6. QUALITY AND OUTCOMES OF CARE

Safe primary care – prescribing

Safe acute care – surgical complications and health care-associated infections

Safe acute care – obstetric trauma

Avoidable hospital admissions

Diabetes care

Mortality following ischaemic stroke

Mortality following acute myocardial infarction (AMI)

Hip and knee surgery

Care for people with mental health disorders

Breast cancer outcomes

Screening and survival for colorectal cancer

Survival for other major cancers

Vaccinations

Patient experiences of ambulatory care

The statistical data for Israel are supplied by and under the responsibility of the relevant Israeli authorities. The use of such data by the OECD is without prejudice to the status of the Golan Heights, East Jerusalem and Israeli settlements in the West Bank under the terms of international law.

Safe primary care – prescribing

Prescribing can be used as an indicator of health care quality, supplementing consumption and expenditure information (see Chapter 10). The overuse, underuse or misuse of prescription medicines can cause significant hazards to health and lead to wasteful expenditure. This is, for example, the case for opioids and antibiotics.

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[1]) (see indicator on "Opioids use" in Chapter 4).

Figure 6.1 indicates that, across OECD countries, the average volume of opioids prescribed in primary care in 2017 was more than 16 defined daily doses (DDDs) per 1 000 population per day. Iceland and Luxembourg report volumes more than twice the OECD average; Turkey and Korea report the lowest volumes. While these numbers measure prescriptions in primary care, they may reflect conditions on the supply side, as the mean availability of opioids is also low in Turkey (see indicator on "Opioids use" in Chapter 4). On average, more than 2% of the adult population across OECD countries were chronic users of opioids in 2017 (Figure 6.2). Korea and Italy report the lowest and Iceland reports the highest proportion by a large margin. The large 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.

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[2]). 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 prescribed and second-line antibiotics as a proportion of total volume have been validated as markers of quality in the primary care setting (OECD, 2017[3]), while overall antibiotic consumption and antimicrobial resistance across OECD countries has been increasing (OECD, 2018[2]).

Figure 6.3 shows the volume of all antibiotics prescribed in primary care in 2017, including second-line antibiotics. Total volumes vary more than three-fold across countries, with the United Kingdom, Estonia and Sweden reporting the lowest volumes, and Italy and Greece reporting the highest. Volumes of second-line antibiotics vary more than 24-fold across countries. The Scandinavian countries and the United Kingdom report the lowest volumes of second-line antibiotics, whereas Greece and Korea report the highest. Variation is likely to be explained, on the supply side, by differences in the guidelines and incentives that govern primary care prescribers 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*.

Data for Austria, Latvia, Estonia, Portugal, Spain and Sweden include data for primary care physicians only. Data for Canada, Finland, Italy, Korea and Norway include outpatient care. Data for the Netherlands include prescriptions by primary care doctors and medical specialists in outpatient clinics. Data for Denmark, Ireland and Slovenia include primary care, outpatient care and nursing homes. Data for Belgium and Turkey include primary care, nursing and residential facilities. Data for Iceland include data for primary care, outpatient care, specialists in private practice and nursing homes. Data relate to reimbursed prescriptions, with the exception of Iceland, Slovenia and the Netherlands (for benzodiazepines only), which include non-reimbursed medicines. Data for Denmark, Canada, Finland, Luxembourg, Portugal, the Netherlands and Sweden relate to medicines dispensed in community pharmacies. Data for Germany are based on prescription data of statutory health insurance for the outpatient area. Data for Australia are sourced from the Pharmaceutical Benefits Scheme dataset. Denominators comprise the population held in the national prescribing database, rather than the general population. Further information on sources and methods is at OECD.Stat. Other data in OECD Health Statistics on antibiotics may differ due to differences in data sources and coverage.

For opioids, "chronic users" is defined as the number of adults in the prescribing database with two or more prescriptions for at least 90 days.

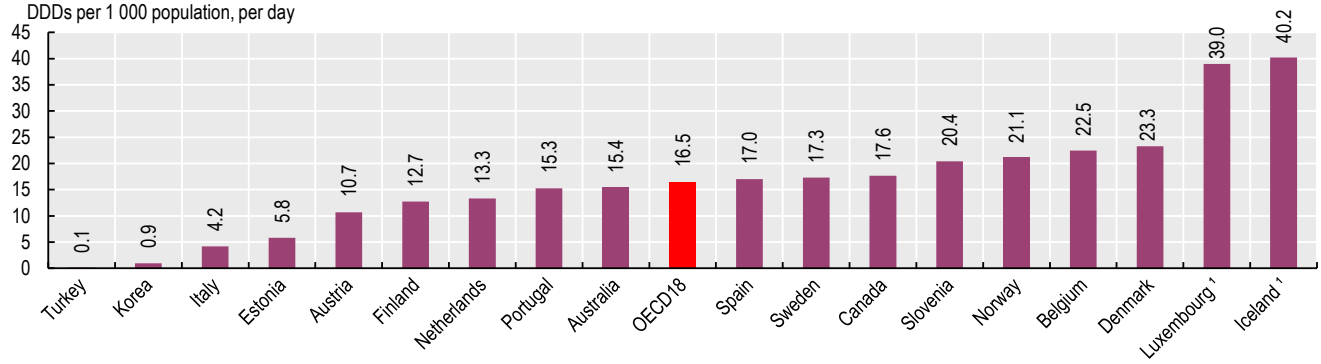
References

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

[2] OECD (2018), *Stemming the Superbug Tide: Just A Few Dollars More*, OECD Health Policy Studies, OECD Publishing, Paris, *https://dx.doi.org/10.1787/9789264307599-en*.

[3] OECD (2017), *Tackling Wasteful Spending on Health*, OECD Publishing, Paris, *https://dx.doi.org/10.1787/9789264266414-en*.

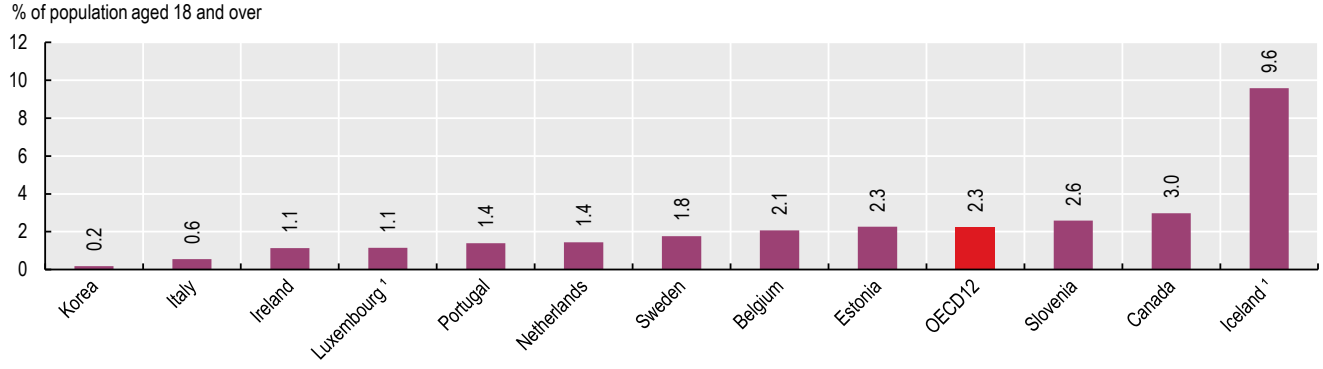
Figure 6.1. **Overall volume of opioids prescribed, 2017 (or nearest year)**



Note: Data exclude products used in the treatment of addiction. 1. Three-year average.
Source: OECD Health Statistics 2019 and Third Australian Atlas of Healthcare Variation 2018.

StatLink https://doi.org/10.1787/888934015961

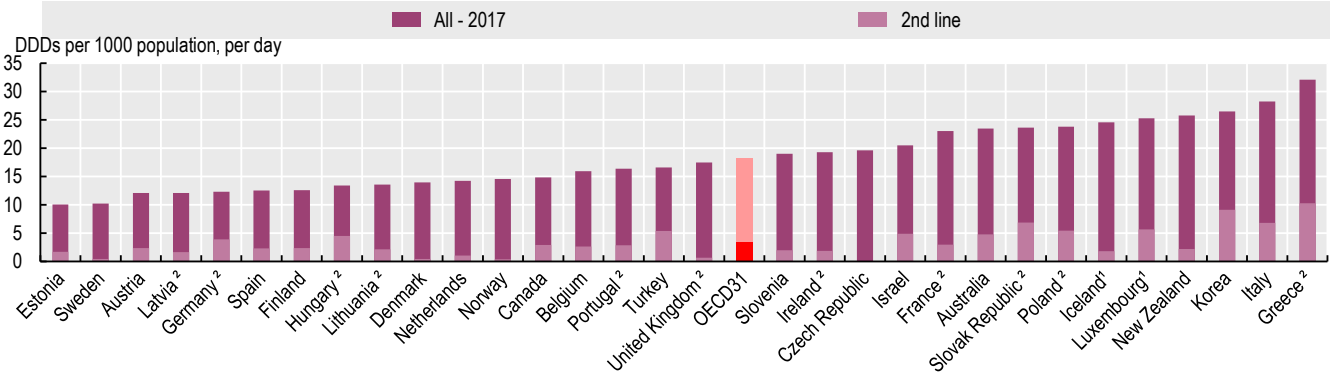
Figure 6.2. **Proportion of chronic opioid users in the adult population, 2017 (or nearest year)**



Note: Data exclude products used in the treatment of addiction. 1. Three-year average.
Source: OECD Health Statistics 2019.

StatLink https://doi.org/10.1787/888934015980

Figure 6.3. **Overall volume of antibiotics prescribed, 2017 (or nearest year)**



1. Three-year average. 2. Data from European Centre for Disease Prevention and Control as OECD Health Statistics data are not available.
Source: OECD Health Statistics 2019.

StatLink https://doi.org/10.1787/888934015999

Safe acute care – surgical complications and health care-associated infections

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, 2018[1]). The World Health Assembly recently endorsed the establishment of an annual World Patient Safety Day to further strengthen awareness and galvanise concerted action for safer care.

Patient safety problems may be categorised as "sentinel" or "never" events: events that should never or very rarely occur; and "adverse" events: events that cannot be fully avoided, but whose incidence could be considerably reduced.

Figure 6.4 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). The most common risk factors for this never event are emergencies, unplanned changes in procedure, patient obesity and changes in the surgical team. Preventive measures include checklists, counting instruments, methodical wound exploration and effective communication among the surgical team.

Figure 6.5 illustrates rates for an adverse event – the percentage of hospital inpatients with health care-associated infections (HAIs) – in OECD countries, together with the proportion of bacteria causing these infections that are resistanct to antibiotics. HAIs are the single most deadly and costly adverse event, representing up to 6% of public hospital budgets (Slawomirski, Auraaen and Klazinga, 2018[1]). This impact is increased by antibiotic-resistant bacteria, which can make HAIs difficult or even impossible to treat.

On average, across OECD countries, just under 4.9% of hospital patients had an HAI in 2015-17. This proportion was 5.2% in 2011-12. The observed proportion of patients was lowest in Lithuania, Latvia and Germany (around 3%) and highest in Portugal, Greece and Iceland (more than 7%). Antibiotic resistance rates ranged from 0% in Iceland to nearly 70% in Latvia, although these rates should be interpreted with caution due to small sample sizes in some cases.

Figure 6.6 shows rates for two related adverse events – pulmonary embolism (PE) and deep vein thrombosis (DVT) after hip or knee replacement surgery – using both unlinked and linked data definitions (see the "Definition and comparability" box). PE and DVT cause unnecessary pain and in some cases death, but they can be prevented by anticoagulants and other measures. The large variations observed, including an over 25-fold variation in DVT rates, may be explained in part by differences in diagnostic practices across countries.

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 International Classification of Diseases (ICD) codes for the relevant complication in any secondary diagnosis field is divided by the total number of discharges for patients aged 15 and older. The linked data approach expands beyond the surgical admission to include all subsequent related re-admissions 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.

HAI data are based on results of point prevalence studies conducted by the Centers for Disease Control and Prevention (CDC) and the European Centre for Disease Prevention and Control (ECDC) between 2015 and 2017 (Magill et al., 2018[2]; Suetens et al., 2018[3]). HAI rates are unadjusted and may not reflect rates published elsewhere owing to differences in the infections included. See Suetens et al. (2018[3]) and Magill et al. (2018[2]) for more details regarding specific inclusions and exclusions. Country estimates may reflect different levels of variability based on sampling differences.The HAI rate is presented, along with the proportion of patients recruited from intensive care units (ICUs). ICU patients may be at greater risk of developing an HAI. Antibiotic resistance data are based on a composite antibiotic resistance indicator developed by the ECDC (Suetens et al., 2018[3]).

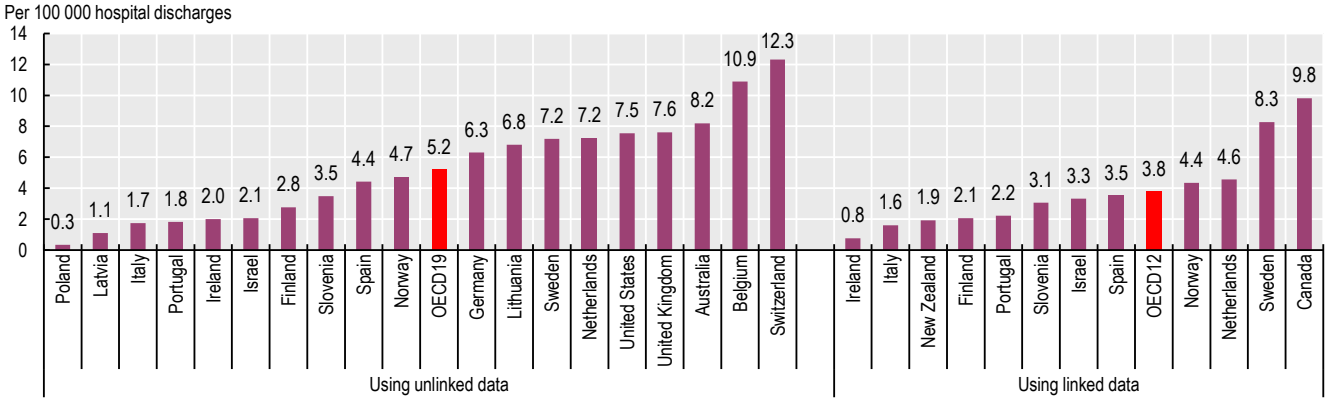
References

[2] Magill, SS. et al. (2018), "Changes in Prevalence of Health Care-Associated Infections in U.S. Hospitals." New England Journal of Medicine, 1;379(18):1732-1744. doi: *http://dx.doi.org/10.1056/NEJMoa1801550*.

[1] Slawomirski, L., A. Auraaen and N. Klazinga (2018), "The Economics of Patient Safety: Strengthening a value-based approach to reducing patient harm at national level," *OECD Health Working Papers*, No. 96, OECD Publishing, Paris, *https://doi.org/10.1787/5a9858cd-en*.

[3] Suetens, C. et al. (2018), "Prevalence of healthcare-associated infections, estimated incidence and composite antimicrobial resistance index in acute care hospitals and long-term care facilities: results from two European point prevalence surveys, 2016 to 2017", *Eurosurveillance*, *http://dx.doi.org/10.2807/1560-7917.es.2018.23.46.1800516*.

