/xgbwi1

Figure 3.18. **Share of 11- and 15-year-olds reporting multiple health complaints, 2018**



1. The United Kingdom includes data from England, Scotland and Wales.
Source: HBSC survey, 2018.

StatLink https://stat.link/zh9onx

Mental health

Good mental health is vital for people to be able to lead healthy, productive lives (OECD, 2021[19]). During the COVID-19 crisis, when OECD populations experienced significant disruption to the way they live, learn and work, substantial impacts on mental health have been observed (see Chapter 2 for further analysis of the mental health impact of COVID-19). In March and April 2020, recorded levels of anxiety and depression in the general population were higher in almost all countries compared to previous years (Figure 3.19, Figure 3.20). These increases in mental distress have not been consistent across the health crisis, or across all population groups. In countries such as Canada, France, the Netherlands and the United Kingdom, where mental health status was tracked throughout the pandemic it improved in the period June to September 2020; this coincided with lower case rates of COVID-19 and fewer infection containment measures (OECD, 2021[20]). People who were unemployed or experiencing financial difficulties reported higher rates of anxiety and depression than the general population during the COVID-19 crisis, which is a trend that pre-dates the crisis but seemed to have accelerated in some countries (OECD, 2021[20]). Young people's mental health was also hit particularly hard during the pandemic, with prevalence of symptoms of anxiety and depression rising dramatically, especially in late 2020 and early 2021 (OECD, 2021[21]).

Without effective treatment or support, mental health problems can have a devastating effect on people's lives. While there are complex social and cultural reasons affecting suicidal behaviours, suffering from a mental health problem also increases the risk of dying by suicide (OECD, 2021[19]). The rate of deaths by suicide varied nearly six-fold across OECD countries in 2019, with the lowest rates found in Turkey (4.4 per 100 000 population) and Greece (4.7 per 100 000). Between 2000 and 2019, deaths by suicide fell overall by 29% (Figure 3.21). The rate of death by suicide per 100 000 population fell or remained fairly stable in all but five OECD countries (Greece, Mexico, Portugal, the United States, Korea). In Lithuania and Korea, where suicide rates were the highest (21.6 per 100 000 in Lithuania, and 24.6 per 100 000 in Korea), the trend in suicide deaths was very different. In Korea, deaths by suicide increased by 46% between 2000 and 2019. In contrast, in Lithuania, deaths by suicide fell by 55% between 2000 and 2019. As in many neighbouring countries, suicide rates in Lithuania increased during the period of significant social and economic change following the fall of the Soviet Union, reaching a high of 51.0 deaths per 100 000 population in 1996. The Lithuanian Government is committed to bringing down suicide rates further through suicide prevention campaigns and mental health system strengthening (OECD/European Observatory on Health Systems and Policies, 2019[22]) To date, significant changes in the rate of deaths by suicide since the start of the COVID-19 crisis have not been observed in OECD countries.

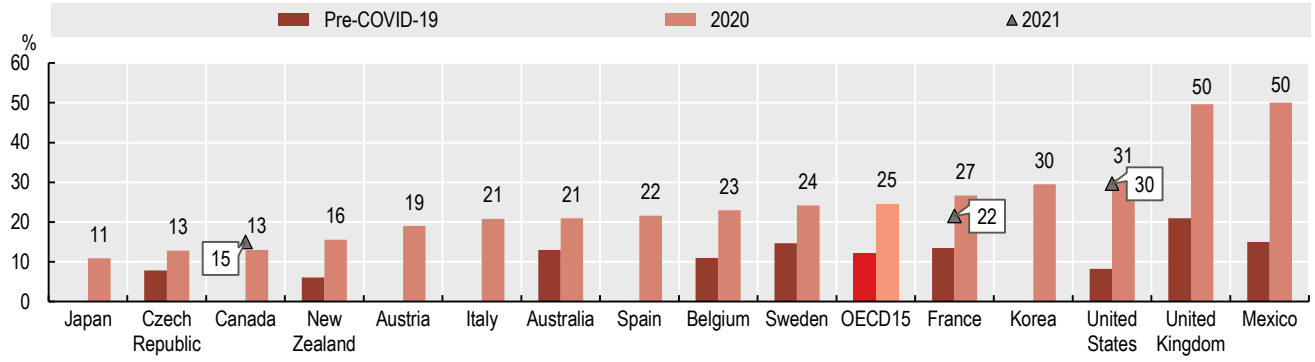
OECD countries have significantly stepped up their mental health support since the start of the COVID-19 crisis. Most countries have developed new mental health information and/or phone support lines giving tips on coping measures, and some countries have increased access to mental health services and/or mental health funding (OECD, 2021[20]). For example, Canada introduced Wellness Together Canada in April 2020, which offers no-cost wellness self-assessment and support and counselling by text or phone, while Australia doubled entitlement to reimbursed sessions of talking therapy. In 2021, Chile – which in 2018 spent just 2.1% of government health spending on mental health – announced that the budget for mental health would increase by 310% (OECD, 2021[19]). Despite the significant social and labour market impacts of mental ill health, mental health support remains weakly integrated into social welfare, labour and youth policies. In line with the OECD Recommendation on Integrated Mental Health, Skills and Work Policy, a whole-of-society approach to mental health is needed (OECD, 2015[23]).

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 as ICD-10 codes X60-X84 and Y870.

Figure 3.19 and Figure 3.20 use national data sources from multiple years, and may not be directly comparable across countries. The survey instruments used to measure depression and anxiety differ between countries, and therefore may not be directly comparable, and some surveys may have small sample sizes or not use nationally representative samples. Differences in the openness of populations to discussing their mental state also hampers cross-country comparability. Where possible, to measure prevalence of depression, surveys using the Patient Health Questionnaire (PHQ-9) instrument have been selected. Where possible, to measure anxiety surveys using the General Anxiety Disorder-7 (GAD-7) instrument have been selected. Data for the 'pre-COVID' year varies based on national data availability; the most recently available data was selected, up to the year 2019. For all national data sources, see OECD (2021[20]). Updated or further national data was used for Canada (Statistics Canada SCMH survey), and the United Kingdom (ONS Statistical Bulletin – Coronavirus and depression in adults, May 2021; ONS Statistical Bulletin – Personal and economic well-being in Great Britain: May 2020).

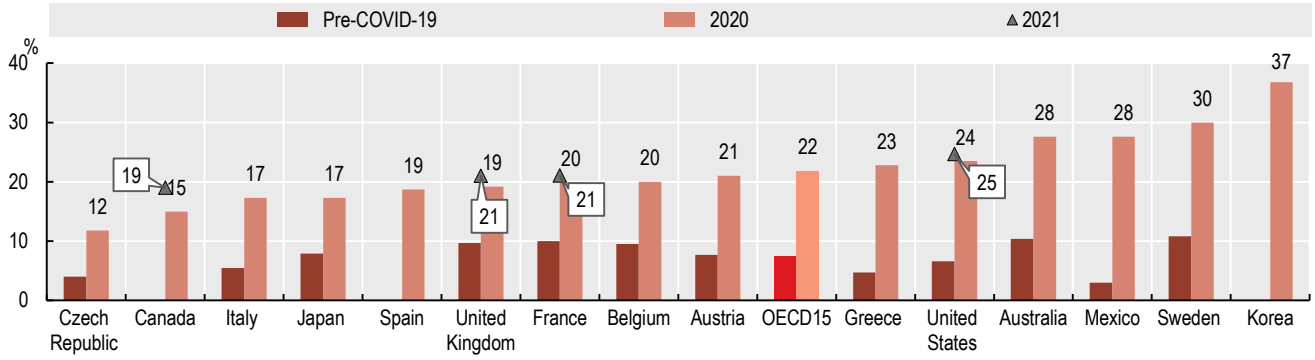
Figure 3.19. **National estimates of prevalence of anxiety or symptoms of anxiety, pre-COVID-19, 2020 and 2021**



Note: 2020 and 2021 data are from March/April 2020 and 2021 where possible. Survey instruments and population samples differ between countries and in some cases across years, which limits direct comparability.
Source: National data sources reported in OECD (2021[20])), "Tackling the mental health impact of the COVID-19 crisis: An integrated, whole-of-society response", *https://doi.org/10.1787/0ccafa0b-en*. Updated national data are included for Canada and the United Kingdom.

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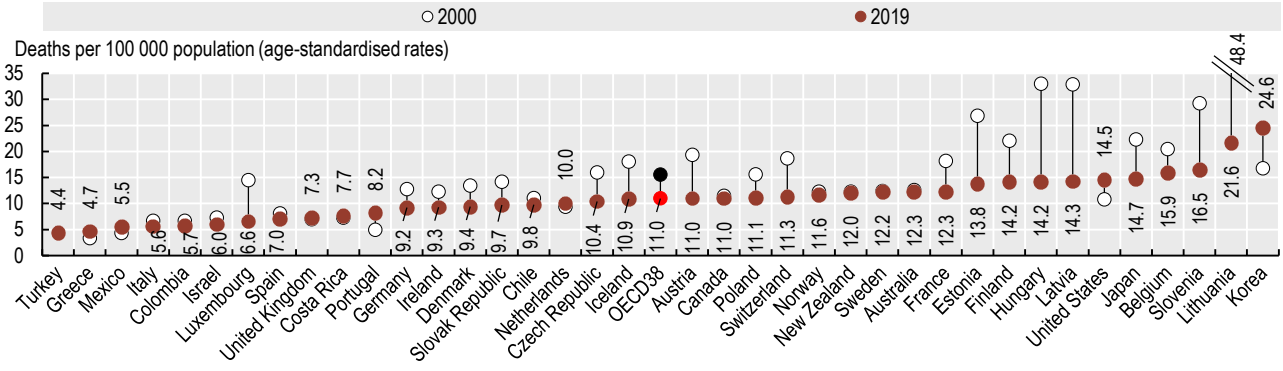
Figure 3.20. **National estimates of prevalence of depression or symptoms of depression, pre-COVID-19, 2020 and 2021**



Note: 2020 and 2021 data are from March/April 2020 and 2021 where possible. Survey instruments and population samples differ between countries and in some cases across years, which limits direct comparability.
Source: National data sources reported in OECD (2021[20])), "Tackling the mental health impact of the COVID-19 crisis: An integrated, whole-of-society response", *https://doi.org/10.1787/0ccafa0b-en*. Updated national data are included for Canada and the United Kingdom.

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Figure 3.21. **Death by suicide, 2000 and 2019 (or nearest year)**



Source: OECD Health Statistics 2021.

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Self-rated health

How individuals assess their own health provides a holistic overview of both physical and mental health. Adding such a perspective on quality of life 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[24]).

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 older 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 considered themselves to be in poor health, on average across OECD countries in 2019 (Figure 3.22). This ranged from over 15% in Korea, Lithuania, Portugal and Latvia to under 4% in Colombia, New Zealand, Canada, Ireland, the United States 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 "Definition and comparability" box). Korea, Japan and Portugal stand out as countries with high life expectancy but relatively poor self-rated health.

Among the few countries with data available for 2020, nearly all reported a reduction in the proportion of the population reporting themselves to be in bad or very bad health compared with 2019, with Finland reporting no change and no countries reporting an increase. While the data must be interpreted with caution – data are available for only seven countries and these include countries where the COVID-19 pandemic did not severely test health systems – it could be an indication of the influence of context on perceived health: health issues that may previously have been considered more serious may be downplayed in the context of the pandemic.

People on lower incomes are on average less positive about their health than those on higher incomes in all OECD countries (Figure 3.23). Almost 80% of adults in the highest income quintile rated their health as good or very good in 2019, compared with under 60% of adults in the lowest income quintile, on average across OECD countries. 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. Socio-economic disparities are relatively low in Australia, Colombia, Greece, Israel and Italy, at less than 10 percentage points.

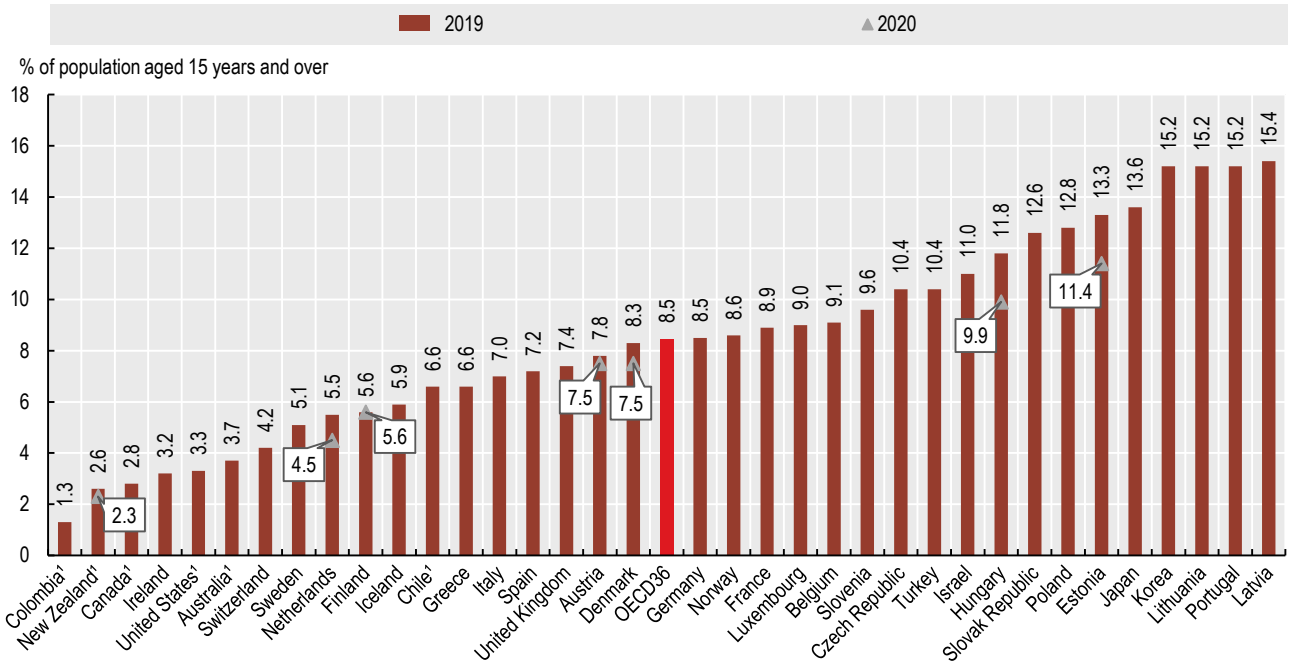
Self-rated health tends to decline with age. In many countries, there is a particularly marked decline in how people rate their health when they reach their mid-40s, with a further decline after reaching retirement age. Men are also more likely than women to rate their health as good.

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. In Korea, differences in survey methodology may bias self-rated health downwards compared with other general household surveys.

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 survey, the income level 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).

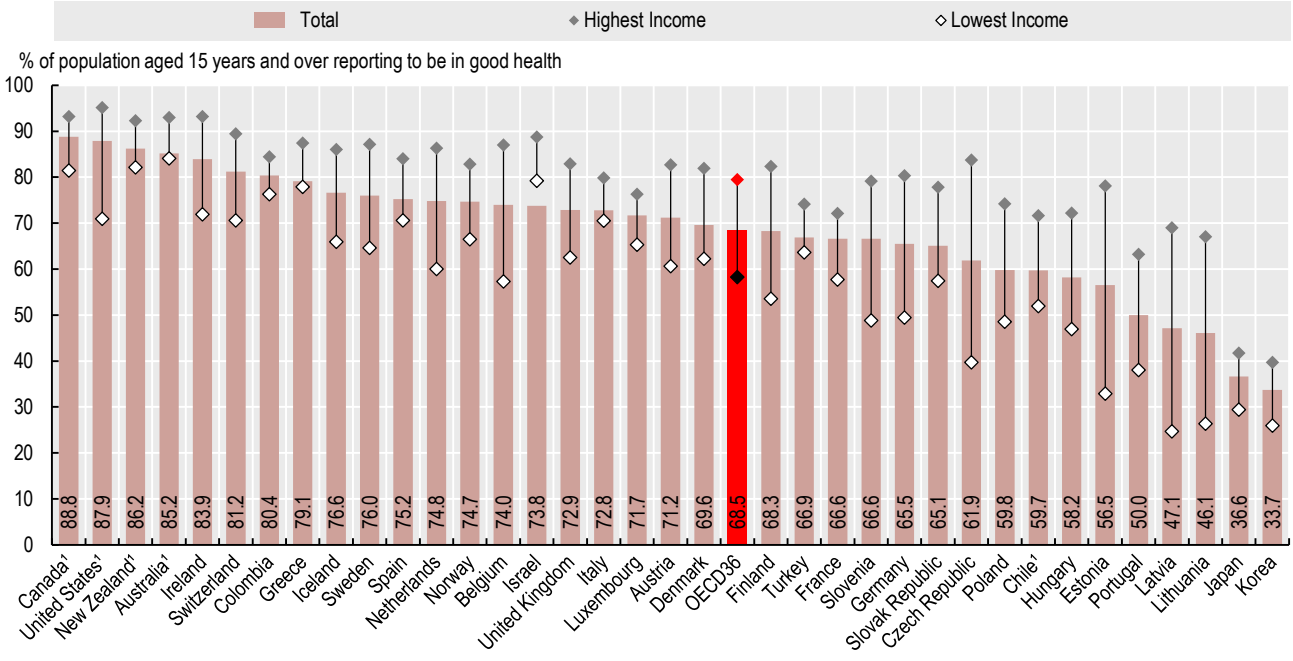
Figure 3.22. **Adults rating their own health as bad or very bad, 2019 (or nearest year) and 2020**



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 2021 (EU-SILC for EU countries).

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Figure 3.23. **Adults rating their own health as good or very good, by income quintile, 2019 (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 2021 (EU-SILC for EU countries).

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4. RISK FACTORS FOR HEALTH

Smoking among adults

Alcohol consumption among adults

Smoking and alcohol consumption among adolescents

Diet and physical activity among adults

Diet and physical activity among adolescents

Overweight and obesity among adults

Overweight and obesity among adolescents

Air pollution and environmental degradation



Smoking among adults

Smoking is a leading cause of multiple diseases, including some cancers, heart attacks, strokes and respiratory diseases such as chronic obstructive pulmonary disease. Smoking among pregnant woman increases the risk of low birth weight and premature delivery. The World Health Organization (WHO) estimates that tobacco smoking kills 8 million people in the world every year. More than 1.2 million of these deaths are due to second-hand smoke and 65 000 are among children (WHO, 2020[1]). In 2019, tobacco smoking accounted for 200 million disability-adjusted life-years worldwide (Reitsma et al., 2021[2]). Although the prevalence of smoking has decreased over the past 30 years, population growth has led to an increase in the total number of smokers, from 0.99 billion in 1990 to 1.14 billion in 2019 worldwide (Reitsma et al., 2021[2]).

Across OECD countries, 16.5% of people aged 15 and over smoked tobacco daily in 2019 (Figure 4.1). Smoking rates ranged from over 25% in Turkey to below 10% in Costa Rica, Mexico, Iceland and Norway. In partner countries, rates were very high in Indonesia (27.6%) and the Russian Federation (Russia) (25.8%), but 10% or lower in Brazil and India. Men smoked more than women in all countries except Iceland, Norway and Sweden – on average across OECD countries, 20.6% of men smoked daily compared with 12.8% of women. The gender gap in smoking rates was comparatively wide in Korea and Turkey, as well as in Indonesia, the People's Republic of China (China) and Russia. Among men, rates were highest in Indonesia (54.4%), Russia (43.2%), China (41.5%) and Turkey (41.3%), and were below 10% in Costa Rica, Iceland and Norway. For women, rates were highest in Hungary, Chile and France (over 20%). Fewer than 5% of women smoked in Indonesia, India, China, Costa Rica, Mexico and Korea.

Daily smoking rates decreased in most OECD countries over the last decade, from an average of 21.3% in 2009 to 16.5% in 2019 (Figure 4.2). Norway had the greatest reduction in smoking rates (12 percentage points), followed by Ireland (10 percentage points), Korea (9.2 percentage points) and Estonia (8.3 percentage points). Smoking rates also decreased greatly in Russia (13.6 percentage points), although the levels remained high. The reductions in smoking rates were smallest in Hungary, Slovenia, Switzerland, as well as in China, India and South Africa (1-2 percentage points), while rates remained stable in Mexico. Smoking rates rose slightly over 2009-19 in the Slovak Republic, Turkey and Indonesia (1-2 percentage points). At the time of writing, seven OECD countries had reported smoking rates among adults in 2020. In six countries, the rates had continued to decrease. Conversely, in Estonia, while the proportion of smoker adults had decreased from 21.3% in 2016 to 17.2% in 2018, a slight increase was recorded in 2020 (17.9%).

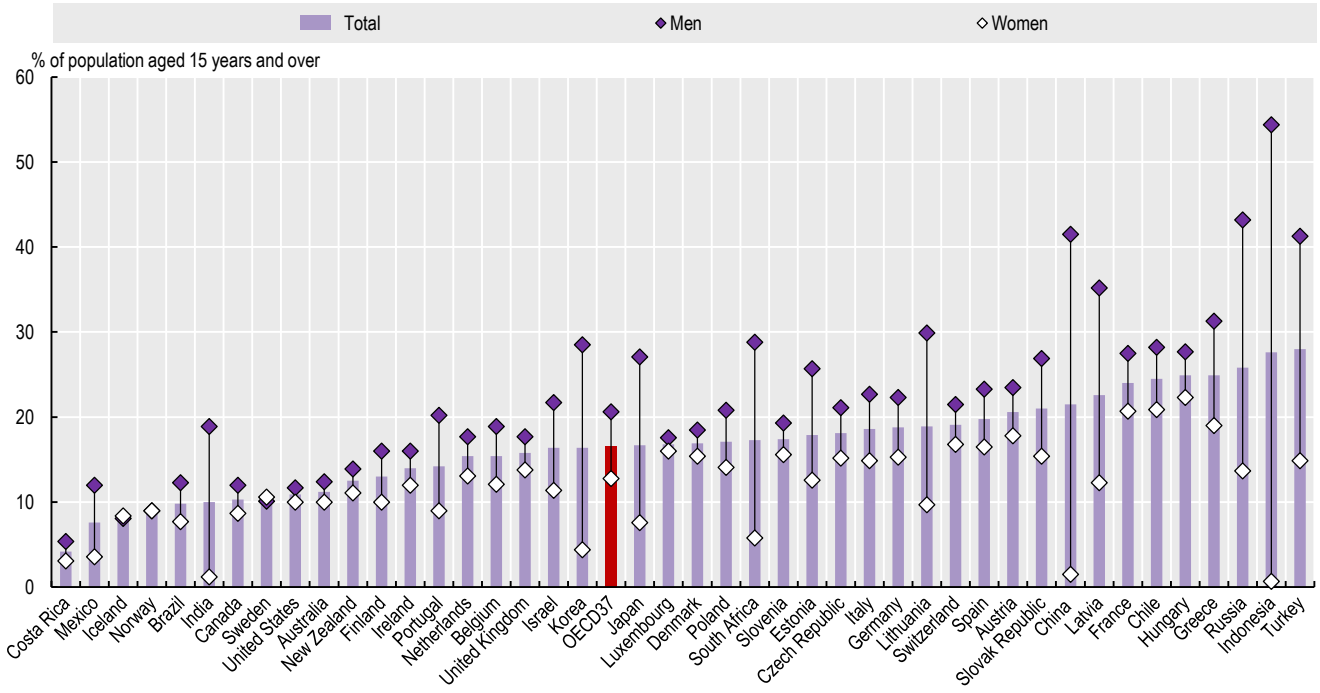
The effect of COVID-19 on smoking habits was mixed, depending on the population group. During periods of confinement, some smokers consumed more cigarettes per day compared to pre-lockdown figures, mainly to cope with stress, boredom, loneliness and isolation during lockdown, as observed in France and New Zealand (Guignard et al., 2021[3]; Gendall et al., 2021[4]). At the same time, older people reduced smoking in countries such as France and Japan (Guignard et al., 2021[3]; Koyama et al., 2021[5]). Smoking reduction and cessation might be related to fear of worse health outcomes of becoming infected with the virus. Official statistics for the year 2020 (available in five countries) shows that the number of cigarettes smoked remained relatively unchanged compared to the previous years in three countries (Estonia, France, and Spain), slightly increased in Norway and slightly decreased in New Zealand. What is clear is that smoking is associated with both the risk of developing a severe form of COVID-19 and a higher likelihood of dying from the virus (Reddy et al., 2021[6]; Sanchez-Ramirez and Mackey, 2020[7]; WHO, 2020[8]).

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. Other key tobacco control policies are health warnings on packages, bans on promotional and misleading information, and restricted branding. Awareness raising and support for smokers – including nicotine replacement treatment and smoking cessation advice – also help reduce smoking. The implementation of tobacco control measures has progressed in recent years, especially significantly in low- and middle-income countries where the heaviest burden of smoking is concentrated. For instance, over half of the world's population now benefit from large graphic health warnings on tobacco packages, and one-third have access to cessation services provided at best-practice levels (WHO, 2019[9]). Among recent national initiatives, New Zealand ran a consultation in 2021 on a proposed Smokefree Aotearoa 2025 Action Plan to reduce smoking prevalence and tobacco availability to minimal levels. The proposals include several world-leading measures, such as significantly reducing tobacco retailers outlets and mandating very low nicotine cigarettes.

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. Data for Italy includes both daily and occasional smokers. Other forms of smokeless tobacco products, such as snuff in Sweden, Norway, Finland and Iceland, 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 over, but there are some exceptions, as highlighted in the data source of the OECD Health Statistics database.

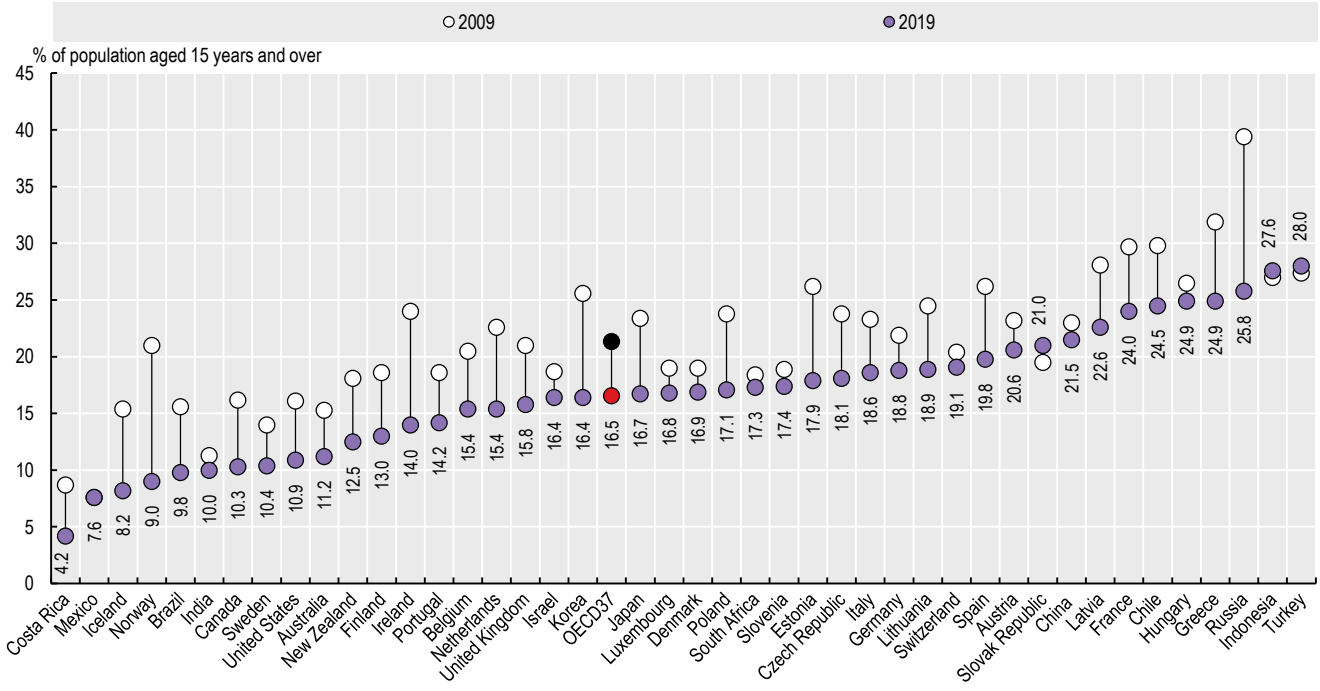
Figure 4.1. **Population aged 15 and over smoking daily, by sex, 2019 (or nearest year)**



Source: OECD Health Statistics 2021.

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Figure 4.2. **Population aged 15 and over smoking daily, 2009 and 2019 (or nearest years)**



Source: OECD Health Statistics 2021.

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Alcohol consumption among adults

Alcohol use is a leading cause of death and disability worldwide, particularly among those of working age. High alcohol intake is a major risk factor for heart diseases and strokes, 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 car crashes and injuries, violence, homicides, suicides and mental health disorders than any other psychoactive substance, particularly among young people. Alcohol-related diseases and injuries incur a high cost to society. Life expectancy is nearly a year lower on average across OECD countries than it would be if people consumed less alcohol. An average of 2.4% of health spending goes on dealing with the harm caused by alcohol consumption – and the figure is much higher in some countries (OECD, 2021[10]). The COVID-19 pandemic and associated government measures to limit mobility affected patterns and places of alcohol consumption. Some of the problems associated with harmful alcohol consumption were intensified by the crisis, such as engaging in harmful drink to cope with stress or domestic violence (OECD, 2021[11]).

Measured through sales data, overall alcohol consumption averaged 8.7 litres per person across OECD countries in 2019, down from 9.1 litres in 2009 (Figure 4.3). Latvia reported the highest consumption in 2019 (12.9 litres), followed by the Czech Republic, Austria, France, Hungary, Lithuania and Slovenia, all with over 11 litres per person. Turkey, Israel, Costa Rica, Colombia and Mexico had comparatively low consumption levels (under 5 litres per person). Among partner countries, consumption was relatively high in Russia (10.8 litres) and low in Indonesia, India and China (less than 5 litres). Average consumption fell in 29 OECD countries between 2009 and 2019, with the largest reductions in Lithuania and Greece (by 2 litres). Consumption also fell markedly in Russia (by 5 litres). However, alcohol consumption increased by more than 3 litres per person in Latvia, and by over 0.5 litres per person in India, Poland, Slovenia and Spain. At the time of writing, five OECD countries had reported the level of overall alcohol consumption in 2020. Four countries show no significant change in the level compared to the previous three years, while Norway reported an 18% increase (from 6.1 litres in 2019 to 7 litres in 2020).

While national data on overall consumption per capita facilitate assessment of long-term trends, they do not identify sub-populations at risk from harmful drinking patterns. Alcohol is disproportionately consumed by a minority of people. People who drink heavily make up 4% to 14% of the population, but they consume between 31% and 54% of all alcohol consumed, depending on the country (Figure 4.4). For instance, in Canada, 6% of the drinkers who drink heavily consume 34% of all alcohol.

Significant disparities exist in patterns of alcohol consumption. In almost all countries, people with higher educational attainment (i.e. those who have completed tertiary or university education) are more likely to be weekly drinkers (Figure 4.5). This effect is considerably stronger in women than in men. On average across 25 OECD countries, women with higher education are 82% more likely to drink alcohol weekly compared to women with lower education. In Latvia, women are up to three times more likely to drink weekly if they have completed tertiary education. For men, this difference is smaller: men with tertiary education are 26% more likely to drink weekly than men with lower education. Conversely, in the Slovak Republic, Lithuania, Mexico and Portugal, men with a lower education are more likely to drink weekly. The positive association between frequency of drinking and education level is largely explained by the economic dimension: alcohol is more affordable for people with more education and higher incomes. However, when looking at alcohol-related harm, the social gradient shows a different pattern of inequality. Harmful drinking is more prevalent in people with lower socio-economic status.

Policies to tackle harmful alcohol use include broad-based strategies and those that target heavy drinkers. Comprehensive policy packages built on a "PPPP strategy" – pricing policies to limit affordability of cheap alcohol, policing to counter drink-driving, primary care based counselling for people with harmful patterns of alcohol use, and protecting children from alcohol promotion – are effective and cost-effective for tackling harmful alcohol use (OECD, 2021[10]).

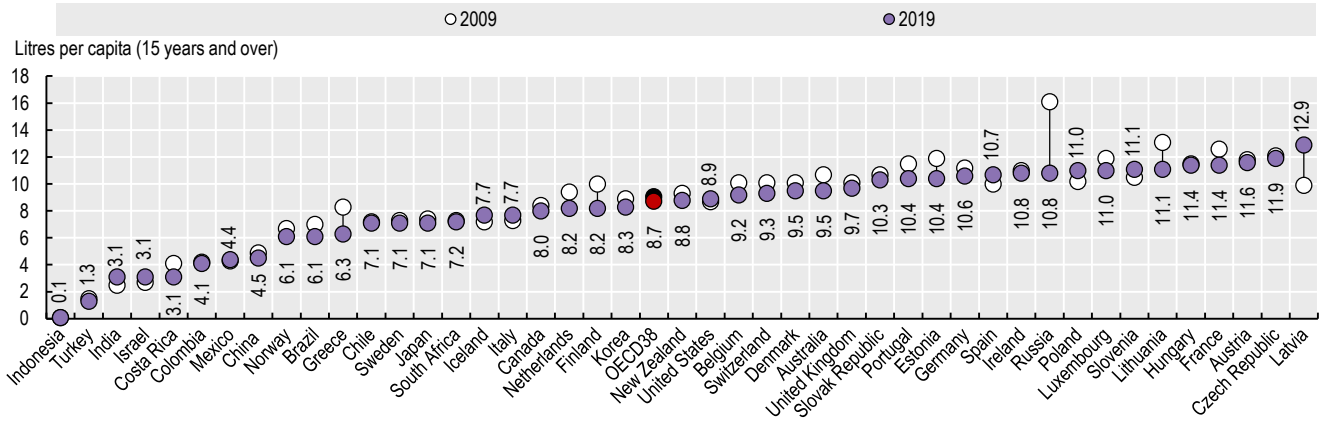
Definition and comparability

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). Data come from national sources – in a few instances these may differ from data shown in the OECD 2021 report on preventing harmful alcohol use, which uses data from the WHO Global Information System on Alcohol and Health, with methodological differences.

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 Estonia and Russia, data include a correction for tourist consumption, cross-border trade and illegal alcohol trade and consumption. 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.

Data on the proportion of alcohol consumed and disparities in weekly drinking derive from OECD analyses based on national survey data: the Canadian Community Health Survey 2015-16 (Canada); the Health Survey for England 2016 (England, United Kingdom); Baromètre santé 2017 (France); the Korean National Health and Nutrition Examination Survey 2018 (Korea); Encuesta Nacional de Consumo de Drogas, Alcohol y Tabaco 2016-17 (Mexico); the National Health and Nutrition Examination Survey 2015 (United States); and the European Health Interview Survey 2014 (remaining 25 countries). Disparities in weekly drinking are measured by comparing the proportions of weekly drinkers between people with tertiary education and those without, for men and women separately. Values below zero indicate that people without tertiary education are more likely to be weekly drinkers.

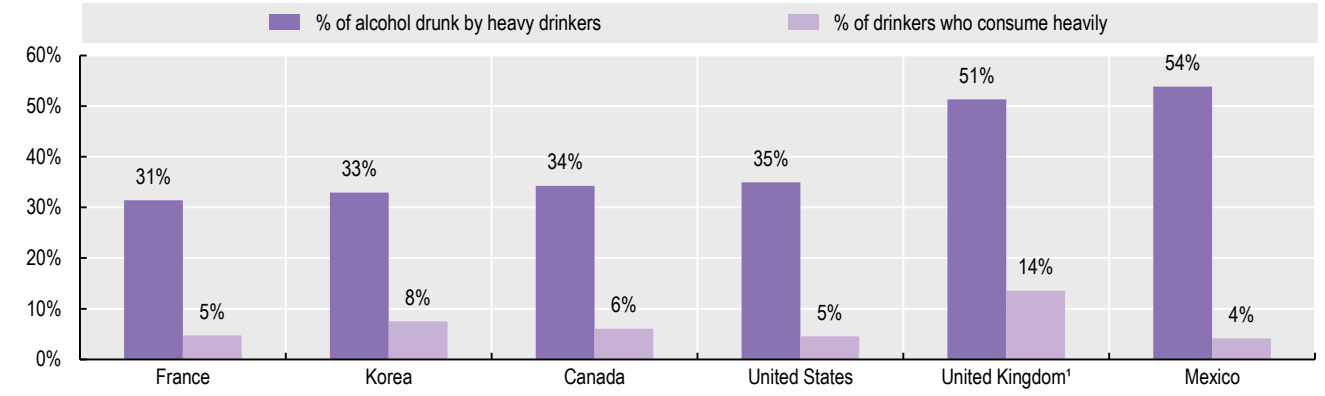
Figure 4.3. **Recorded alcohol consumption among the population aged 15 and over, 2009 and 2019 (or nearest year)**



Source: OECD Health Statistics 2021.

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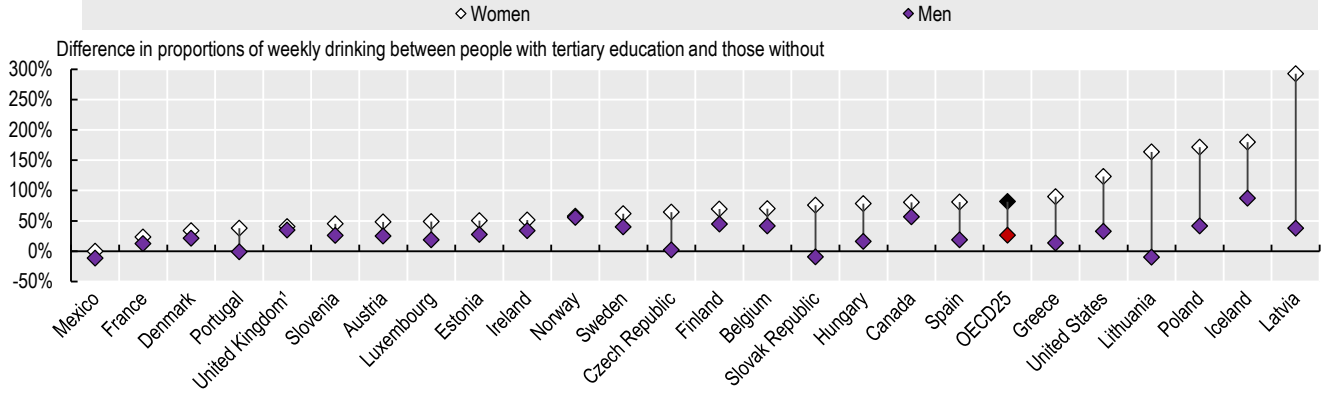
Figure 4.4. **Proportion of alcohol consumed by heavy drinkers, 2015-18**



1. Data only includes England.
Source: OECD (2021[10]), *Preventing Harmful Alcohol Use*, *https://dx.doi.org/10.1787/6e4b4ffb-en*.

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Figure 4.5. **Disparities in weekly drinking, by educational attainment and sex, 2014-17**



1. Data only includes England.
Source: OECD (2021[10]), *Preventing Harmful Alcohol Use*, *https://dx.doi.org/10.1787/6e4b4ffb-en*.

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Smoking and alcohol consumption among adolescents

Smoking and excessive drinking during adolescence have both immediate and long-term health consequences. Smoking during adolescence has immediate adverse health consequences, including addiction to nicotine, reduced lung function and impaired lung growth, and asthma (Inchley et al., 2016[12]). It is also associated with an increased likelihood of experimenting with other drugs, as well as engaging in other risky behaviours (O'Cathail et al., 2011[13]). Early onset of drinking and early onset of excessive drinking are associated with hazardous drinking in young adulthood (Enstad et al., 2019[14]). Early and frequent drinking and drunkenness are associated with detrimental psychological, social and physical effects, such as dropping out of high school without graduating (Chatterji and DeSimone, 2005[15]).

Results from the Health Behaviour in School-aged Children (HBSC) surveys, a series of collaborative cross-national studies, facilitate monitoring of smoking and drinking behaviours among adolescents. Other national surveys, such as the Youth Risk Behavior Surveillance System in the United States, or the Escapad survey in France, also monitor risky behaviours.

Over 20% of 15-year-olds smoked at least once a month in 2017-18 in Lithuania, Italy, Hungary, Latvia and the Slovak Republic (Figure 4.6). At the other end of the scale, fewer than 10% reported monthly smoking in Iceland, Canada and Australia. Across OECD countries, the average was 16.4%. Girls smoked more than boys in 15 OECD countries, but smoking rates among boys were higher in nine OECD countries plus Russia. Gender gaps were particularly wide in Italy, the Czech Republic and Hungary (a difference of 4-9 percentage points).

Over 30% of 15-year-olds had been drunk at least twice in their lifetime in 2017-18 in Denmark, Lithuania, Austria, Hungary, and the United Kingdom (Figure 4.7). In Iceland, Russia, Luxembourg, Sweden, France, Portugal and Switzerland, rates were below 15%. Across OECD countries, the average is 21.5%, with a narrow gap between boys (22.6%) and girls (20.3%). Gender disparities – with boys more prone to drink than girls – were especially high in Denmark, Austria, Hungary, Switzerland, Belgium, Greece, Lithuania and Norway (a difference of over 5 percentage points). Only in Canada, Ireland, Spain, Sweden, Poland and the United Kingdom did girls report repeated drunkenness more often than boys (a 2-5 percentage point difference).

Both smoking and drunkenness among adolescents decreased on average across countries between 2014 and 2018 (Figure 4.8). Smoking at least once a month decreased from 19.2% in 2014 to 16% in 2018 on average. This reduction was reported by 23 countries, and exceeded 6 percentage points in France, Hungary, Luxembourg, the Netherlands and Slovenia. Drunkenness at least twice in one's life decreased from 23.3% in 2014 to 21.5% in 2018. This reduction was reported by 20 countries, and exceeded 6 percentage points in the Czech Republic, Hungary and Poland. Conversely, rates increased by more than 8 percentage points from 2014 to 2018 in Austria (among boys and girls) and Denmark (among boys). Data from the ESPAD study also shows that alcohol use and heavy drinking among adolescents have decreased over the last decade in the European region (ESPAD Group, 2020[16]).

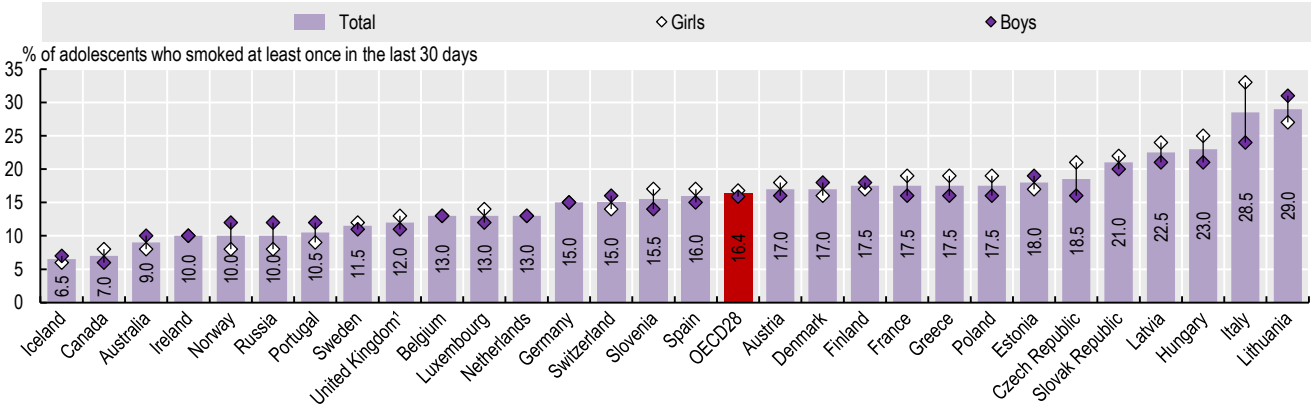
Protecting children and adolescents from tobacco and alcohol advertising and sport sponsorship (through both traditional and new media platforms) is a key pillar of public health policies. Only four OECD countries (Spain, France, Norway and Turkey) have implemented legally binding bans on sport sponsorship across all alcoholic beverages (WHO, 2018[17]). Other pillars of policies include pricing policies, restrictions on access to tobacco and alcohol for young people, and more education about detrimental effects. Creating smoke-free environments is also important to prevent children being exposed to second-hand smoke and as an aspect of work towards enabling a future smoke-free generation. In 2018, several OECD countries – Canada, Chile, Colombia, Costa Rica, Denmark, Greece, Ireland, Norway, Spain, Turkey and the United Kingdom – as well as Brazil and Russia adopted national binding smoke-free legislation covering all indoor public places, all indoor workplaces, all public transport and other (outdoor or quasi-outdoor) public places (WHO, 2021[18]).

Definition and comparability

Estimates for smoking refer to the proportion of 15-year-old adolescents who self-report smoking a cigarette at least once in the last 30 days. Estimates for drunkenness refer to the proportions of 15-year-olds who report that they have been drunk twice or more in their lives.

The Health Behaviour in School-aged Children (HBSC) surveys were undertaken every four years between 1993-94 and 2017-18; they include up to 30 OECD countries and Russia. Comparable indicators on youth smoking and drunkenness were made available for the period 2014-15 and 2017-18. Data are drawn from school-based samples of 1 500 in each age group (11-, 13- and 15-year-olds) in most countries. Estimates for smoking were complemented with data for Australia from the Australian Secondary Students' Alcohol and Drug Survey 2017.

Figure 4.6. **Smoking among 15-year-olds, by sex, 2017-18**



1. Data includes England, Scotland and Wales.
Source: Inchley et al. (2020[19]), and for Australia: Guerin and White (2020[20]).

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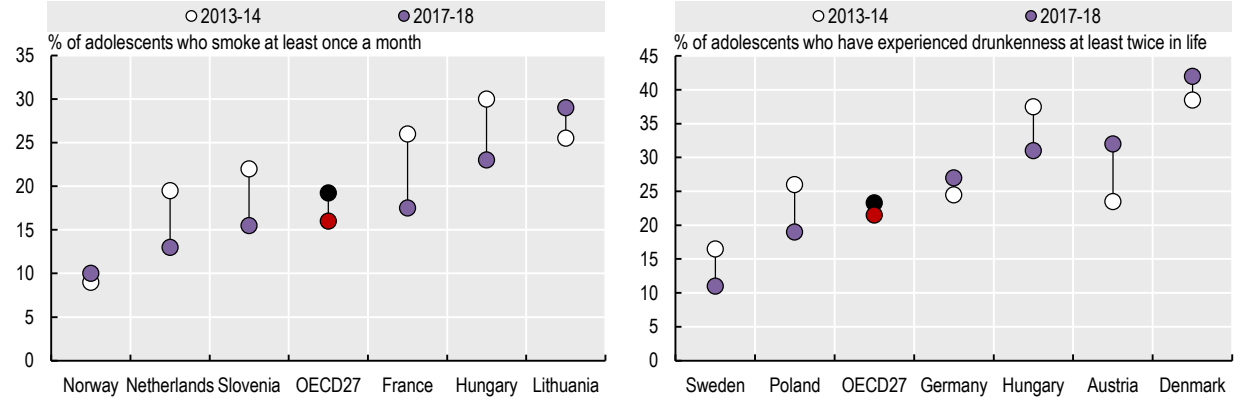
Figure 4.7. **Drunkenness among 15-year-olds, by sex, 2017-18**



1. Data includes England, Scotland and Wales.
Source: Inchley et al. (2020[19]).

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Figure 4.8. **Trends in smoking and drunkenness among 15-year-olds, selected OECD countries, 2013-14 and 2017-18**



Source: Inchley et al. (2020[19]); Inchley et al. (2016[12]).

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Diet and physical activity among adults

A healthy diet is associated with improved health outcomes. Adults who follow a diet rich in fruit and vegetables and low in fat, sugars and salt/sodium are at a lower risk of developing one or more cardiovascular diseases and certain types of cancer (Graf and Cecchini, 2017[21]). A healthy diet may also reduce the likelihood of being overweight or obese. In 2019, diets low in fruit, vegetables and legumes were responsible for an estimated total of 2.7 million deaths worldwide (Institute for Health Metrics and Evaluation, 2020[22]).

On average across 30 OECD countries, 59.1% of people aged 15 and over consumed vegetables each day in 2019. Countries with the highest rates of vegetable consumption were 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 40% in Latvia and the Netherlands. Women are more likely than men to eat at least one portion of vegetables per day (64.2% of women versus 53.6% of men, on average). Daily vegetable consumption was higher among women than men in all countries. Regarding fruit consumption, over half (56%) of all adults consumed at least one piece of fruit per day in 2019 on average across 31 OECD countries. Values for this metric were highest in Australia and New Zealand (greater than 75%). Conversely, Chile, Luxembourg and Latvia recorded values below 40%. As with vegetable consumption, women are more likely to consume fruit daily in all countries. The gender gap in fruit consumption was widest in Finland, Sweden and Luxembourg, with a difference of over 18 percentage points.

Regular consumption of sugar-sweetened beverages contributes to the spread of obesity and to the onset of other metabolic diseases such as diabetes (Hu and Malik, 2010[23]). Across 24 OECD countries, 8% of people aged 15 and over consumed sugar-sweetened beverages at least once a day in 2019 (Figure 4.10). This proportion varies from 2-3% in Estonia, Lithuania, Finland and Latvia, to 11% or more in the Czech Republic, Hungary, Poland and Germany, and up to 20% in Belgium. In the United States, 49% of adults consumed at least one sugar-sweetened beverage on a given day during 2011-14, according to NHANES data (Rosinger et al., 2017[24]). In all countries, men are more likely than women to consume such beverages daily. The gender gap is relatively wide in Poland, Germany and Belgium (a 7-8 percentage point difference). Younger age groups are more likely to consume sugar-sweetened beverages daily, particularly those aged 15-24.

Insufficient levels of physical activity are risk factors for chronic diseases, such as cardiovascular disease and diabetes. Regular physical activity improves mental and musculoskeletal health, and reduces the risk of various non-communicable diseases and depression (Warburton, Nicol and Bredin, 2006[25]). While countries across the world agreed on a global target to reduce insufficient physical activity by 10% by 2025, progress toward this target has been slow (Guthold et al., 2019[26]). Further, during COVID-19, while some people increased their level of physical activity – participating in more sports, walking and similar – overall physical activity declined and sedentary behaviours increased due to lockdowns (Stockwell et al., 2021[27]).

In 2016, more than one in three adults (34.7%) did not meet the recommended guidelines for physical activity on average across 36 OECD countries (Figure 4.11). Adults were most likely to be insufficiently active in Portugal, Costa Rica, Germany and Brazil (over 45% of adults). Conversely, in Finland, China and Russia, fewer than 20% of the adult population were insufficiently active. Women were more likely to be insufficiently active than men in all OECD countries except Finland, where the same proportion of men and women do not meet the recommended level of physical activity. The majority of OECD countries have implemented national guidelines to promote physical activity and multi-sectoral nutritional plans, with the latter present in all countries (OECD, 2019[28]).

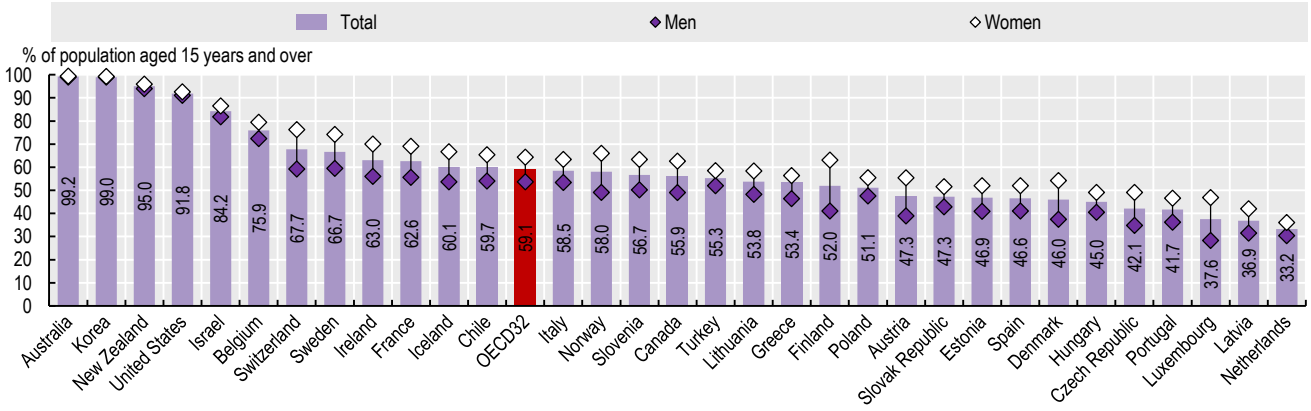
Definition and comparability

Vegetable consumption is defined as the proportion of adults who consume at least one vegetable per day, excluding juice and potatoes. Estimates for vegetable consumption are derived from national health surveys and are self-reported (with some differences in reporting periods – see country-specific notes in the OECD Health Statistics database on definitions, sources and methods for further details). Data for Australia, Korea and New Zealand are derived from quantity-type questions (rather than frequency questions). Values for these countries may therefore be overestimated. Data for the Netherlands refers only to cooked or baked vegetables, which may underestimate consumption. 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. These statistics were complemented with the European Health Interview Survey wave 3 data (2019) for Denmark and Estonia.

Sugar-sweetened beverage consumption data are taken from the European Health Interview Survey wave 3 (2019), compiled by Eurostat. The indicator presented here reports the frequency of drinking regular soft drinks, whether carbonated or not carbonated, bottled iced tea, energy drinks, syrup-based drinks and similar or any other non-alcoholic soft drinks that contain a lot of sugar. Artificially sweetened soft drinks are not included; neither are coffee and tea, even if sweetened with some sugar.

The indicator of insufficient physical activity is defined as attaining less than 150 minutes of moderate-intensity physical activity per week, or less than 75 minutes of vigorous-intensity physical activity per week. Estimates of insufficient physical activity are taken from the WHO Global Health Observatory, and are based on self-reports from the Global Physical Activity Questionnaire, the International Physical Activity Questionnaire or a similar questionnaire covering activity at work, in the household, for transport or during leisure time. These are crude estimates, not age-standardised.

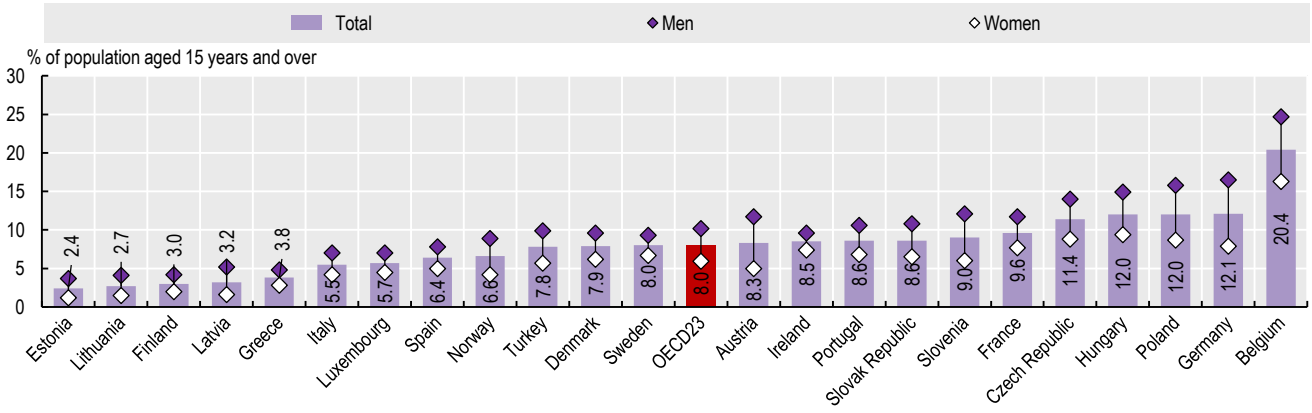
Figure 4.9. **Daily vegetable consumption among population aged 15 and over, by sex, 2019 (or nearest year)**



Source: OECD Health Statistics 2021, complemented with EHIS-3 data for Denmark and Estonia.

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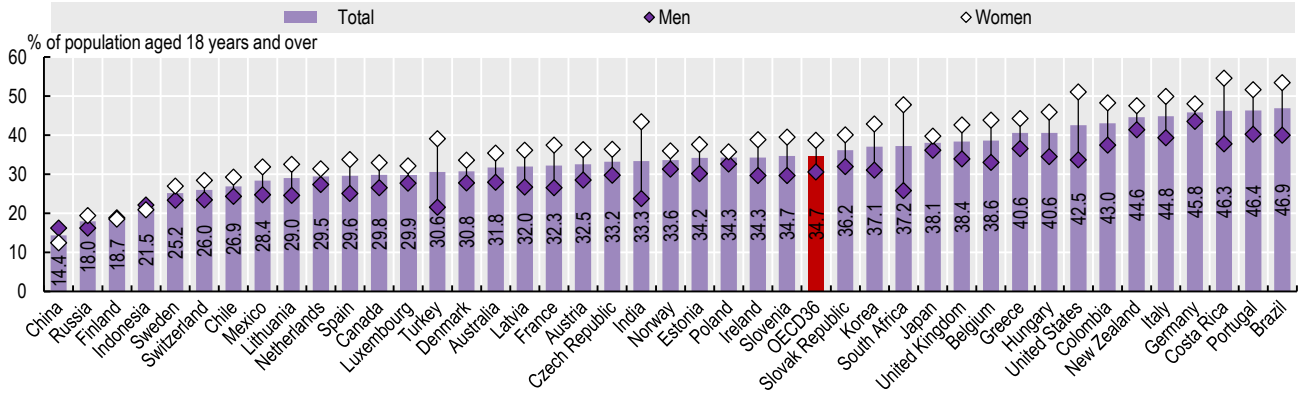
Figure 4.10. **Daily consumption of sugar-sweetened beverages among population aged 15 and over, by sex, 2019**



Source: Eurostat database, based on European Health Interview Survey (EHIS-3).

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Figure 4.11. **Insufficient physical activity among adults, by sex, 2016**



Source: WHO Global Health Observatory 2020.

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Diet and physical activity among adolescents

Consuming a healthy diet and performing regular physical activity when young can be habit forming, promoting a healthy lifestyle in adult life. Daily consumption of fruit and vegetables can help reduce the risk of coronary heart diseases, strokes and certain types of cancer (Hartley et al., 2013[29]; World Cancer Research Fund / American Institute for Cancer Research, 2018[30]). The most common guideline recommends consuming at least five portions of fruit and vegetables daily. During COVD-19 confinements, children and adolescents consumed more fruit and vegetable, since families had more time to cook, although this did not increase the overall quality of diets. Adolescents also exhibited higher consumption of sweet food, probably due to boredom and stress produced by COVID-19 confinement (Ruiz-Roso et al., 2020[31]).

Over 60% of 15-year-olds did not consume any fruit or vegetables daily in 2017-18 in Finland, Hungary, Latvia, Germany, and Lithuania; this proportion was lower than 40% in Belgium and Canada (Figure 4.12). Rates were over 65% for boys in Finland, Germany, Latvia and Hungary, and over 60% for girls in Hungary and Latvia. Rates were under 40% for girls in Belgium, Canada and Denmark, but the rate was only under 40% for boys in Belgium. In the United States, 36% of adolescents aged 12-19 years did not consume any fruit on a given day, and about 8% did not consume any vegetables on a given day, in 2015-18 (Wambogo et al., 2020[32]). Across OECD countries, nearly 55% of 15-year-olds did not consume any fruit or vegetables daily, with girls at 50% and boys at 59%. Girls consumed more fruit and vegetables than boys in all countries. Gender gaps were widest in the Czech Republic, Finland, Germany, Denmark and Italy (a difference of 13-16 percentage points).

More than one in five 15-year-olds consumed sugar-sweetened beverages daily in 2017-18 in Belgium, France, Luxembourg, Switzerland, the Slovak Republic, Hungary and the Netherlands, while fewer than 1 in 15 did so in Estonia, Iceland, Finland, Canada, the Czech Republic, Sweden and Greece (Figure 4.13). Across OECD countries, nearly 13.6% of 15-year-olds consumed sugar-sweetened beverages daily in 2017-18. This is lower than in 2013-14 (17.1%). Between 2014-15 and 2017-18, the sharpest decreases were observed in the Netherlands, the Czech Republic, Hungary and Spain (8-12 percentage points), while small increases were seen in Finland and Lithuania (2-3 percentage points). In the United States, almost two-thirds of youth aged 2-19 years consumed at least one sugar-sweetened beverage on a given day, in 2011-14 (Rosinger et al., 2017[33]).

The WHO recommends 60 minutes of moderate-to-vigorous daily physical activity for the young. The majority of adolescents do not meet this guideline, although physical activity during adolescence improves cardiorespiratory and muscular fitness, bone and cardiometabolic health, and has positive effects on weight and on cognitive development and socialising (Guthold et al., 2019[26]). During the COVID-19-related lockdowns, children's physical activity decreased (Stockwell et al., 2021[27]).

The proportion of 11-year-olds who achieved the recommended 60 minutes of moderate-to-vigorous physical activity per day exceeded 30% in 2017-18 in Finland, Ireland and Canada, but was lower than 15% in Denmark, Portugal, Italy and France (Figure 4.14). Levels of physical activity declined with age in all countries. Across OECD countries, 13.7% of 15-year-olds met the recommended levels, compared to 22.6% of 11-year-olds. The largest differences (with the youngest more physically active than the oldest) were seen in Finland, Ireland, Austria and Hungary (13-28 percentage points). In the United States, 27.2% of students in grade 9 (ages 14-15) and 20% of those in grade 12 (ages 17-18) were physically active for at least 60 minutes daily in 2019 (U.S. Department of Health and Human Services, n.d.[34]). Rates of moderate-to-vigorous physical activity were higher among boys than girls at both ages. At age 11, 26.1% of boys performed at least 60 minutes of activity daily, compared to 19.5% of girls (at age 15, the rates were 17.7% versus 9.7%). The gender gap – boys being more physically active than girls – increased with age in 17 of 28 countries.

Most, if not all, OECD countries already have – or have had in the past – at least one nationally run mass media campaign to encourage consumption of fruit and vegetables, such as the well-known "5-a-day" target (e.g. in Chile, Germany, Italy, Mexico, New Zealand and Spain), the "6-a-day" target in Denmark or the "2&5" campaign in Western Australia (OECD, 2019[28]). There are also examples of governmental programmes encouraging physical activity, such as the "Manger Bouger" campaign in France, Change4Life campaign in England and Wales, United Kingdom, or Move Your Way in the United States. Recently, WHO Member States endorsed a global action plan on physical activity, with a target of a 15% relative reduction in insufficient physical activity among adolescents by 2030 (WHO, 2018[35]). The plan recommends 20 policy actions built around four areas: creating active societies, active environments, active systems and active people.

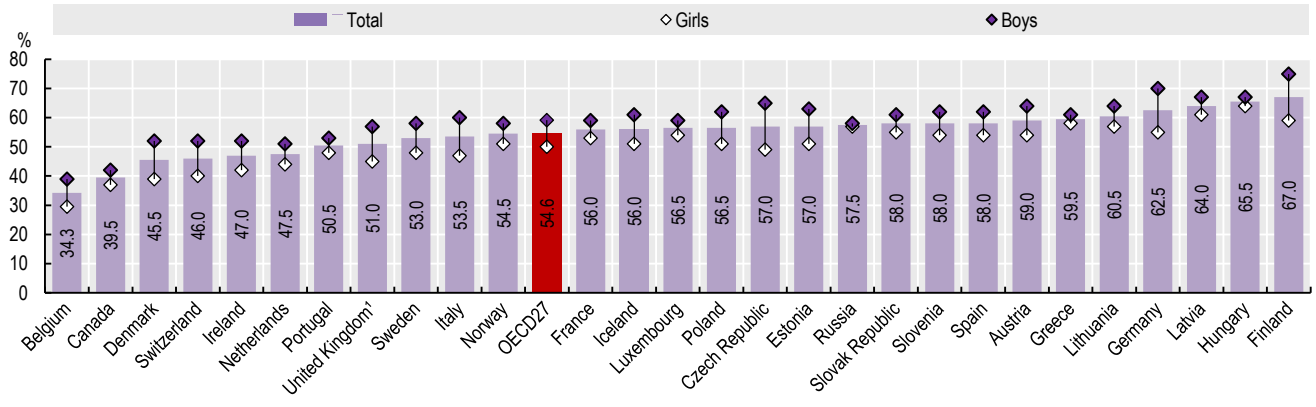
Definition and comparability

Data come from the Health Behaviour in School-aged Children (HBSC) surveys of 2013-14 and 2017-18. Data are drawn from school-based samples of 1 500 in each age group (11-, 13- and 15-year-olds) in most countries.

Dietary habits are measured here in terms of the proportions of young people who report consuming neither fruit nor vegetables (at least once) daily and the proportions of those who report drinking sugar-sweetened beverages (at least once) daily. Young people were asked how often they eat fruit and vegetables and consume sugar-sweetened beverages. Response options ranged from "never" to "every day, more than once". No reference to excluding juice, soup or potatoes was mentioned in the survey questions. In addition to fruit and vegetables and sugar-sweetened beverages, healthy nutrition also involves other types of food.

Data for physical activity consider the proportion of young people who report at least 60 minutes of moderate-to-vigorous physical activity daily. This refers to exercise that increases the heart rate, and sometimes leaves the child out of breath, undertaken for at least an hour each day.

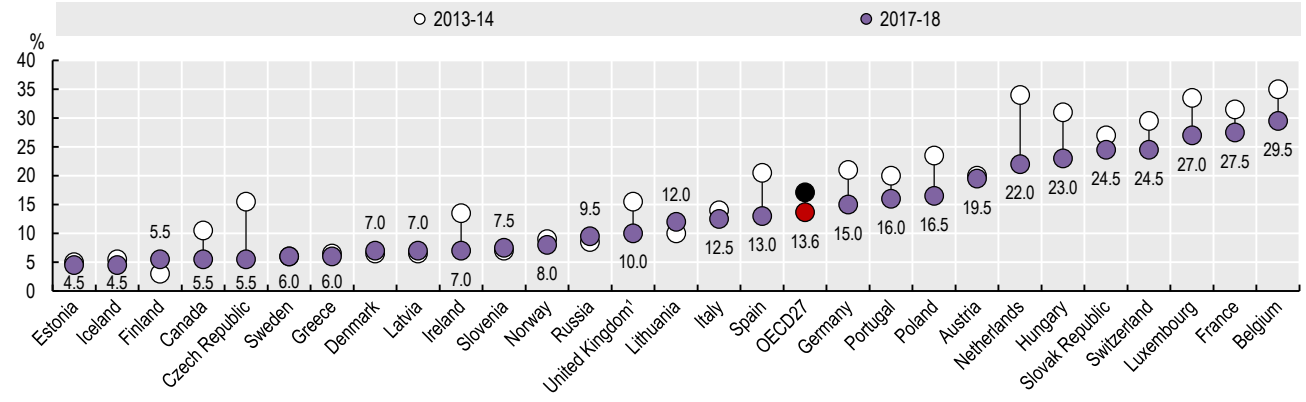
Figure 4.12. **Proportion of 15-year-olds not consuming any fruit or vegetables daily, by sex, 2017-18**



1. Data includes England, Scotland and Wales.
Source: Inchley et al. (2020[19]).

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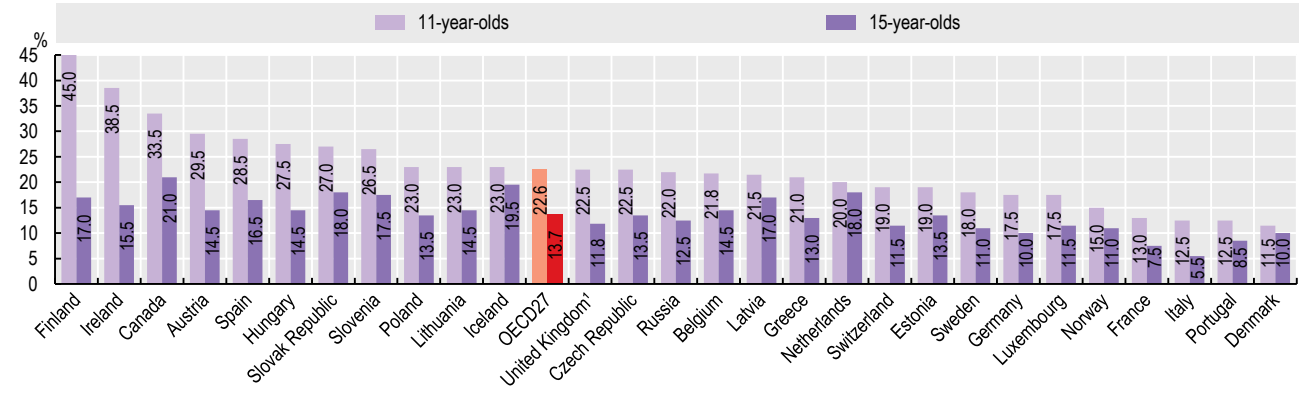
Figure 4.13. **Proportion of 15-year-olds consuming sugar-sweetened beverages daily, 2013-14 and 2017-18**



1. Data includes England, Scotland and Wales.
Source: Inchley et al. (2020[19]); Inchley et al. (2016[12]).

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Figure 4.14. **Proportions of 15- and 11-year-olds reporting at least 60 minutes of moderate-to-vigorous physical activity daily, 2017-18**



1. Data includes England, Scotland and Wales.
Source: Inchley et al. (2020[19]).

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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 (OECD, 2019[28]). Overweight-related diseases are expected to cause life expectancy to decrease by 2.7 years on average in OECD countries over the next 30 years; they are also expected to give rise to treatment costs equivalent to 8.4% of health spending (OECD, 2019[28]). High consumption of calorie-dense food, trans-fats and saturated fats, and increasingly sedentary lifestyles have contributed to growing global obesity rates. High body mass index was estimated to cause 5 million deaths worldwide in 2019 (Institute for Health Metrics and Evaluation, 2020[36]). In addition, obesity puts people at increased risk of developing severe COVID-19 symptoms and of dying from COVID-19 (Katz, 2021[37]; Tartof et al., 2020[38]). Beyond health and medical conditions, obesity has wider social and economic impacts. Women and men with lower incomes are more likely to be obese, entrenching inequality. Individuals with at least one chronic disease associated with overweight are less likely to be employed; when they are at work, they are more likely to be absent or less productive than healthy individuals (OECD, 2019[28]).

Measured height and weight data show that 60% of adults were overweight or obese in 2019, on average across 20 OECD countries with comparable data (Figure 4.15). In 17 of these 20 countries for which measured data is available, over half of the adult population was overweight or obese in 2019. For Mexico, Chile and the United States, this proportion exceeded 70%. Conversely, in Japan and Korea, fewer than 35% of adults were overweight or obese. Men were more likely than women to be overweight or obese in most countries, except in Chile, Latvia, Mexico and Turkey. The gender gap was relatively wide in Australia, Germany and Hungary (a difference of 14-16 percentage points).

As an alternative to measured data, countries can monitor obesity using self-reported height and weight data. These estimates are less reliable, however, and are typically lower than those based on measured data. Across the 16 OECD countries for which measured data are not available, self-reported overweight (including obesity) rates ranged from 41.8% in Switzerland to 58.4% in Iceland in 2019 (Figure 4.16). As with measured data, men were more likely than women to be overweight or obese in all countries. The gender gap was relatively wide in the Czech Republic, Luxembourg, the Slovak Republic and Switzerland (a difference of 18-20 percentage points).

The proportion of overweight and obese adults increased between 2009 and 2019 in most OECD countries, including in countries where rates were relatively low (Figure 4.17), such as Japan, where it increased by 2.1 percentage points, and Korea, where it increased by 3.2 percentage points. In countries with relatively high rates of overweight and obese adults, the proportion also increased – including by 10.1 percentage points in Mexico, 9.7 percentage points in Chile, and 9 percentage points in Turkey. Overweight and obesity rates in Canada, France and Ireland remained stable between 2009 and 2019, and they increased at a relative lower pace in New Zealand.

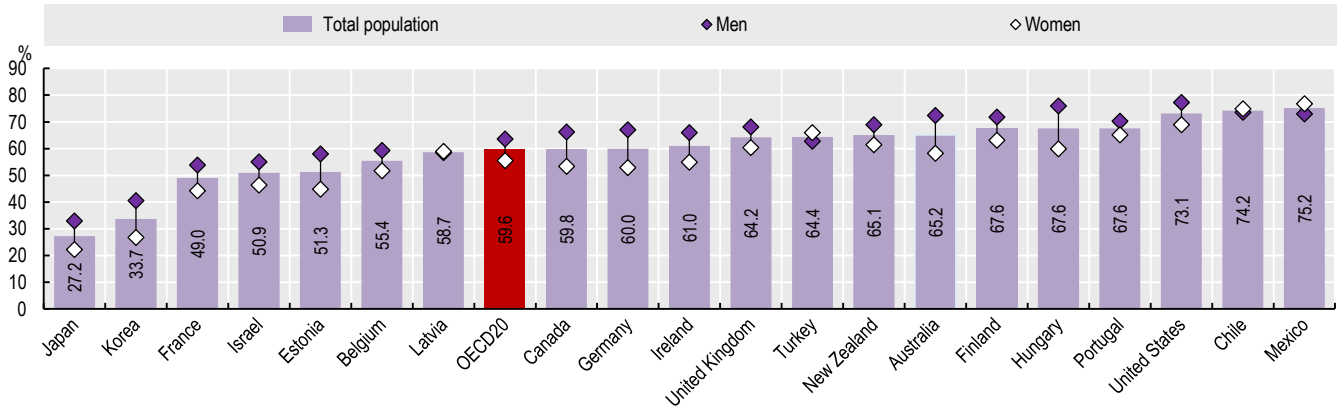
OECD member countries have implemented a suite of regulatory and non-regulatory initiatives to reduce overweight population rates. Prominent examples include mass media campaigns to promote the benefits of healthy eating; promotion of nutritional education and skills; taxes on energy-dense food and drink items to discourage consumption; simplified food labelling to communicate nutritional value; and agreements with the food industry to improve the nutritional value of products. Promoting physical activity and reducing sedentary time also help to address the obesity problem. For instance, one-third of OECD countries have implemented prescription of physical activity by primary care doctors. Innovative initiatives of workplace programmes for wellness and reduced sedentary behaviour – such as in Japan and Ireland – can be found, although they are implemented relatively infrequently (OECD, 2019[28]).

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 (dividing weight in kilograms by height in metres squared). Based on WHO classifications, adults over the age of 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. The method for calculation of BMI is the same for men and women and for adults of all ages. BMI data can also be collected using self-reported estimates of body height and weight. BMI estimates based on self-reported data are typically lower and less reliable than those based on measured data.

This indicator reports on official statistics collected in the OECD Health Statistics 2021 database. For self-reported overweight (including obesity) rates, these statistics were complemented with the European Health Interview Survey wave 3 data (2019) for Denmark (latest data from 2017) and Poland (latest data from 2014).

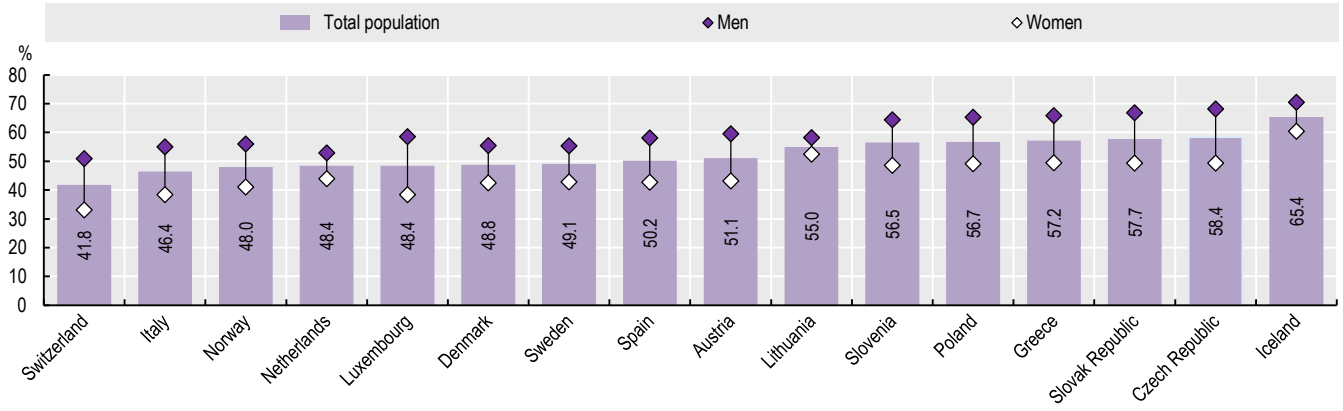
Figure 4.15. **Measured overweight (including obesity) rates among adults, by sex, 2019 (or nearest year)**



Source: OECD Health Statistics 2021.

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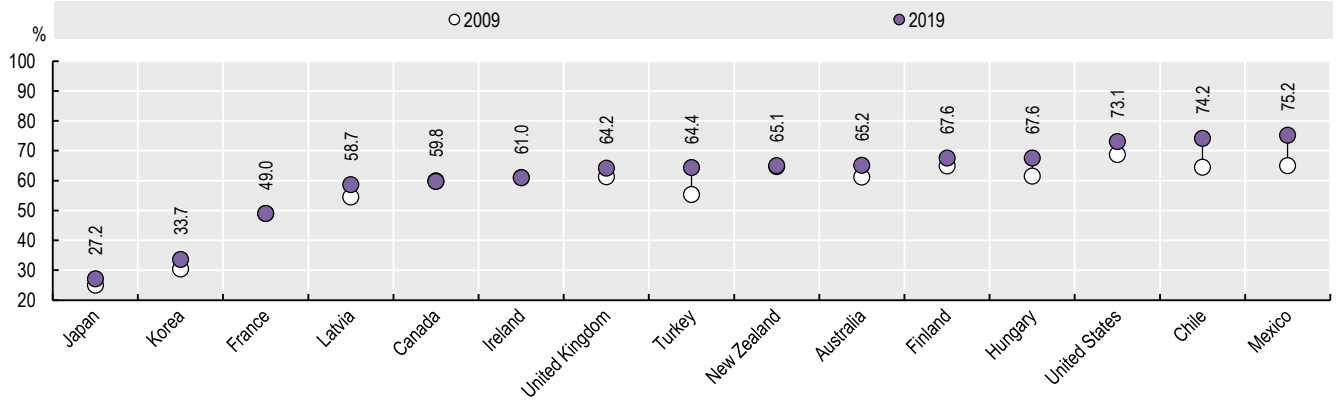
Figure 4.16. **Self-reported overweight (including obesity) rates among adults, by sex, selected countries, 2019 (or nearest year)**



Source: OECD Health Statistics 2021.

StatLink https://stat.link/4husfv

Figure 4.17. **Evolution of measured overweight (including obesity) rates, 2009 and 2019 (or nearest years)**



Source: OECD Health Statistics 2021.

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Overweight and obesity among adolescents

Childhood overweight rates, including pre-obesity and obesity, have been growing worldwide over the past decades. Environmental factors, lifestyle preferences, genetic makeup and culture can all 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 diseases and certain types of cancer (WHO, 2018[39]; OECD, 2019[28]). The COVID-19 confinements and school closures disrupted the lives of children and adolescents, including their eating habits and physical activities. Evidence from several countries, such as China and the United States, shows that obesity rates in children and adolescents increased in the aftermath of the COVID-19 crisis (Stavridou et al., 2021[40]).

Looking at pre-COVID-19 data, 18.3% of adolescents aged 15 years were overweight or obese on average across 27 OECD countries in 2017-18 (Figure 4.18). In Canada, Hungary, Portugal, Luxembourg, Greece, Slovenia, Germany, Iceland, Austria and the Czech Republic, this figure exceeded 20%. Conversely, in the Netherlands, Ireland and France, rates were below 15%. The rate of youth overweight increased from 16.6% to 18.3% between 2009-10 and 2017-18, on average across 27 OECD countries. This rate increased in 23 OECD countries, while it decreased marginally in Poland, Greece and Italy (by 3-4 percentage points), and more significantly in Ireland (by 18 percentage points). Growth was greater in Lithuania, Belgium, Estonia and Russia, where rates increased by 40-60%. At the other end of the spectrum, Iceland, Slovenia and Canada recorded growth rates at or below 5%. In the United States, 41.5% of children and adolescents aged 2-19 were overweight or obese in 2017-18, compared to 37.4% in 2009-10, according to NHANES data (Fryar, Carroll and Afful, 2020[41]). A similar evolution was observed among younger children, with higher levels of overweight. Nearly one-third of children aged 5-9 were overweight or obese in OECD countries in 2016. This proportion increased by more than 10 percentage points between 1990 and 2016 (OECD, 2019[42]).

The proportion of overweight boys exceeded that of girls in all 27 OECD countries examined (Figure 4.19). At age 15, 22.1% of boys were overweight or obese, while this proportion was 14.5% among girls, on average across countries in 2017-18. Countries with the widest gender gaps – with boys more overweight than girls – were Greece, Poland, Italy and the Czech Republic (a difference of 12-18 percentage points). The gap between boys and girls was narrower in Ireland, Sweden and Portugal (less than 3 percentage points).

Social inequalities in overweight were visible in all the countries examined, with youth overweight and obesity more prevalent among those with lower socio-economic backgrounds. Across 27 OECD countries, 25.7% of adolescents from low-affluence families were overweight or obese compared to 15.7% of those from high-affluence families (Figure 4.20). The differences were largest in the United Kingdom, Spain, Belgium, Greece and Germany (at 13-26 percentage points), while Ireland, Finland, the Slovak Republic and Russia showed relatively smaller differences (2-4 percentage points).

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 stakeholders from 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[28]).

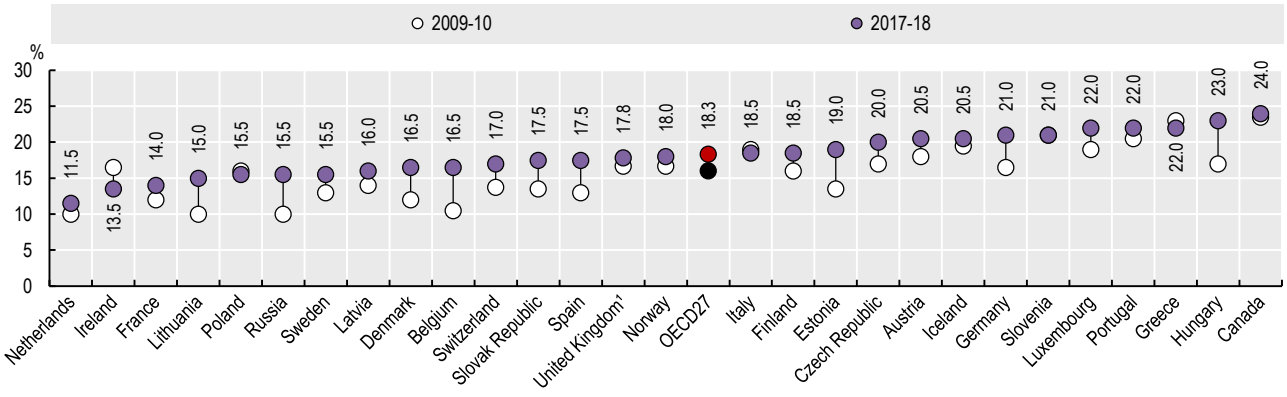
Definition and comparability

Data come from the Health Behaviour in School-aged Children (HBSC) surveys that include up to 30 OECD countries and Russia. Comparable indicators on youth overweight and obesity are made available for the periods 2009-10 and 2017-18. Data are drawn from school-based samples of 1 500 in each age group (11-, 13- and 15-year-olds) in most countries.

Youth overweight and obesity rates are calculated using BMI, which is calculated by dividing weight in kilograms by height in metres squared. Children aged between 5-19 years are considered overweight if their BMI-for-age is greater than one standard deviation above the WHO Growth Reference median. Children whose BMI-for-age is two standard deviations above the median is classified as obese.

The Family Affluence Scale is a proxy for socio-economic status developed within the HBSC surveys. The Scale includes items that reflect the material assets in the household. This measure overcomes the problem of missing data in the information collected from children on their parents' occupations and education levels.

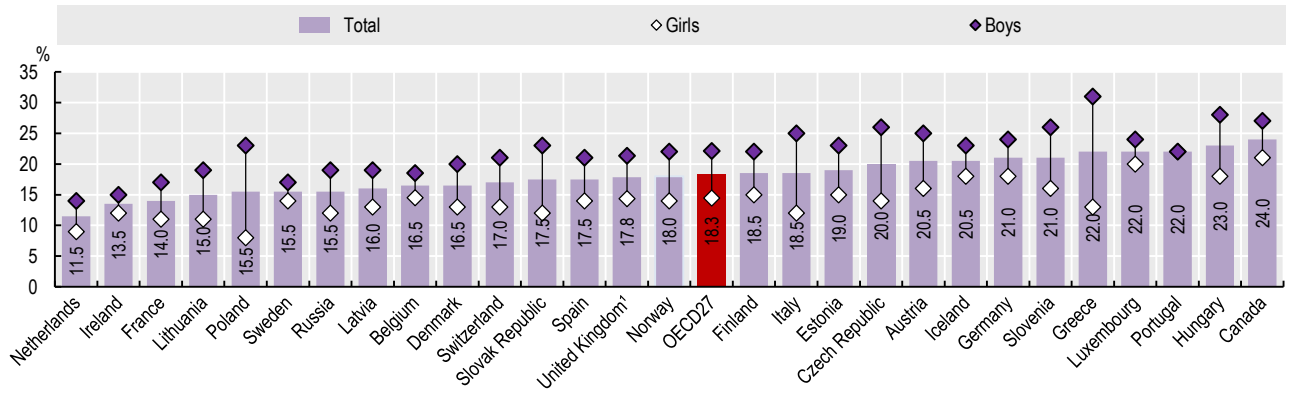
Figure 4.18. **Self-reported overweight (including obesity) among 15-year-olds, 2009-10 and 2017-18**



1. Data includes England, Scotland and Wales.
Source: Inchley et al. (2020[19]); Currie et al. (2012[43]).

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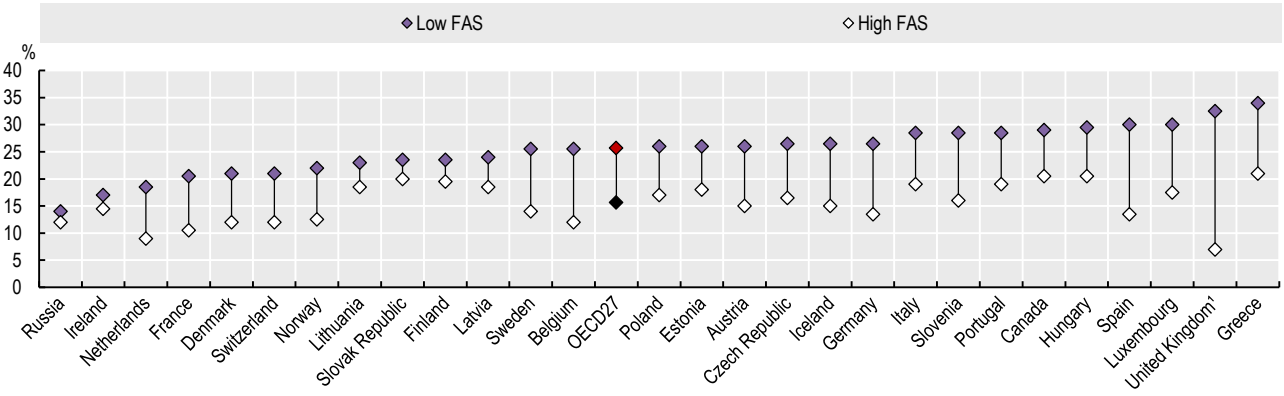
Figure 4.19. **Self-reported overweight (including obesity) among 15-year-olds, by sex, 2017-18**



1. Data includes England, Scotland and Wales.
Source: Inchley et al. (2020[19]).

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Figure 4.20. **Self-reported overweight (including obesity) among 11-, 13- and 15-year-olds, by family affluence, 2017-18**



Note: FAS: family affluence scale. 1. Data includes England, Scotland and Wales.
Source: Inchley et al. (2020[19]).