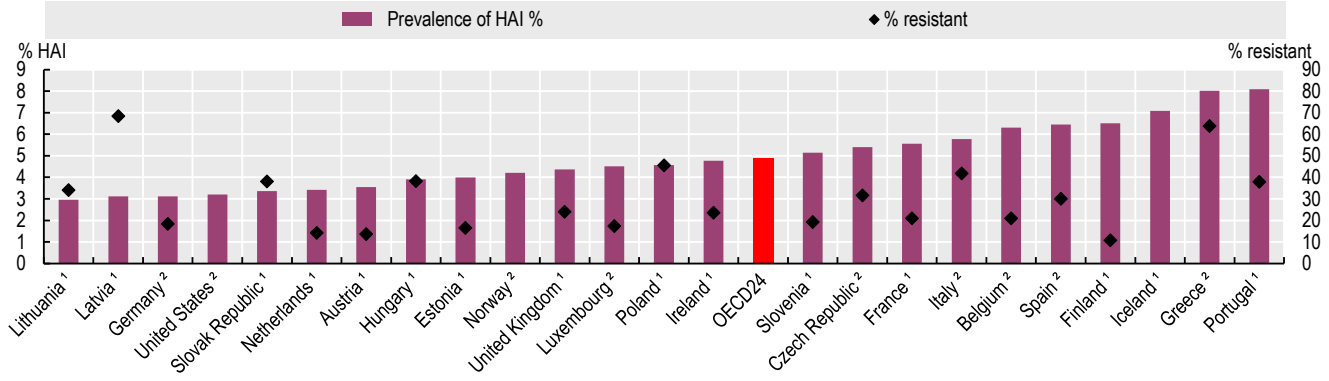
Figure 6.4. **Foreign body left in during procedure, 2017 (or nearest year)**



Source: OECD Health Statistics 2019.

StatLink https://doi.org/10.1787/888934016018

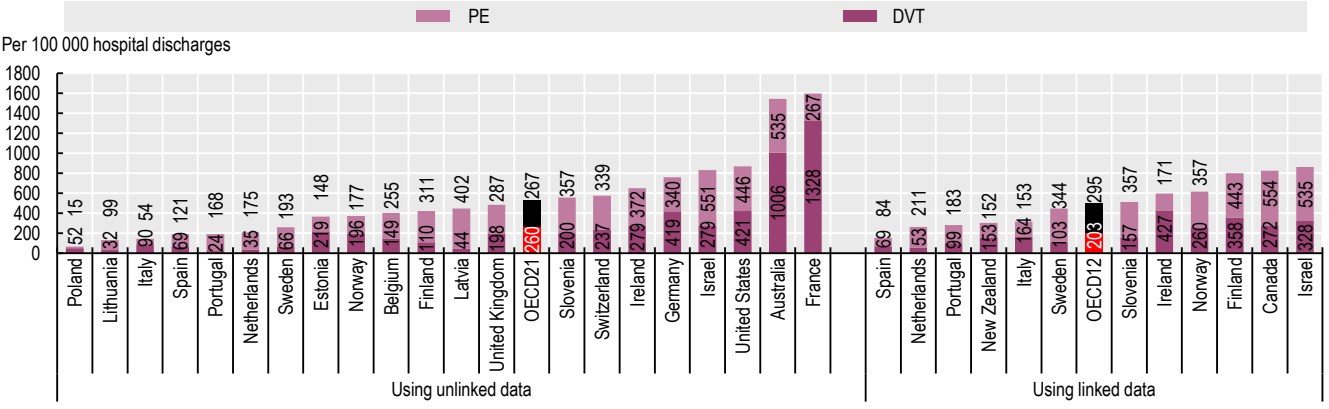
Figure 6.5. **Percentage of hospitalised patients with at least one health care-associated infection and proportion of bacteria isolated from these infections resistant to antibiotics, 2015-17**



Note: No resistance data available for Iceland, Norway and the United States.
1. Under 5% of patients from ICUs. 2. Over 5% of patients from ICUs.
Source: ECDC 2016-17 Point prevalence survey. CDC 2015 point prevalence study.

StatLink https://doi.org/10.1787/888934016037

Figure 6.6. **Adverse events in hip and knee surgeries: post-operative pulmonary embolism (PE) or deep vein thrombosis (DVT), 2017 (or nearest year)**



Source: OECD Health Statistics 2019.

StatLink https://doi.org/10.1787/888934016056

Safe acute care – obstetric trauma

A woman's safety during childbirth can be assessed by looking at potentially avoidable tearing of the perineum during vaginal delivery. Tears that extend to the perineal muscles and bowel wall require surgery. Possible complications include continued 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.

The proportion of deliveries involving higher-degree lacerations is considered a useful indicator of the quality of obstetric care. Nevertheless, differences in the consistency with which obstetric units report these complications may make international comparison difficult.

Rates of obstetric trauma may be influenced by other care processes, including the overall national rate of caesarean births, assisted vaginal births (i.e. using forcepts or a vacuum) and episiotomy (i.e. surgical incision of the perineum performed to widen the vaginal opening for delivery of an infant); these remain issues of ongoing research. For example, while the World Health Organization (WHO) (2018[1]) does not recommend routine or liberal use of episiotomy for women undergoing spontaneous vaginal birth, selective use of episiotomy to decrease severe perineal lacerations during delivery remains a matter of debate.

Figure 6.7 shows rates of obstetric trauma *with* instrument (referring to deliveries using forceps or vacuum extraction) and Figure 6.8 shows rates of obstetric trauma after vaginal delivery *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% in Poland, Israel, Italy, Slovenia and Lithuania to more than 10% in Denmark, Sweden, the United States and Canada. The rates of obstetric trauma after vaginal delivery without instrument vary from below 0.5 per 100 deliveries in Poland, Lithuania, Portugal, Latvia and Israel to over 2.5 per 100 deliveries in Denmark, the United Kingdom and Canada.

While the average rate of obstetric trauma with instrument (5.5 per 100 instrument-assisted vaginal deliveries) across OECD countries in 2017 was nearly four times the rate without instrument (1.4 per 100 vaginal deliveries without instrument assistance), there are indications of a relationship between the two indicators, with Israel, Lithuania, Portugal and Poland reporting among the lowest rates and Canada, Denmark and New Zealand reporting among the highest rates for both indicators.

Rates for both indicators reveal noticeable improvements in Denmark and Norway between 2012 and 2017, but no clear trend is evident in the overall rates of obstetric trauma over the five-year period: the OECD average remained relative static for vaginal deliveries both with and without instrument. In some countries, including Estonia, Italy and Slovenia, rates appear to have deteriorated.

In Canada there has been limited action to address the high rates of reported obstetric trauma. One initiative was the *Hospital Harm Improvement Resource: Obstetric Trauma* by the Canadian Patient Safety Institute to complement measurement of obstetric trauma by the Canadian Institute for Health Information. It links measurement and improvement by providing evidence-informed resources that support patient safety improvement efforts across the health system.

Definition and comparability

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 and 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.

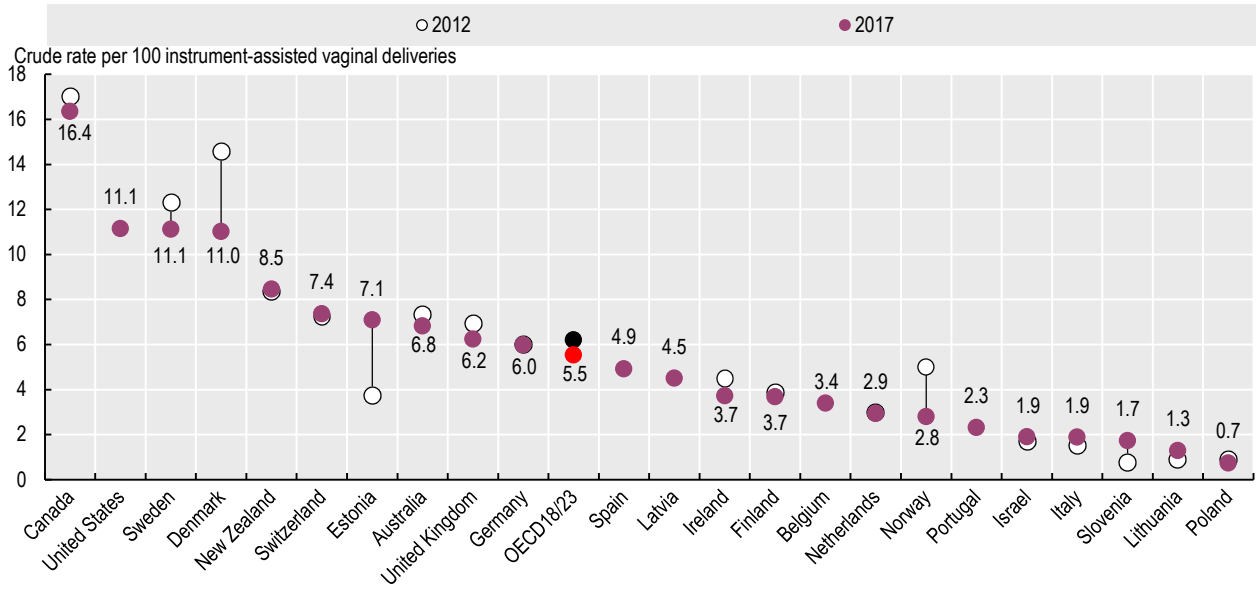
Data for 2012 are not available for Latvia and not presented for Belgium, Portugal, Spain and the United States due to a break in the series. Rates for Denmark, the Netherlands and Norway are based on registry data.

References

[2] Canadian Patient Safety Institute (2018), Hospital Harm Improvement Resource: Obstetric Trauma.

[1] WHO (2018), WHO recommendation on episiotomy policy.

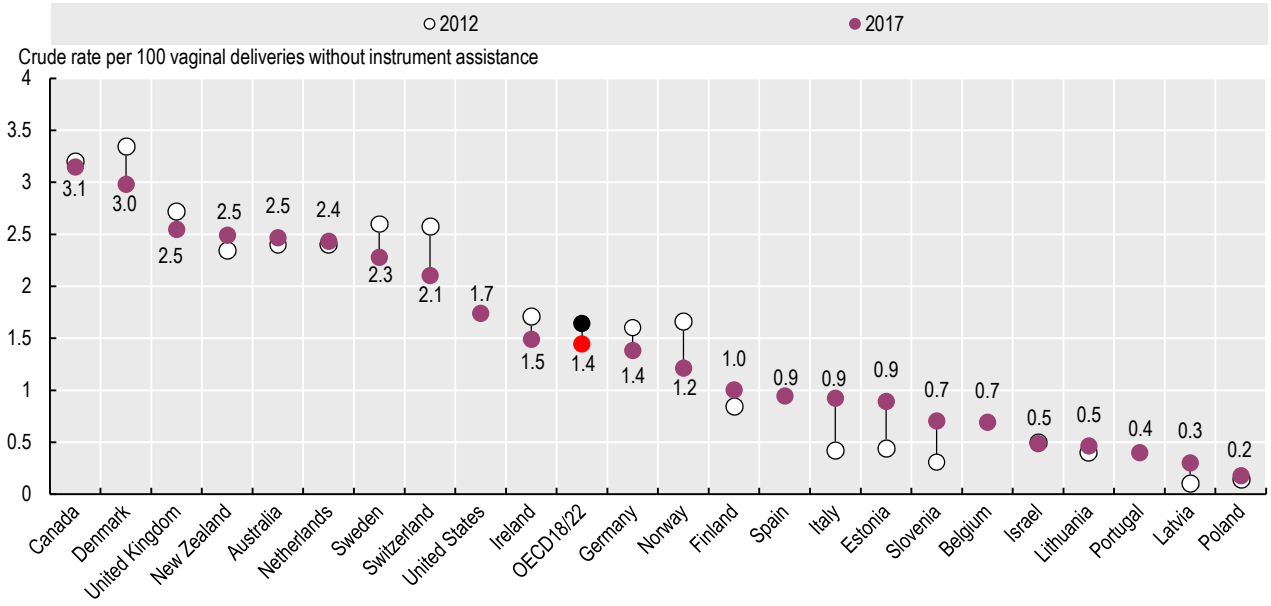
Figure 6.7. **Obstetric trauma, vaginal delivery with instrument, 2012 and 2017 (or nearest year)**



Source: OECD Health Statistics 2019.

StatLink https://doi.org/10.1787/888934016075

Figure 6.8. **Obstetric trauma, vaginal delivery without instrument, 2007 and 2017 (or nearest year)**



Source: OECD Health Statistics 2019.

StatLink https://doi.org/10.1787/888934016094

Avoidable hospital admissions

Primary care is expected to serve as the first point contact of people with health systems, and its functions include health promotion and disease prevention, managing new health complaints, treating the majority of uncomplicated cases, managing long-term 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 longer term, treating the most common conditions, tailoring and co-ordinating care for those with multiple health care needs and supporting the patient in self-education and self-management. 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, forthcoming [1]).

Asthma, chronic obstructive pulmonary disease (COPD) and congestive heart failure (CHF) are three 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. CHF is often caused by hypertension, diabetes or coronary heart disease.

Common to all three conditions is the fact 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 avoid the need for hospital admissions to treat these conditions, which are used as a marker of quality and access in primary care.

Figure 6.9 shows hospital admission rates for asthma and COPD together, given the physiological relationship between the two conditions. Admission rates specifically for asthma vary 12-fold across OECD countries, with Mexico, Italy and Colombia reporting the lowest rates and Latvia, Turkey and Poland reporting rates over twice the OECD average. International admission rates specifically for COPD vary 15-fold across OECD countries, with Japan, Italy and Mexico reporting the lowest and Hungary, Turkey and Australia the highest rates. A lower 7-fold variation across countries is seen for the two respiratory conditions combined.

Hospital admission rates for CHF vary 13-fold, as shown in Figure 6.10. Costa Rica, Mexico and Colombia have the lowest rates, while Poland, Lithuania and the Slovak Republic report rates over twice the OECD average.

Figure 6.11 reveals that in Korea, Lithuania, Mexico and Sweden steady reductions in admission rates for asthma and COPD combined and for CHF have been achieved in recent years, whereas in the Slovak Republic, while rates of admission for asthma and COPD have fallen, rates of admission for CHF have increased. While observed improvements in some countries may represent advances in the quality of primary care, recent reviews undertaken by the OECD indicate that investment in primary care may still not be happening quickly enough (OECD, 2017[2]), potentially resulting in wasteful spending on hospital care (OECD, 2017[3]).

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-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.

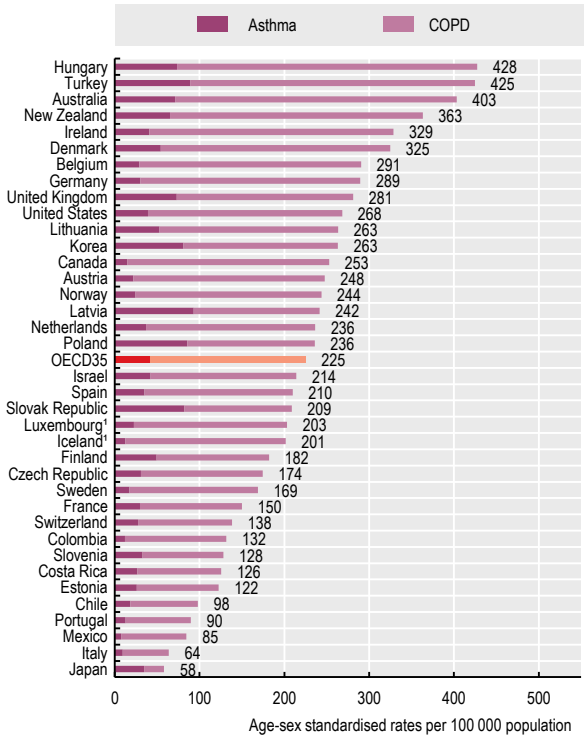
References

[1] OECD (forthcoming), *Doing Things Differently: Towards better primary care in the 21st century*, OECD Publishing, Paris.

[2] OECD (2017), *Caring for Quality in Health: Lessons Learnt from 15 Reviews of Health Care Quality*, OECD Reviews of Health Care Quality, OECD Publishing, Paris, *https://dx.doi.org/10.1787/9789264267787-en*.