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Air pollution and environmental degradation

Climate change is one of the biggest challenges for present and future generations. It is linked to many different types of environment distress, including air pollution and extreme temperatures. Air pollution is already the most significant environmental health risk and a major cause of death and disability, and its future impact is likely to be even greater without adequate policy action. Projections have estimated that outdoor air pollution may cause between 6 million and 9 million premature deaths a year worldwide by 2060, and cost 1% of global gross domestic product (GDP) as a result of sick days, medical bills and reduced agricultural output (OECD, 2015[44]).

Among OECD countries, ambient (outdoor) particulate matter pollution (especially PM 2.5) caused about 29 deaths per 100 000 people in 2019 (Figure 4.21). Death rates ranged from over 60 deaths per 100 000 in the Slovak Republic, Hungary and Poland, to fewer than 7 deaths per 100 000 in Sweden, New Zealand and Iceland. In partner countries, death rates were particularly high in India (around 72 deaths per 100 000) and China (around 99 deaths per 100 000); they were also higher in Russia and Indonesia than in most OECD countries. Since 2000, deaths per 100 000 from ambient particulate matter pollution have declined markedly – by 25% on average – in most OECD countries, although the rates rose in seven countries over the period (Chile, Colombia, Costa Rica, Mexico, Japan, Korea and Turkey). Over the same period, deaths rose rapidly in a number of partner countries – by 43% in Indonesia, 58% in China and 97% in India.

Extreme temperatures are also a consequence of climate change. Both extreme heat and extreme cold can cause health problems and lead to death. For OECD countries, extreme cold has generally had a greater impact on mortality than heatwaves – particularly in eastern Europe and the Nordic countries – although heatwaves have also caused significant numbers of deaths in certain years. The record warm summer of 2003, for example, caused around 80 000 deaths in Europe, and the heatwaves in the summer of 2015 caused more than 3 000 deaths in France alone. Furthermore, the 2021 heat wave in Western Canada and the United States caused hundreds of deaths, especially among older adults. Temperature records were broken, and scientists have determined that the heat wave would have been "virtually impossible" without climate change (Philip et al., 2021[45]).

While the origins of SARS-CoV-2 have not been determined definitively, the pandemic has nevertheless drawn attention to the impact of environmental degradation and the possible effects of changes in land use on the spillover of disease from animals to humans. Even before COVID-19, a number of recent pandemics of global concern – including SARS, the 2009 H1N1 pandemic influenza and the Middle East respiratory syndrome coronavirus – were found to have originated in animals before passing to humans. The continued degradation of natural ecosystems, including the loss or change of key habitats for wildlife due to changes in land use, has meant growing threats to biodiversity and an increasing risk of transmission of new zoonotic diseases from wildlife to humans (Plowright et al., 2021[46]).

Between 2000 and 2014, built-up areas increased by more than 15% on average across OECD countries (Figure 4.22). This increase was lowest in Japan and the United Kingdom – two countries whose proportion of total land devoted to built-up areas is higher than the OECD average – but the increase in built-up areas was 30% in Mexico and Norway between 2000 and 2014. The increase was notably high in a number of OECD countries with relatively low population density, including Finland and Norway. OECD partner countries also experienced high rates of change in land use, with China's built-up area growing by 34% and India's by 30% over the period. In OECD countries, the development of mostly artificial surfaces, including buildings, was largely built on what was formerly cropland, while natural and semi-natural areas remained mostly stable (OECD, 2021[47]).

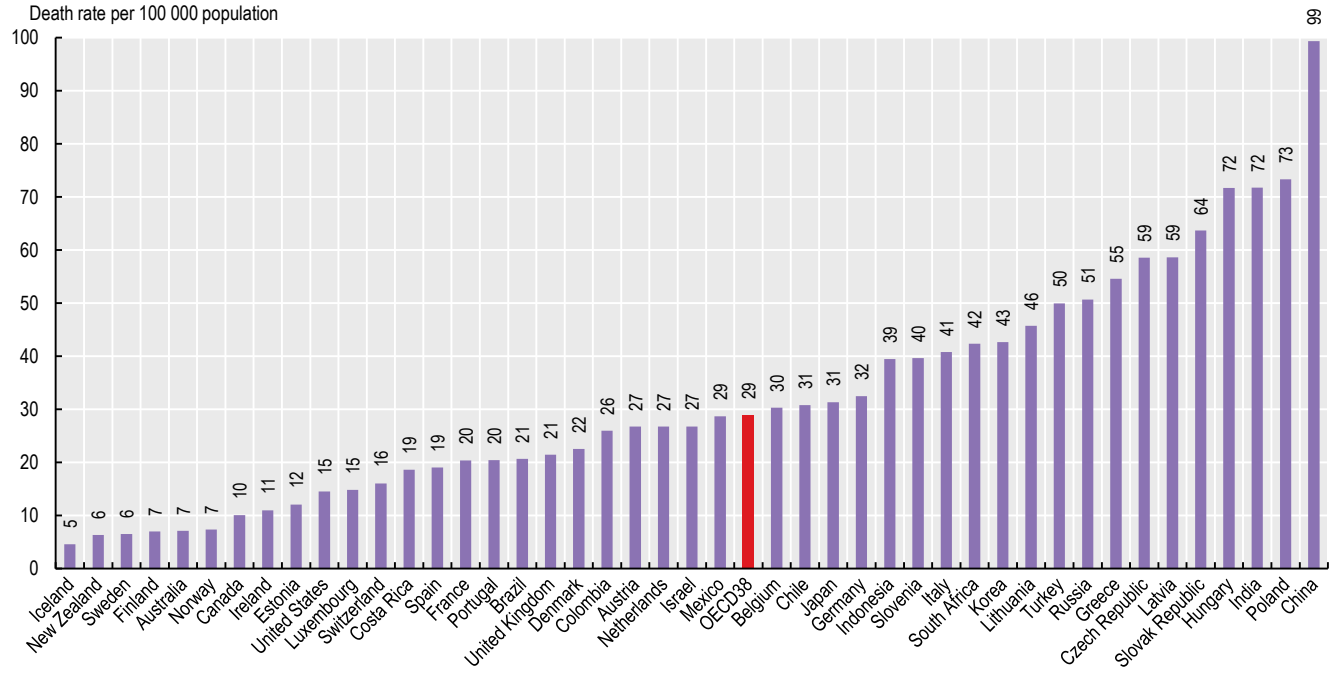
Inter-sectoral policies are needed to address the impact of climate change. Countries can start planning to address pollution and its impacts on health, for instance, by creating partnerships with various international, national and local stakeholders, including local city authorities and ministries of industry, environment, transport and agriculture. 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 and biodiversity 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[48]; OECD, 2017[49]).

Definition and comparability

Ambient (outdoor) particulate matter 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 these pollutants, fine particulate matter, even at low levels, has the greatest effect on human health. Polluting fuels include solid fuels such as wood, coal, animal dung, charcoal, crop waste and kerosene. Data on mortality and disability-adjusted life-years from exposure to environmental risks are taken from the Global Burden of Disease (GBD) Study 2019 results (Abbafati et al., 2020[50]).

Data on land cover are based on Land Cover Annual Maps from the Copernicus/European Space Agency and Université catholique de Louvain Geomatics Climate Change Initiative.

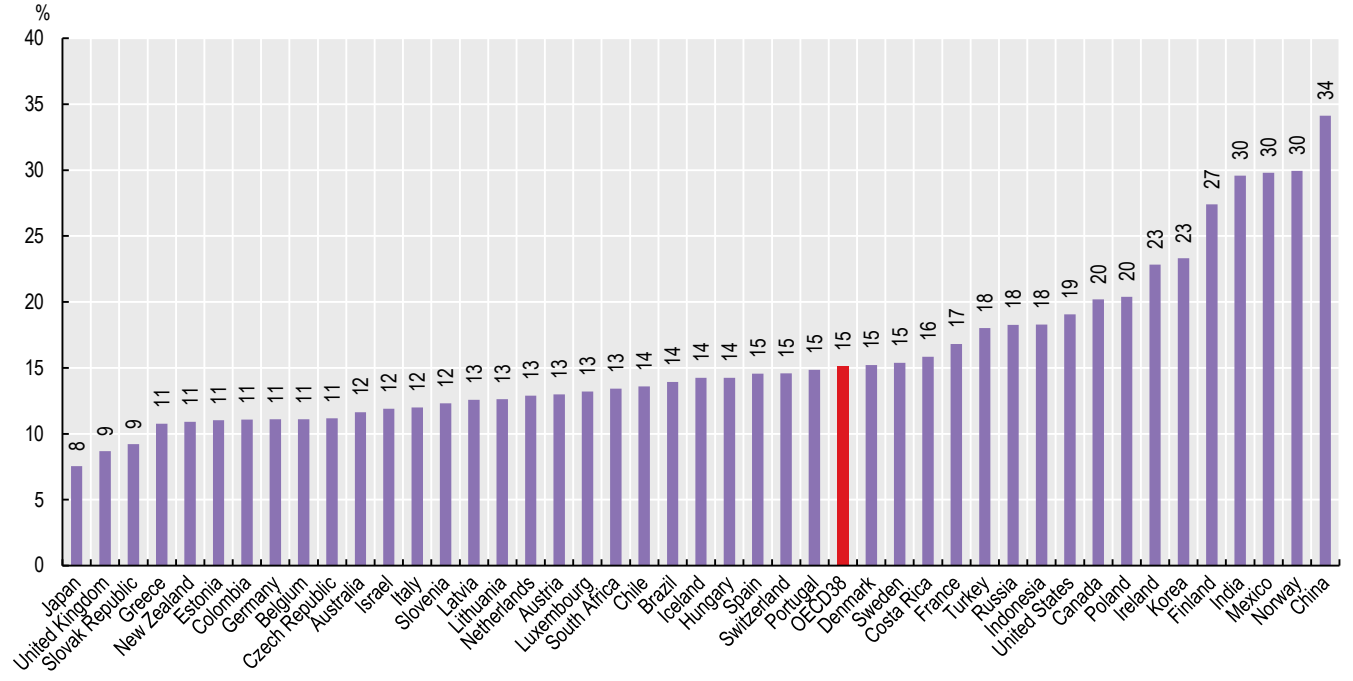
Figure 4.21. **Premature deaths attributable to ambient particulate matter pollution, 2019**



Source: OECD Environment Statistics, 2020.

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Figure 4.22. **Change in land use: increase in built-up areas, 2000-14**



Source: OECD Environment Statistics, 2020.

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5. ACCESS: AFFORDABILITY, AVAILABILITY AND USE OF SERVICES

Population coverage for health care

Unmet needs for health care

Extent of health care coverage

Financial hardship and out-of-pocket expenditure

Consultations with doctors

Digital health

Hospital beds and occupancy

Hospital discharges and average length of stay

Diagnostic technologies

Hip and knee replacement

Ambulatory surgery

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 access and coverage. Universal health coverage also depends on the range of services covered and the degree of cost-sharing for these. Services also need to be of sufficient quality. Indicators in this chapter focus on access in terms of the affordability, availability and use of health care services, 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 and Switzerland) have obtained universality through compulsory private health insurance – supported by public subsidies and laws on the scope and depth of coverage.

Population coverage for core services in 2019 remained below 95% in seven OECD countries, and below 90% in Mexico and the United States. Mexico has expanded coverage since 2004, but gaps remain (OECD, 2016[1]). In the United States, uninsured people tend to be working-age adults with lower education or income levels – the share of uninsured people decreased sharply from about 13% in 2013 to 9% in 2015 (United States Census Bureau, 2018[2]), but has remained relatively unchanged since then. In Ireland, although coverage is universal, less than half of the population are covered for the cost of general practitioner visits. Recent reform proposals suggest a gradual rollout of primary care coverage to the entire population (OECD/European Observatory of Health Systems and Policies, 2019[3]).

Beyond population coverage rates, satisfaction with the availability of quality health services offers further insight into effective coverage. The Gallup World Poll collects data on citizens' satisfaction with health and other public services worldwide. While contextual and cultural factors influence survey responses, the poll allows citizens' opinions to be compared on the basis of the same survey question. Satisfaction with the availability of quality health services averaged 71% across 37 OECD countries in 2020. Citizens in Norway (93%), Belgium and the Netherlands (both 92%) were most likely to be satisfied, while those in Poland (26%), Greece (38%) and Chile (39%) were least likely to be satisfied (Figure 5.2).

In some countries, citizens can purchase additional health coverage through voluntary private health insurance. This can cover any cost-sharing left after basic coverage (complementary insurance), add further services (supplementary insurance) or provide faster access or a wider choice of providers (duplicate insurance). Among 22 OECD countries with recent comparable data, seven had additional private insurance coverage for over half of the population in 2019 (Figure 5.3). Complementary insurance to cover cost-sharing is widely used in Slovenia and Korea (around 70% of the population). Israel and the Netherlands had the largest supplementary health insurance market (over 80% of the population), whereby private insurance pays for dental care, physiotherapy, certain prescription drugs and other services that are not publicly reimbursed. Duplicate private health insurance was most widely used in Ireland and Australia. In the United States, just under 10% of the population had complementary private health insurance. This is in addition to the 52.5% of the American population who had primary private health insurance.

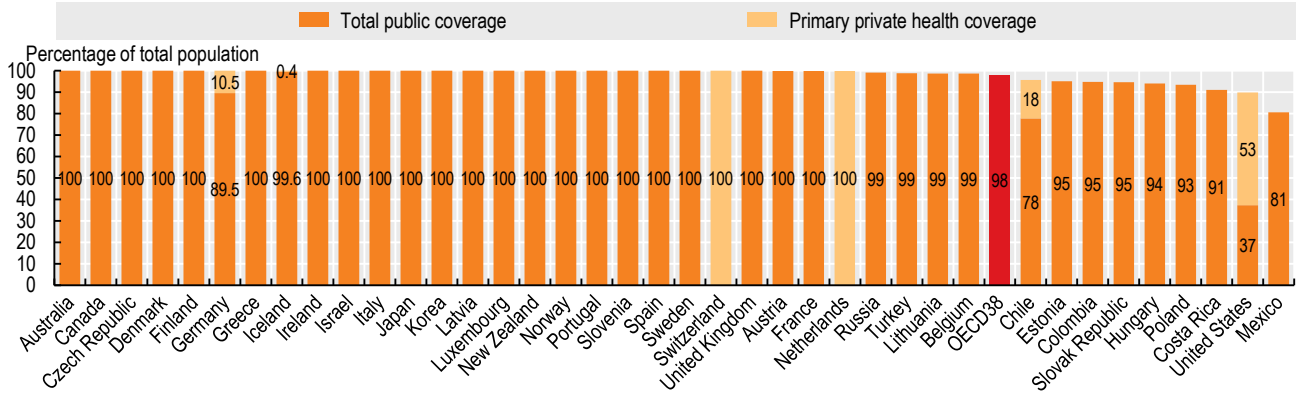
Over the last decade, the population covered by additional private health insurance has increased in 20 of 25 OECD countries with comparable data, although these increases have often been small. Increases have been most marked in Korea (an additional 20% of the total population). Several factors determine 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. In both, 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. Voluntary private insurance premiums are generally not income-related, although the purchase of private coverage may be subsidised by the government.

Data from the Gallup World Poll used in Figure 5.2 are generally based on a representative sample of at least 1 000 citizens in each country aged 15 years and older. For 2020, data were collected from July onwards. Respondents were asked: "In the city or area where you live, are you satisfied or dissatisfied with the availability of quality health care?"

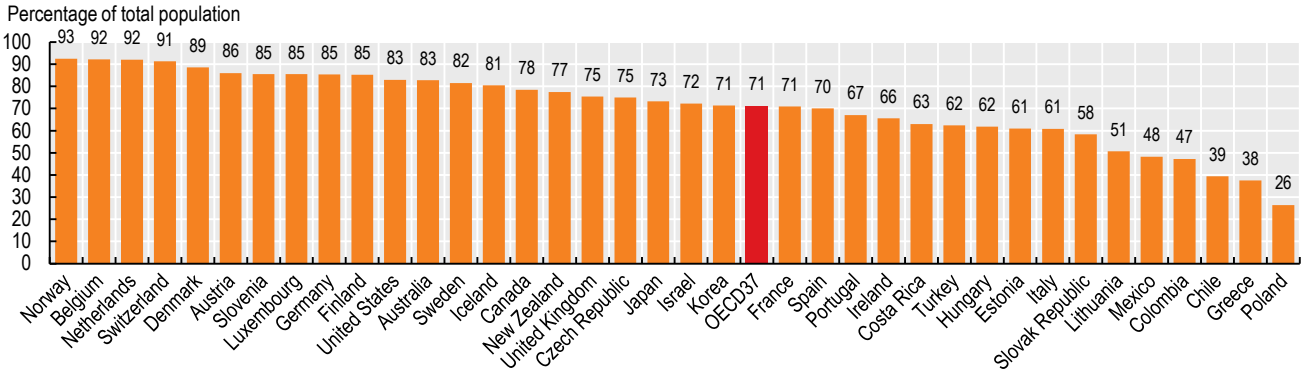
Figure 5.1. **Population coverage for a core set of services, 2019 (or nearest year)**



Source: OECD Health Statistics 2021.

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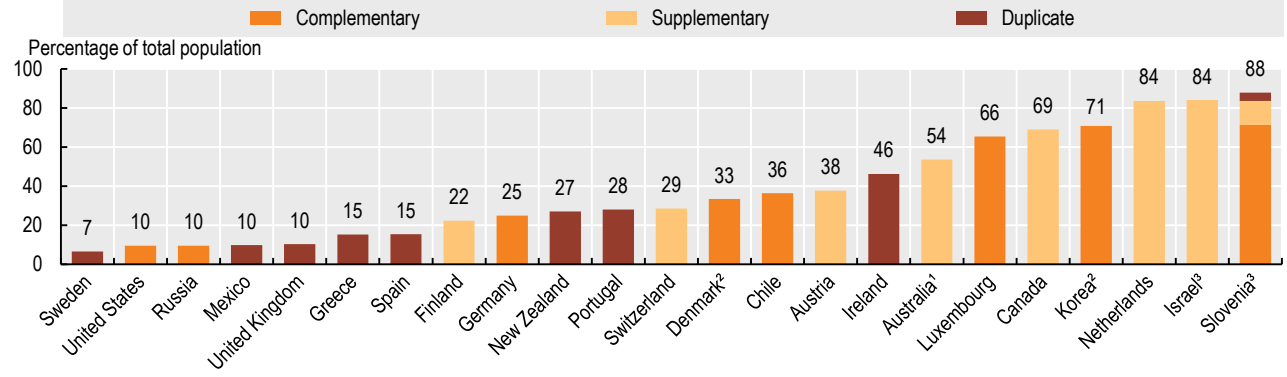
Figure 5.2. **Population satisfied with the availability of quality health care in the area where they live, 2020 (or nearest year)**



Source: Gallup World Poll 2020 (database).

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Figure 5.3. **Voluntary private health insurance coverage by type, 2019 (or nearest year)**



Note: Values here refer to additional voluntary private health insurance. They exclude primary private health insurance coverage, which exists in Chile, Germany, the Netherlands, Switzerland and the United States. 1. Can be duplicate and supplementary. 2. Can be complementary and supplementary. 3. Can be duplicate, complementary and supplementary.
Source: OECD Health Statistics 2021.

StatLink https://stat.link/v8t3bm

Unmet needs for health care

A fundamental principle underpinning all health systems across OECD countries is to provide access to high-quality care for the whole population, irrespective of their socio-economic circumstances. Yet access can be limited for a number of reasons, including limited availability or affordability of services. Policies therefore need both to address financial barriers to care and to promote an adequate supply and distribution of health workers and health care services throughout the country (OECD, 2019[4]; 2020[5]).

On average across 27 OECD countries with comparable data, only 2.6% of the population in 2019 reported that they had unmet care needs due to cost, distance or waiting times (Figure 5.4). However, in Estonia more than 15% of the population reported unmet care needs. Accessibility of health care was also limited in Greece, with around 8% of the population reporting unmet needs. In Spain, Luxembourg, the Netherlands, Germany and Austria, less than 0.5% of the population reported unmet needs for medical care. Reported unmet needs are generally larger for dental care than for medical care, reflecting the fact that dental care is only partly covered by public schemes in many countries, and so must often be paid out of pocket or through additional private health insurance (see indicator "Extent of health care coverage").

Socio-economic disparities are significant in most countries: people in the lowest income quintile have higher unmet needs than the most well-off. This income gradient was largest in Greece, Turkey, Latvia and Iceland in 2019, with a difference of more than 5 percentage points in the proportion of the population reporting some unmet needs between the lowest and highest income quintiles. In Greece, almost one in five people (18%) in the lowest income quintile reported going without some medical care when they needed it, compared to only 1% of people in the highest income quintile. In Estonia, conversely, individuals in the highest income quintile reported slightly more unmet needs than those in the lowest. These results are driven by better-off individuals being more likely to report waiting times as a cause of unmet needs.

Over time, across 27 OECD countries, unmet needs for medical care have decreased in recent years, since reaching a peak around 2014 (Figure 5.5). This reduction mainly occurred among lower-income population groups (a decrease of nearly 40% between 2014 and 2019). Nevertheless, the gap in unmet medical care needs between different income groups remains large. On average across 27 OECD countries, people in the lowest income quintile were almost three times more likely to report unmet medical care needs than those in the highest income quintile in 2019.

The COVID-19 crisis limited access to health services in 2020 in the majority of OECD countries. On average across 23 OECD countries with comparable data, more than one in five people reported having forgone a needed medical examination or treatment during the first 12 months of the pandemic (Figure 5.6). Unmet needs for medical care were highest in Hungary and Portugal, with more than one-third of the population reporting having forgone a needed medical examination or treatment during the first wave of the pandemic. The share of the population forgoing care during the pandemic was comparatively low in Denmark, Austria and Germany (less than 15%). One policy adjustment to maintain access to care during the pandemic was wider adoption of telehealth services (see indicator "Digital health"). For example, in Canada the Wellness Together application helped maintain access to care during the pandemic.

Definition and comparability

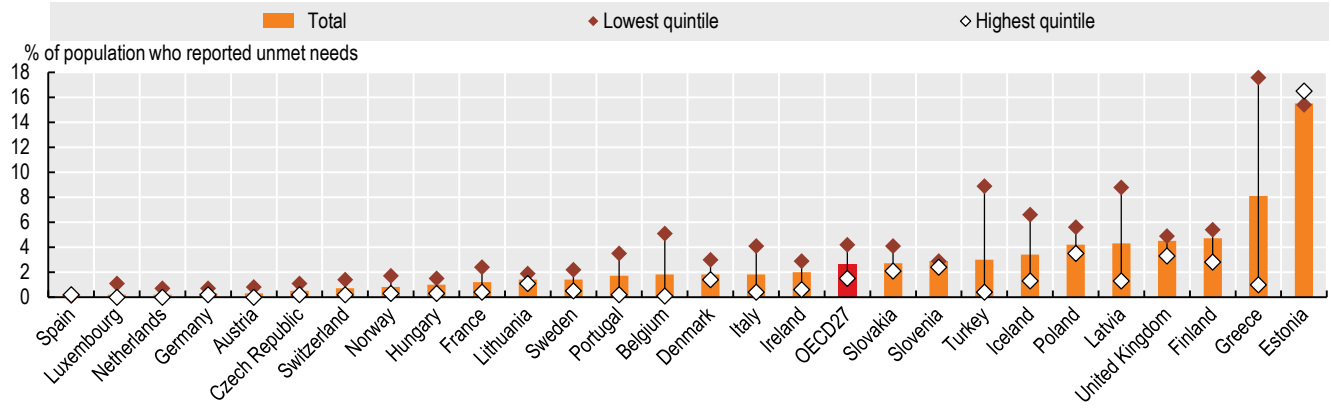
Questions on unmet health care needs are included in the EU Statistics on Income and Living Conditions (EU-SILC) survey compiled by Eurostat. People are asked whether there was a time in the previous 12 months when they felt they needed medical care but did not receive it, followed by a question on why the need for care was unmet. The data presented here focus on three reasons: health care was too expensive, the distance to travel was too far or waiting times were too long. Note that some other surveys of unmet needs – notably the European Health Interview Survey – report much higher rates on unmet needs. This is because these exclude people without health care needs, while the EU-SILC survey considers the total population surveyed.

In comparing across countries, cultural factors may affect responses to questions about unmet care needs. There are also some variations in the survey questions across countries: while most countries refer to both a medical examination and treatment, the question in some countries (the Czech Republic, Slovenia and Spain) only refer to a medical examination or a doctor consultation, resulting in lower rates of unmet needs. Caution is therefore required in comparing variations across countries and over time.

Income quintile groups are computed on the basis of the total equivalised disposable income attributed to each member of the household. The first quintile group represents the 20% of the population with the lowest income and the fifth quintile group the 20% of the population with the highest income.

The Eurofound Living, Working and COVID-19 Survey asked people in 22 OECD countries whether, since the pandemic began, they had needed a medical examination or treatment that they had not received. Data for Luxembourg are excluded due to low reliability according to Eurostat. Data for the United States are taken from the Household Pulse Survey conducted by the US Census Bureau between April 2020 and April 2021. People were asked whether they needed medical care for a reason other than COVID-19 but did not receive it because of the pandemic.

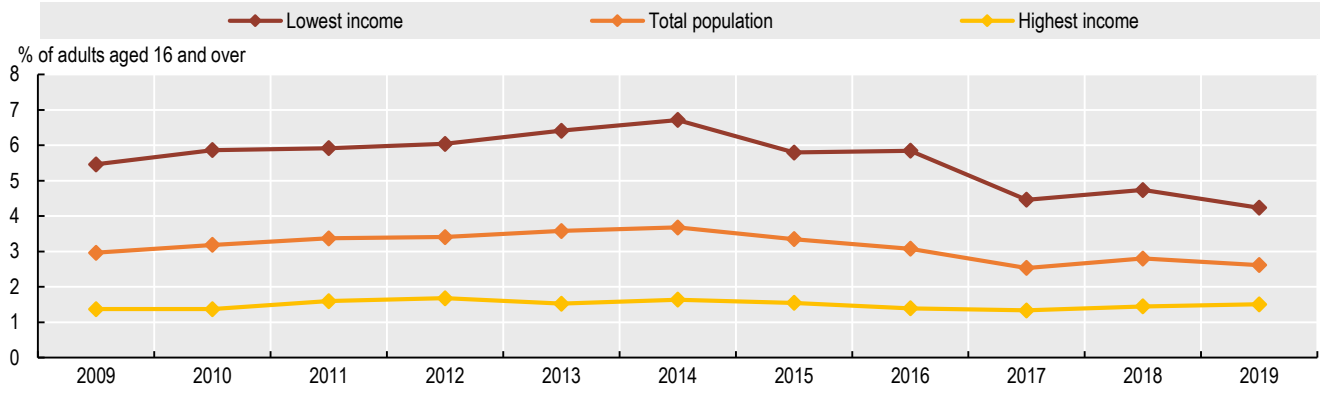
Figure 5.4. **Population reporting unmet needs for medical care, by income level, 2019**



Source: Eurostat database, based on EU-SILC.

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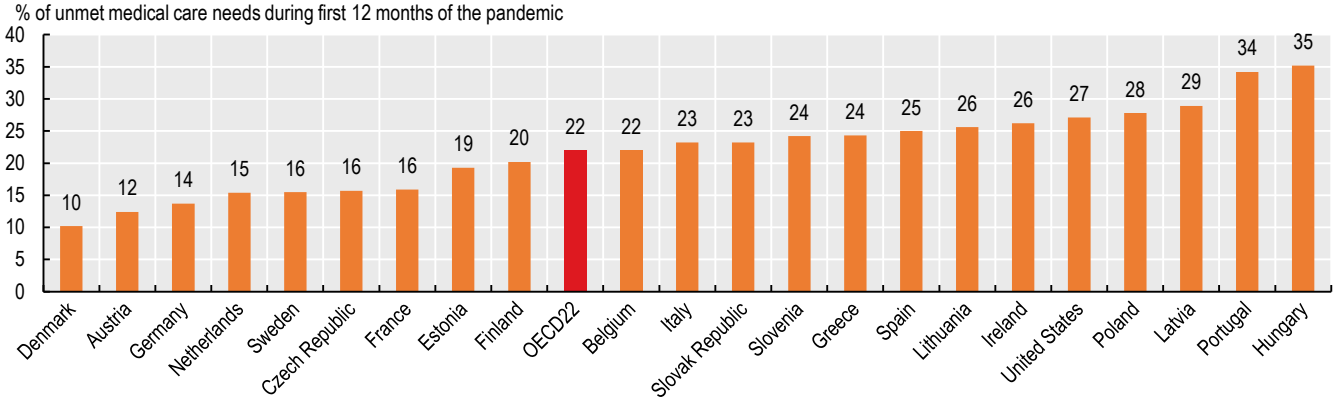
Figure 5.5. **Trends in unmet medical care needs, by income level, OECD27 average, 2009-19**



Source: Eurostat database, based on EU-SILC.

StatLink https://stat.link/snuexo

Figure 5.6. **Unmet medical care needs during first 12 months of the pandemic, 2020-21**



Source: Eurofound Living, Working and COVID-19 Survey; Household Pulse Survey from the United States Census Bureau.

StatLink https://stat.link/qsafm3

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 5.7 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 the result of specific goods and services being included or excluded in the publicly defined benefit package (such as a particular drug or medical treatment), different cost-sharing arrangements or some services only being covered for specific population groups in a country (such as dental treatment).

On average across OECD countries, around three-quarters of all health care costs were covered by government or compulsory health insurance schemes in 2019 (see indicator "Health expenditure by financing scheme"). This share stood above 80% in ten countries (Norway, Luxembourg, Sweden, Germany, Japan, France, Denmark, Iceland, the Netherlands and the Czech Republic). On the other hand, in Greece, Latvia, Portugal and Korea, only around 60% of all costs were covered by publicly mandated schemes. In Mexico, less than half of all health spending was financed by government or compulsory schemes (49%).

In general, financial protection is not uniform across all types of health care services, and there is considerable variation across countries. In nearly all OECD countries, inpatient services in hospitals are more comprehensively covered than any other type of care. Across OECD countries, 87% of all inpatient costs were borne by government or compulsory insurance schemes in 2019. In many countries, patients have access to free acute inpatient care or only need to make a small co-payment. As a result, coverage rates were near 100% in Sweden, Norway, Iceland and Estonia. In Australia, Mexico, Greece and Korea, financial coverage for the cost of inpatient care was only around two-thirds of total costs. In some of these countries, patients frequently choose treatment in private facilities where coverage is not (fully) included in the public benefit package. In Australia, private insurance may also be used for treatment in public hospitals.

More than three-quarters (77%) of spending on outpatient medical care in OECD countries in 2019 was borne by government and compulsory insurance schemes. Coverage ranged from under 60% in Portugal Latvia and Korea to over 90% in the Slovak Republic, Denmark and Sweden. In some countries, 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 91% of total costs are covered, but user charges exist for visits to psychologists and physiotherapists or for patients who see a specialist without referral – and in the United Kingdom (89%), where care provision outside National Health Service-commissioned services is not covered.

Public coverage for dental care costs is far more limited across OECD countries due to restricted service packages (frequently limited to children) and higher levels of cost-sharing. On average, less than one-third 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 – this is the case for adults in the Netherlands, for example.

Coverage for pharmaceuticals is also typically less comprehensive than for inpatient and outpatient care: across OECD countries, around 58% of pharmaceutical costs are financed by government or compulsory insurance schemes. The most generous coverage can be found in Germany (82%), France (80%) and Ireland (79%). On the other hand, this share is less than two-fifths in Canada, Iceland,Poland and Latvia. In Canada, around one-third of all pharmaceutical spending is financed via voluntary private health insurance, which is widespread and accessed mainly through employer-based contracts. 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 9).

During the COVID-19 pandemic, countries have tried to ensure that diagnosis, testing and appropriate care for COVID-19 patients are affordable – notably in countries where segments of the population remain without coverage. In Poland, for example, the National Health Fund covered uninsured as well as insured people for health services combatting COVID-19 (OECD, 2021[6]).

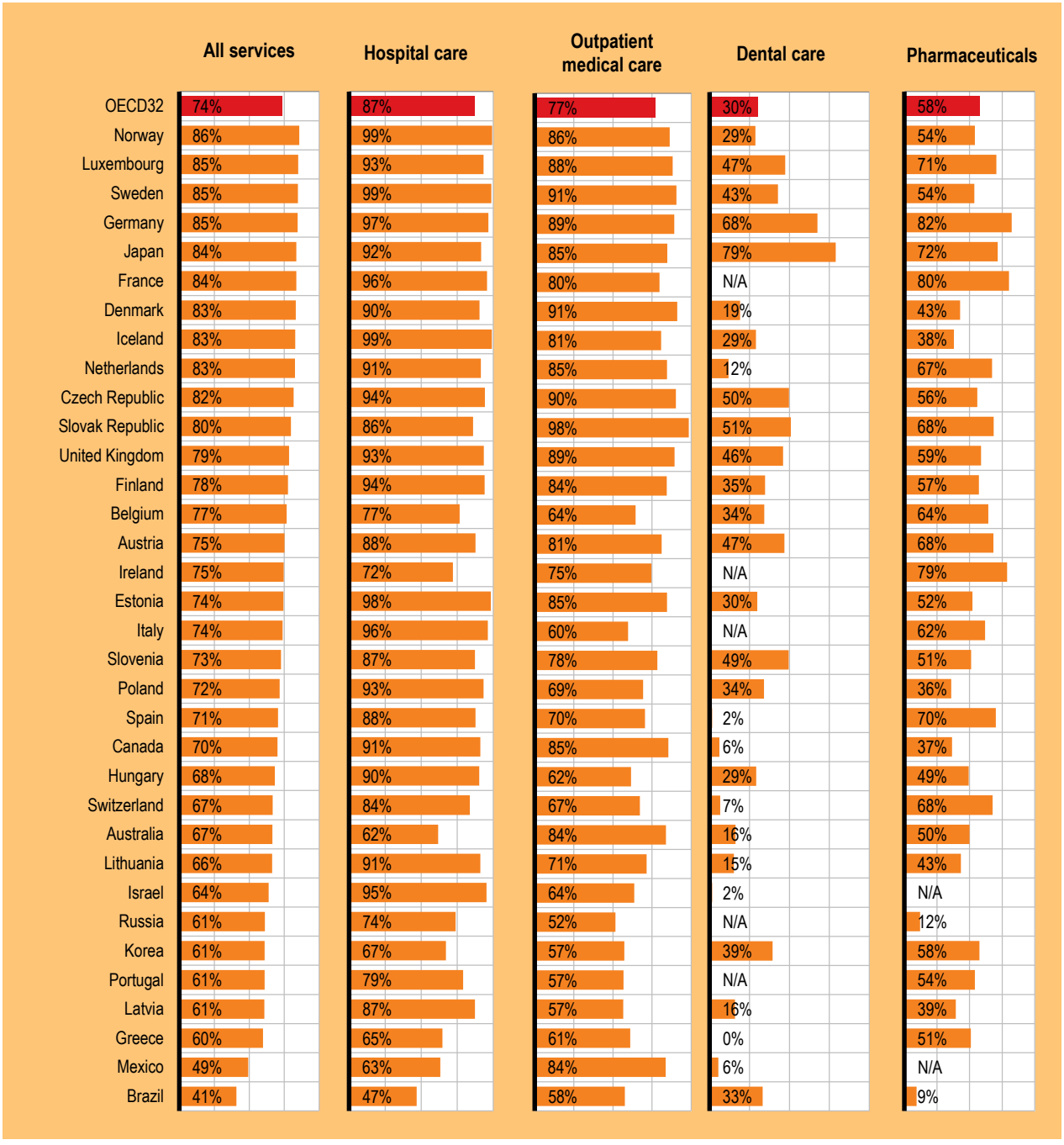
Definition and comparability

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 (OECD/Eurostat/WHO, 2017[7]). Hospital care refers to inpatient curative and rehabilitative care (which is mainly provided in hospitals); outpatient medical care to all outpatient curative and rehabilitative care excluding dental care; and 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 5.7. **Extent of coverage, 2019 (or nearest year)**

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



Note: N/A means data not available.
Source: OECD Health Statistics 2021.

StatLink https://stat.link/dqvn2i

Financial hardship and out-of-pocket expenditure

Where health systems fail to provide adequate financial protection, people may suffer financial hardship from paying for health care, or simply not have enough money to pay for health care. 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 one-fifth of all spending on health care comes directly from patients through out-of-pocket (OOP) payments (see indicator "Financing of health care" in Chapter 7). People experience financial hardship when the burden of such OOP payments is large in relation to their ability to pay. Poorer 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 in 2019, about 3% of total household spending was on health care goods and services, from around 2% or below in New Zealand, France, Slovenia, Luxembourg, Colombia and Turkey to more than 5% in Korea and Switzerland (Figure 5.8).

Health systems in OECD countries differ in the degree of coverage for different health goods and services (see indicator "Extent of health care coverage"). Pharmaceuticals and other medical goods made up the main OOP expense for people in 2019, followed by spending on outpatient care (Figure 5.9). These two components typically account for almost two-thirds of household spending on health care. Average household OOP spending on dental care (14% of spending on health) and long-term health care (12%) can also be high. Inpatient care plays only a minor role (9%) in the composition of OOP spending. During the COVID-19 pandemic, countries have tried to ensure that diagnosis, testing and appropriate care for COVID-19 patients are affordable – notably in countries where segments of the population remain without coverage (OECD, 2021[6]).

The indicator most widely used to measure financial hardship associated with OOP payments for households is incidence of catastrophic spending on health (Cylus, J., Thomson and Evetovits, 2018[8]). This varies considerably across OECD countries, from fewer than 2% of households experiencing catastrophic health spending in Sweden, Spain, the United Kingdom, Ireland, the Czech Republic and Slovenia, to over 10% of households in Lithuania, Latvia, Hungary and Portugal (Figure 5.10). Across all countries, poorer households (those in the lowest 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.

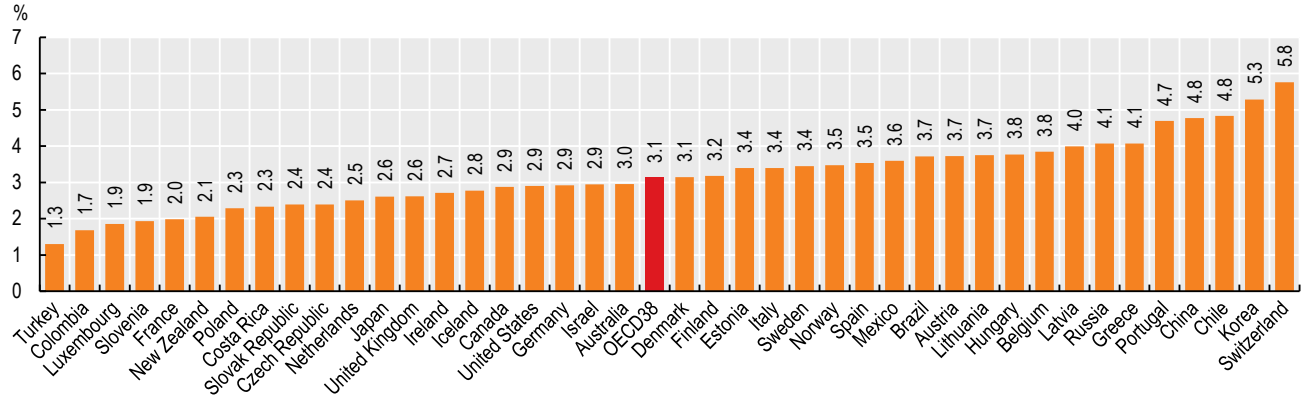
Countries with comparatively high levels of public spending on health and low levels of OOP payments typically have a lower incidence of catastrophic spending. However, policy choices are also important, particularly around coverage policy (WHO Regional Office for Europe, 2019[9]). Population entitlement 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 (as, for example, in Austria, 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. 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.

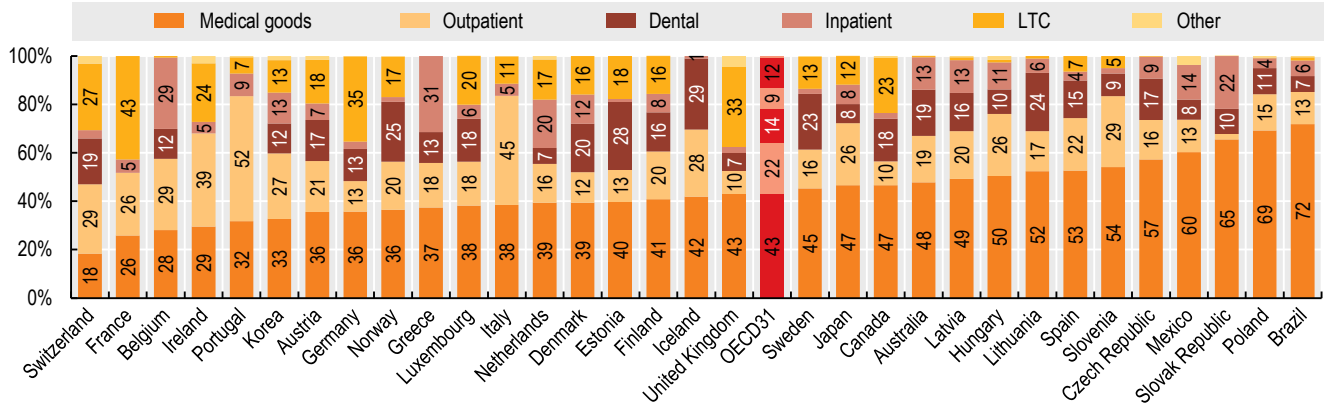
Figure 5.8. **Out-of-pocket spending as share of final household consumption, 2019 (or nearest year)**



Sources: OECD Health Statistics 2021, OECD National Accounts Database.

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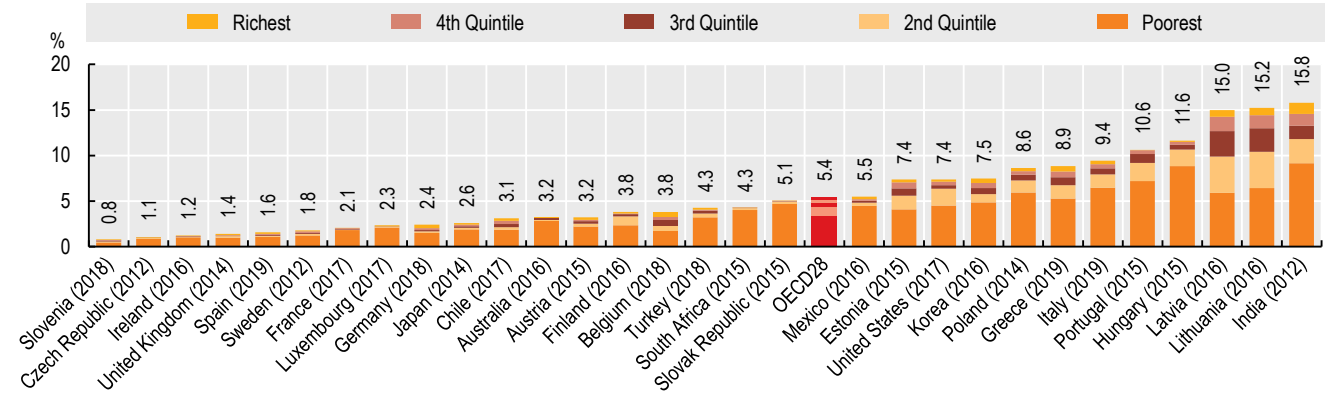
Figure 5.9. **Composition of out-of-pocket spending on health, by type of service, 2019 (or nearest year)**



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 2021.

StatLink https://stat.link/8a9hp1

Figure 5.10. **Share of households with catastrophic health spending by consumption quintile, latest year available**



Sources: WHO Regional Office for Europe, 2021 (countries in Europe); European Observatory on Health Systems and Policies, 2021 (countries outside Europe).

StatLink https://stat.link/4kqcrp

Consultations with doctors

Consultations with primary care doctors are, for many people, the most frequent contact with health services, and often provide an entry point for subsequent medical treatment. Consultations can take place in doctors' clinics, hospital outpatient departments or, in some cases, patients' own homes. Increasingly, consultations can also take place online and through video calls, through the development of teleconsultations (Oliveira Hashiguchi, 2020[10]). The use of teleconsultations increased greatly during the COVID-19 pandemic as a way to protect both patients and doctors, and to avoid spreading the virus (see indicator "Digital health").

In 2019, the number of in-person doctor consultations per person ranged from fewer than 3 in Mexico, Costa Rica, Sweden, Colombia and Chile, to over 17 in Korea (Figure 5.11). The OECD average was 6.8 consultations per person per year, with most countries reporting between four and ten. The average number of doctor consultations per person across OECD countries has remained relatively stable since 2009. However, some countries have seen large increases over time (such as Turkey, Lithuania and Colombia).

Differences in service delivery modalities explain some of the cross-country variation. In Canada, Finland, Ireland, New Zealand, Sweden, the United Kingdom and the United States, the relatively low number of doctor consultations can be explained in part by the fact that nurses and other health professionals play an important role in primary care – notably in the management of patients with chronic diseases and in dealing with patients with minor health issues. This lessens the need for doctor consultations (Maier, Aiken and Busse, 2017[11]).

Provider payment methods and levels of co-payments also have an impact on the number of doctor consultations. In some countries, doctors are paid predominantly by fee-for-service (as in Germany, Japan, Korea and the Slovak Republic). Such countries tend to have higher consultation rates than those countries where doctors are mainly paid by salaries or capitation (such as Denmark, Finland, Mexico and Sweden). However, in Switzerland and the United States, doctors are paid mainly by fee-for-service, but consultation rates are below average. In these countries, patient co-payments are high for a large proportion of the population, which may result in patients not consulting a doctor because of the cost of care.

COVID-19 has also had a substantial impact on doctor consultations. Stay-at-home orders and suspension of non-urgent care – particularly early on in the pandemic – contributed to fewer doctor consultations, as did many people's reluctance to visit health care facilities due to concerns about catching the virus (OECD, 2020[5]). Based on preliminary data for 2020, consultations per capita dropped in seven out of eight OECD countries, compared to 2019. In-person consultations fell by around 30% in Chile and Spain, by 16-17% in Costa Rica, Israel and Norway, and by just under 10% in Australia and Mexico, with no change observed in Denmark. However, declines in in-person consultations were offset to some extent by increasing numbers of teleconsultations (see indicator "Digital health" and Chapter 2 for an in-depth analysis of the health impact of COVID-19).

Information on the number of doctor consultations per person can be used to estimate the annual numbers of consultations per doctor. This indicator should not be taken as a measure of doctors' productivity, since consultations vary in length and effectiveness, and because it excludes services doctors deliver for hospital inpatients, as well as time spent on research and administration. Keeping these comparability issues in mind, the estimated number of consultations per doctor is highest in Korea, Turkey and Japan (Figure 5.12). Numbers were lowest in Greece, Sweden and Costa Rica. In Sweden, consultations with doctors in both primary care and hospital settings tend to be focused on patients with more severe and complex cases.

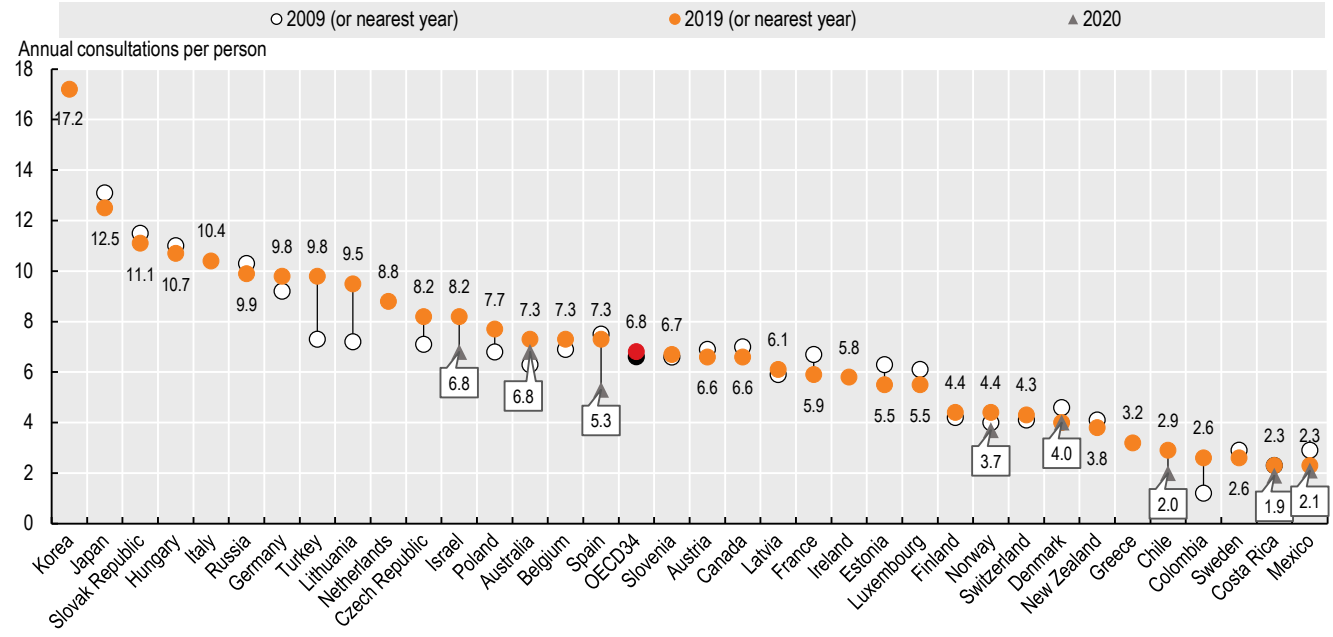
The number and type of doctor consultations can vary among different socio-economic groups. Wealthier individuals are more likely to see a doctor than individuals in the lowest income quintile, for a comparable level of need. Income inequalities in accessing doctors are much more marked for specialists than for general practitioner consultations (OECD, 2019[4]).

Definition and comparability

Consultations with doctors refer to the number of face-to-face (in-person) contacts with physicians, including both generalists and specialists. There are variations across countries in the coverage of different types of consultations, notably in outpatient departments of hospitals. Data come mainly from administrative sources, although in some countries (including Ireland, Italy, the Netherlands, New Zealand, Spain and Switzerland) they come from health interview surveys. Data from administrative sources tend to be more accurate (and higher) than those from surveys because of problems with recall and non-response rates.

Figures for the Netherlands exclude contacts for maternal and child care. In Austria and Germany, data include only the number of cases of physician treatment according to reimbursement regulations under the countries' social health insurance schemes (a case only counts the first contact over a three-month period, even if the patient consults a doctor more often, leading to an underestimation). Telephone contacts are included in a few countries (such as Ireland, the Netherlands and Spain). In Turkey, most consultations with doctors occur in outpatient departments in hospitals.

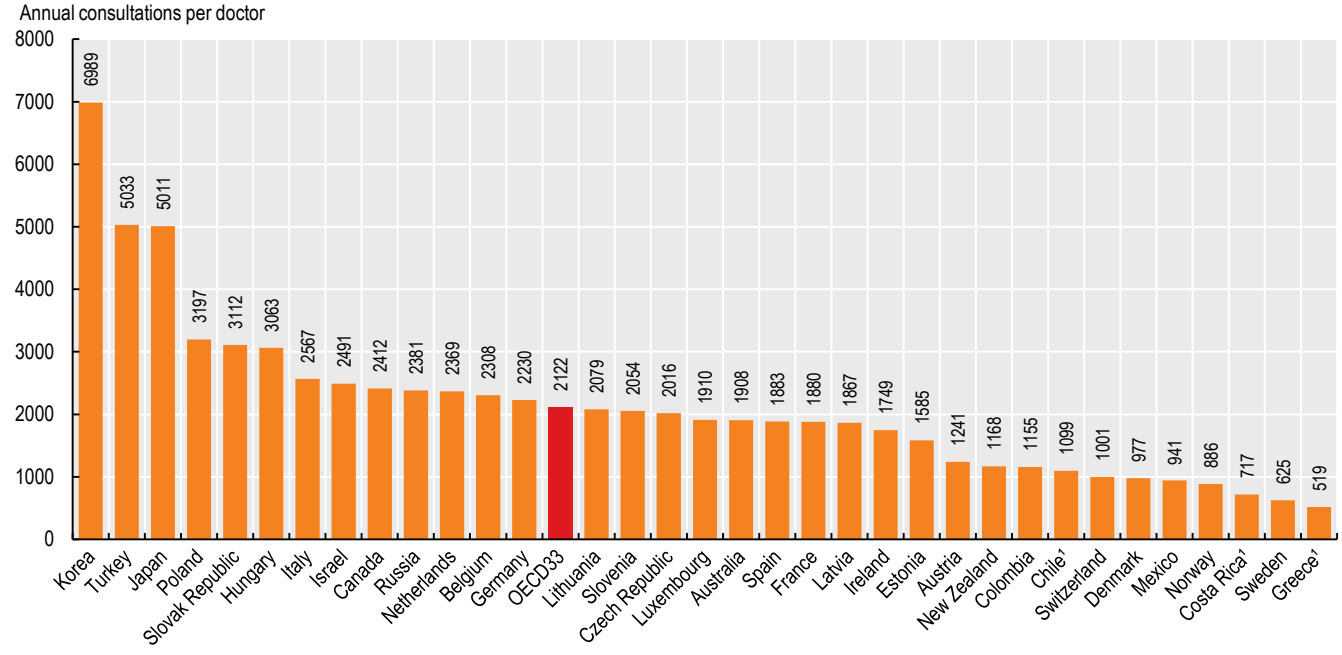
Figure 5.11. **Number of in-person doctor consultations per person, 2009, 2019 and 2020**



Source: OECD Health Statistics 2021.

StatLink https://stat.link/54igmh

Figure 5.12. **Estimated number of in-person consultations per doctor, 2019 (or nearest year)**



1. In Chile, Costa Rica and Greece, data for the denominator include all doctors licensed to practise.
Source: OECD Health Statistics 2021.

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Digital health

Providing safe, effective, responsive and patient-centred care, that is also cost-effective and accessible, requires that those making decisions – from patients to health care providers, managers and scientists – have timely and accurate health data and information (OECD, 2019[12]). When health data and information are understandable and valid for a range of uses and users, new digital health services and applications become possible. From telehealth to artificial intelligence, new digital health services may lead to better access to health care and higher patient satisfaction, especially among those patients that face the most barriers to traditional face-to-face care services (e.g. rural patients). A digital transformation of health care is taking place across OECD countries, accelerated by the COVID-19 pandemic and driven by a digitalisation of information infrastructure, as well as growing demand from patients.

Many OECD countries are implementing electronic medical records (EMRs) in hospitals or physicians' offices for their patients (Oderkirk, 2021[13]). In 2021, on average 93% of primary care practices use EMRs across 24 OECD countries (Figure 5.13). In 15 OECD countries, all primary care practices use EMRs, while in Japan only 42% use them. The proportion of primary care practices using EMRs has increased over time across most countries participating in this OECD survey. In 2012, an average of 70% of primary care practices used EMRs (the composition of participating countries differs from year to year). Countries where the proportion of physician offices using EMRs have at least doubled since 2012 include Canada, Denmark and Japan.

In 16 of 26 OECD countries in 2021, most patients are able to access an Internet portal where they can view information contained in their EMR. In 11 OECD countries, most patients can also interact with their record (such as by amending information; adding additional data from devices or apps; or reporting outcomes, experiences or clinical incidents). About half of the countries connect patients with their health care providers via a patient portal that facilitates teleconsultations (13 countries), video-conferencing (12 countries) and secure email or text messaging (11 countries). Seven countries also use the portal to survey patients about patient experiences and patient-reported outcomes.

Consulting individuals on their care and giving them access to their health data and information are key dimensions of people-centred health systems. Both patients and providers are increasingly interested in using digital tools to improve individual health and help patients engage with health systems. On average across 30 OECD countries, in 2020, 59% of individuals aged 16-74 used the Internet to seek health information in the three months preceding the survey, up from 36% in 2010 (Figure 5.14). However, there were significant demographic and socio-economic differences in seeking health information online (Oliveira Hashiguchi, 2020[10]). Older adults, individuals with lower levels of educational attainment and those from households with lower incomes were less likely to search for health information online. Health and digital health literacy are crucial to guarantee that the digital transformation leaves no patient behind.

With the onset of the COVID-19 pandemic, and the resulting restrictions to mobility, work and social interactions, many more people were unable to receive medical advice in person. In 2019, before the pandemic, remote consultations via phone or video accounted for fewer than 10% of all consultations in Australia, Finland, Lithuania, Norway and Slovenia. Denmark had the highest share of remote consultations pre-pandemic, at 45%. From the start of the pandemic, the proportion of adults who reported having a medical consultation online or by phone increased dramatically: by mid-2020, almost one in three adults had used a remote consultation, a proportion that went up to almost one in two by early 2021 (Figure 5.15). Countries where use of remote consultations was highest in mid-2020 also had higher growth rates between mid-2020 and early 2021, indicating an increasing divergence.

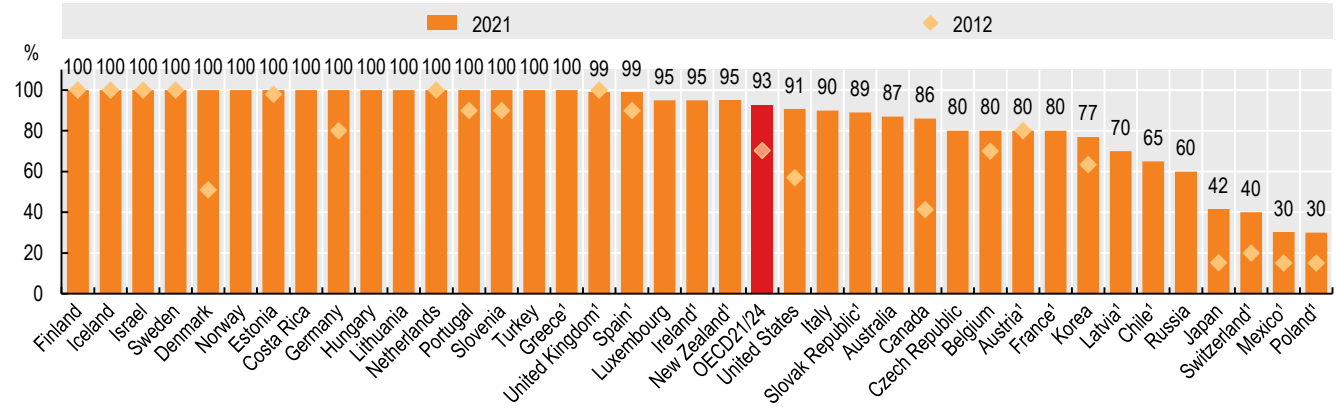
Definition and comparability

An EMR is a computerised medical record created in an organisation that delivers care, such as a hospital or physician's office, for patients of that organisation. Ideally, EMRs should be shared between providers and settings to provide a detailed history of contact with the health care system for individual patients from multiple organisations (Oderkirk, 2021[13]). The figures presented on EMR implementation come from a 2021 survey of OECD countries to which 25 OECD member countries and the Russian Federation (Russia) responded. The survey was carried out in 2012, 2016 and 2021.

The Information and Communication Technology (ICT) Access and Usage by Households and Individuals database provides a selection of 92 indicators, based on the second revision of the OECD Model Survey on ICT Access and Usage by Households and Individuals. The indicators originate from both an OECD data collection on OECD and accession countries or key partners (such as Australia and Brazil), and Eurostat statistics on households and individuals for the OECD countries that are part of the European statistical system (such as Germany).

The proportion of medical appointments conducted by phone or video, out of all medical appointments, before the pandemic was sourced from the OECD/Eurostat/WHO Regional Office for Europe Joint Data Collection on Non-Monetary Health Care Statistics. The share of adults reporting medical consultations online or by phone was sourced from Eurofound's Living, Working and COVID-19 Survey, which provides a snapshot of the impact of the pandemic on people's lives. The survey has been carried out three times at the time of writing, with the question on remote consultations ("Since the pandemic began, have you received any of the following services from a doctor – Online health care: medical consultation online or by telephone") included in rounds 2 (July 2020) and 3 (March 2021).

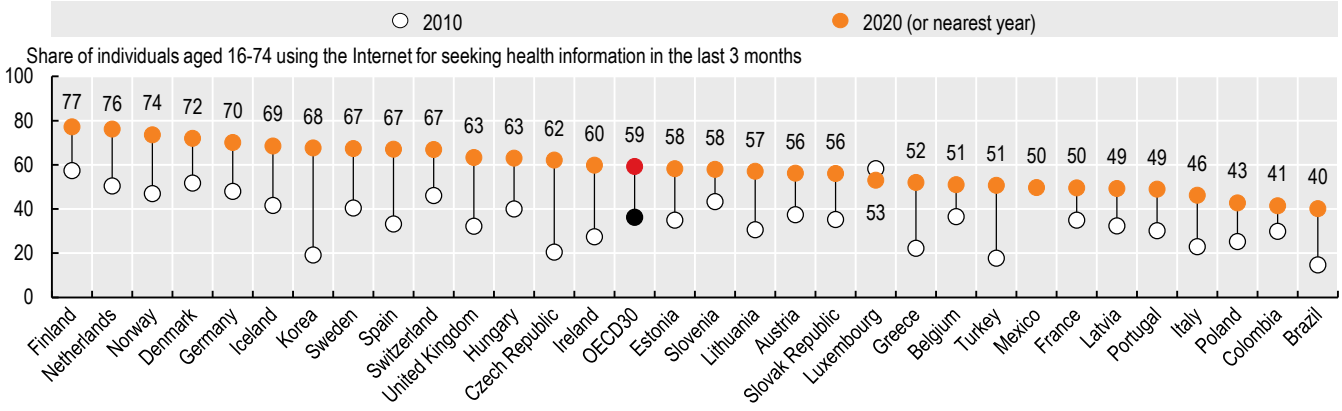
Figure 5.13. **Proportion of primary care physician offices using electronic medical records, 2012 and 2021**



1. Most recent year is 2016 (data not included in the 2021 OECD average).
Source: OECD Survey of Electronic Health Record System Development and Use, 2012, 2016 and 2021.

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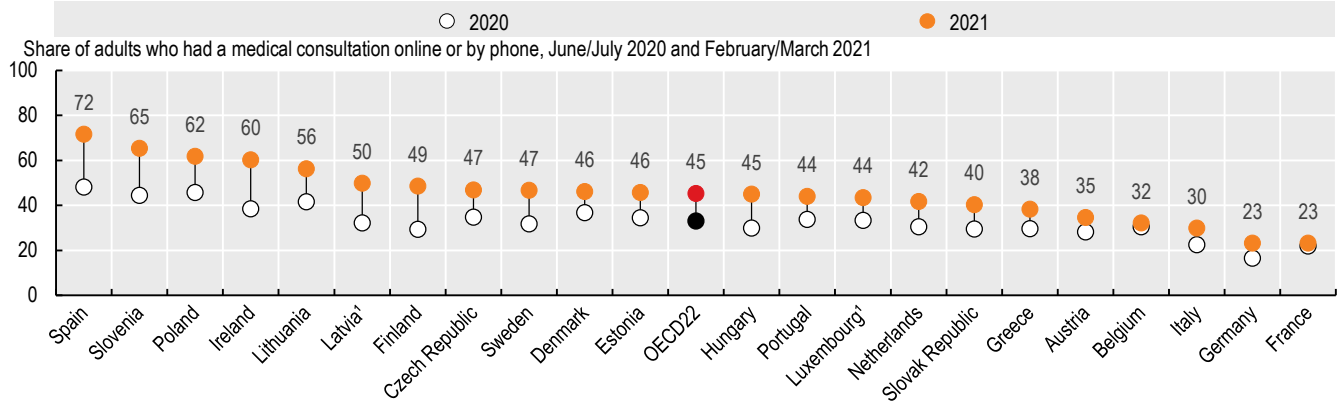
Figure 5.14. **Percentage of adults searching for health information online, 2010 and 2020**



Note: The most recent data point for Poland is 2018, and for Switzerland, Mexico and France is 2019; the earliest data point for Mexico is 2015.
Source: OECD Dataset on ICT Access and Usage by Households and Individuals.

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Figure 5.15. **Share of adults who received services from a doctor via telemedicine since the start of the pandemic, 2020 and 2021**



1. Low reliability in one or both rounds.
Source: Eurofound (2020), "Living, working and COVID-19", *http://eurofound.link/COVID-19data*.

StatLink https://stat.link/l8xfou

Hospital beds and occupancy

The number of hospital beds provides an indication of the resources available for delivering services to inpatients. The COVID-19 pandemic has highlighted the need to have a sufficient number of hospital beds and flexibility in their use, to address any unexpected surge in demand for intensive care, together with a sufficient number of doctors and nurses with the right skills to provide the required services (OECD/European Union, 2020[14]). Still, a surplus of hospital beds may lead to overuse and therefore costs – notably for patients whose outcomes may not improve from intensive care (Phua, Hashmi and Haniffa, 2020[15]). Therefore, while policy makers should guarantee sufficient hospital bed capacity to ensure resilience, value-for-money considerations should also be taken into account.

Across OECD countries, there were on average 4.4 hospital beds per 1 000 people in 2019 (Figure 5.16). In Japan (12.8 beds per 1 000 people) and Korea (12.4 beds per 1 000 people), rates were much higher. Over half of OECD countries reported between 3 and 8 hospital beds per 1 000 population, with the lowest rates in Colombia, Costa Rica and Mexico. Among OECD partner countries, India and Indonesia also had relatively few beds.

Since 2009, the number of beds per capita has decreased in nearly all OECD countries. The largest reduction occurred in Finland, with a fall of more than 50%, mainly affecting long-term care beds and psychiatric care beds. Latvia, Luxembourg, Norway and the Netherlands reduced capacity by 1 bed or more per 1 000 population. Part of the decrease can be attributed to advances in medical technology, allowing more surgery to be performed on a same-day basis, or as part of a broader policy strategy to reduce the number of hospital admissions. In contrast, the number of beds increased strongly in Korea (+52%), with a significant number of these dedicated to long-term care.

Hospital bed occupancy rates offer complementary information to assess hospital capacity. High occupancy rates of curative (acute) care beds can be symptomatic of a health system under pressure. Some spare bed capacity is necessary to absorb unexpected surges in patients requiring hospitalisation. Although there is no general consensus about the “optimal” occupancy rate, a rate of about 85% is often considered a maximum to reduce the risk of bed shortages (NICE, 2018[16]). In 2019, the bed occupancy rate was higher than 85% in four of 27 OECD countries with comparable data: Canada, Israel, Ireland and Costa Rica (Figure 5.17). Occupancy rates were comparatively low in the United States, Hungary and the Netherlands (less than 65%). Around half of OECD countries had bed occupancy rates of 70-80%, and the OECD average was 76% in 2019.

While general hospital bed capacity matters, intensive care unit (ICU) capacity has been an essential resource during the COVID-19 pandemic, delivering care for critically ill patients. Notwithstanding definitional differences, on average across 34 OECD countries there were 14.1 intensive care beds per 100 000 population in 2019 (Figure 5.18). The Czech Republic (43 beds per 100 000 population) and Estonia (38 beds per 100 000 population) had the highest number of ICU beds prior to the pandemic. Germany and Turkey also had numbers well above the OECD average. At the other end of the spectrum, Costa Rica, New Zealand and Mexico had the lowest number of ICU beds, at below 4 beds per 100 000 population. During the pandemic, countries deployed a number of policy interventions to boost surge capacity in a flexible manner. These included transformation of other clinical wards into ICUs, creation of field hospitals with ICU units and transfer of patients to localities with spare ICU capacity. Indeed, preliminary data suggest that among ten countries providing 2020 figures, most increased ICU capacity compared to capacity prior to the pandemic. In Turkey, for example, the number of ICU beds in 2020 increased by about 30% compared to 2019.

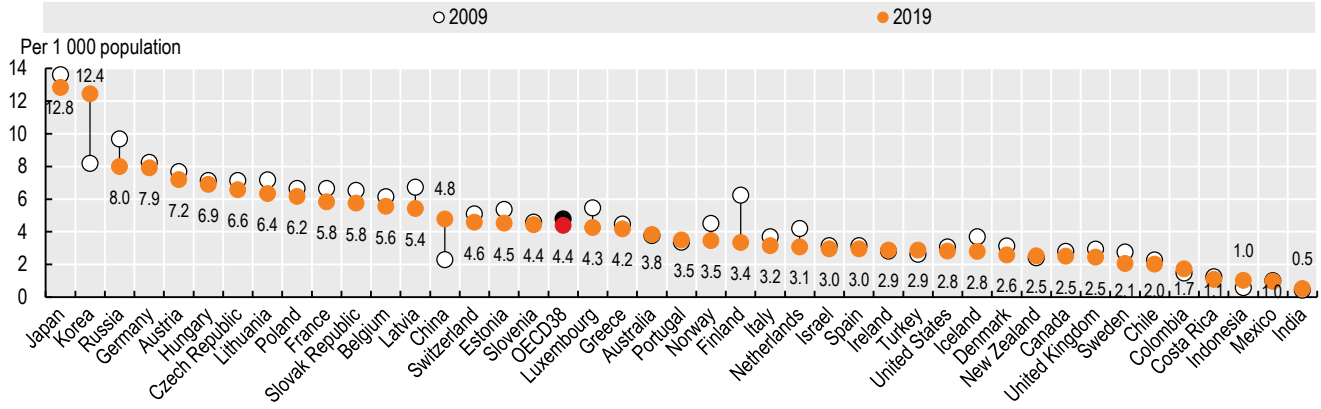
Definition and comparability

Hospital beds include all beds that are regularly maintained and staffed that are immediately available for use. They include beds in general hospitals, mental health and substance abuse hospitals, and other specialty hospitals. Beds in residential long-term care facilities are excluded. Data for some countries do not cover all hospitals. In Costa Rica and the United Kingdom, data are restricted to public hospitals. Data for Sweden exclude private beds that are privately financed. Beds for same-day care may be included in some countries (such as Austria and Luxembourg until 2018 and the Netherlands). Cots for healthy infants are included for a few countries (such as Canada and Poland).

The occupancy rate for curative (acute) care beds is calculated as the number of hospital bed-days related to curative care divided by the number of available curative care beds (multiplied by 365). In the Netherlands, the numbers of beds used for the calculation of occupancy rates are under investigation.

ICU beds are for critically ill patients who need intensive and specialised medical and nursing care, strong monitoring and physiological organ support to sustain life during a period of acute organ system insufficiency. ICU beds are classified by the level of care provided to the patient. Commonly, this falls into three levels, with Level 3 providing the most intense monitoring and Level 1 the lowest. The data on ICU beds cover the three levels, except in England (United Kingdom), Latvia and Ireland, which include only critical care beds (Levels 2 and 3). The exact definition of intensive care beds varies across OECD countries, shaped by differences in regulations, specifying requirements such as the patient/nurse ratio, physical properties of the bed (including ventilators, monitoring equipment, infusion equipment and so on) and patient characteristics. The data in Figure 5.18 relate to adult ICU beds for most countries, but a few countries (such as Estonia) also include neonatal and paediatric ICU beds.

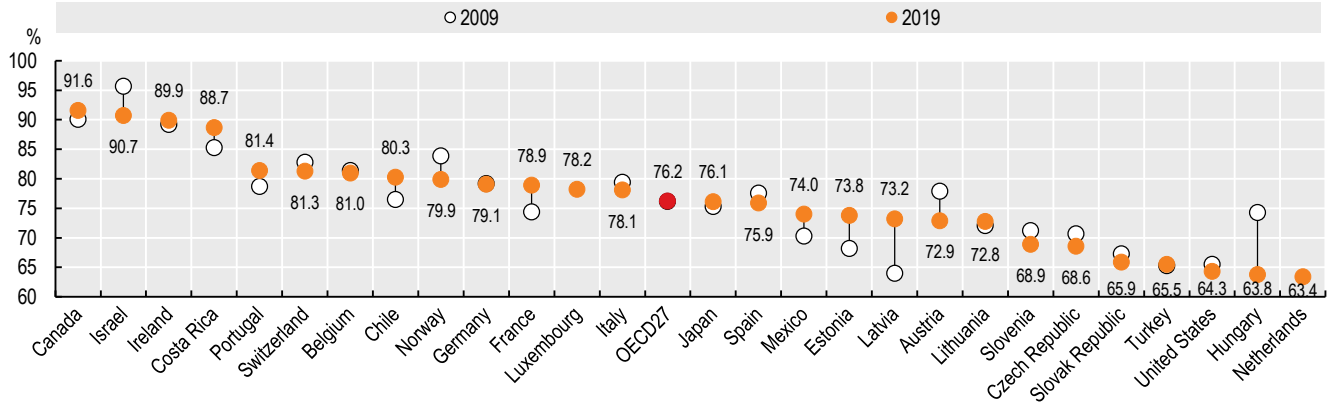
Figure 5.16. **Hospital beds, 2009 and 2019 (or nearest year)**



Source: OECD Health Statistics 2021.

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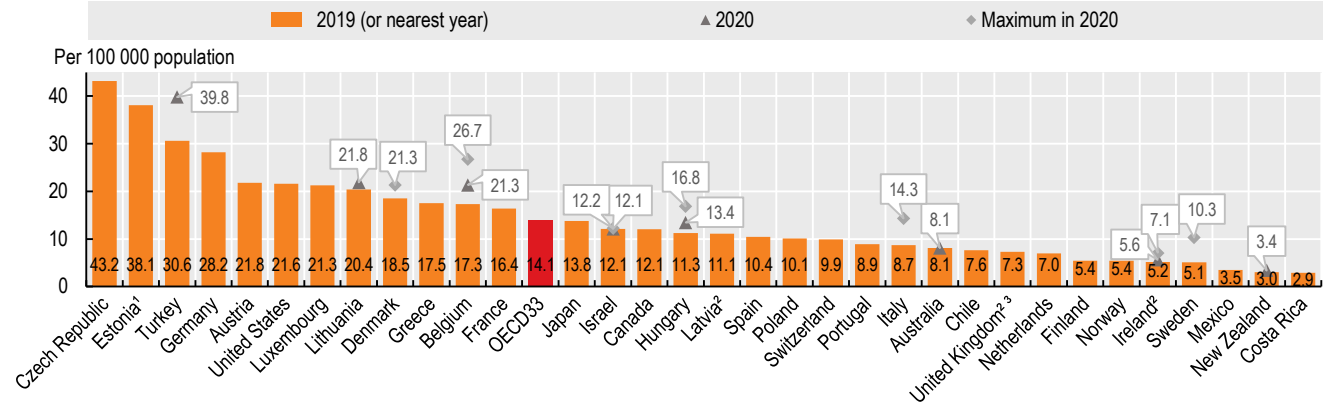
Figure 5.17. **Occupancy rate of curative (acute) care beds, 2009 and 2019 (or nearest year)**



Source: OECD Health Statistics 2021.

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Figure 5.18. **Adult intensive care beds, 2019 (or nearest year) and 2020**



1. Neonatal and paediatric ICU beds included. 2. Data cover critical care beds only. 3. Data refers to England only.
Source: OECD/Eurostat/WHO Regional Office for Europe Joint Questionnaire on Non-Monetary Health Care Statistics 2021 (unpublished data); Country Health Profiles 2021; Health at a Glance: Latin America and the Caribbean 2020; national sources.

StatLink https://stat.link/gd60rn

Hospital discharges and average length of stay

Hospital discharge rates measure the number of patients who leave a hospital after staying at least one night. Improving timely discharge of patients can help the flow of patients through a hospital, freeing up hospital beds and health worker time. Both premature and delayed discharges not only worsen health outcomes but also increase costs: premature discharges can lead to costly readmissions; delayed discharges use up limited hospital resources.

On average across OECD countries, there were 146 hospital discharges per 1 000 population in 2019 (Figure 5.19). The rates were highest in Germany, Austria and Lithuania (220 and over per 1 000 population) and lowest in Colombia, Mexico, Costa Rica, Canada, Chile and the Netherlands (less than 100 per 1 000 population). The number of discharges fell between 2009 and 2019 in the majority of OECD countries, with some of the largest reductions in countries where there were also large decreases in the number of beds (as in Estonia, Finland, Iceland, Luxembourg and Sweden). In contrast, hospital discharge rates increased by 40% in Korea, and nearly tripled in the People's Republic of China (China).

In 2020, many countries redesigned hospital discharge policies as an important tool during the pandemic to free up hospital beds for COVID-19 patients. Indeed, early on, many hospitals looked to discharge patients urgently for whom it was medically safe to do so. At the same time, countries had to quickly assemble new discharge criteria for COVID-19 patients (OECD, 2021[6]). This contributed to sometimes unclear and inconsistent discharge criteria (Sze and al, 2021[17]). In terms of the overall volume of hospital discharges, initial data from five OECD countries for 2020 show a reduction in hospital discharge rates compared to 2019 (Figure 5.19). This reflects changes in hospital discharge policies. Reductions ranged from about 7% in Denmark to around 30% or more in Lithuania, Italy and Chile. Such reductions likely reflect people avoiding hospitals during the height of the pandemic, as well as changes in hospital discharge policies.

The average length of stay in hospital is also an indicator of efficiency in health service delivery. All else being equal, a shorter stay reduces the cost per discharge and shifts care from inpatient to less expensive settings. Longer stays can be a sign of poor care co-ordination, resulting in some patients waiting unnecessarily in hospital until rehabilitation or long-term care can be arranged. At the same time, some patients may be discharged too early, when staying in hospital longer might have improved their health outcomes or reduced the chances of readmission.

In 2019, the average length of stay in hospital was 7.6 days across OECD countries (Figure 5.20). Mexico and Turkey had the shortest hospital stays (about 4 days on average); Korea and Japan the longest (averaging 16 days or over per patient). Since 2009, the average length of stay has decreased in most countries; the most significant declines occurred in Japan, France, Finland, New Zealand and Belgium. The only country with a large increase was Korea, but this reflects in part an increase in the role of "long-term care hospitals", whose function is similar to nursing homes or long-term care facilities.

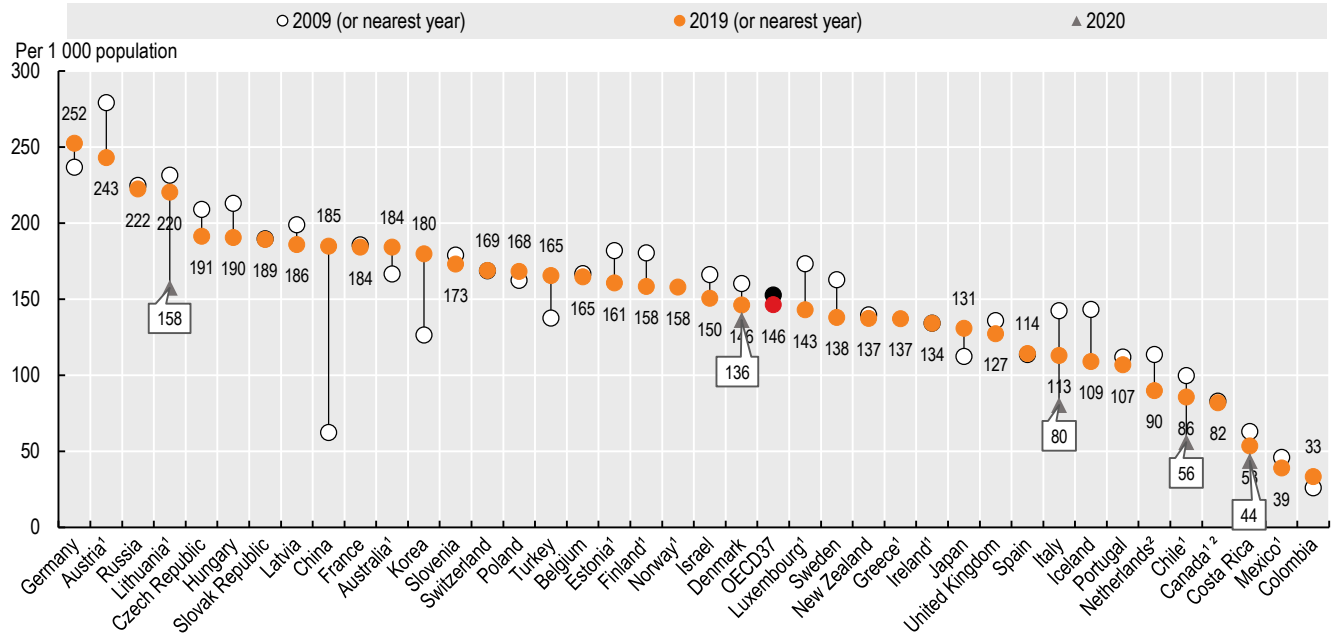
Hospital payment methods may incentivise how long hospitals keep patients. In particular, prospective payment methods such as global budgets or those based on diagnosis-related groups provide a financial incentive to reduce the cost of each hospitalisation, in contrast to payments based on procedure or service. Hospital characteristics may also matter, with OECD analysis finding that hospitals with many beds are associated with a longer length of stay, while high bed occupancy rates are associated with a shorter length of stay (Lorenzoni and Marino, 2017[18]). Finally, strengthening access to primary care and community care can reduce hospital stays. Many countries (such as the Netherlands, France and Norway) have in recent years increased the capacity of intermediate care facilities and home-based care that can serve as alternatives to hospitals (OECD, 2020[5]; 2017[19]).

Definition and comparability

Discharge is defined as the release of a patient who has stayed at least one night in hospital. It includes deaths in hospital following inpatient care. Same-day separations are excluded, with the exceptions of Chile, Japan and Norway, which include some same-day discharges. Healthy babies born in hospitals are excluded (or mostly excluded) from hospital discharge rates in several countries (Australia, Austria, Canada, Chile, Estonia, Finland, Greece, Ireland, Lithuania, Luxembourg, Mexico and Norway). These comprise around 3-10% of all discharges. Data for some countries do not cover all hospitals. For instance, data for Costa Rica, Mexico, New Zealand and the United Kingdom are restricted to public or publicly funded hospitals. Data for Ireland cover public acute and psychiatric (public and private) hospitals. Data for Canada and the Netherlands include only curative/acute care, resulting in some underestimation. The 2020 data are provisional and should be considered cautiously.

Average length of stay refers to the average number of days patients spend in hospital. It is generally measured by dividing the total number of days stayed by all inpatients during a year by the number of admissions or discharges. Day cases are usually excluded. Data cover all inpatient cases (including not only curative/acute care cases) for most countries, with the exceptions of Canada, Japan and the Netherlands, where data refer to average length of stay for curative/acute care or in acute care hospitals only (resulting in an underestimation). The exclusion of healthy babies born in hospitals from hospital discharge data in several countries (see the list above) results in a slight overestimation of the length of stay (for example, the inclusion of healthy newborns would reduce the average length of stay by 0.5 days in Canada).

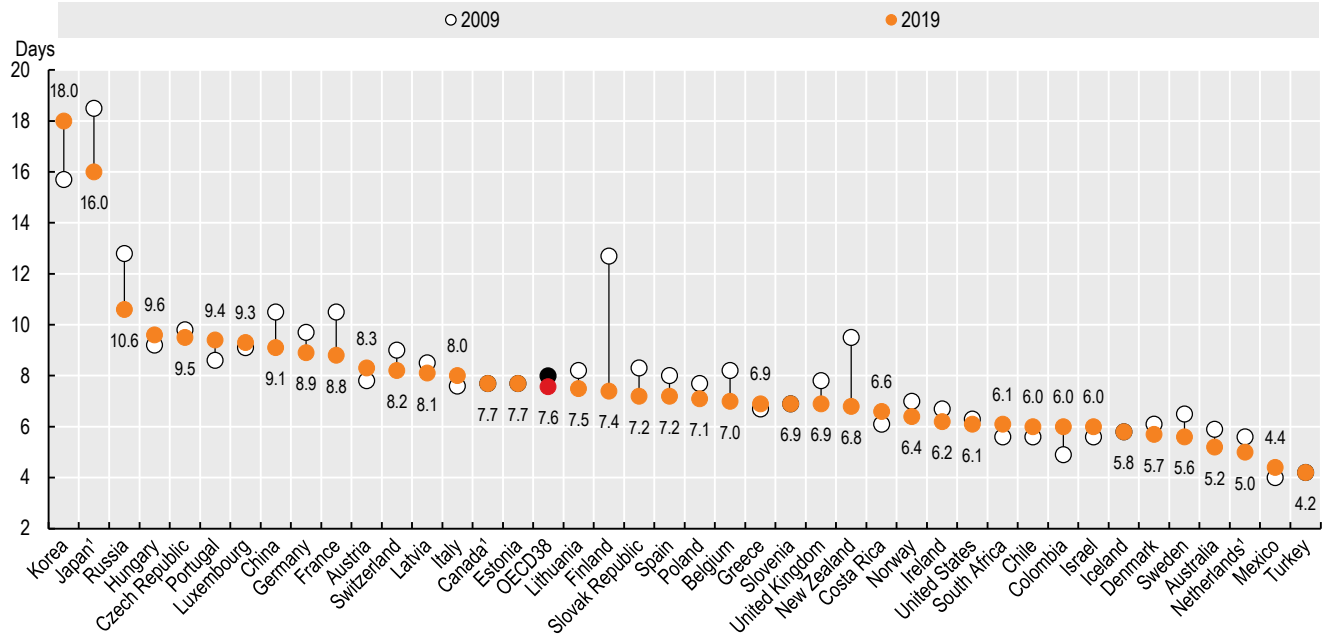
Figure 5.19. **Hospital discharge rates, 2009, 2019 and 2020**



1. Excludes discharges of healthy babies born in hospital (3-10% of all discharges). 2. Includes discharges for curative (acute) care only.
Source: OECD Health Statistics 2021.

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Figure 5.20. **Average length of stay in hospital, 2009 and 2019 (or nearest year)**



1. Refers to average length of stay for curative (acute) care (resulting in an underestimation). In Japan, the average length of stay for all inpatient care was 27 days in 2019 (down from 33 days in 2009).
Source: OECD Health Statistics 2021.

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Diagnostic technologies

Technologies play an important role in medical diagnoses: from physical examination and results processing and sharing, to accessing patients' health records, to the review of clinical histories. However, new technologies can also drive up costs, and are commonly acknowledged to be one of the main causes of increases in health spending (Lorenzoni et al., 2019[20]). This section presents data on the availability and use of three diagnostic imaging technologies: computed tomography (CT), magnetic resonance imaging (MRI) and positron emission tomography (PET). CT and MRI examinations (exams) both show images of internal organs and tissues, while PET scans show other information and problems at the cellular level.

There is no general guideline or international benchmark regarding the ideal number of CT scanners, PET scanners or MRI units. Too few units may lead to access problems in terms of geographical proximity or waiting times, while too many may result in overuse of these costly diagnostic procedures, with little if any benefit for patients.

Availability of CT and PET scanners and MRI units has increased rapidly in most OECD countries over the past two decades. Japan has by far the highest number of CT scanners and MRI units, and the third highest number of PET scanners per capita. Australia has the next highest number of CT scanners; the United States the second highest numbers of MRI units and PET scanners; and Denmark the highest number of PET scanners per capita (Figure 5.21). The combined numbers of these three diagnostic technologies are also substantially higher than the OECD average in Austria, Germany, Greece, Iceland, Italy, Korea and Switzerland; and much lower than average in Colombia, Costa Rica, Hungary and Mexico.

Data on the use of diagnostic scanners are available for 30 OECD countries. Taken together, the use of CT, MRI and PET diagnostic scanners was highest in the United States, Austria and Iceland, all of which had a combined total of over 340 exams per 1 000 population in 2019 (Figure 5.22). The use of these three diagnostic exams was lowest in Poland, Finland and Chile.

Looking at selected trends over time, in Australia and Iceland the number of CT exams per population increased by approximately half over the past decade. The number of CT exams more than doubled in Finland, although from a lower base (Figure 5.23). In the United States, the number of MRI exams per population increased by one-third from 2009 to 2019, while in Australia, the number of MRI exams more than doubled (Figure 5.24).

There are large variations in the use of CT scanners and MRI units, not only across but also within countries – for example, in Belgium, recent analysis shows a 50% variation in the use of diagnostic exams of the spine across provinces in 2017, and this variation is even larger across smaller areas (INAMI/RIVIZ, 2019[21]).

Clinical guidelines exist in several OECD countries to promote more rational use of MRI and CT exams. Through the Choosing Wisely campaign, which began in the United States in 2012 and has since been emulated in a growing number of countries, some medical societies have identified cases when an MRI or CT exam is not necessary. For example, the Royal College of Physicians in the United Kingdom recommends, based on evidence from the National Institute for Health and Care Excellence (NICE), that patients with low back pain or suspected migraine do not routinely need an imaging test (Choosing Wisely UK, 2018[22]).

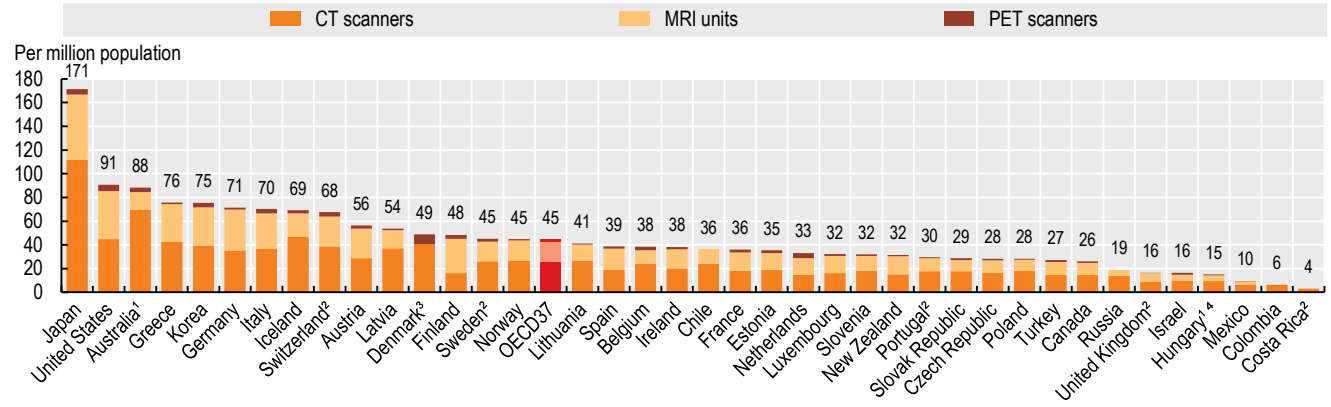
Despite the general upward trend in the use of diagnostic technologies over time, the latest data from 2020 show marked drops across most OECD countries with comparable data. Such reductions were due to the COVID-19 pandemic forcing health providers to delay or cancel diagnosis exams. Numbers of CT and MRI exams fell in 2020 compared to 2019 across five of six OECD countries (Finland, Iceland, Italy, Norway and the United States). The fall in the number of CT exams was over 30% in Finland and 20% in the United States. Numbers of MRI exams fell by over 30% in the United States and over 15% in Italy and Finland. Delays and reductions in diagnostic exams are likely to cause significant backlogs in care, with knock-on effects on people's health outcomes.

Definition and comparability

The data in most countries cover CT scanners, MRI units and PET scanners installed both in hospitals and the ambulatory sector, but coverage is more limited in some countries. Costa Rica, Portugal, Sweden, Switzerland (for MRI units) and the United Kingdom report equipment available in hospitals only, while Hungary includes only devices installed outside hospitals. For Colombia, Costa Rica and the United Kingdom, the data only cover equipment in the public sector. For Australia and Hungary, the number of CT scanners, MRI units and PET scanners includes only those eligible for public reimbursement.

Similarly, CT, MRI and PET exams performed outside hospitals are not included in Portugal, Switzerland and the United Kingdom, while exams performed in hospitals are not covered in Norway. In Australia, the data only include exams for private patients (in or out of hospitals), while in Korea and the Netherlands they only include publicly financed exams.

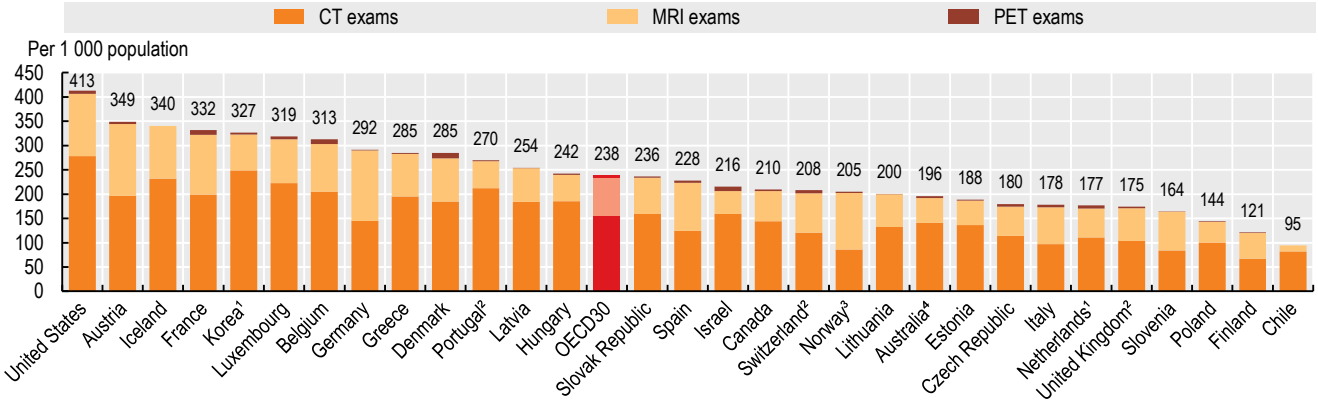
Figure 5.21. **CT scanners, MRI units and PET scanners, 2019 (or nearest year)**



1. Data include only equipment eligible for public reimbursement. 2. Data exclude equipment outside hospital (only for MRI units in Switzerland). 3. Data on MRI units are not available. 4. Data include only equipment outside hospitals.
Source: OECD Health Statistics 2021.

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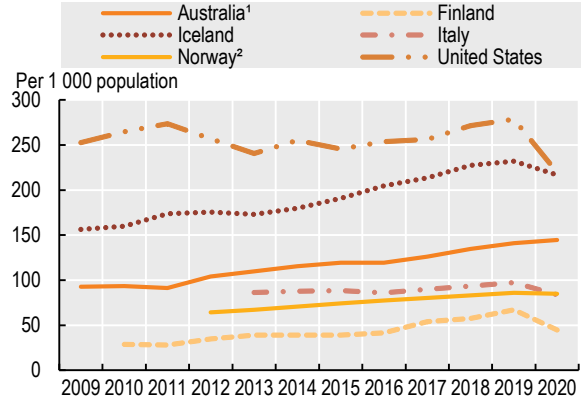
Figure 5.22. **CT, MRI and PET exams, 2019 (or nearest year)**



1. Privately funded exams are not included. 2. Exams outside hospitals are not included. 3. Only exams outside hospitals are included. 4. Exams on public patients are not included.
Source: OECD Health Statistics 2021.

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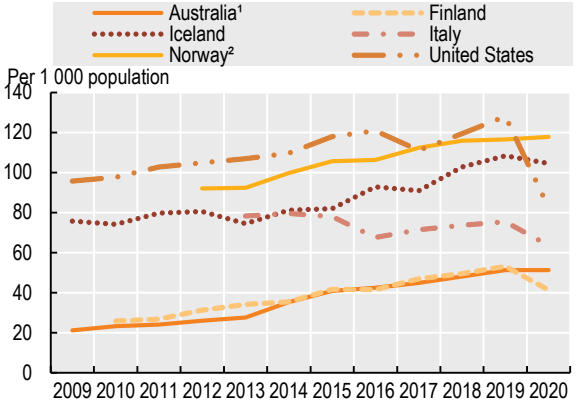
Figure 5.23. **Trends in CT exams, selected countries, 2009-20**



1. Exams on public patients are not included. 2. Only exams outside hospitals are included.
Source: OECD Health Statistics 2021.

StatLink https://stat.link/f73trj

Figure 5.24. Trends in MRI exams, selected countries, 2009-20



1. Exams on public patients are not included. 2. Only exams outside hospitals are included.
Source: OECD Health Statistics 2021.

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Hip and knee replacement

Hip and knee replacements are some of the most frequently performed and effective surgeries worldwide. The main indication for hip and knee replacement (joint replacement surgery) is osteoarthritis, which leads to reduced function and quality of life.

Osteoarthritis is a degenerative form of arthritis characterised by the wearing down of cartilage that cushions and smooths the movement of joints – most commonly for the hip and knee. It causes pain, swelling and stiffness, resulting in a loss of mobility and function. Osteoarthritis is one of the ten most disabling diseases in developed countries. Worldwide, estimates show that 10% of men and 18% of women aged over 60 have symptomatic osteoarthritis, including moderate and severe forms (WHO, 2014[23]).

Age is the strongest predictor of the development and progression of osteoarthritis. It is more common in women, increasing after the age of 50, especially in the hand and knee. Other risk factors include obesity, physical inactivity, smoking, excessive alcohol consumption and injuries. While joint replacement surgery is mainly carried out among people aged 60 and over, it can also be performed on people at younger ages.

In 2019, Germany, Switzerland, Austria, Finland and Belgium were among the countries with the highest rates for hip and knee replacement (Figure 5.25 and Figure 5.26). The OECD averages are 174 per 100 000 population for hip replacement, and 137 per 100 000 for knee replacement. Mexico, Costa Rica, Chile, Portugal, Israel and Ireland have low hip and knee replacement rates. Differences in population structure may explain part of this variation across countries, and age standardisation reduces it to some extent. Nevertheless, large differences persist, and the country ranking does not change significantly after age standardisation (McPherson, Gon and Scott, 2013[24]).

National averages can mask important variation in hip and knee replacement rates within countries. In Australia, Canada, Germany, France and Italy, the rate of knee replacement is more than twice as high in some regions than others, even after age standardisation (OECD, 2014[25]). Alongside the number of operations, the quality of hip and knee surgery (see indicator "Hip and knee surgery" in Chapter 6) and waiting times (see indicator "Waiting times for elective surgery") are also critical for patients.

Since 2009, the number of hip and knee replacements has increased rapidly in most OECD countries (Figure 5.27 and Figure 5.28). On average, hip replacement rates increased by 22% between 2009 and 2019 and knee replacement rates by 35%. This aligns with the rising incidence and prevalence of osteoarthritis, caused by ageing populations and growing obesity rates in OECD countries. For example, in the United States, the prevalence of knee osteoarthritis has more than doubled since the mid-twentieth century (Wallace et al., 2017[26]). Most OECD countries show increasing trends of varying degrees, but Ireland shows slower growth than the average for both hip and knee replacements, while Italy shows above-average growth.

In 2020, however, initial data from a few OECD countries show sharp declines in hip and knee surgeries. This reflects the fact that postponing non-urgent elective surgery was a key measure adopted by countries to increase health systems' capacity to anticipate and address the COVID-19 surge. For example, data from 2020 show a more than 20% drop in hip replacements in Ireland and Italy, and a more than 10% drop in Norway and the Czech Republic compared to 2019. Knee replacements fell by around 30% in Italy, Ireland and the Czech Republic in 2020 compared to 2019, and by 8% in Norway.

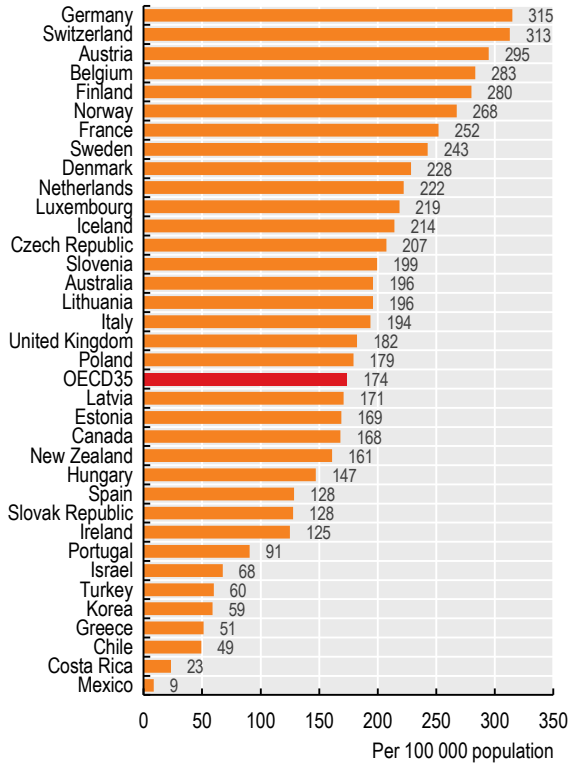
Definition and comparability

Hip replacement is a surgical procedure in which the hip joint is replaced by a prosthetic implant. It is generally conducted to relieve arthritis pain or treat severe physical joint damage following hip fracture.

Knee replacement is a surgical procedure to replace the weight-bearing surfaces of the knee joint in order to relieve the pain and disability of osteoarthritis. It may also be performed for other knee diseases such as rheumatoid arthritis.

Classification systems and registration practices vary across countries, which may affect the comparability of the data. While most countries include both total and partial hip replacement, some countries only include total replacement. In Costa Rica, Ireland, Mexico, New Zealand and the United Kingdom, the data only include activities in publicly funded hospitals, thereby underestimating the number of total procedures presented here (for example, approximately 15% of all hospital activity in Ireland is undertaken in private hospitals). Data for Portugal relate only to public hospitals on the mainland.

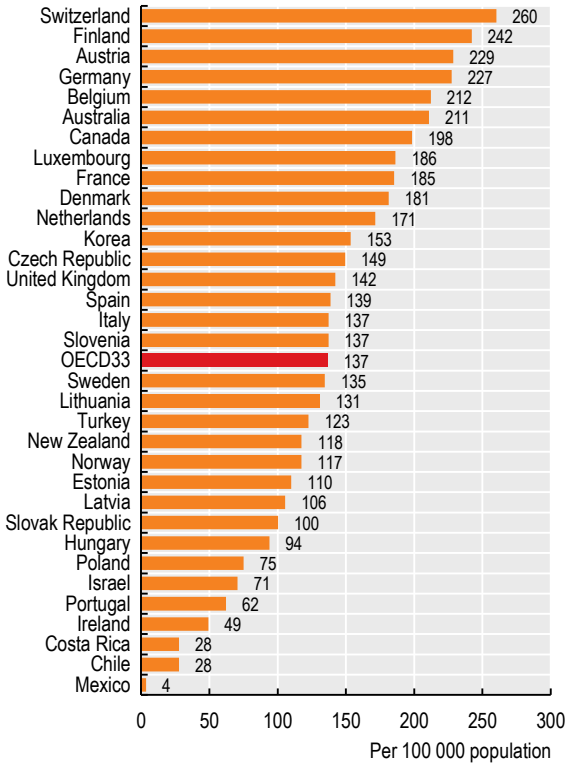
Figure 5.25. **Hip replacement surgery, 2019 (or nearest year)**



Source: OECD Health Statistics 2021.

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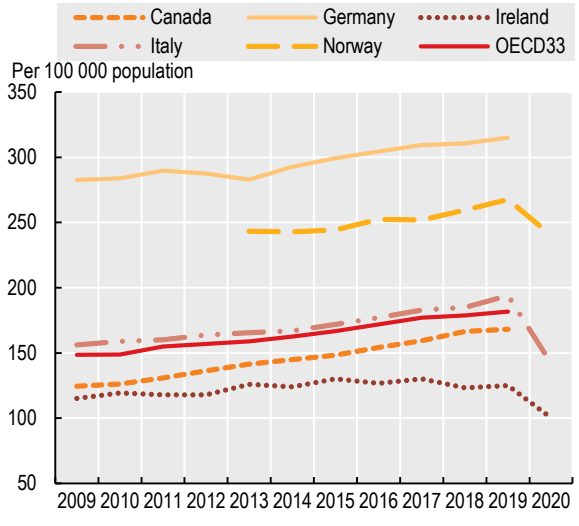
Figure 5.26. **Knee replacement surgery, 2019 (or nearest year)**



Source: OECD Health Statistics 2021.

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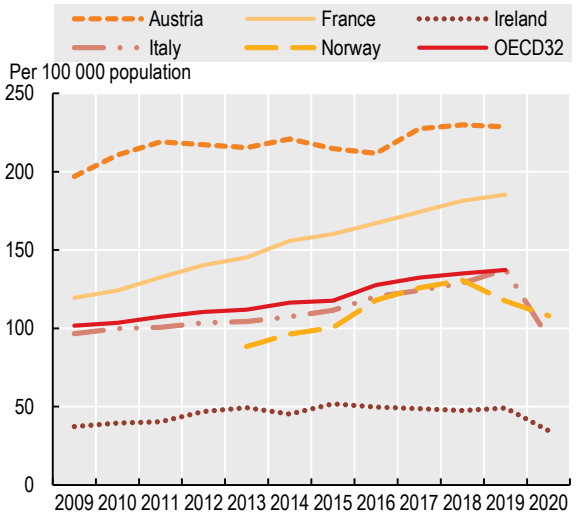
Figure 5.27. **Hip replacement surgery trends, selected OECD countries, 2009-20**



Source: OECD Health Statistics 2021.

StatLink https://stat.link/biu8wq

Figure 5.28. **Knee replacement surgery trends, selected OECD countries, 2009-20**



Source: OECD Health Statistics 2021.

StatLink https://stat.link/fnqbja

Ambulatory surgery

In the past few decades, the number of surgical procedures carried out on a same-day basis has markedly increased in OECD countries. Advances in medical technologies – in particular the diffusion of less invasive surgical interventions – and better anaesthetics have made this development possible. These innovations have improved patient safety and health outcomes. Further, by shortening the treatment episode, ambulatory surgery can save important resources without any adverse effects on quality of care. It also frees up capacity within hospitals to focus on more complex cases or to reduce waiting lists. However, the impact of the rise in same-day surgery on overall health spending may not be straightforward, since the reduction in unit costs (compared to inpatient surgery) may be offset by overall growth in the volume of procedures performed. Any additional costs related to post-acute care and community health services following the interventions also need to be considered.

Cataract surgeries and tonsillectomies (the removal of tonsils – glands at the back of the throat – mainly performed on children) provide good examples of high-volume surgeries that are now mainly carried out on a same-day basis in many OECD countries.

Ambulatory surgery accounts for 90% or more of all cataract surgeries in the majority of OECD countries (Figure 5.29). In several countries, nearly all cataract surgeries are performed as day cases; however, the rate is low in Lithuania, Hungary and Mexico, with fewer than 65% of surgeries performed as ambulatory cases. While this may be explained in part by limitations in the data coverage of outpatient activities in or outside hospitals, it may also reflect higher reimbursement for inpatient stays or constraints on the development of day surgery.

Tonsillectomies are one of the most frequent surgical procedures performed on children – usually those suffering from repeated or chronic infections of the tonsils, breathing problems or obstructive sleep apnoea due to large tonsils. Although the operation is performed under general anaesthesia, it is now carried out predominantly as ambulatory surgery in 11 of 30 OECD countries with comparable data, with children returning home the same day (Figure 5.30). However, the proportion of day cases is not as high as for cataract surgery, at 38% of tonsillectomies versus 92% of cataract surgeries on average across OECD countries. Day tonsillectomy rates are relatively high in Iceland, Finland and Costa Rica (85% of cases or higher) but remain lower than 10% of cases in nine OECD countries. In Slovenia, Hungary, the Czech Republic and Austria, practically no tonsillectomies are undertaken as day cases. These large differences in the share of ambulatory surgery may reflect variations in the perceived risks of postoperative complications, or simply clinical traditions of keeping children in hospital for at least one night after the operation.

The number of cataract surgeries and tonsillectomies performed as ambulatory cases has grown significantly since 2009 in many countries, including Austria, France and the United Kingdom (Figure 5.31 and Figure 5.32). In Austria, the share of cataract surgeries performed as day cases increased from only 24% in 2009 to 88% in 2019; in Lithuania, it increased from 8% to 52%. The share of tonsillectomies performed as ambulatory cases doubled between 2009 and 2019 in Sweden (39% to 79%) and the United Kingdom (31% to 63%). By minimising the time spent in hospital settings, same-day surgeries also reduce the risk of exposure to COVID-19. Initial data for 2020 show only slight changes in the share of cataract surgeries or tonsillectomies performed on an ambulatory basis.

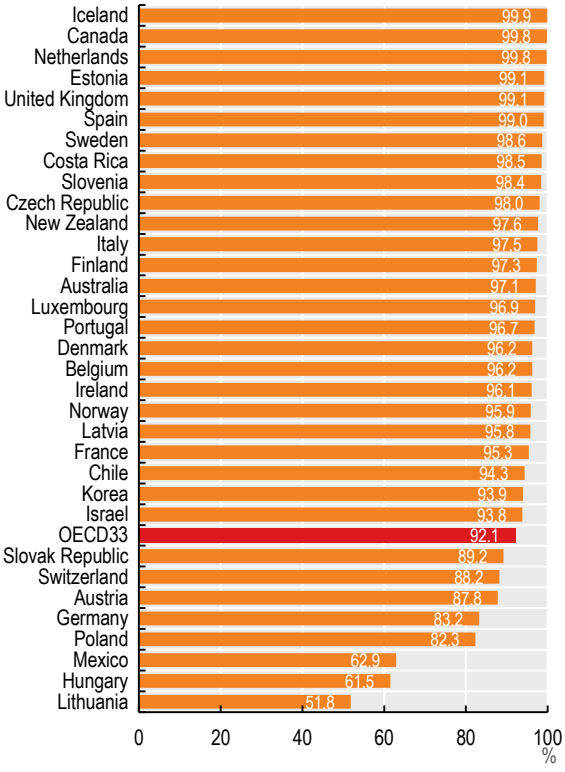
Financial incentives can also affect the extent to which minor surgery is conducted on a same-day basis. In Denmark and France, diagnostic-related group systems have been adjusted to incentivise ambulatory surgery. In the United Kingdom, a financial incentive of approximately GBP 300 per case is awarded for selected surgical procedures if the patient is managed on a day-case basis (OECD, 2017[19]).

Definition and comparability

Cataract surgery consists of removing the lens of the eye because of the presence of cataracts partially or completely clouding the lens, and replacing it with an artificial lens. It is mainly performed on elderly people. Tonsillectomy consists of removing the tonsils – glands at the back of the throat. It is mainly performed on children.

The data for several countries do not include outpatient cases in hospital or outside hospital (patients who are not formally admitted and discharged), leading to some underestimation. In Costa Rica, Ireland, Mexico, New Zealand and the United Kingdom, the data only include cataract surgeries carried out in public or publicly funded hospitals, excluding any procedures performed in private hospitals (in Ireland, it is estimated that approximately 15% of all hospital activity is undertaken in private hospitals). Data for Portugal relate only to public hospitals on the mainland.

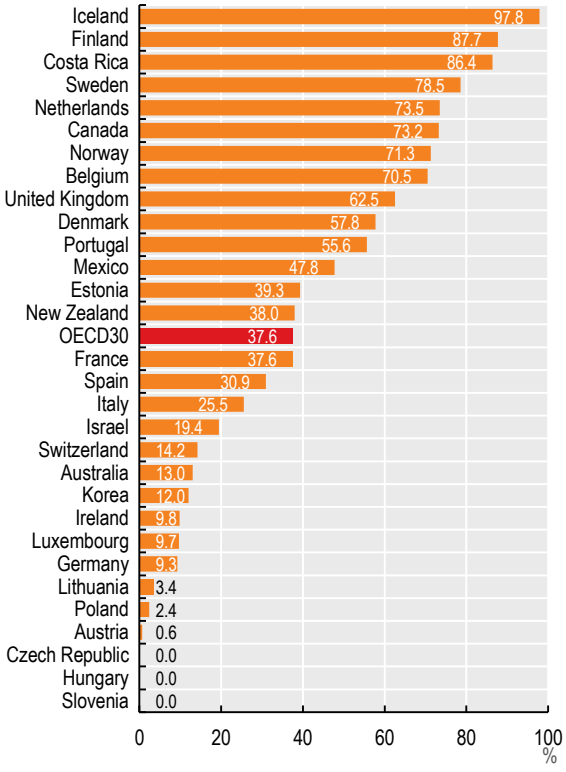
Figure 5.29. **Share of cataract surgeries carried out as ambulatory cases, 2019 (or nearest year)**



Source: OECD Health Statistics 2021.

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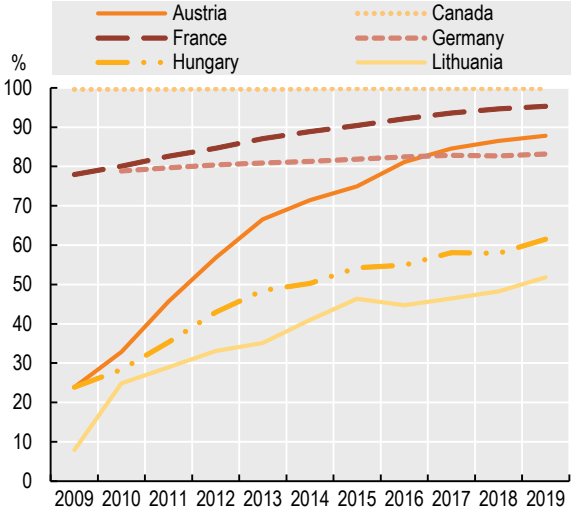
Figure 5.30. **Share of tonsillectomies carried out as ambulatory cases, 2019 (or nearest year)**



Source: OECD Health Statistics 2021.

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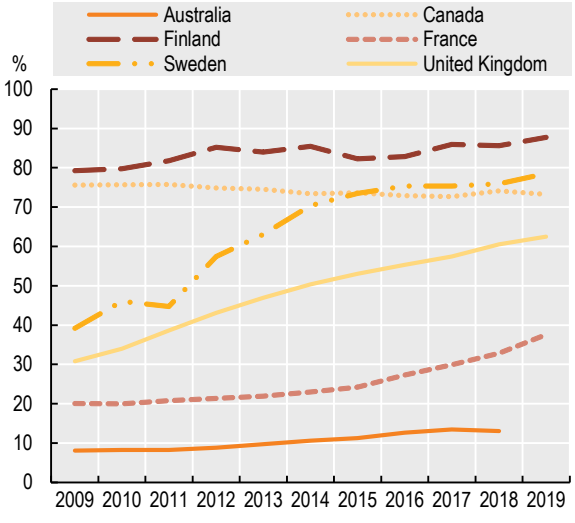
Figure 5.31. **Trends in cataract surgeries carried out as ambulatory cases, selected OECD countries, 2009-19**



Source: OECD Health Statistics 2021.

StatLink https://stat.link/cqj3v7

Figure 5.32. **Trends in tonsillectomies carried out as ambulatory cases, selected OECD countries, 2009-19**



Source: OECD Health Statistics 2021.

StatLink https://stat.link/ifv42a

Waiting times for elective surgery

Long waiting times for elective (non-emergency) surgery have been a longstanding issue in a number of OECD countries, postponing the expected benefits of treatment, meaning that patients continue living with pain and disability. The COVID-19 pandemic has further heightened the issue, as non-urgent interventions have often been postponed during peak periods of the pandemic.

Waiting times are the result of a complex interaction between the demand and supply of health services. 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, affects surgical activity rates.

The data presented in this section focus on three high-volume surgical procedures: cataract surgery, hip replacement and knee replacement. In 2019, among 15 countries with comparable data, over 60% of patients remained on the waiting list for cataract surgery for more than three months in Costa Rica, Norway, Estonia and Finland (although waiting times in Norway are overestimated compared with other countries for this and the other two surgical procedures – see the "Definition and comparability" box). The proportion of patients waiting for over three months was relatively low (20% or less) in Hungary, Italy and Denmark (Figure 5.33, left panel). For hip replacement, the share of patients remaining on the waiting list for over three months ranged from 10% in Denmark, and around 30% in Sweden and Italy, to over 70% in Chile, Estonia, Costa Rica and Norway (Figure 5.34, left panel). Similar patterns are observed for knee replacements (Figure 5.35, left panel): in Chile, Estonia, Costa Rica, Portugal and Norway, over 80% of patients remained on the waiting list for over three months, whereas the share was much lower in Denmark (14%) and Italy (28%).

Governments in many countries implemented various measures before the COVID-19 outbreak to reduce waiting times, often supported by additional funding, with mixed success. The most common policy remains the introduction of a maximum waiting time, which can be used to mobilise efforts to bring together supply and demand in a variety of ways (OECD, 2020[27]). For all three surgical procedures, between 2014 and 2019, the share of patients waiting for more than three months either did not change substantively or even increased in the majority of these 15 countries. Exceptions include large improvements in Denmark, Poland and Hungary across the three procedures, and in Finland for hip and knee replacement surgery. Since the end of the 2000s, Denmark has used maximum waiting times, together with patient choice of provider. The waiting time guarantee was reduced from two months to one month in 2007, combined with a 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. In Hungary, specific goals were set to reduce waiting times. To achieve this, the government adopted new laws and regulations on the management of waiting lists; developed an online system to monitor the situation in real time; provided additional payments to reduce selected waiting times; and encouraged reallocation of patients to providers with shorter waiting times. In Poland, additional funding has been provided since 2018, and information on waiting times for different procedures has become more accessible to patients through a dedicated website. More Polish people have also been purchasing private health insurance to obtain quicker access to services in private hospitals (OECD, 2020[27]).

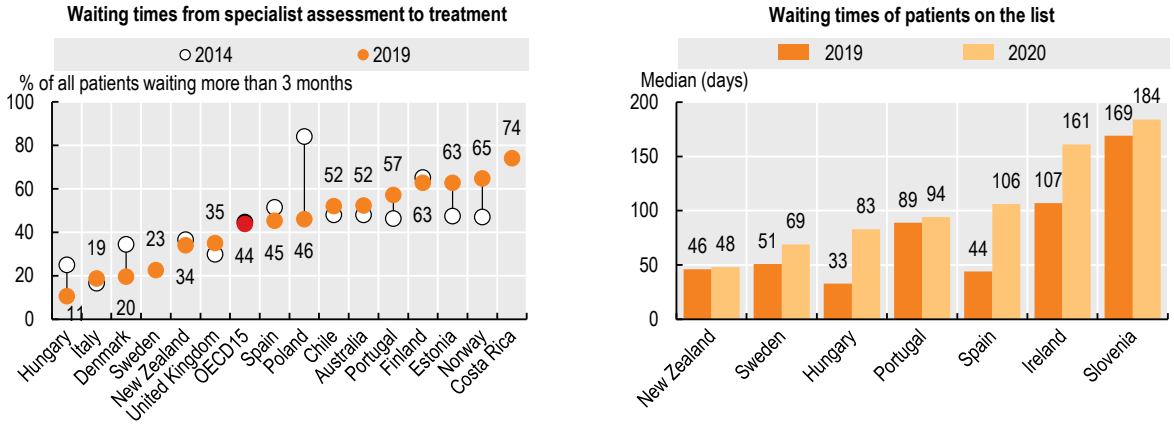
Initial data for 2020 show the adverse impact of the COVID-19 pandemic (Figure 5.33, Figure 5.34 and Figure 5.35, right panels). For all three procedures, waiting times in 2020 increased across all seven countries with available data (New Zealand, Sweden, Hungary, Portugal, Spain, Ireland and Slovenia). In these countries, the median number of days waiting on the list increased by on average 30 days for cataract surgery, 58 days for hip replacement and 88 days for knee replacement, compared to 2019.

Definition and comparability

Two different measures of waiting times for elective procedures are presented in this section: waiting times from specialist assessment to treatment, reporting data on the share of patients waiting more than three months; and waiting times of patients who are still on the list at a given point in time, showing the median number of days. Compared with the mean, the median is lower as it minimises the influence of outliers – patients with very long waiting times. Waiting times are overestimated in Norway because they start from the date a doctor refers a patient for specialist assessment for the treatment, whereas in other countries they start only when a specialist has assessed the patient and decided to add them to the waiting list for the treatment.

Data come from administrative databases. Patients who refuse to receive the procedure on several occasions are generally removed from the list, although not in Estonia.

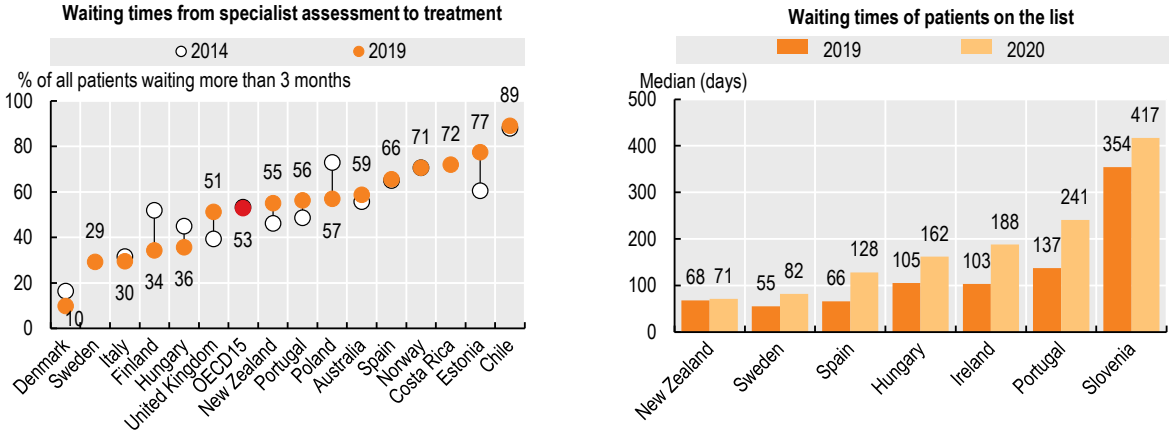
Figure 5.33. **Waiting times for cataract surgery**



Note: Waiting times for Norway are overestimated due to an earlier starting point.
Source: OECD Health Statistics 2021.

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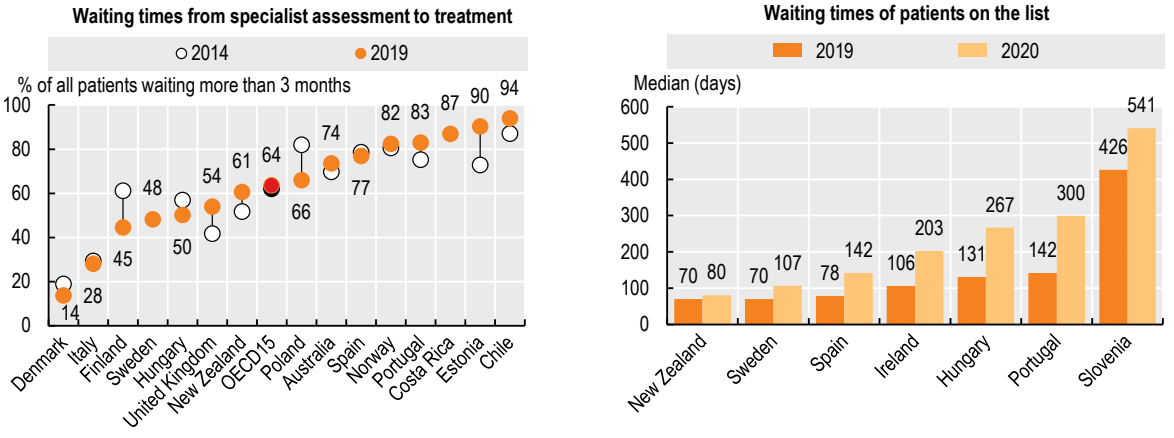
Figure 5.34. **Waiting times for hip replacement**



Note: Waiting times for Norway are overestimated due to an earlier starting point.
Source: OECD Health Statistics 2021.

StatLink https://stat.link/169m3e

Figure 5.35. **Waiting times for knee replacement**



Note: Waiting times for Norway are overestimated due to an earlier starting point.
Source: OECD Health Statistics 2021.

StatLink https://stat.link/6ub1en

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6. QUALITY AND OUTCOMES OF CARE

Routine vaccinations

Safe prescribing in primary care

People-centredness of ambulatory care

Avoidable hospital admissions

Diabetes care

Mortality following acute myocardial infarction (AMI)

Mortality following ischaemic stroke

Hip and knee surgery

Safe acute care – surgical complications and obstetric trauma

Safe acute care – workplace culture and patient experiences

Care for people with mental health disorders

Breast cancer care

Survival for other major cancers

Integrated care

Routine vaccinations

Vaccines are an effective and cost-effective tool for protecting against infectious diseases. There is broad agreement within the global scientific community that the most effective way to defeat COVID-19, for example, is through the mass vaccination of populations around the world.

Influenza is a common infectious disease, annually responsible for 3-5 million severe cases worldwide, along with up to 650 000 deaths (WHO, 2019[1]). Older people are at greater risk of developing serious complications from influenza – including pneumonia and sepsis, which can result in serious illness or death. The World Health Organization (WHO) recommends that 75% of older people should be vaccinated against seasonal influenza.

Figure 6.2 shows vaccination rates among adults over 65 for 2009 and 2019, and in some cases 2020. In 2019, the average vaccination rate for this vulnerable group was only 46% across OECD countries, decreasing from the 2009 rate of 49%. A 20 percentage point or higher decrease in influenza vaccination of older people was observed in the Netherlands, Chile and Germany during this time period.

Abating public confidence in the safety and efficacy of vaccination may play a role in declining coverage in some countries. In North America, only 72% of the population agreed that vaccines are safe; this figure was only 59% in Western Europe (Gallup, 2019[2]). This vaccine hesitancy has extended to COVID-19, where more recent survey findings showed that only 68% of respondents globally would be willing to receive an approved vaccine if offered it free of charge (Gallup, 2021[3]). Government actions to garner trust are essential to the success of vaccination programmes for COVID-19 and other vaccine-preventable diseases (OECD, 2021[4]).

Despite global trends, some countries did show increased vaccination rates between 2009 and 2019, including Greece, Lithuania, Estonia and Korea, where rates for adults over 65 increased by over 10%. Only Korea (at 86%) and Mexico (at 82%) attained the 75% WHO target in 2019. All 11 countries that provided 2020 data saw improvement over 2019 figures.

As with influenza, the most direct way to protect populations from COVID-19 and to reduce morbidity and mortality is to prioritise vulnerable populations for vaccination, including older people, those with pre-existing conditions, and health care workers (OECD, 2021[5]). Primary care can play a key role in the execution of vaccination programmes for vulnerable populations and the various programmes countries have put in place to respond effectively to the demands of the COVID-19 pandemic (OECD, 2021[6]). This may be illustrated by increases in influenza vaccination rates for older people between 2019 and 2020 in some countries where data over the recent period are available, including Iceland, Spain, Ireland, Greece, Israel, New Zealand and Chile.

Coverage of childhood vaccination relies on the ability of health systems to deliver timely routine care. Figure 6.2 shows vaccination coverage for diphtheria, tetanus and pertussis (DTP), measles and hepatitis B at 1 year of age. Across OECD countries, vaccination levels are high, with around 95% of children receiving the recommended DTP or measles vaccinations and 91% receiving the recommended hepatitis B vaccination. Despite high overall rates, however, nearly half of countries fall short of attaining the minimum immunisation levels recommended by the WHO to prevent the spread of measles (95%); Estonia, Canada and France have immunisation rates of 90% or below. Further, Austria and Mexico do not meet the minimum immunisation levels recommended by the WHO for DTP (90%).

High national coverage rates may not be sufficient to stop disease spread if the within-country distribution of vaccinations is uneven. Low coverage in specific local population groups can lead to outbreaks. However, measures put in place to respond to the COVID-19 pandemic – such as increased hygiene, use of face masks and reduced crowding – may also reduce rates of other communicable diseases. In particular, a significant global decrease in measles cases has been observed during the COVID-19 pandemic. In the United States, for example, only 13 individual cases of measles were reported for 2020 – far below the 2019 national figure of 1 282 (CDC, 2021[7]).

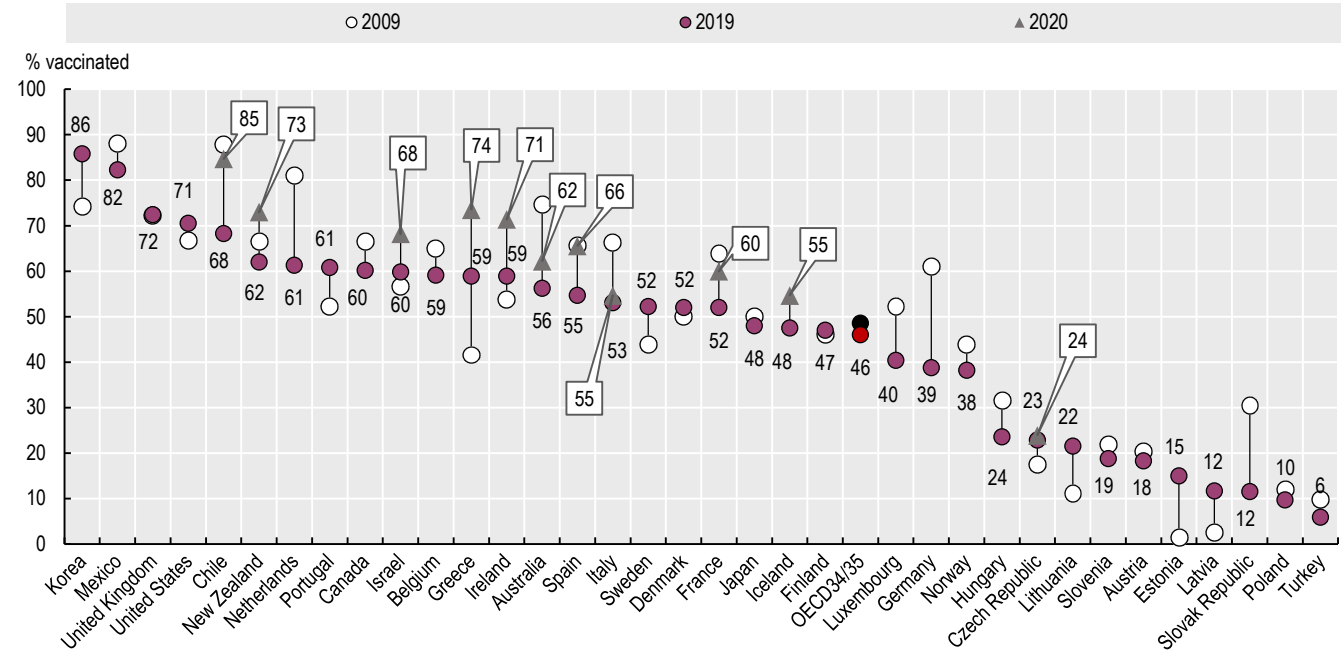
Definition and comparability

Vaccination rates reflect the percentage of people that receive the respective vaccination in the recommended timeframe. The age of complete immunisation differs across countries owing to different immunisation schedules. For those countries recommending the first dose of a vaccine after 1 year of age, the indicator is calculated as the proportion of children under 2 years who have received that vaccine. Thus, these indicators are based on the actual policy in a given country.

Some countries administer combination vaccines (e.g. DTP), while others administer the vaccines separately. Some countries ascertain whether a vaccination has been received based on surveys, and others based on encounter data; this may influence the results. In Canada, only four provinces and three territories include vaccination against hepatitis B in their infant immunisation programmes. Other Canadian jurisdictions do this at school age.

Influenza vaccination rates refer to the number of people aged 65 and over who have received an annual influenza vaccination, divided by the total number of people over 65. In some countries, the data are for people aged over 60.

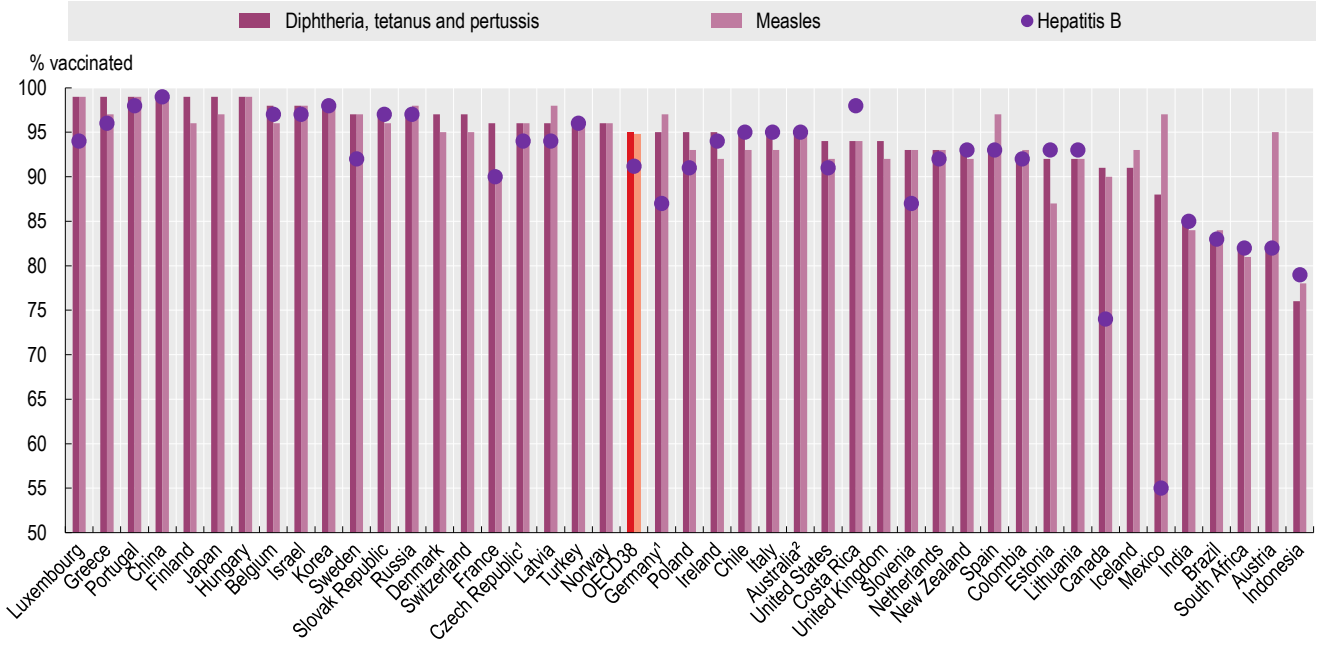
Figure 6.1. **Percentage of population aged 65 and over vaccinated for influenza, 2009, 2019 (or nearest years) and 2020**



Note: Three-year average for Iceland and Luxembourg for all years but 2020. Data estimated for Norway.
Source: OECD Health Statistics 2021.

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Figure 6.2. **Percentage of children at 1 year vaccinated for diphtheria, tetanus and pertussis, measles and hepatitis B, 2018 (or nearest year)**



1. DTP data are estimated. 2. Measles data are estimated.
Source: World Health Organization/UNICEF.

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Safe prescribing in primary care

Safe prescribing can be used as an indicator of health care quality, complementing information on consumption and expenditure (see Chapter 9). The overuse, underuse or misuse of prescription medicines can cause serious health hazards and lead to wasteful expenditure. This is the case for opioids and antibiotics, for example.

Opioids are often used to treat acute pain and pain associated with cancer, and over the last decade have been increasingly used to treat chronic pain, despite the risk of dependence, dose increase, shortness of breath and death. Opioid use is now causing an alarming and rising epidemic of overdose deaths in some OECD countries, such as the United States and Canada (OECD, 2019[8]).

Figure 6.3 indicates that, across OECD countries, the average volume of opioids prescribed in primary care in 2019 was 15 defined daily doses (DDDs) per 1 000 population per day. Iceland and Norway reported volumes more than twice the OECD average; Turkey and Korea reported the lowest volumes. Most countries providing data for 2020 reported an increase in the overall volume of opioids prescribed. On average, more than 2% of the adult population across OECD countries were chronic users of opioids in 2019 (Figure 6.4). Korea and Italy reported the lowest and Iceland the highest proportion by a large margin. The wide variation can be explained in part by differences in clinical practice in pain management, as well as differences in regulation, legal frameworks for opioids, prescribing policies and treatment guidelines.

An increase in the volume of opioids prescribed could also occur in the coming years as a consequence of COVID-19 and the treatment of its possible post-acute sequelae, also known as “long COVID-19”. An increased risk of this kind of incident use of opioid-based medication has already been observed (Al-Aly, Xie and Bowe, 2021[9]).

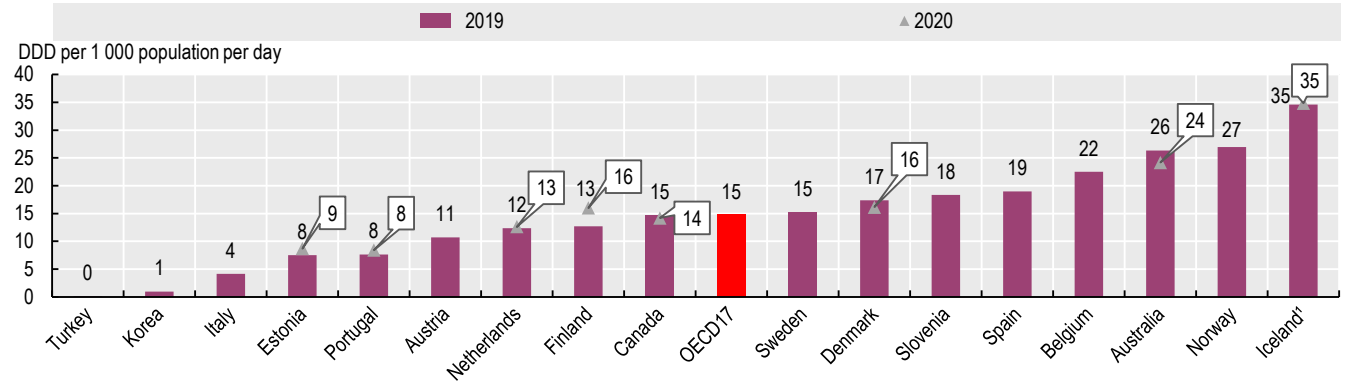
Antibiotics should be prescribed only where there is a need that is clearly supported by evidence, to reduce the risk of resistant strains of bacteria (OECD, 2018[10]). For example, quinolones and cephalosporins are considered second-line antibiotics in most prescribing guidelines, which should generally be used only when first-line antibiotics are ineffective. Total volume of antibiotics and second-line antibiotics (as a proportion of total volume) have been validated as markers of quality in the primary care setting (OECD, 2017[11]), given the rising public health concern caused by antimicrobial resistance across OECD countries (OECD, 2018[10]).

Figure 6.5 shows the volume of all antibiotics prescribed in primary care in 2019, including second-line antibiotics. Total volume of antibiotics use varied nearly four-fold across countries, with Estonia, Sweden and Germany reporting the lowest volumes, and Iceland, Australia and Greece reporting the highest. Volumes of second-line antibiotics vary across countries from 0.4 to 10.6 DDD per 1 000 population per day. The Scandinavian countries and the United Kingdom reported the lowest volumes of second-line antibiotics, whereas Greece and Korea reported the highest. Data for 2020 show a reduction in the overall volume of antibiotics prescribed. Variation is likely to be explained, on the supply side, by differences in the guidelines and incentives that govern primary care prescribers and uptake of e-prescribing solutions and, on the demand side, by differences in attitudes and expectations regarding optimal treatment of infectious illness.

Definition and comparability

Defined daily dose (DDD) is the assumed average maintenance dose per day for a drug used for its main indication in adults. For instance, the DDD for oral aspirin equals 3 grammes, the assumed maintenance daily dose to treat pain in adults. DDDs do not necessarily reflect the average daily dose actually used in a given country. For more detail, see *http://www.whocc.no/atcddd*. Denominators comprise the population in the national prescribing database, rather than the general population. Further information on sources and methods is available at OECD.Stat. Other data in OECD Health Statistics on antibiotics may differ due to differences in data sources and coverage.

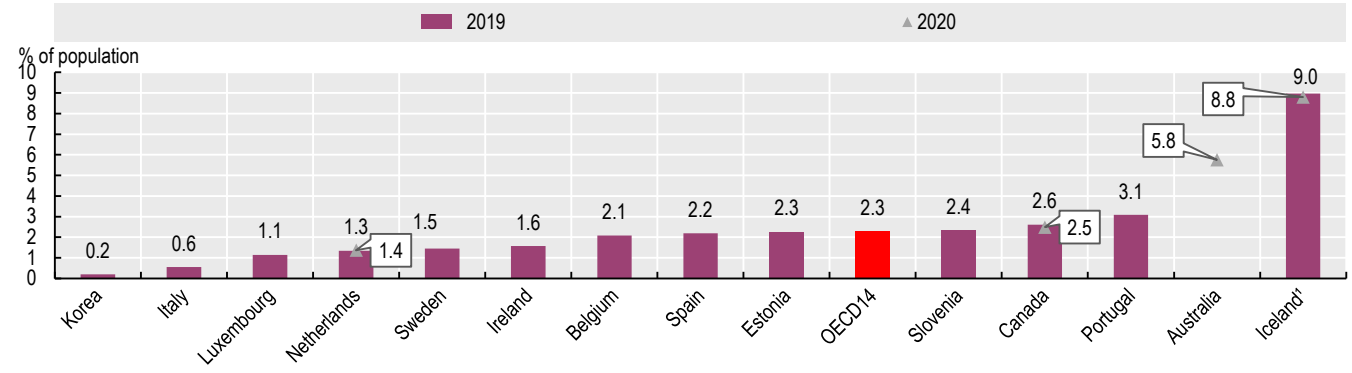
Figure 6.3. **Overall volume of opioids prescribed in the adult population, 2019 (or nearest year) and 2020**



Note: Adult population covers individuals aged 18 and over. Data exclude products used in the treatment of addiction. 1. Three-year average.
Source: OECD Health Statistics 2021.

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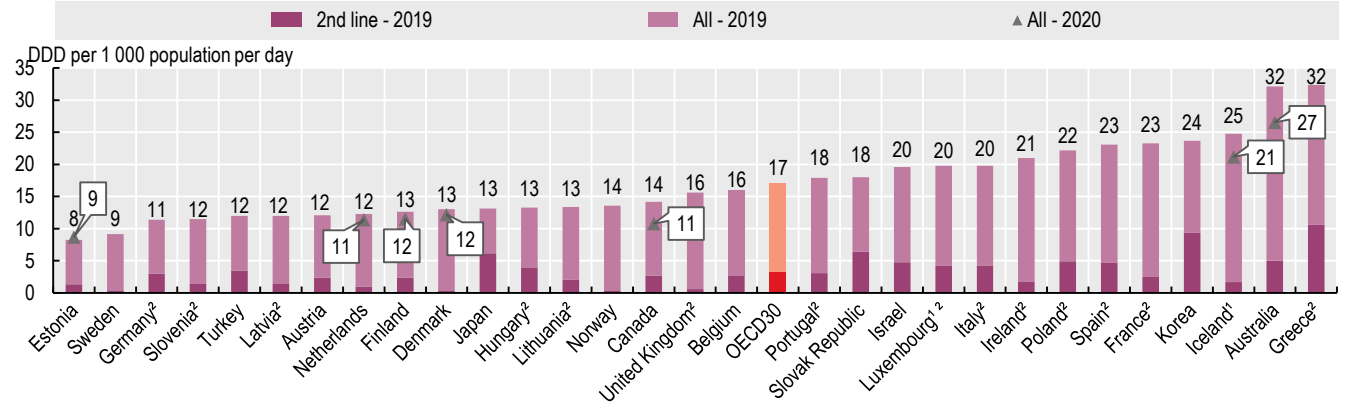
Figure 6.4. **Proportion of chronic opioid users in the adult population, 2019 (or nearest year) and 2020**



Note: Adult population covers individuals aged 18 and over. Data exclude products used in the treatment of addiction. Chronic use is defined as two or more prescriptions for at least 90 days. 1. Three-year average.
Source: OECD Health Statistics 2021.

StatLink https://stat.link/gxjzqp

Figure 6.5. **Overall volume of antibiotics prescribed, 2019 (or nearest year) and 2020**



1. Three-year average. 2. Data from European Centre for Disease Prevention and Control.
Source: OECD Health Statistics 2021.

StatLink https://stat.link/45l0j3

People-centredness of ambulatory care

Given the importance of incorporating people's voices into the development of health systems and improving quality of care, national efforts to develop and monitor patient-reported measures have been intensified in recent years. In many countries, specific organisations have been established or existing institutions have been identified and made responsible for measuring and reporting patient experiences of health care. This has frequently resulted in regular collection of patient experience data and standardised procedures for analysis and reporting.

Countries use patient-reported data differently to drive quality improvements in health systems. To promote quality of health care through increased provider accountability and transparency, many countries report patient experience data in periodic national health system reports and/or on public websites, showing differences across providers and regions, and over time. Canada, the Czech Republic, Denmark, France and the United Kingdom use patient experience measures to inform health care regulators for inspection, regulation and/or accreditation. Patient-reported measures are also used in some Canadian jurisdictions, Denmark, the Netherlands and the United Kingdom to provide specific feedback for providers to support quality improvement (Fujisawa and Klazinga, 2017[12]).

Across OECD countries, the majority of patients reported positive experiences during their health care: that they spent enough time with a doctor during consultation (Figure 6.6), and that a doctor provided easy-to-understand explanations (Figure 6.7) and involved them in care and treatment decisions (Figure 6.8). Japan has a particularly low rate for patient perception of the time spent with a doctor; this is likely to be associated with a high number of consultations per doctor (see indicator "Consultations with doctors" in Chapter 5). Other factors such as survey coverage, response rates and cultural differences in survey response patterns may also contribute to international variations in patient-reported measures, so further research is needed.

Patients' income level is associated not only with access to care (see indicator "Unmet needs for health care" in Chapter 5) but also with their experiences with health care. On average across 11 OECD countries, patients with above-average income reported a better health care experience than patients with below-average income. Patient experiences also vary by health condition (see indicator "Care for people with mental health disorders").

In the years leading up to 2019, patient experiences improved in Estonia, Israel and Poland. Between 2010 and 2020, however, the proportion of patients who reported spending enough time with a doctor during consultation decreased significantly in Germany, Sweden, Switzerland and the United Kingdom, and the proportion of patients being involved in care and treatment decisions decreased significantly in France, Sweden, Switzerland and the United Kingdom. A significant reduction in patients reporting positive experiences was observed in some of these countries in 2020; this may be related to the COVID-19 crisis, to some extent.

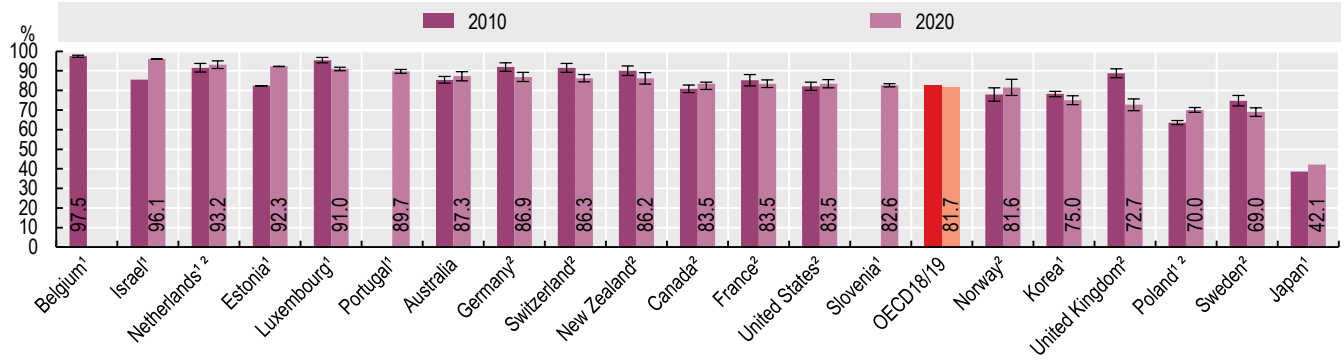
The COVID-19 pandemic has also made clear the need to institutionalise mechanisms to incorporate patient voices in policy decisions that have an impact on patient care (OECD, 2021[6]). A growing number of countries are using patient-reported measures to assess how well health systems are serving people's needs. The OECD's Patient-Reported Indicators Surveys (PaRIS) initiative aims to collect key people-reported outcomes and experiences to improve the performance of health care providers and to drive changes in health systems, based on people's voices (OECD, 2021[13]) (see *https://www.oecd.org/health/paris.htm*).

Definition and comparability

To monitor general patient experiences in the health system, the OECD recommends collecting data on patient experiences with any doctor in ambulatory settings. An increasing number of countries have been collecting patient experience data based on this recommendation through nationally representative population surveys, while Japan and Portugal collect them through nationally representative service user surveys. About half of the countries presented, however, collect data on patient experiences with a regular doctor or regular practice, not data on patient experiences with any doctor in ambulatory care. National data refer to years up to 2018.

In 11 countries, the Commonwealth Fund's International Health Policy Surveys 2010 and 2020 were used as a data source, even though there are limitations relating to the small sample size and low response rates. Data from this survey refer to patient experiences with a general practitioner (GP) rather than any doctor, including both GPs and specialists.

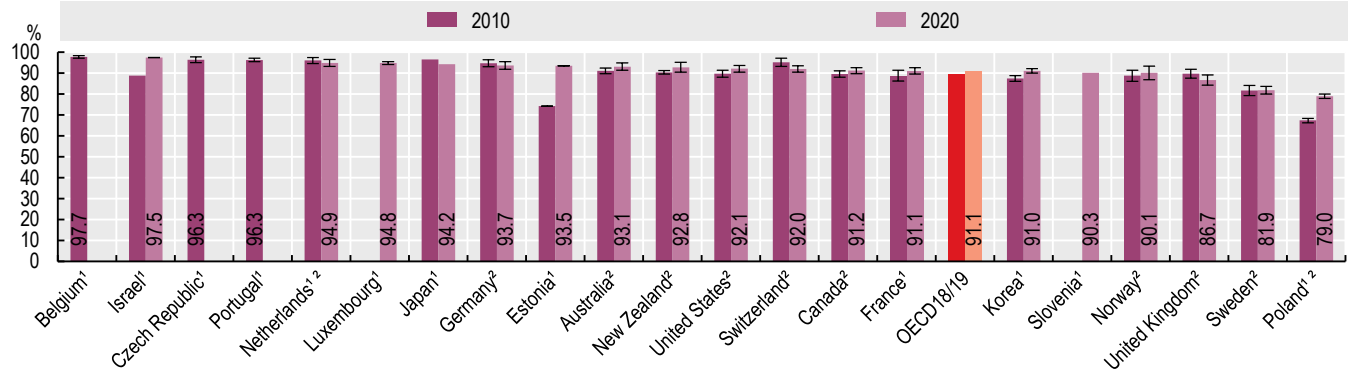
Figure 6.6. **Doctor spending enough time with patient during consultation, 2010 and 2020 (or nearest year)**



Note: H lines show 95% confidence intervals. 1. Data from national sources. 2. Refers to patient experiences with regular doctor or regular practice.
Source: Commonwealth Fund International Health Policy Survey 2010 and 2020 and other national sources.

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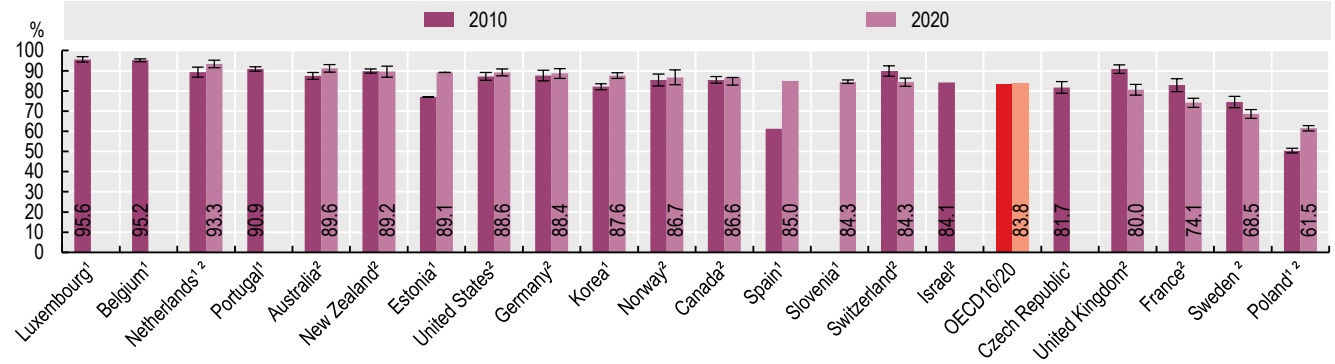
Figure 6.7. **Doctor providing easy-to-understand explanations, 2010 and 2020 (or nearest year)**



Note: H lines show 95% confidence intervals. 1. Data from national sources. 2. Refers to patient experiences with regular doctor or regular practice.
Source: Commonwealth Fund International Health Policy Survey 2010 and 2020 and other national sources.

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Figure 6.8. **Doctor involving patient in decisions about care and treatment, 2010 and 2020 (or nearest year)**



Note: H lines show 95% confidence intervals. 1. Data from national sources. 2. Refers to patient experiences with regular doctor or regular practice.
Source: Commonwealth Fund International Health Policy Survey 2010 and 2020 and other national sources.

StatLink https://stat.link/ms09k8

Avoidable hospital admissions

Primary care is often the first contact point of people with health systems. Its functions include promoting health and preventing disease; managing new health complaints; treating the majority of uncomplicated cases; managing chronic conditions; and referring patients to hospital-based services when appropriate. A key aim of primary care is to keep people well by providing a consistent point of care over the long term, treating common conditions, tailoring and co-ordinating care for those with multiple health care needs, and supporting patients' self-management of their conditions. Good primary care has, therefore, the potential to improve health, reduce socio-economic inequalities in health and make health care systems people-centred, while making better use of health care resources (OECD, 2020[14]).

Asthma, chronic obstructive pulmonary disease (COPD) and congestive heart failure (CHF) are widely prevalent long-term conditions. Both asthma and COPD limit the ability to breathe: asthma symptoms are usually intermittent and reversible with treatment, while COPD is a progressive disease that mainly affects current or prior smokers. CHF is a serious medical condition in which the heart is unable to pump enough blood to meet the body's needs. It is often caused by hypertension, diabetes or coronary heart disease. People with one of these three conditions are at risk of needing hospitalisation, and at higher risk of severe complications from COVID-19. Those with asthma and COPD, for example, are at higher risk of needing intensive care and a ventilator to help them breathe and/or of death from COVID-19 (CDC, 2021[15]). People with CHF are more likely to develop acute decompensation after COVID-19 infection (Rey et al., 2020[16]).

Common to all three conditions is that the evidence base for effective treatment is well established, and much of it can be delivered by primary care. A high-performing primary care system, where accessible and high-quality services are provided, can reduce acute deterioration in people living with asthma, COPD or CHF. This can reduce hospital admissions to treat these conditions, which are used as a marker of quality and access in primary care.

Figure 6.9 shows that hospital admission rates for asthma varied over 15-fold across OECD countries, with Iceland, Mexico, Italy and Colombia reporting the lowest rates and Latvia, Turkey and Poland reporting rates over twice the OECD average. Between 2009 and 2019, hospital admission rates for asthma decreased in many OECD countries – particularly in the Slovak Republic, Korea and Finland – and cross-country variation narrowed. Countries that were able to report 2020 admission rates showed general declines in admissions, with reductions of 50% between 2019 and 2020 in Lithuania and England (United Kingdom).

Hospital admission rates for COPD varied 8-fold across OECD countries, with Italy, Mexico and Chile reporting the lowest and Turkey, Ireland and Australia the highest rates (Figure 6.10). The average rate for OECD countries decreased from 194 admissions per 100 000 population in 2009 to 171 per 100 000 population in 2019. In 2020, the rates decreased in Austria, the Czech Republic, Ireland, Latvia, Lithuania, Portugal, the Slovak Republic and England (United Kingdom), and the decline was particularly large in England, Lithuania and Ireland.

Hospital admission rates for CHF varied 16-fold, as shown in Figure 6.11. Costa Rica, Mexico and Colombia had the lowest rates, while Poland, Lithuania and the Slovak Republic reported rates over twice the OECD average. While the average rate across OECD countries decreased between 2009 and 2019, the cross-country variation increased slightly. In 2020, the rates decreased in Austria, Lithuania (where the decline was particularly large), the Czech Republic, Portugal, the Slovak Republic and England (the United Kingdom), while rates were stable in Iceland and Ireland.

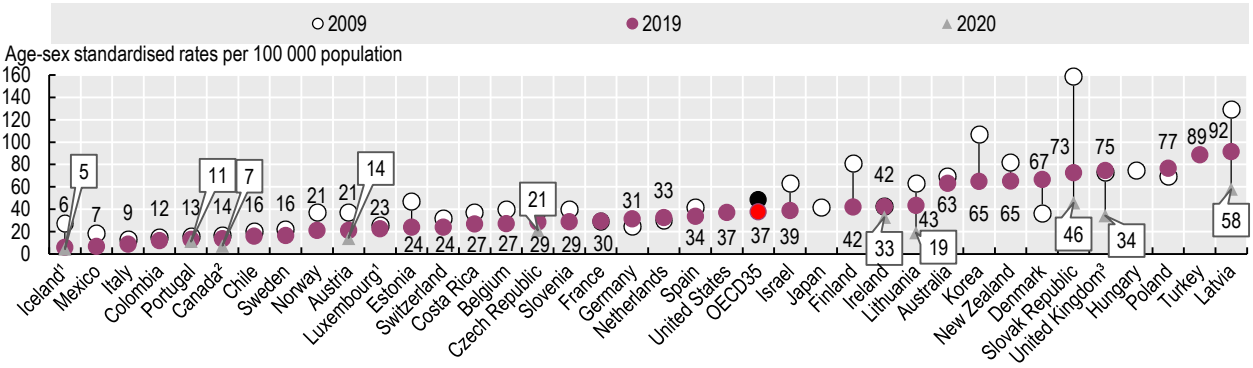
While observed improvements over the past decade may represent advances in the quality of primary care in some countries, investment in primary care may still not be happening quickly enough (OECD, 2017[17]), potentially resulting in unnecessary spending on high-cost hospital care (OECD, 2017[11]). General declines in hospital admissions in 2020 may reflect improved access to and quality of primary care to some extent, but they are also due to difficulties in accessing health care in the initial stage of the COVID-19 crisis and hesitancy among patients to seek regular care during the pandemic. On the other hand, OECD countries have adopted telemedicine and digital tools quickly to facilitate access (OECD, 2021[6]). The COVID-19 crisis has highlighted the importance of placing primary health care at the core of health systems, both to manage an unexpected surge in demand and to maintain continuous access to high-quality care for all (OECD, 2020[14]).

Definition and comparability

The indicators are defined as the number of hospital admissions with a primary diagnosis of asthma, COPD or CHF among people aged 15 years and over per 100 000 population. Rates are age- and sex-standardised to the 2010 OECD population aged 15 and over. Admissions resulting from a transfer from another hospital and where the patient dies during admission are excluded from the calculation, as these are considered unlikely to be avoidable.

Disease prevalence and availability of hospital care may explain some, but not all, variations in cross-country rates. Differences in coding practices among countries may also affect the comparability of data. For example, the exclusion of transfers cannot be fully complied with by some countries. Differences in data coverage of the national hospital sector across countries may also influence rates.

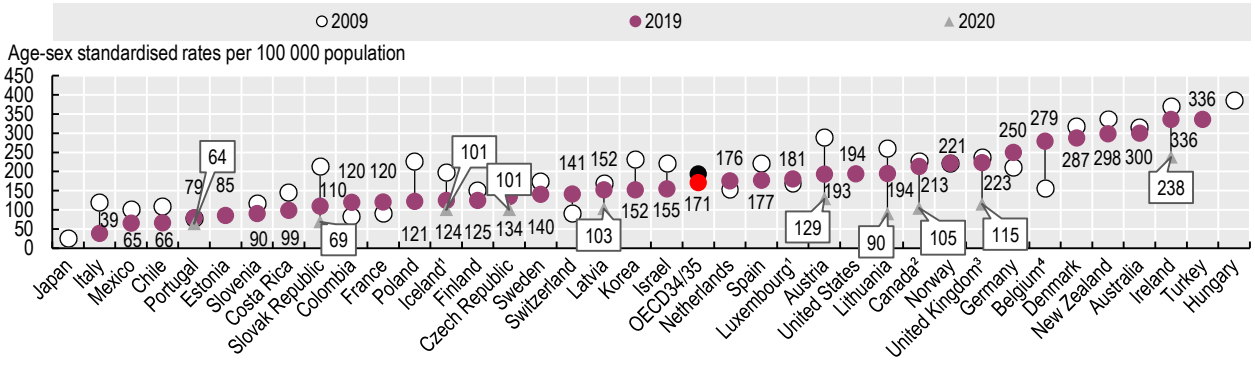
Figure 6.9. **Asthma hospital admission in adults, 2009, 2019 (or nearest year) and 2020**



1. Three-year average. 2. 2020 estimate based on provisional 1 April to 30 September data from all jurisdictions except Quebec. 3. 2020 data are provisional and include England only.
Source: OECD Health Statistics 2021.

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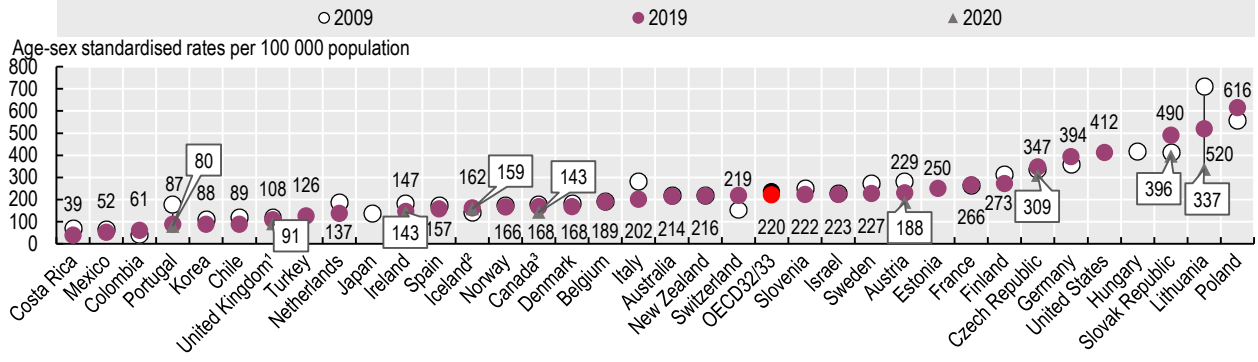
Figure 6.10. **COPD hospital admission in adults, 2009, 2019 (or nearest year) and 2020**



1. Three-year average. 2. 2020 estimate based on provisional 1 April to 30 September data from all jurisdictions except Quebec. 3. 2020 data are provisional and include England only. 4. Break in time-series in 2016, so changes between 2010 and 2019 need to be interpreted with care.
Source: OECD Health Statistics 2021.

StatLink https://stat.link/unsj9h

Figure 6.11. **Congestive heart failure hospital admission in adults, 2009, 2019 (or nearest year) and 2020**



1. 2020 data are provisional and include England only. 2. Three-year average. 3. 2020 estimate based on provisional 1 April to 30 September data from all jurisdictions except Quebec.
Source: OECD Health Statistics 2021.

StatLink https://stat.link/mz3lie

Diabetes care

Effective management of diabetes is a public health priority, with over 463 million people living with the condition worldwide. Diabetes is a chronic disease that occurs when the body's ability to regulate excessive glucose levels in the blood is diminished. Diabetes caused 4.2 million deaths in 2019, and it is projected that by 2045 up to 700 million adults will have the condition (International Diabetes Federation, 2020[18]). It is a leading cause of cardiovascular disease, blindness, kidney failure and lower limb amputation.

More recently, diabetes has been found to be an important risk factor for hospitalisation and death due to COVID-19 (Muniyappa and Gubbi, 2020[19]; Singh et al., 2020[20]), and several studies have found that potential complications of COVID-19 infection include development of diabetes and kidney failure (Collins, 2021[21]). In addition, measures put in place to respond to the COVID-19 pandemic have disrupted routine management of diabetes (Chudasama et al., 2020[22])

Ongoing control of diabetes usually involves a considerable amount of self-management; therefore, patient-centred care instruction and education are central to the primary care of people with diabetes (OECD, 2020[14]). Effective control of blood glucose levels through routine monitoring, dietary modification and regular exercise can reduce the onset of serious complications and the need for hospitalisation. Management of key risk factors such as smoking, blood pressure and lipid levels are also important in reducing complications.

Figure 6.12 shows avoidable hospital admissions for diabetes. While admissions have fallen in many countries over time, a more than 6-fold variation in the rates still occurs across countries. In 2019, Iceland, Italy and Spain reported the lowest rates, with Lithuania, the United States and Korea reporting rates nearly twice the OECD average. Prevalence of diabetes and general access to hospital care may explain some of this variation (OECD, 2015[23]). During the COVID-19 crisis, diabetes hospital admission rates decreased in most countries that were able to report 2020 data. The reduction was largest in Lithuania, potentially reflecting reduced use of health care services across multiple settings. Austria, the Czech Republic, Ireland, Portugal and Latvia also reduced the proportion, although the extent of the reduction was limited.

In diabetic individuals with hypertension, angiotensin-converting enzyme inhibitors or angiotensin receptor blockers are recommended in most national guidelines as first-line medications to reduce blood pressure. Figure 6.13 reveals broad consistency in the proportion of diabetic patients on recommended antihypertensive medications: only Finland, Belgium and Korea had rates lower than 80%.

High-quality primary care can reduce the risk of amputations, and hospital admissions for major lower extremity amputation reflect the long-term quality of diabetes care. Figure 6.14 shows the rates of amputation among adults with diabetes. The international variation is 18-fold. Iceland, Korea and Italy reported rates lower than 3 per 100 000 general population, while Israel, Mexico and Costa Rica reported rates between 13 and 18 per 100 000. In 2020, the rates were not significantly different from 2019 in all countries that reported 2020 data.

The relationship between the nature, frequency and duration of primary care for diabetes and the rate of admissions to hospital for related complications is complex and warrants further research. The OECD is conducting an international survey of patients with chronic conditions, including diabetes, to capture their self-reported health outcomes and better understand their primary care context. This survey is central to the OECD's PaRIS initiative (*https://www.oecd.org/health/paris.htm*).

Definition and comparability

Diabetes avoidable admission is based on the sum of three indicators: admissions for short-term and long-term complications and for uncontrolled diabetes without complications. The indicator is defined as the number of hospital admissions with a primary diagnosis of diabetes among people aged 15 years and over per 100 000 population.

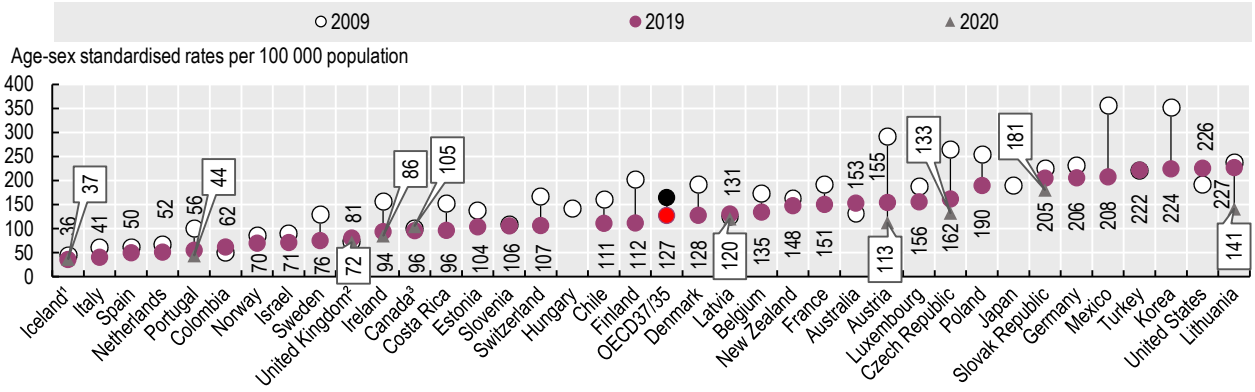
The denominator of people with diabetes who have recommended antihypertensive medication prescriptions is based on people with diabetes (i.e. who are long-term users of glucose-regulating medication) who also have one or more prescriptions per year from a range of medications often used in the management of hypertension. The numerator is the number of these people who have one or more prescriptions of an angiotensin-converting enzyme inhibitor or angiotensin receptor blocker.

Major lower extremity amputation in adults with diabetes is defined as the number of discharges of people aged 15 years and over per 100 000 population. Rates for these indicators have been directly age-standardised to the 2010 OECD population.

Differences in data definition, coding practices and indicator calculation methods between countries may affect comparability of data. For example, in many countries diabetes is coded as a secondary diagnosis while a few countries code it as a primary diagnosis. Differences in data coverage of the national hospital sector across countries may also influence indicator rates.

In all instances, national data are reported. Variations in the coverage and national representativeness of the indicators for countries are documented in the sources and methods information in OECD.Stat.

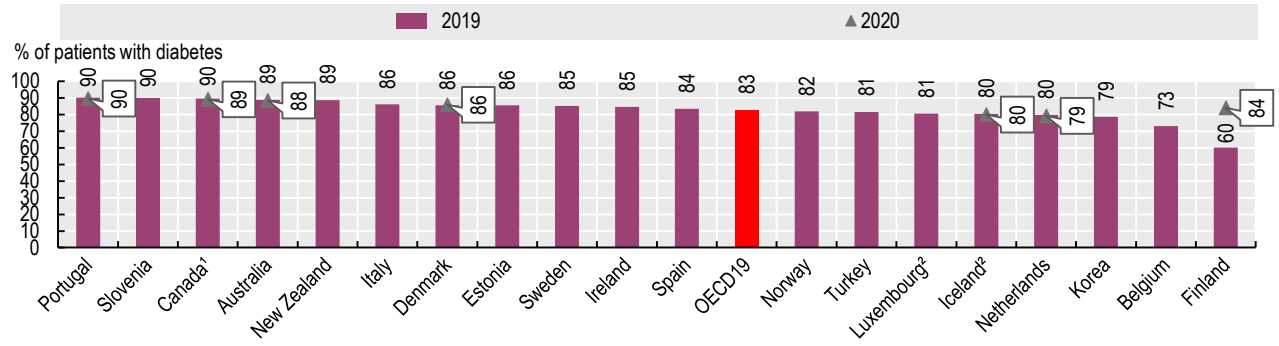
Figure 6.12. **Diabetes hospital admission in adults, 2009, 2019 (or nearest year) and 2020**



1. Three-year average. 2. 2020 data are provisional and include England only. 3. 2020 estimate based on provisional 1 April to 30 September data from all jurisdictions except Quebec.
Source: OECD Health Statistics 2021.

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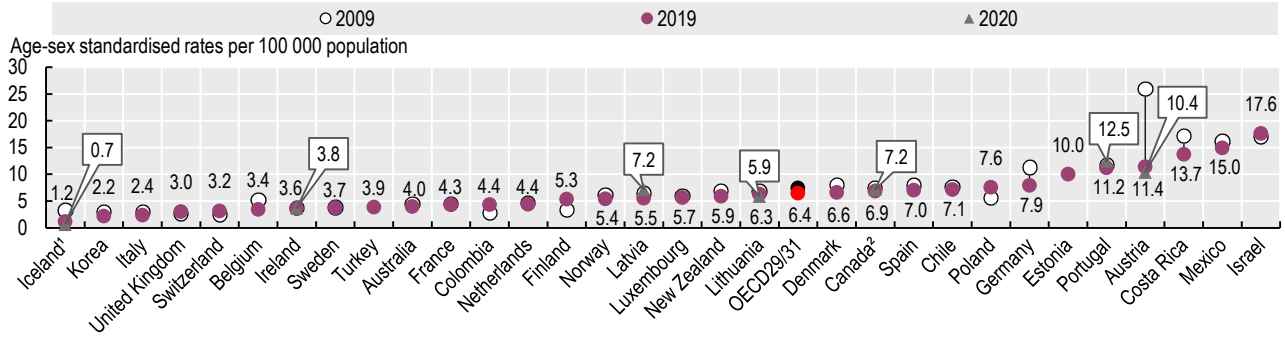
Figure 6.13. **People with diabetes prescribed recommended antihypertensive medication in the past year in primary care, 2019 (or nearest year) and 2020**



1. 2020 estimate based on provisional 1 April to 30 September data from all jurisdictions except Quebec. 2. Three-year average.
Source: OECD Health Statistics 2021.

StatLink https://stat.link/19v5l4

Figure 6.14. **Major lower extremity amputation in adults, 2009, 2019 (or nearest year) and 2020**



1. Three-year average. 2. 2020 estimate based on provisional 1 April to 30 September data from all jurisdictions except Quebec.
Source: OECD Health Statistics 2021.

StatLink https://stat.link/vq5pu0

Mortality following acute myocardial infarction (AMI)

Mortality due to coronary heart disease has declined substantially over recent decades (see indicator "Mortality from circulatory diseases" in Chapter 3). Reductions in smoking (see indicator "Smoking among adults" in Chapter 4) and improvements in treatment for heart diseases have contributed to these declines (OECD, 2015[23]). Despite this progress, AMI (heart attack) remains the leading cause of cardiovascular death in many OECD countries, highlighting the need for further reductions in risk factors and care quality improvements (OECD/The King's Fund, 2020[24]). The COVID-19 crisis has also revealed the need to maintain access to high-quality acute care for AMI during public health emergencies.

Metrics of 30-day mortality after AMI hospital admission are reflective of processes of care, such as timely transport of patients and effective medical interventions. However, the indicator is influenced not only by the quality of care provided in hospitals but also by differences in the patterns of hospital transfers, length of stay and AMI severity across countries.

Figure 6.15 shows mortality rates within 30 days of admission to hospital for AMI using unlinked data – that is, only counting deaths that occurred in the hospital where the patient was initially admitted. The lowest rates in 2019 were in Iceland, the Netherlands, Norway, Australia, Sweden, and Turkey (less than 4% among patients aged 45 and over) while the highest rates were in Latvia and Mexico (over 13%). In Mexico, the absence of a co-ordinated system of care between primary care and hospitals may contribute to delays in reperfusion and low rates of angioplasty (Martínez-Sánchez et al., 2017[25]).

Figure 6.16 shows the same 30-day mortality rate but calculated based on linked data, whereby the deaths are recorded regardless of where they occurred after hospital admission (in the hospital where the patient was initially admitted, after transfer to another hospital or after being discharged). Based on these linked data, the AMI mortality rates in 2019 ranged from 3% in the Netherlands to 17% in Latvia.

Case fatality rates for AMI decreased substantially between 2009 and 2019, according to both datasets (Figure 6.15 and Figure 6.16). Across OECD countries, the average rate fell from 8.7% to 6.6% for same-hospital deaths and from 11.4% to 8.8% for deaths in and out of hospital. Between 2019 and 2020, however, case fatality rates increased in Lithuania, Poland and England (United Kingdom), while the rates were stable in countries including Canada, Iceland, Ireland, Latvia, Portugal and the Slovak Republic.

Changes in the trend reflect challenges faced by health systems in ensuring timely access to acute care during the COVID-19 crisis. In all countries reporting 2020 data, the number of people admitted to hospital due to AMI decreased. Reductions were particularly large in Canada and Portugal. Fewer AMI admissions and reductions in the number of procedures to treat heart attack were reported in Austria, Italy, Spain and the United States. These may be the result either of reduced hospital use from patients (due to concern about COVID-19 exposure or not wanting to burden the health system) or of ambulance systems not being able to transfer all patients promptly due to a surge in demand for COVID-19 patients. The absolute number of people who died of AMI within 30 days of hospital admission decreased substantially in Portugal, suggesting that at least some AMI patients may have died at home or in long-term care institutions before arriving at hospital.