[3] OECD (2017), *Tackling Wasteful Spending on Health*, OECD Publishing, Paris, *https://dx.doi.org/10.1787/9789264266414-en*.

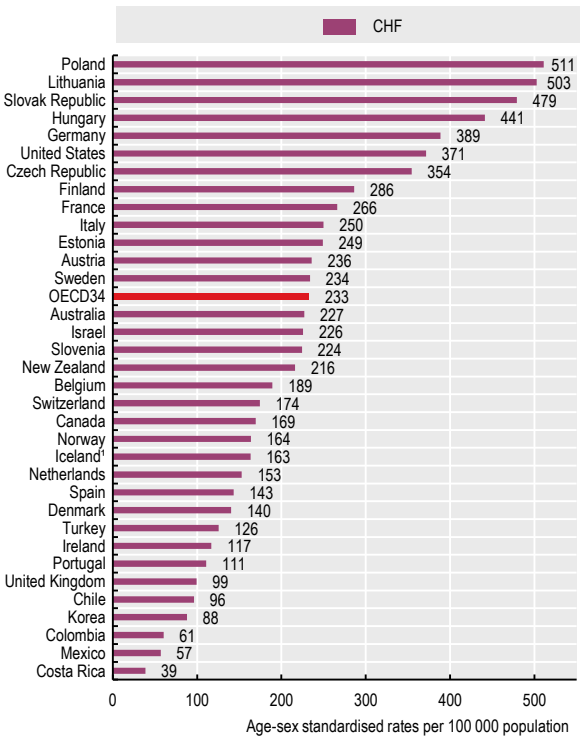
Figure 6.9. **Asthma and COPD hospital admission in adults, 2017 (or nearest year)**



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

StatLink https://doi.org/10.1787/888934016113

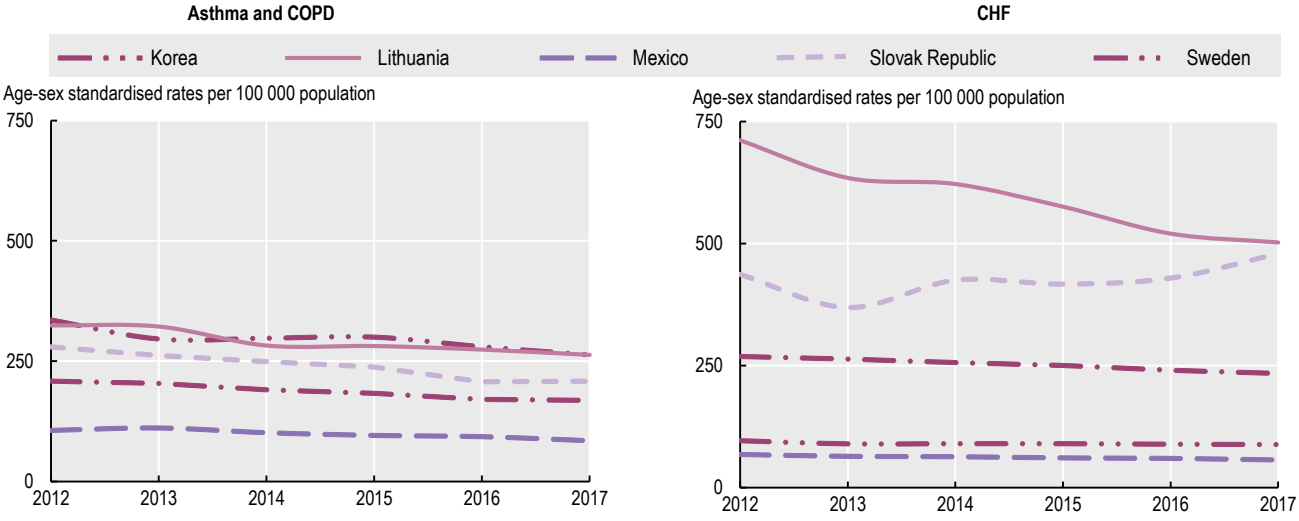
Figure 6.10. **Congestive Heart Failure (CHF) hospital admission in adults, 2017 (or nearest year)**



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

StatLink https://doi.org/10.1787/888934016132

Figure 6.11. **Trends in hospital admission in adults, selected countries 2007-17 (or nearest year)**



Source: OECD Health Statistics 2019.

StatLink https://doi.org/10.1787/888934016151

Diabetes care

Effective management of diabetes remains a public health priority, with over 425 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. It is a leading cause of cardiovascular disease, blindness, kidney failure and lower limb amputation. Diabetes caused 4 million deaths in 2017, and it is projected that by 2045 over 629 million adults will have the condition (IDF, 2017[1]).

Ongoing management of diabetes usually involves a considerable amount of self-care; therefore, advice and education are central to the primary care of people with diabetes (OECD, 2019[2]). 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 (Wolters, Braspenning and Wensing, 2017[3]). Management of other key risk factors such as smoking, blood pressure and lipid levels is also important in reducing complications of diabetes.

Figure 6.12 shows avoidable hospital admissions for diabetes. While admissions have fallen in many countries over time, a more than 5-fold variation in the rates is still evident across countries. Iceland, Italy and Spain report the lowest rates, with Mexico and Korea reporting rates nearly twice the OECD average. Prevalence of diabetes may explain some of this variation. A positive relationship can be demonstrated between overall hospital admissions and admissions for diabetes, providing some indication that access to hospital care can also play a role in explaining international variation (OECD, 2015[4]).

In diabetic individuals with hypertension, angiotensin-converting enzyme inhibitors (ACE-Is) or angiotensin receptor blockers (ARBs) 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 have rates lower than 80%.

Hospital admissions for major lower extremity amputation reflect the long-term quality of diabetes care. Figure 6.14 shows the rates of amputations among adults with diabetes. The international variation is over 20-fold, with Iceland, Italy, Korea and the United Kingdom reporting rates lower than 3 per 100 000 general population and Costa Rica, Israel, Mexico and Austria reporting rates above 13 per 100 000.

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 still not well understood. In its ongoing attempts to contribute to reductions in knowledge gaps, the OECD is working to establish 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 Patient-Reported Indicators Surveys (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 numberator is the number of these people who have one or more prescriptions of an angiotensin converting enzyme inhibitor (ACE-I) or angiotensin receptor blocker (ARB).

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. 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.

References

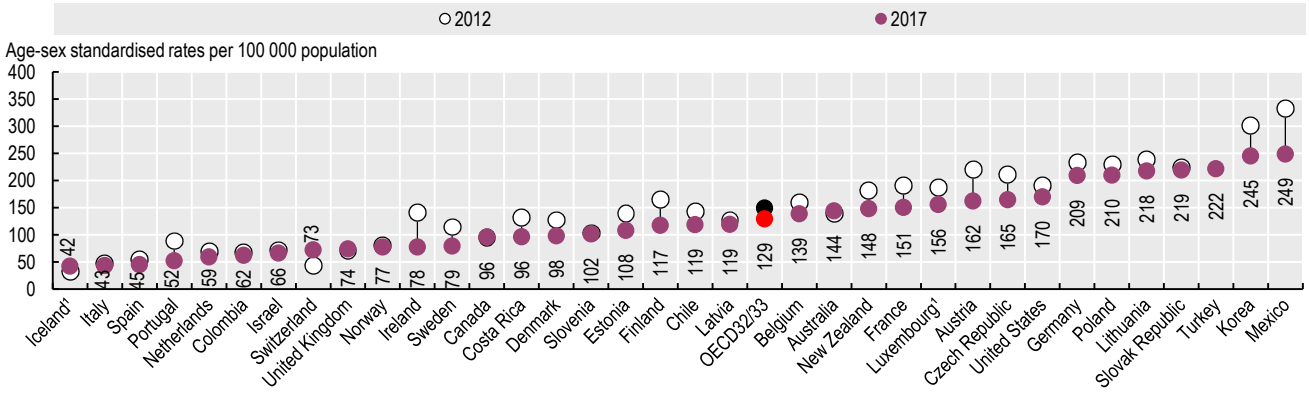
[1] IDF (2017), *IDF Diabetes Atlas Eighth Edition 2017*, International Diabetes Federation, *http://www.diabetesatlas.org*.

[2] OECD (2019), "Realising the Full Potential of Primary Health Care", OECD, Paris, *http://www.oecd.org/health/health-systems/OECD-Policy-Brief-Primary-Health-Care-May-2019.pdf*.

[4] OECD (2015), *Cardiovascular Disease and Diabetes: Policies for Better Health and Quality of Care*, OECD Health Policy Studies, OECD Publishing, Paris, *https://dx.doi.org/10.1787/9789264233010-en*.

[3] Wolters, R., J. Braspenning and M. Wensing (2017), "Impact of primary care on hospital admission rates for diabetes patients: A systematic review", *Diabetes Research and Clinical Practice*, Vol. 129, pp. 182-196, *http://dx.doi.org/10.1016/j.diabres.2017.05.001*.

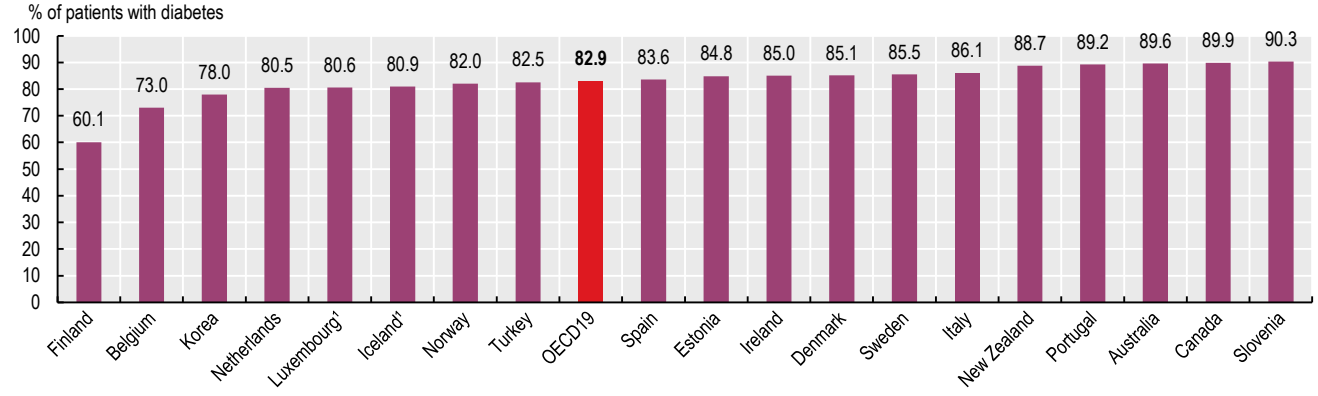
Figure 6.12. **Diabetes hospital admission in adults, 2012 and 2017 (or nearest year)**



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

StatLink https://doi.org/10.1787/888934016170

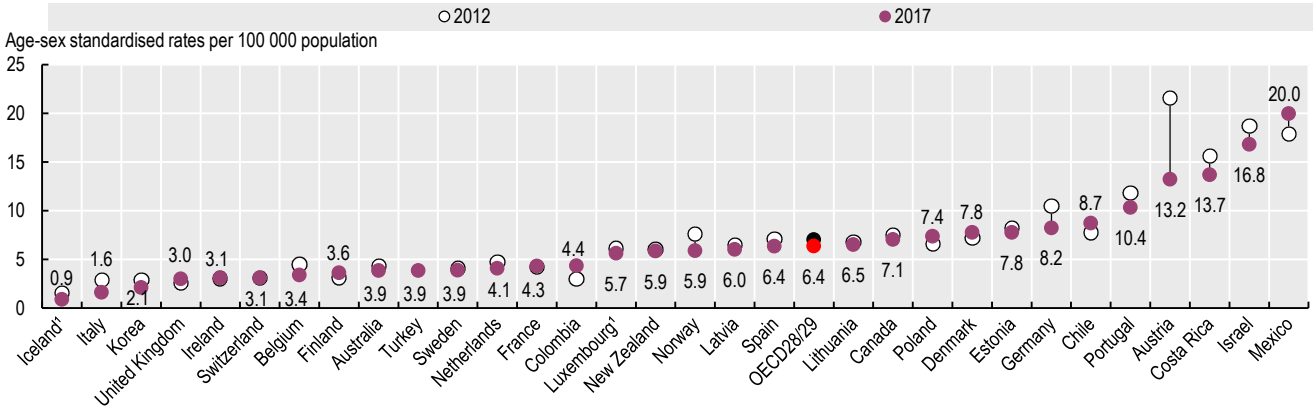
Figure 6.13. **People with diabetes prescribed recommended antihypertensive medication in the past year, 2017 (or nearest year)**



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

StatLink https://doi.org/10.1787/888934016189

Figure 6.14. **Major lower extremity amputation in adults with diabetes, 2012 and 2017 (or nearest year)**



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

StatLink https://doi.org/10.1787/888934016208

Mortality following ischaemic stroke

Stroke is the second leading global cause of death behind heart disease and accounted for over 10% of total deaths worldwide in 2013 (American Heart Association, 2017[1]). 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).

Figure 6.15 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 6.16 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 linked data, which are not available in all countries.

Across OECD countries, 7.7% of patients in 2017 died within 30 days of hospital admission for ischaemic stroke using unlinked data (Figure 6.15). The case-fatality rates were highest in Slovenia, Poland, Lithuania and Latvia, all with mortality rates over 12%. Rates were less than 4% in Norway, Korea, Japan and Costa Rica. Low rates in Japan are due in part to recent efforts dedicated to improving the treatment of stroke patients in hospitals, through systematic blood pressure monitoring, major material investment in hospitals and establishment of stroke units (OECD, 2015[2]).

Across the 23 countries that reported linked data rates, 12.3% of patients died within 30 days of being admitted to hospital for stroke (Figure 6.16). This figure is higher than the same-hospital indicator because it only counts each patient once and captures all deaths.

Treatment for ischaemic stroke has advanced dramatically over the last decade, with systems and processes now in place in many OECD countries to identify suspected ischaemic stroke patients as early as possible and to deliver acute reperfusion therapy quickly. Between 2007 and 2017, case-fatality rates for ischaemic stroke decreased substantially across OECD countries: from 10.1% to 7.7% for unlinked data rates and from 14.6% to 12.6% for linked data rates.

National measures of ischaemic stroke are affected by within-country variations in performance at the hospital level. Reducing this variation is key to providing equitable care and reducing overall mortality rates. Figure 6.17 presents the dispersion of ischaemic stroke 30-day case-fatality rates across hospitals within countries, using both unlinked and linked data.

Reducing this variation requires high-quality stroke care for all, including timely transportation of patients, evidence-based medical interventions and access to high-quality specialised facilities such as stroke units (OECD, 2015[3]). 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 (Chang and Prabhakaran, 2017[4]).

Definition and comparability

National case-fatality rates are defined in indicator "Mortality following acute myocardial infarction".

Hospital-level stroke mortality rates use a different methodology from national rates. Hospital rates are adjusted for age, sex, co-morbidity, stroke severity and previous stroke (linked data only). The reference population for hospital rates is constructed from data from participating countries. The hospital-level ischaemic stroke definition also differs from the national indicator, using only ICD-10 code I63 (cerebral infarction).

Figure 6.17 is a turnip plot that graphically represents the relative dispersion of rates. A limitation of this type of representation is the inability to detect statistically significant variations. Countries are ordered according to ascending level of dispersion as measured by the interquartile range (between the 25th and 75th percentile) of rates. Hospitals with fewer than 50 ischaemic stroke admissions were excluded from both figures to improve data reliability.