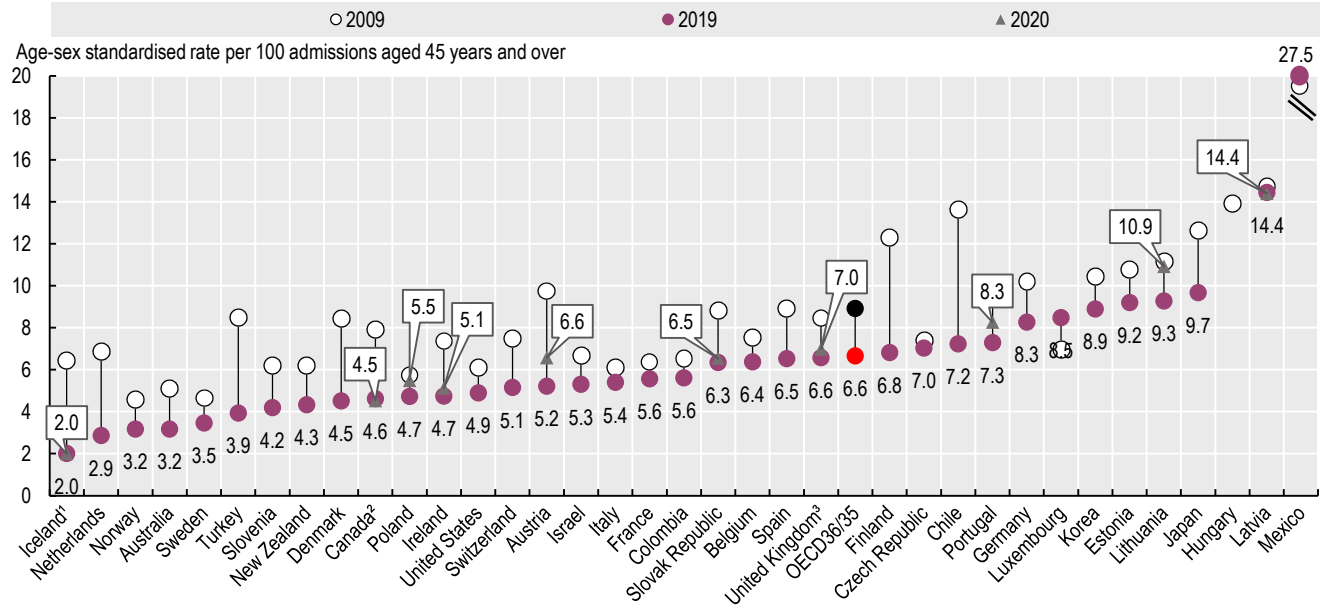
Supplementary data are needed to assess the impact of COVID-19 on acute care for AMI and to support health systems in providing high-quality acute care during public health emergencies. England (United Kingdom) found that the number of ambulance callouts for heart attack was stable compared to previous years (Holmes et al., 2020[26]), and that while ambulance response times increased, this was not related to delays for revascularisation once in hospital and higher mortality (Little et al., 2020[27]). When resources are limited, more granular data such as hospital admissions and case fatality rates by AMI severity could further inform ways to promote effective provision and management of acute care – particularly for patients with the most severe conditions.

Definition and comparability

The case fatality rate measures the percentage of people aged 45 and over who die within 30 days following hospital admission for a specific acute condition. Unlinked data include only deaths that occurred in the same hospital as the initial admission; linked data include deaths recorded regardless of where they occurred, including in another hospital or outside the hospital where AMI was first recorded. The linked data-based method is considered more robust than the rates based on unlinked data, and results in much lower variations between countries. However, it requires a unique patient identifier to link the data across the relevant datasets, which is not available in all countries.

Rates are age- and sex-standardised to the 2010 OECD population aged 45 and over admitted to hospital for AMI, using International Classification of Diseases, tenth revision (ICD-10) codes I21-I22.

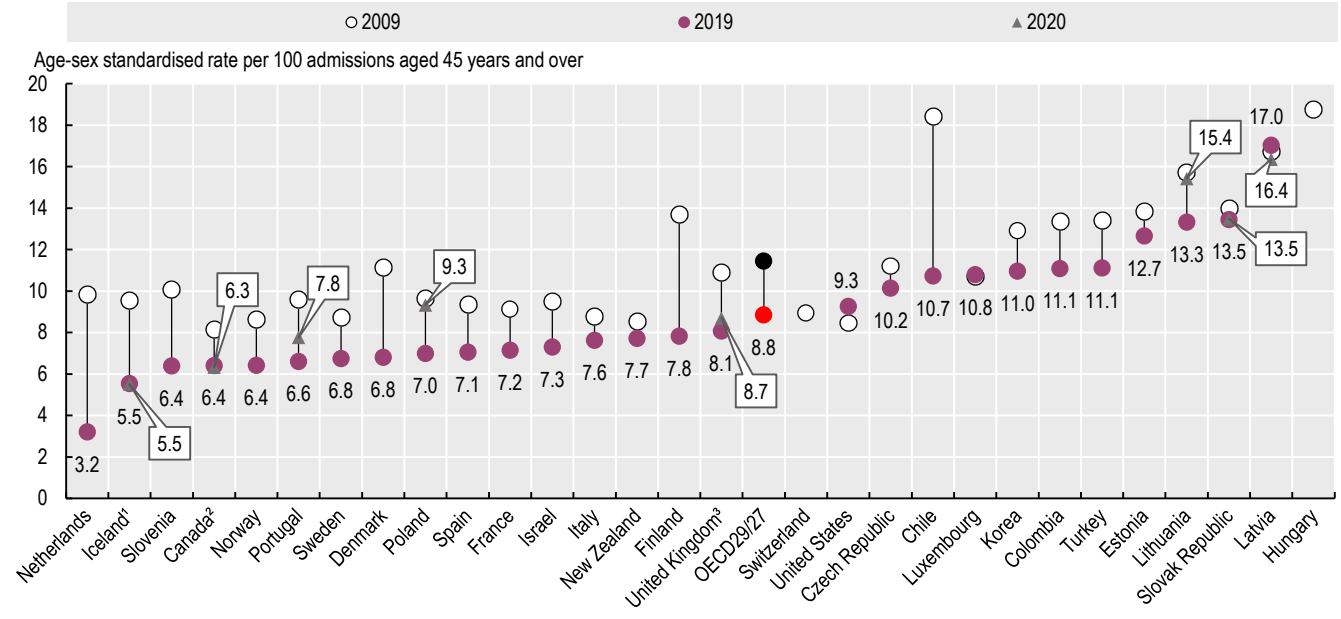
Figure 6.15. **Thirty-day mortality after admission to hospital for acute myocardial infarction based on unlinked data, 2009, 2019 (or nearest year) and 2020**



1. Three-year average for all years except 2020. 2. 2020 estimate based on provisional 1 April to 30 September data from all jurisdictions except Quebec. 3. 2020 data are provisional and include England only.
Source: OECD Health Statistics 2021.

StatLink https://stat.link/pgm0nl

Figure 6.16. **Thirty-day mortality after admission to hospital for acute myocardial infarction based on linked data, 2009, 2019 (or nearest year) and 2020**



1. Three-year average for all years except 2020. 2. Data do not include deaths outside acute care hospitals. 2020 estimate based on provisional 1 April to 30 September data from all jurisdictions except Quebec. 3. 2020 data are provisional and include England only.
Source: OECD Health Statistics 2021.

StatLink https://stat.link/catxl6

Mortality following ischaemic stroke

Stroke is a leading cause of death, accounting for 7% of deaths across the OECD in 2019 (see indicators "Main causes of mortality" and "Mortality from circulatory diseases" in Chapter 3). A stroke occurs when the blood supply to a part of the brain is interrupted, leading to necrosis (cell death) of the affected part. Of the two types of stroke, about 85% are ischaemic (caused by clotting) and 15% are haemorrhagic (caused by bleeding). The COVID-19 pandemic has so far had a varying impact on access to and quality of care for stroke patients across OECD countries.

Figure 6.17 shows the case fatality rates within 30 days of hospital admission for ischaemic stroke where the death occurred in the same hospital as the initial admission (unlinked data). Figure 6.18 shows the case fatality rate where deaths are recorded regardless of where they occurred, including in another hospital or outside the hospital where the stroke was first recorded (linked data). The indicator using linked data is more robust because it captures fatalities more comprehensively than the same-hospital indicator, but it requires a unique patient identifier and the capacity to link data, which are not available in all countries.

Across OECD countries, 7.7% of patients in 2019 died within 30 days of hospital admission for ischaemic stroke using unlinked data (Figure 6.17). The case fatality rates were highest in Mexico, Latvia, Lithuania and Poland – all with mortality rates over 11%. Rates were lower than 4% in Costa Rica, Japan, Korea, Norway and Iceland. Low rates in Japan are due in part to efforts dedicated to improving the treatment of stroke patients in hospitals, through systematic blood pressure monitoring, major material investment in hospitals and establishment of specialised stroke units (OECD, 2015[28]).

Across the 26 countries that reported linked data, 12% of patients died within 30 days of being admitted to hospital for stroke (Figure 6.18). This figure is higher than the same-hospital indicator as deaths are recorded regardless of where they occurred after hospital admissions (i.e. either in the hospital where the patient was initially admitted, after transfer to another hospital or after being discharged).

Treatment for ischaemic stroke has advanced dramatically over recent decades, with systems and processes now in place in many OECD countries to identify suspected ischaemic stroke patients and to deliver acute reperfusion therapy quickly. Between 2009 and 2019, case fatality rates for ischaemic stroke decreased substantially across OECD countries: from 9.8% to 7.7% for unlinked data rates and from 13.7% to 11.8% for linked data rates (Figure 6.17 and Figure 6.18). Countries can further improve quality of stroke care through timely transportation of patients, evidence-based medical interventions and access to high-quality specialised facilities such as stroke units (OECD, 2015[28]). Timely care is particularly important, and advances in technology are leading to new models of care to deliver reperfusion therapy in an even more speedy and efficient manner, whether through pre-hospital triage via telephone or administering the therapy in the ambulance.

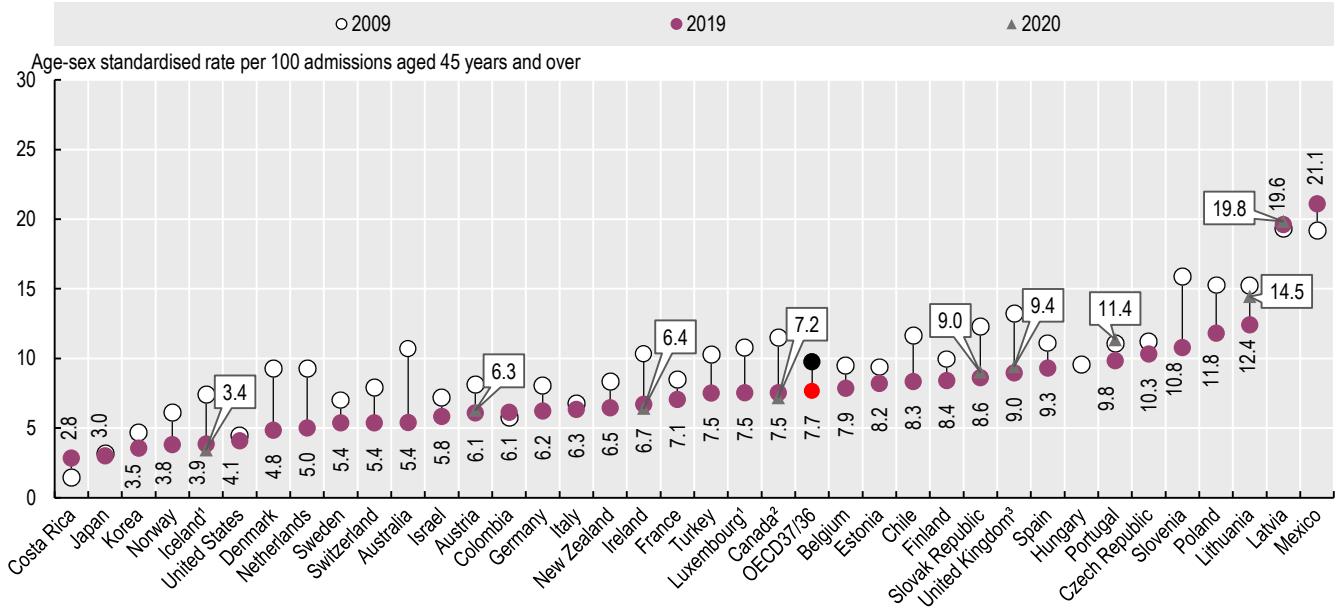
Between 2019 and 2020, case fatality rates increased in Lithuania and Portugal, while the rates were stable in countries such as Canada, Iceland, Latvia, the Slovak Republic and England (United Kingdom) (Figure 6.17 and Figure 6.18). However, the number of people admitted to hospital due to ischaemic stroke decreased in these countries – particularly in Portugal, where the extent of reduction was also large for AMI (see indicator "Mortality following acute myocardial infarction"). Reductions in hospital admissions due to stroke and the number of procedures for stroke were also reported in France, Italy, Germany, Spain and the United States. These reductions may have occurred because at least some people who had strokes did not seek hospital care immediately due to a fear of becoming infected with COVID-19, or because pre-hospital triage did not function as well and ambulance systems may not have been able to transfer all patients promptly due to surges in demand. The number of ischaemic stroke patients who died after hospital admission decreased in most countries that provided 2020 data. The decrease was significant in Portugal, suggesting that at least some stroke patients may have died at home or in long-term care institutions before arriving at hospital.

In order to tackle resource constraints during the COVID-19 crisis, countries such as France, Germany and Italy reorganised pathways for acute stroke care, and stroke care was sometimes concentrated in a few hospitals (Bersano et al., 2020[29]). Supplementary data such as ambulance callouts, ambulance response times and door-to-needle time from emergency room arrival to initiation of thrombolysis are needed to assess the impact of COVID-19 on acute care for stroke patients and to support health systems in providing high-quality acute care during public health emergencies. Granular data such as hospital admissions and case fatality rates by stroke severity could further inform ways to promote effective provision and management of acute care, particularly to patients with the greatest needs.

Definition and comparability

National case fatality rates are defined in indicator "Mortality following acute myocardial infarction". Case fatality rates for ischaemic stroke refer to ICD-10 codes I63-I64.

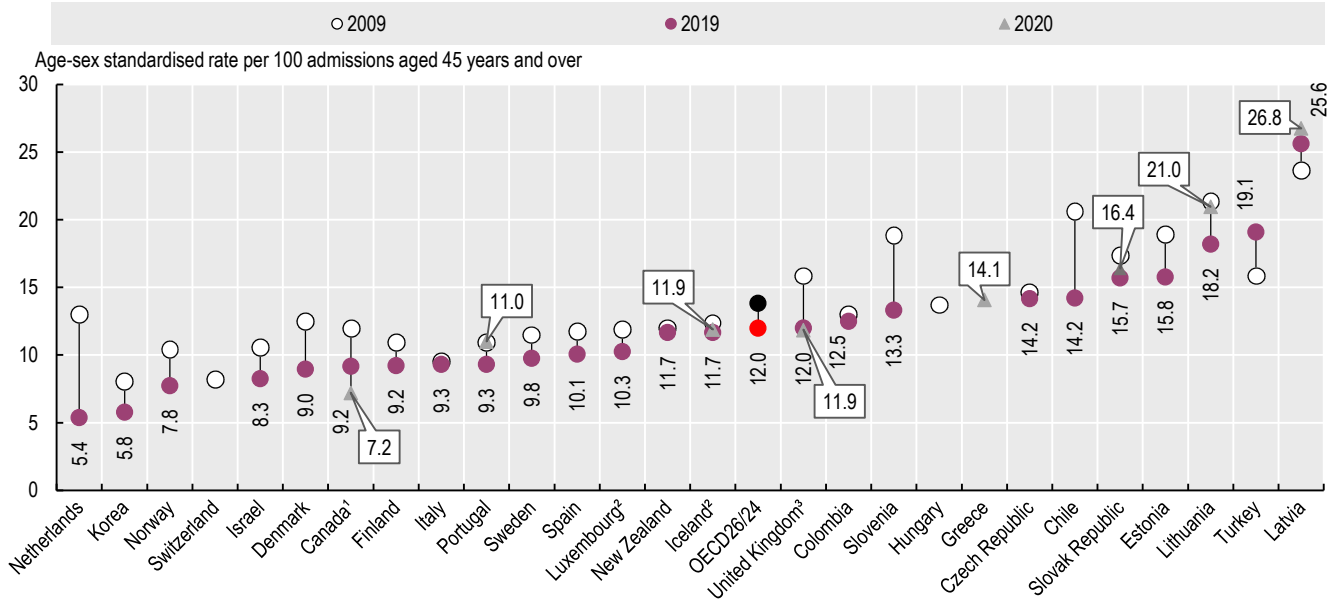
Figure 6.17. **Thirty-day mortality after admission to hospital for ischaemic stroke based on unlinked data, 2009, 2019 (or nearest year) and 2020**



1. Three-year average for all years except 2020. 2. 2020 estimate based on provisional 1 April to 30 September data from all jurisdictions except Quebec. 3. 2020 data are provisional and include England only.
Source: OECD Health Statistics 2021.

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Figure 6.18. **Thirty-day mortality after admission to hospital for ischaemic stroke based on linked data, 2009, 2019 (or nearest year) and 2020**



1. Data do not include deaths outside acute care hospitals. 2020 estimate based on provisional 1 April to 30 September data from all jurisdictions except Quebec. 2. Three-year average for all years except 2020. 3. 2020 data are provisional and include England only.
Source: OECD Health Statistics 2021.

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Hip and knee surgery

Hip fracture repair is usually an emergency procedure. Evidence suggests that early surgical intervention – within 48 hours – improves patient outcomes and minimises the risk of complication. Time to surgery is influenced by many factors, including hospitals' surgical theatre capacity, flow and access, and targeted policy interventions. In 2019, on average across OECD countries, almost 80% of patients admitted for hip fracture underwent surgery within two days (Figure 6.19). COVID-19 had a significant impact on hospital capacity and function. For countries that were able to provide 2020 data, Latvia saw improvement, Lithuania saw a reduction, and Ireland, Iceland and Portugal maintained rates close to 2019 figures.

Osteoarthritis is among the most prevalent diseases in many OECD countries. It typically manifests as pain and stiffness in weight-bearing joints such as the hip and knee. Treatment of osteoarthritis of the hip and knee aims to reduce the patient's joint pain and improve their function, mobility and quality of life. Joint replacement surgery is generally recommended if symptoms persist after exhausting non-surgical treatment such as physical therapy and weight loss. Rates of elective hip and knee replacement have risen over the past decade, and the number of people undergoing these procedures in OECD countries each year is fast approaching a total of 2.5 million.

Patient-reported outcome measures (PROMs) can be used to assess the effect of a medical intervention from the patient's perspective. The Oxford Hip/Knee Score and the Hip/Knee Disability and Osteoarthritis Outcome Score – Physical Short Form (HOOS-PS/KOOS-PS) are among the most common condition-specific PROMs used in hip and knee replacement surgery. Common generic instruments include the EuroQol Five Dimensions (EQ-5D) questionnaire (OECD, 2019[30]).

Figure 6.20 shows the mean change on the Oxford Hip Score and HOOS-PS scales reported by patients after elective hip replacement surgery for osteoarthritis in an international set of joint replacement registries. Results have been adjusted for preoperative score and for the age and sex of the patient cohort. The average mean adjusted change reported across the participating registries was +21 on the Oxford Hip Score (equating to 44% improvement) and +33 on the HOOS-PS scale (equating to 33% improvement).

Figure 6.21 shows the adjusted mean change reported by patients using the Oxford Knee Score and KOOS-PS after elective knee replacement surgery for osteoarthritis. The average mean adjusted change was +17.6 on the Oxford Knee Score (equating to 36% improvement) and +21.1 on the KOOS-PS (equating to 21% improvement) – more modest than the average improvement reported by patient who underwent hip replacement.

The average mean change on the EQ-5D index – adjusted for preoperative score, age and sex – across participating registries was +0.25 for patients after elective hip replacement surgery (equating to 25% improvement) and +0.19 after knee replacement surgery (equating to 19% improvement). The results suggest that – all other things being equal and compared to a no-intervention alternative – the average 65-year-old patient who underwent a hip replacement in the participating registries gained the equivalent of about five years in "full" health; the average patient who underwent knee replacement gained over three years.

Definition and comparability

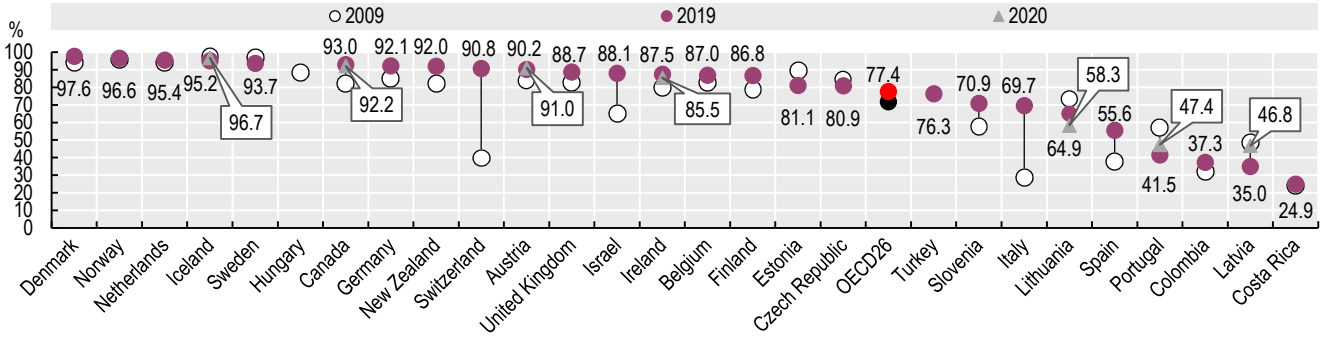
The hip fracture indicator is defined as the proportion of patients aged 65 years and over admitted to hospital in a specified year with a diagnosis of upper femur fracture, who had surgery initiated within two calendar days of their admission to hospital. The capacity to capture time of admission and surgery in hospital administrative data varies across countries. While cases where the hip fracture occurred during admission to hospital should be excluded, not all countries have a "present on admission" flag in their datasets to enable them to identify such cases accurately.

PROMs results are based on data from specific sites or networks of sites in countries using data on adult patients undergoing elective hip or knee replacement surgery with a principal diagnosis of osteoarthritis, who completed an Oxford Hip/Knee Score, and/or a HOOS-PS/KOOS-PS questionnaire and/or an EQ-5D or 12-Item Short Form Health Survey (SF-12v1 and SF-12v2) mapped to EQ-5D pre- and postoperatively. A higher score denotes better outcomes on all these scales (OECD, forthcoming[31]).

Caution is advised when comparing the results of participating registries from which postoperative data are collected at 6 months versus 12 months after surgery. Results derived from the condition-specific instruments (Oxford Hip/Knee Score and HOOS-PS/KOOS-PS) are presented separately because no validated methods exist for converting one to the other. Comparison of results derived from each instrument is not advised.

The EQ-5D analysis used the three-level index (EQ-5D-3L), using the valuation derived from the US population (Van Hout et al., 2012[32]). Several participating registries converted results from EQ-5D-5L to EQ-5D-3L using an algorithm that collapses the five-level scores of the former to the three levels of the latter. The EQ-5D index is used to calculate quality-adjusted life-years (QALYs). Additional QALYs were derived by multiplying the adjusted mean change in EQ-5D score by 20.5 years, which is the average life expectancy at age 65 in the participating registries' countries, minus one year to account for recovery and rehabilitation.

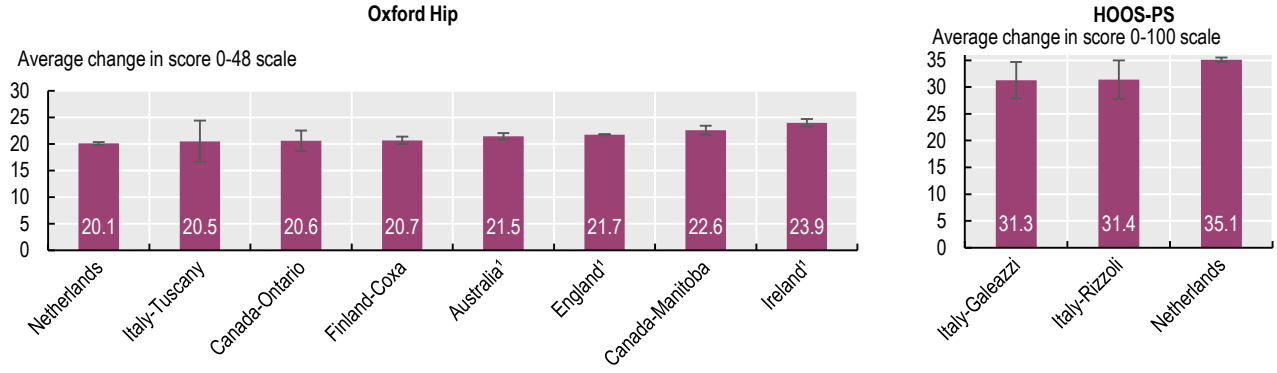
Figure 6.19. **Hip fracture surgery initiation for patients aged 65 and over within two days of admission, 2009-19 (or nearest years) and 2020**



Note: Three-year average for Iceland for all years but 2020. For Canada, 2020 estimate is based on provisional 1 April to 30 September data from all jurisdictions except Quebec.
Source: OECD Health Statistics 2021.

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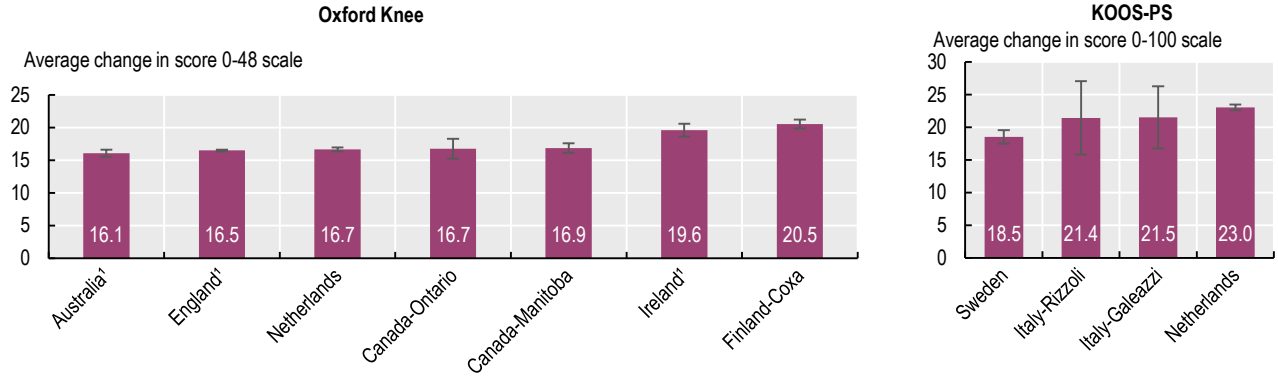
Figure 6.20. **Adjusted mean change between pre- and postoperative Oxford Hip Score and HOOS-PS, 2014-20 (or nearest year)**



1. Postoperative collection at 6 months (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, 2020-21.

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Figure 6.21. **Adjusted mean change between pre- and postoperative Oxford Knee Score and KOOS-PS, 2014-20 (or nearest year)**



1. Postoperative collection at 6 months (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, 2020-21.

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Safe acute care – surgical complications and obstetric trauma

"First, do no harm" is a fundamental principle of the practice of medicine. Even so, patient safety remains one of the most pressing health issues for public education and further policy action. Over 15% of hospital expenditure and activity in OECD countries can be attributed to treating patients who experience a safety event, many of which are preventable (Slawomirski, Auraaen and Klazinga, 2017[33]). COVID-19 has made evident the continued vulnerability of health care delivery systems and the real risk of patient harm – particularly the risk of hospital-acquired infections (G20 Health & Development Partnership, 2021[34]). In 2021, the World Health Assembly endorsed the Global Patient Safety Action Plan 2021-30 to provide a strategic direction for concrete action to be taken by countries, partner organisations, health care facilities and international organisations to ensure safer health care systems (WHO, 2021[35]).

Patient safety "sentinel" or "never" events are events that should never or very rarely occur; "adverse" events are those that cannot be fully avoided, but whose incidence could be considerably reduced. Figure 6.22 illustrates rates for a never event – a foreign body left in during a procedure – using both linked and unlinked data (see the "Definition and comparability" box).

Figure 6.23 shows rates for two related adverse events – pulmonary embolism (PE) and deep vein thrombosis (DVT) after hip or knee replacement surgery – using both linked and unlinked data. PE and DVT cause unnecessary pain, reduced mobility and in some cases death, but they can be prevented by anticoagulants and other measures. The wide variations observed – including an over 35-fold variation in DVT rates – may be explained in part by differences in diagnostic practices, treatment guidelines, and coding practices across countries. Many countries postponed non-emergency surgery in 2020 as a COVID-19 response measure, leading to reductions in surgical volumes, which may explain changes for countries able to report 2020 data.

A woman's safety during childbirth can be assessed by looking at potentially avoidable severe tearing of the perineum during vaginal delivery. Surgery may be required, and complications include perineal pain and incontinence. It is not possible to prevent these types of tear in all cases, but they can be reduced by appropriate labour management and high-quality obstetric care.

Figure 6.24 shows rates of severe obstetric trauma (third- and fourth-degree tearing) after vaginal delivery with instrument (referring to deliveries using forceps or vacuum extraction) and without instrument. As the risk of a perineal laceration is significantly increased when instruments are used to assist the delivery, rates for this patient population are reported separately. High variation in rates of obstetric trauma is evident across countries. Reported rates of obstetric trauma with instrument vary from below 2 per 100 deliveries in Israel, Poland, Lithuania and Colombia to more than 10 per 100 deliveries in Denmark, the United States and Canada. The rates of obstetric trauma after vaginal delivery without instrument vary from below 0.5 per 100 deliveries in Colombia, Poland, Lithuania and Latvia to over 3 per 100 deliveries in Denmark and Canada. As with other patient safety indicators, findings may also be indicative of better coding and reporting practices, rather than less safe care.

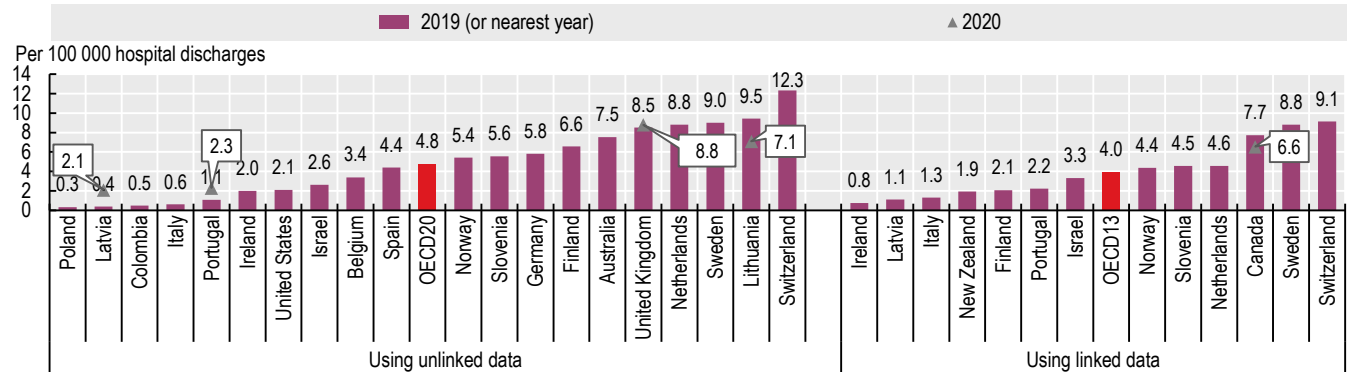
When interpreting 2020 data, the impact of COVID-19 on obstetric safety outcomes requires further study. Rates of obstetric trauma may be influenced by potential changes in caesarean section rates; reduced lengths of hospitalisation and changes to hospital processes and staffing levels; ability of patients to receive routine prenatal care; and other factors affected by COVID-19.

Definition and comparability

Indicators using unlinked data rely on information from a patient's admission to the hospital where surgery occurred to calculate rates. The number of discharges with ICD-10 codes for the relevant complication in any secondary diagnosis field is divided by the total number of discharges for patients aged 15 and over. The linked data approach expands beyond the surgical admission to include all subsequent related readmissions to any hospital within 30 days after surgery. Variations in definitions and medical recording practices between countries can affect calculation of rates and limit data comparability in some cases. Higher adverse event rates may signal more developed patient safety monitoring systems and a stronger patient safety culture rather than worse care.

The two obstetric trauma indicators are defined as the proportion of instrument-assisted/non-assisted vaginal deliveries with third- and fourth-degree obstetric trauma codes (ICD-10 codes O70.2-O70.3) in any diagnosis and procedure field. Several differences in data reporting across countries may influence the calculated rates of obstetric patient safety indicators. These relate primarily to differences in coding practices and data sources. Some countries report obstetric trauma rates based on administrative hospital data, others based on obstetric register data. Careful interpretation of obstetric trauma for instrument-assisted delivery rates over time is required, since the very low number of trauma cases in some countries is likely to give rise to significant year-on-year variation.

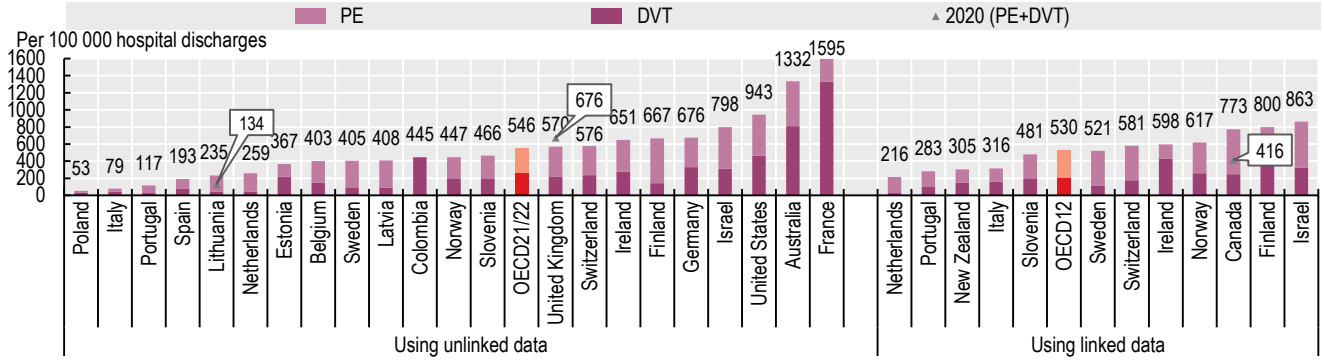
Figure 6.22. **Foreign body left in during procedure, 2019 (or nearest year) and 2020**



Note: 2020 data for the United Kingdom are provisional and include England only. For Canada, 2020 estimate is based on provisional 1 April to 30 September data from all jurisdictions except Quebec.
Source: OECD Health Statistics 2021.

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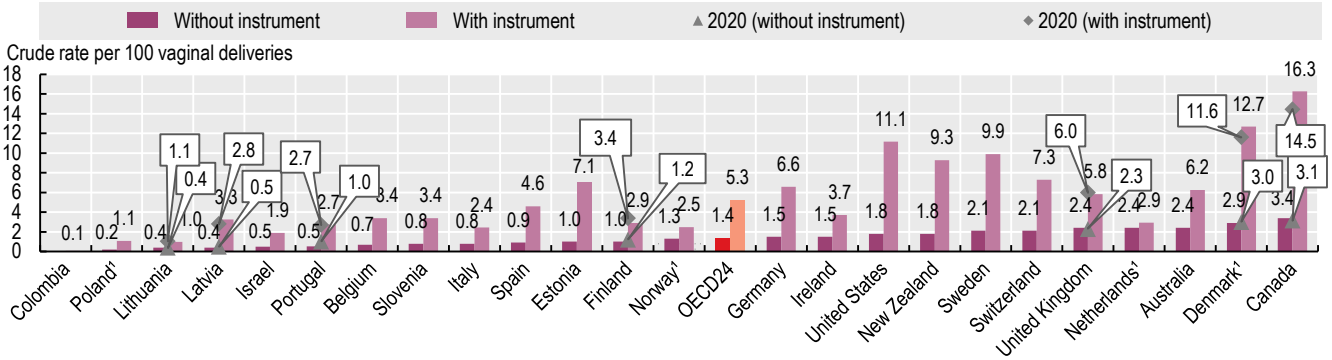
Figure 6.23. **Adverse events in hip and knee surgeries: postoperative pulmonary embolism or deep vein thrombosis in hip and knee surgeries, 2019 (or nearest year) and 2020**



Note: 2020 data for the United Kingdom are provisional and includes England only. For Canada, 2020 estimate is based on provisional 1 April to 30 September 2020 data from all jurisdictions except Quebec.
Source: OECD Health Statistics 2021.

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Figure 6.24. **Obstetric trauma, vaginal delivery with and without instrument, 2019 (or nearest year) and 2020**



Note: 2020 data for the United Kingdom are provisional and include England only. For Canada, 2020 estimate is based on provisional 1 April to 30 September data from all jurisdictions except Quebec. 1. Based on registry data.
Source: OECD Health Statistics 2021.

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Safe acute care – workplace culture and patient experiences

Measures of patient safety culture from the perspective of health workers can be used – along with patient-reported experiences of safety, traditional patient safety indicators (see indicator "Safe acute care – surgical complications and obstetric trauma") and health outcome indicators (see, for example, indicator "Mortality following acute myocardial infarction") – to give a holistic perspective of the state of safety in health systems.

A positive patient safety culture for health workers results in shared perceptions of the importance of safety, increased transparency and trust, and higher levels of shared responsibility, along with improved confidence in organisational and national safety initiatives. A growing body of research has found that positive patient safety culture is associated with a number of benefits, including better health outcomes and patient experiences, as well as improved organisational productivity and staff satisfaction (de Bienassis et al., 2020[36]). Improved models of patient safety governance and investment in improving the patient safety culture have a substantial and lasting impact on outcomes (G20 Health & Development Partnership, 2021[34]). Figure 6.25 illustrates two domains of the Hospital Survey on Patient Safety Culture, which asks hospital staff to provide information on aspects of their work environment and whether they are conducive to good patient safety. The safety of handoffs and transitions relates to staff perceptions of whether important patient care information is transferred across hospital units and during shift changes. Positive perceptions from staff on safety of handoffs and transitions range from 54% in Slovenia, to 32% in Belgium and Scotland (United Kingdom). On average across OECD countries, fewer than half of the hospital staff surveyed thought that handoffs and transitions were sufficient. Figure 6.25 also shows that just over half of health workers had positive overall perceptions of patient safety – meaning that staff think the procedures and systems at their workplace are good at preventing errors and that there is a lack of patient safety problems (OECD, forthcoming[37]).

Patient perspectives are also critical to make health systems more safe and people-centred. Given this importance, the OECD developed a pilot survey instrument to measure patient-reported experience of safety (OECD, 2019[38]), and several OECD countries have tested this instrument. To strengthen health systems based on people's voices, a few OECD countries have started utilising patient-reported safety indicators systematically. For example, Poland uses them as part of its provider accreditation mechanism, and Germany uses them as one of the inputs for an incident reporting project.

According to the Commonwealth Fund 2020 survey, the proportion of patients reporting experiences of medical mistakes in the past two years varied between 3% in Germany and 13% in Norway in 2020. Among hospitalised patients, the proportion was 5% in New Brunswick (Canada) and Estonia and 9% in Poland (Figure 6.26). New Brunswick (Canada) and Poland assessed the comparability of patient-reported incident rates and found that patient-reported data were comparable to the data collected in medical records. However, it should be noted that neither data source may capture certain types of harm. Patients may not report physical harms if they are not immediately recognisable (unlike pain and infection) and if they are not informed of their occurrence by a provider. Medical records may not include harms such as miscommunication, distress and worry, although responding to patients' information and emotional needs is essential for delivering safe and people-centred care.

Among different types of patient safety incident, medication-related incidents are most frequently reported across countries. The proportion of people who reported wrong medication or wrong dose given by a doctor, nurse, hospital or pharmacist in the past two years ranged from 3% in Australia to 7% in Norway (Figure 6.27). In Poland, 3% of hospitalised patients reported medication-related incidents. These data need to be interpreted with care: they may be underreported because patients may not know about all cases of medication error.

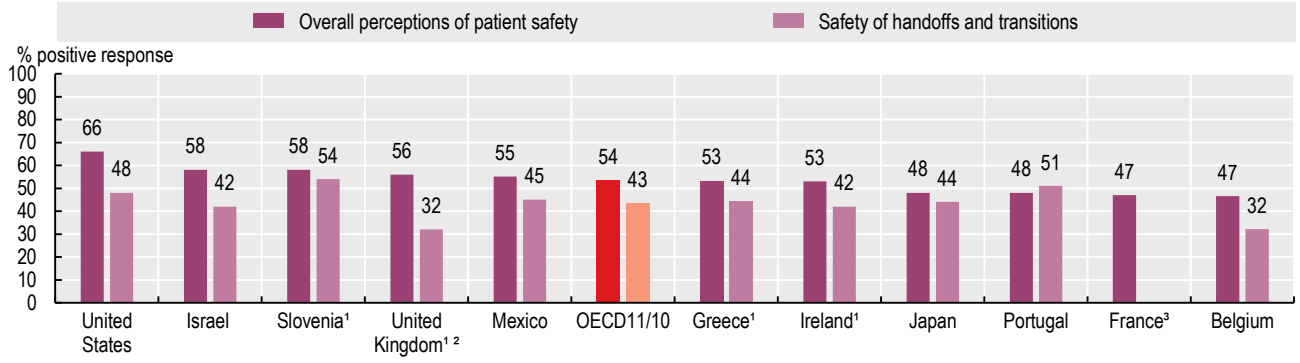
Definition and comparability

Health worker perceptions of patient safety are based on the assessment of workers in the hospital setting (including psychiatric hospitals) using the Hospital Survey of Patient Safety Culture (HSPSC). Due to infrequent national assessments of patient safety culture in many countries, Figure 6.25 includes data from the most recent representative data collection between 2010-20. In some cases, 2020 data submissions include data from part of 2021.

Several differences in data reporting across countries may influence the calculated rates. These relate primarily to differences in the scope and methods used in the patient safety culture measurement, including differences in the total number of survey respondents, types and number of participating hospitals, response rates and required vs. voluntary reporting (more information can be found in OECD (forthcoming[37])). Careful interpretation of patient safety culture indicators is required due to these differences. Data from France is from the region of Bourgogne-Franche-Comté.

International comparisons of patient-reported data are challenging because they may be influenced by many factors, including phrasing of the questions and response categories, and the order of questions in the survey. Patient-reported data from the Commonwealth Fund survey were collected from people aged 18 and over; national surveys based on the pilot instrument (OECD, 2021[38]) were collected from hospitalised patients aged 18 and over, so they are not directly comparable.

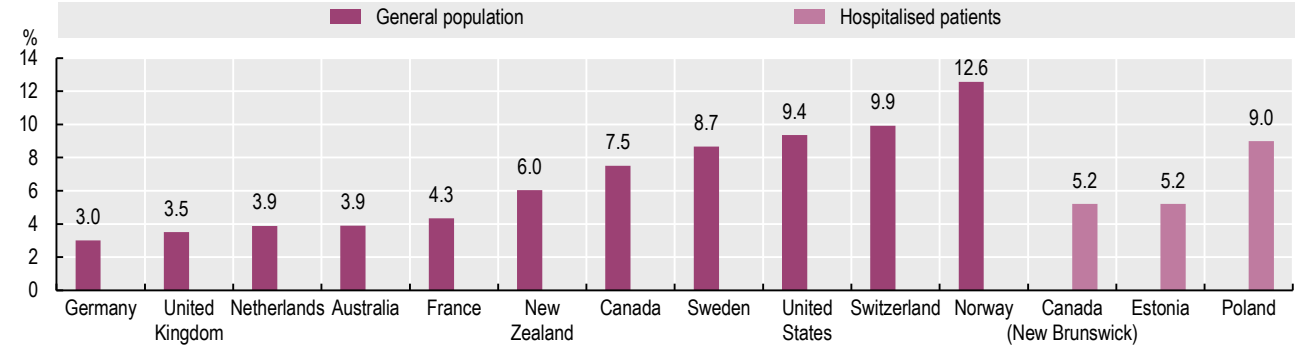
Figure 6.25. **Health worker perceptions of patient safety culture domains, handoffs and transitions and overall perceptions of safety, latest available year**



1. Data from 2010-15 (all other data are from 2015-20). 2. Data are for Scotland only. 3. Bourgogne-Franche-Comté.
Source: OECD Pilot Data Collection on Patient Safety Culture, 2020/2021.

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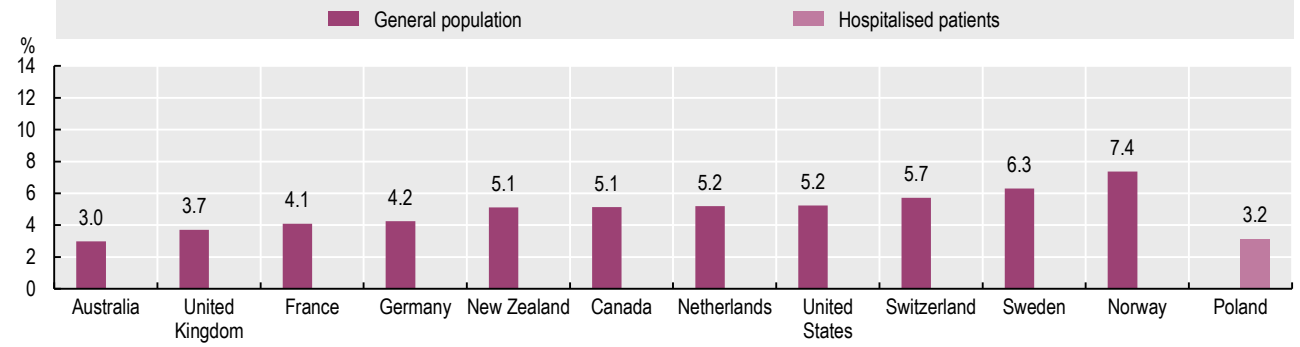
Figure 6.26. **Patients reporting that a medical mistake was made during treatment or care, 2020 (or nearest year)**



Note: Data for the general population are from the Commonwealth Fund 2020 International Health Policy Survey.
Source: OECD Pilot Data collection on Patient-Reported Experience of Safety, 2020-21.

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Figure 6.27. **Patients reporting that they experienced a medication-related mistake, 2020 (or nearest year)**



Note: Data for the general population are from the Commonwealth Fund 2020 International Health Policy Survey.
Source: OECD Pilot Data collection on Patient-Reported Experience of Safety, 2020-21.

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Care for people with mental health disorders

The burden of mental illness is substantial, affecting one in two people at some point in their lives (see indicator "Mental health" in Chapter 3). Since the start of the COVID-19 crisis, levels of mental distress have increased, and the prevalence of anxiety and depression has even doubled in some countries (OECD, 2021[39]). Mental ill health drives economic costs equal to more than 4.2% of gross domestic product (GDP), which include the direct costs of treatment but also indirect costs related to lower employment rates and reduced productivity (OECD, 2021[40]). High-quality, timely care has the potential to improve outcomes and reduce suicide and excess mortality for individuals with mental disorders.

Data on quality and outcomes of care point to shortcomings in continuity of care and ongoing difficulties with improving outcomes, especially for people with severe mental health conditions. Inpatient suicide is a "never" event, which should be closely monitored as an indication of how well inpatient settings are able to keep patients safe from harm. Most countries report inpatient suicide rates below 6 per 10 000 patients, but Denmark, Belgium, Israel, and Canada are exceptions (Figure 6.28). High rates in these countries may be, in part, due to differences in case-mix (i.e. the severity of patient conditions that are treated in inpatient settings) or waiting times for ambulant treatment of patients with complex problems.

Suicide rates after hospital discharge can indicate the quality of care in the community, as well as co-ordination between inpatient and community settings. Across OECD countries, suicide rates among patients who had been hospitalised in the previous year were as low as 7 per 10 000 patients in Iceland but as high as almost 100 per 10 000 in the Netherlands (Figure 6.29).

Individuals with a psychiatric illness have a higher mortality rate than the general population. An "excess mortality" value greater than one implies that people with mental disorders face a higher risk of death than the rest of the population. Figure 6.30 shows the excess mortality values for schizophrenia and bipolar disorder, which are above two in most countries. In 2017-19, excess mortality ranged from 1.8 in Lithuania to 5.3 in Chile for people who had lived with schizophrenia.

Patient-reported metrics can help capture the quality of care provided to individuals living with mental conditions (de Bienassis et al., 2021[41]). These metrics are increasingly used in mental health care to capture people's experience of health services and to provide their perspective on their own health status and how it may have changed over the course of treatment. Figure 6.31 shows service users perceptions of if care providers treated them with courtesy and respect, for people both in inpatient mental health settings and those using community services. While the scope of included data varies from individual sites to national surveys, this figure demonstrates increased adoption of national and subnational efforts to capture information about patient experiences with mental health care systems (de Bienassis et al., 2021[41]; OECD, forthcoming[42]).

Definition and comparability

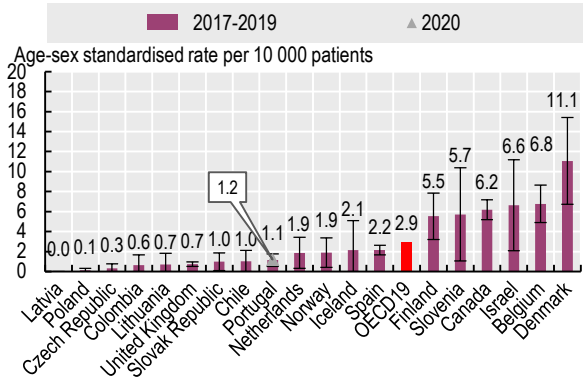
The inpatient suicide indicator is composed of a denominator of patients discharged with a principal diagnosis or first two secondary diagnosis code of mental health and behavioural disorders (ICD-10 codes F10-F69 and F90-99) and a numerator of these patients with a discharge code of suicide (ICD-10 codes X60-X84). Data should be interpreted with caution due to a very small number of cases. Reported rates can vary over time, so where possible a three-year average has been calculated to give more stability to the indicator.

Suicide within one year of discharge is established by linking discharge following hospitalisation with a principal diagnosis or first two listed secondary diagnosis code of mental health and behavioural disorders (ICD-10 codes F10-F69 and F90-99) with suicides recorded in death registries (ICD-10 codes X60-X84).

For the excess mortality indicators, the numerator is the overall mortality rate for people aged between 15 and 74 diagnosed with schizophrenia or bipolar disorder. The denominator is the overall mortality rate for the general population in the same age group. The relatively small number of people with schizophrenia or bipolar disorder dying in any given year can cause substantial variations from year to year, so three-year averages are presented.

Mental health patient-reported experience measures (PREMs) are based on the assessment of inpatient and community mental health service users using domains recommended from the PaRIS Mental Health Working Group. Differences in data collection across reporting sites and countries may influence the calculated rates, including differences in identifying the patient populations, the total number of survey respondents, the structure and implementation of the questionnaire, and the mapping process of existing survey activities onto the identified domains (OECD, forthcoming[42]). For Australia, differences between public and private mental health services in the survey instrument, sampling methodology, patient case mix, service mix and calculation methodology may affect the overall experience scores. Direct comparison between private and public services is not recommended. In addition, direct comparison between countries should be made with caution because there is substantial variation in sample size, as well as the factors above.

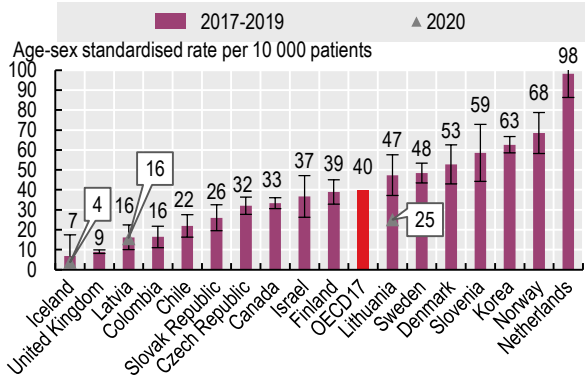
Figure 6.28. **Inpatient suicide among patients with a psychiatric disorder, 2017-19 (or nearest years) and 2020**



Note: H lines show 95% confidence intervals. Three-year average except for Lithuania, Poland and the Slovak Republic (two-year average).
Source: OECD Health Statistics 2021.

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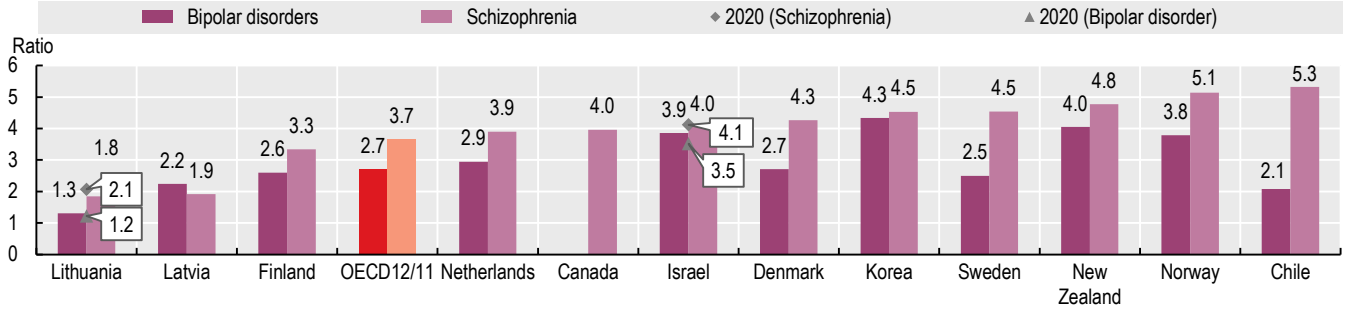
Figure 6.29. **Suicide following a hospitalisation for a psychiatric disorder, within one year of discharge, 2017-19 (or nearest year) and 2020**



Note: H lines show 95% confidence intervals. Three-year average except for Canada and Norway (two-year average).
Source: OECD Health Statistics 2021.

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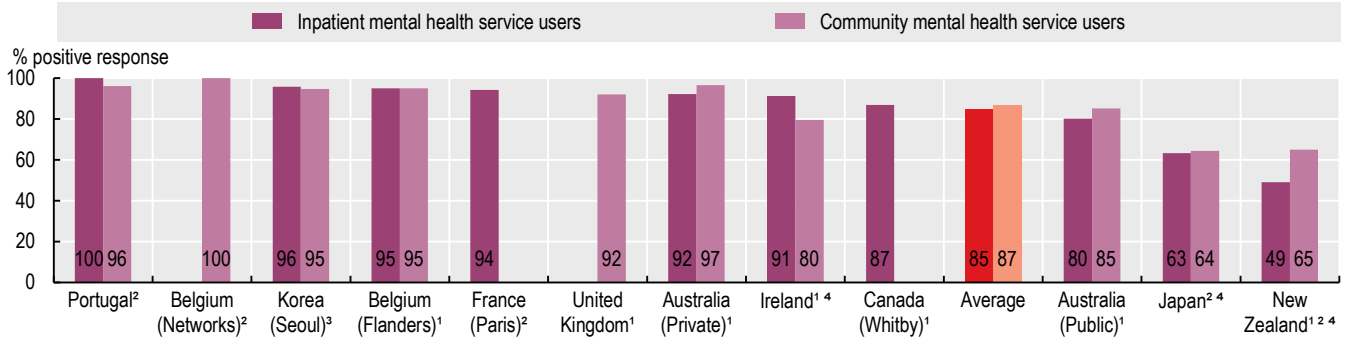
Figure 6.30. **Excess mortality from bipolar disorder and schizophrenia, 2017-19 (or nearest year) and 2020**



Note: Three-year average except for Colombia bipolar disorder (2014). Netherlands: schizophrenia and other psychotic disorders; bipolar and other mood disorders (excluding depressive disorder).
Source: OECD Health Statistics 2021.

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Figure 6.31. **Share of inpatient and community mental health service users who were treated with courtesy and respect by care providers, 2021 (or nearest year)**



1. Information mapped from existing survey programme. 2. Sample size between 500-100. 3. Sample size smaller than 100. 4. Web-based survey.
Source: PaRIS Mental Health Pilot Data Collection 2020-21.

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Breast cancer care

Breast cancer is the cancer with the highest incidence among women in all OECD countries, and the second most common cause of cancer death among women (see indicator "Cancer incidence and mortality" in Chapter 3). Although the quality and outcomes of breast cancer care have generally been improving in recent years, as seen in improved survival estimates, the COVID-19 pandemic may have a negative impact on breast cancer outcomes in OECD countries.

At the onset of the pandemic, many health systems prioritised urgent care needs, and cancer screening programmes were paused (OECD, 2021[6]). Many women also delayed seeking health care to reduce the risk of COVID-19 transmission, which led to a decline in breast cancer screening uptake in many OECD countries (see Chapter 2 "The Health Impact of COVID-19"; Figure 6.32). These changes will slow progress towards earlier diagnosis made in OECD countries that have adopted breast cancer screening programmes (OECD, 2013[43]), which led to an increase in the proportion of women of screening age receiving mammography from 57.3% in 2009 to 61.7% in 2019.

Changes in the stage of the disease at diagnosis can signal changes in timely access to high-quality breast cancer care. During 2010-14, 51.5% of women with breast cancer were diagnosed at an early stage and 8.6% at an advanced stage across OECD countries (Figure 6.33). During the COVID-19 pandemic, the stage distribution changed in several OECD countries. The Netherlands, where breast cancer screening was halted, for example, had a higher share of breast cancer patients diagnosed at the advanced stage during the first wave of the crisis in 2020 compared to the same period in the previous two years (NABON COVID-19 Consortium and the COVID and Cancer-NL Consortium, 2021[44]).

Delayed screening, diagnosis and treatment may lead to poorer outcomes for breast cancer patients in the near future. To minimise these consequences, a few OECD countries, such as Denmark, have made additional efforts to increase screening uptake and to reduce the backlog of cancer diagnosis.

The collection of patient-reported outcome measures (PROMs) in breast cancer care is growing; these can inform treatment choices and policy action to improve the quality of care services for breast cancer patients. Many OECD countries are scaling up their breast cancer PROMs initiatives to regional (e.g. Italy) and national (e.g. the Netherlands, Sweden) levels in order to make their health systems more people-centred.

The COVID-19 crisis has magnified the benefits to health systems of having systematic collection of PROMs in place. The pandemic has challenged health systems to deliver more timely and appropriate breast cancer care in a few OECD countries. Evidence shows that, from the onset of the pandemic, breast cancer patients and survivors were less likely to contact physicians, and experienced a deterioration in their emotional functioning and mental health (Bargon, 2021[45]). With the aim of minimising surgical complexity, length of stay, complication risks and the risk of COVID-19 infection, some countries and certain hospitals – including Sweden, the United Kingdom and the U.S. Brigham and Women's Hospital – reduced or suspended all immediate breast reconstruction surgery and delayed reconstruction to be offered once services returned to normal (Dave, 2021[46]; Regionala Cancercentrum I Samverkan, 2021[47]). Such disruptions in care have significantly affected the ability for participating hospitals to deliver PROMs data to the OECD.

Figure 6.34 presents crude (unadjusted) breast satisfaction outcome scores at 6-12 months following breast cancer procedures (breast-conserving therapy and reconstruction following mastectomy) for ten clinical sites in nine countries. Results suggest higher breast satisfaction outcomes after breast-conserving therapy in some, but not all, sites. Consolidated mean crude scores from all 10 sites except Switzerland show higher breast satisfaction scores following breast-conserving therapy compared to reconstruction surgery.

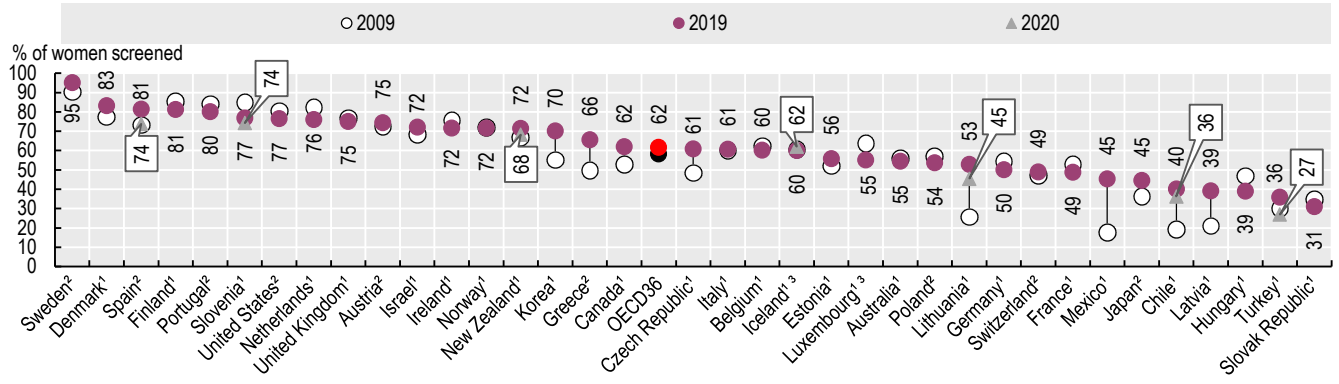
Definition and comparability

Cancer patient data were provided by national or regional cancer registries. Screening rates are based on survey or programme data. Survey-based results may be affected by recall bias. Quality control, analysis of stage distribution and estimation of age-standardised five-year net survival were performed centrally as part of CONCORD, the global programme for the surveillance of cancer survival, led by the London School of Hygiene and Tropical Medicine (Allemani et al., 2018[48]). The stage at diagnosis for breast cancer is categorised according to the Tumour, Nodes, Metastasis staging system.

PROMs data are only presented for selected hospitals and are not representative for each country. Outcomes were measured using the relevant postoperative breast satisfaction scales from the BREAST-Q tool, an internationally validated instrument used to measure breast surgery outcomes reported by patients (Pusic et al., 2009[49]). A higher score denotes better outcomes.

Caution is advised when comparing the results of participating sites for several reasons. The size of participating programmes in terms of patient numbers varied considerably from regional efforts to single hospitals. These differences are reflected in the confidence intervals included in Figure 6.34. Note that measurement extended beyond 12 months after surgery for some sites. Data from Flinders Medical Centre (Australia), University of Western Australia Medical School (Australia), Portugal (Site A), 12 Octubre Hospital (Spain) and Brigham and Women's Hospital (United States) are not included in the figure due to small sample sizes. Data from these sites, and additional data on the sites and samples can be found in a forthcoming technical report.

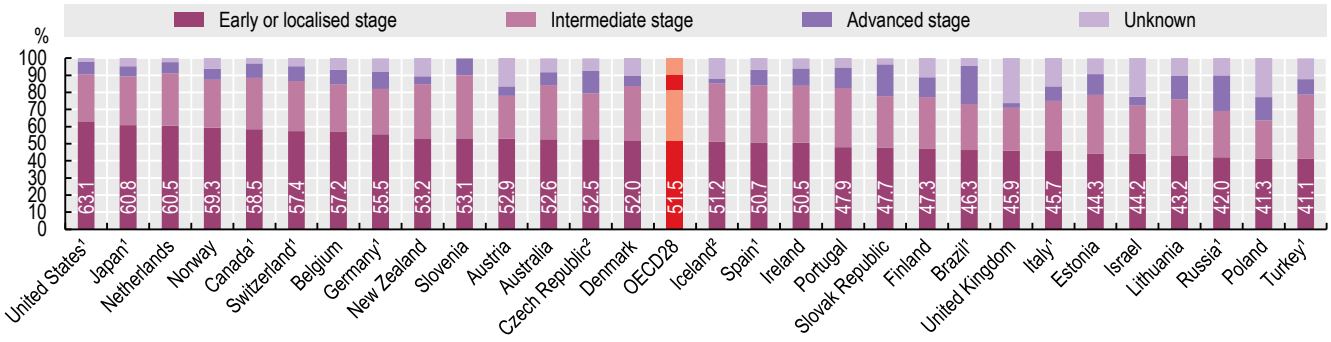
Figure 6.32. **Mammography screening in women aged 50-69 within the past two years, 2009, 2019 (or nearest year) and 2020**



1. Programme data. 2. Survey data. 3. Three-year average.
Source: OECD Health Statistics 2021.

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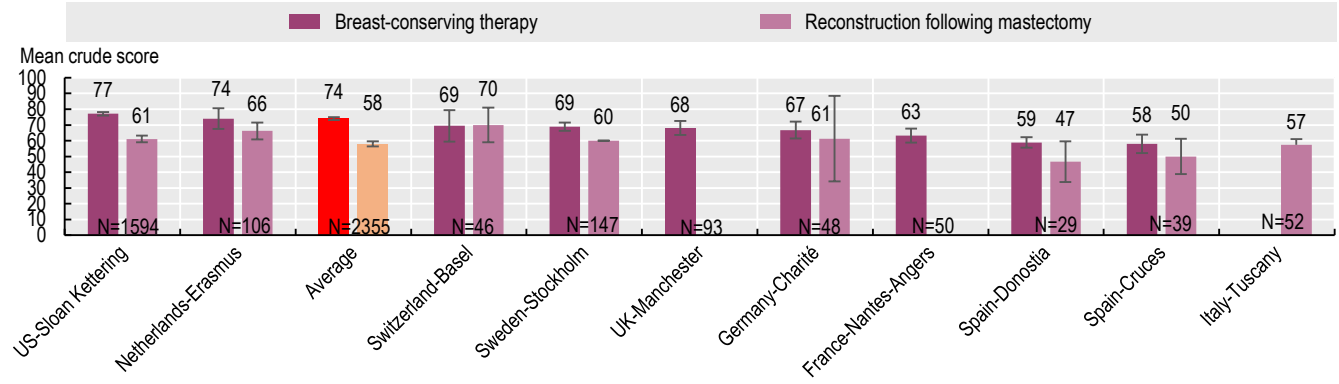
Figure 6.33. **Breast cancer stage at diagnosis distribution, 2010-14**



1. Data represent coverage of less than 100% of the national population. 2. Data for 2004-09.
Source: CONCORD Prgramme, London School of Hygiene and Tropical Medicine.

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Figure 6.34. **Self-reported breast satisfaction: Crude scores 6-12 months after surgery, 2020-21**



Note: H lines show 95% confidence intervals. Weighted average based on site sample size was used to calculate crude average breast satisfaction. Data labels at the base of the histogram refer to the sample size at each site.
Source: PaRIS Breast Cancer PROMs pilot data collection 2021.

StatLink https://stat.link/xdqyr7

Survival for other major cancers

In order to improve poor cancer outcomes (see indicator "Main causes of mortality" in Chapter 3), many OECD countries have broadened their efforts in cancer control. For example, the EU's renewed political commitment is articulated in its Europe's Beating Cancer Plan. However, the COVID-19 pandemic has disrupted primary and secondary prevention, diagnosis and treatment for cancers to a variable extent. OECD countries may therefore find it difficult to continue to improve cancer outcomes.

Invasive cervical cancer is preventable if pre-cancerous or pre-invasive changes are detected and treated before progression occurs. Over half of OECD countries have population-based cervical cancer screening programmes (OECD, 2013[43]; European Commission, 2017[50]). Most OECD countries also have human papillomavirus (HPV) vaccination programmes, although vaccination coverage ranges widely: between 1% of women in the target age group in Japan and 99% in Mexico (WHO, 2021[51]). During 2010-14, age-standardised five-year net survival for cervical cancer ranged from 53.9% in Latvia to 77.3% in Korea (Figure 6.35). The incidence of invasive cancer may be lower in countries – such as the United States – where there is intensive screening activity, which can detect and remove in-situ cancers and slower-growing invasive tumours. Women who are diagnosed with cervical cancer despite screening tend to have more aggressive tumours that are more difficult to treat, leading to lower survival rates for all stages combined.

Cervical cancer screening uptake and HPV vaccination coverage were sometimes adversely affected by the COVID-19 pandemic, as were breast cancer screening and childhood vaccination programmes (see indicators "Routine vaccinations" and "Breast cancer care"). In Slovenia, for example, less screening, diagnosis and treatment was provided in 2020 than in the previous three years, although the time from diagnosis to treatment and the time to laboratory test were maintained at a similar level (Ivanuš et al., 2021[52]). Timely detection of changes in access to cervical cancer care and the quality of care requires recording and monitoring of data on the stage of disease at the time of diagnosis, together with case loads and waiting times.

Melanoma of the skin is mainly caused by exposure to ultraviolet radiation, and people with a low level of skin pigmentation, a family history of the disease or poor immune function are at higher risk. Incidence rates vary widely, from below 1 per 100 000 population per year in Japan and Korea to over 30 per 100 000 population per year in Australia and New Zealand (GLOBOCAN, 2020[53]). Age-standardised five-year net survival ranges from under 50% in the People's Republic of China (China) to over 93% in Switzerland and Germany (Figure 6.36). In countries with high incidence rates, such as Australia, Denmark, New Zealand, the United Kingdom and the United States, public health efforts have focused on raising awareness of the importance of recognition of the early symptoms of melanoma, helping to achieve the highest levels of survival among OECD countries. In some countries, a less favourable distribution of histologic sub-types – such as a higher proportion of nodular and acral lentiginous melanomas, which have a poorer prognosis – may also help to explain some of the international differences in survival. This requires health policies to target specific populations to improve awareness, early diagnosis and access to treatment.

In recent years, net survival from melanoma of the skin has increased in most OECD countries. The introduction of immunotherapies and targeted treatments for metastatic melanoma has led to unprecedented clinical benefit, and may have contributed to improving short-term survival, as shown in a recent population-based study in the United States (Di Carlo et al., 2020[54]). During the initial phase of the COVID-19 pandemic, in Ontario (Canada) and Italy, for example, skin biopsies became less common. In Italy, the stage distribution worsened, but treatment for patients at an advanced stage was managed promptly (Intergruppo Melanoma Italiano, 2021[55]).

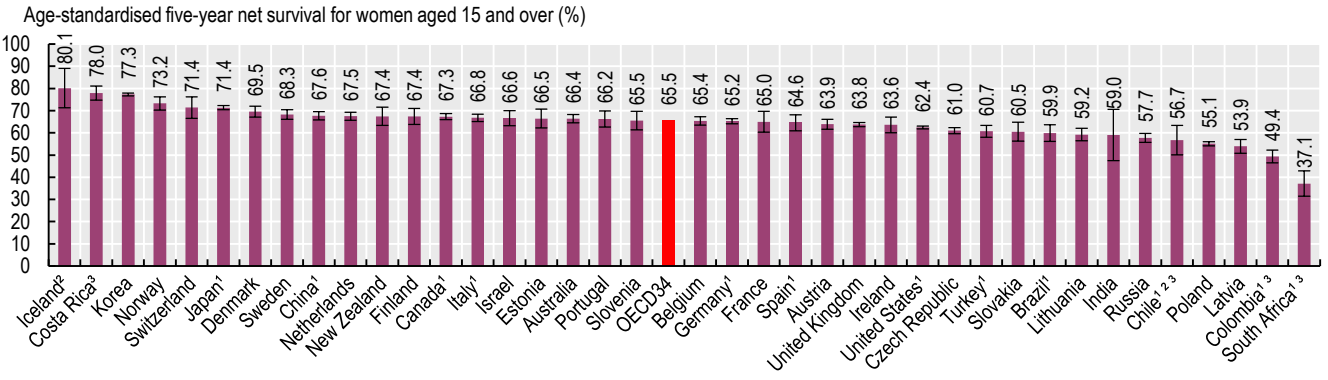
Oesophageal cancer has the sixth highest incidence rates and fifth highest mortality rates in OECD countries. The risk is higher among men, and among people who smoke and drink alcohol. Age-standardised five-year net survival for oesophageal cancer has improved since the early 2000s. For adults diagnosed during 2010-14, the highest five-year net survival was in Korea (31.3%) and Japan (36.0%), and the lowest in Estonia (5.4%) and Lithuania (5.6%) (Figure 6.37). Countries with population-based gastric screening programmes, such as Korea and Japan, have experienced massive improvements over the past few decades, and now have the highest levels of oesophageal cancer survival worldwide.

Definition and comparability

Five-year net survival is the cumulative probability that cancer patients survive their cancer for at least five years following diagnosis, after controlling for the risks of death from other causes, and taking into account that competing risks of deaths are higher among elderly people. The period approach is used to allow estimation of five-year survival when five years of follow-up are not available. Cancer survival estimates are age-standardised with the International Cancer Survival Standard weights.

Quality control and analysis for age-standardised five-year net survival were performed centrally as part of CONCORD, the global programme for the surveillance of cancer survival, led by the London School of Hygiene and Tropical Medicine (Allemani et al., 2018[48]).

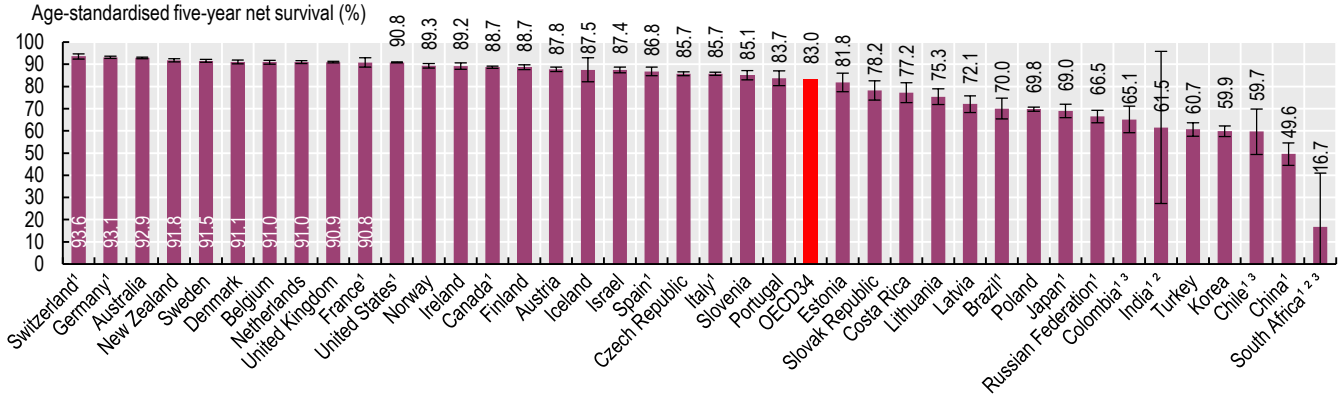
Figure 6.35. **Cervical cancer five-year net survival, 2010-14**



Note: H lines show 95% confidence intervals. 1. Data represent coverage of less than 100% of the national population. 2. Survival estimates are considered less reliable: see Allemani et al. (2018[48]) for more information. 3. Survival estimates are not age-standardised.
Source: CONCORD Programme, London School of Hygiene and Tropical Medicine.

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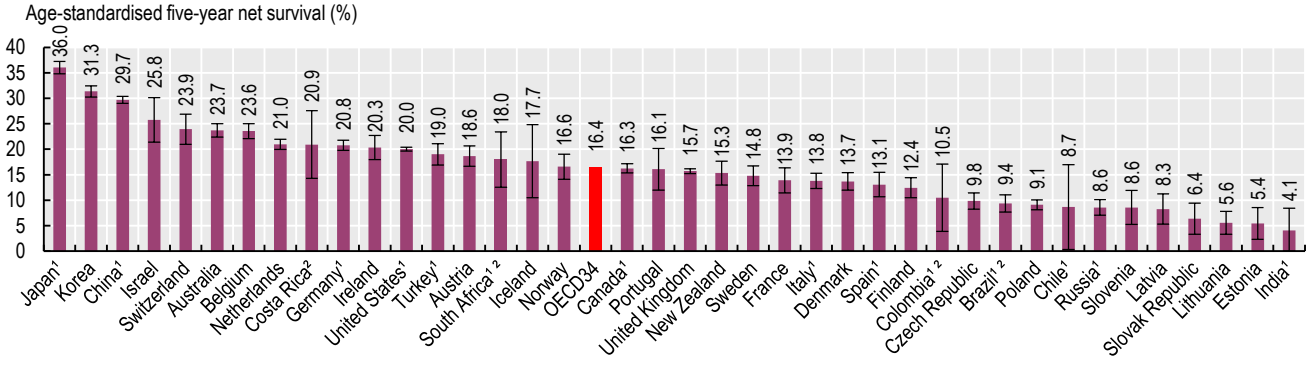
Figure 6.36. **Melanoma five-year net survival, 2010-14**



Note: H lines show 95% confidence intervals. 1. Data represent coverage of less than 100% of the national population. 2. Survival estimates are considered less reliable: see Allemani et al. (2018[48]) for more information. 3. Survival estimates are not age-standardised.
Source: CONCORD Programme, London School of Hygiene and Tropical Medicine.

StatLink https://stat.link/2isbg9

Figure 6.37. **Oesophageal cancer five-year net survival, 2010-14**



Note: H lines show 95% confidence intervals. 1. Data represent coverage of less than 100% of the national population. 2. Survival estimates are considered less reliable.
Source: CONCORD Programme, London School of Hygiene and Tropical Medicine.

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Integrated care

Despite national efforts to facilitate transitions of care and improve interaction between providers, health systems remain fragmented when delivering care. Recent OECD work flags how poor integration undermines the full potential of health care (OECD, 2020[14]). This is especially true for those who transition between care settings with complex health conditions, such as mental illness (OECD, 2021[39]). Poor co-ordination is also reported between health, long-term and social care (OECD, 2020[56]). These failures have been magnified by the COVID-19 pandemic, with fragmented care between hospitals and community care damaging continuity of care and risking the delivery of safe care for the most vulnerable populations (OECD, 2020[57]).

Integrated care can improve patient outcomes and experiences. It also increases value for money by improving co-ordination, while reducing duplicative and unnecessary care. OECD work has identified key mechanisms for improving integrated care: strengthening governance, developing strong information systems, building a skilled workforce and ensuring aligned financial incentives (OECD, 2017[17]).

Indicators such as mortality, readmissions and medication prescriptions after hospitalisation provide insight into the quality of integration between hospital and community care. Stroke and CHF indicators in the year following discharge can be calculated using patient-level hospital records linked to death registries and outpatient prescribing data. However, only three OECD countries (Czech Republic, Finland and Sweden) participating in the OECD pilot data collection on Integrated Care are presently able to link all the data sources for reporting prescription indicators, in addition to all the other indicators.

Figure 6.38 shows the mortality and readmissions outcomes across OECD countries in the year after discharge following ischaemic stroke or CHF in 2018. For patients who suffered an ischaemic stroke, on average, 64% survived and did not return to acute care, 22% survived and were readmitted to hospital (4% for stroke-related and 18% for other reasons) and 14% died in the following year. For CHF patients, on average, 45% who survived did not return to acute care, while 32% survived but were readmitted for CHF related or other causes and 23% died in the following year.

For patients who suffered a stroke and were discharged, 1-year mortality ranged from 2% in Japan to 25% in Estonia. For CHF patients, 1-year mortality varied from 8% in Japan to 33% in Slovenia. 1-year readmissions of stroke patients surviving one year or more ranged from 1% in Italy to 6% in Norway for stroke-related reasons, and from 0% in Costa Rica to 28% in the Czech Republic for non-stroke causes. For patients with CHF surviving one year or more, readmission rates varied from 1% in Italy to 17% in Israel for CHF-related causes and from 0% in Costa Rica to 29% in the Czech Republic for other causes.

Trend analysis can identify changes over time, such as improvements in mortality and readmission rates. Data for 2013-18 are shown for the percentage of discharged stroke and CHF patients readmitted or dying in the year following discharge either for any cause (Figure 6.39) or for the primary diagnosis (Figure 6.40). Most countries demonstrated small improvements over a five-year period. Costa Rica, Sweden and Israel demonstrated the largest improvements for reducing 1-year readmissions and mortality following an ischaemic stroke, and Costa Rica, Sweden, Japan and Israel for CHF. Similar declines can be seen for 30-day case fatality rates for ischaemic stroke (see indicator “Mortality following ischaemic stroke”). However, some countries reported worsening rates, including Lithuania, Norway and Finland.

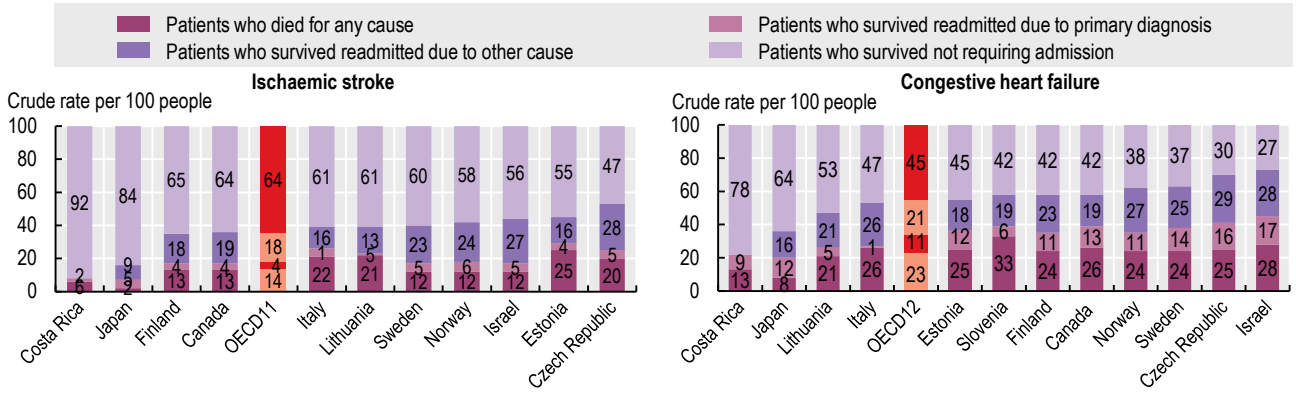
Variation in outcomes across countries can be partly explained by differences in the organisation of care delivery, and differences in access to care, payment mechanisms and information systems. For example, Estonia adopted a new person-centred care network model and Finland defined a new governance model of financing, organisation and information to drive integration of health and social care.

Definition and comparability

The OECD piloted the collection of integrated care indicators to support the international comparison of performance for patients discharged from hospital with ischaemic stroke or CHF. Outcome indicators are calculated for people aged 15 and over at the day of admission presenting with an acute non-elective (urgent) episode of care for a first-time event of ischaemic stroke or CHF. A first-time event is defined among people with no disease-specific hospital admission in the previous five years. Countries applied this “washout” period except the Czech Republic (which only used the first event of primary diagnosis) and Japan (which used a one-year washout). These variations affect the construction of the patient cohort, hinder the possibility of tracing persons who have a history of repeated hospitalisations and reduce data comparability.

All countries use patient unique identifiers. For all countries data are nationally representative, except for Japan. Japan uses a network of providers representing 30% of hospitalisations and only identifies hospital readmissions within this network thus limiting data comparability with other countries. Patient unique identifiers link hospital data (with information on the type and date of admission and discharge and diagnoses) with death registries and with prescribing databases. Definitions of acute urgent care vary across countries. Most countries define acute urgent care as hospital admission via emergency/unplanned care (Costa Rica, Finland, Japan, Israel, Italy, Norway, Slovenia and Sweden) or curative care (Lithuania). Some countries (Estonia) exclude acute care related to rehabilitation, psychiatric or long-term care, or use diagnosis-related groups (Czech Republic) to identify acute episodes. As shown in Figure 6.11 and Figures 6.17-18, CHF hospitalisations and ischaemic stroke mortality demonstrate substantial variability between countries. Caution is advised when making direct comparison between countries using these metrics. See Barrenho et al. (forthcoming[58]) for further analyses.

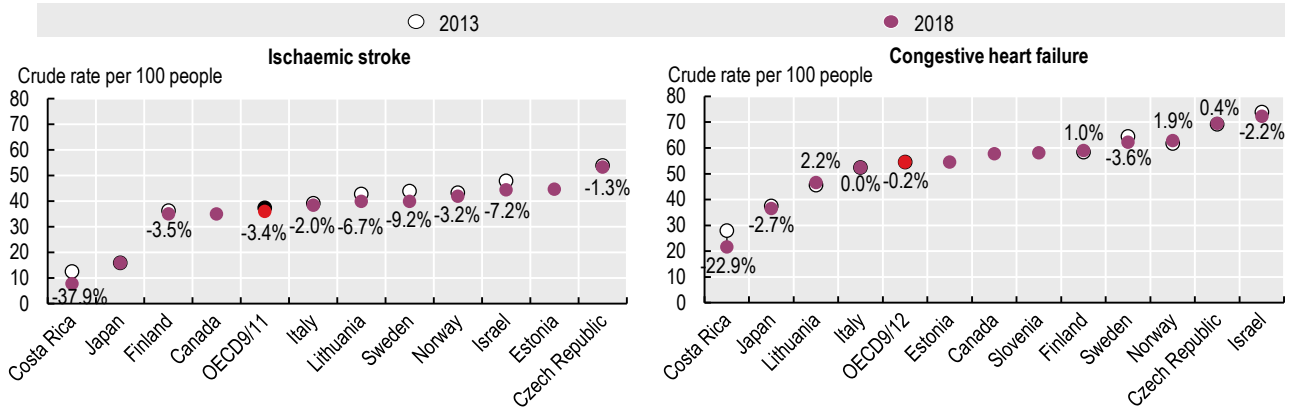
Figure 6.38. **Patient outcomes within one year of discharge after ischaemic stroke and congestive heart failure, 2018**



Source: OECD HCQO Pilot Data Collection on Integrated Care 2021.

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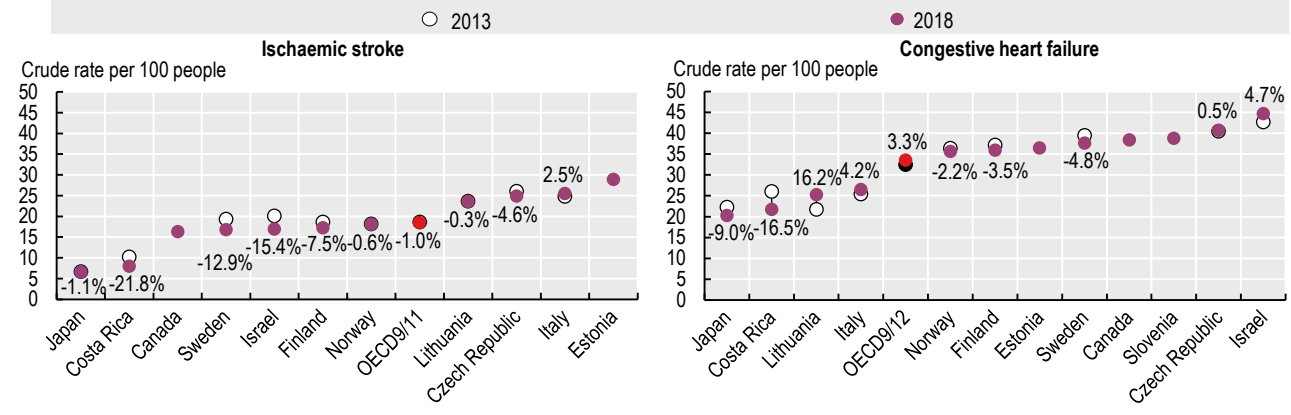
Figure 6.39. **Patients readmitted or dying due to any cause within one year of discharge after stroke and congestive heart failure, 2013-18 (or nearest year)**



Note: Data labels report relative percentage change, 2013-18. 2013 OECD average does not include data for Canada, Estonia and Slovenia.
Source: OECD HCQO Pilot Data Collection on Integrated Care 2021.

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Figure 6.40. **Patients readmitted or dying due to the primary diagnosis within one year of discharge after stroke and congestive heart failure, 2013-18 (or nearest year)**



Note: Data labels report relative percentage change, 2013-18. 2013 OECD average does not include data for Canada, Estonia and Slovenia.
Source: OECD HCQO Pilot Data Collection on Integrated Care 2021.

StatLink https://stat.link/wynqf6

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7. HEALTH EXPENDITURE

Health expenditure in relation to GDP

Health expenditure per capita

Prices in the health sector

Health expenditure by financing scheme

Public funding of health spending

Health expenditure by type of service

Health expenditure on primary health care

Health expenditure by provider

Capital expenditure in the health sector

Health expenditure in relation to GDP

The amount spent on health care compared to the size of the overall economy varies over time owing to differences in both the growth of health spending and overall economic growth. During the 1990s and early 2000s, OECD countries generally saw health spending outpace the rest of the economy, leading to an almost continual rise in the ratio of health expenditure to gross domestic product (GDP). After the volatility of the 2008 economic crisis, the share remained relatively stable, as growth in health spending broadly matched overall economic performance across OECD countries. However, with the COVID-19 crisis severely restricting economic activity, and health spending tending to increase, the ratio of health expenditure to GDP is set to experience significant adjustment.

In 2019, prior to the COVID-19 pandemic, OECD countries spent, on average, around 8.8% of their GDP on health care – a figure more or less unchanged since 2013. The United States spent by far the most on health care, equivalent to 16.8% of its GDP – well above Germany, the next highest spending country, at 11.7% (Figure 7.1). After the United States and Germany, a group of ten high-income countries, including France, Canada, Japan and the United Kingdom, all spent more than 10% of their GDP on health care. A further dozen countries spread across OECD countries, but also including Brazil and South Africa, sit within a band of health spending of 8-10% of GDP. The next block of countries spending between 6% and 8% of their GDP on health care includes many of the central and eastern European OECD countries, as well as the newer members from the Latin America region – Colombia and Costa Rica. Finally, Mexico and Turkey spent less than 6% of GDP on health, alongside some of the partner countries, such as the People's Republic of China (China) and India.

Preliminary estimates for 2020 for a number of OECD countries all point to a significant increase in the ratio of health spending to GDP. This reflects both the extra health spending needed to combat COVID-19 and reductions in GDP caused by restrictions on economic activity. Based on the initial data, the average share of GDP allocated to health is estimated to have jumped from 8.8% in 2019 to 9.7% in 2020. Those countries most severely affected by the pandemic reported unprecedented increases in the share of GDP allocated to health. The United Kingdom estimated an increase from 10.2% in 2019 to 12.8% in 2020, while Slovenia anticipated its share of spending on health rising from 8.5% to more than 10%.

Analysis of the trends in per capita health spending and GDP over the last 15 years clearly show the two shocks: the economic crisis in 2008 and the recent impact of COVID-19 in 2020 (Figure 7.2). While OECD economies contracted sharply in 2008 and 2009, health spending growth was maintained for a while before also declining – growth hovered just above zero between 2010 and 2012 – as a range of policy measures to rein in public spending on health kicked in. For the rest of the 2010s, the average rate of health spending growth in OECD countries tended to track growth in the overall economy closely. The gap widened in 2019, with stronger growth in health spending. With widespread lockdowns and other public health measures severely restricting economic output and consumer spending, many OECD economies went into freefall in 2020. Per capita GDP fell by more than 4.5% on average, with Spain and the United Kingdom recording double-digit contractions in GDP. The need to increase health spending, particularly by governments, in response to the pandemic pushed average per capita growth in spending close to 5%, according to preliminary data for a number of OECD countries. This is likely to be the fastest growth in OECD health spending in the last 15 years.

The trends in health spending and GDP over this period have translated into a distinct pattern, with significant jumps in the ratio in 2009 and 2020, and a period of stability in between (Figure 7.3). Focusing on a few countries, Italy and the United Kingdom closely followed this trend, with the latter showing an even more pronounced jump in 2020. Germany and Portugal experienced a smoother transition, with health spending in Portugal estimated to be only 0.4 percentage points higher than in 2005. Despite the shocks, health spending in Korea has shown a steady increase year on year, rising from 4.8% to 8.4% over the 15-year period.

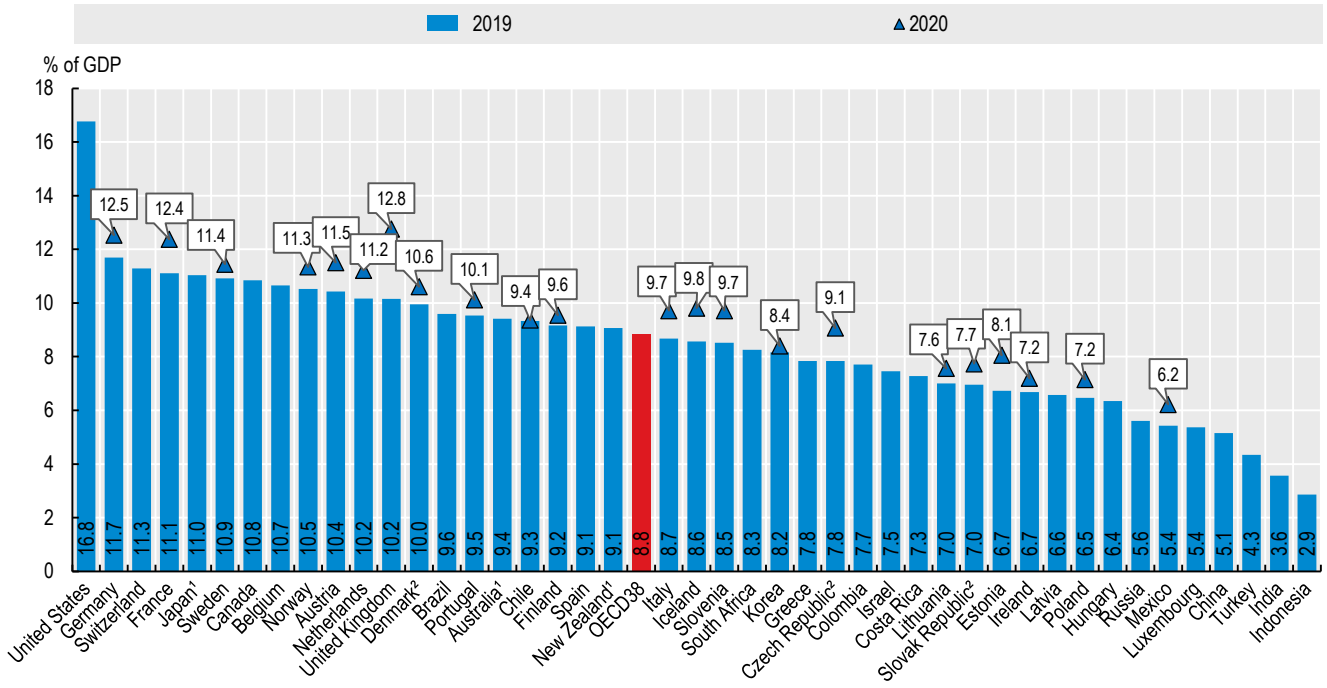
Definition and comparability

See indicator "Health expenditure per capita" for a definition of current expenditure on health. GDP is the sum of final consumption, gross capital formation (investment) and net exports. Final consumption includes goods and services used by households or the community to satisfy their individual needs. It includes final consumption expenditure of households, general government and non-profit institutions serving households.

In countries such as Ireland and Luxembourg, where a significant proportion of GDP refers to repatriated profits and is thus not available for national consumption, gross national income may be a more meaningful measure than GDP. However, for consistency, GDP is maintained as the denominator for all countries.

Note that data for 2020 are based on provisional figures provided by the country or preliminary estimates made by the OECD Secretariat. As a result of challenges faced in collecting data during COVID-19 pandemic, 2020 estimates may be subject to more uncertainty than usual.

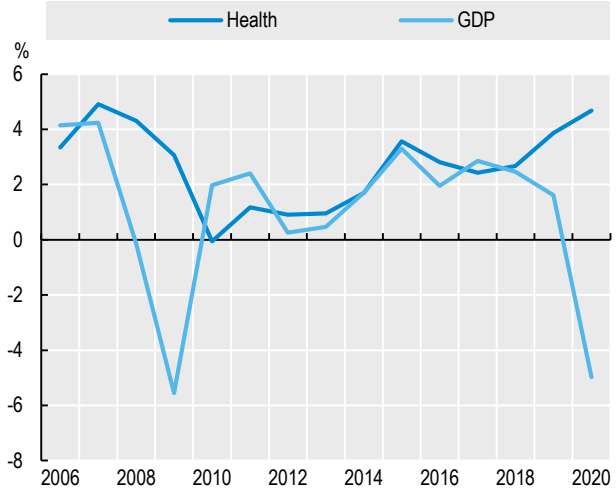
Figure 7.1. **Health expenditure as a share of GDP, 2019 (or nearest year) and 2020**



1. OECD estimates for 2019. 2. OECD estimates for 2020.
Source: OECD Health Statistics 2021, WHO Global Health Expenditure Database.

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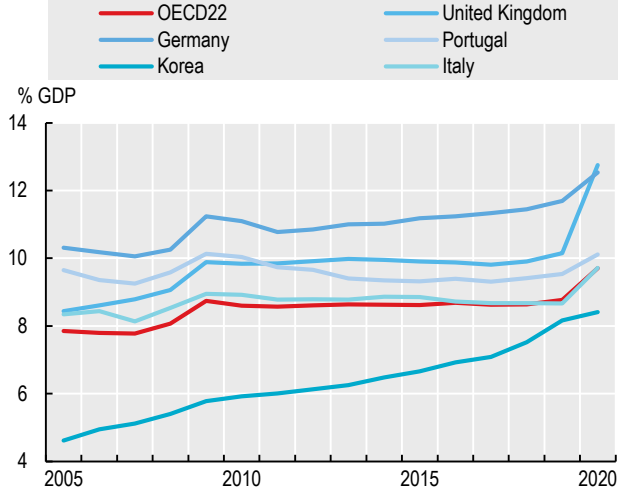
Figure 7.2. **Annual real growth in per capita health expenditure and GDP, OECD, 2005-20**



Note: Average of 22 OECD countries.
Source: OECD Health Statistics 2021.

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Figure 7.3. **Health expenditure as a share of GDP, selected OECD countries, 2005-20**



Source: OECD Health Statistics 2021.

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Health expenditure per capita

The level of per capita health spending, which covers both individual and population health care needs, and how this changes over time, depends on a wide range of demographic, social and economic factors, as well as the financing and organisational arrangements of the health system.

In 2019, average per capita health spending in OECD countries (when adjusted for differences in purchasing power) was estimated to be more than USD 4 000, while in the United States it reached the equivalent of almost USD 11 000 for every US citizen. Switzerland, the next highest spender among OECD countries, had health expenditure of around two-thirds of this level (Figure 7.4). In addition to Switzerland, only a handful of high-income OECD countries, including Germany, Norway and Sweden, spent more than half of the US spending on health, while others, such as Japan and the United Kingdom, were around the OECD average. Lowest per capita spenders on health among OECD member countries were Colombia, Turkey and Mexico, with health expenditure of around a quarter of the OECD average. Latest available estimates show that per capita spending in China was just under 20% of the OECD average, while both India and Indonesia spent between 6% and 8% of this figure.

Figure 7.4 also shows the split of health spending based on the type of health care coverage – organised either through government health schemes or compulsory insurance (public or private), or through a voluntary arrangement such as private voluntary health insurance or direct payments by households (see indicator "Health expenditure by financing schemes"). Across OECD countries, more than 76% of all health spending is financed through government or compulsory insurance schemes. In the United States, since the introduction of the Affordable Care Act in 2014, this share stands at 85%, reflecting the existence of an individual mandate to purchase health insurance. Federal and state programmes such as Medicaid and Medicare continue to play an important role in purchasing health care.

Between 2015 and 2019, average per capita spending on health care grew by an average of 2.7% across OECD countries (Figure 7.5). This compares with the low growth rates experienced in many countries in the years immediately following the global financial and economic crisis. In the 2015-19 period, average annual growth of less than 1% was still seen in France, Greece and Mexico, while the Baltic countries and Korea continued to show strong average growth above 5%. With the onset of the COVID-19 pandemic in 2020, preliminary estimates for a subset of OECD countries point to a sharp increase in overall health spending of around 4.7%, on average. This increase would represent the highest growth in average per capita health spending for around 15 years.

However, there are diverging trends in the pattern of health spending across countries in 2020, varying according to the extent to which a country was affected by the crisis, and reflecting the differing ways that health care is financed in countries. Upward pressure on spending can be observed in a number of countries in line with increased testing and treatment of COVID-19 patients, while widespread containment policies and the reduction in non-COVID-19 care services may have led to lower spending on health, particularly where activity-based financing plays a role. Initial estimates for Estonia, Slovenia and the United Kingdom suggest that per capita health spending grew by more than 10% in 2020. A number of other – mainly European – countries able to provide initial estimates also reported significant increases in health spending compared to the previous period. Norway and Korea, which imposed strict public health measures and saw a relatively low number of COVID-19 cases, both recorded substantially lower health spending growth in 2020 compared to 2019. In Chile and Portugal, preliminary projections point to a real-terms reduction of health spending per capita in 2020.

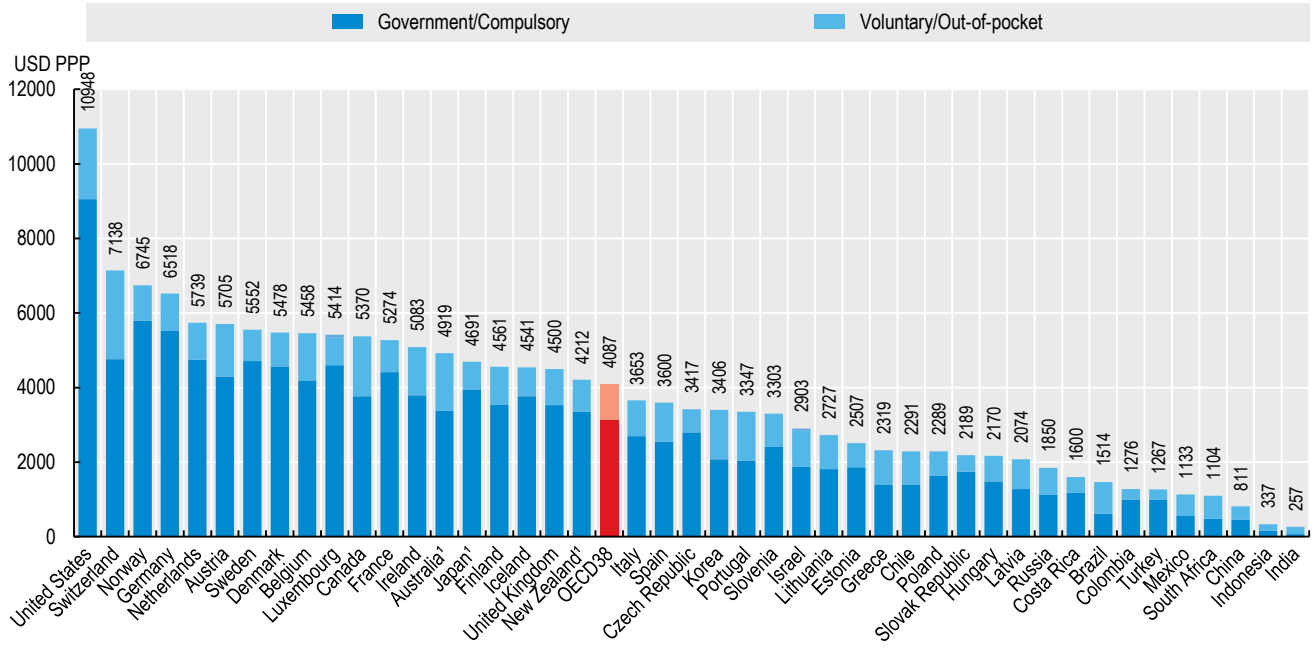
Definition and comparability

Expenditure on health gives a measure of the final consumption of health goods and services (i.e. current health expenditure) (OECD/Eurostat/WHO, 2017[1]). This includes spending by all types of financing arrangements (such as government-based programmes, social insurance and out-of-pocket spending) on medical services and goods, population health and prevention programmes, as well as administration of the health system. The split of spending combines government and compulsory financing schemes, the latter including private insurance of a mandatory nature (as, for example, in Switzerland and the Netherlands). Due to data limitations, private voluntary insurance in the United States is included with employer-based private insurance, which is currently mandated under the Affordable Care Act.

To compare spending levels between countries, per capita health expenditures are converted to a common currency (US dollars) and adjusted to take account of the differences in purchasing power of the national currencies. Actual Individual Consumption PPPs are used as the most available and reliable conversion rates. For the calculation of growth rates in real terms, actual individual consumption deflators are used for all countries, where available.

Note that data for 2020 are based on provisional figures submitted by the country or estimated by the OECD Secretariat.

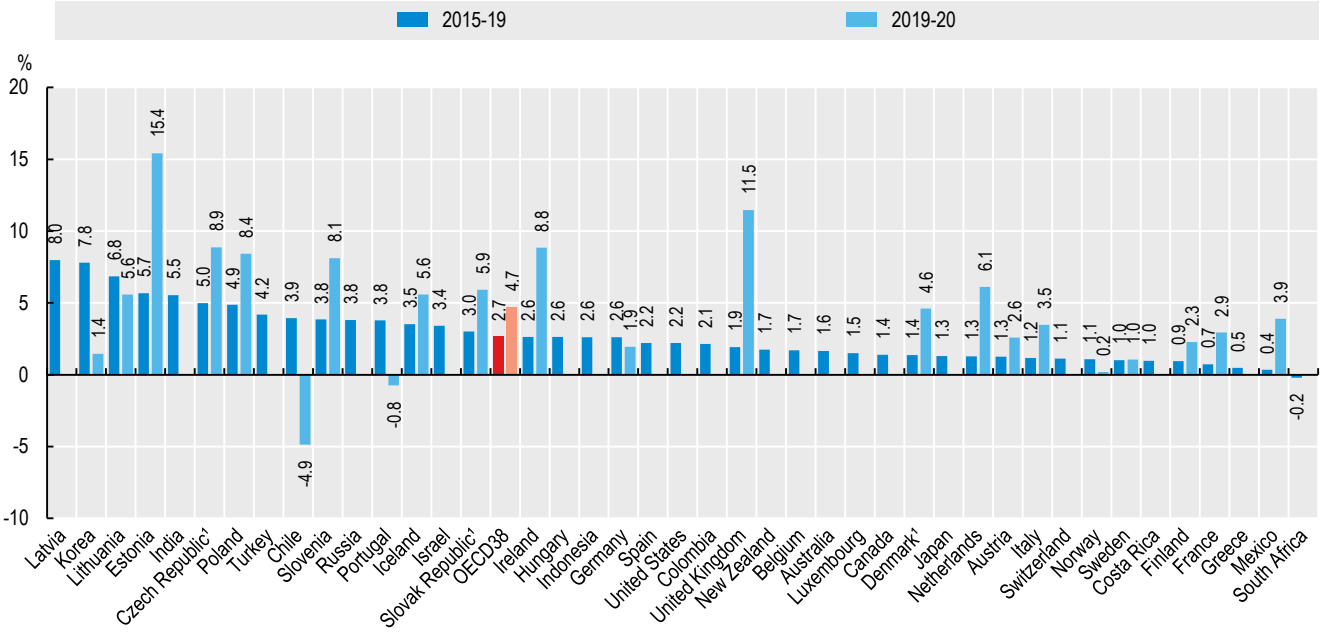
Figure 7.4. **Health expenditure per capita, 2019 (or nearest year)**



1. OECD estimates.
Source: OECD Health Statistics 2021, WHO Global Health Expenditure Database.

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Figure 7.5. **Annual growth in per capita health expenditure (real terms), 2015-19 (or nearest year) and 2019-20**



Note: OECD average growth rate for 2019-20 is based on the preliminary estimates for 22 countries. 1. OECD estimates for 2020.
Source: OECD Health Statistics 2021.

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Prices in the health sector

Comparisons of health spending reflect both differences in the prices of health care goods and services, and the quantity of care individuals are using ("volume"). By breaking down health spending into the two components, policy makers gain a better understanding of what is driving the differences; this guides them to the policy responses that can be put in place.

Cross-country comparisons require spending to be expressed in a common currency, and the choice of currency conversion measure can greatly affect the results and interpretation. While market exchange rates are commonly used, they are not ideal for the health care sector. Exchange rates are determined by the supply and demand for currencies, which can be influenced by currency speculation and interest rates, among other factors. Then, for predominantly non-traded sectors, such as health care, exchange rates are unlikely to reflect the relative purchasing power of currencies in national markets (OECD/Eurostat, 2012[2]). Finally, market exchange rates are updated continuously and are subject to volatility. In contrast, purchasing power parities (PPPs) are point estimates that are usually calculated once a year and are available at an economy-wide level, industry level (for example, health or education), and for selected spending aggregates (such as actual individual consumption and government consumption).

Actual Individual Consumption (AIC) PPPs are the most widely used conversion rates for health expenditure (see indicator "Health expenditure per capita"). However, using AIC PPPs means that the resulting measures reflect not only variations in the volume of health care goods and services but also any variations in the prices of health care goods and services relative to prices of other consumer goods and services across countries. Therefore, Figure 7.6 shows health price levels using a representative basket of health care goods and services for each OECD country. Iceland and Switzerland have the highest health prices among OECD countries: on average, the same basket of goods and services would cost 72% more than the OECD average in Switzerland and 67% more in Iceland. Health care prices also tend to be relatively high in Norway. In contrast, prices for the same mix of health care goods and services in Chile and Greece are around two-thirds of the OECD average. The lowest health care prices among OECD countries are in Turkey, at around 20% of the OECD average.

Adjusting for health prices gives a measure of the amount of health care goods and services being consumed by the population ("the volume of care"). Comparing relative levels of health expenditure and volumes provides a way to look at the contribution of volumes and prices. Volume measures are a useful addition to comparisons of spending to analyse health care use.

Volumes of health care use vary less than health expenditure (Figure 7.7). The United States is the highest spender on health care, at nearly three times the OECD average, but in volume terms it stand at around twice the OECD average due to the relatively high prices in the United States. Taking account of their high health price levels, Ireland, Norway, Sweden and Switzerland also see lower relative measures of the volume of care. On the other hand, the Czech Republic has a higher level based on volume of care due to the relatively lower prices in its health sector. While Mexico and Turkey have similar low levels of health spending, the difference in price levels means that the volume of care in Turkey is almost double that of Mexico. Differences in the per capita volume of care are influenced by the age and disease profile of a population; the organisation of service provision; use of prescribed pharmaceuticals; and issues with access, leading to lower levels of care being used.

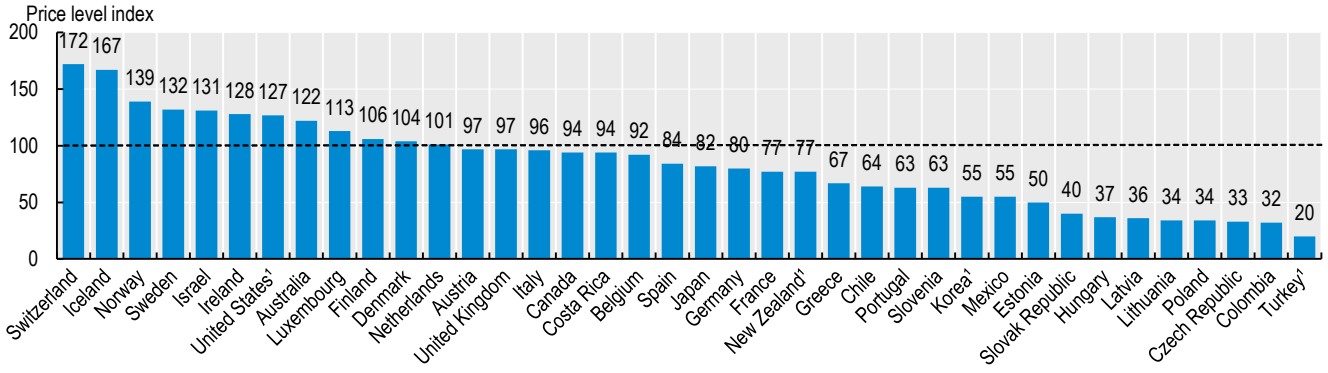
The variation in prices of hospital services is greater compared to that in the health sector as a whole. As with health prices, hospital prices tend to be higher in higher-income economies: the hospital sector is more labour intensive than the health sector as a whole (typically, 60-70% of hospital spending is staff costs). Service prices in hospitals are heavily determined by local (national) wage levels, but may also be influenced by hospital financing mechanisms and funding arrangements, the structure of service provision, the market structure and competition among payers and among providers, and the way prices are set (Barber, Lorenzoni and Ong, 2019[3]). Estimates for 2017 suggest that average hospital prices in Switzerland are more than double the average level calculated across OECD countries, whereas prices in Turkey are only around one-eighth of the OECD average (Figure 7.8).

Definition and comparability

PPPs are conversion rates that show the ratio of prices in national currencies of the same basket of goods and services in different countries. Thus, they can be used as both currency converters and price deflators. When used to convert expenditure to a common unit, the results are valued at a uniform price level and should reflect only differences in volumes of goods and services consumed.

Assessment of differences in health volume requires health-specific PPPs. Eurostat and the OECD calculate PPPs for GDP and some 50 product groups, including health, on a regular basis. In recent years, a number of countries have worked towards output-based measures of prices of health care goods and services. The output-based methodology has then been used to produce both health sector and hospital sector PPPs, which are now incorporated into the overall calculation of GDP PPPs. Such PPPs can be used to calculate health price level indices to compare price levels and volumes across countries. These indices are calculated as ratios of health PPPs to exchange rates, and indicate the number of units of a common currency needed to purchase the same volume.

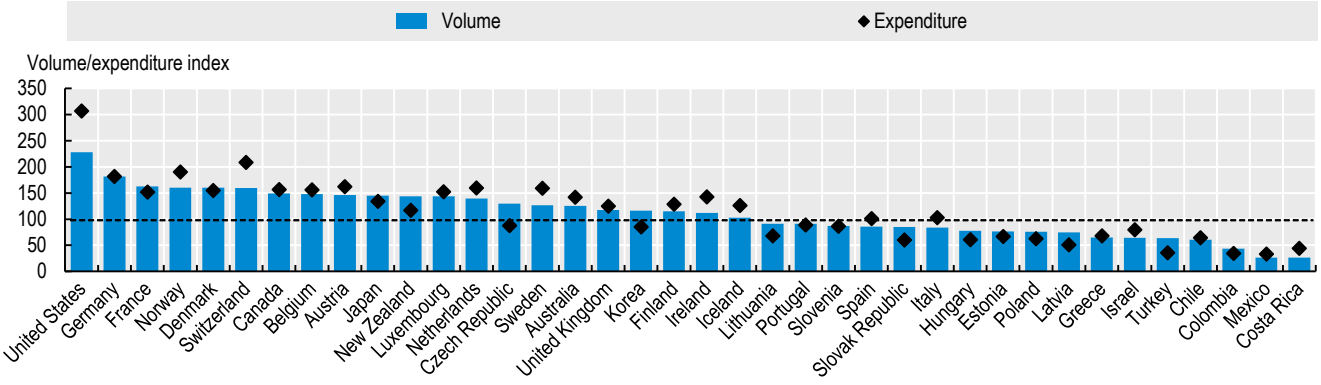
Figure 7.6. **Price levels in the health care sector, 2017, OECD average = 100**



1. For hospitals, PPPs are estimated predominantly by using salaries of medical and non-medical staff (input method).
Source: OECD Health Statistics 2021.

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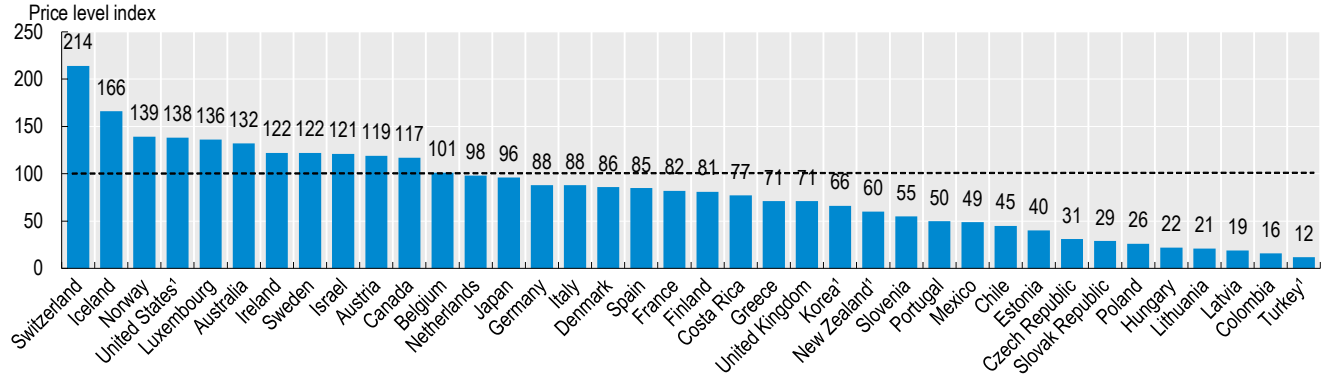
Figure 7.7. **Health care volumes per capita compared to health expenditure per capita, 2017, OECD average = 100**



Note: Volumes are calculated using the PPPs for health. Expenditures are calculated using the PPPs for AIC.
Source: OECD Health Statistics 2021.

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Figure 7.8. **Hospital price levels, 2017, OECD average = 100**



1. PPPs are estimated predominantly by using salaries of medical and non-medical staff (input method).
Source: OECD Health Statistics 2021.

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Health expenditure by financing scheme

Individuals or groups of the population obtain health care through a variety of financing arrangements. These involve a range of third-party schemes but also, by convention, payments made directly by households. Government financing schemes, on a national or subnational basis or for specific population groups, entitle individuals to health care based on residency, and form the principal mechanism to cover health care costs in close to half of OECD countries. The other main method of financing is some form of compulsory health insurance (managed through public or private entities). Spending by households (out-of-pocket spending), both on a fully discretionary basis and as part of some co-payment arrangement, can constitute a significant part of overall health spending. Finally, voluntary health insurance, in its various forms, can also play an important funding role in some countries.

Compulsory or automatic coverage, through government schemes or health insurance, forms the bulk of health care financing in OECD countries (Figure 7.9). Taken together, three-quarters of all health care spending in 2019 was covered through these types of mandatory financing schemes. Central, regional or local government schemes in Norway, Denmark, Sweden, Iceland and the United Kingdom accounted for 80% or more of national health spending. In Germany, Japan, France and the Netherlands, more than 75% of spending was covered through a type of compulsory health insurance scheme. While Germany and Japan rely on a comprehensive social health insurance, France supplements the public health insurance coverage with a system of private health insurance arrangements, which became compulsory under certain employment conditions in 2016.

In the United States, federal and state programmes, such as Medicaid, covered around one-quarter of all US health care spending in 2019. Although almost 60% of expenditure was classified under compulsory insurance schemes, this covers very different arrangements. Federal health insurance schemes, such as Medicare, covered a quarter of all spending but most spending in this category related to private health insurance. The latter accounted for a further third of all health spending and is considered compulsory under the Affordable Care Act due to the individual mandate for individuals to buy coverage.

Out-of-pocket payments financed one-fifth of all health spending in 2019 in OECD countries, with the share broadly decreasing as GDP increases. Households accounted for one-third or more of all spending in Mexico (42%), Latvia (37%), Greece (36%) and Chile (33%), while in France out-of-pocket spending was below 10%. Out-of-pocket spending on health care was also greater than 35% in the Russian Federation (Russia) and China, and above 60% in India.

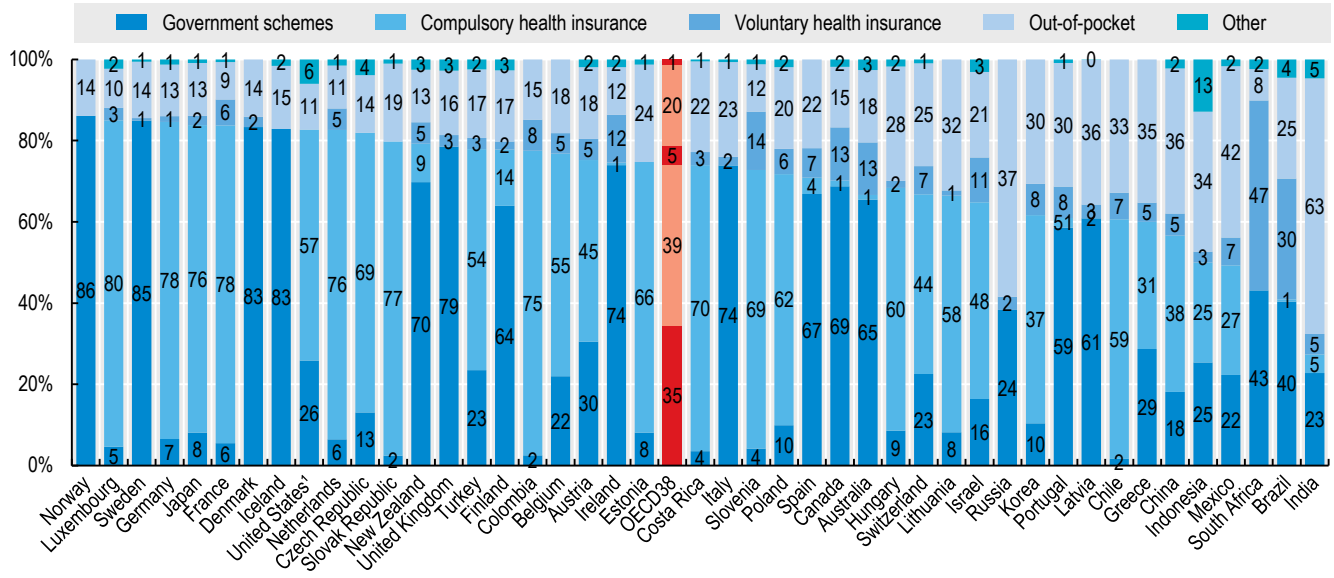
With moves towards universal health coverage, a number of OECD countries have increased spending by government or compulsory insurance schemes in recent decades. As a result, there have been some significant decreases in the share of health care costs payable by individuals and voluntary insurance schemes in some countries. So while the proportion of health spending covered by those two schemes across OECD countries slightly decreased from around 28% in 2003 to 25% in 2019, there is notable variability within countries. In Slovenia and Canada, where voluntary health insurance plays an important role, the share remained relatively flat, while it grew in Korea and Mexico (Figure 7.10).

In the years following the global financial and economic crisis, the share of health spending covered by out-of-pocket payments rose in several European countries, such as Greece (6 percentage points), Portugal (5 percentage points) and Spain (3 percentage points) (Figure 7.11). This may have been the result of policies introduced to balance public budgets, such as introducing or increasing co-payments or raising reimbursement thresholds. In Chile and Korea, on the other hand, the share of out-of-pocket spending has gradually declined over the last 15 years. Preliminary estimates of health spending in 2020 suggest that spending from private financing may have decreased as the impact of COVID-19 reduced health care activities in areas of the sector where private spending plays a greater role, such as dental care and over-the-counter pharmaceuticals. At the same time, many OECD governments increased budget commitments for health, to cover the additional costs associated with COVID-19 (OECD, 2021[4]).

Definition and comparability

The financing of health care can be analysed from the point of view of financing schemes (financing arrangements through which health services are paid for and obtained by people, such as social health insurance), financing agents (organisations managing the financing schemes, such as social insurance agencies), and types of revenues of financing schemes (such as social insurance contributions). Here "financing" is used in the sense of financing schemes as defined in the System of Health Accounts (OECD/Eurostat/WHO, 2017[1]) and includes government schemes, compulsory health insurance, voluntary health insurance and private funds such as households' out-of-pocket payments and financing from non-governmental organisation (NGO) and private corporation schemes. Out-of-pocket payments are expenditures borne directly by patients. The data include cost-sharing and, in certain countries, estimations of informal payments to health care providers.

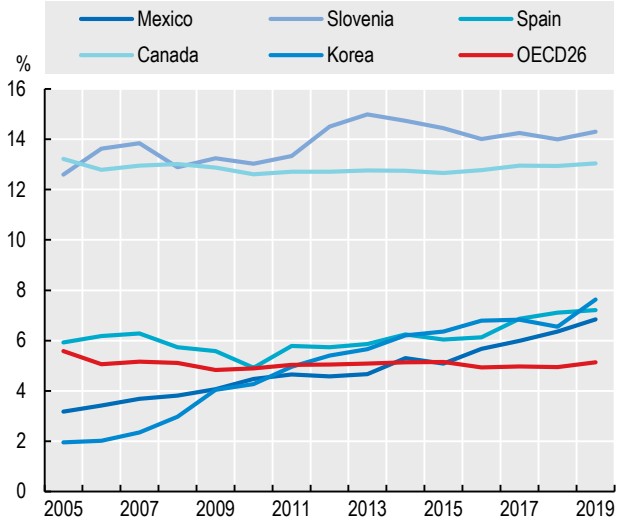
Figure 7.9. **Health expenditure by type of financing, 2019 (or nearest year)**



1. All spending by private health insurance companies reported under compulsory health insurance. Category "Other" refers to financing by NGOs, employers, non-resident schemes and unknown schemes.
Source: OECD Health Statistics 2021.

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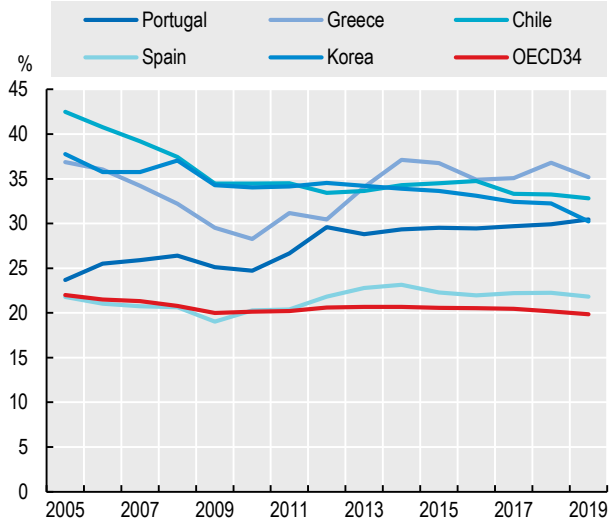
Figure 7.10. **Voluntary health insurance expenditure as a proportion of total, selected countries, 2005-19**



Source: OECD Health Statistics 2021.

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Figure 7.11. **Out-of-pocket health expenditure as a proportion of total, selected countries, 2005-19**



Source: OECD Health Statistics 2021.

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Public funding of health spending

While financing schemes purchase health care on behalf of individuals and the population (see indicator "Health expenditure by financing scheme"), the revenues needed to fund this expenditure can originate from a number of different sources (government revenues, social contributions, insurance premiums and so on). Analysing the flow from these sources to the schemes gives a more comprehensive understanding of how health services are ultimately funded and the overall burden on the sectors of the economy.

The vast majority of funding for government schemes comes from general government revenues (such as taxation and levies), which are then channelled through budgetary and allocation processes. However, governments might also contribute to social health insurance, for example, by covering the contributions of particular population groups or providing general budget support to insurance funds. Individuals purchase private health insurance through the payment of regular premiums. However, part of the premium is often paid by the employer, or it may be subsidised by government. Individuals also finance care directly, using household income to pay for services in their entirety or as part of a cost-sharing arrangement with a third-party financing scheme. Other health financing schemes (such as non-profit or enterprise schemes) can receive donations or generate income from investments or other commercial operations. Finally, although limited in most OECD countries, funds can come from non-domestic sources through bilateral agreements between foreign governments or development partners.

Overall public funding can be defined as the sum of government transfers and all social contributions. Private sources consist of the premiums for voluntary and compulsory insurance schemes, as well as any other funds coming from households or corporations. In 2019, public sources funded around 71% of health care spending on average in OECD countries (Figure 7.12). Where government financing schemes are the principal financing mechanism, as in Norway, Sweden and Denmark, public sources funded more than 80% of health care expenditure. In other countries, governments may not pay directly for the majority of health services, but they provide transfers and subsidies (Mueller and Morgan, 2017[5]). In Germany, for example, only about 7% of spending on health came directly from government schemes, but government transfers to public agency and social insurance funds, as well as social insurance contributions payable by employees and employers, meant that a large proportion of expenditure was still considered publicly funded (78% of the total).

Governments fund a range of public services, and health care competes with other sectors such as education, defence and housing. The level of public funding of health is determined by factors such as the type of health system in place, the demographic composition of the population and government policy. Budget priorities can also shift from year to year due to political decision making and economic effects. Public funding of health spending (via government transfers and social insurance contributions) accounted for an average of 15% of total government expenditure across OECD countries in 2019 (Figure 7.13). Around 20% or more of public spending was linked to health care spending in Costa Rica, Japan, the United States, Ireland and Germany. At the other end of the scale, Mexico, Greece, Hungary and Turkey allocated around 10% of government spending to health care. All OECD countries expanded and revised their budget allocations in 2020 as part of government responses to tackle the impact of COVID-19. While the public resources allocated to health rose, the extent of these increases was generally smaller than the subsidies provided to businesses that suffered from the economic standstill.

Many countries have a system of compulsory health insurance – either social health insurance or through private coverage – but there is substantial diversity in the composition of revenues for these types of scheme (Figure 7.14). The importance of government transfers as a source of revenue can vary significantly. On average, around three-quarters of financing comes from social contributions (or premiums) – primarily split between employees and employers – but around one-quarter still comes from government transfers, either on behalf of certain groups (such as low-income or unemployed population groups) or as general support. In Hungary, government transfers funded 64% of the health spending of the social health insurance fund. In Poland, Slovenia and Costa Rica, the share was less than 5%: social insurance contributions were the main funding source.

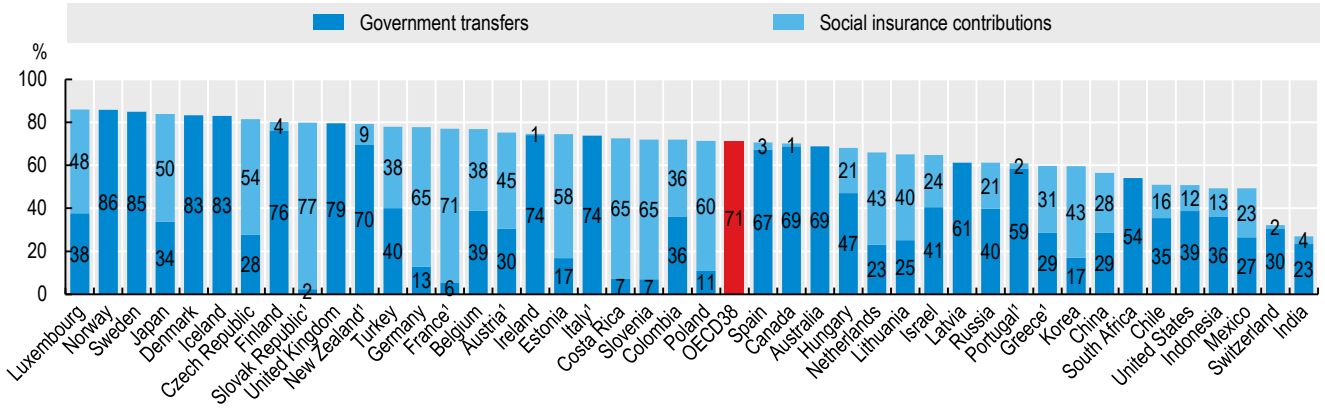
Definition and comparability

Health financing schemes raise revenues to pay for health care for the population they are covering. In general, financing schemes can receive transfers from the government, social insurance contributions, voluntary or compulsory prepayments (such as insurance premiums), other domestic revenues and revenues from abroad (for example, as part of development aid).

Revenues of a financing scheme are rarely equal to expenses in any given year, leading to a surplus or deficit of funds. In practice, most countries use the composition of revenues per scheme to apply on a pro rata basis to the scheme's expenditure, thereby providing a picture of how spending was financed in the accounting period.

Total government expenditure is as defined in the System of National Accounts. Using the methodology of the System of Health Accounts (OECD/Eurostat/WHO, 2017[1]), public spending on health is equal to the sum of transfers from government (domestic), transfers from government (foreign) and social insurance contributions. In the absence of information from the revenue side, the sum of spending by government financing schemes and social health insurance is taken as a proxy.

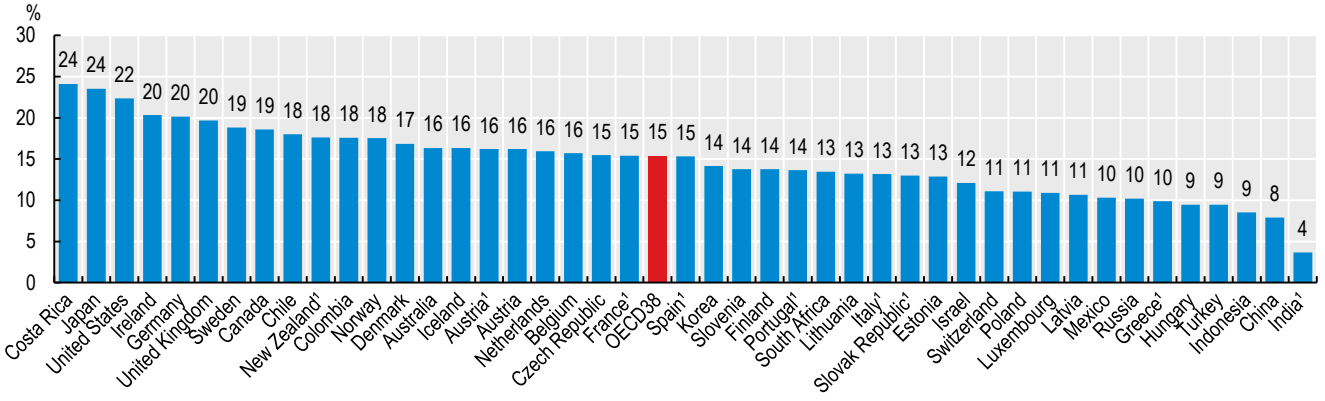
Figure 7.12. **Health expenditure from public sources as a share of total, 2019 (or nearest year)**



1. Public funding is calculated using spending by government schemes and social health insurance.
Source: OECD Health Statistics 2021.

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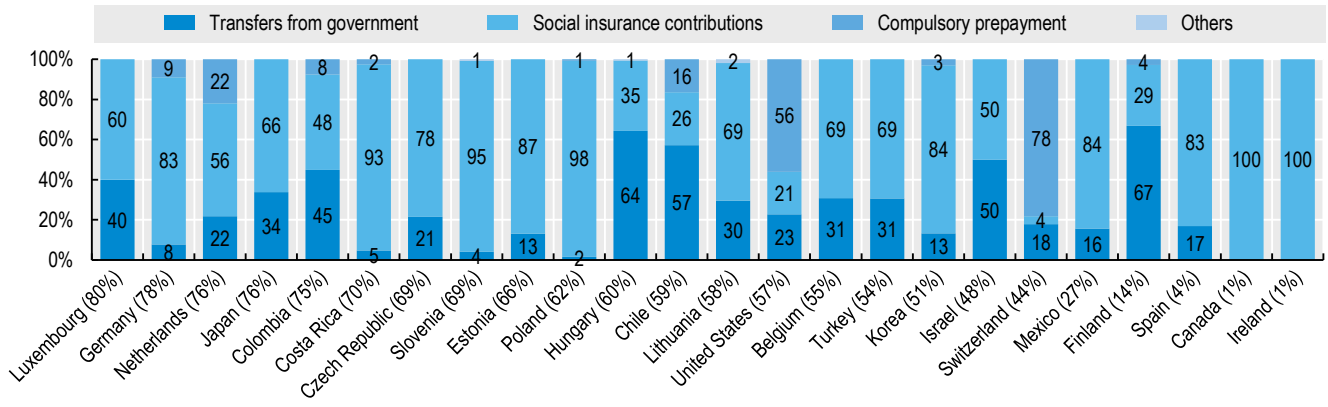
Figure 7.13. **Health expenditure from public sources as a share of total government expenditure, 2019 (or nearest year)**



1. Government expenditure includes expenditure by government schemes and social health insurance.
Source: OECD Health Statistics 2021.

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Figure 7.14. **Financing sources of compulsory health insurance, 2019 (or nearest year)**



Note: Numbers in brackets indicate the contribution of compulsory health insurance to total health expenditure. Category "Others" includes other domestic revenues and direct foreign transfers. Due to rounding, percentages may not add up to 100%.
Source: OECD Health Statistics 2021.

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Health expenditure by type of service

Estimates of health spending are based on a common boundary defining the range of health care services and medical goods to be included. These items are aggregated into broad categories of care, based on their purpose or mode of provision. For all OECD countries, curative and rehabilitative care services make up the bulk of health spending, and are primarily delivered through inpatient and outpatient services – these two categories typically account for 60% of all health spending (Figure 7.15). Medical goods (mostly pharmaceuticals) take up a further 19%, followed by a growing share spent on long-term care (LTC) services, which in 2019 averaged around 15% of health spending. Administration and overall governance of the health system, together with preventive care, account for the remainder, with spending on disease prevention averaging only 2.7% of health spending. Both the level and the structure of spending can vary across countries due to factors such as how care is organised and prioritised across providers, input costs and population needs.

Greece was the OECD member country that reported the highest share of health spending allocated to inpatient services in 2019, at 44%. This is some way ahead of the next highest countries, Belgium and Poland, and more than 15 percentage points higher than the OECD average. At the other end of the scale, many of the Nordic countries, Canada and the Netherlands report a much lower proportion of spending on inpatient services – at around 20-25% of overall health spending.

Outpatient care forms a broad category covering generalist and specialist outpatient services and dental care, but also home care and ancillary services. Taking all these categories together, spending on outpatient care services accounted for close to half of all health spending in Portugal and Israel compared to an OECD average of 33% in 2019. Given the relatively high share on inpatient care, unsurprisingly, Greece and Belgium spent the lowest proportion on outpatient services, at less than one-quarter of all health spending.

The third largest health spending category is medical goods. Differences in prices for international goods such as pharmaceuticals tend to show less variation across countries than for locally produced services (see indicator “Prices in the health sector”). As a result, spending on medical goods (including pharmaceuticals) in lower-income countries often accounts for a higher share of health spending relative to services. Therefore, expenditure on medical goods represented nearly a third of all health spending in Hungary and the Slovak Republic in 2019. By contrast, in Denmark, Norway and the Netherlands, the shares were much lower, at around 10% of overall health spending.

Spending on LTC services accounted for 15% of health spending on average, but this figure hides large differences in resources covering the care arrangements for the elderly and dependent population across OECD countries. In countries with formal arrangements, such as Norway, Sweden and the Netherlands, one-quarter or more of all health spending can relate to LTC services. However, in countries with a more informal LTC sector, such as many southern, central and eastern European countries, spending on LTC is much lower – typically around 5% or less in Greece, Portugal, Hungary, Latvia and the Slovak Republic.

Following a general slowdown after the economic crisis, growth in overall health expenditure resumed from 2011, albeit on a very moderate level initially (see indicator “Health expenditure in relation to GDP”). During the years of the economic crisis, many governments sought to make cost savings in the health system while protecting frontline services (Morgan and Astolfi, 2013[6]). As a result, during the period 2009-13, spending on curative care services was broadly maintained in many countries, while there were more notable reductions in spending on pharmaceuticals and prevention services (Figure 7.16).

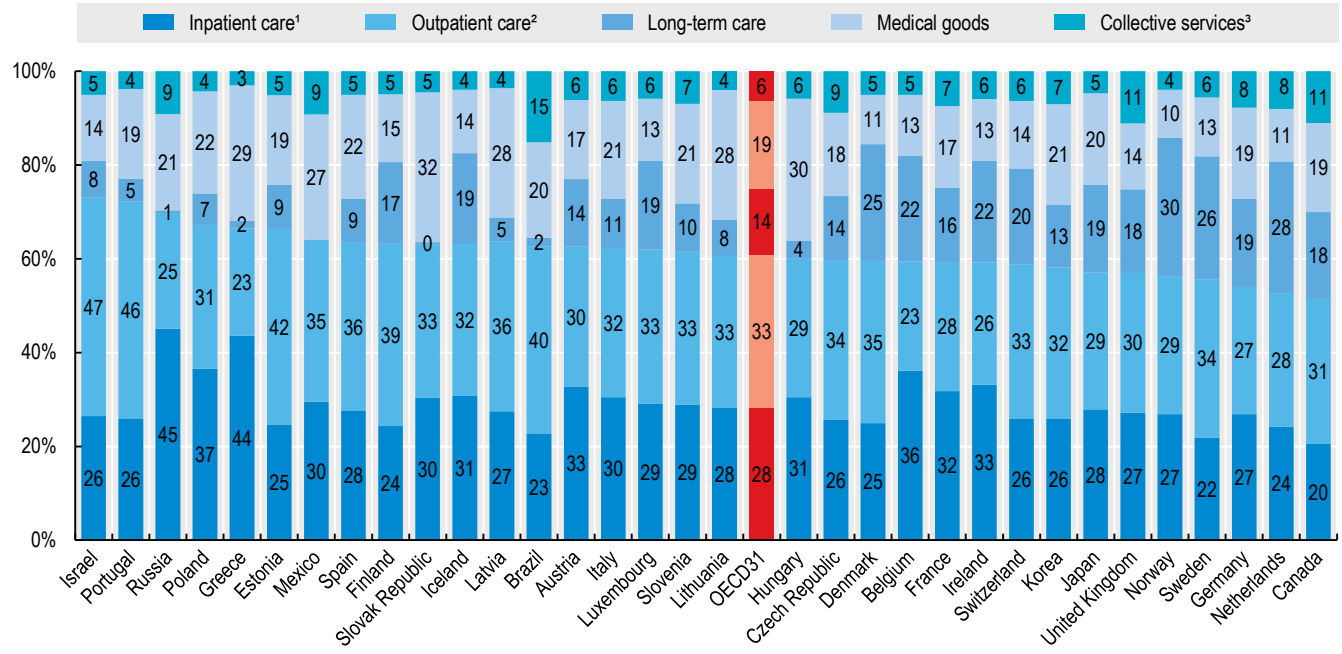
From 2013 to 2019, however, growth in spending rebounded across nearly all health care functions. This was particularly the case for outpatient care, which saw growth more than double on average (from 1.3% per year to 3.4%), while inpatient care spending increased by 2.1%, spending on pharmaceuticals increased by 1.3% and prevention services increased by 2.5% per year. Notably, spending on LTC has continued to grow at a consistent rate since 2003: demand for LTC services continues to grow as OECD country populations age. While the various factors triggering the exceptionally high projected growth for 2020 (see indicator “Health expenditure per capita”) have not yet been clearly identified, it can be expected that strong growth in spending on inpatient care has contributed to this in a number of countries.

Definition and comparability

The System of Health Accounts (OECD/Eurostat/WHO, 2017[1]) defines the boundaries of the health care system from a functional perspective, with health care functions referring to the different types of health care services and goods. Current health expenditure comprises personal health care (curative care, rehabilitative care, LTC, ancillary services and medical goods) and collective services (prevention and public health services as well as administration – referring to governance and administration of the overall health system rather than at the health provider level). Curative care, rehabilitative care and LTC can also be classified by mode of provision (inpatient, day care, outpatient and home care).

For the calculation of growth rates in real terms, AIC deflators are used.

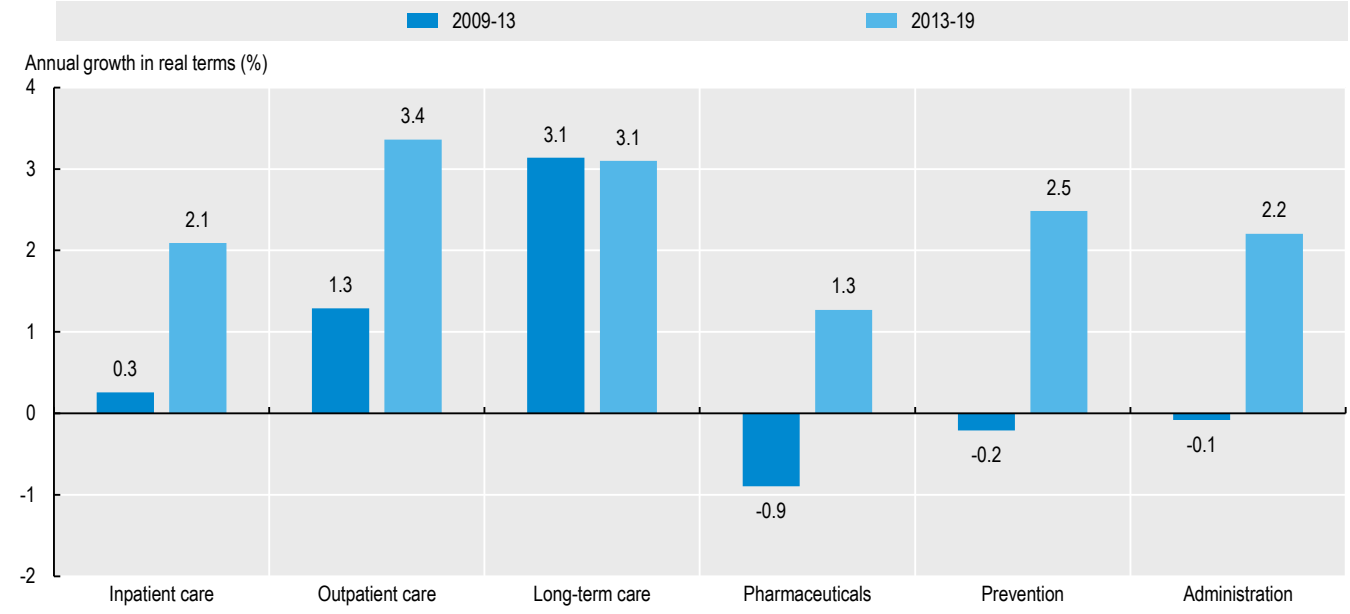
Figure 7.15. **Health expenditure by type of service, 2019 (or nearest year)**



Note: Countries are ranked by curative and rehabilitative care as a share of current expenditure on health.
1. Refers to curative and rehabilitative care in inpatient and day care settings. 2. Includes home care and ancillary services. 3. Refers to prevention and administration and includes unknown or unallocated services.
Source: OECD Health Statistics 2021.

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Figure 7.16. **Annual growth in health expenditure for selected services (real terms), OECD average, 2009-13 and 2013-19**



Source: OECD Health Statistics 2021.

StatLink https://stat.link/53vnga

Health expenditure on primary health care

Primary health care is the cornerstone of an efficient, people-centred and equitable health system. Strengthening primary care has been identified as an effective way to improve care co-ordination and health outcomes and reduce wasteful spending, by limiting unnecessary hospitalisations and associated costs in hospitals and other parts of the health system. However, in many OECD countries, primary care has not yet realised this potential fully (OECD, 2020[7]).

Primary health care is a complex concept that stretches across different types of service and provider. No definitive consensus exists on which services or providers should be included, and countries may have different national notions of what activities it should entail. Here, primary health care uses the reported spending estimates for a range of services (collectively termed "basic care services") covering general outpatient, dental and home-based curative care, as well as preventive services when provided by ambulatory care providers – meaning that the same services provided in hospitals or as outpatient specialist care are not included. Using this as a proxy measure, primary health care accounts for around 13% of health spending on average across OECD countries, ranging from 10% and less in Luxembourg, the Netherlands, the Slovak Republic and Switzerland to 17% or more in Poland, Australia, Lithuania and Estonia (Figure 7.17). Primary health care spending as a share of total health spending has remained relatively constant over the last five years in many OECD countries, suggesting expenditure growth in line with overall health spending. Exceptions to this are Lithuania and Latvia – where the share of primary health care spending has increased by around 1 percentage point over the last five years – and Spain, Finland and Australia, where this proportion has dropped since 2013.

On average, half of primary care spending across OECD countries is on general outpatient care services, with a further 38% related to dental care. Prevention services (8%) and home visits by general practitioners (GPs) or nurses (3%) make up a much smaller proportion of spending on primary care, although services related to prevention activities may often be hard to distinguish from general outpatient consultations. At a country-specific level, general outpatient care provided by ambulatory providers is particularly high in Australia, Mexico and Poland, reaching around 12% of all health spending. In Canada, Switzerland, Austria, Germany and Luxembourg, spending on general outpatient care is much lower overall, accounting for less than 5% of health spending (Figure 7.17).

In Lithuania and Estonia, the large share of primary care in overall health spending can be explained by spending on dental care, which accounts for half of primary health care spending. In both countries, dental care accounts for 9% of the total health budget – nearly twice the OECD average. This compares with Poland, Belgium, the Netherlands and the United Kingdom, where dental care spending represents only around 3% of total health spending.

The "basic care services" described above can be delivered in various settings, including hospitals. The proportion of spending on these services that is delivered by the ambulatory care sector could be interpreted as a rudimentary measure of allocative efficiency, since it could indicate what is delivered in the most appropriate setting. Nevertheless, at this aggregate level, the cross-country comparability of this indicator remains limited owing to the diversity of organisational models for primary health care across OECD countries. For example, some countries may have established dedicated primary health care units within hospitals. Across OECD countries, 80% of all basic care spending is on services delivered by ambulatory care providers (Figure 7.18). This share stood at 90% or more in Mexico, Germany, Latvia, Spain, Denmark, Lithuania and Belgium but was less than 70% in Luxembourg, Canada and Switzerland.

Definition and comparability

International comparisons of what is spent on primary health care have, to date, largely been absent owing to the lack of both a commonly accepted definition and an appropriate data collection framework. Working with data and clinical experts and international partners, the OECD has developed a methodological framework to estimate primary health care spending. The results presented here are based on this methodology (Mueller and Morgan, 2018[8]).

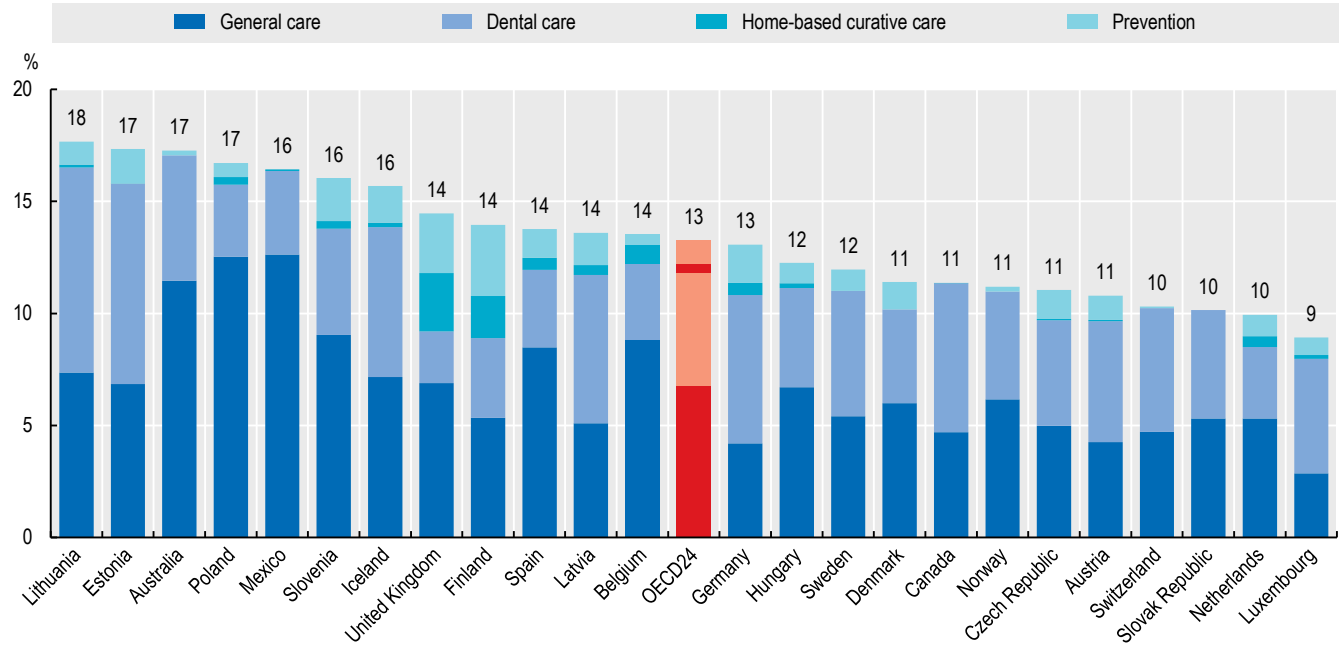
Estimates are based on data submitted using the System of Health Accounts 2011 framework. The following functions are identified as basic care services:

- general outpatient curative care (such as routine visits to a GP or nurse for acute or chronic treatment)
- dental outpatient curative care (including regular control visits as well as more complex oral treatment)
- home-based curative care – mainly home visits by GPs or nurses
- preventive care services (such as immunisations or health check-ups).

Where basic care services are provided by ambulatory health care providers such as medical practitioners, dentists, ambulatory health care centres and home health care service providers, this may be considered a proxy for primary health care. It should be stressed that this proxy measure is a simplified approach to operationalise a complex multi-dimensional concept. An alternative proxy to measure primary health care spending also includes pharmaceuticals, but this is not presented here as pharmaceutical spending is analysed in detail elsewhere (see indicator "Pharmaceutical expenditure").

Comparability for this indicator is still limited; it depends on countries' capacity and methods used to distinguish between general outpatient and specialist services.

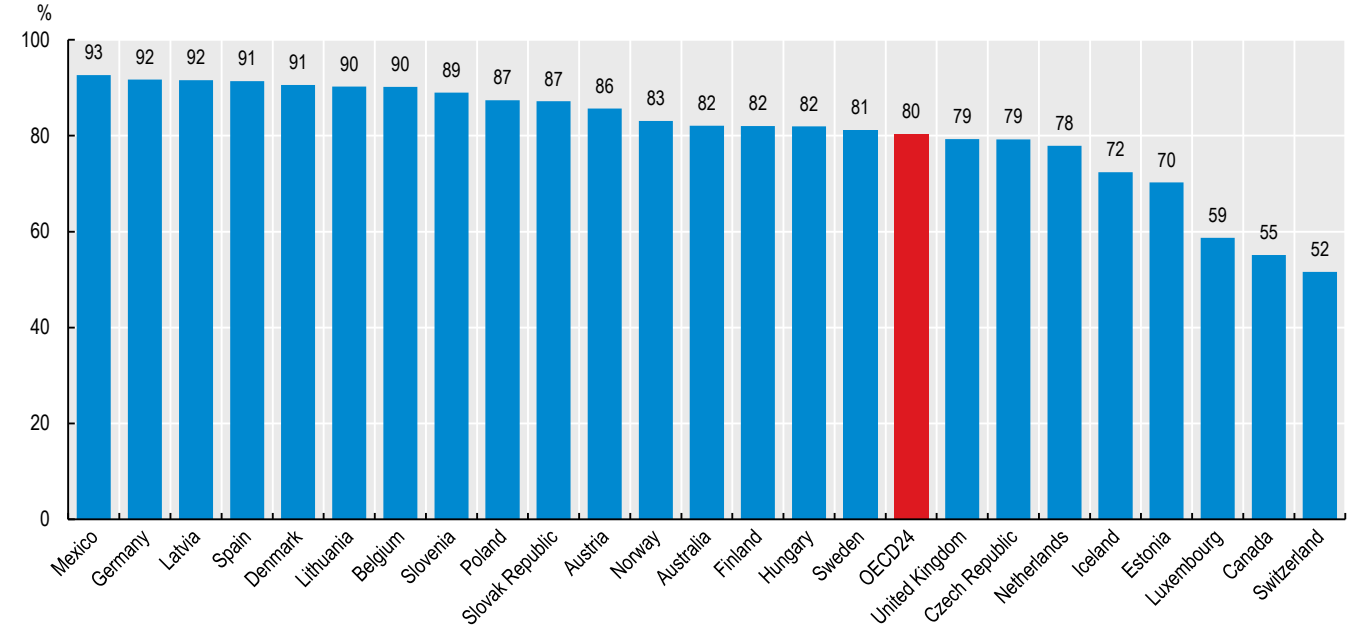
Figure 7.17. **Spending on primary health care services as a share of current health expenditure, 2019 (or nearest year)**



Source: OECD Health Statistics 2021.

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Figure 7.18. **Share of spending on basic care services delivered by ambulatory care providers, 2019 (or nearest year)**



Source: OECD Health Statistics 2021.

StatLink https://stat.link/njzi48

Health expenditure by provider

Health care is delivered by a wide variety of providers, ranging from hospitals and medical practices to ambulatory facilities and retailers. This affects expenditure patterns for different goods and services. Analysing health spending by provider can be particularly useful when considered alongside the functional breakdown of health expenditure, giving a fuller picture of the organisation of health systems (see indicator "Health expenditure by type of service").

As a result of differences in the organisation in health service delivery, there is significant impact on health expenditure by provider across countries. While activities delivered in hospitals accounted for the largest proportion of health system funding across OECD countries in 2019, at around 39%, this average was largely exceeded in both Turkey and Costa Rica, where hospital activities received around half of all financial resources (Figure 7.19). On the other hand, Germany and Canada spent less than 30% of the total health budget on hospitals.

After hospitals, the largest provider category is ambulatory providers. This category covers a wide range of facilities, with most spending relating to either medical practices including GPs and specialists (as in Austria, France and Germany) or ambulatory health care centres (as in Finland, Ireland and Sweden). Across OECD countries, care delivered by ambulatory providers accounted for around one-quarter of all health spending on average in 2019. Within this, around two-thirds of all spending related to GPs, specialist practices and ambulatory health care centres, and roughly one-fifth related to dental practices. Overall spending on ambulatory providers in 2019 exceeded 30% of all health spending in Israel, Belgium, the United States, Mexico and Germany, but remained less than 20% in Turkey, the Netherlands and Greece.

Other main provider categories include retailers (mainly pharmacies selling prescription and over-the-counter medicines), which accounted for 17% of all health spending in 2019, and residential LTC facilities (mainly providing inpatient care to people dependent on LTC), to which around one-tenth of total health spending can be attributed.

Across OECD countries, there is wide variation in the range of activities that may be performed by the same category of provider, reflecting differences in the structure and organisation of health systems. These cross-country differences are most pronounced in the hospital sector (Figure 7.20). Although inpatient curative and rehabilitative care define the primary activity of hospitals and therefore represent the majority of their expenditure, hospitals can also be important providers of outpatient care in many countries – for example, through accident and emergency departments, specialist outpatient units or laboratory and imaging services. In a few countries, they are also important providers of inpatient LTC infrastructure.

In countries such as Estonia, Denmark, Sweden, Finland and Portugal, outpatient care accounted for over 40% of hospital expenditure in 2019, since specialists typically receive patients in hospital outpatient departments. On the other hand, in Germany and Greece, hospitals are generally mono-functional, with the vast majority (more than 90%) of spending on inpatient care services, and very little outpatient and day care spending.

Furthermore, in recent years, many countries have also shifted some inpatient hospital services to day care departments owing to potential efficiency gains and reduction of waiting times (see indicator "Ambulatory surgery" in Chapter 5). This resulted in day care services accounting for 15% or more of all hospital expenditure in Belgium, France, Ireland and Portugal in 2019.

As many countries allocated additional resources to hospitals to cope with severe cases of COVID-19 and to be better prepared for future increases in demand, the total share of hospital expenditure in overall health spending may have increased in 2020. The composition of service delivery in hospitals will most likely also have changed in many countries, as elective day surgeries were frequently postponed and more inpatient capacity built up.

Definition and comparability

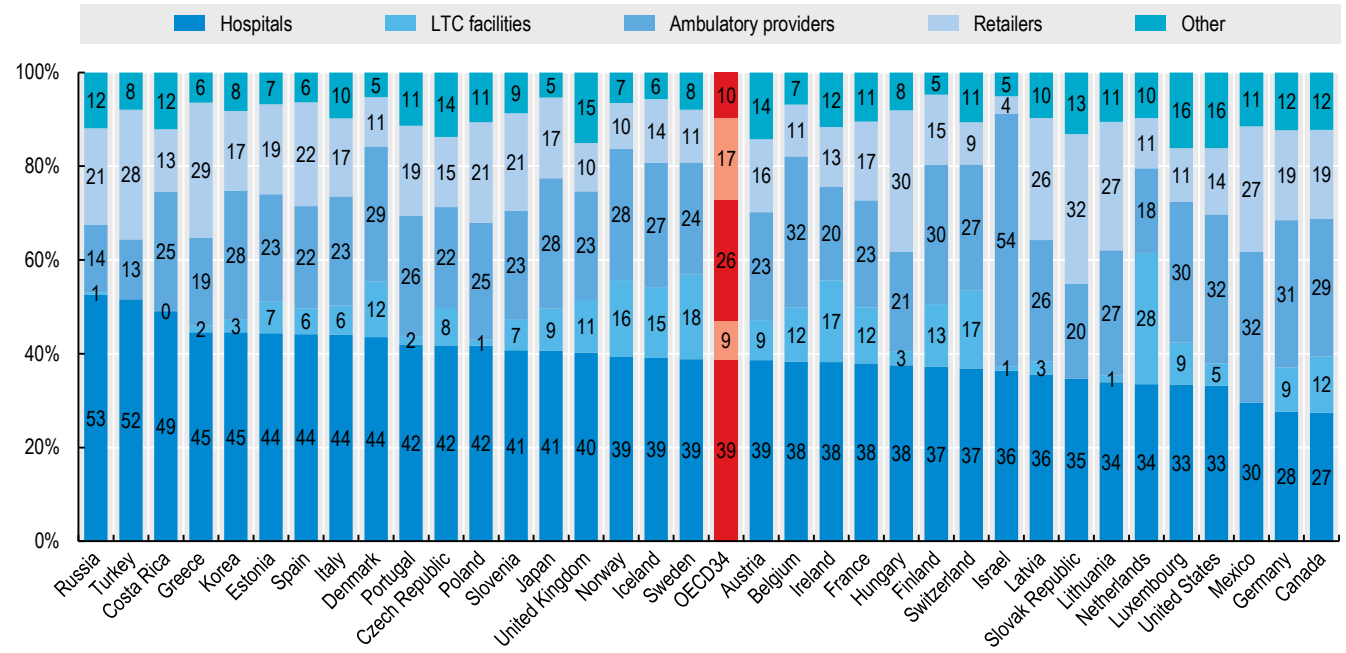
The universe of health care providers is defined in the System of Health Accounts (OECD/Eurostat/WHO, 2017[1]) and encompasses primary providers – organisations and actors that deliver health care goods and services as their primary activity – and secondary providers, for which health care provision is only one among a number of activities.

The main categories of primary providers are hospitals (acute and psychiatric), residential LTC facilities, ambulatory providers (practices of GPs and specialists, dental practices, ambulatory health care centres and providers of home health care services), providers of ancillary services (such as ambulance services and laboratories), retailers (such as pharmacies) and providers of preventive care (such as public health institutes).

Secondary providers include residential care institutions whose main activities might be the provision of accommodation, but that provide nursing supervision as secondary activity; supermarkets that sell over-the-counter medicines; and facilities that provide health care services to a restricted group of the population, such as prison health services. Secondary providers also include providers of health care system administration and financing (such as government agencies and health insurance agencies) and households as providers of home health care.

Comparability issues may arise in complex care arrangements such as care networks where several provider units with different activities are allocated to one provider based on the dominant activity of the network.

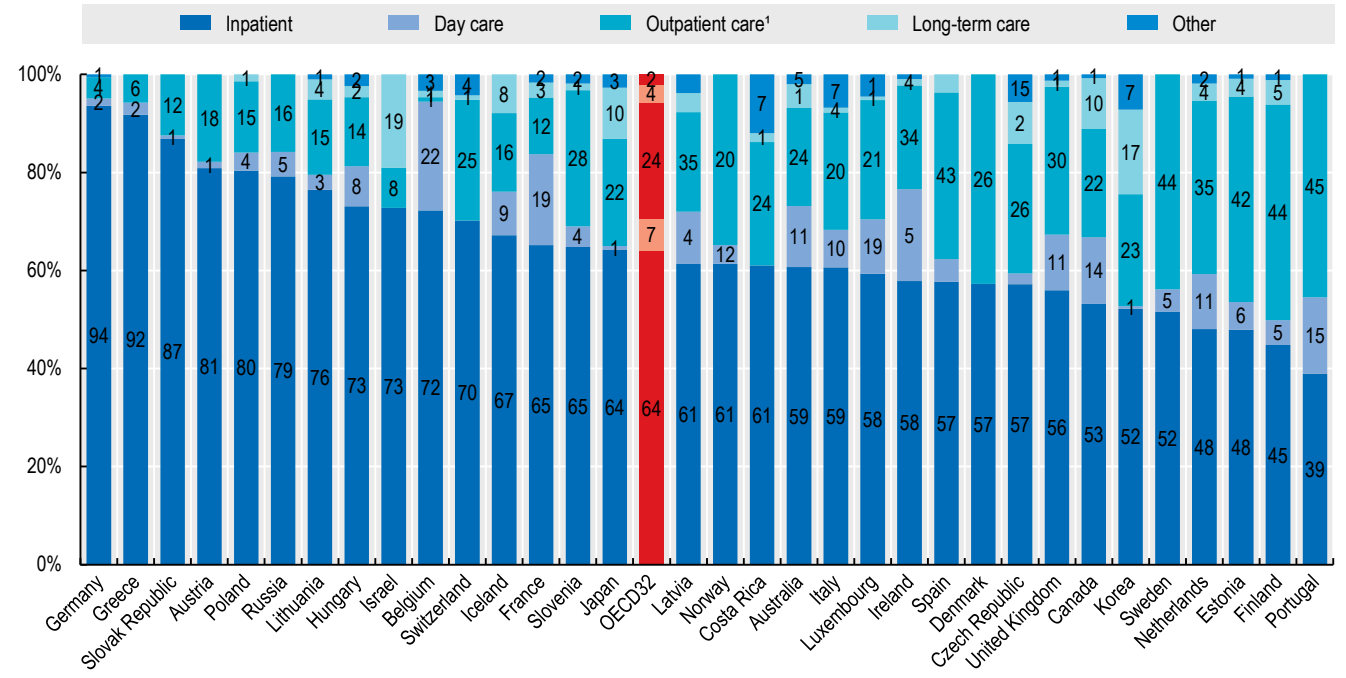
Figure 7.19. **Health expenditure by provider, 2019 (or nearest year)**



Note: "Other" includes ancillary service providers (e.g. patient transport, laboratories); health system administration, public health and prevention agencies; households in cases where they provide paid LTC; and atypical providers where health care is a secondary economic activity.
Source: OECD Health Statistics 2021.

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Figure 7.20. **Hospital expenditure by type of service, 2019 (or nearest year)**



1. Includes ancillary services. "Other" includes preventive care activity, pharmaceuticals if dispensed to outpatients and unknown services.
Source: OECD Health Statistics 2021.

StatLink https://stat.link/6olyka

Capital expenditure in the health sector

While human resources are essential to the health and LTC sector, physical resources are also a key factor in the production of health services. How much a country invests in new health facilities, diagnostic and therapeutic equipment, and information and communications technology (ICT) can have an important impact on the capacity of a health system to meet the health care needs of the population. The COVID-19 crisis has shone a spotlight on some of the infrastructure challenges. Health systems – and hospitals in particular – have been placed under immense strain. Some countries have lacked the necessary physical resources to respond to the sudden influx of seriously ill COVID-19 patients. Having sufficient equipment in intensive care units and other health settings helps to avoid potentially catastrophic delays in diagnosing and treating patients. Non-medical equipment is also important – notably the ICT infrastructure needed to monitor population health, both in acute situations and in the long term. Investing in capital equipment is therefore a prerequisite to strengthening overall health system resilience.

In reality, capital investment fluctuates from year to year, as investment decisions can be dependent on economic circumstances and political or business choices, as well as reflecting future needs and past levels of investment. As with any industry, a lack of investment spending in the present can lead to an accumulation of problems and bigger costs in the future, as current equipment and facilities deteriorate.

Between 2015 and 2019, the average annual capital expenditure in the health sector in OECD countries was equivalent to around 0.6% of GDP (Figure 7.21). This compares to an average share of 8.8% of GDP spent on health in 2019 (see indicator "Health expenditure in relation to GDP"). Germany, Japan, Belgium and Austria were the highest spenders over these five years, investing around 1% of GDP on average each year in new construction projects, medical and non-medical equipment and technology in the health and social sector. The United States is a large spender in nominal terms, investing 0.7% of GDP on an annual basis. Notably, of the G7 countries, capital spending in the United Kingdom and Italy remained below the OECD average during the period 2015-19, at 0.4% of GDP. Mexico spent on average around 0.1% of GDP on capital investment – a tenth of the level in Germany or Japan.

Capital spending covers a broad range of investments, from construction projects (building of hospitals and health care facilities) and equipment (including medical and ICT equipment) to intellectual property (including databases and software). Figure 7.21 shows that, on average across OECD countries, 40% of capital expenditure went on construction projects, 46% on equipment and the remaining 14% on intellectual property. The United States, the Netherlands and Finland all had a similar level of overall investment, but whereas Finland allocated the majority to the construction of health care facilities, the United States invested a greater proportion in equipment, while the Netherlands spent a more significant share on digital solutions and data.

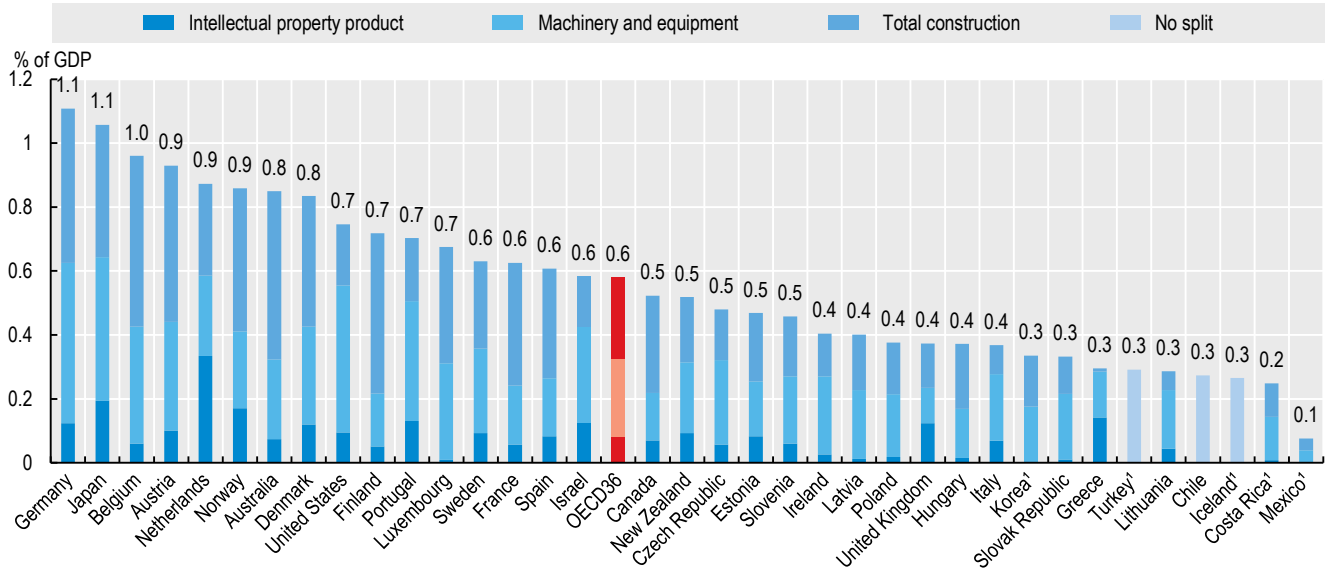
Figure 7.22 (left panel) shows an index of capital spending in real terms over a ten-year period for a selection of non-European OECD countries. On average across OECD countries, annual investment was around a third higher (in real terms) in 2019 compared with the levels of investment reported in 2010. The United States generally followed the overall OECD trend, and increased annual capital spending over that period by about 20-25%. In Australia, investment in health increased strongly from 2011 onwards. On the other hand, Canada invested 14% less in real terms in 2019 compared with 2010. In Europe (right panel), Norway was investing 40% more towards the end of the period compared to the start of the decade and the German capital spending trajectory was similar to the OECD average. Health sector investment in the United Kingdom dropped by more than a third in the years following the economic crisis but has since recovered, although in real terms, capital investments in 2019 were still 10% below the level seen in 2010.

Definition and comparability

Gross fixed capital formation in the health sector is measured by the total value of the fixed assets that health providers have acquired during the accounting period (less the value of disposals of assets) and that are used repeatedly or continuously for more than one year in the production of health services. The breakdown by assets includes infrastructure (hospitals, clinics and so on), machinery and equipment (including diagnostic and surgical machinery, ambulances and ICT equipment) and software and databases.

Gross fixed capital formation is reported under the National Accounts (UN et al., 2009[9]) by industrial sector according to the International Standard Industrial Classification (ISIC) Rev. 4, using section Q: Human health and social work activities. It is also reported by a number of countries under the System of Health Accounts. The ISIC section Q is generally broader than the System of Health Accounts boundary for health care. For reasons of comparability and availability, preference has been given to measures of gross fixed capital formation under the National Accounts.

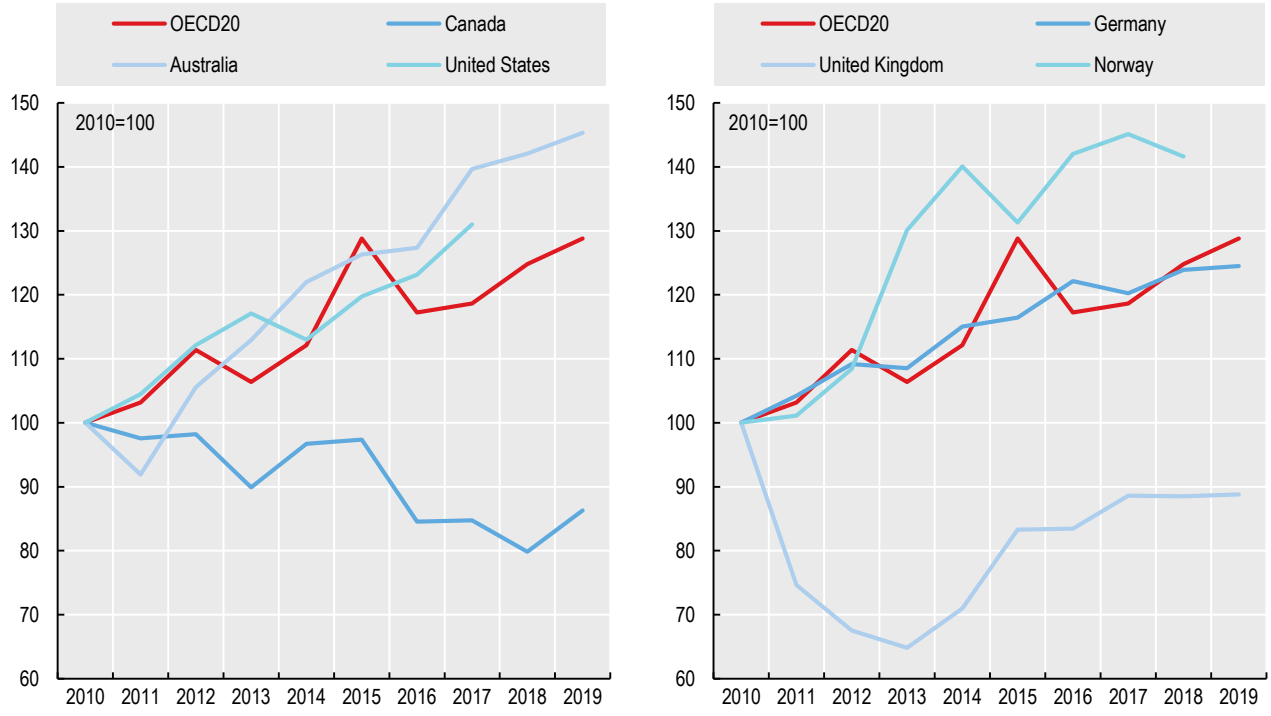
Figure 7.21. **Annual capital expenditure on health as a share of GDP, average over 2015-19 (or nearest year) by type of asset**



1. Refers to gross fixed capital formation in health providers under the System of Health Accounts. Breakdown by type of asset refers to the last available year based on either National Accounts or Health Accounts data.
Source: OECD National Accounts, OECD Health Statistics 2021.

StatLink https://stat.link/kixd7m

Figure 7.22. **Trends in capital expenditure (constant prices), selected countries, 2010-19**



Sources: OECD National Accounts, OECD Health Statistics 2021.

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[2] OECD/Eurostat (2012), *Eurostat-OECD Methodological Manual on Purchasing Power Parities (2012 Edition)*, OECD Publishing, Paris, *https://dx.doi.org/10.1787/9789264189232-en*.