References

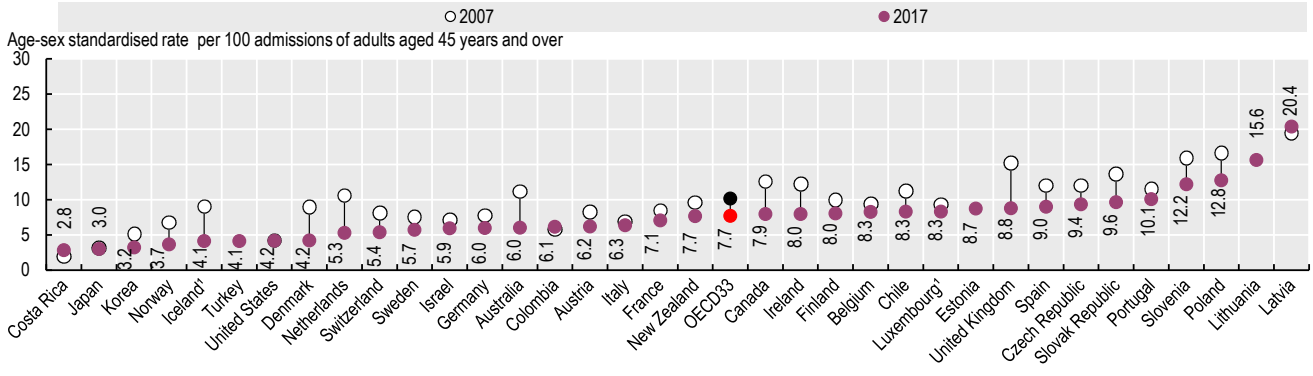
[1] American Heart Association (2017), *Heart Disease and Stroke Statistics 2017 at-a-Glance*.

[4] Chang, P. and S. Prabhakaran (2017), "Recent advances in the management of acute ischemic stroke", *F1000Research*, *http://dx.doi.org/10.12688/f1000research.9191.1*.

[3] OECD (2015), *Cardiovascular Disease and Diabetes: Policies for Better Health and Quality of Care*, OECD Health Policy Studies, OECD Publishing, Paris, *https://dx.doi.org/10.1787/9789264233010-en*.

[2] OECD (2015), *OECD Reviews of Health Care Quality: Japan 2015: Raising Standards*, OECD Reviews of Health Care Quality, OECD Publishing, Paris, *https://dx.doi.org/10.1787/9789264225817-en*.

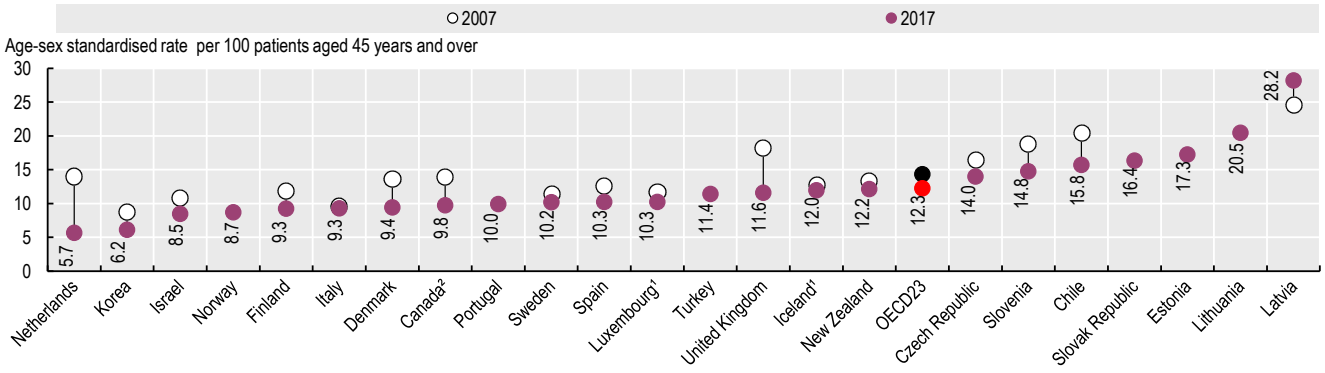
Figure 6.15. **Thirty-day mortality after admission to hospital for ischaemic stroke based on unlinked data, 2007 and 2017 (or nearest year)**



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

StatLink https://doi.org/10.1787/888934016227

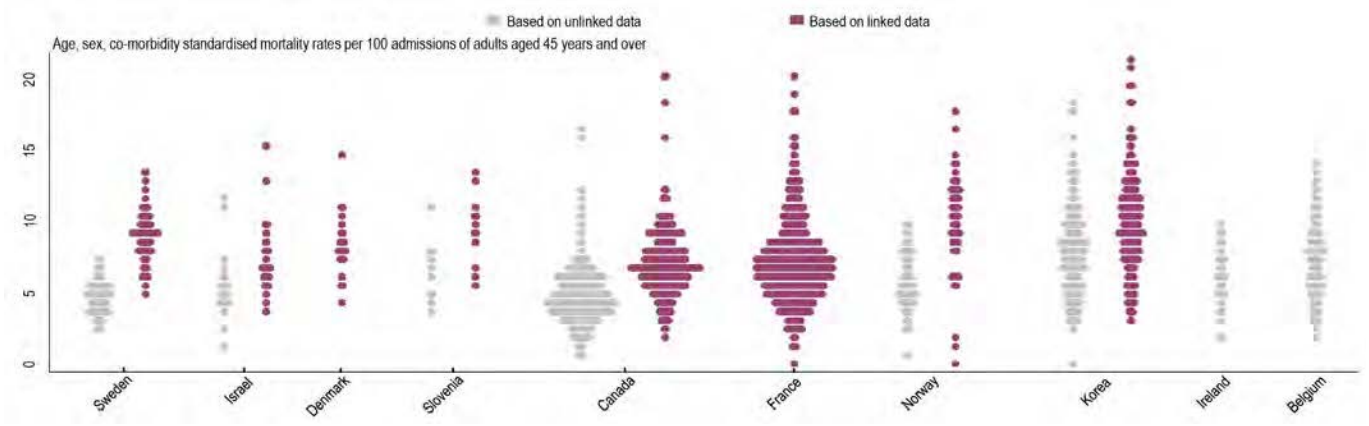
Figure 6.16. **Thirty-day mortality after admission to hospital for ischaemic stroke based on linked data, 2007 and 2017 (or nearest year)**



1. Three-year average. 2. Results for Canada do not include deaths outside acute care hospitals.
Source: OECD Health Statistics 2019.

StatLink https://doi.org/10.1787/888934016246

Figure 6.17. **Variations across hospitals in 30-day mortality after admission for ischaemic stroke using linked and unlinked data, 2015-17**



Note: The width of each line in the figure represents the number of hospitals (frequency) with the corresponding rate.
Source: OECD Hospital Performance Data Collection 2019.

StatLink https://doi.org/10.1787/888934016265

Mortality following acute myocardial infarction (AMI)

Mortality due to coronary heart disease has declined substantially since the 1970s (see indicator "Mortality from circulatory diseases" in Chapter 3). Important advances in both prevention policies, such as for smoking (see indicator "Smoking among adults" in Chapter 4), and treatment of cardiovascular diseases have contributed to these declines (OECD, 2015[1]). A good indicator of acute care quality is the 30-day AMI case-fatality rate. The measure reflects the processes of care, including timely transport of patients and effective medical interventions.

Figure 6.18 shows the case-fatality rates within 30 days of admission for AMI where the death occurs in the same hospital as the initial AMI admission. This method of calculating the indicator is influenced by not only the quality of care provided in hospitals but also differences in hospital transfers and average length of stay. The lowest rates are found in Iceland, Denmark, Norway, the Netherlands, Australia and Sweden (all 4% or less). The highest rates are in Latvia and Mexico, suggesting that AMI patients do not always receive recommended care in these countries. 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[2]).

Figure 6.19 shows 30-day case-fatality rates where fatalities are recorded regardless of where they occur (including after transfer to another hospital or after discharge). This is a more robust indicator because it records deaths more widely than the same-hospital indicator, but it requires a unique patient identifier and linked data, which are not available in all countries. The AMI case-fatality rate in 2017 ranged from 4.0% in the Netherlands to 16.5% in Latvia.

Case-fatality rates for AMI decreased substantially between 2007 and 2017 (Figure 6.18 and Figure 6.19). Across OECD countries, case fatalities fell from 9.5% to 6.9% when considering same-hospital deaths and from 12.5% to 9.1% when considering deaths in and out of hospital.

Variations in AMI 30-day case-fatality rates at the national level are influenced by the dispersion of rates across hospitals within countries, as represented in Figure 6.20. The interquartile range of rates within countries varies markedly. The differences between the upper and lower rates are 1.9 deaths per 100 admissions for Sweden and 4.1 deaths per 100 admissions for Korea (based on linked data).

Multiple factors contribute to variations in outcomes of care, including hospital structure, processes of care and organisational culture. Recent research points to higher total numbers of hospital patients as being significantly related to higher performance; this may support national movements towards concentration of care services (Lalloué et al., 2019[3]).

Definition and comparability

The case-fatality rate measures the percentage of people aged 45 and over who die within 30 days following admission to hospital for a specific acute condition. Rates based on unlinked data only consider deaths occurring in the same hospital as the initial admission. Rates based on linked data consider deaths that occurred anywhere including in or outside hospital. While the linked data-based method is considered more robust, it requires a unique patient identifier to link the data across the relevant datasets, which is not available in all countries.

National rates are age-sex standardised to the 2010 OECD population aged 45 and over admitted to hospital for AMI (ICD-10 codes I21-I22) and ischaemic stroke (ICD-10 codes I63-I64).

Hospital-level AMI mortality rates use a different methodology from national rates. Hospital rates are adjusted for age, sex, co-morbidity and previous AMI (linked data only). The reference population for hospital rates is constructed from data from participating countries (Padget, forthcoming[4]).

Figure 6.20 is a turnip plot that graphically represents the relative dispersion of rates. A limitation of this type of representation is the inability to detect statistically significant variations. Countries are ordered according to ascending level of dispersion as measured by the interquartile range (between the 25th and 75th percentile) of rates. Hospitals with fewer than 50 AMI admissions were excluded from both figures to improve data reliability.

References

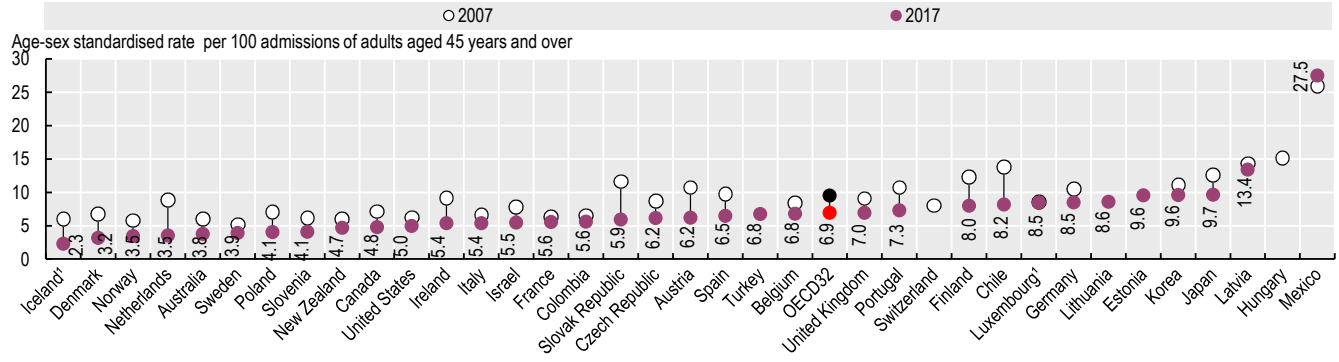
[4] Padget, M. (forthcoming), "OECD Hospital Performance Project: Methodological Development of International Measurement of Acute Myocardial Infraction 30-Day Mortality Rates at the Hospital Level", *OECD Health Working Papers*, OECD Publishing, Paris.

[3] Lalloué, B. et al. (2019), "Does size matter? The impact of caseload and expertise concentration on AMI 30-day mortality-A comparison across 10 OECD countries.", *Health policy (Amsterdam, Netherlands)*, Vol. 123/5, pp. 441-448, *http://dx.doi.org/10.1016/j.healthpol.2019.03.007*.

[2] Martínez-Sánchez, C. et al. (2017), "Reperfusion therapy of myocardial infarction in Mexico: A challenge for modern cardiology.", *Archivos de cardiologia de Mexico*, Vol. 87/2, pp. 144-150, *http://dx.doi.org/10.1016/j.acmx.2016.12.007*.

[1] OECD (2015), *Cardiovascular Disease and Diabetes: Policies for Better Health and Quality of Care*, OECD Health Policy Studies, OECD Publishing, Paris, *https://dx.doi.org/10.1787/9789264233010-en*.

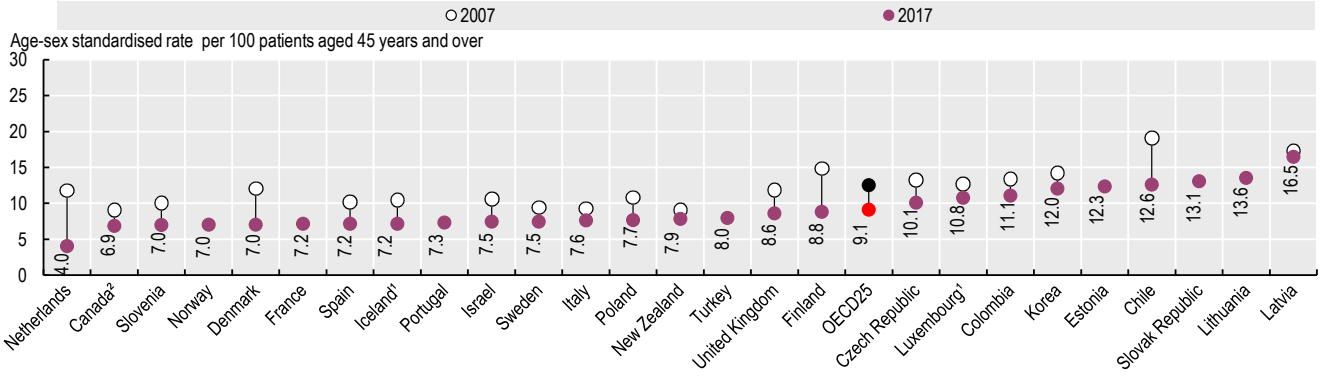
Figure 6.18. **Thirty-day mortality after admission to hospital for AMI based on unlinked data, 2007 and 2017 (or nearest year)**



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

StatLink https://doi.org/10.1787/888934016284

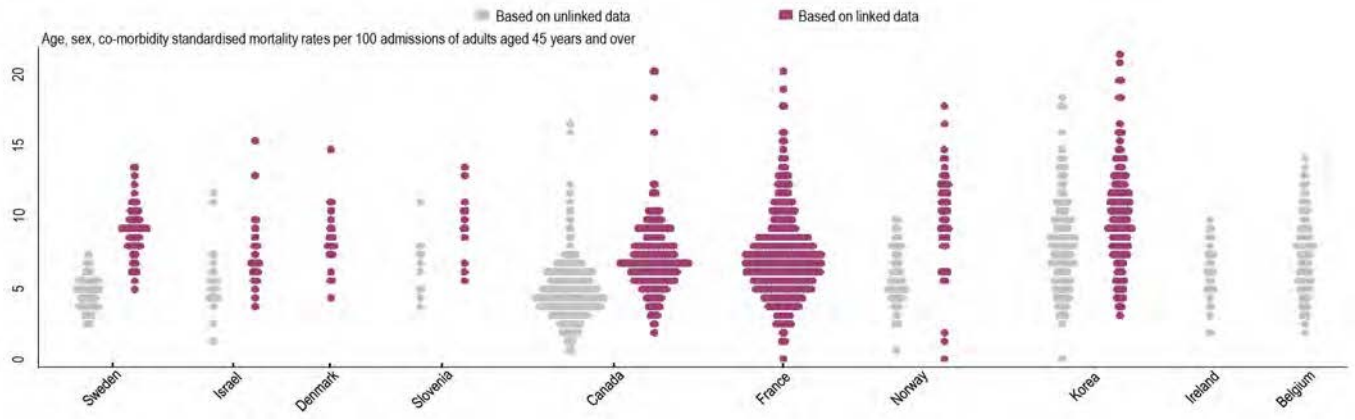
Figure 6.19. **Thirty-day mortality after admission to hospital for AMI based on linked data, 2007 and 2017 (or nearest year)**



1. Three-year average. 2. Results for Canada do not include deaths outside acute care hospitals.
Source: OECD Health Statistics 2019.