[1] OECD/Eurostat/WHO (2017), *A System of Health Accounts 2011: Revised edition*, OECD Publishing, Paris, *https://doi.org/10.1787/9789264270985-en.*

[9] UN et al. (2009), *System of National Accounts 2008*, United Nations, *https://unstats.un.org/unsd/nationalaccount/docs/sna2008.pdf*.





8. HEALTH WORKFORCE

Health and social care workforce

Doctors (overall number)

Doctors (by age, sex and category)

Geographic distribution of doctors

Remuneration of doctors (general practitioners and specialists)

Nurses

Remuneration of nurses

Hospital workers

Medical graduates

Nursing graduates

International migration of doctors and nurses



Health and social care workforce

In OECD countries, health and social care systems employ more workers now than at any other time in history. In 2019, one in every ten jobs (10%) was in health or social care, up from less than 9% in 2000 (Figure 8.1). In Nordic countries and the Netherlands, more than 15% of all jobs are in health and social work. From 2000 to 2019, the share of health and social care workers increased in all countries except the Slovak Republic, where it decreased in the 2000s and has remained stable since 2010, and Sweden, where this share came down in recent years but remains among the highest. The share of health and social care workers increased particularly rapidly over the past two decades in Japan (by over 5 percentage points) and in Ireland and Luxembourg (by about 4 percentage points).

Job numbers in the health and social care sector have increased much more rapidly than in other sectors since 2000. On average across OECD countries, employment in health and social work increased by 49% between 2000 and 2019, outpacing even the growth in the service sector, while employment in agriculture and industry continued to decline during that period (Figure 8.2).

At the same time, the sector has also been more robust to cyclical downturns than other sectors. While total employment declined during the global economic crisis in 2008-09, employment in the health and social care sector continued to grow in many OECD countries. Not surprisingly, during the COVID-19 pandemic, many jobs with the strongest increase in online job postings were in the health care sector. For example, online job postings for carers for aged and disabled people increased by 35% in Australia; for licensed practical nurses by 39% in Canada; for community health workers by 91% in the United States; and for health professionals by 25% in the United Kingdom (OECD, 2021[1]).

Nurses make up the most numerous category of health and social care workers in many OECD countries, accounting for approximately 20-25% of all workers. Personal care workers (including health care assistants in hospitals and nursing homes and home-based personal care workers) also account for a relatively large share, sometimes exceeding the number of nurses. By comparison, doctors account for a much lower share.

In most OECD countries, over 75% of workers in the health and social care sector are women. While women tend to be concentrated more in lower-skilled and lower-paid occupations, nearly half of all doctors on average across OECD countries in 2019 were female (see indicator “Doctors by age, sex and category”).

In the aftermath of the COVID-19 crisis, investment in health and social care jobs (the “care economy”) can be expected to provide a stimulus to the job recovery. Such jobs can be offered across all regions and for a wide variety of skill sets. Megatrends such as population ageing and technological change are expected to continue to play a key role in boosting the demand for workers in health and social care.

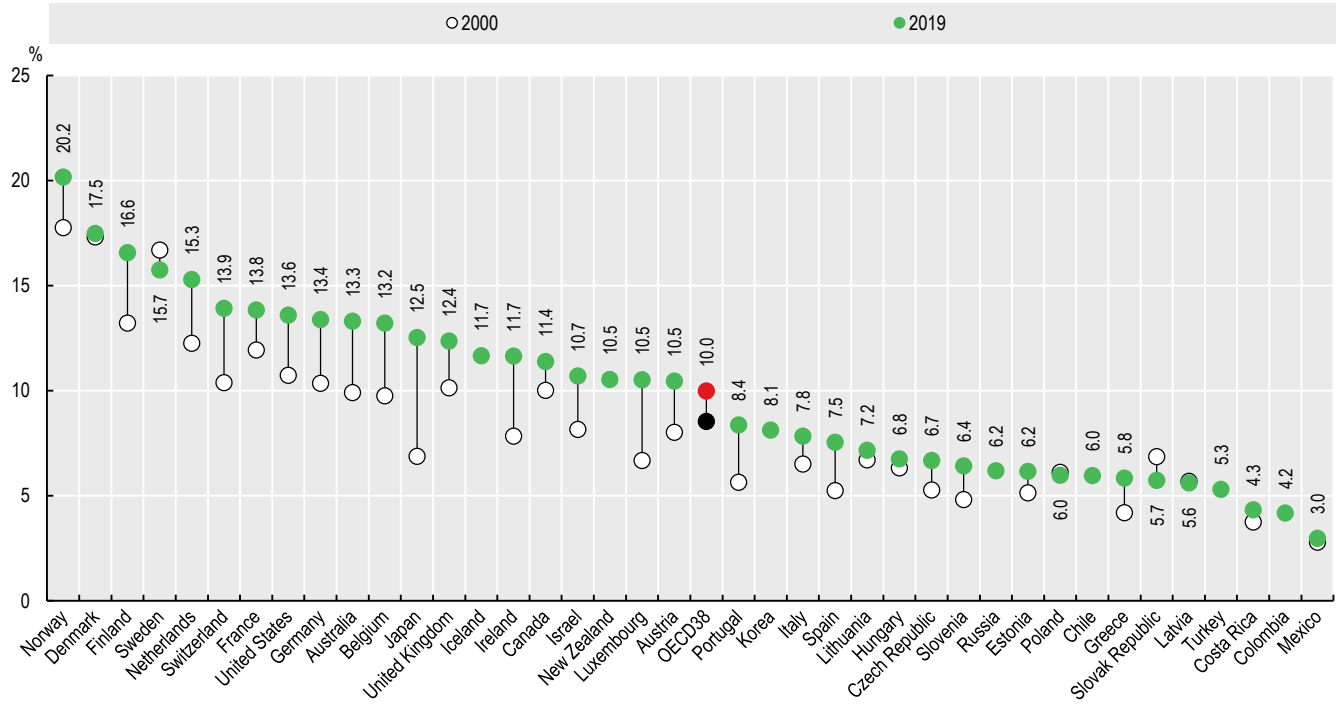
Most national projections foresee substantial employment growth in the health and social care sector in the coming years. In the United States, the Bureau of Labor Statistics projected that jobs in the sector would be the fastest growing between 2020 and 2030, with five out of the ten fastest growing occupations being in that sector (BLS, 2021[2]). In Australia, jobs in health and social work are also expected to increase rapidly between 2020 and 2025, with projected increases of 15% for health professionals and of 25% for carers for aged and disabled people over this five-year period (Australian Goverment, 2021[3]). In Canada, projections carried out prior to the COVID-19 pandemic foresaw an increase of 8% across all health occupations between 2020 and 2028, including an increase of over 10% in registered nurses (Government of Canada, 2019[4]).

New technologies, particularly information technology and artificial intelligence, can also be expected to generate demand for new jobs and new skills in the health and social care sector, while reducing the importance of some tasks (OECD, 2019[5]).

Definition and comparability

Health and social work is one of the economic activities defined according to the major divisions of the International Standard Industrial Classification of All Economic Activities. Health and social work is a sub-component of the services sector, and is defined as a composite of human health activities, residential care activities (including long-term care) and social work activities without accommodation.

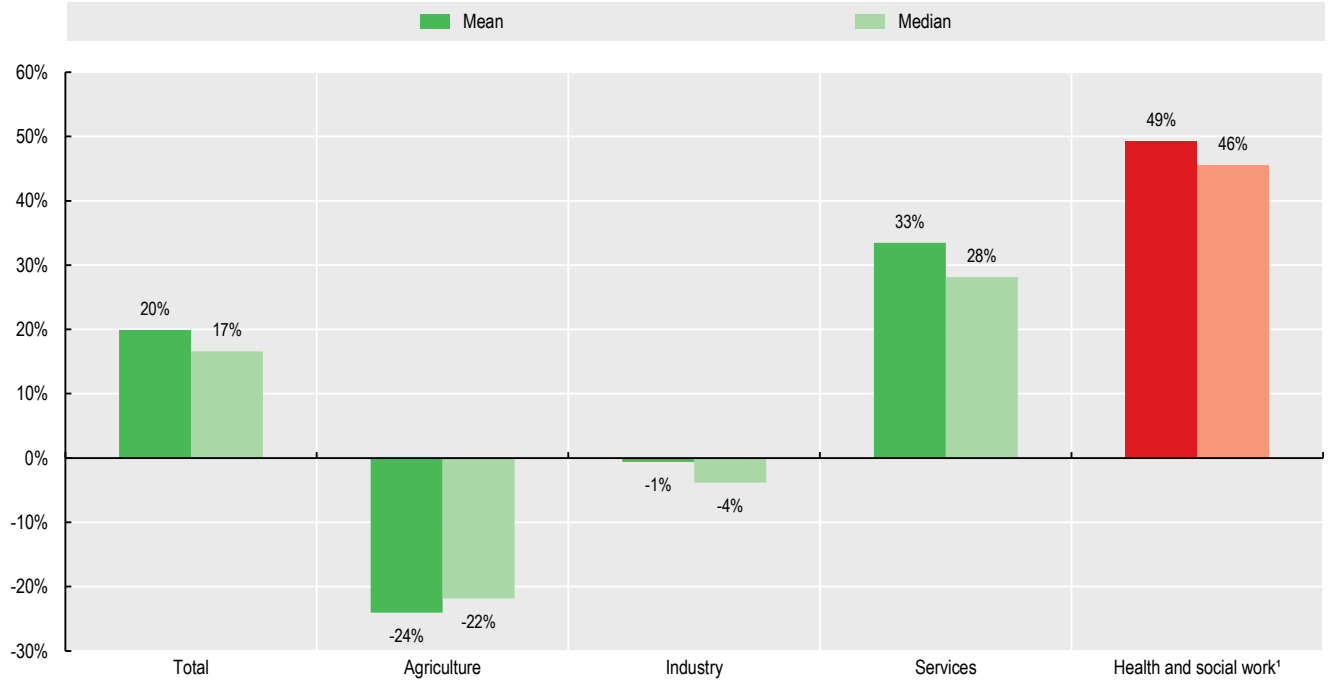
Figure 8.1. **Employment in health and social work as a share of total employment, 2000 and 2019 (or nearest year)**



Sources: OECD National Accounts; OECD Annual Labour Force Statistics for Turkey.

StatLink https://stat.link/uyvtka

Figure 8.2. **Employment growth by sector, OECD average, 2000-19 (or nearest year)**



1. Health and social work is classified as a sub-component of the services sector.
Source: OECD National Accounts.

StatLink https://stat.link/ycib1d



Doctors (overall number)

The number of doctors in OECD countries increased from about 2.8 million in 2000 to 3.4 million in 2010 and 4.1 million in 2019. In most OECD countries, the number of doctors increased more rapidly than population size, so that, on average, the number of doctors rose from 2.7 per 1 000 population in 2000 to 3.6 in 2019 (Figure 8.3). Israel was an exception to this general trend, as the 38% increase in the absolute number of doctors was not enough to keep pace with total population growth of 44% between 2000 and 2019.

In 2019, the number of doctors in OECD member countries ranged from less than 2.5 per 1 000 population in Turkey, Colombia, Poland and Mexico, to over 5 in Austria, Portugal and Greece. However, the numbers in Portugal and Greece are overestimated as they include all doctors licensed to practise.

In Indonesia, South Africa and India, there was less than one doctor per 1 000 population in 2019. In the People's Republic of China (China), the number of doctors increased rapidly from 1.2 per 1 000 population in 2000 to 2.2 per 1 000 population in 2019. In Brazil, the number of doctors per 1 000 population also increased rapidly between 2000 and 2019, but it remains low compared to most OECD countries.

The rising number of doctors in OECD countries over the past two decades has been driven mainly by increases in the number of students admitted and graduating from domestic medical education and training programmes (see indicator "Medical graduates"). Concerns about doctor shortages and the ageing of the medical workforce prompted many OECD countries to increase the number of students in medical education programmes (OECD, 2016[6]). In some countries, immigration of foreign-trained doctors also contributed to the growth (see indicator "International migration of doctors and nurses"). A third factor that contributed to the rise is a growing number of doctors in several countries prolonging their working lives and working beyond the previous standard retirement age.

The increase in the number of doctors per 1 000 population since 2000 has been strong in some countries that had a low number in 2000, such as Korea, the United Kingdom, Slovenia and New Zealand, although the number in these countries continues to be below the OECD average (Figure 8.4). There has also been a strong increase in several countries where the number of doctors was already above the OECD average in 2000, such as Austria, Norway, Spain, Sweden and Denmark.

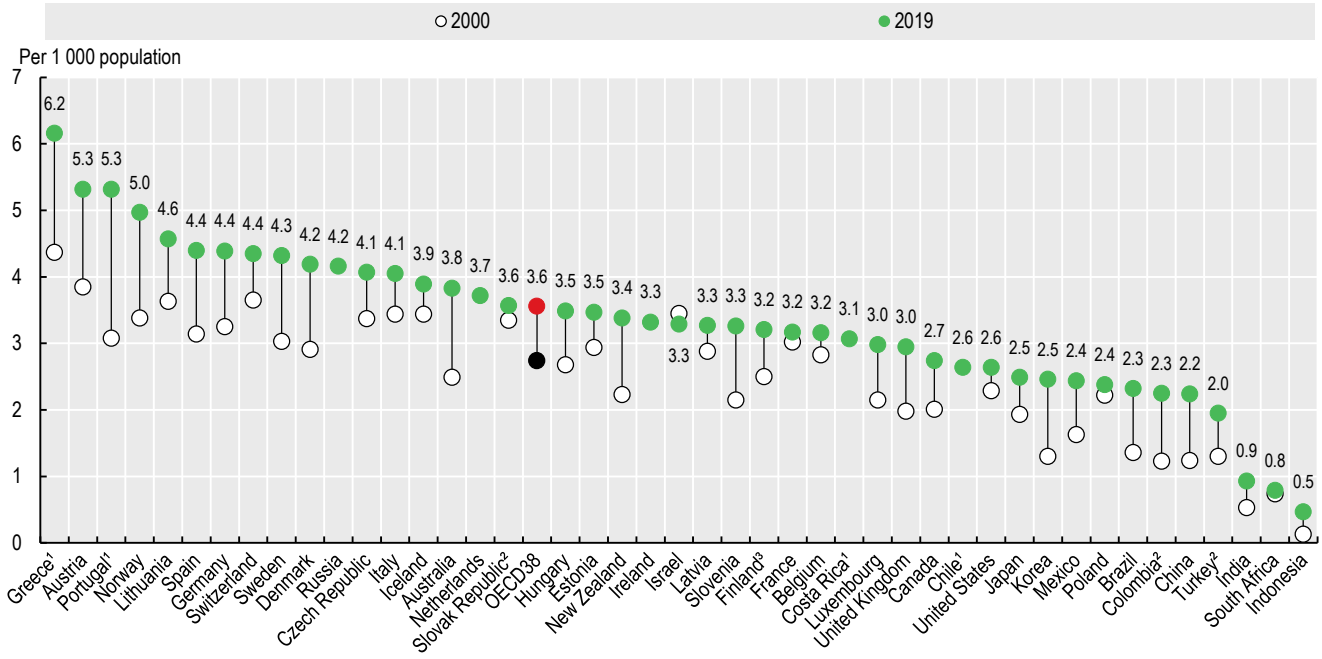
The number of doctors per capita grew only modestly from 2000 in France, Poland and the Slovak Republic. In France, the number of doctors just kept up with the increase in population growth, and it is projected to fall in the next few years, both in absolute levels and per capita, as the number of doctors who will retire is expected to exceed those entering the profession. This has prompted recommendations to increase by an additional 20% the number of students admitted to medical schools in France during 2021-25 compared with the previous five-year period (ONDPS, 2021[7]). The long duration of doctors' education and training, however, means that it takes about a decade to feel the impact of any increase in student intakes into medical education.

In most OECD countries, concerns and policy responses relate more specifically to addressing shortages of general practitioners (GPs) (see indicator "Doctors by age, sex and category") and shortages of doctors in rural and remote regions (see indicator "Geographic distribution of doctors").

Definition and comparability

The data for most countries refer to practising doctors, defined as the number of doctors providing care directly to patients. In many countries (but not all), the numbers include interns and residents (doctors in training). Colombia, the Slovak Republic and Turkey also include doctors who are active in the health sector even though they may not provide direct care to patients, adding another 5-10% of doctors. Chile, Costa Rica, Greece and Portugal report the number of physicians entitled to practise, resulting in an even larger overestimation of the number of practising doctors.

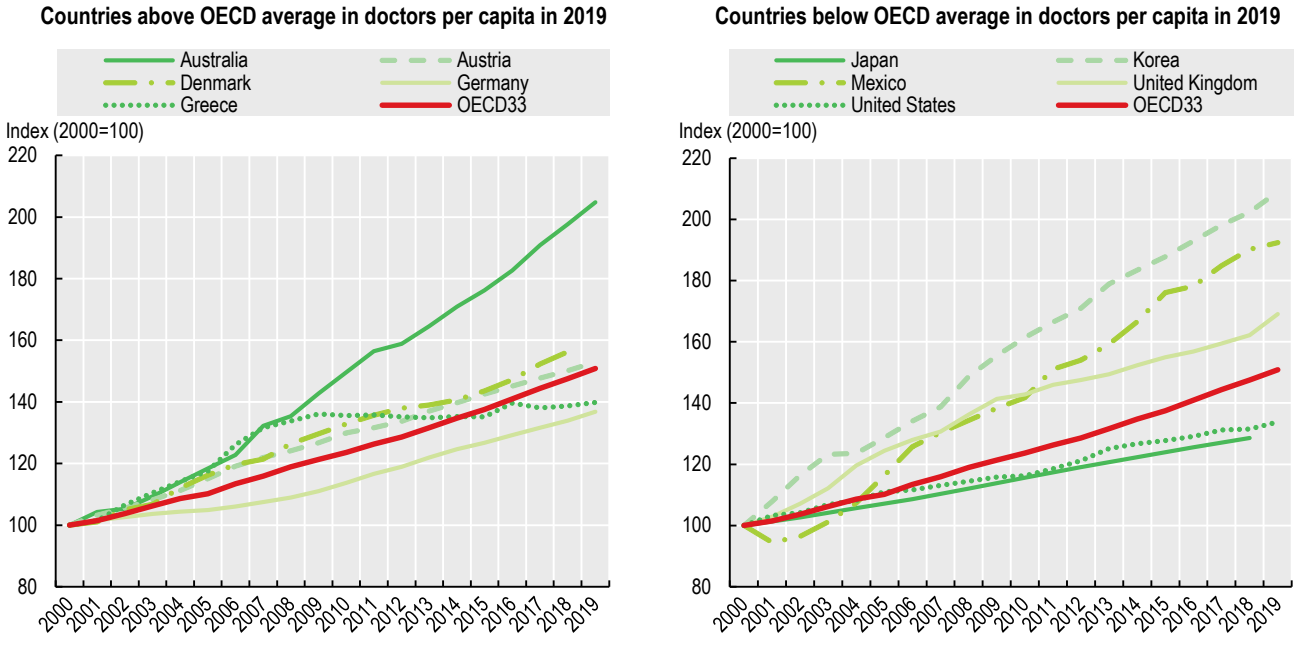
Figure 8.3. **Practising doctors per 1 000 population, 2000 and 2019 (or nearest year)**



1. Data refer to all doctors licensed to practise, resulting in a large overestimation of the number of practising doctors (e.g. of around 30% in Portugal). 2. Data include not only doctors providing direct care to patients but also those working in the health sector as managers, educators, researchers and similar (adding another 5-10% of doctors). 3. In Finland, the latest data refer to 2014 only.
Source: OECD Health Statistics 2021.

StatLink https://stat.link/3pasve

Figure 8.4. **Evolution in the number of doctors, selected countries, 2000-19 (or nearest year)**



Source: OECD Health Statistics 2021.

StatLink https://stat.link/qub5zr



Doctors (by age, sex and category)

In 2019, more than one-third of all doctors in OECD countries were over 55 years of age, up from one-fifth in 2000 (Figure 8.5). The share of doctors over 55 increased in all countries between 2000 and 2019, although this share has stabilised in some countries, with the entry of many new young doctors in the profession in recent years and the progressive retirement of the baby-boom generation of doctors.

Some countries have seen a rapid ageing of their medical workforce over the past two decades. Italy, where the share of doctors aged 55 and over increased from about 20% in 2000 to 56% in 2019, is the most striking example. No fewer than 20% of all doctors in Italy were aged 65 and over in 2019. In France, there has also been a rapid increase in the share of doctors aged 55 and over since 2000, and 14% of doctors in 2019 (one in seven) were aged 65 and over. Other countries such as Israel, Latvia, Hungary, Belgium and Spain have also seen a rapid ageing of their medical workforce (Figure 8.5).

Ageing of the medical workforce is a concern, as doctors aged 55 and over can be expected to retire in the following decade. Proper health workforce planning is required to ensure that a sufficient number of new doctors will become available to replace them, given that it takes about ten years to train new doctors. At the same time, it is important to take into account changes in retirement patterns of doctors, and to note that many may continue to practise beyond age 65, full time or part time, if the working conditions are adequate and if pension systems do not provide a disincentive for them to do so (OECD, 2016[8]).

The proportion of female doctors has increased in all OECD countries over the past two decades, and female doctors are on average younger than male doctors. In 2019, almost half of all doctors in OECD countries were female. This ranged from about three-quarters in Latvia and Estonia to less than one-quarter in Japan and Korea (Figure 8.6). The share of female doctors increased particularly rapidly from 2000 in the Netherlands, Spain, Denmark and Norway, where women accounted for more than half of all doctors in 2019. This increase has been driven by growing numbers of young women enrolling in medical schools, as well as the progressive retirement of more commonly male generations of doctors. Female doctors tend to work more in general medicine and medical specialties like paediatrics, and less in surgical specialties.

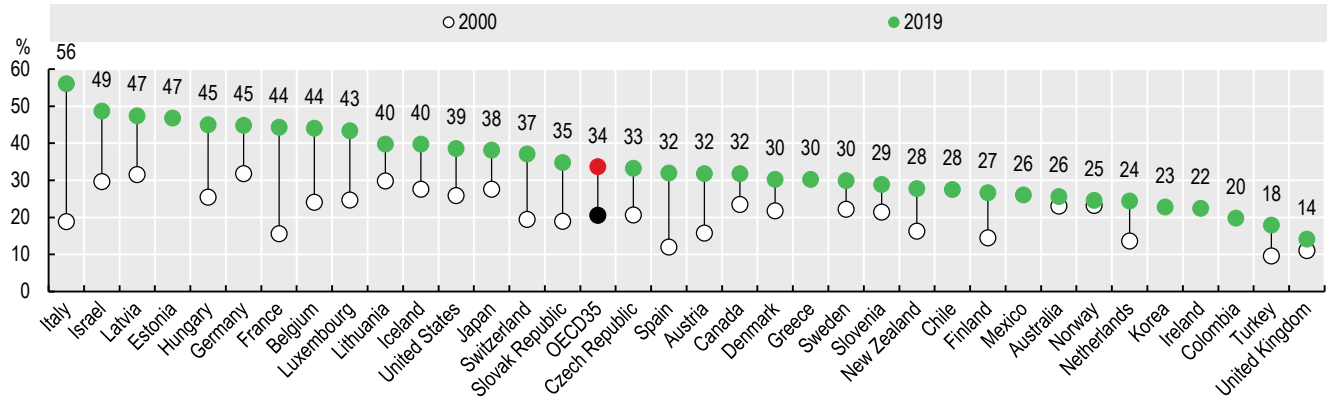
GPs (family doctors) represented less than one-quarter (23%) of all physicians on average across OECD countries in 2019, ranging from around half in Portugal, Canada and Chile to just 6% in Greece and Korea (Figure 8.7). However, the number of GPs is difficult to compare across countries owing to variation in the ways doctors are categorised. For example, in the United States and Israel, general internal medicine doctors often play a role similar to that of GPs in other countries, yet they are categorised as specialists. General paediatricians who provide general care to children are also considered specialists in all countries, so they are not considered GPs. In many countries, GPs play a key role in guaranteeing good access to health care, managing chronic conditions and keeping people out of hospital (see indicator “Avoidable hospital admissions” in Chapter 6).

Many countries have taken steps to increase the number of training places in general medicine in response to concerns about shortages of GPs. For example, in France, nearly 40% of all new postgraduate training places since 2017 have been in general medicine – a much higher proportion than in nearly all other OECD countries. In Canada, the number of residents who completed their training in general medicine in 2019 was almost equal to those completing training in all medical and surgical specialties combined. However, in many countries, it remains a challenge to attract a sufficient number of medical graduates to fill all the available training places in general medicine, given the lower perceived prestige and remuneration (see indicator “Remuneration of doctors”).

Definition and comparability

The data for most countries refer to practising doctors, defined as doctors providing care directly to patients. In some countries, the data are based on all doctors licensed to practise, not only those practising (Chile, Greece and Portugal; and also Israel and New Zealand for doctors by age and gender). Not all countries are able to report all their physicians in the two broad categories of specialists and generalists. This may be because specialty-specific data are not available for doctors in training or for those working in private practice. A distinction is made in the generalists category between GPs (family doctors) and non-specialist doctors working in hospitals or other settings. In Switzerland, general internal medicine doctors and other generalists are included under GPs.

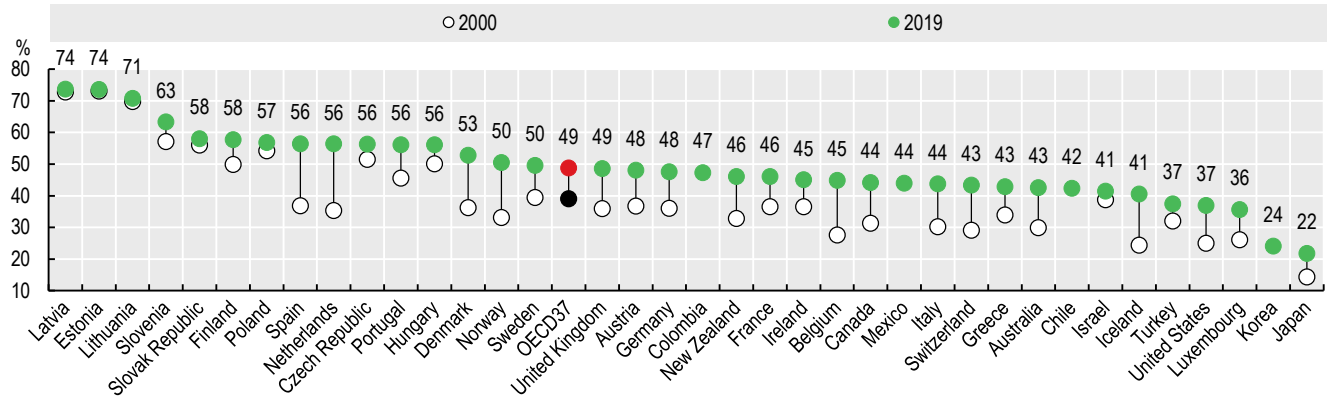
Figure 8.5. **Share of doctors aged 55 and older, 2000 and 2019 (or nearest year)**



Source: OECD Health Statistics 2021.

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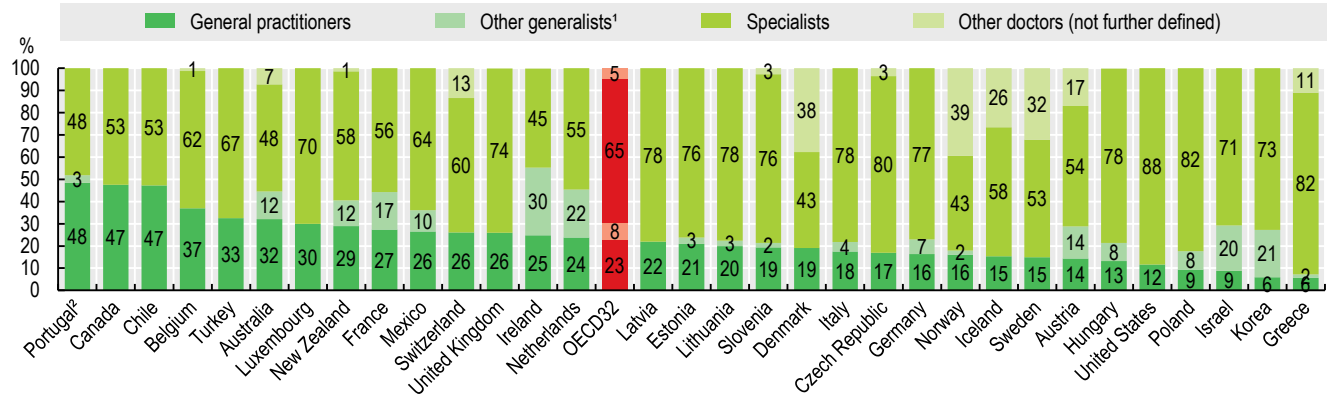
Figure 8.6. **Share of female doctors, 2000 and 2019 (or nearest year)**



Source: OECD Health Statistics 2021.

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Figure 8.7. **Share of different categories of doctors, 2019 (or nearest year)**



1. Includes non-specialist doctors working in hospitals and recent medical graduates who have not yet started postgraduate specialty training. 2. In Portugal, only about 30% of doctors employed by the public sector work as GPs in primary care – the other 70% work in hospitals.
Source: OECD Health Statistics 2021.

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Geographic distribution of doctors

Access to medical care requires a sufficient number and proper distribution of doctors in all parts of the country. A shortage of doctors in some regions can lead to inequalities in access to care and unmet needs. The difficulties in recruiting and retaining doctors in certain regions has been an important policy issue in many OECD countries for a long time, especially in countries with remote and sparsely populated areas, and those with deprived rural and urban regions.

The overall number of doctors per 1 000 population varies widely across OECD member countries, from less than 2.5 in Turkey, Colombia, Mexico and Poland, to over 5 in Portugal, Austria and Greece (see indicator "Doctors (overall number)"). Beyond these cross-country differences, the number of doctors per 1 000 population also varies widely across regions within each country. The density of doctors is generally greater in urban regions, reflecting the concentration of specialised services such as surgery, and physicians' preferences to practise in urban settings. Differences in the density of doctors between urban and rural regions were highest in Hungary, the Slovak Republic, Lithuania, Latvia and Canada in 2019. The distribution was more equal in Norway and Japan, although in Japan there were relatively few doctors in all regions (Figure 8.8).

In many countries, there is particularly high concentration of doctors in national capital regions (Figure 8.9). This was the case notably in Austria, the Czech Republic, Greece, Hungary, Portugal, the Slovak Republic and the United States in 2019.

Doctors may be reluctant to practise in rural regions due to concerns about their professional life (including their income, working hours, opportunities for career development and 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, including: 1) providing financial incentives for doctors to work in underserved areas; 2) increasing enrolments in medical education programmes of students coming from underserved areas or decentralising the location of medical schools; 3) regulating the choice of practice location of doctors (for new medical graduates or foreign-trained doctors arriving in the country); and 4) reorganising service delivery to improve the working conditions of doctors in underserved areas (OECD, 2016[8]). The development of telemedicine can also help overcome geographic barriers between patients and doctors (see indicator "Digital health" in Chapter 5).

In France, over the past 15 years the government has launched a series of measures to address concerns about "medical deserts", including offering financial support for doctors to set up their practices in underserved areas. It has also supported the creation of multidisciplinary medical homes to allow GPs and other health professionals to work in the same location, although most of the 1 600 medical homes that had been established by 2020 were not located in areas where access is most limited. Encouraging medical students to practise in underserved areas has been quite successful, notably through the use of "access contracts", whereby medical students and residents receive a monthly stipend during their education and training in exchange for a commitment to practise for an equivalent period after graduation in designated underserved areas (OECD/European Observatory on Health Systems and Policies, 2021[9]).

In Germany, where the number of doctors per 1 000 population is well above the OECD average, the geographic distribution of doctors varies across states, as well as between urban and rural areas. The number of doctors in rural areas is generally below average, whereas it is well above average in capital cities, such as Berlin and Hamburg. A number of measures have aimed to improve the number of doctors working in rural areas, including granting places to medical students who commit to practise as GPs in rural areas on graduation (Blümel et al., 2020[10]).

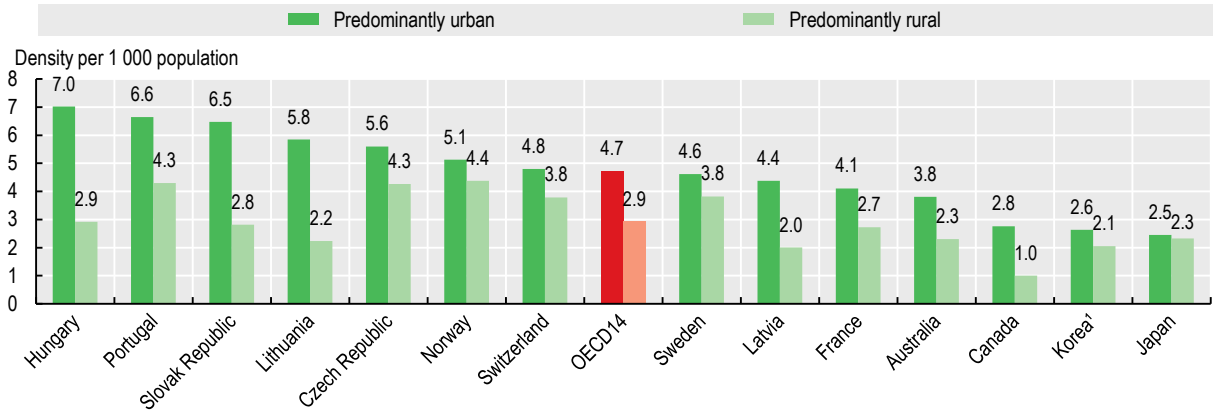
In the Czech Republic, the Ministry of Health announced a new support programme for GPs working in underserved areas in April 2020. The programme is open to all GPs who are planning or have recently started to provide services in a designated underserved area. It provides funding to GP practices to cover personnel and technical equipment costs up to a ceiling. Health insurance funds also pay more for GP services provided in some underserved areas (OECD/European Observatory on Health Systems and Policies, 2021[9]).

In Australia, the government announced a new ten-year Stronger Rural Health Strategy in 2018 to meet Australia's current and future health workforce challenges in rural and remote areas. This Strategy comprises 13 initiatives that aim to address the issues of quality, distribution and planning of Australia's health workforce, particularly in regional, rural and remote communities (Department of Health, 2019[11]). A short-term evaluation of this Strategy is expected for 2022.

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. All data on geographic distributions come from the OECD Regional Database, which includes data from the Eurostat database for territorial level 2.

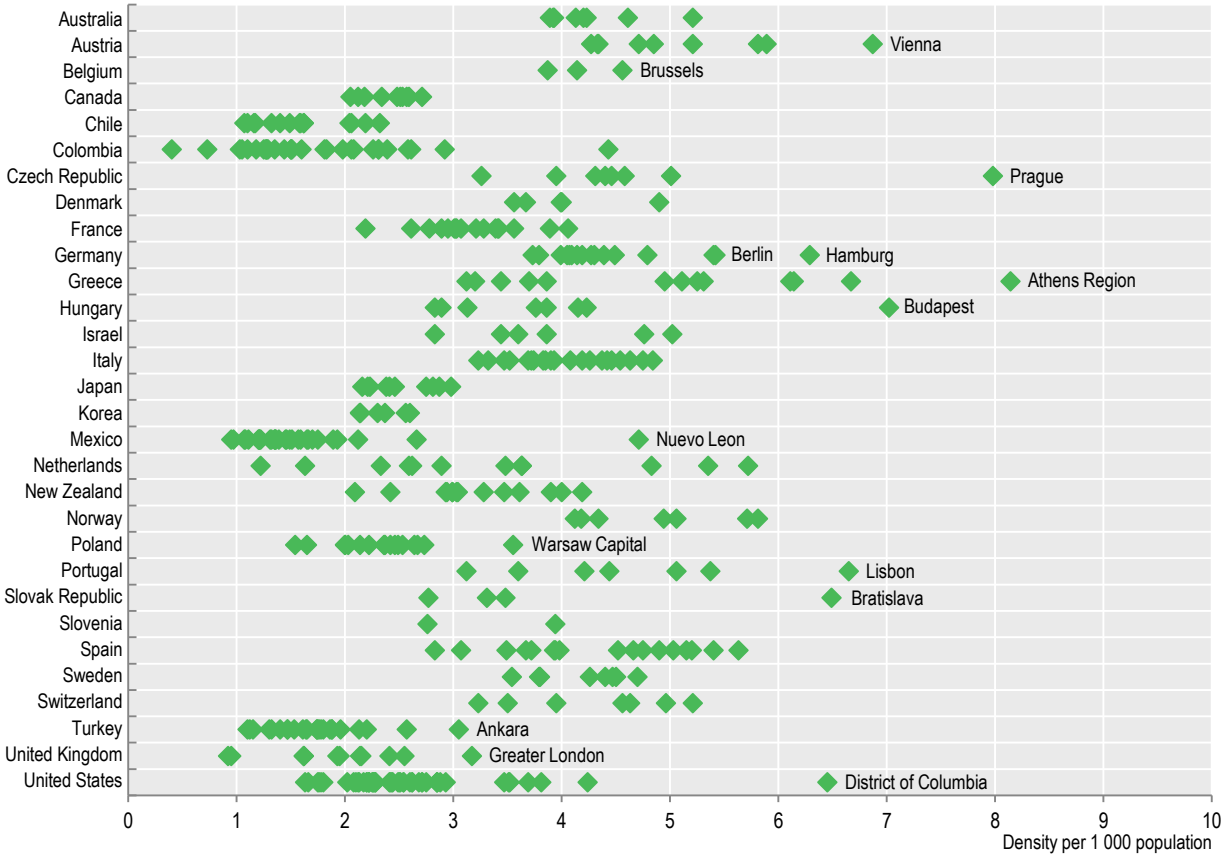
Figure 8.8. **Physician density, urban vs. rural areas, 2019 (or nearest year)**



1. In Korea, data for predominantly rural refer to intermediate regions (the share of the population living in rural areas is between 15-50%).
Source: OECD Regional Statistics Database 2021.

StatLink https://stat.link/qt6e5w

Figure 8.9. **Physician density across regions, by territorial level 2 regions, 2019 (or nearest year)**



Source: OECD Regional Statistics Database 2021.

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Remuneration of doctors (general practitioners and specialists)

The remuneration level and structure for various categories of doctors affect the financial attractiveness of general practice and different specialities. Differences in remuneration levels of doctors across countries can also act as a "push" or "pull" factor when it comes to physician migration (OECD, 2019[12]). In many countries, governments can determine or influence the level and structure of physician remuneration by regulating their fees or by setting salaries when doctors are employed in the public sector.

Across OECD countries, the remuneration of doctors (both GPs and specialists) is substantially higher than the average wage of all workers. In most countries, GPs earned two to four times more than the average wage in each country in 2019, while specialists earned two to six times more (Figure 8.10).

In most countries, specialists earned more than GPs. In Australia and Belgium, self-employed specialists earned at least twice as much as self-employed GPs. In Germany, the difference between specialists and GPs is much smaller, at about 20%.

In most countries, the remuneration of physicians has increased since 2010, but at different rates across countries and between GPs and specialists (Figure 8.11). The increase among both specialists and generalists has been particularly strong in Chile and Hungary. The large increases in Chile are mainly due to successive pay raises for specialists and generalists between 2012 and 2016. In Hungary, the government also increased substantially the remuneration of specialists and generalists over the past decade to reduce the emigration of doctors and shortages. These pay raises have been accompanied by a reduction in the number of Hungarian doctors moving to other countries like Germany and the United Kingdom in recent years.

In several countries, the remuneration of specialists has risen faster than that of generalists since 2010, thereby increasing the remuneration gap. This has been particularly the case in Chile. However, in Austria, Belgium, the Netherlands and Turkey, the gap has narrowed slightly, as the income of GPs grew more than that of specialists.

In some countries, like Portugal, Slovenia and the United Kingdom, the remuneration of both GPs and specialists fell in real terms between 2010 and 2019. In Portugal, the reduction occurred between 2010 and 2012: since then, the remuneration of doctors has increased, but remained lower in 2019 than in 2010 in real terms. In the United Kingdom, the remuneration of doctors fell slightly in real terms over the past decade as was also the case for nurses and other NHS staff (The Health Foundation, 2021[13]).

It is important to bear in mind that the remuneration of different categories of surgical or medical specialties also varies widely in each country. For example, in France, surgeons, anaesthetists and radiologists earn at least twice as much as paediatricians and psychiatrists (DREES, 2018[14]). Similarly, in Canada, ophthalmologists and many surgical specialists earn at least twice as much as paediatricians and psychiatrists (CIHI, 2020[15]). In many countries, the remuneration of paediatricians is close to that of GPs, reflecting some similarities in their practices.

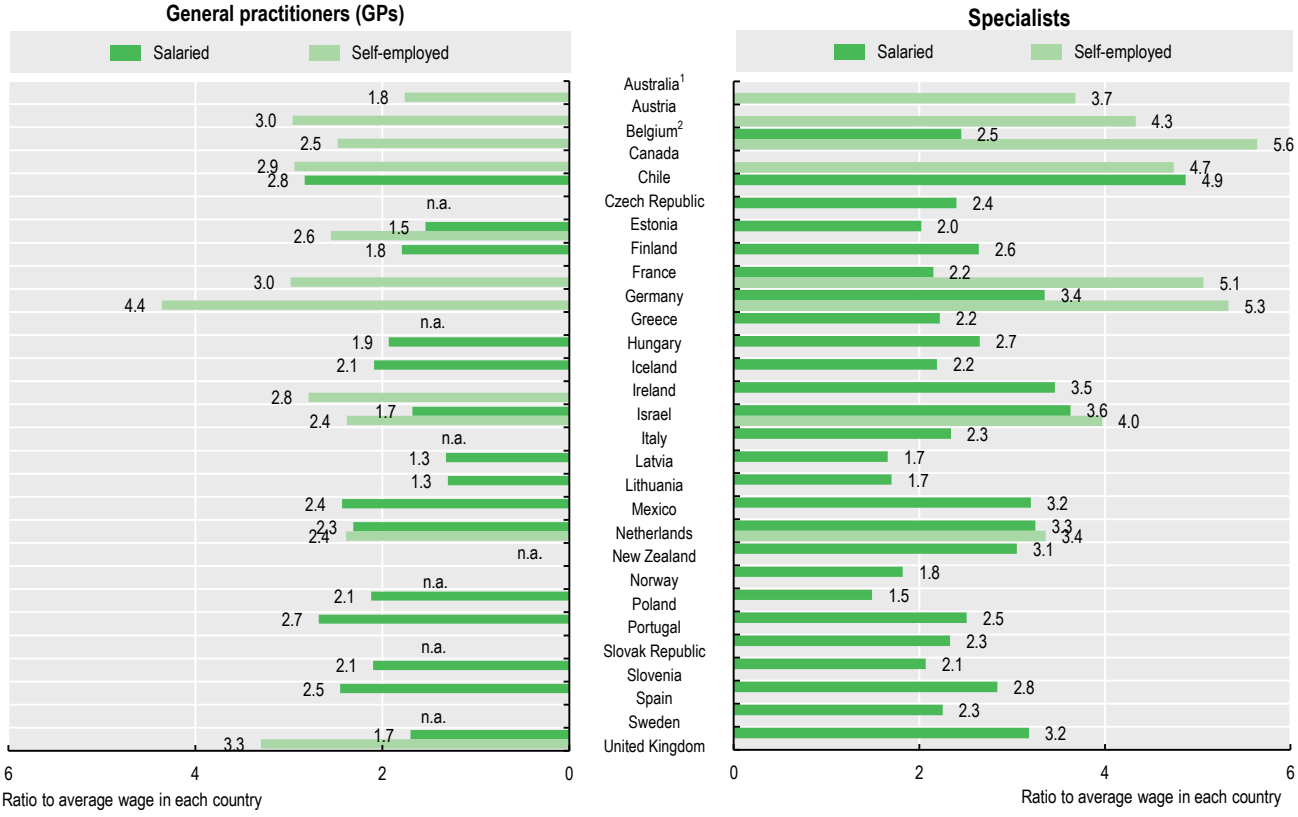
Definition and comparability

The remuneration of doctors refers to average gross annual income, including social security contributions and income taxes payable by the employee. It normally excludes practice expenses for self-employed doctors (in Belgium, practice expenses are included). OECD data on physician remuneration make the distinction between salaried and self-employed physicians. In some countries this distinction is blurred, since some salaried physicians are allowed to have a private practice and some self-employed doctors receive part of their remuneration through salaries. The OECD data also distinguish between GPs and all other specialists combined, although there can be wide differences in the income of different medical and surgical specialists.

A number of data limitations contribute to an underestimation of remuneration levels in some countries: 1) payments for overtime work, bonuses, other supplementary income or social security contributions are excluded in some countries (in Austria for GPs, and in Ireland and Italy for salaried specialists); 2) incomes from private practices for salaried doctors are not included in some countries (such as the Czech Republic, Hungary, Iceland, Ireland and Slovenia); 3) informal payments, which may be common in certain countries (such as Greece and Hungary), are not included; 4) data relate only to public sector employees, who tend to earn less than those working in the private sector in Chile, Denmark, Greece, Hungary, Iceland, Ireland, Norway, the Slovak Republic and the United Kingdom; and 5) physicians in training are included in Australia.

The income of doctors is compared to the average wage of full-time employees in all sectors in the country. The average wage of workers in the economy comes from the OECD Employment Database.

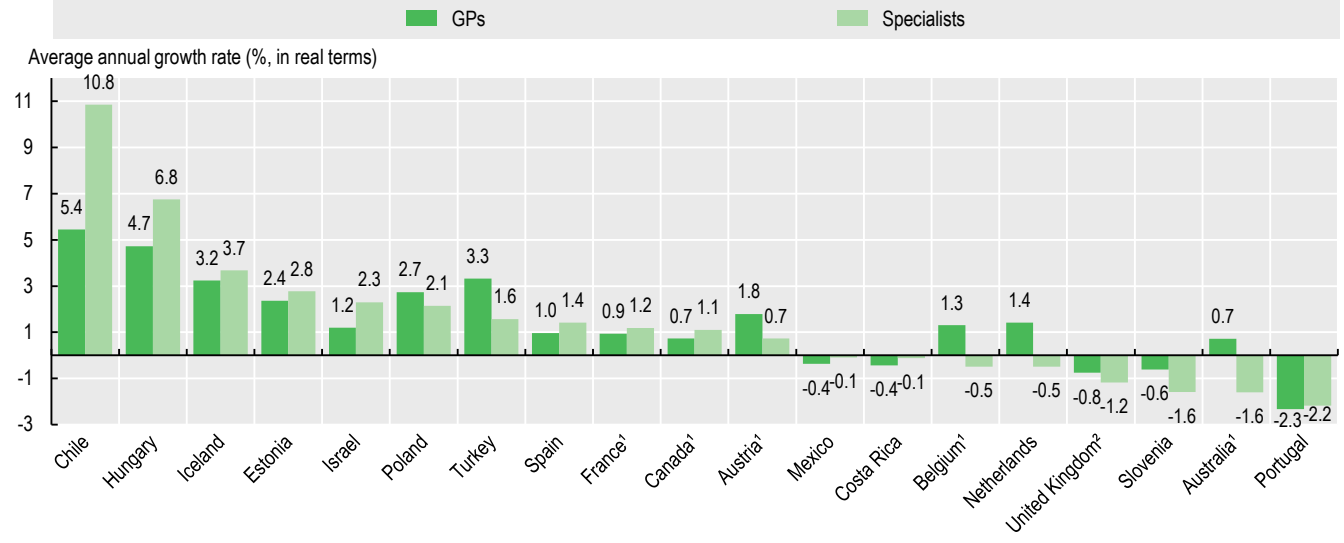
Figure 8.10. **Remuneration of doctors, ratio to average wage, 2019 (or nearest year)**



1. Physicians in training included (resulting in an underestimation). 2. Practice expenses included (resulting in an overestimation).
Source: OECD Health Statistics 2021 and OECD Employment Database 2021.

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Figure 8.11. **Growth in the remuneration of general practitioners and specialists (real terms), 2010-19**



1. Growth rate is for self-employed GPs and specialists. 2. Data only include England.
Source: OECD Health Statistics 2021.

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Nurses

Nurses make up the most numerous category of health workers in nearly all OECD countries. The key role they play in providing care in hospitals, long-term care facilities and the community was highlighted again during the COVID-19 pandemic.

In 2019, there were just under nine nurses per 1 000 population on average across OECD member countries, ranging from less than three per 1 000 population in Colombia, Turkey, Mexico and Chile to about 18 in Norway and Switzerland (Figure 8.12).

In South Africa, Indonesia and India, there are relatively few nurses – fewer than 2.5 per 1 000 population. In China, the number of nurses has increased rapidly over the past two decades, from 1.0 per 1 000 population in 2000 to 3.1 per 1 000 population in 2019.

Between 2000 and 2019, the number of nurses per capita grew in almost all OECD countries, and the average rose from 7.0 per 1 000 population in 2000 to 8.8 per 1 000 population in 2019. Israel and the Slovak Republic are the only two OECD countries where the number of nurses per population fell between 2000 and 2019. The decrease in Israel is due to the rapid growth of the population (+44%), with the increase in the number of nurses not keeping up (+33%). In the Slovak Republic, the number of nurses declined in the 2000s and has remained at this lower level.

In the United Kingdom and Ireland, the number of nurses per capita in 2019 was about the same as in 2000, as the increase in the number of nurses just kept up with population growth. In the Baltic countries (Estonia, Latvia and Lithuania), the number of nurses per population has also remained fairly stable since 2000, because the absolute number of nurses has decreased at about the same rate as the overall population size.

Norway and Switzerland provide examples of countries that have managed to increase the number of nurses greatly over the past two decades. In Norway, the substantial increase has been driven by a series of measures to attract more students in nursing education and to retain more nurses in the profession by improving their working conditions. In 2016, the Norwegian Government adopted a five-year action plan – the *Competence Lift 2020* – to improve the competencies, pay and retention rates of nurses. This action plan was extended for another five years under the *Competence Lift 2025*. Although the number of nurses has increased, the dropout rate continues to be high, especially among nurses working in long-term care.

In Switzerland, the recent increase in the number of nurses has been driven mainly by a rise in the number of "associate professional nurses" (or "intermediate care workers"), who have lower qualifications than "professional nurses" (or "qualified nurses"). Between 2010 and 2019, the number of associate professional nurses increased almost three times faster than the number of professional nurses, and the share of associate professional nurses increased from 29% in 2010 to 35% in 2019. Despite the growth in these two categories, hospitals and other health facilities continue to have difficulty recruiting nurses, and there are concerns about nurse shortages in the coming years.

In most countries, the growth in the number of nurses has been driven by growing numbers of domestic nursing graduates (see indicator "Nursing graduates"). However, in some countries, the immigration of foreign-trained nurses also played an important role. Over one-quarter (25%) of all practising nurses in New Zealand and Switzerland obtained their first nursing degree in another country; this proportion exceeds 15% in Australia and the United Kingdom (see indicator "International migration of doctors and nurses"). In Switzerland, most foreign-trained nurses come from France and Germany, and the numbers have risen strongly in recent years.

Nurses outnumber physicians in most OECD countries. On average, there are slightly less than three nurses to every doctor. The ratio of nurses per doctor ranges from about one nurse per doctor in Colombia, Chile, Costa Rica, Mexico and Turkey to more than four in Japan, Finland, the United States and Switzerland (Figure 8.13).

In many countries, there was strong demand to recruit nurses in response to the COVID-19 pandemic. In the United States, online job postings during the pandemic increased by 27% for registered nurses and 22% for licensed practical/vocational nurses. In Canada, they increased by 6% for registered nurses and 39% for licensed practical nurses (OECD, 2021[1]).

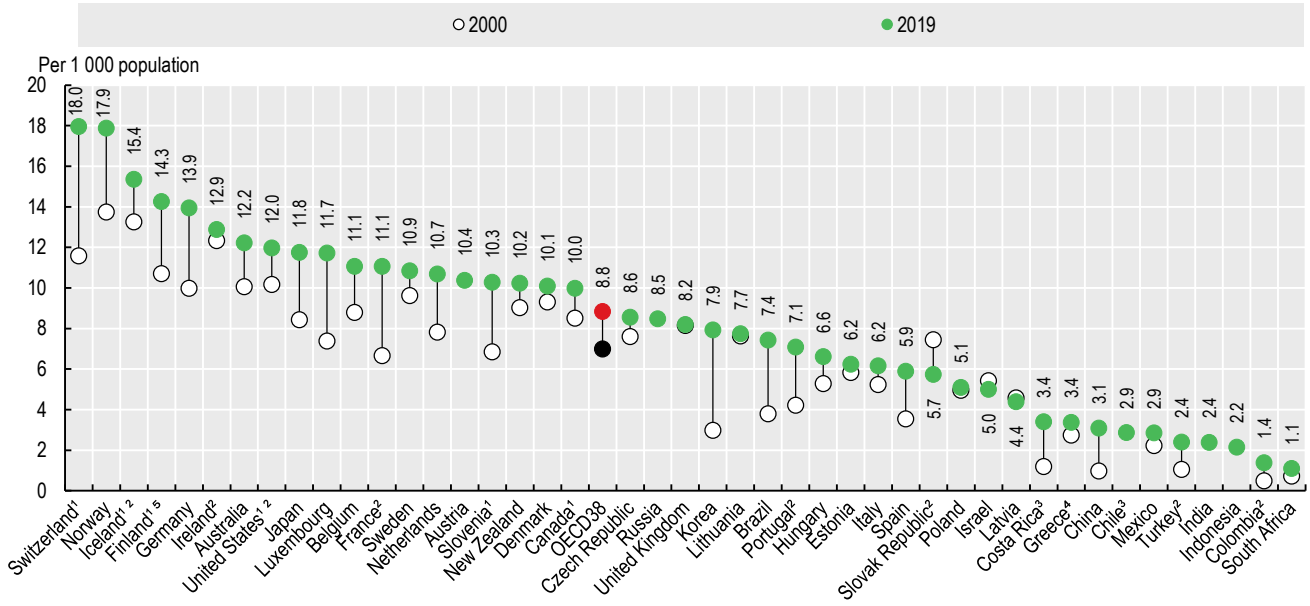
Definition and comparability

The number of nurses includes those providing services directly to patients ("practising") and in some cases also those working as managers, educators or researchers.

In countries where different nurses can hold different levels of qualification or role, the data include both professional nurses, who have a higher level of education and perform more complex or skilled tasks, and associate professional nurses, who have a lower level of education but are nonetheless recognised as nurses. Health care assistants (or nursing aides) who are not recognised as nurses are excluded. Midwives are excluded, except in some countries where they are included because they are considered as specialist nurses or for other reasons (Australia, Ireland and Spain).

Greece reports only nurses working in hospitals, resulting in an underestimation.

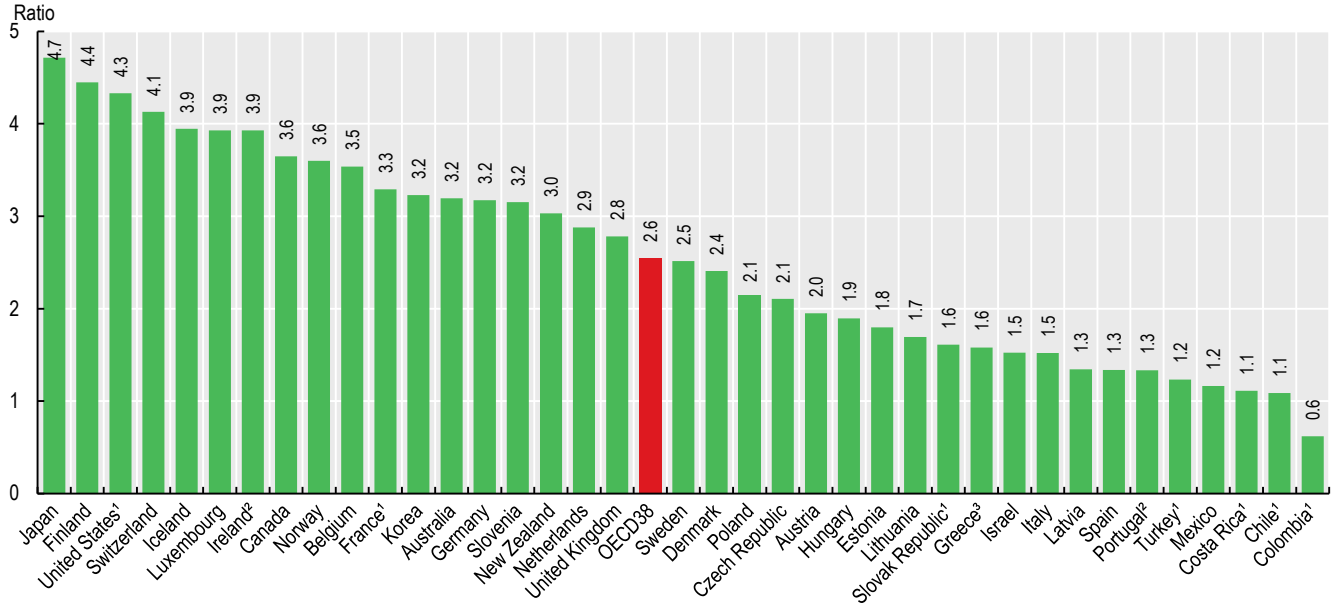
Figure 8.12. **Practising nurses per 1 000 population, 2000 and 2019 (or nearest year)**



1. Associate professional nurses with a lower level of qualifications make up about two-thirds of nurses in Slovenia; about one-third in Switzerland, Iceland, Finland and Canada; and about 18% in the United States. In Switzerland, most of the growth since 2000 has been in this category. 2. Data include nurses working in the health sector as managers, educators, researchers and similar. 3. Data include all nurses licensed to practise. 4. Data only refer to nurses employed in hospitals. 5. Latest data is from 2014.
Source: OECD Health Statistics 2021.

StatLink https://stat.link/mjae80

Figure 8.13. **Ratio of nurses to doctors, 2019 (or nearest year)**



1. For countries that have not provided data for practising nurses and/or practising doctors, the numbers relate to the "professionally active" concept for both nurses and doctors (except Chile and Costa Rica, where numbers include all nurses and doctors licensed to practise). 2. The ratio for Ireland is overestimated (professionally active nurses/practising doctors), while the ratio for Portugal is underestimated (professionally active nurses/all doctors licensed to practise). 3. For Greece, the data refer to nurses and doctors employed in hospitals.
Source: OECD Health Statistics 2021.

StatLink https://stat.link/m5nfxa



Remuneration of nurses

The COVID-19 pandemic has brought further attention to the pay rate of nurses and the need to ensure sufficient remuneration to attract and retain nurses in the profession.

On average across OECD countries, the remuneration of hospital nurses in 2019 (before the pandemic) was slightly above the average wage of all workers. However, in some countries like Switzerland, Lithuania, France, Latvia and Finland, nurses earned less than the average wage of all workers, whereas in other countries like Chile, Mexico, Luxembourg and Belgium, they earned much more (Figure 8.14).

Figure 8.15 compares the remuneration of hospital nurses based on a common currency (US dollars) and adjusted for differences in purchasing power to provide an indication of the relative economic well-being of nurses across countries and the financial incentives to consider moving to another OECD country to achieve better-paid jobs. In 2019, nurses in Luxembourg had remuneration levels at least four times higher than those working in Lithuania, the Slovak Republic and Latvia. In general, nurses working in central and eastern European countries had the lowest levels of remuneration, explaining at least in part why many choose to migrate to other EU countries (Socha-Dietrich and Dumont, 2021[16]).

The remuneration of nurses in the United States is higher than in most other OECD countries, explaining why the United States is able to attract several thousand nurses from other countries every year.

In many countries, the remuneration of nurses has increased in real terms since 2010, albeit at different rates (Figure 8.16). In Israel and Australia, nurses obtained substantial pay raises between 2010 and 2018.

In France and the United States, the remuneration of nurses was about the same in real terms in 2018/2019 as in 2010. In Spain, the remuneration of nurses fell after the 2008-09 economic crisis due to cuts in the public sector, but it has recovered since 2013, so that on average the remuneration level was about 5% higher in real terms in 2019 than in 2010.

In the United Kingdom, the remuneration of nurses increased in nominal terms, but it fell by over 5% in real terms between 2010 and 2018 due mainly to the public sector pay cap between 2010/11 and 2017/18. Since 2018, the average income of nurses in real terms has started to increase due to the Agenda for Change pay deal for 2018-2021 (Buchan, Shembavnekar and Bazeer, 2021[17]).

Many countries provided some form of COVID-19 "bonus" to nurses in recognition of the frontline role they played during the pandemic and the additional stress and workload. The level and coverage of such bonus payments varied across countries. In Germany, some bonuses were provided in 2020 for nurses working in nursing homes and those working in hospitals with a minimum number of COVID-19 patients (approximately one-third of all hospitals qualified). An additional bonus was provided for nurses in hospitals in April 2021. The national bonuses were between EUR 500 and EUR 1 500, depending on hours worked. Some *Länder* also provided additional bonuses of approximately EUR 500.

In France, payment for the overtime work of nurses and other workers in hospitals and nursing homes was increased during the first wave of the pandemic in spring 2020. In addition, most hospital workers, including nurses, received a COVID-19 bonus after the first wave, ranging from EUR 1 000 to EUR 1 500, depending on the intensity of the pandemic in each region. To improve recruitment and retention, all health workers in hospitals and nursing homes received a permanent pay raise of EUR 183 per month in 2020, followed by another raise of between EUR 45 and EUR 450 per month at the end of 2021/ early 2022, depending on professional categories and years of experience (OECD/European Observatory on Health Systems and Policies, 2021[9]).

Definition and comparability

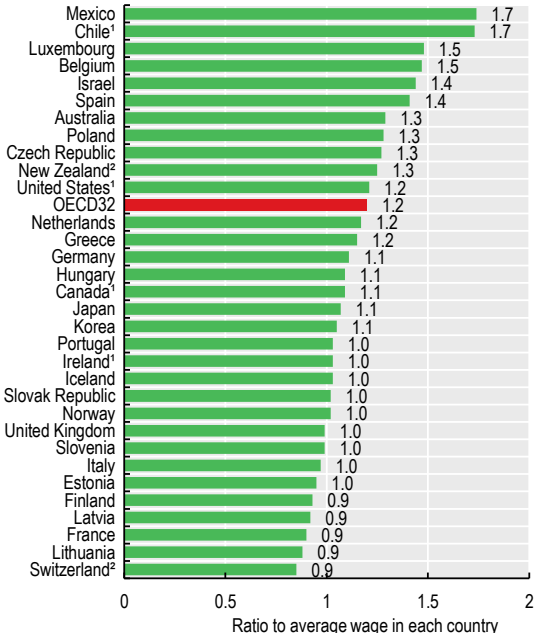
The remuneration of nurses refers to average gross annual income, including social security contributions and income taxes payable by the employee. In most countries, the data relate specifically to nurses working in hospitals, although in Canada the data also cover nurses working in other settings. In some federal states, such as Australia, Canada and the United States, as well as in the United Kingdom, the level and structure of nurse remuneration is determined at the subnational level, which may contribute to variations across jurisdictions.

Data refer only to registered ("professional") nurses in Canada, Chile, Ireland and the United States, resulting in an overestimation compared to other countries where lower-level ("associate professional") nurses are also included. Data for New Zealand include all nurses employed by publicly funded district health boards, at all levels; they also include health assistants, who have a different and significantly lower salary structure than registered nurses.

The data relate to nurses working full time. The data for some countries (such as Italy and Slovenia) do not include additional income such as overtime payments. Informal payments, which represent a significant part of total income in some countries, are not reported.

The income of nurses is compared to the average wage of full-time employees in all sectors in the country. It is also compared across countries based on a common currency (US dollars) and adjusted for PPP. The figures in this edition of Health at a Glance are not comparable to those in previous editions because a different PPP indicator was used to adjust for differences in cost of living across countries.

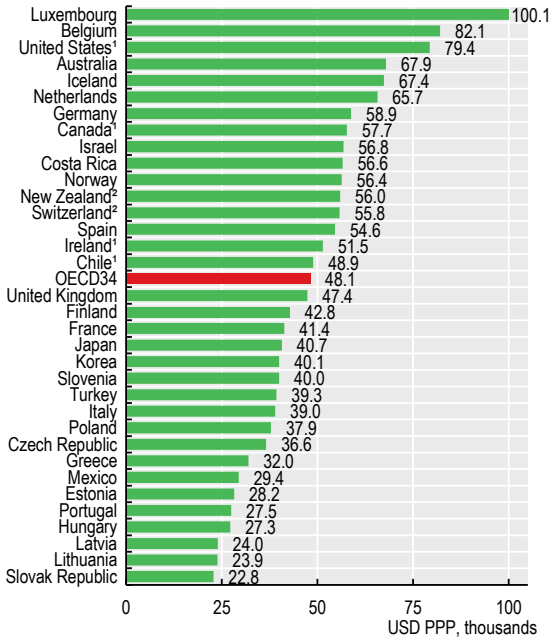
Figure 8.14. **Remuneration of hospital nurses, ratio to average wage, 2019 (or nearest year)**



1. Data refer to registered ("professional") nurses only in the United States, Canada, Ireland and Chile (resulting in an overestimation). 2. Data for New Zealand and Switzerland include "associate professional" nurses, who have lower qualifications and revenues.
Source: OECD Health Statistics 2021.

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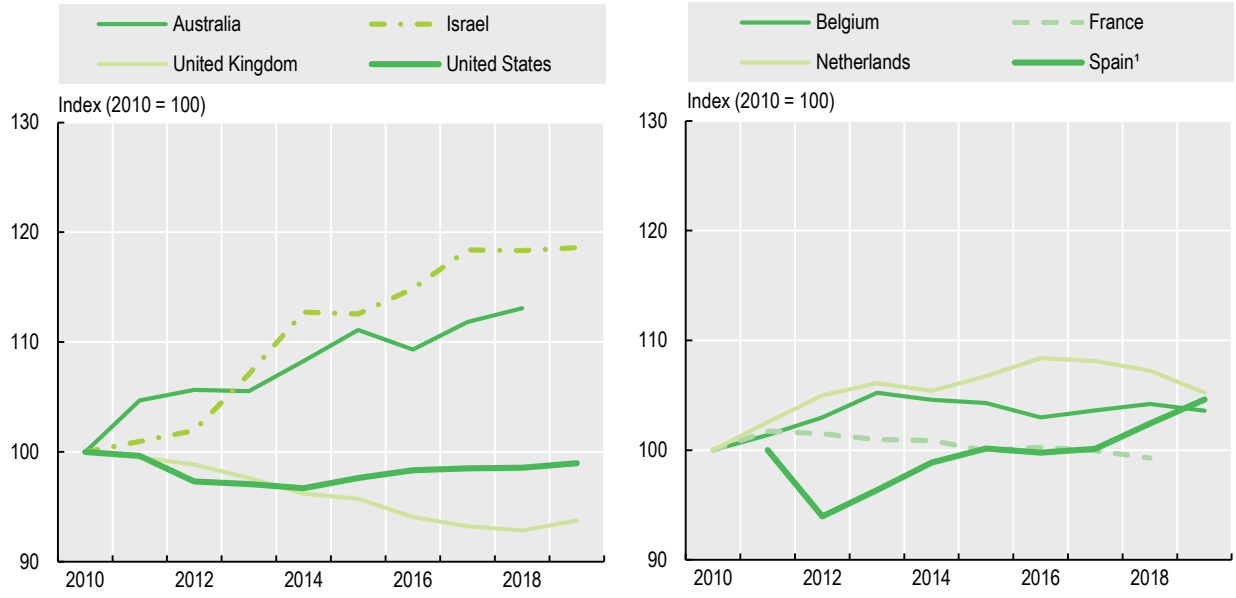
Figure 8.15. **Remuneration of hospital nurses, USD PPP, 2019 (or nearest year)**



Note: Numbers here cannot be compared with those in previous editions of *Health at a Glance* because a different PPP indicator has been used to adjust for differences in cost of living across countries.
1. Data refer to registered ("professional") nurses only in the United States, Canada, Ireland and Chile (resulting in an overestimation). 2. Data for New Zealand and Switzerland include "associate professional" nurses, who have lower qualifications and revenues.
Source: OECD Health Statistics 2021.

StatLink https://stat.link/sftlp6

Figure 8.16. **Trends in the remuneration of hospital nurses (real terms), selected OECD countries, 2010-19**



1. Index for Spain, 2011 = 100.
Source: OECD Health Statistics 2021.

StatLink https://stat.link/zesmwb



Hospital workers

The number and composition of people working in hospitals in OECD countries varies depending on the roles and functions that hospitals play in health systems, as well as on how different types of support services in hospitals are provided and accounted for. The roles and functions of hospitals vary notably regarding the extent to which outpatient specialist services are provided in hospitals or outside hospitals. In most countries with universal health coverage funded by the tax system (national health service-type systems), outpatient specialist services are typically provided in public hospitals. This is the case, for example, in the United Kingdom, Nordic countries, Portugal and Spain. In other countries such as Australia, Austria, Belgium, Canada, France, Germany, Switzerland and the United States, most outpatient services are provided outside hospitals. In some central and eastern European countries (such as Estonia and Slovenia), most outpatient specialist services are provided in public hospitals, whereas these are provided in public multi-specialty clinics in others (such as Poland) or in private solo practices (as in the Czech Republic).

Before the COVID-19 pandemic, in 2019, the number of people working in hospitals relative to the overall size of the population was at least twice as high in Switzerland, the United Kingdom, Norway, the United States, Iceland, Denmark and France as in Chile, Mexico, Korea and Greece (Figure 8.17). However, it is important to bear in mind that in the United States, 45% of people working in hospitals are non-clinical staff (including administrative and other support staff), while this proportion is around 30% in Switzerland, France and Iceland.

In all countries, nurses represent the largest category of care providers in hospitals. Nurses and midwives account for 37% of all hospital employment on average across OECD countries. In most OECD countries, between 50% and 90% of all nurses work in hospitals. In some countries like France and Portugal, health care assistants (or nursing aides) also represent a large category of hospital workers. Doctors account for one in seven (14%) hospital workers on average across OECD countries, although in several countries this number underestimates the number of doctors who work at least part time in hospitals, since self-employed doctors with dual practices outside and in hospital are not counted.

The number of full-time equivalent (FTE) nurses in hospitals is lower than the head counts because a significant proportion of nurses work part time. On average across OECD countries, the number of FTE nurses in hospitals is 15% lower than head counts. This gap is larger in some countries like Germany and Iceland, where FTE nurse numbers are about 30% lower.

The number of nurses working in hospitals increased fairly rapidly between 2010 and 2019 in some countries, such as Germany, the United States and Norway. The increase was more modest in Denmark and France. By contrast, the number of hospital nurses decreased over that period in Italy, Lithuania, the Slovak Republic and the United Kingdom (Figure 8.18).

Many countries recruited additional staff in hospitals during the COVID-19 crisis as a matter of urgency to respond to increased pressures. The pandemic also stimulated the development of new plans to increase recruitment of hospital staff and improve working conditions to motivate staff to continue to work. For example, in France, the government introduced a new multiyear plan in July 2020 to strengthen public hospitals and increase investment in the health workforce (OECD/European Observatory on Health Systems and Policies, 2021[9]).

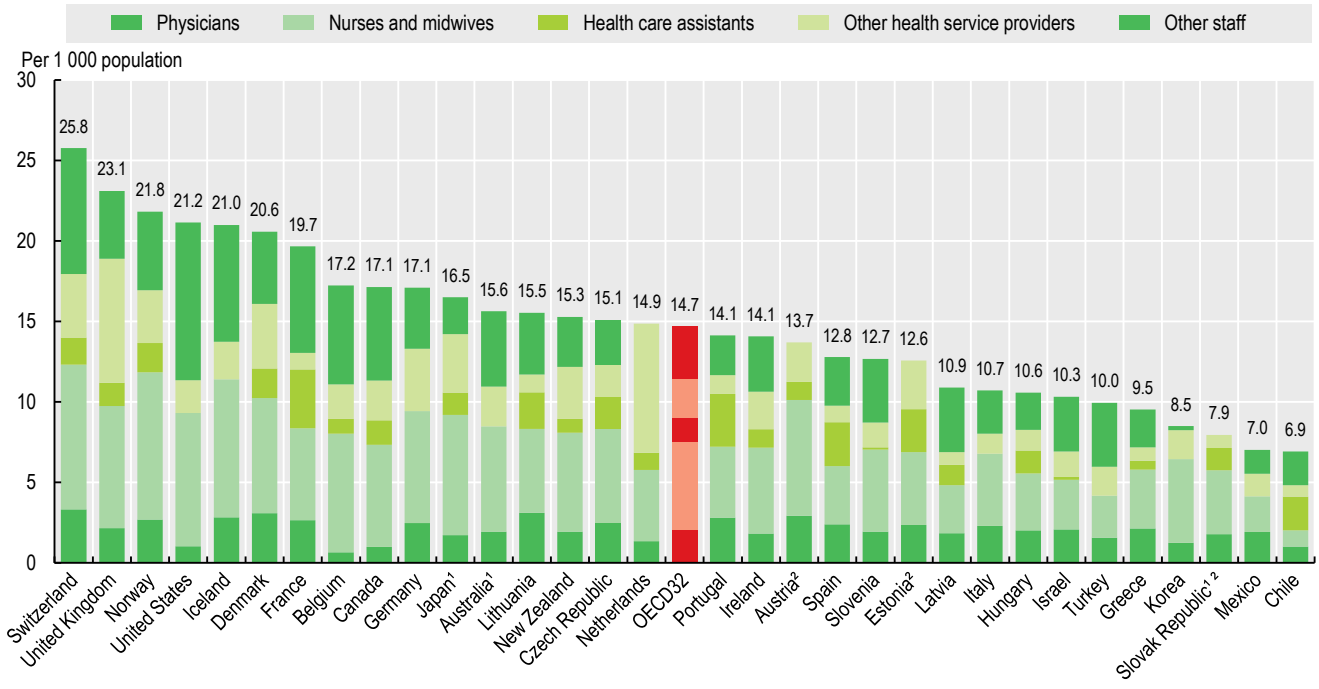
Definition and comparability

Hospital workers are defined as people working in hospitals, including wherever possible self-employed people under service contracts. In most countries, workers include both clinical and non-clinical staff. The data are reported in head counts, although the OECD health database also includes data on FTE numbers for a more limited number of countries. FTE is generally defined as the number of hours worked divided by the average number of hours worked in full-time jobs, which may vary across countries.

Many countries do not count all or some self-employed workers working in hospitals. Australia, Chile, Denmark, Ireland, New Zealand and the United Kingdom only report data on employment in public hospitals, resulting in an underestimation.

For comparisons across countries, the number of hospital workers is related to the overall population size in each country. Another option would be to relate the number of workers more specifically to the number of hospital beds or hospital bed-days to take into account some measure of hospital activities across countries, although this would not include those activities that do not require hospitalisation (such as examinations, consultations and day care).

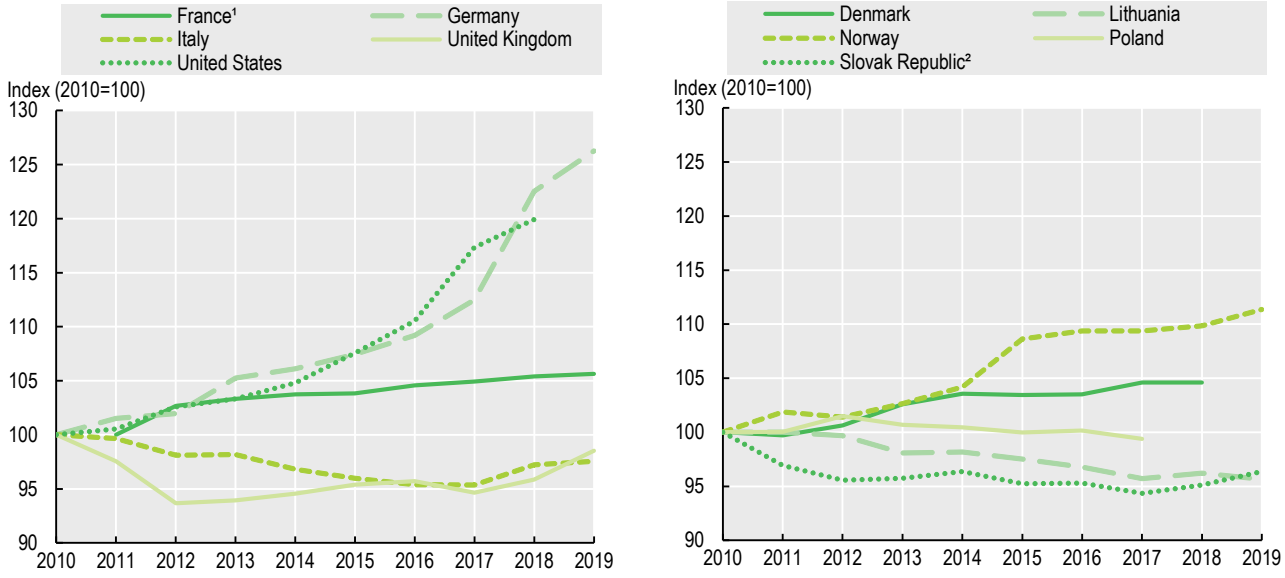
Figure 8.17. **Hospital workforce, 2019 (or nearest year)**



1. Data refer to FTE numbers (rather than head count), resulting in an underestimation. 2. Data cover only health care workers, excluding other staff (administrative, technical and similar), resulting in an underestimation.
Source: OECD Health Statistics 2021.

StatLink https://stat.link/sr4y1w

Figure 8.18. **Growth in number of hospital nurses, selected OECD countries, 2010-19 (or nearest year)**



Note: Data cover nurses and midwives. 1. Index for France, 2011=100. 2. Data for the Slovak Republic refer to FTE numbers.
Source: OECD Health Statistics 2021.

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Medical graduates

The number of new medical graduates is a key indicator to assess the number of new entrants into the medical profession; these will be available to replace doctors who will be retiring and to respond to any current or future expected shortages of doctors. The number of medical graduates in any given year reflects decisions made a few years earlier related to student admissions either through explicit *numerus clausus* policies (the setting of quotas on student admissions) or other decision-making processes, although graduation rates are also affected by student dropout rates.

Overall, the number of medical graduates across OECD countries increased from 93 000 in 2000 to 114 000 in 2010 and to 149 000 in 2019. In 2019, the number of new medical graduates ranged from about seven per 100 000 population in Japan, Israel and Korea to more than 20 in Ireland, Denmark, Latvia and Lithuania (Figure 8.19).

In Ireland, the high number of medical graduates is to a large extent due to the large share of international medical students, who in recent years have made up about half of all students. Many students and graduates from Irish medical schools come from Canada, the United States and the United Kingdom, as well as other non-OECD countries. After obtaining their first medical degree, these international medical students in many cases leave Ireland – either because they prefer to complete their training and practise in their home country or because they have difficulty securing an internship. Paradoxically, this means that Ireland needs to import doctors trained in other countries to address doctor shortages (OECD, 2019[12]).

In other countries, the internationalisation of medical education is also reflected in a growing number of international medical students and graduates. Many medical schools in Poland, the Czech Republic and Hungary have attracted a growing number of international medical students, who in most cases do not plan to remain in the country after graduation. Polish medical schools, for example, offer medical studies in English, and 25% of all medical students are foreigners (OECD, 2019[12]).

In Israel, the low number of domestic medical graduates is compensated by the high number (about 60%) of foreign-trained doctors. A large share of these foreign-trained doctors are in fact Israeli-born people who have returned to Israel after completing their studies abroad because of the limited number of places in Israeli medical schools.

In contrast, Japan does not currently rely on foreign-trained doctors in any significant way (see indicator "International migration of doctors and nurses"). Japan has increased the number of students admitted to medical schools in recent years, which has resulted in some increase in the number of medical graduates.

The number of new medical graduates per population has increased in all OECD countries since 2000 in response to concerns about current or future shortages of doctors, but with varying growth rates. Two-fold increases or more have occurred in several countries such as Portugal, Ireland and the Netherlands, while there has been a 50% increase in Italy, Spain and the United States (Figure 8.20).

In Portugal, the strong increase in the number of medical graduates since 2000 reflects both an increase in the number of places in existing universities and the creation of new medical schools outside Lisbon and Porto. The increase in the *numerus clausus* has been driven by concerns about doctor shortages, which is exacerbated by the uneven distribution of doctors across the country. However, the growing number of medical graduates in Portugal has raised concerns that this might result in bottlenecks, as not all new medical graduates may be able to find postgraduate specialty training places to complete their training immediately.

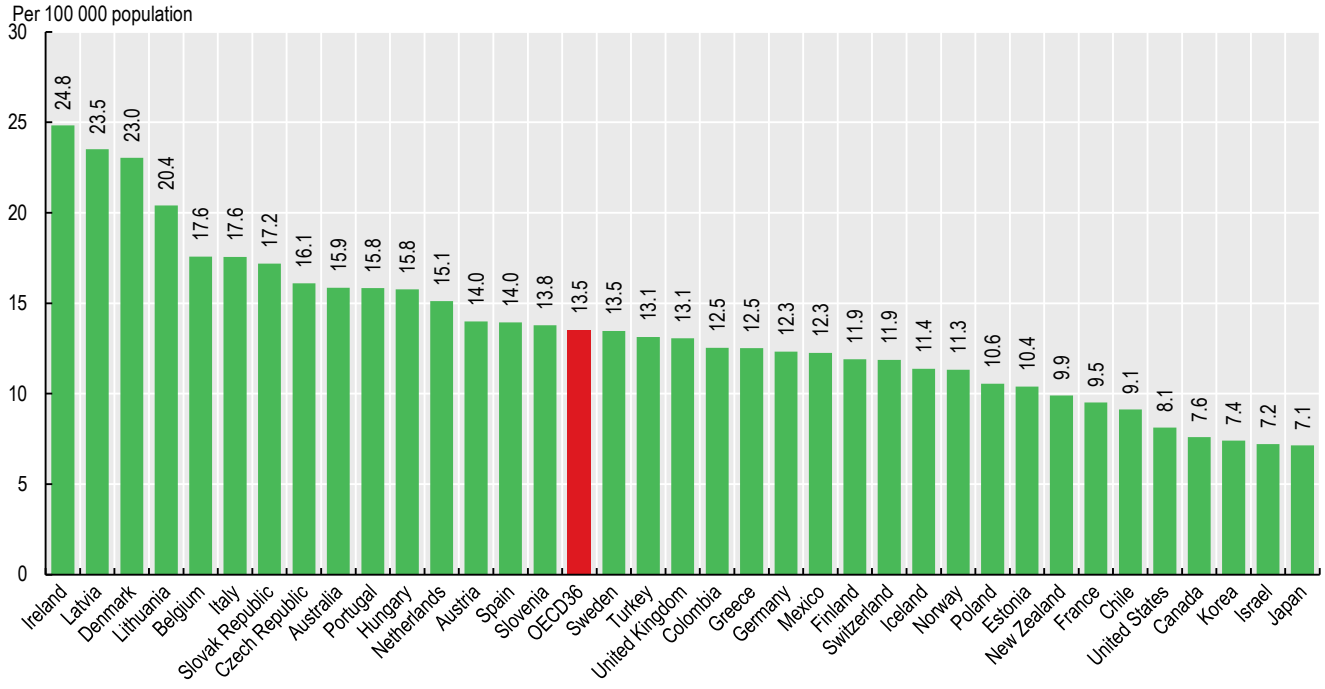
In the Netherlands, the number of students admitted to medical schools increased by 50% between 1999 and 2003 (from about 2 000 to 3 000 per year) in response also to concerns about doctor shortages, and it has remained at this higher level. In addition, a number of university medical centres allow students with a bachelor's degree in certain other fields to enrol into a master's degree in medicine, increasing the pool of students who can obtain a doctorate degree. In 2019, the Advisory Council on Medical Manpower Planning recommended that the intake of medical graduates in postgraduate training programmes should be increased in general medicine, geriatric medicine and occupational medicine, among other specialty areas (ACMMP, 2019[18]).

In Norway, a special commission appointed by the Ministry of Education and Research in 2019 recommended an increase in the number of training slots in medical schools of 69% by 2027 to ensure that 80% of doctors are trained domestically (Grimstad Commission, 2019[19]). As it stands, about 40% of all doctors are foreign-trained, including many Norwegian citizens returning to their home country following education abroad (see indicator "International migration of doctors and nurses"). This resulted in a 13% increase in the number of medical training slots in autumn 2020.

Definition and comparability

Medical graduates are defined as students who have graduated from medical schools in a given year.

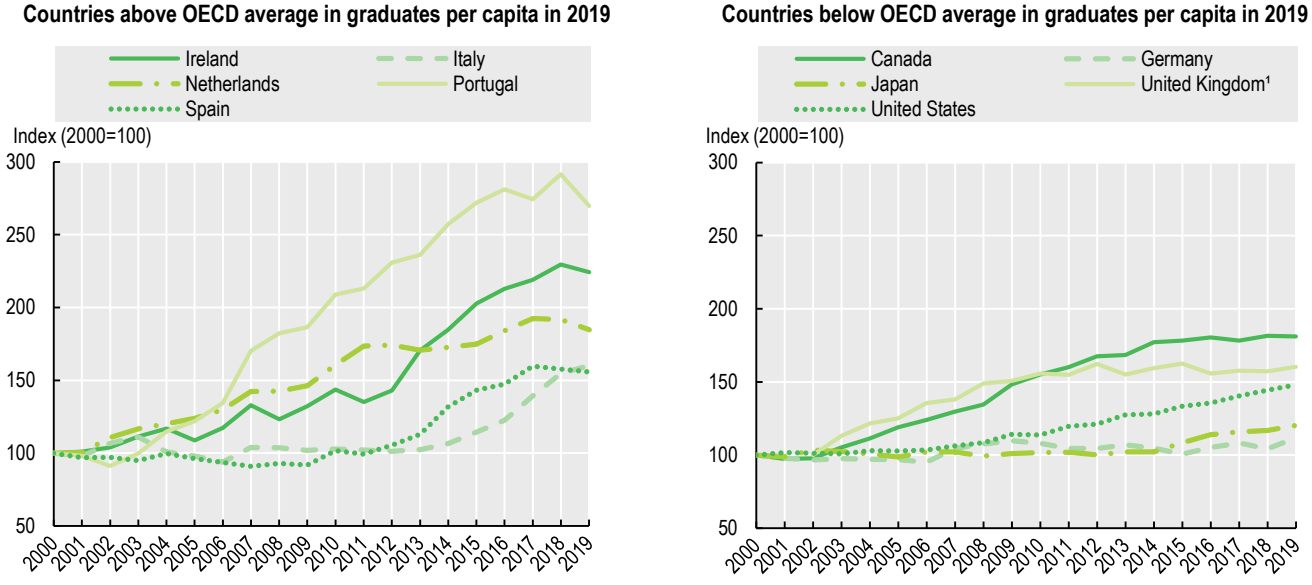
Figure 8.19. **Medical graduates, 2019 (or nearest year)**



Source: OECD Health Statistics 2021.

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Figure 8.20. **Evolution in the number of medical graduates, selected OECD countries, 2000-19**



1. Index for the United Kingdom, 2002=100.
Source: OECD Health Statistics 2021.

StatLink https://stat.link/p8dch4



Nursing graduates

The number of new nursing graduates is a key indicator to assess the number of new entrants to the nursing profession who might be available to replace those nurses who will be retiring and respond to any current or future shortages of nurses. The number of nursing graduates in any given year reflect decisions that were made a few years earlier (about three years) related to student admissions, either through explicit *numerus clausus* policies (the setting of quotas on student admissions) or through other decision-making processes, although graduation rates are also affected by student dropout rates.

Overall, the number of nurse graduates across OECD countries increased from about 350 000 in 2000 to 520 000 in 2010 and 620 000 in 2019. In 2019, the number of new nurse graduates ranged from fewer than 20 per 100 000 population in Colombia, Luxembourg, Mexico, Italy and Turkey to over 100 in Australia, Switzerland and Korea (Figure 8.21). The low number in Colombia, Mexico and Turkey is related to the low number of nurses working in the health system (see indicator "Nurses"). In Luxembourg, the low number of nurse graduates is offset by a large number of students from Luxembourg who get their nursing degree in another country, as well as the capacity of the country to attract nurses from other countries through better pay and working conditions (see indicator "Remuneration of nurses").