StatLink https://doi.org/10.1787/888934016303

Figure 6.20. **Variations across hospitals in 30-day mortality after admission for AMI using linked and unlinked data, 2015-17**



Note: The width of each line in the figure represents the number of hospitals (frequency) with the corresponding rate.
Source: OECD Hospital Performance Data Collection 2019.

StatLink https://doi.org/10.1787/888934016322

Hip and knee surgery

Hip and knee replacement surgeries can be effective treatments for patients with chronic conditions such as osteoarthritis (OA). Surgeries to repair hip fractures are also common and effective. Ageing and a loss of skeletal strength from osteoporosis are the main risk factors associated with a hip fracture, typically sustained during a fall. In most instances, surgical intervention is required to repair or replace the fractured hip joint.

Treatment of patients with hip and knee OA aims to reduce the patient's joint pain and improve their function, mobility and quality of life (QoL). Surgery is generally recommended if symptoms substantially affecting QoL persist after exhausting non-surgical treatment (NICE, 2014[1]). Age-standardised hip and knee replacement rates have risen over the past decade, and vary up to five-fold within and between countries (OECD, 2014[2]).

Figure 6.21 shows the crude mean scores submitted by patients before and at 6 or 12 months after elective hip replacement surgery for OA in a set of national or sub-national joint replacement programmes using the Oxford Hip Score and HOOS-PS, which are validated patient-reported outcome measures (PROMs) that have been developed specifically for hip and knee pain. In all programmes, the average patient reported a higher score following surgery, suggesting a positive outcome on average.

Figure 6.22 shows the crude mean scores submitted by patients before and 6 or 12 months after elective knee replacement surgery for OA in national and sub-national programmes using the Oxford Knee Score and KOOS-PS instruments. On average, knee replacement patients also reported improvement after surgery in all programmes. The amount of improvement for knee replacement was, on average, more modest than that reported by hip replacement patients. However, patients recovering from knee arthroplasty may take longer to recover. Further results and analysis of these measures are provided in Chapter 2.

While a hip replacement for OA is an elective procedure, hip fracture repair is usually an emergency procedure. Evidence suggests that early surgical intervention improves patient outcomes and minimises the risk of complication. There is general agreement that surgery should occur within two days (48 hours) of hospital admission (National Clinical Guideline Centre, 2011[3]).

Time-to-surgery (TTS) is considered a clinically meaningful process indicator of the quality of acute care for patients with hip fracture. However, TTS is influenced by many factors, including hospitals' surgical theatre capacity, flow and access, and targeted policy interventions, including public reporting and monitoring of performance (Siciliani, Borowitz and Moran, 2013[4]).

In 2017, on average across OECD countries, over 80% of patients admitted for hip fracture underwent surgery within two days (Figure 6.23) This represents a modest increase of 2.7 percentage points (from 78.2% to 80.9%) since 2012.

The biggest improvement was observed in Israel (from 68% to 89%). Targeted policies that effectively incentivise timely surgery following hip fracture admission could partly explain this result. Iceland, the Czech Republic, Portugal and Latvia reported a decline in the proportion over this period, suggesting a need for policy interventions.

Definition and comparability

The PROM results are based on data from adult patients undergoing elective hip or knee replacement with a principal diagnosis of OA, who completed an Oxford Hip/Knee Score and/or H/KOOS questionnaire pre- and post-operatively (OECD, forthcoming[5]). On both scales, a higher score denotes better outcomes. Data collection at 6 months versus 12 months influences the results. The size of participating programmes varied from entire countries to single hospitals. For further details of the methodological approach and issues regarding comparability, refer to Chapter 2.

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, resulting in the inability to precisely record surgery within 48 hours in some countries.

While cases where the hip fractures occurred during the 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.

References

[3] National Clinical Guideline Centre (2011), *The management of hip fracture in adults*, National Clinical Guideline Centre, London, *http://www.ncgc.ac.uk*.

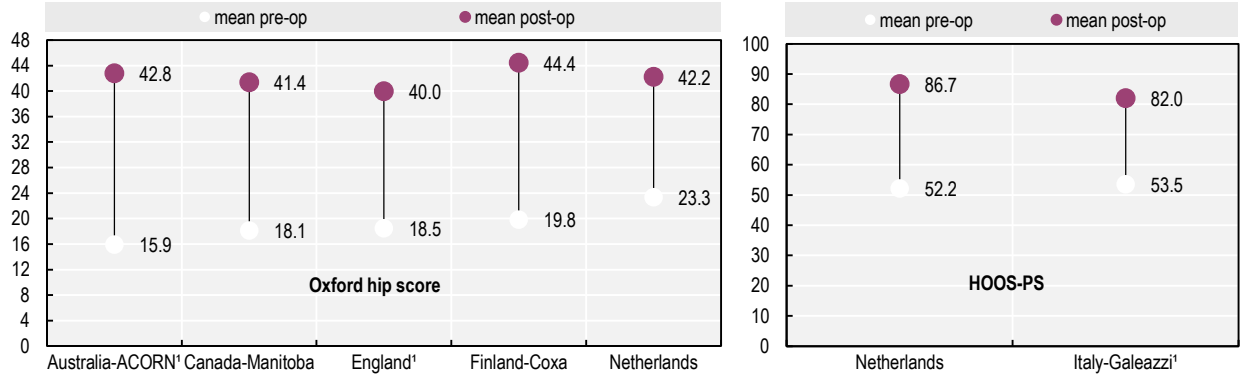
[1] NICE (2014), Osteoarthritis: care and management, The National Institute for Health and Care Excellence.

[2] OECD (2014), *Geographic Variations in Health Care: What Do We Know and What Can Be Done to Improve Health System Performance?*, OECD Health Policy Studies, OECD Publishing, Paris, *https://dx.doi.org/10.1787/9789264216594-en*.

[5] OECD (forthcoming), "Patient-reported outcome indicators in joint replacement and breast cancer surgery", *OECD Health Working Papers*, OECD Publishing, Paris.

[4] Siciliani, L., M. Borowitz and V. Moran (eds.) (2013), *Waiting Time Policies in the Health Sector: What Works?*, OECD Health Policy Studies, OECD Publishing, Paris, *https://dx.doi.org/10.1787/9789264179080-en*.

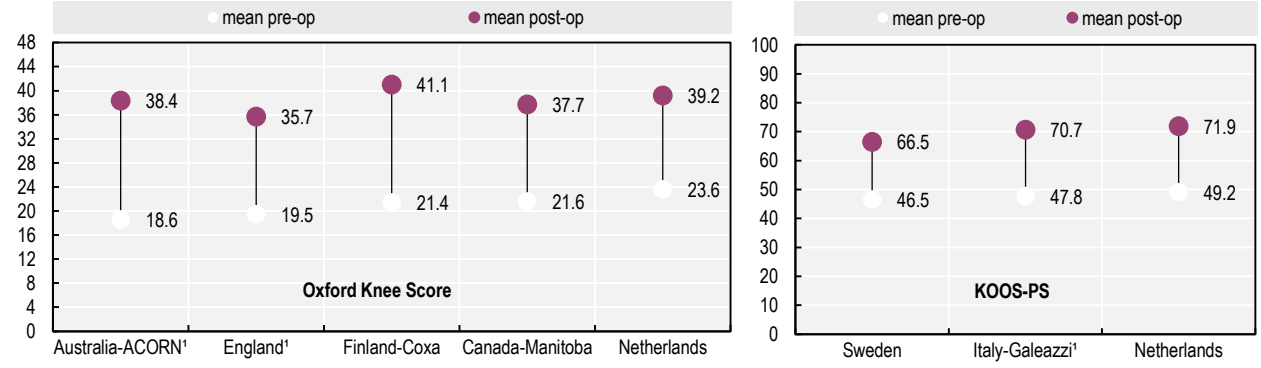
Figure 6.21. **Crude mean pre- and post-operative Oxford Hip Score and HOOS-PS, 2013-16 (or nearest year)**



1. Post-operative measurement at six months.
Source: PaRIS Hip/Knee Replacement Pilot Data Collection.

StatLink https://doi.org/10.1787/888934016341

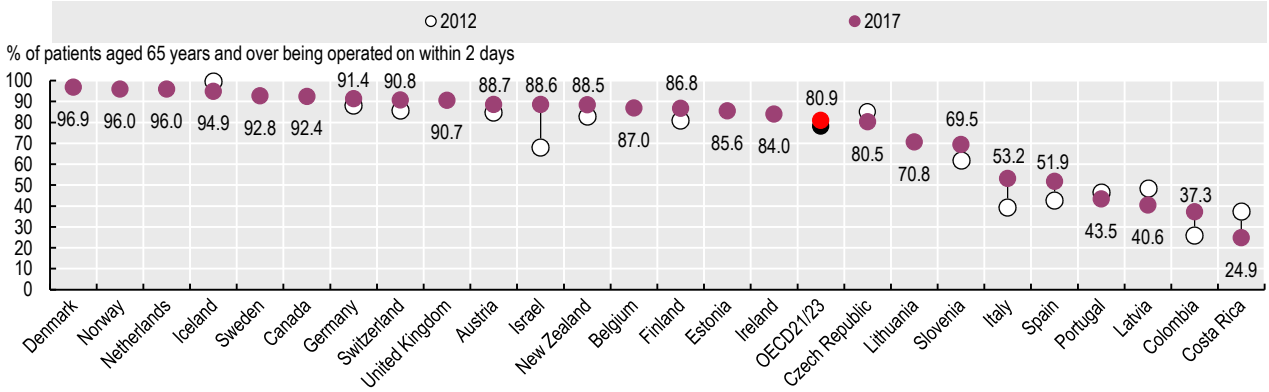
Figure 6.22. **Crude mean pre- and post-operative Oxford Knee Score and KOOS-PS, 2013-16 (or nearest year)**



1. Post-operative measurement at six months.
Source: PaRIS Hip/Knee Replacement Pilot Data Collection.

StatLink https://doi.org/10.1787/888934016360

Figure 6.23. **Hip fracture surgery initiation within two days of admission to hospital, 2012 and 2017 (or nearest year)**



Source: OECD Health Statistics 2019.

StatLink https://doi.org/10.1787/888934016379

Care for people with mental health disorders

The burden of mental illness is substantial, affecting an estimated one in five people among the population of OECD countries at any given time, and one in two across the life course (see indicator "Mental health" in Chapter 3). The total cost of mental ill health is estimated at between 3.5% and 4% of GDP in OECD countries (OECD, 2018[1]). High-quality, timely care has the potential to improve outcomes and may help reduce suicide and excess mortality for individuals with mental disorders.

High-quality care for mental disorders in inpatient settings is vital, and 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 10 per 10 000 patients, but Denmark is an exception, with rates of over 10 (Figure 6.24). Steps to prevent inpatient suicide include identification and removal of likely opportunities for self-harm, risk assessment of patients, monitoring and appropriate treatment plans. While inpatient suicide should be considered a never event, some practices that reduce risk of inpatient suicide – such as use of restraints – may impede high-quality care.

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 was as low as 10 per 10 000 patients in Iceland and the United Kingdom but higher than 50 per 10 000 in the Netherlands, Slovenia and Lithuania (Figure 6.25). Patients with a psychiatric illness are particularly at risk immediately following discharge from hospital, but it is known that suicide in the high-risk days following discharge can be reduced by good discharge planning and follow-up, and enhanced levels of care immediately following discharge.

Individuals with a psychiatric illness have a higher mortality rate than the general population. An "excess mortality" value that is greater than one implies that people with mental disorders face a higher risk of death than the rest of the population. Figure 6.26 shows the excess mortality for schizophrenia and bipolar disorder, which is above two in most countries. In order to reduce their high mortality, a multifaceted approach is needed for people with mental disorders, including primary care prevention of physical ill health, better integration of physical and mental health care, behavioural interventions and changing professional attitudes (OECD, 2014[2]).

Patient experiences can also shed light on the quality of care provided to individuals diagnosed with a mental problem. On average across OECD countries, patients diagnosed with a mental health problem are less likely to report that they were treated with courtesy and respect by doctors and nurses during hospitalisation than hospitalised patients never diagnosed with a mental health problem (Figure 6.27). In addition, in several countries including Australia, Sweden and France, people diagnosed with a mental health problem are more likely to have received conflicting information from different health care professionals (see Chapter 2). This suggests that there is a room to improve the quality of care for people with mental health problems.

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, except for New Zealand.

Suicide within 30 days and 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 persons 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 were presented.

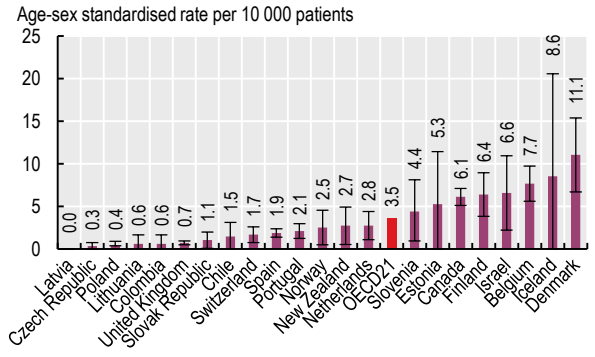
For information on patient experience monitoring see the 2016 Commonwealth Fund International Health Policy Survey of Adults. Differences between countries should be interpreted with care, given the heterogeneity in nature and the size of country samples.

References

[1] OECD (2018), *Health at a Glance: Europe 2018: State of Health in the EU Cycle*, OECD Publishing, Paris/European Union, Brussels, *https://dx.doi.org/10.1787/health_glance_eur-2018-en*.

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

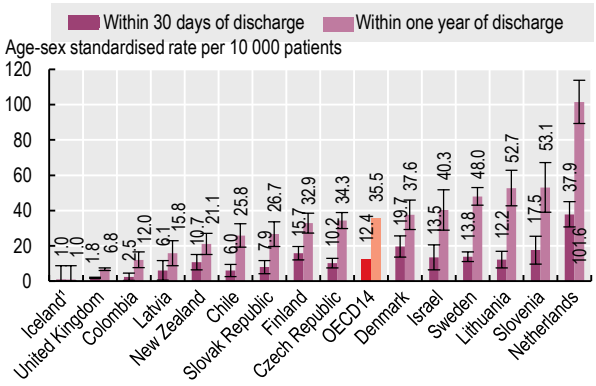
Figure 6.24. **Inpatient suicide among patients with a psychiatric disorder, 2015-17 (or nearest year)**



Note: H lines show 95% confidence intervals.
Source: OECD Health Statistics 2019.

StatLink https://doi.org/10.1787/888934016398

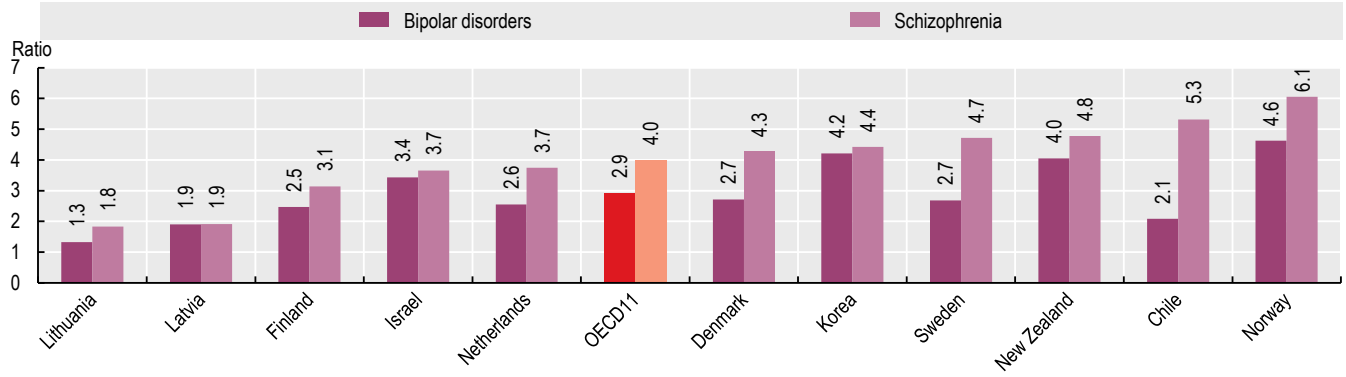
Figure 6.25. **Suicide following hospitalisation for a psychiatric disorder, within 30 days and one year of discharge, 2017 (or nearest year)**



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

StatLink https://doi.org/10.1787/888934016417

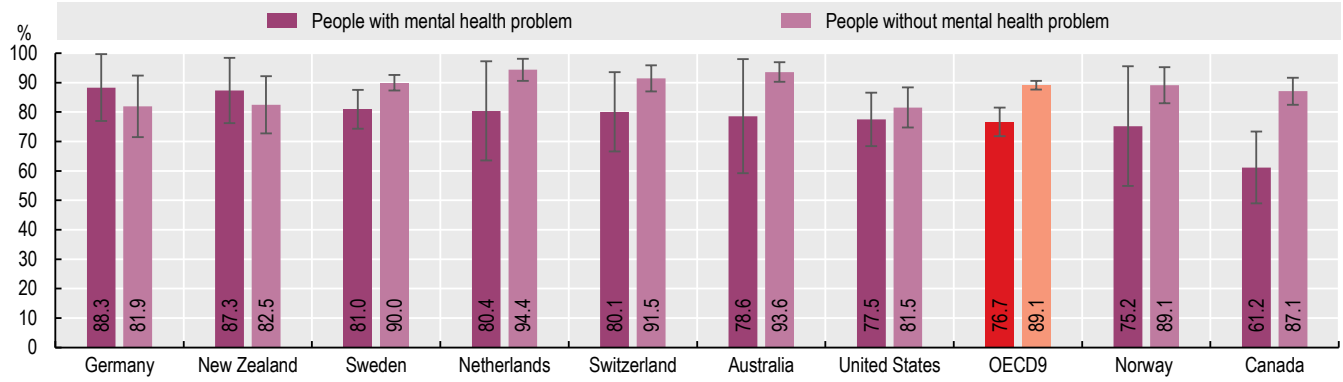
Figure 6.26. **Excess mortality from bipolar disorder and schizophrenia, 2015-17**



Note: Data represent a three-year average except for the Netherlands (two-year average).
Source: OECD Health Statistics 2019.

StatLink https://doi.org/10.1787/888934016436

Figure 6.27. **Share of people who were treated with courtesy and respect by doctors and nurses during hospitalisation, 2016**



Note: H lines show 95% confidence intervals.
Source: Commonwealth Fund International Health Policy Survey 2016.

StatLink https://doi.org/10.1787/888934016455

Breast cancer outcomes

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).

During 2010-14, an average of 51.5% of women with breast cancer were diagnosed at an early stage of disease in OECD countries, while 8.6% of women were diagnosed at an advanced stage (Figure 6.28). Countries with a high proportion of women diagnosed at an early stage, such as the United States and Japan, have a correspondingly low proportion of women diagnosed at an advanced stage. Since the 1980s, most OECD countries have adopted breast cancer screening programmes as an effective way of detecting the disease early (OECD, 2013[1]). This has contributed to higher proportions of women being diagnosed at an early stage.

In most OECD countries, five-year net survival for women with breast cancer has improved in recent years, reflecting overall improvement in the quality of cancer care (Allemani et al., 2018[2]). In all OECD countries, for women diagnosed at early or localised stage, the cumulative probability of surviving their cancer for at least five years is 90% and the international variation is small (Figure 6.29). However, net survival for women diagnosed at an advanced stage is still low and ranges widely, from about 30% in Austria and Lithuania to over 50% in Israel and Finland.

Motivated providers and patients across OECD countries are increasingly using patient-reported outcome measures (PROMs) for breast cancer to help inform difficult clinical decisions. Figure 6.30 presents crude outcome scores at 6-12 months following breast surgery (breast-conserving therapy and breast reconstruction) for 11 clinical sites from eight countries. Outcomes were measured using the relevant post-operative 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[3]). Further results and analysis of this measure are provided in Chapter 2.

Figure 6.31 presents the proportion of women undergoing implant and autologous reconstruction surgery in the sample from each site. Consolidated crude scores from the participating sites indicate that women are about 10% (6 percentage points) more satisfied with their breasts after autologous reconstruction surgery than after implant reconstruction (see Figure 2.9 in Chapter 2). This outcome aligns with existing evidence (Matros et al., 2015[4]) and can be an important consideration if choice of surgical intervention is possible.

These PROMs results are not representative for each country but do show the capacity for metrics of this kind to be reported internationally. Some OECD countries are now scaling up efforts to measure breast cancer PROMs as their utility becomes more fully appreciated. For example, in the Netherlands, breast cancer has been identified as a possible priority area as part of a current national policy effort to measure PROMs systematically.

Definition and comparability

The stage at diagnosis for breast cancer is categorised according to the Tumour, Nodes, Metastasis (TNM) staging system. In this analysis, "early or localised stages" refers to tumours without lymph node involvement or metastasis (T1-3, N0, M0), "intermediate stage" refers to tumours with lymph node involvement but no metastasis (T1-3, N1-3, M0), and "advanced stage" refers to large tumours with ulceration or involvement of the chest wall, and those that have metastasised to other organs (T4, any N, M0 or M1).

Five-year net survival refers to the cumulative probability that the cancer patients would have lived five years after diagnosis if the cancer was the only possible cause of death. The period approach is used to allow estimation of five-year survival where five years of follow-up are not available. Cancer survival estimates are age-standardised with the International Cancer Survival Standard weights.

Cancer patient data were provided by national or regional cancer registries. Quality control and analysis for stage distribution and 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[2]).

See Box 2.3 in Chapter 2 for more details regarding the BREAST-Q breast satisfaction scale used to measure the breast cancer PROMs. Data are only presented for selected sites and are not representative for each country. Note that measurement extended beyond 12 months after surgery for sites in Sweden and Switzerland.

References

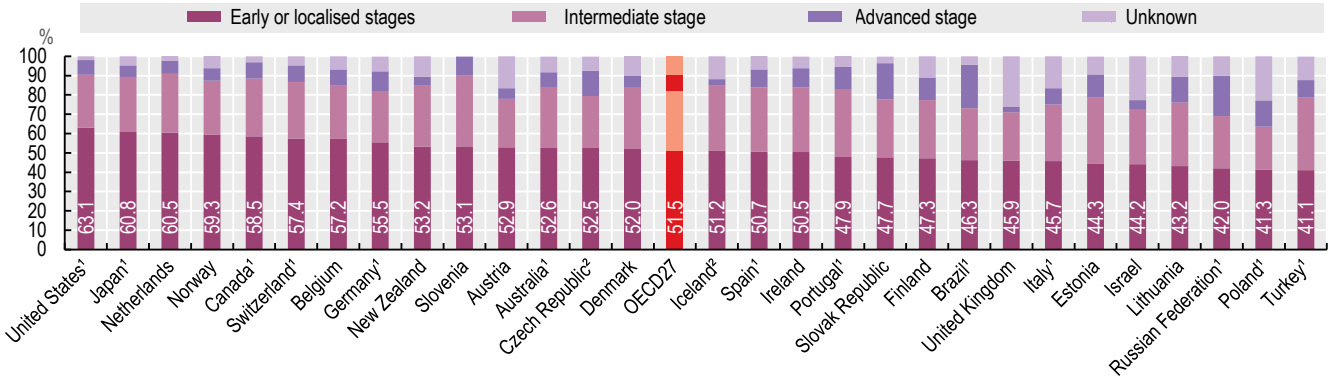
[2] Allemani, C. et al. (2018), "Global surveillance of trends in cancer survival 2000–14 (CONCORD-3): analysis of individual records for 37 513 025 patients diagnosed with one of 18 cancers from 322 population-based registries in 71 countries", *The Lancet*, Vol. 391/10125, pp. 1023-1075, *http://dx.doi.org/10.1016/s0140-6736(17)33326-3*.

[4] Matros, E. et al. (2015), "Cost-Effectiveness Analysis of Implants versus Autologous Perforator Flaps Using the BREAST-Q", *Plastic and Reconstructive Surgery*, Vol. 135/4, pp. 937-946, *http://dx.doi.org/10.1097/prs.0000000000001134*.

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

[3] Pusic, A. et al. (2009), "Development of a New Patient-Reported Outcome Measure for Breast Surgery: The BREAST-Q", *Plastic and Reconstructive Surgery*, Vol. 124/2, pp. 345-353, *http://dx.doi.org/10.1097/prs.0b013e3181aee807*.

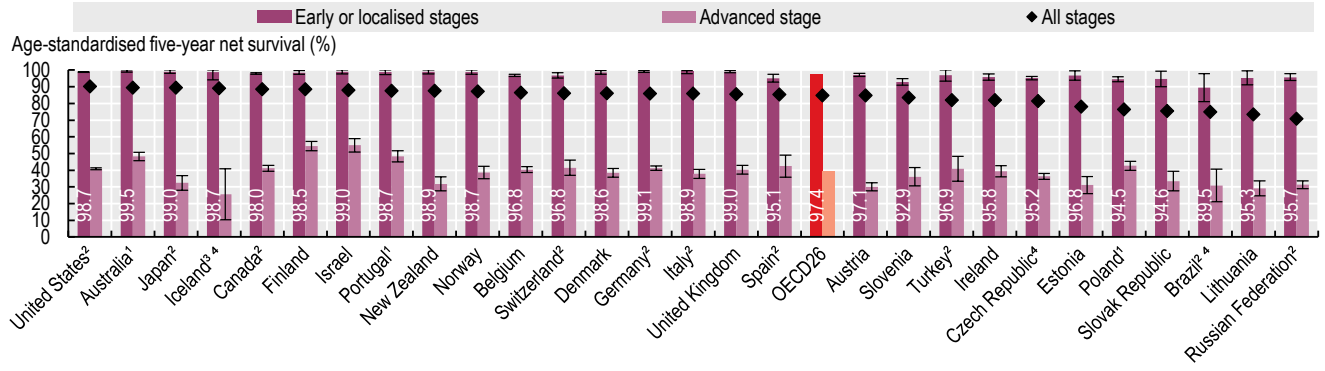
Figure 6.28. **Breast cancer stage distribution, 2010-14**



1. Data represent coverage of less than 100% of the national population. 2. Data for 2004-09.
Source: CONCORD programme, London School of Hygiene and Tropical Medicine.

StatLink https://doi.org/10.1787/888934016474

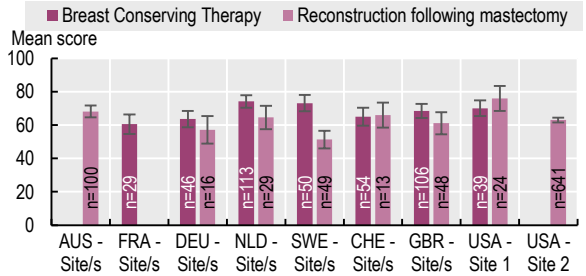
Figure 6.29. **Breast cancer five-year net survival by stage of breast cancer at diagnosis, 2010-14**



Note: H line shows 95% confidence intervals. 1. Coverage is less than 100% of the national population for stage-specific survival estimates. 2. Coverage is less than 100% of the national population. 3. Survival estimates for advanced stage are not age-standardised. 4. Data for 2004-09.
Source: CONCORD programme, London School of Hygiene and Tropical Medicine.

StatLink https://doi.org/10.1787/888934016493

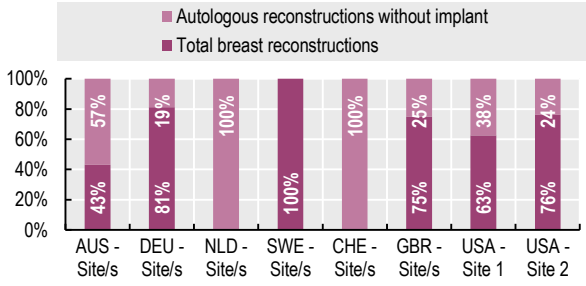
Figure 6.30. **Self-reported satisfaction with breast surgery: crude scores 6-12 months after surgery, 2017-18 (or nearest year)**



Note: H line shows 95% confidence intervals. Data labels at the base of the histogram refer to the sample size at each site.
Source: PaRIS Breast Cancer PROMs pilot data collection 2019.

StatLink https://doi.org/10.1787/888934016512

Figure 6.31. **Type of breast reconstruction surgery, proportion of total, 2017-18 (or nearest year)**



Source: PaRIS Breast Cancer PROMs pilot data collection 2019.

StatLink https://doi.org/10.1787/888934016531

Screening and survival for colorectal cancer

Colorectal cancer is the third most commonly diagnosed cancer after breast and prostate cancers in OECD countries, and the third most common cause of death from cancer (see indicator "Cancer incidence and mortality" in Chapter 3) (GLOBOCAN, 2018[1]). Several factors increase the risk of developing colorectal cancer, including older age, ulcerative colitis, previous colorectal polyps or a family history of colorectal cancer, as well as lifestyle factors such as a diet high in fat and low in fibre, lack of physical activity, obesity and tobacco and alcohol consumption. Incidence is significantly higher for men than women in most countries. Rectal cancer is often more difficult to treat than colon cancer due to a higher probability of spreading to other tissue, recurrence and post-operative complications.

A growing number of OECD countries have introduced free population-based screening, targeting men and women in their 50s and 60s at either the national or regional levels (OECD, 2013[2]). In most countries that offer the faecal occult blood test, screening is available every two years. The screening/follow-up periodicity schedule is less frequent with colonoscopy and flexible sigmoidoscopy – generally every ten years. These differences complicate international comparisons of screening coverage.

In 2014, an average 40.4% of people aged between 50 and 74 in OECD countries had had a faecal occult blood test at least once in their life (Figure 6.32), and 18.4% of people of all ages had undergone colonoscopy at least once in their life. Population coverage of screening for colorectal cancer is still much lower than for breast and cervical cancer in many OECD countries.

Advances in the diagnosis and treatment of colorectal cancer – including improved surgical techniques, radiation therapy and combined chemotherapy, combined with wider and more timely access to treatments – have contributed to higher survival over the last decade in OECD countries. On average, age-standardised five-year net survival for patients diagnosed during 2010-14 reached 62.1% for colon cancer and 60.6% for rectal cancer (Figure 6.33 and Figure 6.34). Some countries have shown a considerable improvement over the last 10 years, including Denmark, Korea and Lithuania for colon cancer, and the Czech Republic, Denmark, Korea, Ireland, Latvia, Lithuania and Slovenia for rectal cancer.

International variation in age-standardised five-year net survival for cancers of the colon and rectum between OECD countries is very wide. For example, five-year net survival is much higher in Korea than in Chile, for both colon cancer (71.8% versus 43.9%) and rectal cancer (71.1% versus 32.7%). Countries where survival from colon cancer is low also tend to have low survival for rectal cancer, including Chile, the Czech Republic, Latvia, Poland, the Slovak Republic and Turkey. In recent years, some of these countries have made progress in strengthening their systems to reduce the burden of colorectal cancer. For example, in 2013, Chile included treatment for colorectal cancer as part of its guaranteed health care coverage plan (OECD, 2019[4]).