In Italy, the number of nurse graduates increased fairly rapidly in the 2000s but has decreased since 2013. There was a sharp drop in the number of applicants to nursing education programmes in the years before the COVID-19 pandemic, signalling reduced interest in the profession.

In many countries, young people still see nursing as an occupation with low professional status and autonomy, and with few career opportunities. The OECD 2018 PISA survey of 15-year-old students in secondary schools shed light on the challenge in many countries of recruiting students to nursing. The survey asked these 15-year-olds what job they expected to have at age 30. On average across OECD countries, around 3% of young people anticipated going into nursing. In Estonia, Italy, Latvia, Lithuania and Turkey, fewer than 1% of respondents were thinking of nursing. Across all countries, considerably more girls expressed interest in nursing than boys. On average across OECD countries, 92% of those young people who anticipated going into nursing were women (Mann and Denis, 2020[20]). This continues to reflect the traditional gender composition of the nursing workforce.

A key strategy to attract more students to nursing is to target a more diversified and less traditional group of nursing students, including men and people from minority groups. However, as noted in a 2019 independent review commissioned by the Australian Government, the capacity to increase the representation of men and other under-represented students in nursing is constrained by the perception that nursing is "women's work", and the perceived status of nursing in the community (Williams et al., 2020[21]).

Despite this challenge, several countries have been able to increase the number of students in nursing, as reflected by rising numbers of new graduates (Figure 8.22). In the United States, the number of nurse graduates doubled between 2000 and 2010 (from around 100 000 in 2000 to 200 000 in 2010), in a context of widespread concern that there would be a huge shortage of nurses, although the number has remained fairly stable since 2010. In Switzerland, the number of new graduates has increased by about 50% since 2010, driven mainly by an increase in the number of graduates from "associate professional nurses" programmes ("intermediate care workers").

In Norway, the number of students admitted to and graduating from nursing education programmes has also increased since 2010: the number of new nursing graduates in 2017 was one-third higher than in 2010. However, as many as one in five recently graduated nurses work outside the health sector. This has led to the implementation of a series of measures in recent years to improve the working conditions of nurses to increase retention rates, including pay raises.

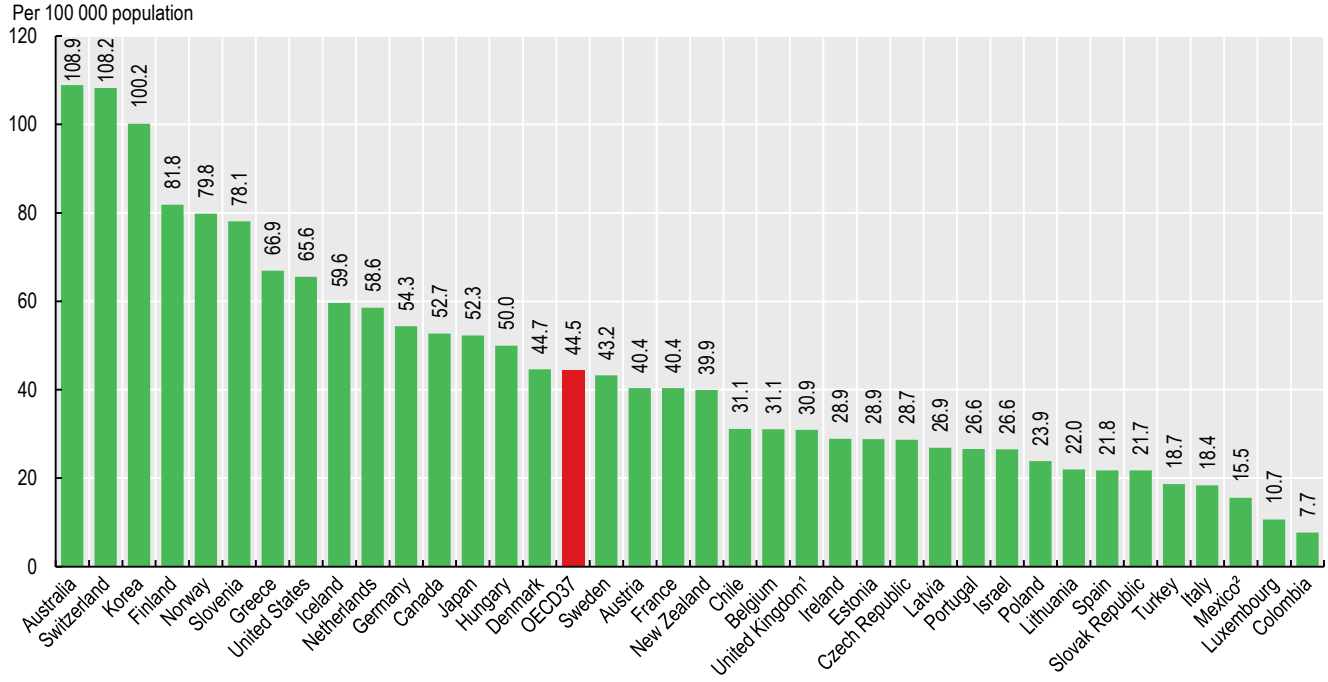
The number of new nurse graduates in Israel has increased by a factor of nearly 2.5 since 2010, but it remains below the OECD average relative to the country's population size.

Definition and comparability

Nursing graduates are students who have obtained a recognised qualification required to become a licensed or registered nurse. They include graduates from both higher-level and lower-level nursing programmes in countries where this distinction exists. They exclude graduates from master's or doctorate degrees in nursing to avoid double-counting nurses acquiring further qualifications.

The data for the United Kingdom are based on the number of new nurses receiving an authorisation to practise.

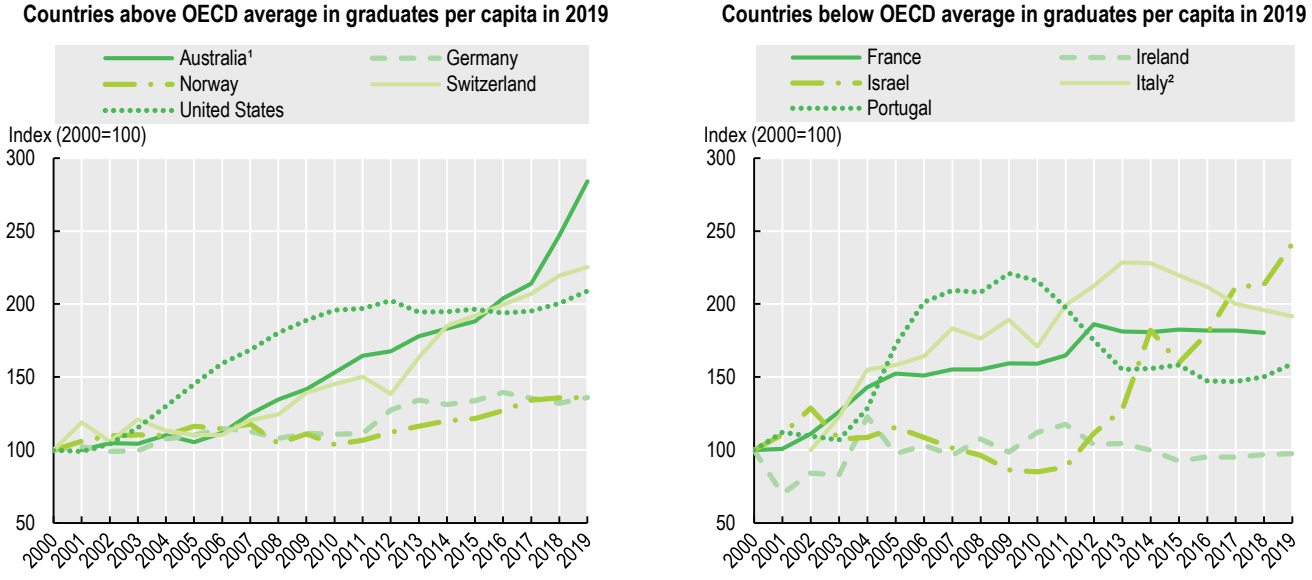
Figure 8.21. **Nursing graduates, 2019 (or nearest year)**



1. In the United Kingdom, the numbers refer to new nurses receiving an authorisation to practise, which may result in an overestimation if these include foreign-trained nurses. 2. In Mexico, the data include professional nursing graduates only.
Source: OECD Health Statistics 2021.

StatLink https://stat.link/ebor9c

Figure 8.22. **Evolution in the number of nursing graduates, selected OECD countries, 2000-19**



1. Index for Australia, 2001=100. 2. Index for Italy, 2002=100.
Source: OECD Health Statistics 2021.

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International migration of doctors and nurses

The number and share of foreign-trained doctors – and in some countries foreign-trained nurses – working in OECD countries has continued to rise over the past decade (OECD, 2019[1]). In 2019, about 18% of doctors on average across OECD countries had obtained at least their first medical degree in another country (Figure 8.23), up from 15% a decade earlier. For nurses, on average 6% had obtained a nursing degree in another country in 2019 (Figure 8.24). These developments occurred in parallel with a significant increase in the numbers of domestically trained medical and nursing graduates in nearly all OECD countries (see indicators "Medical graduates" and "Nursing graduates"), which indicates substantial demand for doctors and nurses.

In 2019, the share of foreign-trained doctors ranged from 2% or less in Turkey, Lithuania, Italy and Poland to around 40% in Norway, Ireland and New Zealand, and nearly 60% in Israel. In most OECD countries, the share of foreign-trained nurses is below 5%, but New Zealand and Switzerland have proportions around 25%, and Australia and the United Kingdom around 15-20%. However, in some cases, foreign-trained doctors and nurses consist of people born in the country who studied abroad but have returned. In a number of countries (including Israel, Norway, Sweden and the United States), this share is large and growing, particularly for foreign-trained doctors. In 2019 in Israel, for example, nearly 50% of foreign-trained doctors and nurses were native.

The share of foreign-trained doctors in various OECD countries evolved between 2005 and 2019 (Figure 8.25). The share remained relatively stable in the United Kingdom, at about 30%, and in the United States, at about 25%, with the number of foreign-trained and domestically trained doctors increasing at a similar rate. However, a growing number of foreign-trained doctors in the United States are American citizens who obtained their first medical degree abroad: in 2017, one-third of international medical graduates who obtained their certification to practise in the United States were American citizens, up from 17% in 2007 (OECD, 2019[12]).

In Europe, the share of foreign-trained doctors increased rapidly in Norway and Sweden. However, in Norway more than half of foreign-trained doctors are native, returning after studying abroad. In Sweden, the number of foreign-trained but native doctors has quadrupled since 2006, accounting for nearly one-fifth of foreign-trained doctors in 2018.

In France and Germany, the number and share of foreign-trained doctors has also increased steadily over the past decade (with the share more than doubling from 5-6% of all doctors in 2005 to 12-13% in 2019).

The share of foreign-trained nurses has increased substantially since 2005 in Switzerland, New Zealand, Australia and the United Kingdom, although the share seems to have stabilised in recent years in Australia and Switzerland (Figure 8.26). In Switzerland, the increase has been driven mainly by the growing number of nurses trained in France and Germany, and to a lesser extent in Italy.

The Philippines has been the leading country of origin of foreign-trained nurses in many OECD countries, including New Zealand, the United Kingdom, the United States and Canada. For many years, the Philippines has had a deliberate policy of training nurses to work in other countries. India has also been an important country of origin of foreign-trained nurses in many English-speaking OECD countries.

In Italy, the number of foreign-trained nurses increased sharply between 2007 and 2012, driven mainly by the arrival of nurses trained in Romania following its accession to the EU in 2007, but the number and share have started to decrease in recent years.

Definition and comparability

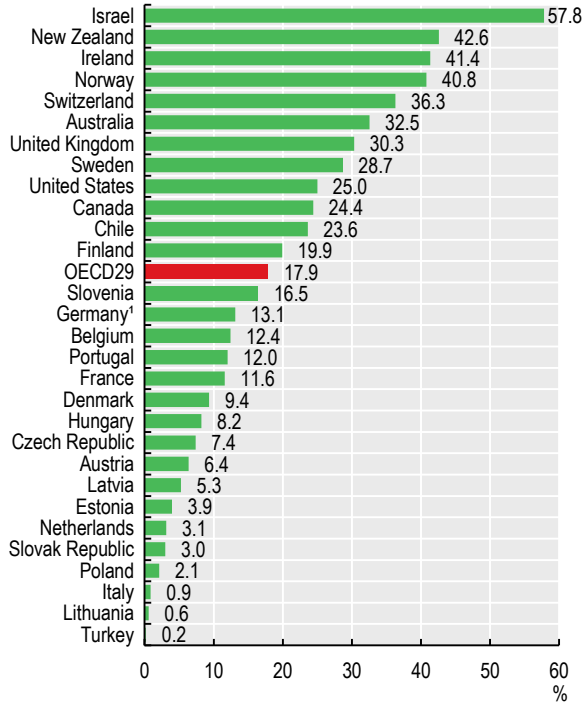
The data relate to foreign-trained doctors and nurses working in OECD countries defined as the place where they obtained their first medical or nursing degree. The data presented relate to the total stocks. The OECD health database also includes data on annual inflows, as well as by country of origin. The data sources in most countries are professional registries or other administrative sources.

The main comparability limitation relates to differences in the activity status of doctors and nurses. Some registries are updated regularly, making it possible to distinguish doctors and nurses who are still actively working in health systems, while other sources include all doctors and nurses licensed to practise, regardless of whether they are still active.

The data source in some countries includes interns and residents, while these physicians in training are not included in other countries. Because foreign-trained doctors are often over-represented in the categories of interns and residents, this may result in an underestimation of the share of foreign-trained doctors in countries where they are not included (such as Austria and France).

The data for Germany are based on nationality, not on the place of training.

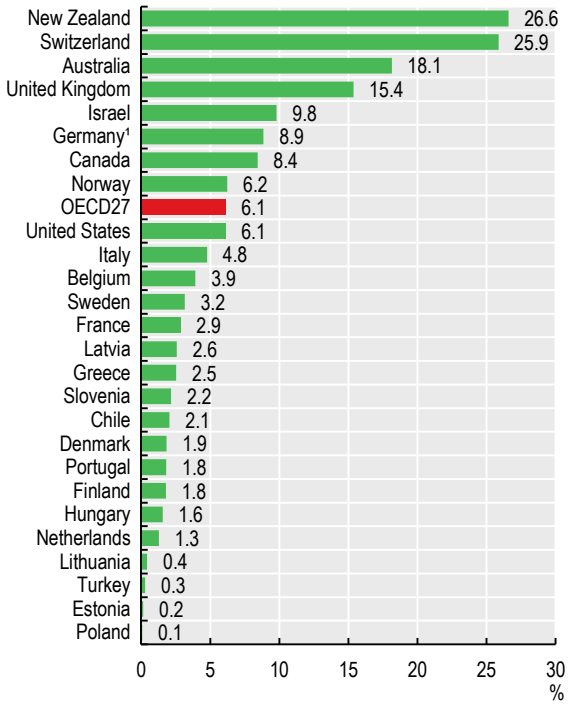
Figure 8.23. **Share of foreign-trained doctors, 2019 (or nearest year)**



1. In Germany, data based on nationality (not on place of training).
Source: OECD Health Statistics 2021.

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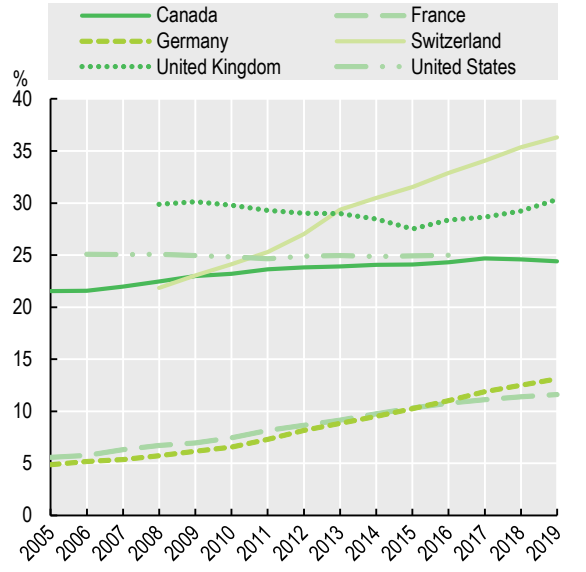
Figure 8.24. **Share of foreign-trained nurses, 2019 (or nearest year)**



1. In Germany, data based on nationality (not on place of training).
Source: OECD Health Statistics 2021.

StatLink https://stat.link/bxymws

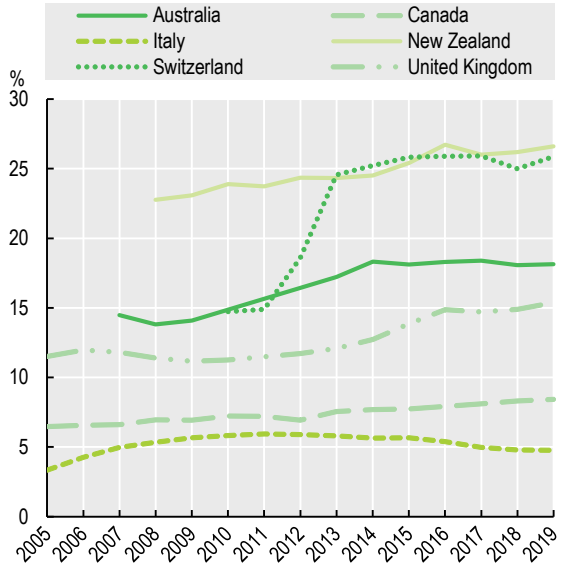
Figure 8.25. **Evolution in the share of foreign-trained doctors, selected OECD countries, 2005-19**



Source: OECD Health Statistics 2021.

StatLink https://stat.link/6fzwub

Figure 8.26. **Evolution in the share of foreign-trained nurses, selected OECD countries, 2005-19**



Source: OECD Health Statistics 2021.

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9. PHARMACEUTICAL SECTOR

Pharmaceutical expenditure

Pharmacists and pharmacies

Pharmaceutical consumption

Generics and biosimilars

Pharmaceutical research and development

Pharmaceutical expenditure

In 2019, spending on retail pharmaceuticals (that is, excluding those used during hospital treatment) accounted for one-sixth of overall health care expenditure in OECD countries. It represented the third largest component of health spending after inpatient and outpatient care.

Across OECD countries, governments and compulsory insurance schemes accounted for the largest share of retail pharmaceutical costs, covering 56% of total spending (Figure 9.1). In countries such as Germany and France, this share was even higher, with more than 80% of total costs covered by these schemes. In contrast, voluntary health insurance schemes covered a relatively small proportion, averaging only around 3%. Among the exceptions were Slovenia and Canada, where almost one-third of pharmaceutical spending was covered by private insurance. The other significant source of financing was household out-of-pocket payments (including cost-sharing for reimbursed drugs). This amounted to an average of 41% of total pharmaceutical spending, albeit with much higher levels in countries such as Poland and Latvia, where out-of-pocket spending accounted for almost two-thirds of the total.

A variety of factors influence the level of per capita spending on retail pharmaceuticals, including distribution, prescribing and dispensing; pricing and procurement policies; and patterns of uptake of novel and generic medicines. In 2019, per capita retail pharmaceutical expenditure in OECD countries averaged USD 571 (adjusted for differences in purchasing power) (Figure 9.2). Spending in the United States was more than double the OECD average, while the majority of OECD countries fell within a relatively narrow spending band of ±15% from the average. Per capita spending was lowest in Mexico and Costa Rica, at less than half the OECD average.

Pharmaceutical expenditure has two main components: prescription medicines and over-the-counter (OTC) products (see the "Definition and comparability" box). Across OECD countries in 2019, prescription medicines accounted for 79% of pharmaceutical spending, with the remaining 21% directed to OTC products. The split is influenced by country-specific differences in the coverage of prescription medicines, as well as the prices and availability of different medicines. Poland was the only OECD member country where spending on OTC products exceeded that of prescription medicines. In the United Kingdom and Australia, OTC spending accounted for a third of total pharmaceutical expenditure, while in Canada and France spending on prescription medicines accounted for 90% of the total.

Retail pharmaceutical spending across OECD countries has tended to increase again in recent years (see indicator "Health expenditure by type of service" in Chapter 7), following some volatility over the past decade. The decrease from 2009 to 2013 was due to a mix of cost-control measures: excluding products from reimbursement; cutting manufacturer prices and margins for pharmacists and wholesalers; and introducing or increasing user charges for retail prescription medicines (Belloni, Morgan and Paris, 2016[1]). Provisional data for 2020 for a small number of countries suggest significant growth in spending on prescription medicines relative to 2019; this may be due to forward purchasing of medicines for chronic diseases, especially early in the COVID-19 pandemic.

Analysing retail pharmaceutical spending only gives a partial picture of the cost of pharmaceuticals in the health system. Spending on medicines in the hospital sector can be significant – typically accounting for 20% on top of retail spending. Over the last decade, hospital pharmaceutical spending has grown substantially, partly due to the advent of new high-cost treatments, particularly in oncology and immunology. As shown in Figure 9.3, spending on pharmaceuticals in hospitals increased more rapidly than that on retail medicines, with the highest growth rates in Iceland and Spain. Retail spending on pharmaceuticals declined in countries such as Greece and Portugal. In Greece, this substantial reduction was probably due to the introduction of policies to reduce wasteful use of medicines in the wake of the 2008 financial crisis.

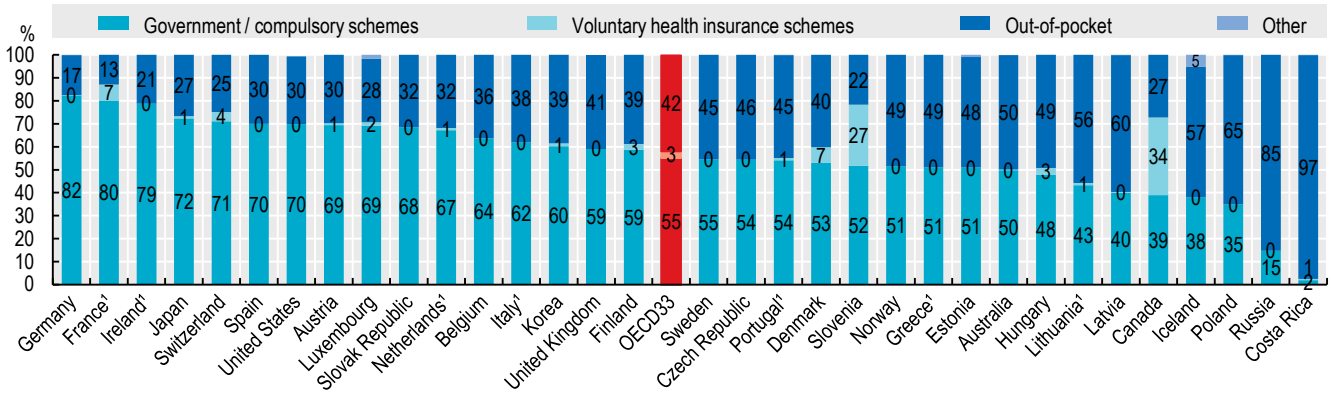
Definition and comparability

Pharmaceutical expenditure covers spending on prescription medicines and self-medication (often referred to as OTC products). Some countries cannot report a breakdown, and their data may include medical non-durables (such as first aid kits and hypodermic syringes); this typically leads to an overestimation by 5-10%. Retail pharmaceuticals are those provided outside hospital care, dispensed by a retail pharmacy or bought from a supermarket, and the prices should include wholesale and retail margins and value added tax. Comparability issues exist regarding the administration and dispensing of pharmaceuticals for hospital outpatients. In some countries, the costs are included under curative care; in others, under pharmaceuticals.

Hospital pharmaceuticals include drugs administered or dispensed during an episode of hospital care. The costs of pharmaceuticals consumed in hospitals and other health care settings are reported as part of the costs of inpatient or day-case treatment. Separate estimates of expenditure on hospital pharmaceuticals should include pharmacist remuneration where this is separate from the cost of medicines.

According to SHA guidelines, total pharmaceutical spending refers to "net" spending: it is adjusted for rebates paid by manufacturers, wholesalers or pharmacies.

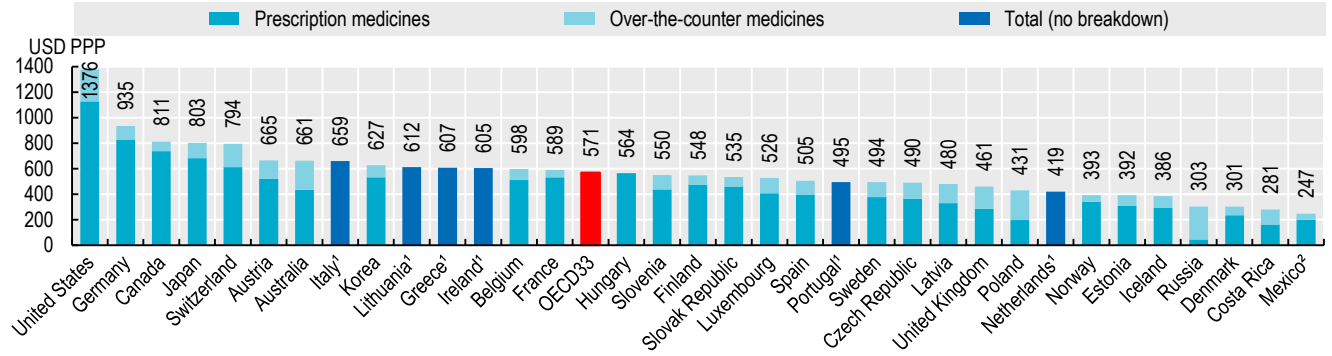
Figure 9.1. **Expenditure on retail pharmaceuticals by type of financing, 2019 (or nearest year)**



1. Includes medical non-durables.
Source: OECD Health Statistics 2021.

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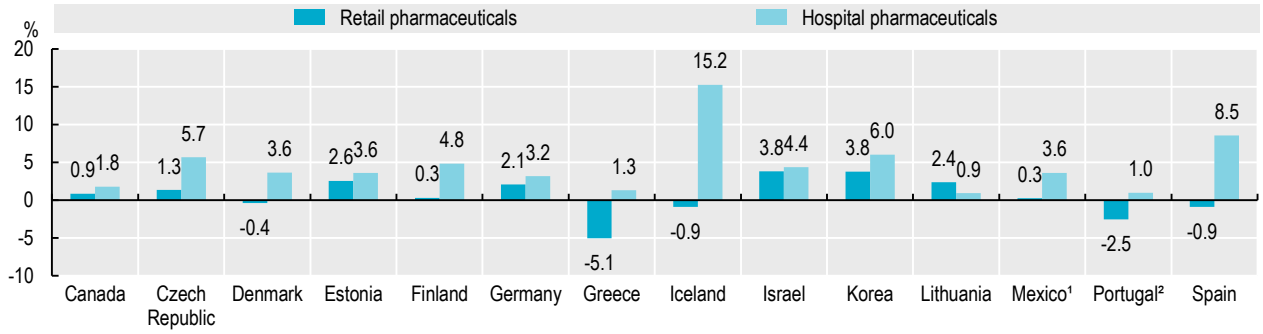
Figure 9.2. **Expenditure on retail pharmaceuticals per capita, 2019 (or nearest year)**



1. Includes medical non-durables (resulting in an overestimation of around 5-10%). 2. Only includes private expenditure.
Source: OECD Health Statistics 2021.

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Figure 9.3. **Annual average growth in retail and hospital pharmaceutical expenditure, in real terms, 2010-19 (or nearest years)**



1. Only includes private expenditure. 2. Excludes expenditure on other medical products from retail spending.
Source: OECD Health Statistics 2021.

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Pharmacists and pharmacies

Pharmacists are highly trained health care professionals whose key role is managing the distribution of medicines to consumers/patients and supporting their safe and efficacious use. Between 2000 and 2019, the number of pharmacists per capita increased in all OECD countries for which time series are available by almost 40% on average, to 86 pharmacists per 100 000 inhabitants (Figure 9.4). However, the density of pharmacists varied widely across OECD countries, ranging from a low of 21 per 100 000 in the Netherlands to 190 in Japan.

The largest increases in pharmacist density between 2000 and 2019 were observed in Japan, Portugal, Spain and Norway. In Japan, the increase is largely attributable to government efforts to separate drug prescribing by doctors from drug dispensing by pharmacists more clearly (the Bungyo system).

Across OECD countries, most pharmacists work in community retail pharmacies, but many also work in hospitals and industry, as well as in research and academic settings. In Canada, for example, in 2019 more than 75% of practising pharmacists worked in community pharmacies, while almost 20% worked in hospitals and other health care facilities (CIHI, 2020[2]). In Japan, around 58% of pharmacists worked in community pharmacies in 2018, while around 19% worked in hospitals or clinics, and the remaining 23% in other settings (Ministry of Health, Labour and Welfare, 2018[3]).

In 2019, the number of community pharmacies per 100 000 people ranged from 9 in Denmark to 88 in Greece, with an average of 28 across OECD countries (Figure 9.5). This variation can be explained in part by differences in common distribution channels. Some countries rely more on hospital pharmacies to dispense medicines to outpatients; others continue to allow doctors to dispense medicines to their patients (such as the Netherlands). Denmark has fewer community pharmacies, but these are often large, and include branch pharmacies and subsidiary pharmacy units attached to a principal pharmacy. In Australia, with an average of around 23 community pharmacies per 100 000 people, the minimum distance between pharmacies is regulated.

The range of products and services provided by pharmacies also varies between countries. In most European countries, for example, pharmacies also sell cosmetics, food supplements, medical devices and homeopathic products.

The role of the community pharmacist has changed in recent years. In addition to dispensing medications, pharmacists are increasingly providing direct care to patients (such as vaccinations, medicine adherence and chronic disease management support, and home medication review), both in community pharmacies and as part of integrated health care provider teams. In countries such as Belgium, Finland, Italy, Switzerland and the United Kingdom, pharmacists also play an enhanced role in health promotion and disease prevention, including in rural areas (OECD, 2020[4]).

In many OECD countries, the scope of practice of community pharmacists has been further expanded in response to COVID-19. Pharmacists remain a key first point of contact for the health care system, and pharmacies were among the health care services that remained open to the public during lockdowns. To guarantee continuity of care and access to medicines, in Austria, Canada, France, Ireland, Italy, Portugal, and in some states of the United States, pharmacists have been given greater scope including extending prescriptions, enabling electronic prescription transfer and, in some cases, prescribing medicines for certain chronic conditions.

In several countries, pharmacists are playing an expanding role in administering vaccinations, including for seasonal influenza (as in Australia, Canada, Ireland, Italy, New Zealand, Norway and Portugal), COVID-19 (as in Australia, Canada, France, Ireland, Italy, Norway, Poland, Portugal and the United Kingdom) and selected routine childhood vaccinations (as in Australia, the United States and the United Kingdom). In addition, COVID-19 testing capacity was augmented in some countries with provision of self-sampling kits or direct testing by pharmacies (PGEU, 2021[5]; OECD, 2021[6]).

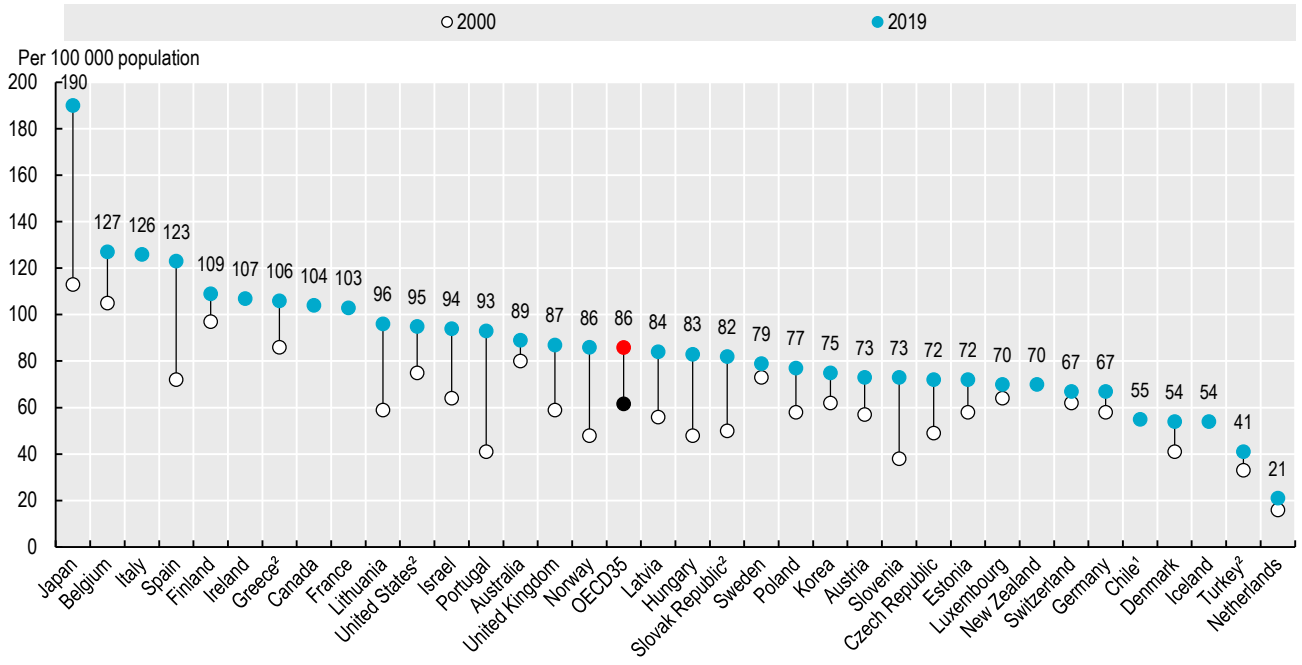
Definition and comparability

Practising pharmacists are defined as pharmacists who are licensed to practise and provide direct services to clients/patients. They can be either salaried or self-employed, and work in community pharmacies, hospitals or other settings. Assistant pharmacists and other employees of pharmacies are normally excluded.

In Ireland, the figures include all pharmacists registered with the Pharmaceutical Society of Ireland, possibly including some pharmacists who are not working actively. Assistant pharmacists are included in France and Latvia.

Community pharmacies are premises which, in accordance with local regulation and definitions, may operate as a facility for the provision of pharmacy services in community settings. The number of community pharmacies reported is the number of premises where medicines are dispensed under the supervision of a pharmacist.

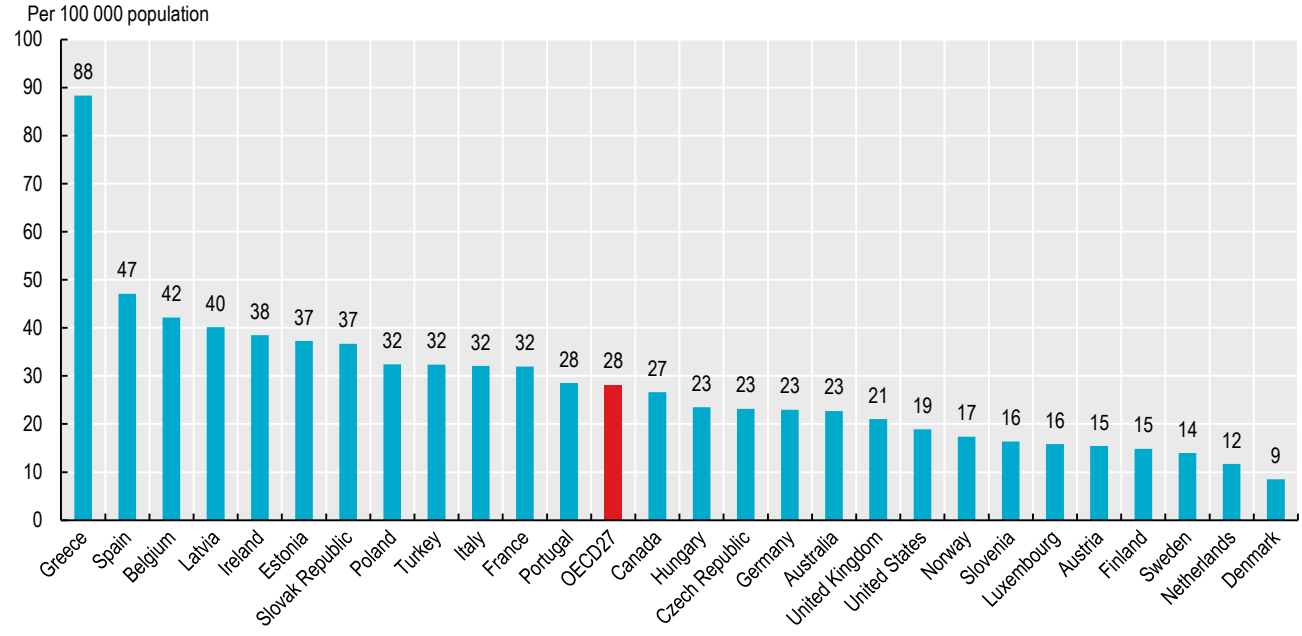
Figure 9.4. **Practising pharmacists, 2000 and 2019 (or nearest years)**



1. Data refer to all pharmacists licensed to practise. 2. Data include not only pharmacists providing direct services to patients but also those working in the health sector as researchers, for pharmaceutical companies, etc.
Source: OECD Health Statistics 2021.

StatLink https://stat.link/91ejvg

Figure 9.5. **Community pharmacies, 2019 (or nearest year)**



Source: Pharmaceutical Group of the European Union database or national sources for non-European countries, 2019 or nearest year.

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Pharmaceutical consumption

Pharmaceutical consumption has been increasing for decades, driven by a growing need for drugs to treat age-related and chronic diseases, and by changes in clinical practice. This section examines consumption of four categories of medicines used in select chronic conditions: anti-hypertensives, lipid-modifying agents (such as cholesterol-lowering medicines), anti-diabetic agents and anti-depressants (Figure 9.6). These medicines address illnesses for which the prevalence has increased markedly across OECD countries in recent decades.

Consumption of anti-hypertensive drugs in OECD countries increased by 65% on average between 2000 and 2019, nearly quadrupling in Costa Rica and Estonia. It remained highest in Germany and Hungary, which reported consumption levels almost five times those seen in Korea. These variations probably reflect both differences in the prevalence of hypertension and variations in clinical practice.

Even greater growth was seen in the use of lipid-modifying agents, with consumption in OECD countries increasing by a factor of nearly four between 2000 and 2019. The United Kingdom, Denmark, Norway and Belgium reported the highest levels of consumption per capita in 2019, with about a six-fold variation in consumption levels across OECD countries.

The use of anti-diabetic medications also grew dramatically, doubling over the same period. This growth can be explained in part by the rising prevalence of diabetes, which is largely linked to the increasing prevalence of obesity (see indicator "Overweight and obesity" in Chapter 4), a major risk factor for development of type 2 diabetes. In 2019, consumption of anti-diabetic drugs was highest in Finland and lowest in Austria, Chile and Latvia, with a two-fold variation.

Consumption of anti-depressant medicines more than doubled in OECD countries between 2000 and 2019. This may reflect improved recognition of depression, availability of therapies, evolving clinical guidelines or changes in patient and provider attitudes (Mars et al., 2017[7]). However, there was significant variation between countries, with Iceland reporting the highest level of consumption in 2019 at a rate eight times that of Latvia.

Preliminary analysis of 2020 data from a subset of OECD countries showed that pharmaceutical consumption in the above categories had either remained stable or even increased relative to 2019, suggesting that access to medicines for chronic diseases appears to have been maintained during the pandemic. This may in part reflect the implementation of measures by pharmacists to support continuity of access to treatments for patients with chronic conditions (see, for example, indicator "Pharmacists and pharmacies"). Another possible reason may be the increased use of online health care services (see indicator "Digital health" in Chapter 5), including online or phone prescriptions. In mid-2020, for example, around 47% of adults in 22 OECD EU countries had received a prescription online or by phone since the beginning of the pandemic, a proportion that increased by 12% in early 2021, according to the Eurofound survey (Eurofound, 2021[8]). Countries with greater growth in online and phone prescriptions between mid-2020 and early-2021, such as Greece and Portugal, also reported increases in pharmaceutical consumption from 2019 to 2020.

Definition and comparability

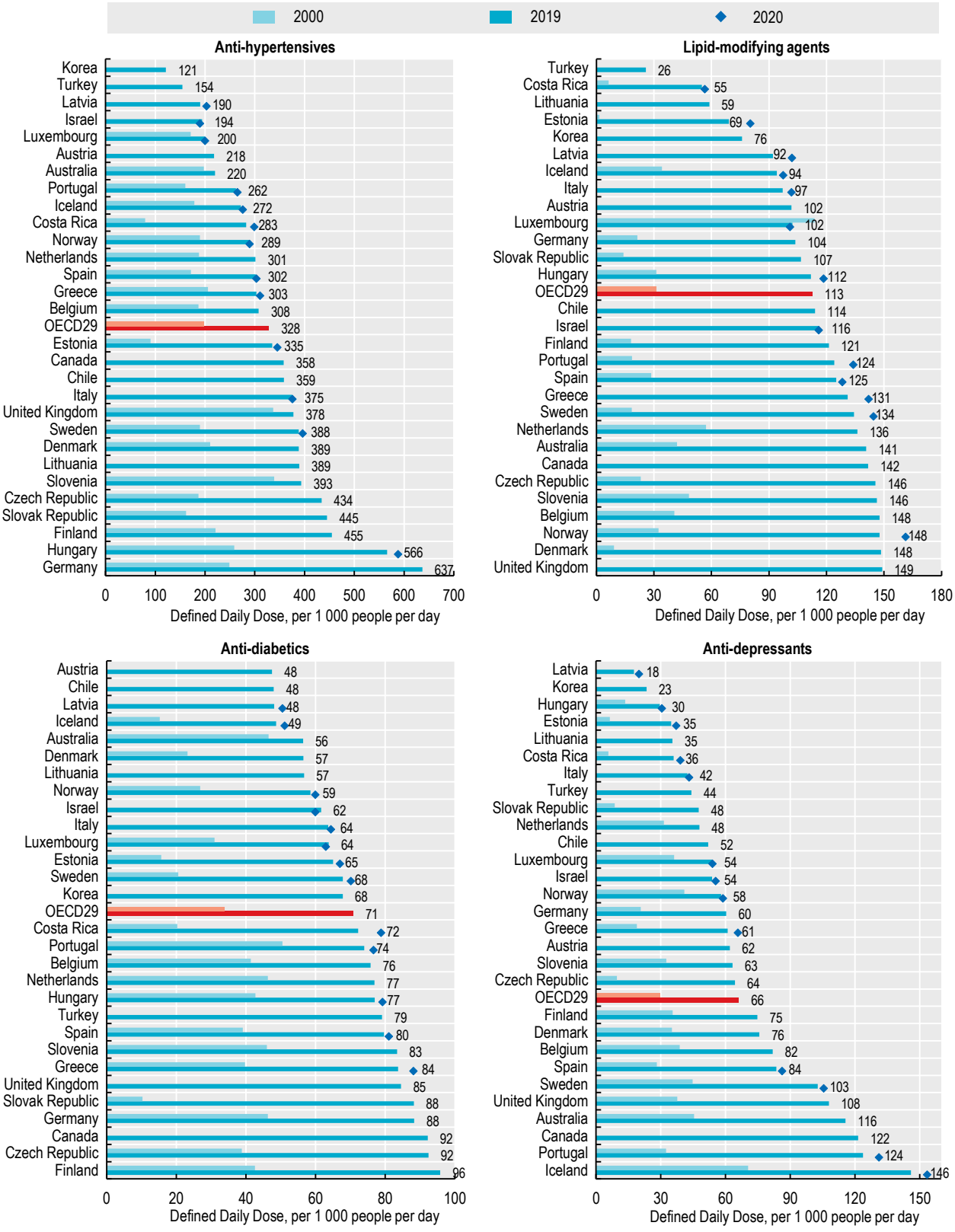
The Defined Daily Dose (DDD) is the assumed average maintenance dose per day for a drug used for its main indication in adults. DDDs are assigned to each active ingredient in a given therapeutic class by international expert consensus. For example, the DDD for oral aspirin is 3 grammes, which is the assumed maintenance daily dose to treat pain in adults. DDDs do not necessarily reflect the average daily dose actually used in a given country. They can be aggregated within and across therapeutic classes of the Anatomical Therapeutic Chemical (ATC) classification of the World Health Organization (WHO). For more detail, see *https://www.whocc.no/*.

The volume of anti-hypertensive drugs' consumption presented in Figure 9.6 refers to the sum of five ATC 2nd level categories, which may all be prescribed for hypertension (C02 – anti-hypertensives, C03 – diuretics, C07 – beta blocking agents, C08 – calcium channel blockers and C09 – agents acting on the renin-angiotensin system). ATC codes for other medicine classes are C10 – lipid-modifying agents, A10 – drugs used in diabetes (i.e. anti-diabetic medicines, including insulins and analogues) and N06A – anti-depressants.

Data refer to outpatient consumption only, except for Chile, Costa Rica, the Czech Republic, Denmark, Estonia, Finland, France, Iceland (before 2011), Italy, Korea, Lithuania, Norway, the Slovak Republic, Spain (since 2018) and Sweden, where data also include hospital consumption. For Canada, only data from provinces for which population level data were available were included (British Columbia, Manitoba and Saskatchewan). The data for Spain refer to inpatient and outpatient consumption for prescribed drugs covered by the national health system (public insurance), while the data for Luxembourg only refer to outpatient consumption. The data for Luxembourg are underestimated due to incomplete consideration of products with multiple active ingredients.

An additional data point for 2020 was available in some OECD countries, as indicated in Figure 9.6. Data labels correspond to 2019 data.

Figure 9.6. **Consumption of medicines for selected chronic conditions, 2000, 2019 and 2020 (or nearest years)**



Note: See box on "Definition and comparability" for a break-down of medicines by ATC codes. Data labels correspond to 2019 data.
Source: OECD Health Statistics 2021.

StatLink https://stat.link/7l01wm

Generics and biosimilars

All OECD countries view generic and biosimilar markets as an opportunity to increase efficiency in pharmaceutical spending, but many do not fully exploit their potential. In 2019, generics accounted for more than three-quarters of the volume of pharmaceuticals sold in Canada, Chile, Germany, the Netherlands, New Zealand and the United Kingdom, but less than one-quarter in Luxembourg and Switzerland (Figure 9.7). By value, generics accounted for more than two-thirds of the pharmaceuticals sold in Chile in 2019, but on average less than one-quarter in OECD countries. Differences in market structures (notably the number of off-patent medicines) and prescribing practices explain some cross-country differences, but generic uptake also depends on policies (OECD, 2018[9]; Socha-Dietrich, James and Couffinhal, 2017[10]). In Austria, for example, generic substitution by pharmacists is not permitted. In Luxembourg, generic substitution by pharmacists is limited to selected medicines.

Many countries have implemented incentives for physicians, pharmacists and patients to boost generic markets. Over the last decade, France and Hungary, for example, have introduced incentives for general practitioners to prescribe generics through pay-for-performance schemes. In Switzerland, pharmacists receive a fee for generic substitution; in France, pharmacies receive bonuses if their substitution rates are high. In many countries, third-party payers fund a fixed reimbursement amount for a given medicine, allowing the patient a choice of the originator or a generic, but with responsibility for any difference in price (Socha-Dietrich, James and Couffinhal, 2017[10]).

Biologicals are a class of medicines manufactured in, or sourced from, living systems such as microorganisms, or plant or animal cells. Most biologicals are very large, complex molecules or mixtures of molecules. Many are produced using recombinant DNA technology. When such medicines no longer have market exclusivity, “biosimilars” – follow-on versions of these products – can be approved. The market entry of biosimilars creates price competition, thereby improving affordability.

In 2019, biosimilars accounted for more than 80% of the volume of the “accessible market” (see the “Definition and comparability” box) for erythropoietins (used to treat anaemia) in Finland, Greece, Italy and Poland (Figure 9.8). In most European countries, the list prices of erythropoietins fell by between 30% and 80% following biosimilar market entry. The impact of biosimilar competition has led to both originator and biosimilar manufacturers of erythropoietins lowering their prices.

For tumour necrosis factor (TNF) inhibitors also known as anti-TNF alfas (used to treat a range of autoimmune and immune-mediated disorders), biosimilars had over 80% of the accessible market in Denmark, but less than 10% in Greece and Hungary in 2019 (Figure 9.8). Price reductions since biosimilar entry have been more modest than for erythropoietins, and prices have even appeared to increase in some countries. However, for both drug classes, actual price reductions are greater than those appearing in the figures shown here: these data are based on list prices, and do not take into account any confidential discounts or rebates, which can be substantial.

Definition and comparability

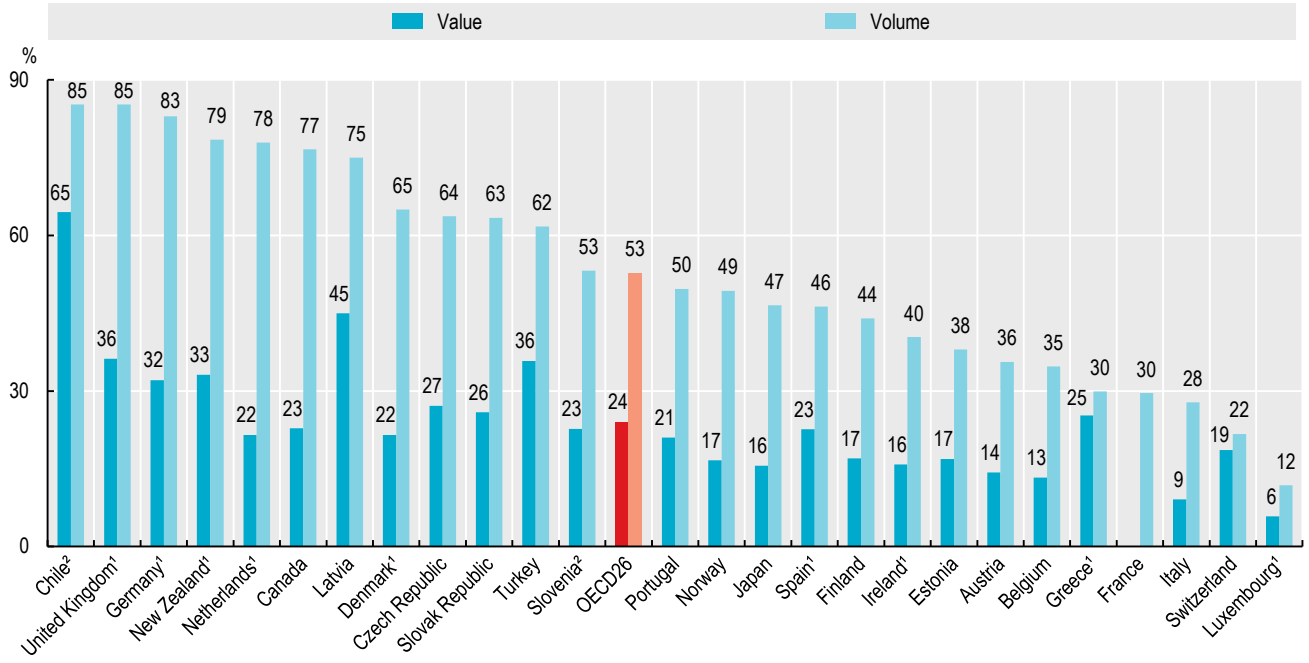
A generic medicine is defined as a pharmaceutical product which has the same qualitative and quantitative composition in active substances and the same pharmaceutical form as the reference product, and whose bioequivalence with the reference product has been demonstrated. Generics may be either branded (generics with a specific trade name) or unbranded (identified using the international non-proprietary name and the name of the company).

Countries were requested to provide data for the whole of their respective markets. However, many countries provided data covering only the community pharmaceutical market or the reimbursed pharmaceutical market (see figure notes). The share of generic market expressed in value can be the turnover of pharmaceutical companies, the amount paid for pharmaceuticals by third-party payers or the amount paid by all payers (third-party and consumers). The share of the generic market by volume can be expressed in DDDs or as a number of packages/boxes or standard units.

A biosimilar medicinal product (a biosimilar) is a product granted regulatory approval by demonstrating sufficient similarity to the reference medicinal product (biological) in terms of quality characteristics, biological activity, safety and efficacy.

Biosimilar market shares and changes in prices are measured with respect to the “accessible market”, which is the market comprising originator products that no longer have market exclusivity, and their biosimilars. The accessible market for biosimilars is highly dynamic due to the progressive loss of exclusivity of biological medicines over time. Market share is computed as the number of biosimilar treatment days as a proportion of the accessible market treatment days. Price changes are measured as the differences between prices per treatment day in 2019 and in the year before entry of the first biosimilar. The tumour necrosis factor inhibitor accessible market includes adalimumab, infliximab and etanercept. The erythropoeitin accessible market includes darbepoetin alfa, and epoetin alfa, beta, delta, theta and zeta.

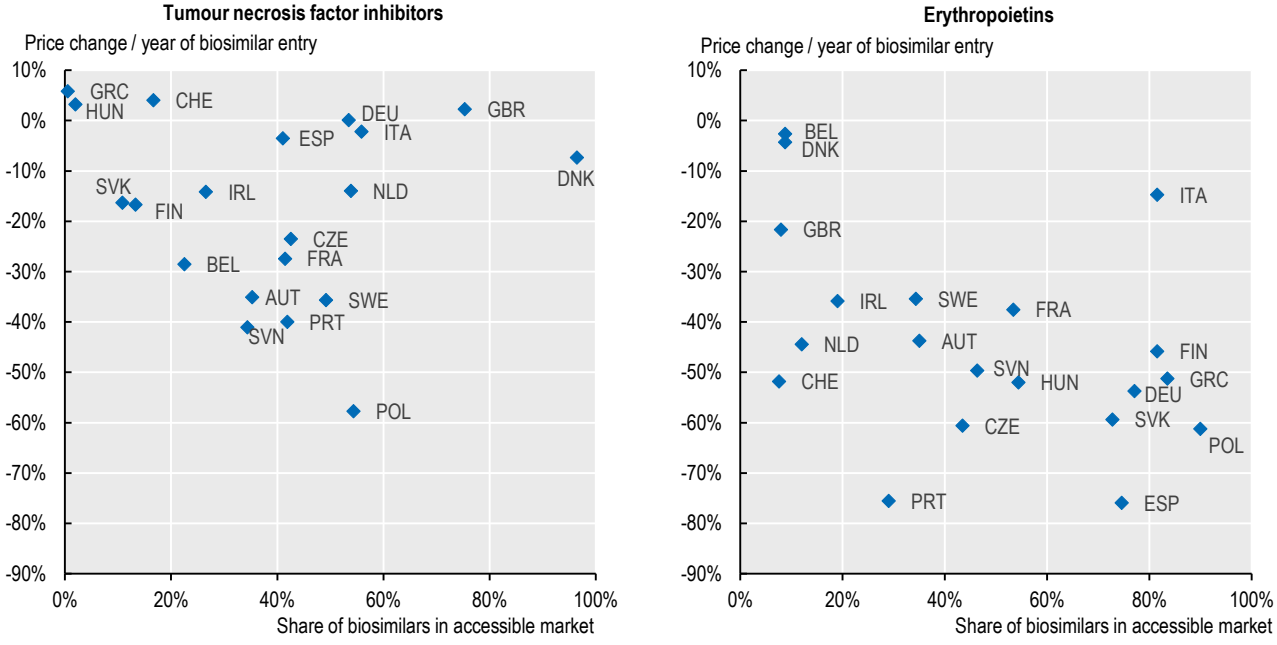
Figure 9.7. **Share of generics in the total pharmaceutical market, 2019 (or nearest year)**



1. Reimbursed pharmaceutical market, i.e. the sub-market in which a third party payer reimburses medicines. 2. Community pharmacy market.
Source: OECD Health Statistics 2021.

StatLink https://stat.link/uyjgok

Figure 9.8. **Biosimilar market share in treatment days for tumour necrosis factor inhibitors and erythropoietins vs. accessible market, 2019 (or nearest year)**



Source: IQVIA MIDAS® MAT December 2019. Data for Greece reflect only retail panel data.

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Pharmaceutical research and development

Pharmaceutical research and development (R&D) is funded via a mix of private and public sources. Before COVID-19, governments mainly supported basic and early-stage research through budget allocations, research grants and public ownership of research and higher education institutions. The pharmaceutical industry funds R&D across all phases, but makes the largest contribution to translating and applying knowledge to develop products, and funds most pre-registration clinical trials – albeit often supported by R&D subsidies or tax credits. In 2018, governments in 33 OECD countries for which data are available collectively budgeted about USD 67 billion for health-related R&D. While this figure goes beyond pharmaceuticals, it understates total government support, as it excludes most tax incentives and funding for higher education and publicly owned enterprises. In the same year, the pharmaceutical industry spent around USD 114 billion on R&D across the same countries.

While most pharmaceutical R&D expenditure occurs in OECD countries, the non-OECD share is increasing (EFPIA, 2020[11]). In 2018, the industry spent over USD 14 billion on R&D in the People's Republic of China (0.06% of GDP) – more than in any OECD country except the United States (OECD, 2021[12]). Nearly two-thirds of spending in OECD countries occurred in the United States (Figure 9.9), where the industry spent about USD 75 billion (0.36% of GDP), while government budgets for health-related R&D were USD 44 billion (0.21% of GDP). Most of the remainder was spent in Europe and Japan, with industry spending as a share of GDP highest in Switzerland (0.8%), Belgium (0.5%) and Slovenia (0.4%) – smaller countries with relatively large pharmaceutical sectors.

While no official data are yet available, this pattern clearly changed in response to COVID-19. Governments mobilised tens of billions of dollars to fund entire R&D processes, including late-stage clinical trials – particularly for vaccines, but also for treatments. Governments also made large advance purchase commitments for COVID-19 vaccines before clinical trial data were available, effectively shifting much of the financial risks of R&D from firms to taxpayers. For example, by July 2021, the WHO Access to COVID-19 Tools Accelerator had raised USD 12 billion in funding for vaccines from various governments, including USD 1.7 billion in direct R&D support for projects selected by the Coalition for Epidemic Preparedness Innovations (WHO, 2021[13]). By late 2020, the US Government had allocated USD 12 billion to late-stage vaccine development and supply commitments (Bloomberg, 2020[14]). Preliminary OECD analyses of financial statements suggest that industry R&D expenditure also continued to grow, albeit with significant variability, as some firms reported a decline in R&D spending (OECD, 2021[15]).

The pharmaceutical industry remains R&D intensive: the industry spends, on average, over 13% of its gross value added on R&D – less than the electronics and optical industry, comparable to the air and spacecraft industries, but considerably higher than manufacturing as a whole (Figure 9.10). While R&D expenditure is a measure of R&D inputs, health systems are mainly interested in R&D outputs, which are more difficult to measure. The number of marketing approvals of new medicines is one output metric, but it does not account for the health benefits new products may or may not deliver. Between 2010 and 2020, the US Food and Drug Administration (FDA) approved on average 43 new medicines annually, with a clear upward trend from fewer than 30 approvals in 2010 to around 50 in recent years (Figure 9.11). Nearly a third were cancer and immunomodulatory products, 14% were anti-infectives and 10% each were products for the alimentary tract and metabolism and the nervous system.

Definition and comparability

Business enterprise expenditure on R&D (BERD) covers R&D by corporations regardless of source of funding. BERD is recorded in the country where the R&D activity takes place. National statistical agencies collect data primarily through surveys and according to the OECD Frascati Manual, but there is some variation in national practices. Pharmaceutical R&D refers to BERD by businesses classified in the pharmaceutical industry.

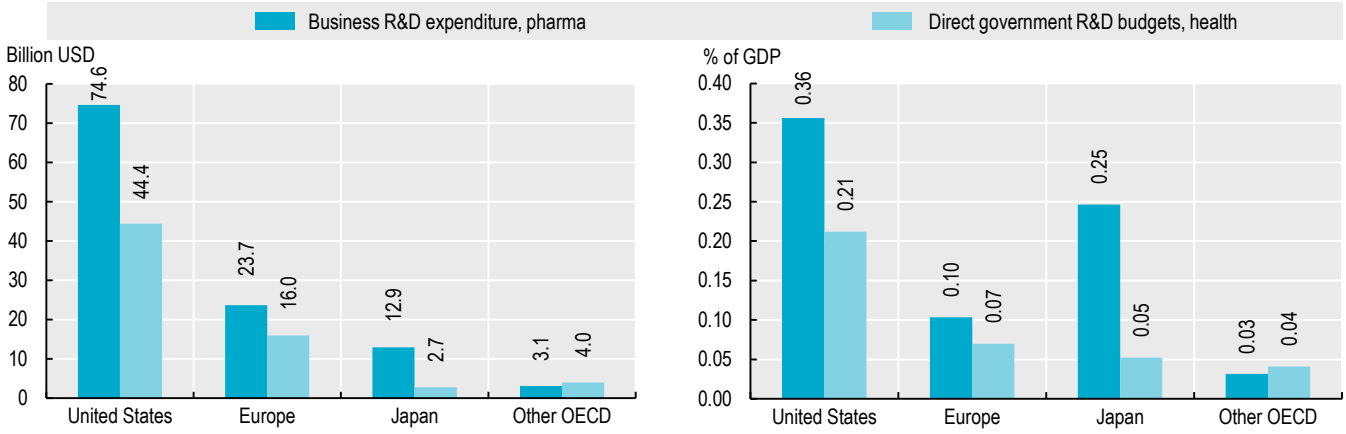
Government budget allocations for R&D (GBARD) capture R&D performed directly by government and amounts paid to other institutions for R&D. Health-related R&D refers to GBARD aimed at protecting, promoting and restoring human health, including all aspects of medical and social care, but excluding spending by public corporations or general university funding subsequently allocated to health.

Europe includes 21 EU Member States that are also OECD countries, Iceland, Norway, Switzerland and the United Kingdom. No data are available for Australia, Colombia, Costa Rica, Luxembourg or New Zealand.

The gross value added of a sector equals gross output less intermediate consumption. It includes wages costs, consumption of fixed capital and taxes on production. The OECD averages in Figure 9.10 show unweighted means of R&D intensity, based on 17 countries with data available for air and spacecraft; and on 31-34 countries for all other industries.

Figure 9.11 includes approvals of new molecular entities and new biological licence applications by the US FDA Center for Drug Evaluation and Research, and approvals of new biological licence applications related to vaccines, gene therapies and coagulation factors by the FDA Center for Biologics Evaluation and Research, but excludes other types of products approved by the FDA Center for Biologics Evaluation and Research. Therapeutic areas are based on the WHO ATC 1st level groups.

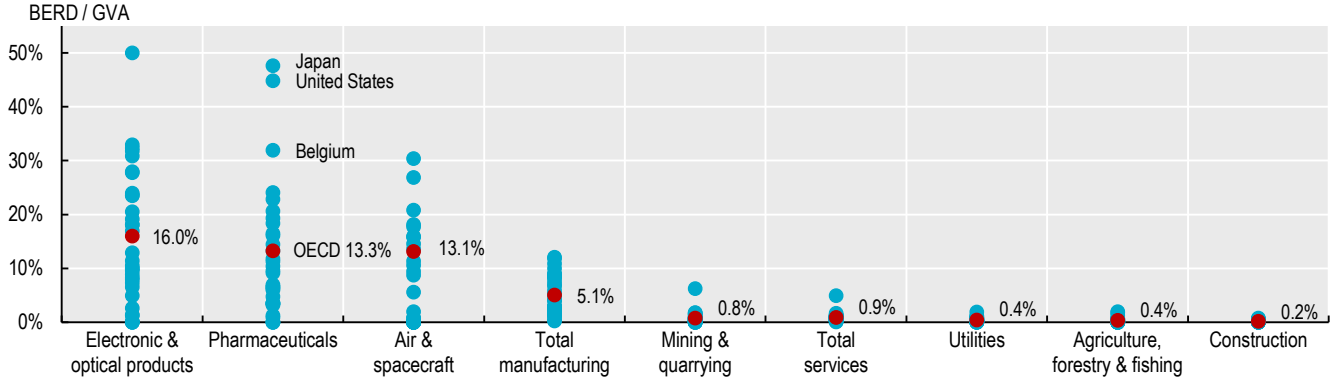
Figure 9.9. **Business enterprise expenditure on pharmaceutical R&D and government budgets for health-related R&D, 2018 (or nearest year)**



Source: OECD Main Science and Technology Indicators and Research and Development Statistics databases.

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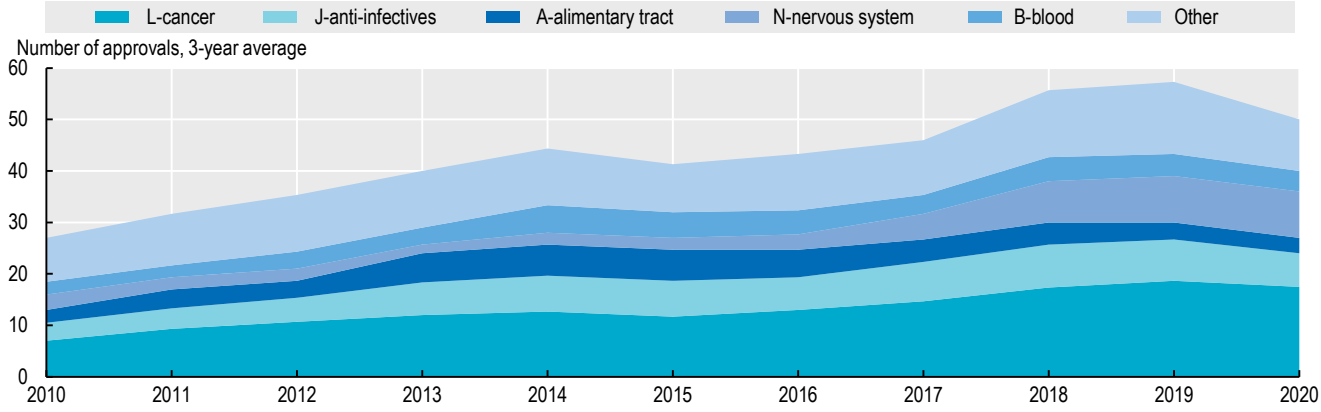
Figure 9.10. **R&D intensity by industry: Business enterprise expenditure on R&D as a share of gross valued added, 2018 (or nearest year)**



Source: OECD Analytical Business Enterprise R&D, Structural Analysis and System of National Accounts databases.

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Figure 9.11. **Annual approvals of new medicines in the United States by therapeutic area, 2010-20**



Note: Other includes V-various, R-respiratory, D-dermatologicals, C-cardiovascular, M-musculoskeletal, S-sensory organs, G-genito-urinary system and sex hormones, H-systemic hormonal preparations, P-anti-parasitics, and missing or unknown.
Source: OECD analysis based on data published by the US FDA.

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10. AGEING AND LONG-TERM CARE

Demographic trends

Life expectancy and healthy life expectancy at age 65

Self-rated health and disability at age 65 and over

Dementia

Safe long-term care

Access to long-term care

Informal carers

Long-term care workers

Long-term care settings

Long-term care spending and unit costs

End-of-life care



Demographic trends

In recent decades, the share of the population aged 65 years and over has nearly doubled on average across OECD countries, increasing from less than 9% in 1960 to more than 17% in 2019. Declining fertility rates and longer life expectancy (see indicator "Life expectancy by sex and education level" in Chapter 3) have meant that older people make up an increasing proportion of the population in OECD countries. Across the 38 OECD member countries, more than 232 million people were aged 65 and over in 2019, including more than 62 million who were at least 80 years old. As ageing represents one of the key risk factors for serious illness or death from COVID-19, the pandemic has driven home the need to ensure that health systems are prepared to adapt to the changing needs of an older population.

Across OECD member countries on average, the share of the population aged 65 and over is projected to continue increasing in the coming decades, rising from 17.3% in 2019 to 26.7% by 2050 (Figure 10.1). In five countries (Italy, Portugal, Greece, Japan and Korea), the share of the population aged 65 and over will exceed one-third by 2050. At the other end of the spectrum, the population aged 65 and over in Israel, Mexico, Australia and Colombia will represent less than 20% of the population in 2050, owing to higher fertility and migration rates.

While the rise in the population aged 65 and over has been striking across OECD countries, the increase has been particularly rapid among the oldest group – people aged 80 and over. Between 2019 and 2050, the share of the population aged 80 and over will more than double on average across OECD member countries, from 4.6% to 9.8%. At least one in ten people will be 80 and over in nearly half (18) of these countries by 2050, while in five (Portugal, Greece, Italy, Korea and Japan), more than one in eight people will be 80 and over.

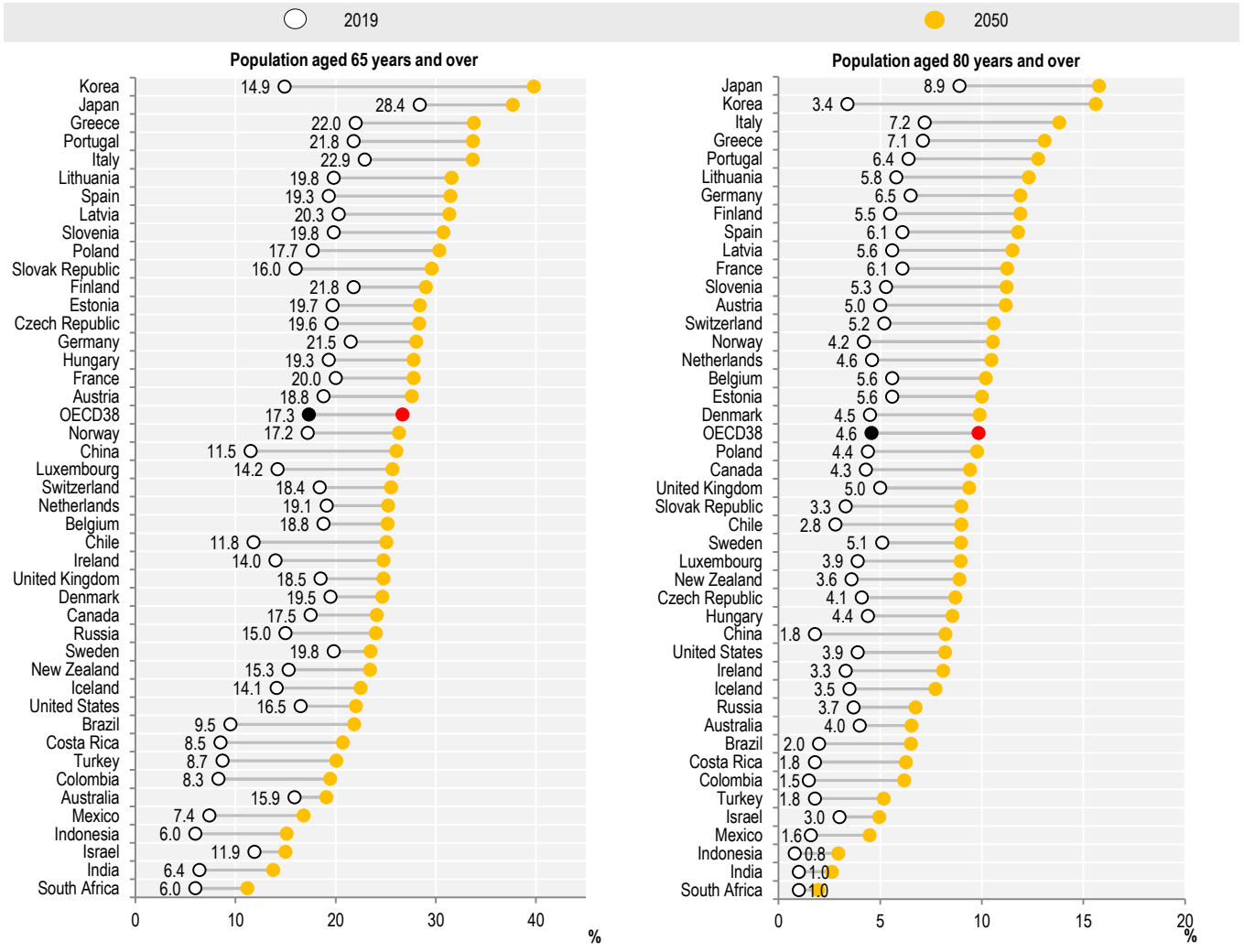
While most OECD partner countries have a younger age structure than many member countries, population ageing will nonetheless occur rapidly in the coming years – sometimes at a faster pace than among member countries. In the People's Republic of China (China), the share of the population aged 65 and over will increase much more rapidly than in OECD member countries – more than doubling from 11.5% in 2019 to 26.1% in 2050. The share of the Chinese population aged 80 and over will rise even more quickly, increasing more than three-fold from 1.8% in 2019 to 8.2% in 2050. Brazil – whose share of the population aged 65 and over was barely half the OECD average in 2019 – will see similarly rapid growth, with nearly 22% of the population projected to be aged 65 and over by 2050. The speed of population ageing has varied markedly across OECD countries, with Japan in particular experiencing rapid ageing over the past three decades (Figure 10.2). In the coming years, Korea is projected to undergo the most rapid population ageing among OECD member countries, with the share of the population aged 80 and over nearly quintupling – from well below the OECD average in 2019 (3.4% versus 4.6%) to well above it (15.6% versus 9.8%) by 2050. Among OECD partner countries, the speed of ageing has been slower than among member countries, although rapid ageing in large countries including Brazil and China will accelerate in the coming decades.

One of the major implications of rapid population ageing is the decline in the potential supply of labour in the economy, even despite recent efforts by countries to extend working lives. Moreover, in spite of the gains in healthy life expectancy seen in recent years (see indicator "Life expectancy and healthy life expectancy at age 65"), health systems will need to adapt to meet the needs of an ageing population, which are likely to include greater demand for labour-intensive long-term care (LTC) and a greater need for integrated, person-centred care. Between 2015 and 2030, the number of older people in need of care around the world is projected to increase by 100 million (ILO and OECD, 2019[1]). Countries such as the United States are already facing shortages of LTC workers, and in the coming years more will find themselves under pressure to recruit and retain skilled LTC staff (see indicator "Long-term care workers"). In the vast majority (three-quarters) of OECD countries, the growth in the number of older people outpaced the growth in the number of LTC workers between 2011 and 2016 (OECD, 2020[2]).

Definition and comparability

Data on the population structure have been extracted from the OECD historical population data and projections (1950-2050). The projections are based on the most recent "medium-variant" population projections from the United Nations World Population Prospects – 2019 Revision.

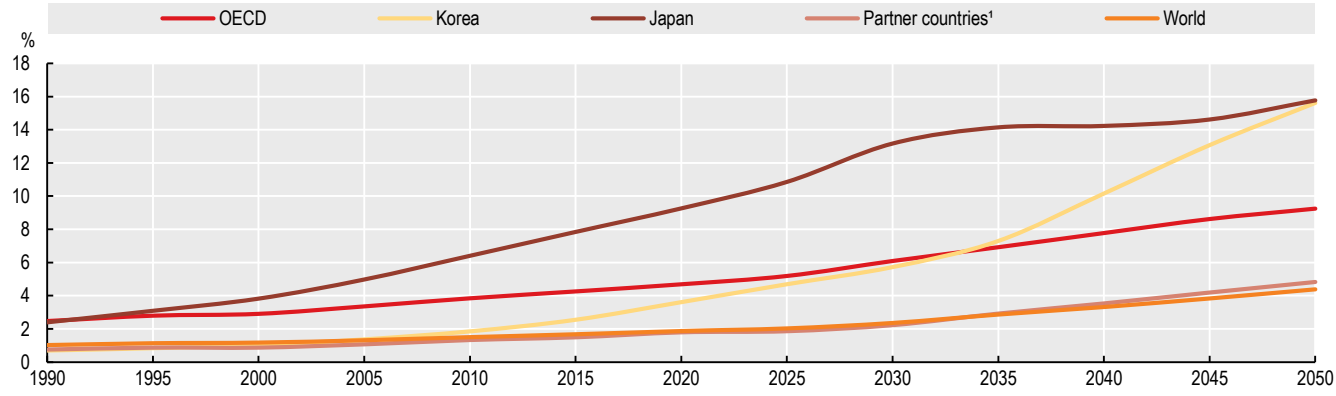
Figure 10.1. **Share of the population aged 65 and over and 80 and over, 2019 and 2050**



Sources: OECD Health Statistics 2021, OECD Historical Population Data and Projections Database, 2021.

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Figure 10.2. **Trends in the share of the population aged 80 and over, 1990-2050**



1. Partner countries include Brazil, China, India, Indonesia, the Russian Federation and South Africa.
Source: OECD Historical Population Data and Projections Database, 2021.

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Life expectancy and healthy life expectancy at age 65

All OECD countries have experienced tremendous gains in life expectancy at age 65 for both men and women in recent decades. On average across OECD countries, life expectancy at age 65 increased by 5.7 years between 1970 and 2019 (Figure 10.3). Seven countries (Australia, Finland, Ireland, Japan, Korea, Luxembourg and Spain) enjoyed gains of a least seven years over the period; two countries (Lithuania and Mexico) experienced an increase of less than three years between 1970 and 2019.

On average across OECD countries in 2019, people at age 65 could expect to live a further 19.9 years. Life expectancy at age 65 is around 3.3 years higher for women than for men. This gender gap has not changed substantially since 1970, when life expectancy at age 65 was 2.9 years longer for women than men. Among OECD countries, life expectancy at age 65 in 2019 was highest for women in Japan (24.6 years) and for men in Switzerland (20.3 years). It was lowest for women in Hungary (18.6 years) and for men in Latvia (14.4 years).

While all OECD countries experienced gains in life expectancy at age 65 between 1970 and 2019, not all additional years are lived in good health. The number of healthy life-years at age 65 varies substantially across OECD countries (Figure 10.4). In the European Union (EU), an indicator of disability-free life expectancy known as "healthy life-years" is calculated regularly, based on a general question about disability in the EU Statistics on Income and Living Conditions (EU-SILC) survey. On average across OECD countries participating in the survey, the number of healthy life-years at age 65 was 9.8 for women and 9.7 for men in 2019 – a markedly smaller difference between men and women than that of general life expectancy at age 65. Healthy life expectancy at age 65 was close to or above 16 years for both men and women in Norway and Sweden; for men, this was nearly 3 years above the next-best performing countries (Iceland and Ireland). Healthy life expectancy at 65 was less than 5 years for both men and women in the Slovak Republic and Latvia. In these countries, women spend more than three-quarters of their additional life-years in poor health, compared with one-quarter or less in Norway and Sweden.

Gains in life expectancy at age 65 have slowed in recent years. This can be explained in part by health challenges that disproportionately affect older populations, including the severe influenza epidemic of 2014-15 – which affected frail and older populations in particular. More recently, the COVID-19 pandemic dramatically affected life expectancy in 2020, especially among older populations. Across 21 OECD countries, 93% of COVID-19 deaths have occurred among adults aged 60 or older, including close to three-fifths among people aged at least 80 (OECD, forthcoming[3]). Between 2019 and 2020, life expectancy at age 65 declined in 18 of the 25 OECD countries with available data, falling by an average of 7.4 months (7.1 months for women and 7.7 months for men). As population ageing continues, OECD countries will need to anticipate health challenges – like the COVID-19 pandemic, influenza and other infectious disease outbreaks – that can disproportionately affect older people, and be prepared to address them, including by ensuring high vaccination rates among older populations.

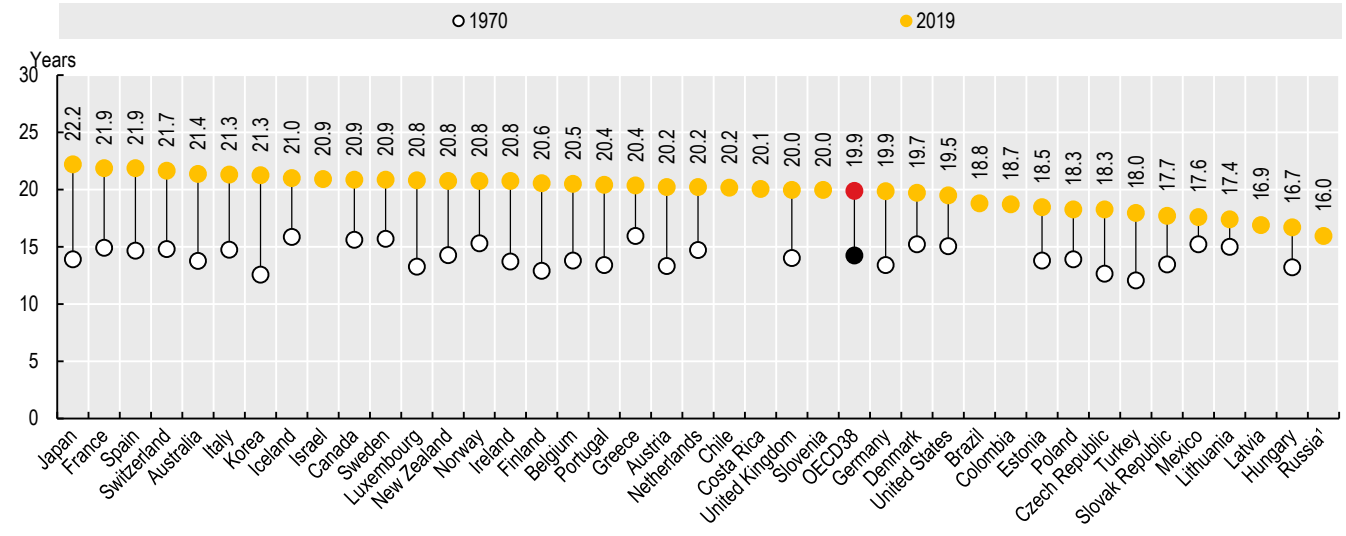
Definition and comparability

Life expectancy measures how long on average a person of a given age can expect to live, if current death rates do not change. However, the actual age-specific death rate of any particular birth cohort cannot be known in advance. If rates are falling, as has been the case over the past decades in OECD countries, actual life spans will be higher than life expectancy calculated using current death rates. The methodology used to calculate life expectancy can vary slightly between countries. This can change a country's estimates by a fraction of a year. Life expectancy at age 65 is the unweighted average of the life expectancy at age 65 of women and men.

Disability-free life expectancy (or "healthy life-years") is defined as the number of years spent free of activity limitation. In Europe, this indicator is calculated annually by Eurostat for EU countries and some European Free Trade Association countries. The disability measure is based on the global activity limitation indicator (GALI) question in the EU-SILC survey: "For at least the past six months, have you been hampered because of a health problem in activities people usually do? Yes, strongly limited / yes, limited / no, not limited". While healthy life-years is the most comparable indicator to date, there are still problems with translation of the GALI question, although it does appear to reflect other health and disability measures satisfactorily (Jagger et al., 2010[1]).

Data on the population structure have been extracted from the OECD historical population data and projections (1950-2050). The projections are based on the most recent "medium-variant" population projections from the United Nations World Population Prospects – 2019 Revision.

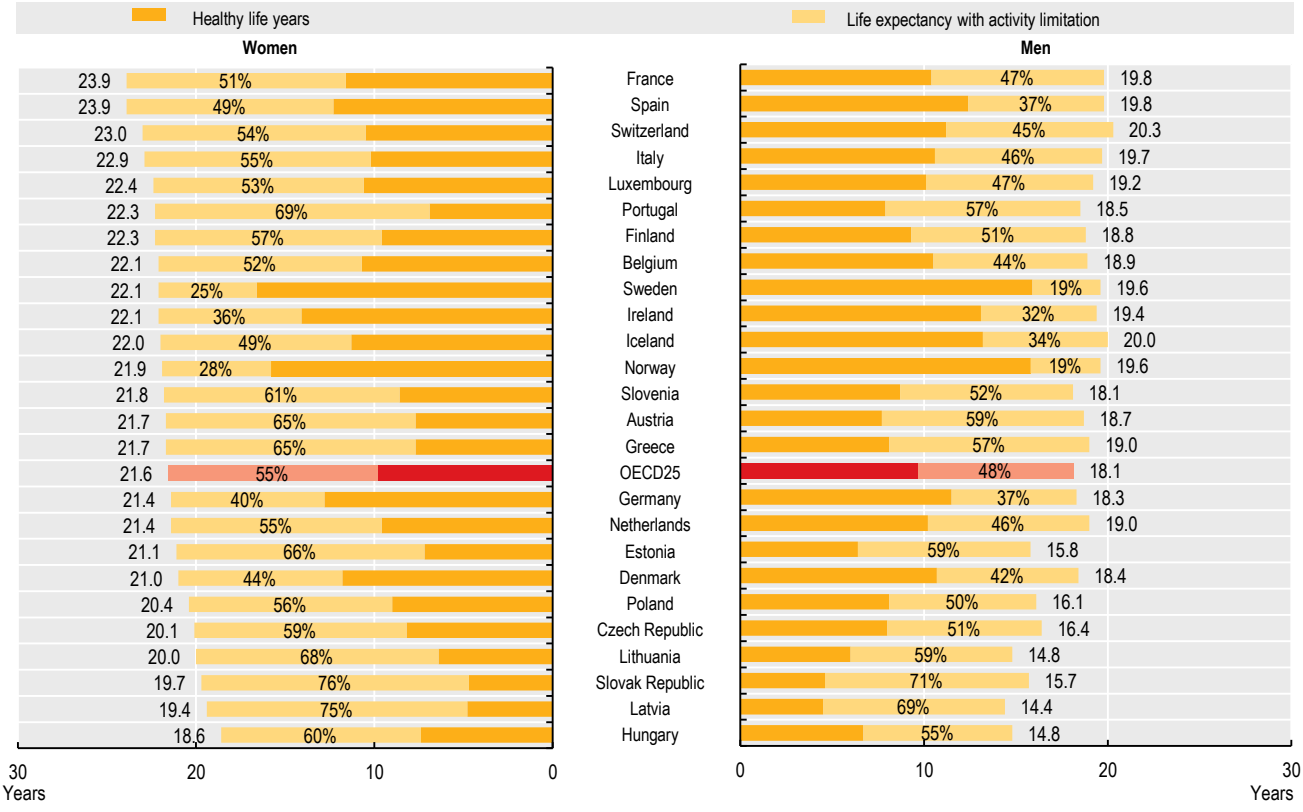
Figure 10.3. **Life expectancy at age 65, 1970 and 2019 (or nearest year)**



1. 2018 data.
Source: OECD Health Statistics 2021.

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Figure 10.4. **Life expectancy and healthy life-years at age 65, by sex, 2019 (or nearest year)**



Note: Data comparability is limited because of cultural factors and different formulations of questions in EU-SILC.
Source: Eurostat database.

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Self-rated health and disability at age 65 and over

Even as life expectancy at age 65 has increased across OECD countries, many adults spend a high proportion of their older lives in poor or fair health (see indicator "Life expectancy and healthy life expectancy at age 65"). In 2019, more than half the population aged 65 and over in 36 OECD countries reported being in poor or fair health (Figure 10.5). Older people in eastern European OECD countries reported some of the highest rates of poor or fair health: more than four-fifths of people aged 65 and over reported their health to be fair, poor or very poor in Lithuania, Latvia, Portugal, Estonia and Hungary. Women are slightly more likely to report being in poor or fair health than men: 57% of women reported their health to be fair, poor or very poor on average across OECD countries in 2019, compared with 53% of men. Less than 40% of the total population aged 65 and over reported being in poor or fair health in Ireland, Switzerland, Norway, Sweden and the Netherlands. The lowest rate of poor or fair health for women was reported in Ireland (28.8%), while the lowest rate for men was reported in Switzerland (30.1%).

In all OECD countries with available data, older people in the lowest income quintile are more likely to rate their health as poor than those in the highest quintile (Figure 10.6). Across 26 OECD countries on average, nearly one in three (27.1%) people in the lowest income quintile reported their health to be poor or very poor in 2019, compared with one in nine (11.1%) among those in the highest quintile. In all but five countries (Austria, Germany, Italy, Luxembourg and Greece), people in the lowest income quintile are at least twice as likely to report their health as poor, compared with those in the highest quintile. In six countries – Norway, Lithuania, Switzerland, the Czech Republic, Iceland and Sweden – adults aged 65 and over in the lowest income quintile are at least four times as likely to report living in poor health, compared with adults 65 and over in the highest quintile.