In order to tackle poor outcomes for other cancers (see indicator "Survival for other major cancers"), several OECD countries have taken a more comprehensive approach to strengthening their cancer care systems. In Latvia, cancer care delivery has been centralised and expertise concentrated in specialised institutions to improve both quality and efficiency of care delivery. A national plan was also adopted in 2017 to improve cancer care through prevention, better access to early diagnosis and optimal treatment, as well as rehabilitation and palliative care (OECD/European Observatory on Health Systems and Policies, 2017[6]).

Definition and comparability

Net survival is defined in indicator "Breast cancer outcomes". Survival estimates are based on cancer patient records with ICD-10 codes C18-C19 (International Classification of Diseases for Oncology, third edition) for colon cancer and ICD-10 codes C20-C21 for rectal cancer.

References

[5] Allemani, C. et al. (2018), "Global surveillance of trends in cancer survival 2000–14 (CONCORD-3): analysis of individual records for 37 513 025 patients diagnosed with one of 18 cancers from 322 population-based registries in 71 countries", *The Lancet*, Vol. 391/10125, pp. 1023-1075, *http://dx.doi.org/10.1016/s0140-6736(17)33326-3*.

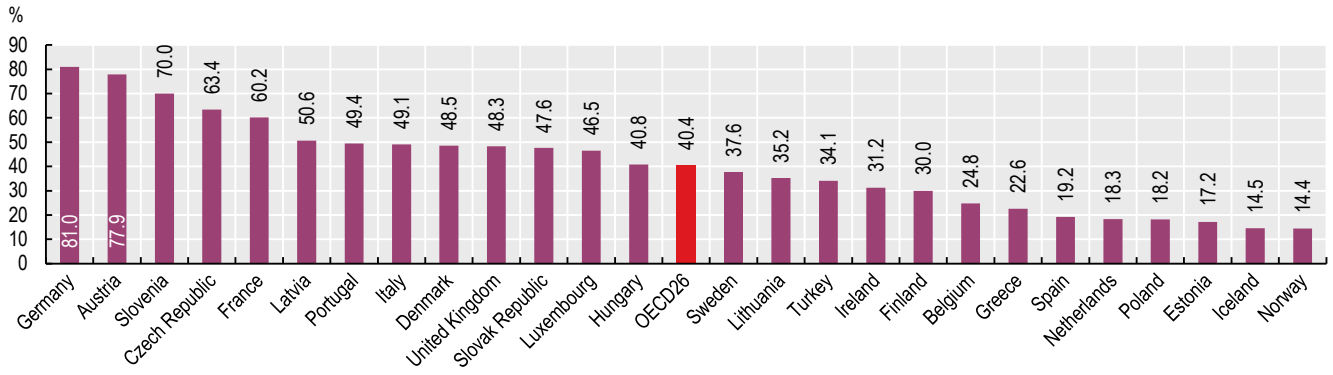
[1] GLOBOCAN (2018), *Cancer Today*, *https://gco.iarc.fr/today/home*.

[3] OECD (2019), *OECD Reviews of Public Health: Chile: A Healthier Tomorrow*, OECD Publishing, Paris, *https://dx.doi.org/10.1787/9789264309593-en*.

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

[4] OECD/European Observatory on Health Systems and Policies (2017), *Latvia: Country Health Profile 2017*, State of Health in the EU, OECD Publishing, Paris/European Observatory on Health Systems and Policies, Brussels, *https://dx.doi.org/10.1787/9789264283466-en*.

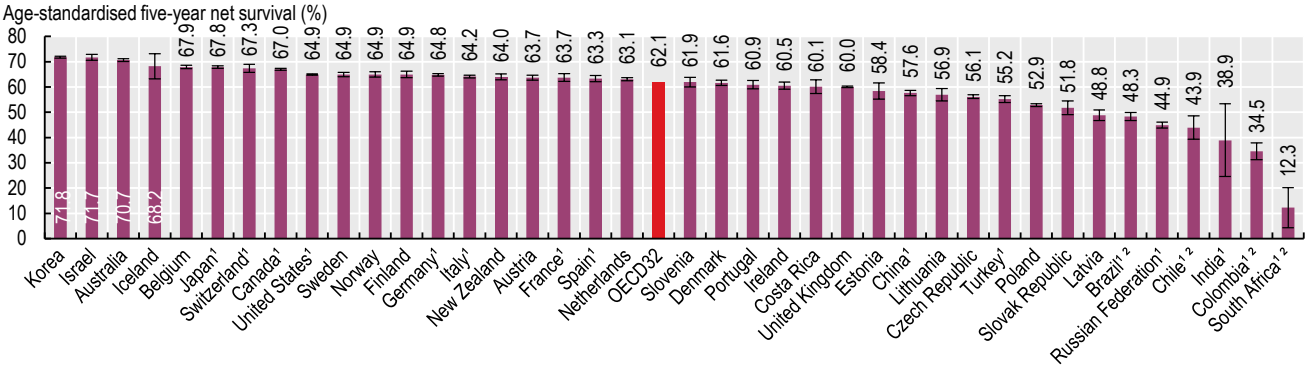
Figure 6.32. **People aged 50-74 years who have had faecal occult blood test at least once in their life, 2014**



Source: European Health Interview Survey 2014.

StatLink https://doi.org/10.1787/888934016550

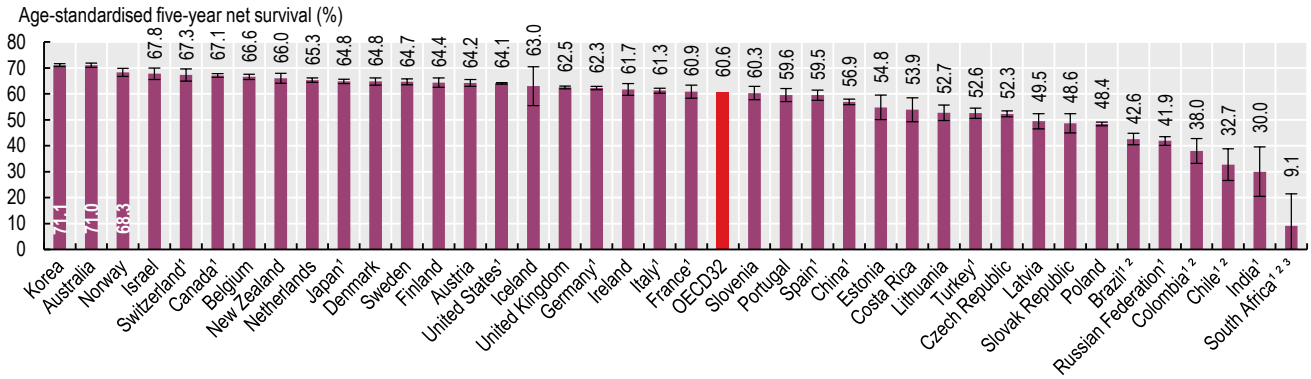
Figure 6.33. **Colon cancer five-year net survival, 2010-14**



Note: H line shows 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) for more information.
Source: CONCORD programme, London School of Hygiene and Tropical Medicine.

StatLink https://doi.org/10.1787/888934016569

Figure 6.34. **Rectal cancer five-year net survival, 2010-14**



Note: H line shows 95% confidence intervals. 1. Data represent coverage of less than 100% of the national population. 2. Survival estimates are considered less reliable. 3. Survival estimates are not age-standardised.
Source: CONCORD programme, London School of Hygiene and Tropical Medicine.

StatLink https://doi.org/10.1787/888934016588

Survival for other major cancers

Lung cancer is the main cause of cancer death for both men and women in OECD countries (see indicator "Cancer incidence and mortality" in Chapter 3). The main risk factors for lung cancer are smoking; passive smoking; exposure to radon and/or certain chemicals and substances such as arsenic, asbestos, beryllium, cadmium, coal and coke fumes, silica and nickel; air pollution; and a family history of lung cancer. Following the declining trend of smoking in recent decades (see indicator "Smoking among adults" in Chapter 4), incidence rates of lung cancer have declined across OECD countries. However, together with ischaemic heart disease, road accidents and alcohol-related deaths, lung cancer continues to be one of the main causes of preventable mortality in OECD countries.

Compared to other cancers such as breast and colorectal cancers (see indicators "Breast cancer outcomes" and "Screening and survival for colorectal cancer"), lung cancer continues to be associated with very poor survival. On average in OECD countries, for patients diagnosed with lung cancer, the cumulative probability of surviving their cancer for at least five years is less than 20% (Figure 6.35). Across OECD countries, age-standardised five-year net survival ranged from 32.9% in Japan to 4.6% in Chile in 2010-14, and is low in Lithuania, the Czech Republic, the Slovak Republic, Finland and the United Kingdom. In recent years, age-standardised five-year net survival has increased substantially in Denmark, Ireland, Korea and France. Lung cancer screening is not common in OECD countries, but in Japan, an annual chest X-ray is recommended for people aged 40 and over, and sputum cytology is also recommended for smokers aged 50 and over who have smoked more than 600 cigarettes over their lifetime (OECD, 2019[1]) while the English National Health Service is launching its Targeted Lung Health Checks Programme.

Stomach cancer is another commonly diagnosed cancer and fifth highest cause of cancer death in OECD countries (GLOBOCAN, 2018[2]). The main risk factors for stomach cancer include age, gender, smoking, *Helicobacter pylori* infection, diet, genetic predisposition, pernicious anaemia, peptic stomach ulcer and stomach surgery. WHO recommends that countries with a high burden of stomach cancer should explore the introduction of population-based *H. pylori* screening and treatment based on local contexts, such as health priorities and cost–effectiveness (IARC, 2014[3]). Incidence of stomach cancer is high in some OECD countries, such as Chile, Korea and Japan; in these countries, stomach cancer screening is available for people in certain age groups (OECD, 2019[1]; OECD, 2019[4]).

Age-standardised five-year net survival for stomach cancer is particularly high in Korea and Japan (60% or higher), while it ranges between 20% and 40% in other OECD countries (Figure 6.36). Net survival is low in Chile, suggesting that there is room to improve stomach cancer screening strategies through stronger stakeholder engagement, better communication strategies to increase public awareness and better access to cancer screening (OECD, 2019[4]).

Leukaemia is the most common cancer among children aged 0-14; it accounts for over 30% of all cancers diagnosed in children worldwide (GLOBOCAN, 2018[2]). The causes of leukaemia are not well known, but some known risk factors include inherited factors, such as Down syndrome and a family history of leukaemia, and non-inherited factors, such as exposure to ionising radiation. There are different types of leukaemia but about three-quarters of cases among children are acute lymphoblastic leukaemia (ALL). The prognosis for leukaemia depends on various factors including age, initial white blood cell count, gender, initial reaction to induction treatment and type of leukaemia. Children with acute leukaemia who are free of the disease for five years are considered to have been cured, as remission after five years is rare.

Age-standardised five-year net survival for ALL among children was on average 83.7% during 2010-14 in OECD countries (Figure 6.37), and it improved over the period, mainly due to progress in chemotherapy and stem cell transplantation technology. However, countries have not benefited equally from progress in medical technologies. Survival estimates are high in Finland and Denmark but low in Chile and Mexico. Chile is making progress in improving access and quality of care for childhood cancer – for example, by including access to care for childhood cancer as part of its guaranteed health care coverage plan (OECD, 2019[4]).

Definition and comparability

Net survival is defined in indicator "Screening and survival for breast cancer".

References

[5] Allemani, C. et al. (2018), "Global surveillance of trends in cancer survival 2000–14 (CONCORD-3): analysis of individual records for 37 513 025 patients diagnosed with one of 18 cancers from 322 population-based registries in 71 countries", *The Lancet*, Vol. 391/10125, pp. 1023-1075, *http://dx.doi.org/10.1016/s0140-6736(17)33326-3*.

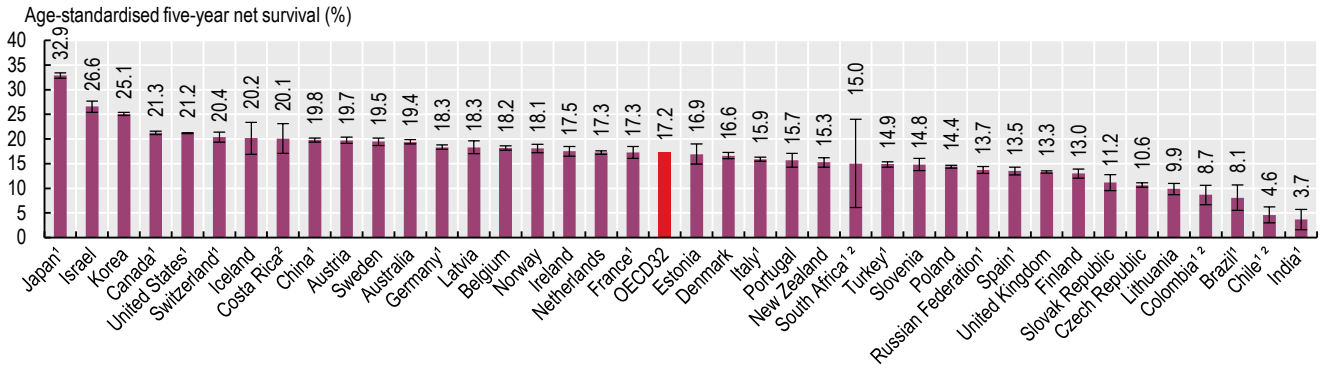
[2] GLOBOCAN (2018), *Cancer Today*, *https://gco.iarc.fr/today/home*.

[3] IARC (2014), *Helicobacter pylori Eradication as a Strategy for Preventing Gastric Cancer*.

[4] OECD (2019), *OECD Reviews of Public Health: Chile: A Healthier Tomorrow*, OECD Publishing, Paris, *https://dx.doi.org/10.1787/9789264309593-en*.

[1] OECD (2019), *OECD Reviews of Public Health: Japan: A Healthier Tomorrow*, OECD Publishing, Paris, *https://dx.doi.org/10.1787/9789264311602-en*.

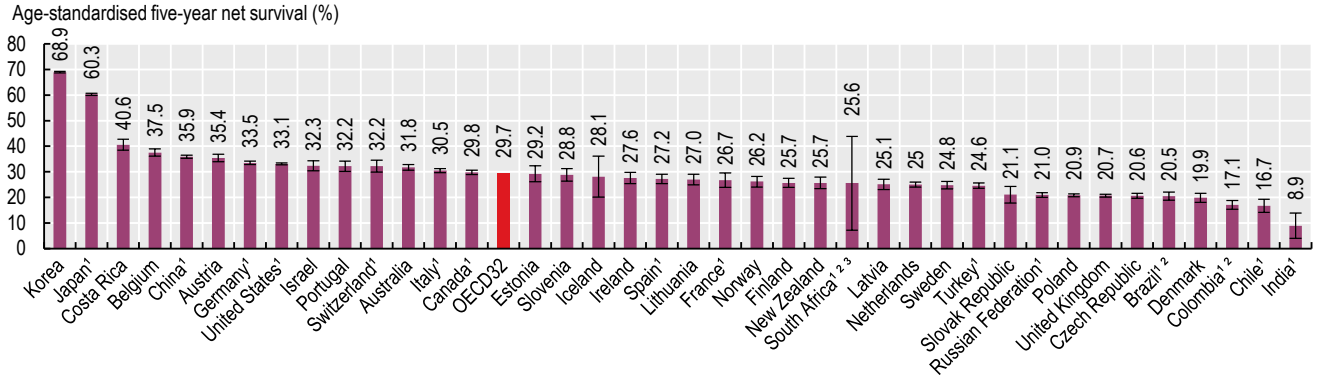
Figure 6.35. **Lung cancer five-year net survival, 2010-14**



Note: H line shows 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) for more information.
Source: CONCORD programme, London School of Hygiene and Tropical Medicine.