Across 27 European OECD countries, 50% of people aged 65 and over reported having at least some limitations in their daily activities: 34% reported some limitations and a further 16% reported severe limitations (Figure 10.7). Many of the countries reporting the highest rates of self-rated poor health also reported high rates of limitations in daily activities. In the Slovak Republic and Latvia, nearly three in four adults aged 65 and over reported at least some limitations to activities of daily living, while in Estonia, the Slovak Republic and Turkey one in four adults aged 65 and over reported severe limitations. In contrast, only about one in five people aged 65 and over in Sweden (21%) and Norway (23%) reported having limitations in their daily activities.

Definition and comparability

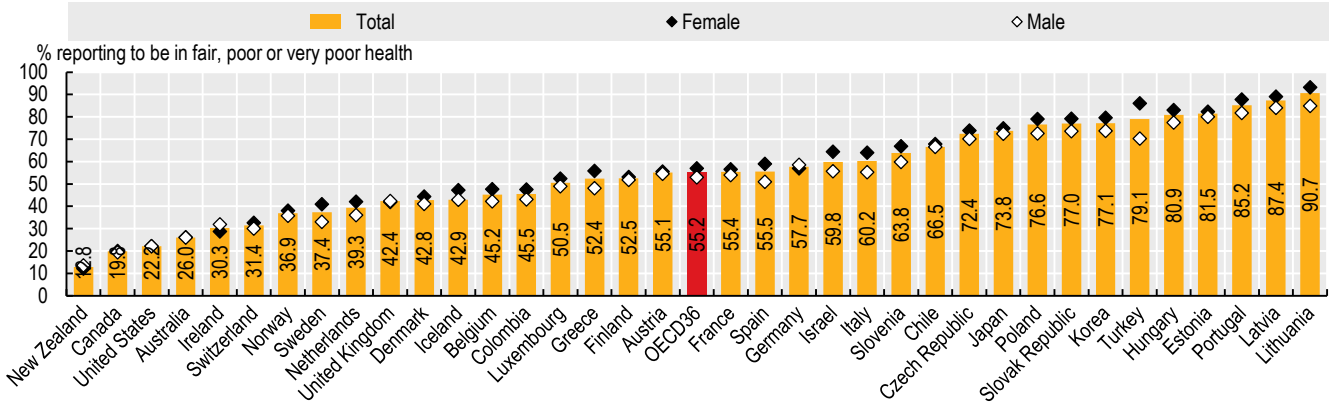
Self-reported health reflects people's overall perception of their own health, including both physical and psychological dimensions. Typically, survey respondents are asked a question such as: "How is your health in general? Very good / good / fair / poor / very poor". OECD Health Statistics provide figures related to the proportion of people rating their health to be fair, poor and very poor combined.

Caution is required in making cross-country comparisons of perceived health status for at least two reasons. First, people's rating of their health is subjective and can be affected by cultural factors. Second, there are variations in the question and answer categories used to measure perceived health across surveys/countries. In particular, the response scale used in Australia, Canada, New Zealand and the United States is asymmetrical (skewed on the positive side), including response categories: "Excellent / very good / good / fair / poor". The data reported in OECD Health Statistics refer to respondents answering one of the two negative responses (fair or poor). By contrast, in most other OECD countries, the response scale is symmetrical, with response categories "Very good / good / fair / poor / very poor". The data reported from these countries refer to the last three categories (fair, poor and very poor). This difference in response categories may introduce an upward bias in the results from those countries that use an asymmetrical scale.

Perceived health status by income quintile is based on Eurostat data with response categories "Very good / good / fair / poor / very poor". Data for income-based inequalities in perceived health status looked at the difference in the proportion of adults 65 and over reporting their health to be poor or very poor, and did not include individuals who perceived their health status to be fair.

The category of limitations in daily activities is measured by the GALI question in the EU-SILC survey: "For at least the past six months, have you been hampered because of a health problem in activities people usually do? Yes, strongly limited / yes, limited / no, not limited". People in institutions are not surveyed, resulting in an underestimation of disability prevalence. Again, the measure is subjective, and cultural factors may affect survey responses.

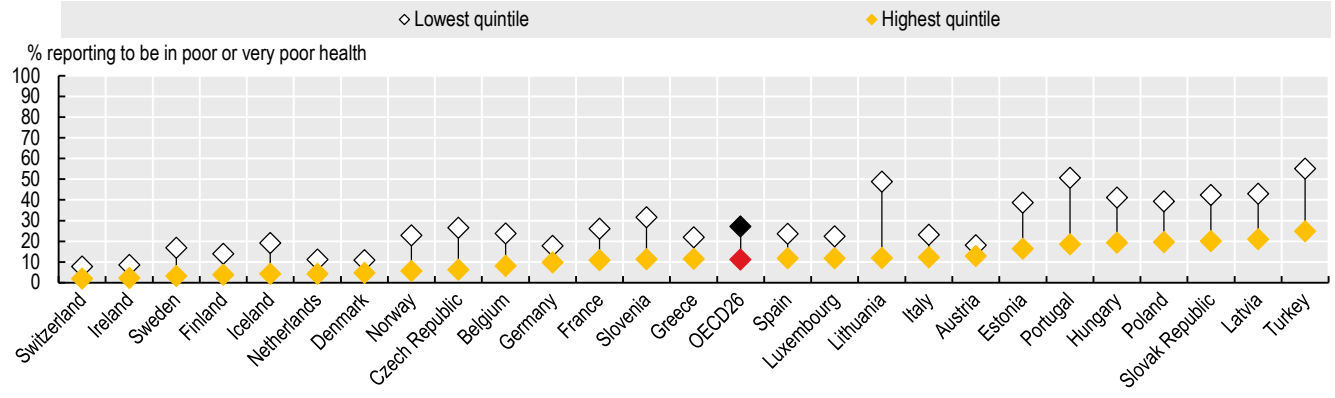
Figure 10.5. **Adults aged 65 and over rating their own health as fair, poor or very poor, 2019 (or nearest year)**



Note: Numbers are close together for males and females for Canada, the United States, Australia and the United Kingdom. Data for New Zealand, Canada, the United States and Australia are biased downwards relative to other countries and so are not directly comparable.
Source: OECD Health Statistics 2021.

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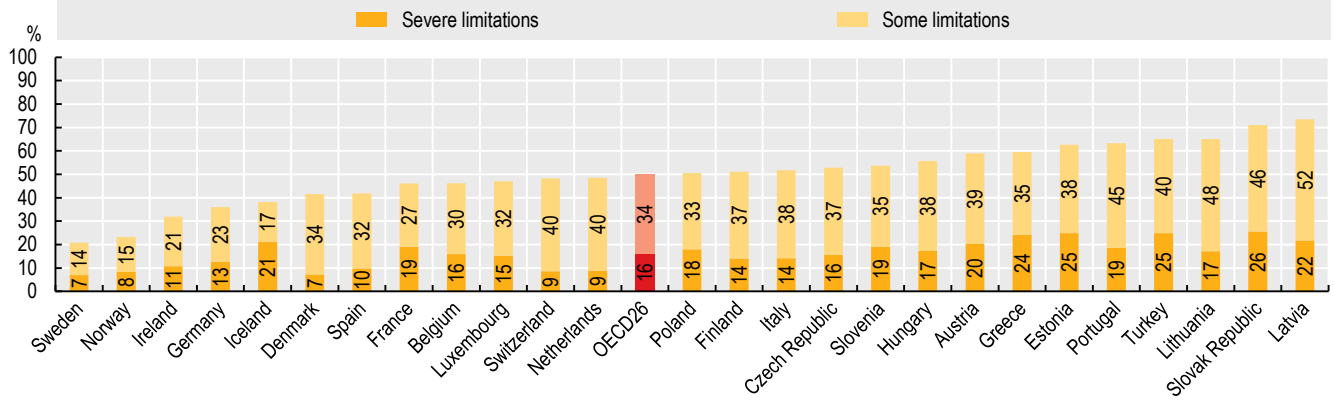
Figure 10.6. **Adults aged 65 and over rating their own health as poor or very poor, by income, European countries, 2019 (or nearest year)**



Source: Eurostat database.

StatLink https://stat.link/zma7ph

Figure 10.7. **Limitations in daily activities in adults aged 65 and over, European countries, 2019 (or nearest year)**



Source: Eurostat database.

StatLink https://stat.link/gajpvt

Dementia

Dementia represents one of the greatest challenges associated with population ageing. The term "dementia" describes a variety of brain disorders, including Alzheimer's disease, which progressively lead to brain damage and cause a gradual deterioration of a person's functional capacity and social relations. Despite billions of dollars spent on research into dementia-related disorders, there is no cure, and substantially disease-modifying treatments may only now be emerging.

More than 21 million people in OECD countries are estimated to have dementia in 2021. If current trends continue, this number will double by 2050, reaching nearly 42 million people across OECD countries. Age remains the greatest risk factor for dementia: across the 38 OECD countries, average dementia prevalence rises from 2.2% among people aged 65-69 to nearly 42% among people aged 90 or older. This means that as countries age, the number of people living with dementia will also increase – particularly as the proportion of the population over 80 rises. Already, countries with some of the oldest populations among OECD countries – including Japan, Italy and Germany – also have the highest prevalence of dementia. Across OECD countries on average, 16 people per 1 000 population are estimated to have dementia (Figure 10.8). In eight countries, more than 20 people per 1 000 population are living with a dementia disorder. By 2050, all but five OECD member countries (the Czech Republic, Hungary, Israel, Mexico and the Slovak Republic) will have a dementia prevalence of more than 20 people per 1 000 population, while in five countries (Greece, Italy, Japan, Korea and Spain), more than one in 25 people will be living with dementia.

Even though treatment is not available in most OECD countries, there is much that health and social care systems can do to improve care and the quality of life for people living with dementia and their families. In recent years, at least 25 OECD countries have developed or announced national plans or strategies for dementia, and increasing attention is being paid to reducing stigma around dementia, and to adapting communities and care facilities to meet the needs of people with dementia (OECD, 2018[1]).

Although antipsychotic drugs can reduce the behavioural and psychological symptoms that affect many people with dementia, the availability of effective non-pharmacological interventions – as well as the associated health risks and ethical issues of antipsychotic medication – means that they are only recommended as a last resort. However, inappropriate use of these drugs remains widespread, and reducing their overuse is a policy priority for many OECD countries. Across 19 OECD countries in 2019, more than 5% of adults aged 65 and over received a prescription for antipsychotic medicines. This masks the wide variation in prescribing rates between countries. Excluding Latvia, antipsychotic prescribing varies by a factor of six across most OECD countries, from just 16 prescriptions per 1 000 people aged 65 and over in Sweden to 97 prescriptions per 1 000 in Ireland. Moreover, age-standardised rates of antipsychotic prescribing were higher for women than for men in every OECD country. On average across 19 OECD countries, women were 31% more likely to be prescribed antipsychotic medication than men (Figure 10.9).

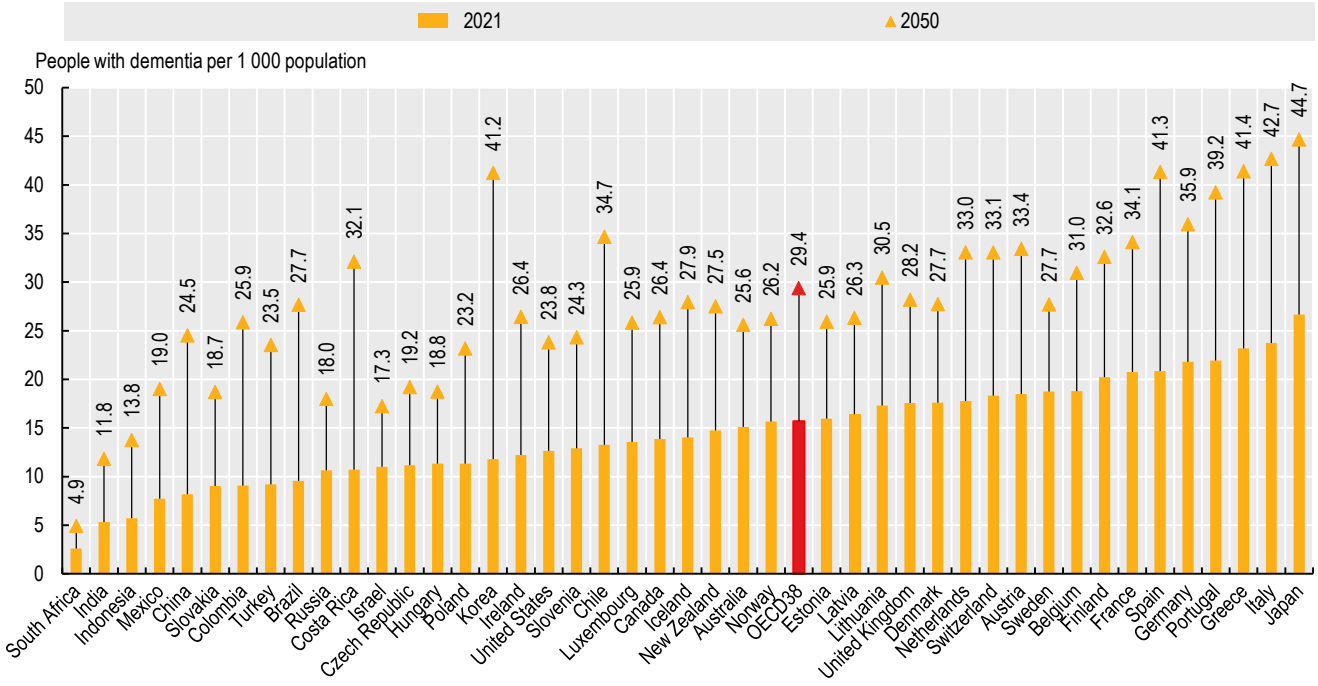
People living with dementia have been severely affected by the COVID-19 pandemic. Measures put in place to contain the virus – notably strict bans or limitations on visitors to LTC facilities – dramatically increased social isolation. The longer-term impacts of the containment measures put in place to control the pandemic may have negative impacts on cognitive decline and well-being among many living with dementia.

Definition and comparability

The prevalence estimates in Figure 10.8 are taken from the World Alzheimer Report 2015, which includes a systematic review of studies of dementia prevalence around the world. Prevalence by country has been estimated by applying these age-specific prevalence rates for the relevant region of the world to population estimates from the United Nations World Population Prospects – 2019 Revision. Differences between countries are therefore driven by the age structure of populations: countries with older populations have more people with dementia. The World Alzheimer Report 2015 analysis includes studies carried out since 1980, with the assumption that age-specific prevalence is constant over time. This assumption is retained in the construction of this indicator, so that fixed age-specific prevalence rates are applied for both 2021 and 2050. Although sex-specific prevalence rates were available for some regions, overall rates were used in this analysis. While more up-to-date estimates of prevalence are available for some regions and countries, the 2015 World Alzheimer Report data was used to ensure consistency in methodology across all OECD countries.

Antipsychotics are defined consistently across countries using Anatomical Therapeutic Classification (ATC) codes. The numerator includes all patients on the medications register with a prescription for a drug within ATC subgroup N05A. The denominator is the total number of people on the register. Most countries are unable to identify which prescriptions relate to people with dementia, so the antipsychotics indicator covers all people aged 65 and over. Some caution is needed when making inferences about the dementia population, since it is not certain that a higher rate of prescribing among all those aged 65 and over translates into more prescriptions for people with dementia. Nonetheless, measuring this indicator, exploring the reasons for variation and reducing inappropriate use can help to improve the quality of dementia care.

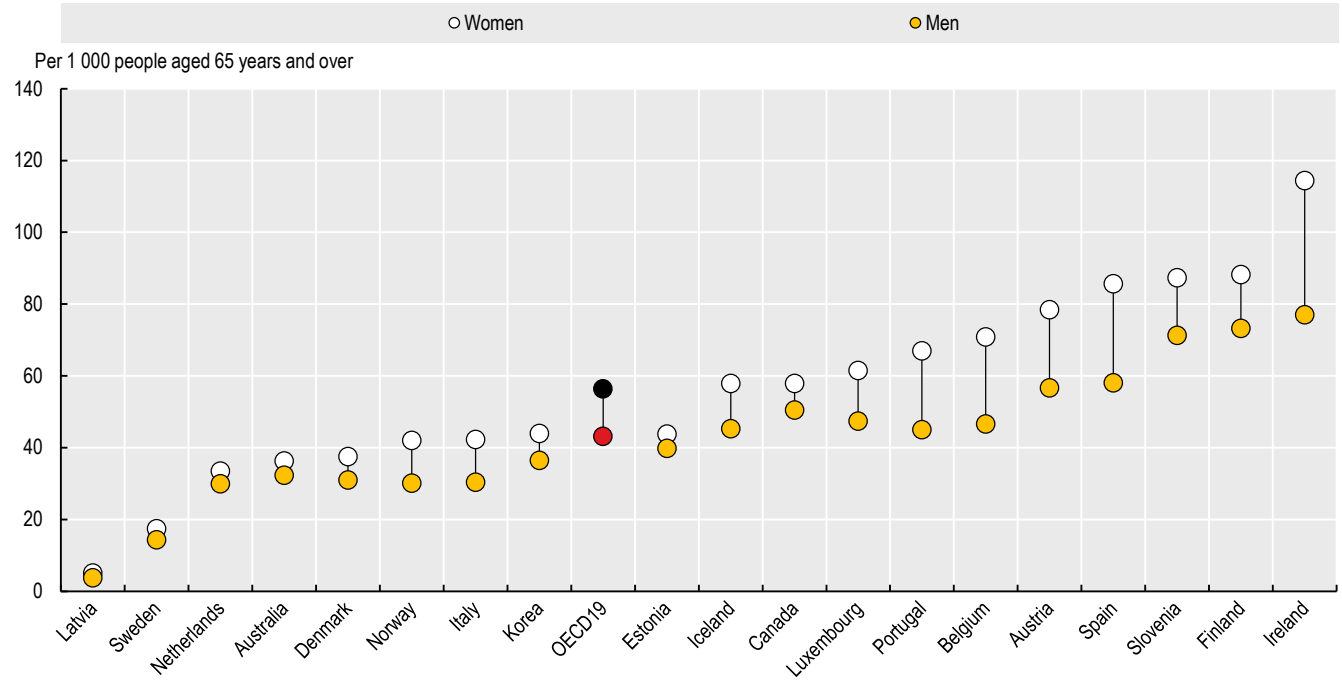
Figure 10.8. **Estimated prevalence of dementia, 2021 and 2050**



Sources: OECD analysis of data from the World Alzheimer Report 2015 and the United Nations World Population Prospects.

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Figure 10.9. **Antipsychotic prescribing rates by sex, 2019 (or nearest year)**



Source: OECD Health Statistics 2021.

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Safe long-term care

As OECD populations are ageing rapidly, demand is increasing on the LTC sector to provide care for more, and older, people with complex conditions and heightened needs for expert care. This has put an enormous strain on LTC systems – a strain that is projected to increase in the coming years as OECD populations continue to age.

The safety risks in LTC have been made evident by the rapid spread of COVID-19 among residents and health workers in LTC settings (see Chapter 2). The advanced age of many residents, lack of sufficient personal protective equipment and poor infection control meant that many LTC facilities experienced outbreaks that spread rapidly (OECD, 2020[4]).

Over half of the harm that occurs in LTC is preventable, and over 40% of admissions to hospitals from LTC are avoidable. Reducing and preventing harm in LTC is an end in itself, but there is also an economic case to be made. The total cost of avoidable admissions to hospital due to safety lapses in LTC facilities was almost USD 18 billion in 2016 across OECD countries. This figure is equivalent to 2.5% of all spending on hospital inpatient care or 4.4% of all spending on LTC (de Bienassis, Llena-Nozal and Klazinga, 2020[5]).

For older people, most guidelines advise complete avoidance (that is, an ideal rate of 0%) of benzodiazepines because of the risk of dizziness, confusion and falls. Even so, benzodiazepines are prescribed for older adults for anxiety and sleep disorders, despite these risks. Long-term use of benzodiazepines can lead to adverse events (overdoses), tolerance, dependence and dose escalation. Long-acting (as opposed to short-acting) benzodiazepines are furthermore discouraged for use in older adults because they take longer for the body to eliminate (OECD, 2017[6]).

Use of benzodiazepines varies greatly, but – on average – has declined between 2009 and 2019 in OECD countries (Figure 10.10). The largest declines in chronic use have occurred in Iceland, Portugal and Denmark. Korea, Iceland and Denmark experienced the largest decline in use of long-acting benzodiazepines. The wide variation is explained in part by different reimbursement and prescribing policies for benzodiazepines, as well as by differences in disease prevalence and treatment guidelines.

Ageing and multimorbidity often require older patients to take multiple medicines (polypharmacy) for long periods of their lives. While polypharmacy is in many cases justified for the management of multiple conditions, inappropriate polypharmacy increases the risk of adverse drug events, medication error and harm – resulting in falls, episodes of confusion and delirium. Adverse drug events cause 8.6 million unplanned hospitalisations in Europe every year (Mair et al, 2017[7]).

Across a selection of 16 countries with broader data coverage, polypharmacy rates among older people varied more than 8-fold in 2019, with Turkey reporting the lowest rates and Luxembourg the reporting highest rates (Figure 10.11). These large variations are explained in part by the establishment of targeted polypharmacy initiatives in some countries, including related reimbursement and prescribing policies. Countries that cannot separate prescription data from primary care and LTC show higher average and larger variation of polypharmacy rates than countries with separate primary care prescription data.

A major concern for health care-acquired infections is the rise of antibiotic-resistant bacteria, which can lead to infections that are difficult or even impossible to treat. Infections can lead to significant increases in patient morbidity, mortality and cost for the health system. These infections are also generally considered to be preventable through standard prevention and hygiene measures. The most commonly occurring hospital acquired infections in LTC facilities include urinary tract infections, lower respiratory tract infections, skin and soft tissue infections.

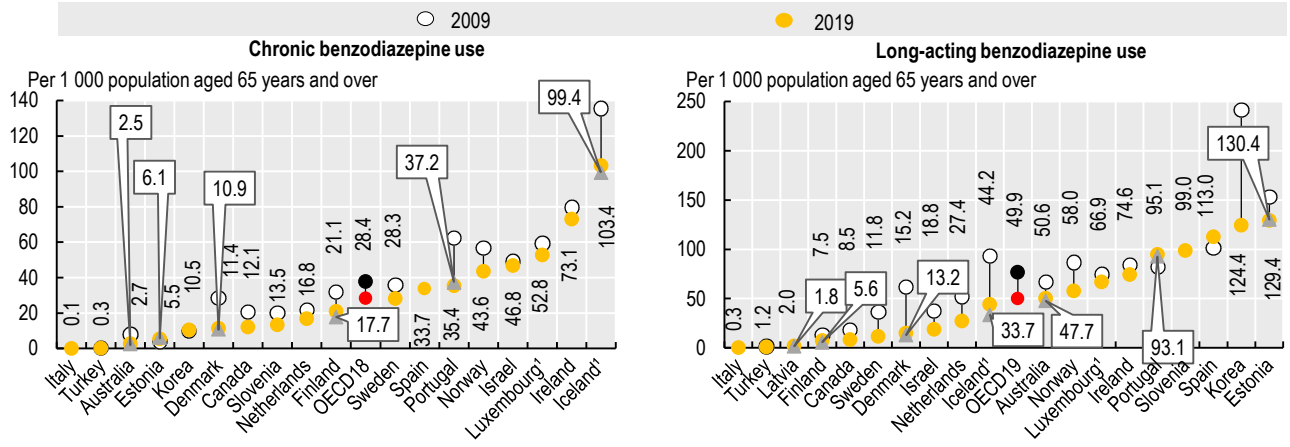
Figure 10.12 shows the proportions of bacteria isolated from LTC residents that are resistant to antibiotics. On average, over one-quarter of isolates were resistant – on a par with levels seen in acute care hospitals.

Definition and comparability

See the “Definition and comparability” box in indicator “Safe prescribing in primary care” in Chapter 6 for more details regarding the definition and comparability of prescription data across countries.

Resistance proportion data are based on a composite antibiotic resistance indicator developed by the European Centre for Disease Prevention and Control (ECDC) (Suetens et al., 2018[8]). Data were obtained from point prevalence surveys conducted between 2016 and 2017 by the ECDC and the US Centers for Disease Control and Prevention (CDC) among participating LTC facilities. Facilities included in the ECDC data were general nursing homes, mixed LTC facilities and residential homes; specialised LTC facilities, as defined by the ECDC, were excluded. Only nursing homes were included in the CDC survey data. Point prevalence surveys currently represent the best tool for collecting internationally comparable data in LTC settings, but they are subject to possible biases due to facility selection, local recording practices and observer training. Countries noted as having poor data representativeness had low participation among LTC facilities, which may lead to wide variance or biased estimates.

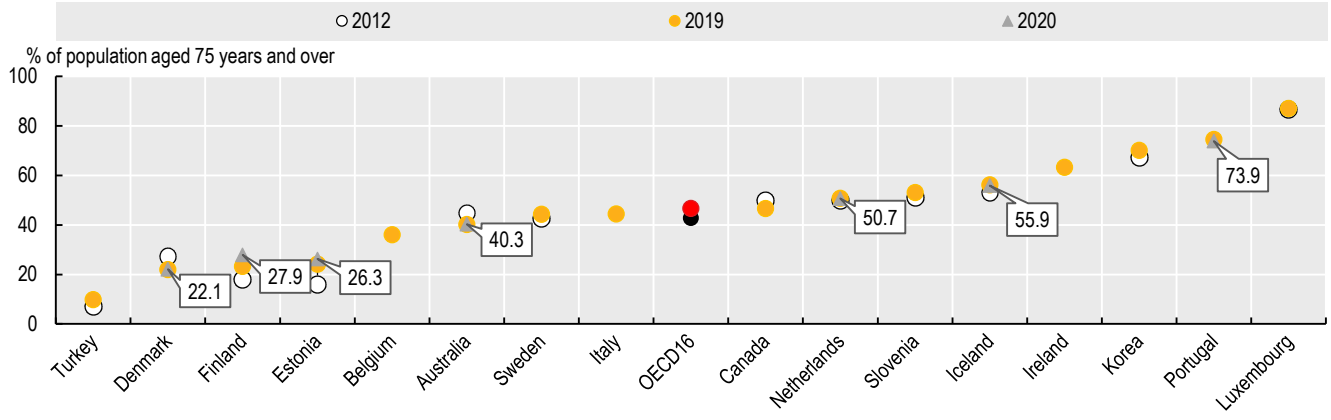
Figure 10.10. **Trends in benzodiazepine use in adults aged 65 and over: Chronic and long-acting use, 2009, 2019 (or nearest years) and 2020**



1. Three-year average.
Source: OECD Health Statistics 2021.

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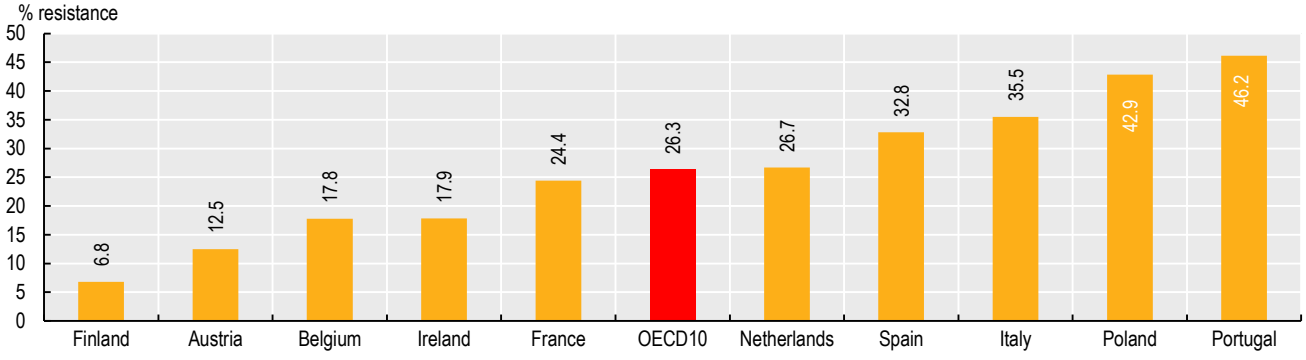
Figure 10.11. **Population at age 75 and over taking more than five medications concurrently, 2012, 2019 (or nearest year) and 2020**



Source: OECD Health Statistics 2021.

StatLink https://stat.link/9mvjon

Figure 10.12. **Proportion of antimicrobial-resistant bacterial isolates from health care-associated infections in long-term care, 2016-17**



Note: Based on composite antibiotic resistance indicator developed by the ECDC. Only countries with over 15 bacterial isolates were included.
Source: ECDC.

StatLink https://stat.link/cnzhk6



Access to long-term care

Across OECD countries, an average of 10.7% of people aged 65 and over received long-term care, either at home or in long-term care facilities, in 2019 (Figure 10.13). More than one in five people aged 65 and over received LTC services in Israel (23.1%) and Switzerland (23.4%), compared with less than 5% in Canada (3.8%), the Slovak Republic (3.4%), Ireland (3.2%), Japan (2.6%), Portugal (1.9%) and Poland (0.8%).

The majority of LTC recipients are older adults (Figure 10.14). Although LTC services are also delivered to younger disabled groups, people are more likely to develop disabilities and need support from LTC services as they age. In 2019, just 25% of LTC recipients on average across OECD countries were younger than 65, while a further 26% were between 65 and 79. Adults aged 80 and over represent the majority of LTC recipients in OECD countries. On average in OECD countries, 49% of LTC recipients were aged 80 and above in 2019. In Japan, more than four in five (84%) LTC recipients were 80 and over, while people aged 0-64 represented just 1% of LTC recipients.

While population ageing is a significant driver of the growth in LTC users over time, the cross-country variation in the proportion of older LTC recipients suggests that other drivers – notably publicly funded LTC services – also determine LTC use. For example, Israel has one of the youngest populations among OECD countries, but a greater than average proportion receive LTC. Because data on people receiving care outside public systems are more difficult to collect and may be underreported, figures for countries that rely more heavily on privately funded care may be artificially low. Cultural norms around the degree to which families look after older people may also be an important driver of the use of formal services (see indicator “Informal carers”).

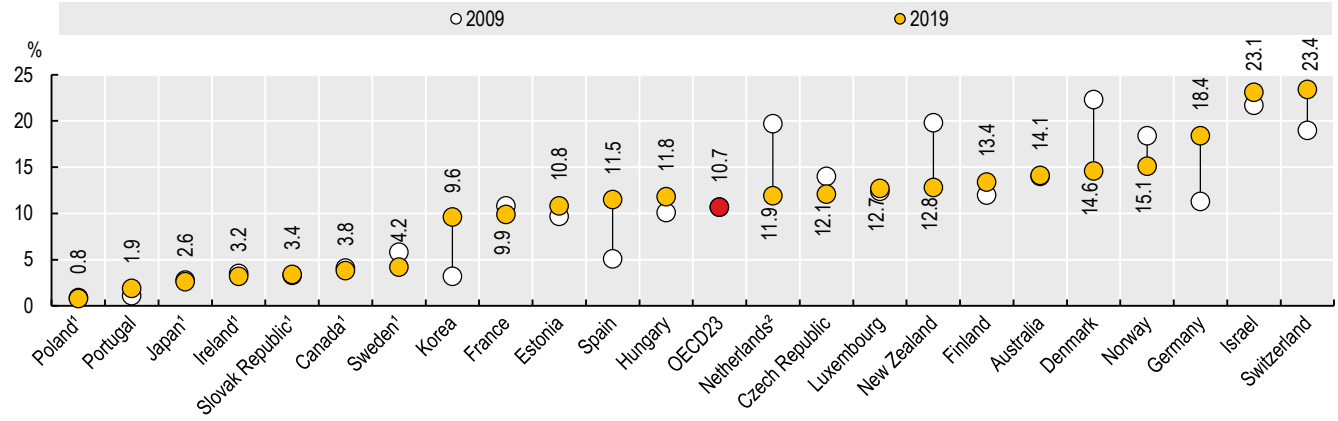
Many people in need of LTC care wish to remain in their homes for as long as possible. In response to these preferences – and the high costs of care facility-based LTC – many OECD countries have developed services to support home-based care for older adults. Nevertheless, changing policy priorities have not always resulted in a significant move away from facility-based LTC. Between 2009 and 2019, the proportion of LTC recipients who received care at home rose only marginally, from 67% to 68% (Figure 10.14). Increases were particularly large in Portugal, Australia, Finland, Germany and Switzerland. In Germany, part of the increase was due to policy reforms expanding the definition of LTC, thereby increasing the number of benefit recipients. In Australia, reforms expanding financing for aged care and increasing the number of home care packages available has similarly led to increases in the number of LTC recipients. While the proportion of LTC recipients living at home has increased over the past decade in most OECD countries, it has declined significantly in Estonia, where there has been an increase in the availability of institutional general care and the number of added home service users has increased at a slower pace compared to 24-hour services in the social welfare system. Even where people live with limitations in activities of daily living (ADL) and in instrumental activities of daily living (IADL), they may not always receive sufficient formal LTC support. Among people aged 65 and over across 22 European countries, half of individuals living at home with at least one ADL or IADL limitation – and nearly two in five (37%) people living with three or more ADL/IADL limitations – reported that they either did not receive sufficient informal LTC help, or did not receive formal LTC support (Figure 10.15).

Definition and comparability

LTC recipients are defined as people receiving LTC from paid providers, including non-professionals receiving cash payments under a social programme. They also include recipients of cash benefits such as consumer choice programmes, care allowances or other social benefits granted with the primary goal of supporting people with LTC needs. LTC can be delivered in facilities (institutions) or at home. LTC institutions refer to nursing and residential care facilities that provide accommodation and LTC as a package. LTC at home is defined as people with functional restrictions who receive most of their care at home. Home care also applies to the use of institutions on a temporary basis, community care and day-care centres, and specially designed living arrangements. Data for Poland, Ireland, Canada, the Slovak Republic, Iceland and Belgium are only available for people receiving LTC in institutions, so the total number of recipients will be underestimated. In Estonia, the decrease in recipients of home care refers to those who have a “curator” appointed by local government. An increase in other social welfare home service users has not compensated for this decline, partly due to the fact that not all home services are considered to be LTC health services. In New Zealand, the decline in home care recipients between 2009 and 2019 is attributable in part to a change in methodology, as well as more consistent re-assessments of home care needs by District Health Boards.

Data on LTC services are difficult to collect in many countries, and there are some known limitations of the figures. Data for some countries refer only to people receiving publicly funded care, while other countries include people who are paying for their own care. For the indicator on unmet LTC needs, the data relate to the population aged 65 and over, based on wave 8 of the Survey of Health, Ageing and Retirement in Europe (SHARE), referring to 2019 and 2020. It is important to highlight that the COVID-19 pandemic may have affected the field work conducted for the survey in 2020. While there is no internationally accepted definition of unmet LTC needs, SHARE facilitates estimation of the share of older people reporting limitations in daily activities (ADL and IADL) who did not receive formal home care or sufficient informal care.

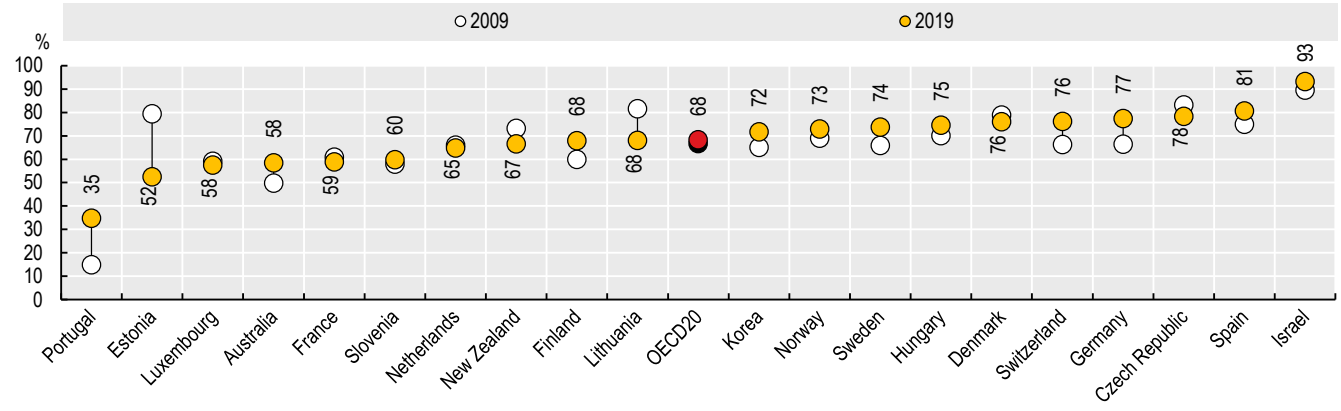
Figure 10.13. **Share of adults aged 65 and over receiving long-term care, 2009 and 2019 (or nearest year)**



1. Includes only recipients of LTC in institutions. 2. 2018 data.
Source: OECD Health Statistics 2021.

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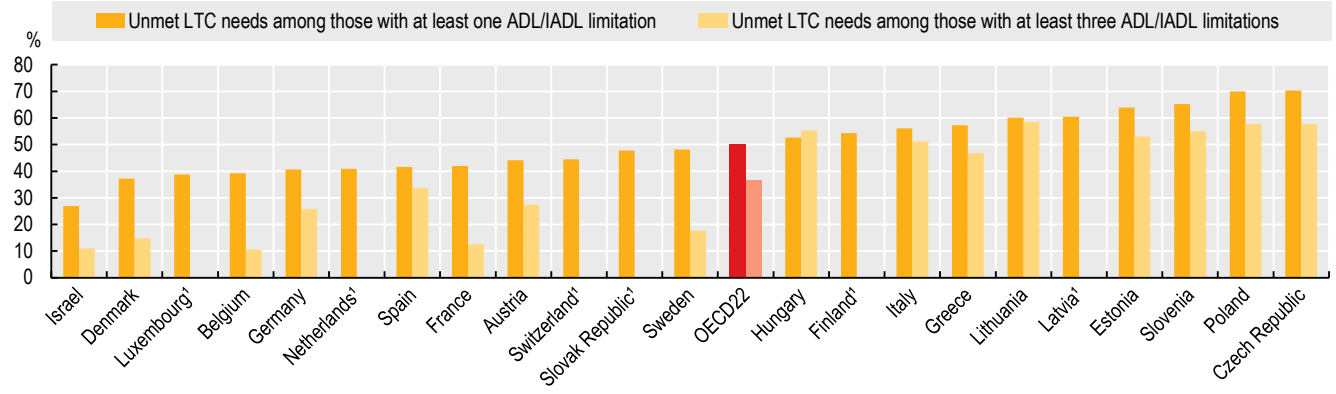
Figure 10.14. **Long-term care recipients aged 65 and over receiving care at home, 2009 and 2019 (or nearest year)**



Source: OECD Health Statistics 2021.

StatLink https://stat.link/rg7h3c

Figure 10.15. **Unmet long-term care needs among people aged 65 and over living at home, 2019-20**



1. Low sample size.
Source: SHARE, wave 8 (2019-20).

StatLink https://stat.link/prv3dy



Informal carers

Family and friends are the most important source of care for people with LTC needs in OECD countries. Because of the informal nature of the care they provide, it is not easy to get comparable data on the number of people caring for family and friends across countries, nor on the frequency of their caregiving. The data presented in this section come from national or international health surveys and refer to people aged 50 years and over who report providing care and assistance to family members and friends.

On average across OECD countries for which data are available, around 13% of people aged 50 and over reported providing informal care at least weekly in 2019. The share of people aged 50 and over providing informal care was close to or over 20% in Belgium, Austria, the Czech Republic, the United Kingdom and Germany, and less than 10% in Portugal, Greece, Lithuania, the United States, Ireland, the Slovak Republic and Latvia (Figure 10.16). There was also variation in the intensity of the care provided. The lowest rates of daily care provision were found in the Slovak Republic and Latvia.

Intensive caregiving is associated with a reduction in labour force attachment for caregivers of working age, higher poverty rates and a higher prevalence of mental health problems. Many OECD countries have implemented policies to support family carers with a view to mitigating these negative impacts. Two-thirds of OECD countries provide care leave, whether paid or unpaid, while respite care remains fragmented in many countries. Moreover, two-thirds of OECD countries provide cash benefits to family caregivers; cash-for-care allowances for recipients, which can be used to pay informal caregivers; or periods of paid leave for informal carers. Some countries (such as Australia, Germany and Luxembourg) also provide counselling/training services, but many rely heavily on the voluntary sector (OECD, forthcoming[9]).

On average across OECD countries, 62% of those providing daily informal care were women in 2019 (Figure 10.17). Spain, Greece and Portugal had the greatest gender imbalance: over 70% of informal carers were women. Around two-thirds of carers are looking after a parent or a spouse, but patterns of caring vary for different age groups. The survey found that younger carers (aged between 50 and 65) were much more likely to be caring for a parent (Figure 10.18). They were more likely to be women and might not be providing care every day. Carers aged over 65 were more likely to be caring for a spouse. Caring for a spouse tends to be more intensive, requiring daily care, and men and women are equally likely to take on this role.

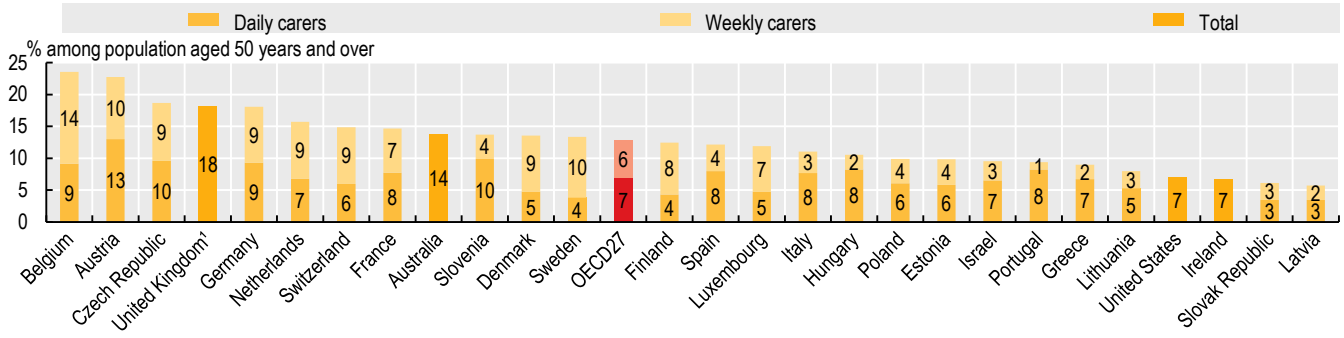
The fact that fewer people provide daily care in countries with stronger formal LTC systems suggests that there is a trade-off between informal and formal care. Declining family size, increased geographical mobility and rising participation rates of women in the labour market mean that there is a risk that fewer people will be willing and able to provide informal care in the future. Coupled with the effects of an ageing population, this could lead to higher demand for professional LTC services. Public LTC systems will need adequate resources to meet increased demand while maintaining access and quality.

Definition and comparability

Informal carers are defined as people providing any help to older family members, friends and people in their social network, living inside or outside their household, who require help with everyday tasks. The data presented here relate only to the population aged 50 and over, and are based on national surveys for Australia (Survey of Disability and Carers – SDC), the United Kingdom (English Longitudinal Study of Ageing – ELSA), the United States (Health and Retirement Survey – HRS) and an international survey for other European countries (SHARE). Data for Ireland were taken from its 2016 census.

Questions about the intensity of care vary between surveys. In SHARE, carers are asked about how often they provided care in the last year; this indicator includes people who provided care at least weekly. It is important to highlight that the COVID-19 pandemic might have made people realise their role of and identify as informal caregivers. In ELSA, people are asked whether they have provided care in the last week, which may be broadly comparable with "at least weekly". Questions in HRS and SDC are less comparable with SHARE. Carers in HRS are included if they provided more than 200 hours of care in the last year. In SDC, a carer is defined as someone who has provided ongoing informal assistance for at least six months. People caring for disabled children are excluded for European countries but included in data for the United States and Australia. However, the US data only include those caring for someone outside their household. Australia and Ireland consider all informal carers together. As a result, data for Australia, Ireland and the United States may not be comparable with other countries' data.

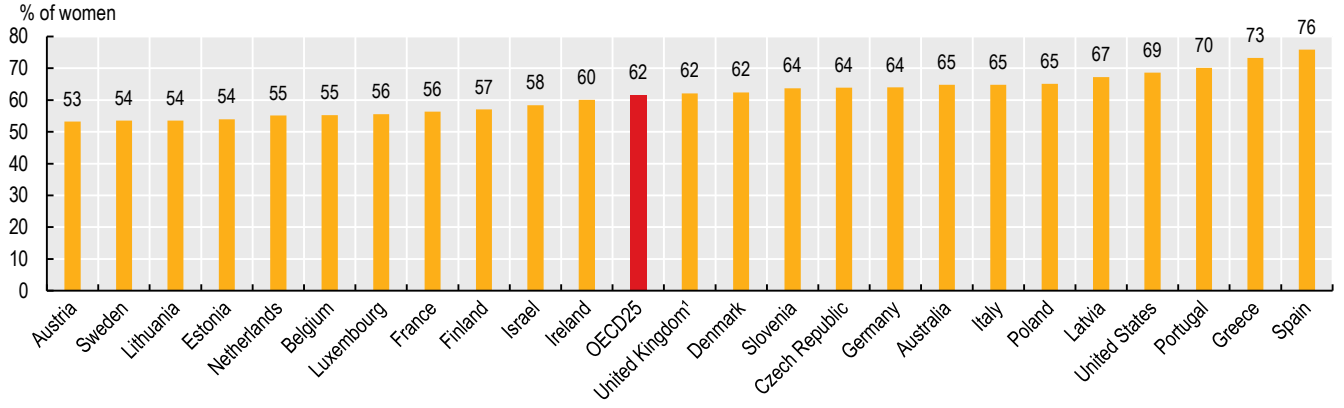
Figure 10.16. **Share of informal carers among the population aged 50 and over, 2019 (or nearest year)**



Note: The definition of informal carers differs between surveys (see "Definition and comparability" box). 1. Data refer to England only.
Source: SHARE, wave 8 (2019-20); SDC (2018) for Australia; ELSA, wave 8 (2017) for the United Kingdom; HRS, wave 14 (2018-19) for the United States; Census 2016 for Ireland.

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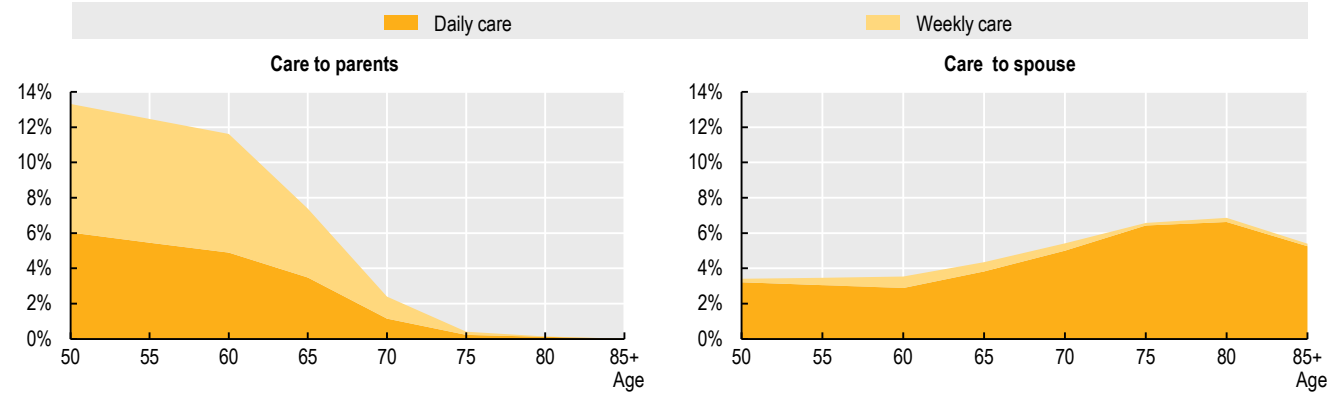
Figure 10.17. **Share of women among informal daily carers aged 50 and over, 2019 (or nearest year)**



Note: The definition of informal carers differs between surveys (see "Definition and comparability" box). 1. Data for England only.
Source: SHARE, wave 8 (2019-20); SDC (2018) for Australia; ELSA, wave 8 (2017) for the United Kingdom; HRS, wave 14 (2018-19) for the United States; Census 2016 for Ireland.

StatLink https://stat.link/3p0yuh

Figure 10.18. **Share of informal carers in the population aged 50 and over, by recipients of care and age, daily and weekly, European OECD countries, 2019-20**



Source: SHARE, wave 8 (2019-20).

StatLink https://stat.link/l3ywtp



Long-term care workers

LTC is a labour-intensive service, and formal care is in many cases a necessary complement to informal, unpaid work in supporting people with LTC needs (see indicator "Informal carers"). Formal LTC workers are defined as paid staff – typically nurses and personal carers – who provide care and/or assistance to people limited in their daily activities at home or in institutions, excluding hospitals. There are on average five LTC workers per 100 people aged 65 and over across 32 OECD countries, ranging from 12 in Norway and Sweden to less than one in Greece, Poland and Portugal (Figure 10.19). COVID-19 has exacerbated the need for higher staffing levels to replace sick or isolating LTC workers and to take care of ill LTC recipients. While nearly all OECD countries with available data have introduced measures (such as funding) to recruit LTC workers directly or indirectly, more could be done (OECD, forthcoming[3]).

In more than half of OECD countries, population ageing has been outpacing the growth of the LTC supply. The LTC workforce has stagnated or declined, even in countries where the LTC supply is much higher than the OECD average (such as Norway and Sweden). Nine countries experienced a small overall increase in their LTC supply between 2011 and 2019, but only of about one LTC worker (or less) per 100 people 65 or older. As populations continue to age, demand for LTC workers is likely to rise. Responding to increasing demand will require policies to improve recruitment and retention, and increase productivity.

Less than one-quarter of LTC workers held tertiary education across OECD countries in 2019 (Figure 10.20). This can be explained by the fact that personal care workers represent 70% of the LTC workforce on average in OECD countries, and up to 90% in a few countries (Estonia, Switzerland, Korea, Israel and Sweden). Only Germany, Hungary and Switzerland have a supply of nurses greater than the supply of personal care workers (OECD, 2018[10]). Very few countries currently require personal care workers to hold minimum education levels, licences and/or certifications. Despite being mostly staffed by lower-skilled workers, however, LTC involves spending significant time delivering more complex tasks than basic care. Personal care workers do not always have sufficient knowledge and training, which can affect the quality of care delivered.

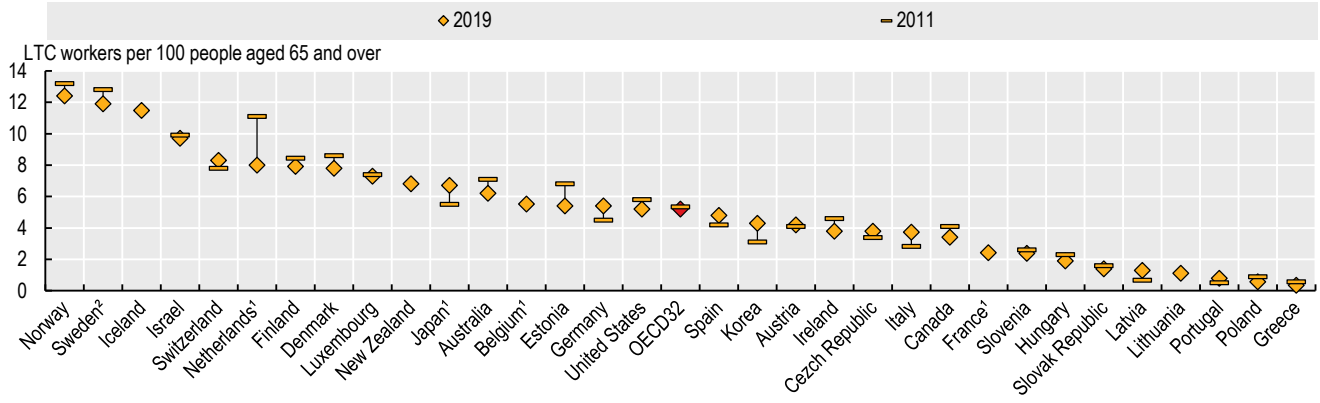
Non-standard employment (including part-time and temporary work) is common in the LTC sector (Figure 10.21). This tends to affect women disproportionately as, on average, women hold about 90% of the jobs in the LTC sector. For instance, 42% of LTC workers worked part time in OECD countries in 2019. In many northern and central European countries, more than half of LTC workers are employed on a part-time basis. Part-time work is particularly widespread among personal carers and home-based workers. The fact that basic LTC services are mostly needed for reduced hours at specific times of the day may contribute to explaining such high rates. Temporary employment is also common, contributing to job insecurity in the sector. About 17% of LTC workers held a temporary contract in OECD countries in 2019. Shares were about 40% or above in Japan and Poland, while they were below 10% in Australia, the United Kingdom, Ireland, Belgium and Luxembourg. However, nearly one-quarter of care workers have zero hours contracts in the United Kingdom. Workers under this type of contract typically have less access to training, do not always have benefits such as paid annual leave, suffer from low job security and have less access to social protection. Lack of continuity in staffing also affects quality of care. In addition, LTC tends to be demanding, both physically and mentally, and pay is often low.

Definition and comparability

LTC workers are defined as paid workers who provide care at home or in institutions (outside hospitals). They include qualified nurses and personal care workers providing assistance with ADL and other personal support. Personal care workers include various categories of workers, who may be called different names in different countries. Because personal care workers may not be part of recognised occupations, it is more difficult to collect comparable data for this category of LTC workers across countries. Data from OECD Health Statistics 2021 also include family members or friends who are employed under a formal contract by the care recipient, an agency or public and private care service companies. They exclude nurses working in administration. The numbers are expressed as headcounts, not full-time equivalents.

Compared with the OECD's latest publication on LTC workforce (OECD, 2018[10]), the methodology to select LTC workers in EU Labour Force Survey (EU-LFS) datasets changed because of modifications in Eurostat's agreement with EU countries on thresholds of sample sizes, possibly leading to slightly higher number of workers.

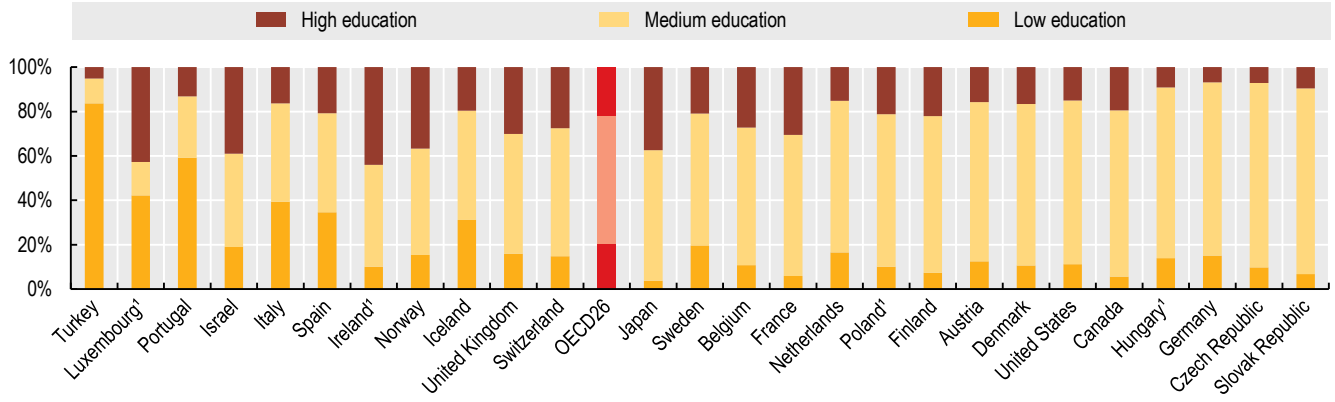
Figure 10.19. **Long-term care workers per 100 people aged 65 and over, 2011 and 2019 (or nearest year)**



1. Break in time series. 2. Data for Sweden cover only public providers. In 2016, 20% of beds in LTC for people 65+ were provided by private companies (but publicly financed).
Source: OECD Health Statistics 2021, complemented with EU-LFS.

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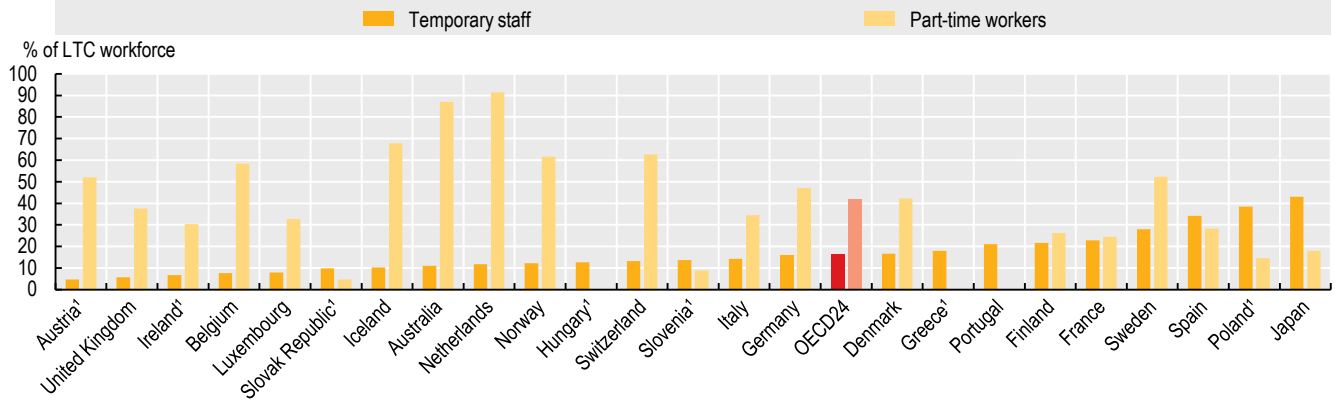
Figure 10.20. **Long-term care workers by education level, 2019 (or nearest year)**



1. Small sample sizes: data should be interpreted with caution.
Source: EU-LFS; ASEC-CPS for the United States; Census for Canada; LFS for Israel; Survey on Long-term Care Workers for Japan.

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Figure 10.21. **Share of long-term care workers who work part-time or on temporary contracts, 2019**



1. Small sample sizes: data should be interpreted with caution.
Source: EU-LFS; ASEC-CPS for the United States; Census for Canada; LFS for Israel; Survey on Long-term Care Workers for Japan.

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Long-term care settings

While countries have increasingly taken steps to ensure that people in need of LTC services who wish to live in their homes for as long as possible can do so, many people will at some point require LTC services that cannot be delivered at home. The number of beds in LTC facilities and in LTC departments in hospitals offers a measure of the resources available for delivering LTC services to individuals outside their home.

Across OECD countries, there were 46 beds per 1 000 people aged 65 and over in 2019 (Figure 10.22). The vast majority of beds – 43 per 1 000 people aged 65 and over – were located in LTC facilities, with just 3 in hospitals. The number of LTC beds per 1 000 people aged 65 and over varies enormously between OECD countries. Luxembourg – the country with the highest number (81.6 beds) – had nearly 20 times more beds per capita aged 65 and over than Greece, which had the lowest number (4.1 beds) in 2019. Five countries – Italy, Latvia, Poland, Turkey and Greece – had fewer than 20 beds per 1 000 adults aged 65 and over. Two – Luxembourg and the Netherlands – had more than 70 beds per 1 000 adults aged 65 and over.

Between 2009 and 2019, OECD countries reduced the number of LTC beds in facilities by an average of 3 beds per 1 000 people aged 65 and over (Figure 10.23). However, the change in the number of beds varied significantly between OECD countries. Over the ten-year period, Norway, Iceland, Finland and Denmark each reduced the number of beds in LTC facilities by 15 or more per 1 000 people aged 65 and over. At the other end of the spectrum, Korea and Luxembourg increased the number of LTC beds by more than 25 over the same period. These substantial changes were largely driven by changes in policies over the period. Reductions in the number of facility-based LTC beds in Sweden were driven by a move towards community-based LTC service provision, while the massive increase in capacity in Korea followed the introduction of a public LTC insurance scheme in 2008.

Many people receiving LTC wish to remain at home for as long as possible, and most countries have taken steps in recent years to support this preference and promote community and home-based care. However, depending on individual circumstances, a move to LTC facilities may – at least eventually – be the most appropriate option. For example, people living alone and requiring round-the-clock care and supervision (Wiener, 2009[11]), or people living in remote areas with limited home care support, may find it difficult to manage at home as their needs increase. It is therefore important that countries retain an appropriate level of residential LTC capacity.

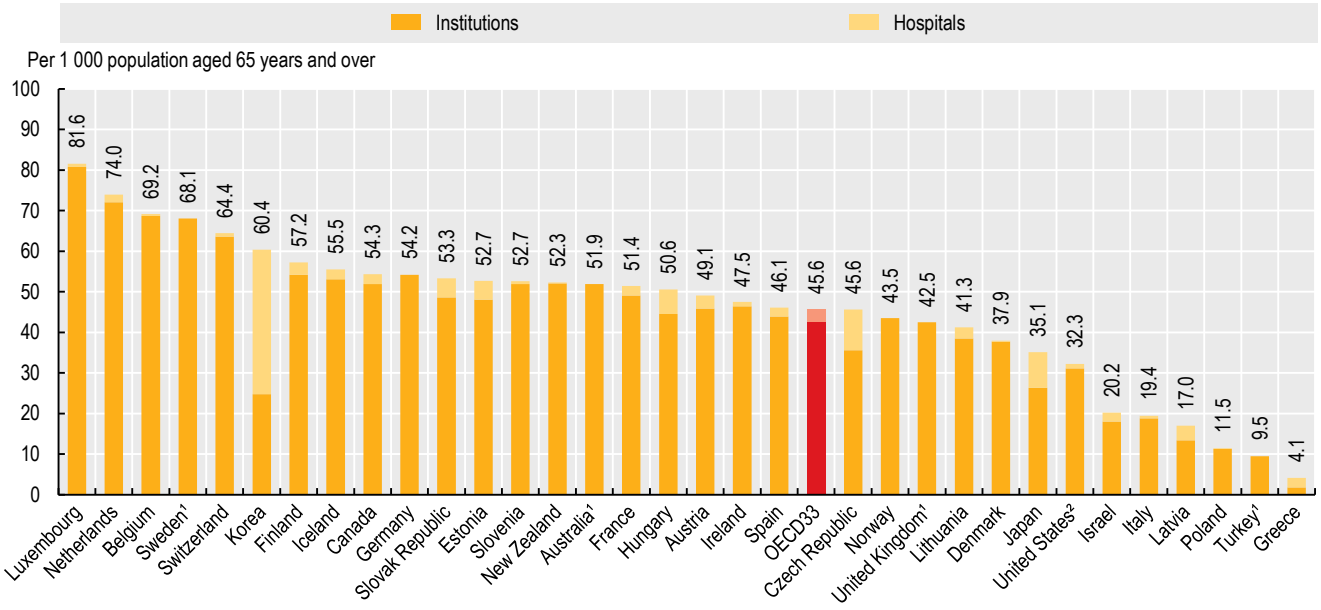
Residents of LTC facilities were badly hit during the COVID-19 pandemic: across 25 OECD countries, more than 40% of COVID-19 deaths occurred among nursing home residents. Moreover, containment measures – including strict bans on visitation in most countries – dramatically affected the well-being of many residents, even beyond the direct health impact of the virus. Developing and applying models of care that respect the resident's wishes and promote dignity and autonomy is a critical aspect of high-quality care. This includes ensuring that staff working in LTC facilities are appropriately trained, and that facilities receive the support they need to deliver high-quality care, reduce high turnover and facilitate the recruitment and retention of high-quality care workers (see indicator "Long-term care workers").

Definition and comparability

LTC facilities refer to nursing and residential care facilities that provide accommodation and LTC as a package. They include specially designed facilities or hospital-like settings where the predominant service component is LTC for people with moderate to severe functional restrictions. They do not include beds in adapted living arrangements for people who require help while guaranteeing a high degree of autonomy and self-control. For international comparisons, they should also not include beds in rehabilitation centres.

However, there are variations in data coverage across countries. Several countries only include beds in publicly funded LTC facilities, while others also include private facilities (both for-profit and not-for-profit). Some countries also include beds in treatment centres for addicted people, psychiatric units of general or specialised hospitals, and rehabilitation centres.

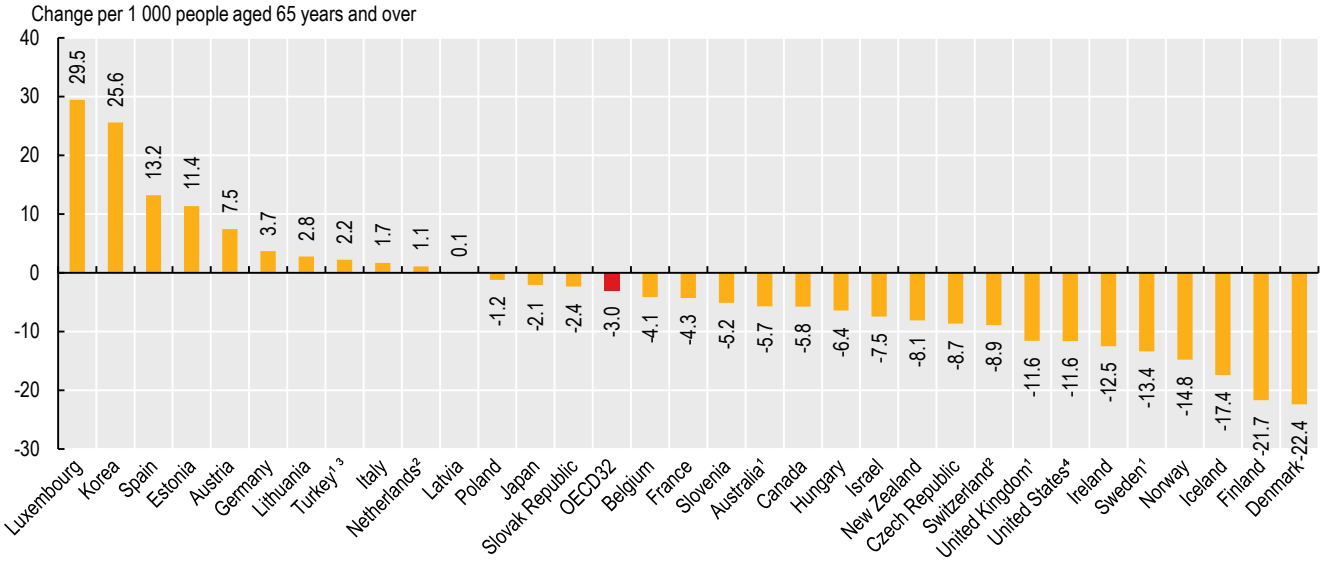
Figure 10.22. **Long-term care beds in institutions and hospitals, 2019 (or nearest year)**



1. Numbers of LTC beds in hospitals are not available in these countries. 2. Data refer to 2018.
Source: OECD Health Statistics 2021.

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Figure 10.23. **Trends in long-term care beds in institutions and hospitals, 2009-19 (or nearest year)**



1. Numbers of LTC beds in hospitals are not available in these countries. 2. The comparator numbers of LTC beds in hospitals refer to 2010. 3. The comparator number of LTC beds in institutions refers to 2011. 4. Data refer to 2018.
Source: OECD Health Statistics 2021.

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Long-term care spending and unit costs

Compared to other areas of health care, spending on LTC has seen the highest growth in recent years (see indicator "Health expenditure by type of service" in Chapter 7). Population ageing leads to more people needing ongoing health and social care; rising incomes increase expectations of the quality of life in old age; the supply of informal care is potentially shrinking; and productivity gains are difficult to achieve in such a labour-intensive sector. All these factors create upward cost pressures, and substantial further increases in LTC spending in OECD countries are projected for the coming years.

In 2019, 1.5% of gross domestic product (GDP) was allocated to LTC (including both the health and social component) across OECD countries (Figure 10.24). At 4.1% of GDP, the highest spender was the Netherlands, followed by Norway (3.7%), Denmark (3.6%) and Sweden (3.4%). At the other end of the scale, Mexico, Chile, Greece and Turkey only spent between 0.1% and 0.2% of their GDP on the delivery of LTC services. This variation partly mirrors differences in the population structure, but mostly reflects the stage of development of formal LTC systems, as opposed to more informal arrangements based mainly on care provided by unpaid family members. Some level of underestimation can exist for those countries unable to record spending on social LTC. Across OECD countries, four out of five dollars spent on LTC come from public sources.

The way LTC is organised in countries affects the composition of LTC spending and can also have an impact on overall spending. Across OECD countries, more than half of health and social LTC spending in 2019 occurred in nursing homes (Figure 10.25). In most OECD countries, these providers account for the majority of LTC spending. On average, around one-fifth of all LTC spending was on professional (health) care provision at home. Other LTC providers are hospitals, households – if a care allowance exists that remunerates the informal provision of such services – and LTC providers with a clear social focus. Each accounts for an average of 9% of total LTC spending. The importance of these modes of provision varies widely across countries, reflecting differences in the organisation of LTC and policy priorities.

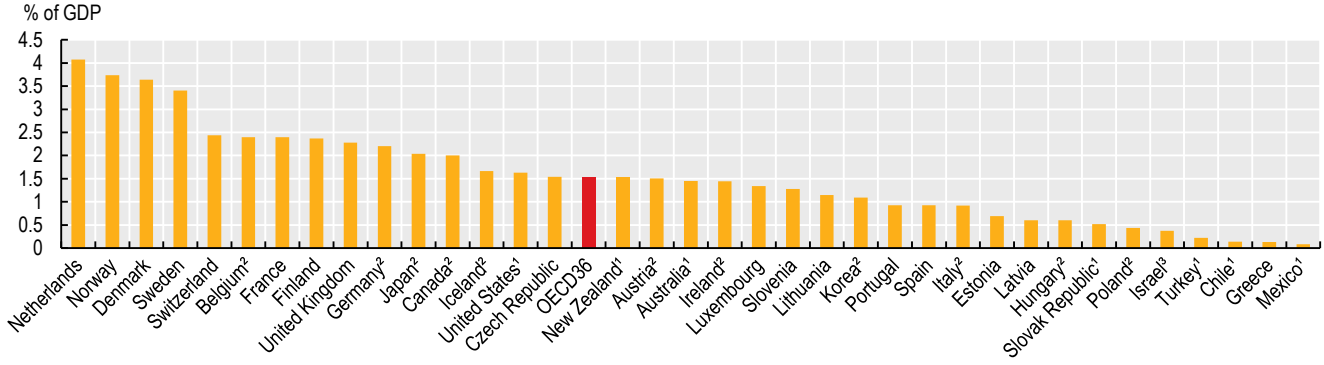
Public schemes play a crucial role in maintaining the costs of care for older people with LTC needs at affordable levels. Without public financial support, the total costs of LTC would be higher than median incomes among older people in most OECD countries and EU Member States. On average across OECD countries, institutional care for severe needs would cost more than twice the median income among older people (see Figure 10.26). Compared to median incomes among older individuals, total costs of care were highest in Finland and Sweden and lowest in Croatia and Slovenia, among countries providing data in 2020. Only in these latter two countries would an older person with median income be able to afford the total costs of institutional care for severe needs from their income alone. Public social protection systems provide support to older people with LTC needs so that they are able to afford care. It is because of public support that the costs older people ultimately face are far below what is shown in Figure 10.26 for Finland and Sweden (Oliveira Hashiguchi and Llena-Nozal, 2020[12]).

Definition and comparability

LTC spending comprises both health and social services to LTC-dependent people who need care on an ongoing basis. Based on the System of Health Accounts (OECD/Eurostat/WHO, 2017[13]), the health component of LTC spending relates to nursing care and personal care services (help with ADL). It also covers palliative care and care provided in LTC institutions (including costs for room and board) or at home. LTC social expenditure primarily covers help with IADL. Progress has been made in improving the general comparability of LTC spending in recent years, but there is still some variation in reporting practices between the health and social components of some LTC activities. In some countries, social LTC is (partly) included under health LTC; in others, only health LTC is reported. There is also some variation in the comprehensiveness of reporting privately funded LTC expenditure. For those countries that do not report any LTC spending, or where substantial components are missing, an attempt was made to estimate them (OECD, 2020[14]).

LTC institutions refer to nursing and residential care facilities that provide accommodation and LTC as a package. They are specially designed institutions where the predominant service component is LTC for dependent people with moderate to severe functional restrictions. An older person with severe needs is defined as someone who requires 41.25 hours of care per week. A detailed description of their needs can be found in Muir (2017[15]).

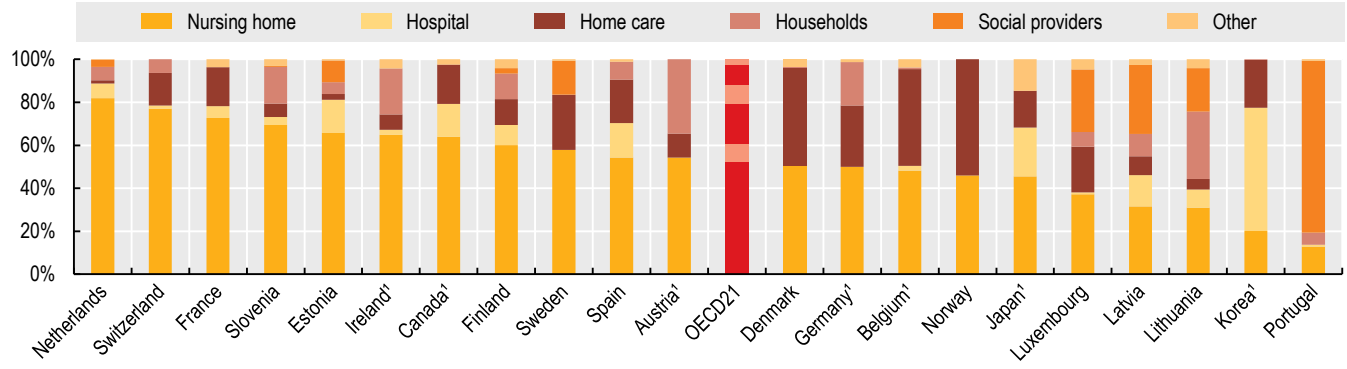
Figure 10.24. **Total long-term care spending as a share of GDP, 2019 (or nearest year)**



1. Estimated by OECD Secretariat. 2. Countries not reporting spending for LTC (social). In many countries this component is therefore missing from total LTC, but in some countries it is partly included under LTC (health). 3. Country not reporting spending for LTC (health).
Source: OECD Health Statistics 2021; OECD (2020[14]), "Focus on spending on long-term care", *https://www.oecd.org/health/health-systems/Spending-on-long-term-care-Brief-November-2020.pdf*.

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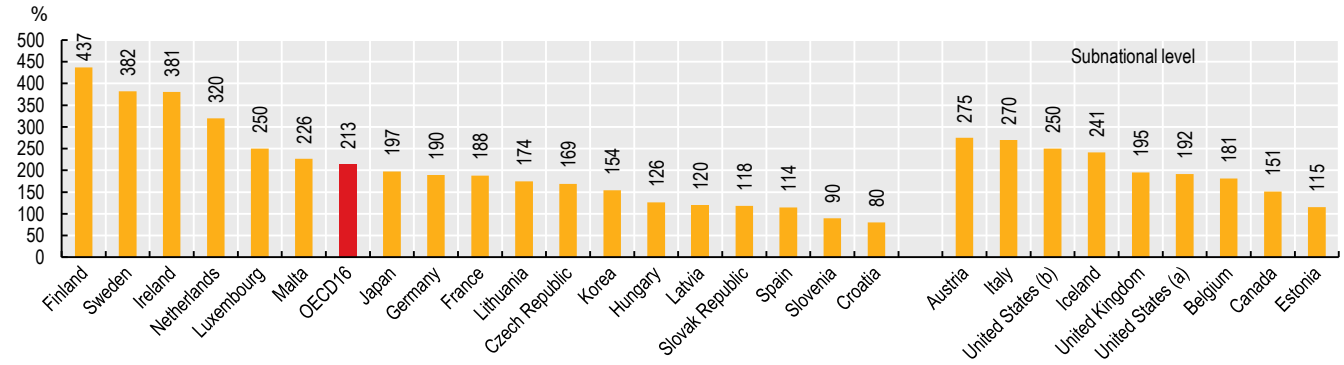
Figure 10.25. **Total long-term care spending, by provider, 2019 (or nearest year)**



1. Countries not reporting social LTC. The category "Social providers" refers to providers where the primary focus in on help with IADL or other social care.
Source: OECD Health Statistics 2021.

StatLink https://stat.link/kpowz3

Figure 10.26. **Costs of institutional long-term care for an older person with severe needs, as a share of the median income among people of retirement age and older, 2020 (or nearest year)**



Note: Data for Belgium refer to Flanders, for Iceland refer to Reykjavik, for Canada refer to Ontario, for Estonia refer to Tallinn, for Austria refer to Vienna, for the United States refer to (a) California and (b) Illinois, for Italy refer to South Tyrol and for the United Kingdom refer to England.
Source: OECD Long-Term Care Social Protection questionnaire (2020) and OECD Income Distribution Database (2020).

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End-of-life care

Improving care at the end of life, which refers to the health and social care provided as an individual nears the end of life, is becoming a growing global public health priority and an important aspect of people-centred policies. With ageing populations and changing epidemiology of disease, more people will require better care and support in their last phase of life. During the COVID-19 pandemic, containment measures adopted to prevent the spread of the virus – including bans on visitors to LTC facilities and hospitals, even for dying patients – ran counter to key principles of high-quality, person-centred end-of-life care (EOLC). The difficult experience at the end of life for many patients and their families during the pandemic has underscored the importance of person-centred, accessible and high-quality EOLC services.

The vast majority of all deaths between 2001 and 2017 in OECD countries were related to diseases requiring EOLC, classified into three death trajectories: organ failure, frailty and terminal illness (Figure 10.27). These trajectories often entail suffering and functional decline in the last years or months of life, requiring EOLC services (Lunney, Lynn and Hogan, 2002[16]). Between 2001 and 2017, organ failure represented the biggest death trajectory in OECD countries, despite an overall slight (-7%) reduction in the death rate between 2001 and 2017. The Slovak Republic, Korea and the United Kingdom experienced a reduction of more than 17% in this trajectory, while Chile, the Czech Republic, Finland, Hungary, Lithuania and Mexico recorded an increase over the same period.

Terminal illness constitutes an increasing burden in OECD countries. This is particularly the case in Estonia, Slovenia, the Slovak Republic and Korea, where deaths from terminal illnesses increased by more than 17% between 2001 and 2017. In contrast, Australia, the Czech Republic, Iceland, Japan, Mexico and the United States experienced a fall by 5% or more. OECD countries are rapidly ageing, and death rates related to frailty correspondingly grew substantially between 2001 and 2017. While 43% of deaths occurred in people aged over 80 in OECD countries in 2001, by 2017 this had increased to 51%. The proportion of people aged over 80 is expected to further double between 2017 and 2050 (OECD, 2019[17]), and the proportion of deaths due to frailty is likely to increase even further. While Poland, Sweden, Chile, Finland and the Czech Republic experienced a slight reduction in deaths related to frailty between 2001 and 2017, Lithuania, the Slovak Republic, Luxembourg, Slovenia and Germany registered an increase of 30% or more.

EOLC services can be provided in a variety of settings, including hospitals, people's homes, nursing homes or hospices; good EOLC entails that people can choose where to be cared for and die. Place of death is widely considered a measure of EOLC quality and people-centredness, as the patient's home is often the preferred place of death. Hospitals remain the most common place of death in most OECD countries, however (Figure 10.28). In 2019, across 22 OECD countries with comparable data, hospitals were the setting for 50% of deaths on average, and for over 70% of deaths in Korea and Japan. The Netherlands (20%), Switzerland (32%) and the United States (35%) reported the lowest proportion of deaths occurring in hospitals. In the Netherlands, both LTC facilities and private homes play an important role, with 36% of deaths occurring at home and 35% in LTC facilities (2017 data). Similarly, in Switzerland, 36% of deaths occurred in LTC facilities in 2018. In Norway, deaths in non-hospital institutions increased from 40% to 46% between 2001 and 2011. Home deaths are most common in Chile (47% in 2017), and the proportion is growing in the United States (23% in 2001; 31% in 2018) and the United Kingdom (19% in 2006; 24% in 2018).

In a majority of countries, deaths within hospitals decreased between 2009 and 2019, particularly in the United Kingdom. Only Estonia, Germany, Korea, Latvia, Lithuania and Switzerland experienced an increase. In Korea, the trend is driven in part by reductions in home deaths over the same period. Nevertheless, the high proportion of people dying in hospitals has raised concerns around the institutionalisation and medicalisation of death and the possible poor alignment with people's preferences.

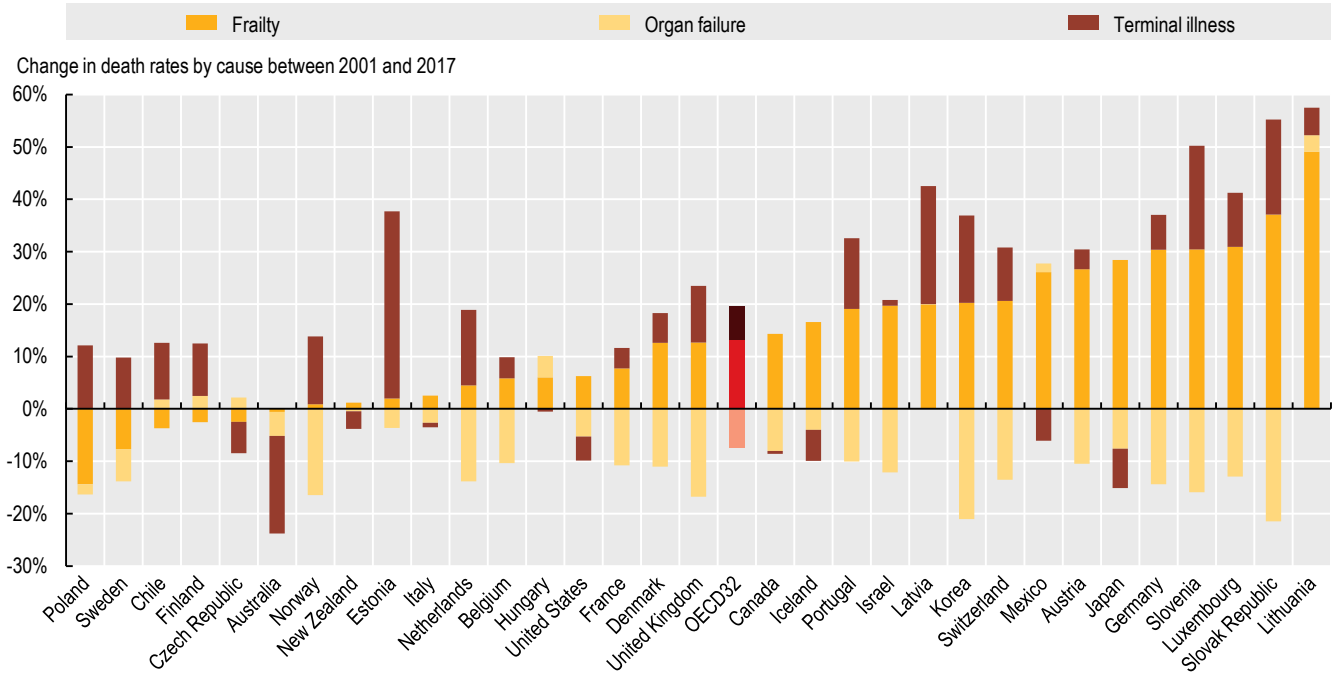
Definition and comparability

The classification of diseases requiring end-of-life care into three death trajectories (organ failure, frailty and terminal illness) reflects the definition of Lunney, Lynn and Hogan (2002[16]). Organ failure mainly refers to heart disease: chronic ischaemic heart disease is the main cause of death. In older people, dementia, Alzheimer's disease and senility are the most common causes of deaths related to frailty. Malignant neoplasm of bronchus and lung is the most common cause of death among those with terminal illness.

It is noteworthy that the period under examination has been characterised by a change in the codification practices for dementia and Alzheimer's disease, which have been increasingly codified as the main cause of death; this may have influenced the scale of the trend reported (Roth et al., 2018[18]).

The data shown in Figure 10.28 on place of death refer to years 2009 and 2019 or the closest years available. Caution is needed in cross-country comparisons, as data might refer to different years. The share of deaths at the hospital has been calculated by the OECD Secretariat, based on the available data.

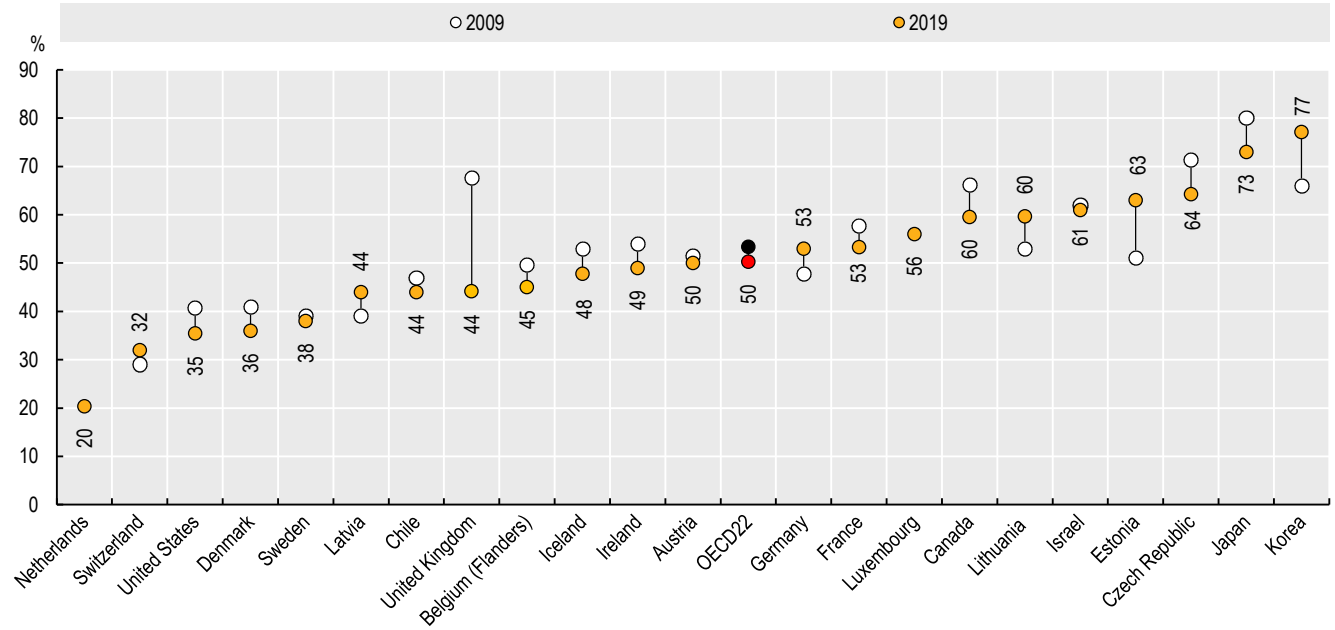
Figure 10.27. **Trends in death rates for diseases requiring EOLC, 2001-17 (or nearest year)**



Sources: World Health Organization mortality database (WHO, 2019[19]) and Lunney, Lynn and Hogan (2002[16]) for the definition of the EOLC death trajectories.

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Figure 10.28. **Trends in hospital death rates, 2009-19 (or nearest year)**



Sources: National sources and OECD EOLC-HCQO pilot data collection, 2021.
Note: Data for the Czech Republic include hospices and nursing homes classified as health establishments.

StatLink https://stat.link/oi2fun



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Health at a Glance 2021

OECD INDICATORS

Health at a Glance provides a comprehensive set of indicators on population health and health system performance across OECD members and key emerging economies. These cover health status, risk factors for health, access to and quality of health care, and health resources. Analysis draws from the latest comparable official national statistics and other sources.

Alongside indicator-by-indicator analysis, an overview chapter summarises the comparative performance of countries and major trends. This edition also has a special focus on the health impact of COVID-19 in OECD countries, including deaths and illness caused by the virus, adverse effects on access and quality of care, and the growing burden of mental ill-health.



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