StatLink https://doi.org/10.1787/888934016607

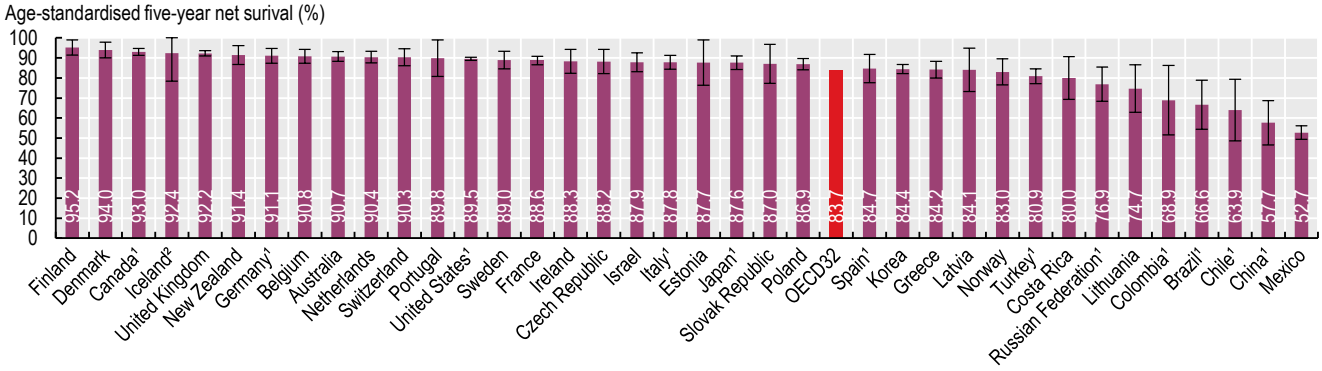
Figure 6.36. **Stomach cancer five-year net survival, 2010-14**



Note: H line shows 95% confidence intervals. 1. Data represent coverage of less than 100% of the national population. 2. Survival estimates are considered less reliable. 3. Survival estimates are not age-standardised.
Source: CONCORD programme, London School of Hygiene and Tropical Medicine.

StatLink https://doi.org/10.1787/888934016626

Figure 6.37. **Childhood acute lymphoblastic leukaemia five-year net survival, 2010-14**



Note: H line shows 95% confidence intervals. 1. Data represent coverage of less than 100% of the national population. 2. Survival estimates are not age-standardised.
Source: CONCORD programme, London School of Hygiene and Tropical Medicine.

StatLink https://doi.org/10.1787/888934016645

Vaccinations

Vaccines are an effective and cost-effective tool for protecting against infectious diseases. The WHO estimates that vaccines prevent between 2 million and 3 million deaths each year worldwide through direct protection of those vaccinated and prevention of the spread of disease to those unvaccinated.

Figure 6.38 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%) and nearly 15% of countries fail to meet this target for DTP (90%). Furthermore, high national coverage rates may not be sufficient to stop disease spread, as low coverage in local populations can lead to outbreaks. In the United States, 1 123 individual cases of measles were reported for the period 1 January to 11 July 2019 – the highest number since 1992. Between March 2018 and February 2019 OECD countries in Europe reported 10 564 cases of measles. (CDC, 2019[1]; ECDC, 2019[2]).

Over the last decade, rates of vaccination across OECD have increased by six percentage points for hepatitis B and by half a percentage point for measles, but have decreased by one percentage point for DTP. Some countries, however, have experienced important reductions. Coverage for DTP has decreased by four or more percentage points in Mexico, Iceland, Lithuania, Poland, Slovenia and Spain, while rates have dropped at least three percentage points for measles coverage in Estonia, Lithuania, Poland, Canada, Chile, Iceland, the Netherlands, the Slovak Republic and Slovenia.

Figure 6.39 shows trends of vaccination from 2008 to 2018 by country and vaccine type. Countries listed in green boxes increased vaccination rates over the time period while countries in red boxes had declining rates. Roughly one-third of countries had declining levels for each vaccine.

Eroding public confidence in the safety and efficacy of vaccination, despite the lack of scientific evidence to support this, may play a role in declining coverage in some countries. In North America, only 72% of the population agreed that vaccines are safe; this number was only 59% in western Europe. In France, one in three people disagree that vaccines are safe (Gallup, 2019[3]).

Influenza is a common infectious disease responsible for 3-5 million severe cases worldwide, along with up to 650 000 deaths, including 72 000 in the WHO Europe Region (WHO, 2019[4]). The WHO recommends that 75% of elderly people be vaccinated against seasonal influenza.

Figure 6.40 shows vaccination rates among adults over 65 for 2007 and 2017. Over this period, the average vaccination rate against influenza among the elderly population decreased among OECD countries from 49% to 42%. Large decreases can be seen in Germany, Slovenia and Italy. Some countries did show increased vaccination over this period, including Mexico, Israel, the United States, Portugal, Denmark, Greece and New Zealand. Only Korea attained the 75% target, with coverage of 83%.

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 due 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 less than 2 years of age who have received that vaccine. Thus, these indicators are based on the actual policy in a given country.

Some countries administer combination vaccines (e.g. DTP), while others administer the vaccinations separately. Some countries ascertain whether a vaccination has been received based on surveys and others based on encounter data, which 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 over 60. The main limitation in terms of data comparability arises from the use of different data sources, whether survey or programme, which are susceptible to different types of errors and biases. For example, data from population surveys may reflect some variation due to recall errors and irregularity of administration.

References

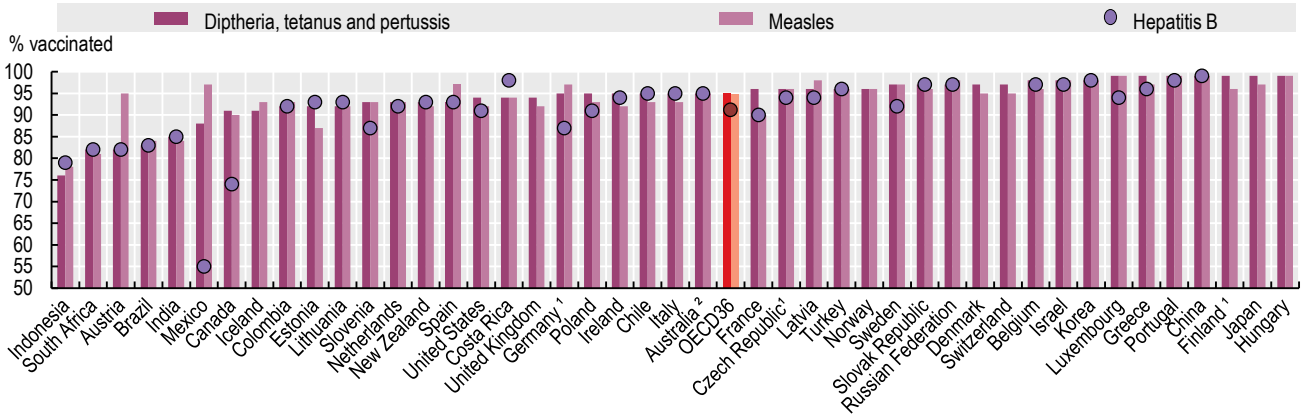
[1] CDC (2019), *Measles Cases and Outbreaks*.

[2] ECDC (2019), *Monthly measles and rubella monitoring report - April 2019*,.

[3] Gallup (2019), *Wellcome Global Monitor – First Wave Findings*.

[4] WHO (2019), *Seasonal influenza*.

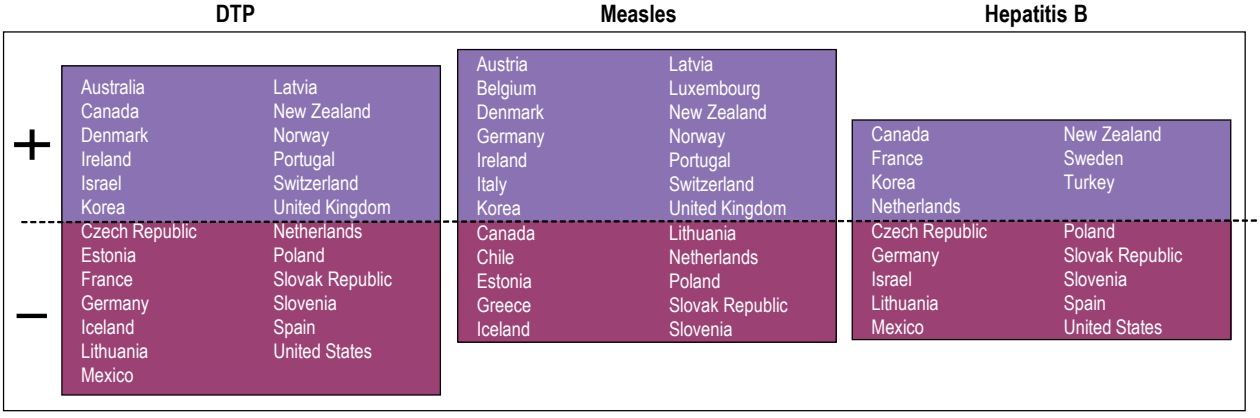
Figure 6.38. **Percentage of children at 1 year of age vaccinated for diphtheria, tetanus and pertussis (DTP), measles and hepatitis B, 2018 (or nearest year)**



1. DTP data are estimated. 2. Measles data are estimated.
Source: OECD Health Statistics 2019.

StatLink https://doi.org/10.1787/888934016664

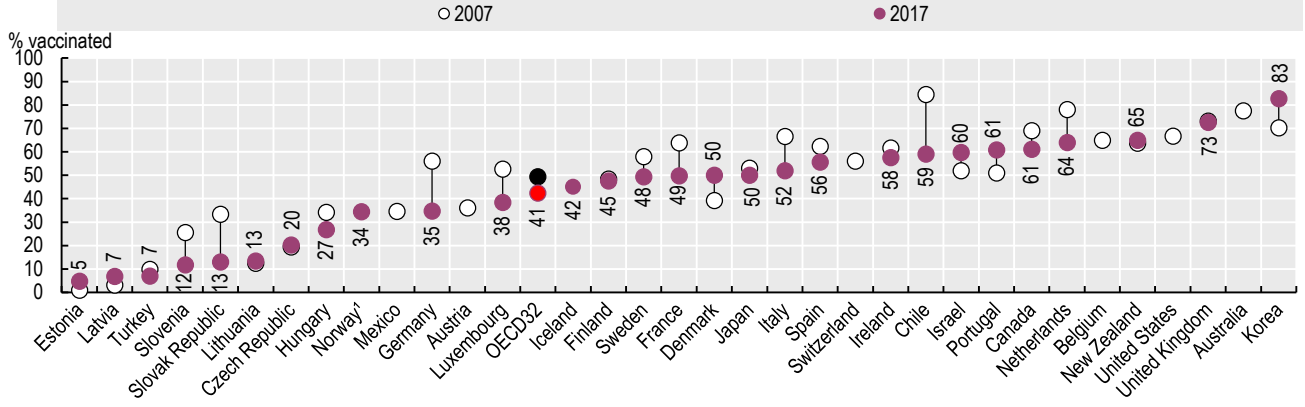
Figure 6.39. **Trends in vaccination coverage for DTP, measles and hepatitis B, 2008-18 (or nearest year)**



Note: Countries above the dashed line have increased and those below have decreased vaccination coverage by at least two percentage points over the last decade.

StatLink https://doi.org/10.1787/888934016683

Figure 6.40. **Percentage of population aged 65 and over vaccinated for influenza, 2007 and 2017**



1. 2017 data are estimated.
Source: OECD Health Statistics 2019.

StatLink https://doi.org/10.1787/888934016702

Patient experiences 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 (see Chapter 2). In many countries, specific organisations have been established or existing institutions have been identified and made responsible for measuring and reporting patient experiences. These organisations develop survey instruments for regular collection of patient experience data and standardise 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, 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[1]; Desomer et al., 2018[2]). Germany plans to use patient surveys as part of external quality assurance in the hospital sector.

Across OECD countries, the majority of patients reported that they spent enough time with a doctor during consultation (Figure 6.41), and that a doctor provided easy-to-understand explanations (Figure 6.42) and involved them in care and treatment decisions (Figure 6.43). For all three aspects of patient experience, Belgium and Luxembourg score highly at above 95% of patients with positive experiences; Poland has lower rates, but patient experiences have improved significantly over the past decade. Patient experiences also improved in Estonia in recent years.

Japan has a low rate for patients' perception of the time spent with a doctor, and this is likely to be associated with a high number of consultations per doctor (see indicator "Consultations with doctors" in Chapter 9). However, in Korea, which has by far the highest number of consultations per doctor in OECD countries, a higher proportion of patients report that their doctors spent enough time during consultation.

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 report 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 order to ensure delivery of people-centred health care across population groups, health care professionals in OECD countries are under increasing pressure to address patient needs, but measures of patient-reported experiences and health outcomes are still limited across countries. The OECD's 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, 2018[3]) (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, including Poland, 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 2016 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 GP rather than any doctor, including both GPs and specialists.

Patient experience indicators are not age-standardised to the 2010 OECD population because high-quality health care needs to be provided to all patients regardless of age, and patient experiences are not consistently associated positively with age across countries.

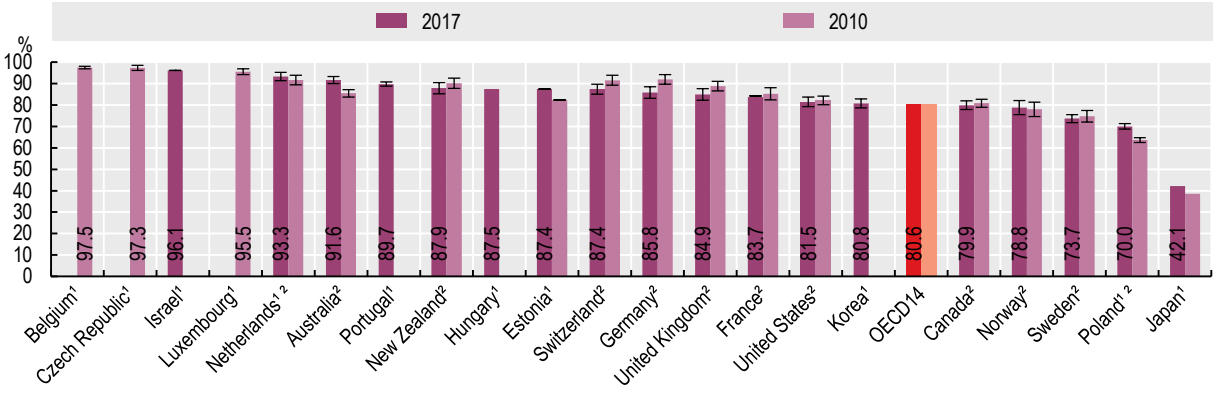
References

[2] Desomer, A. et al. (2018), *Use of patient-reported outcome and experience measures in patient care and policy – Short report*, *http://www.kce.fgov.be*.

[1] Fujisawa, R. and N. Klazinga (2017), "Measuring patient experiences (PREMS): Progress made by the OECD and its member countries between 2006 and 2016", *OECD Health Working Papers*, No. 102, OECD Publishing, Paris, *https://dx.doi.org/10.1787/893a07d2-en*.

[3] OECD (2018), *Patient-Reported Indicators Surveys (PaRIS) - OECD*, *http://www.oecd.org/health/paris.htm*.

Figure 6.41. **Doctor spending enough time with patient during consultation, 2010 and 2017 (or nearest year)**



Note: H line shows 95% confidence intervals. 1. National sources. 2. Data refer to patient experiences with regular doctor or regular practice.
Source: Commonwealth Fund International Health Policy Survey 2016 and other national sources.

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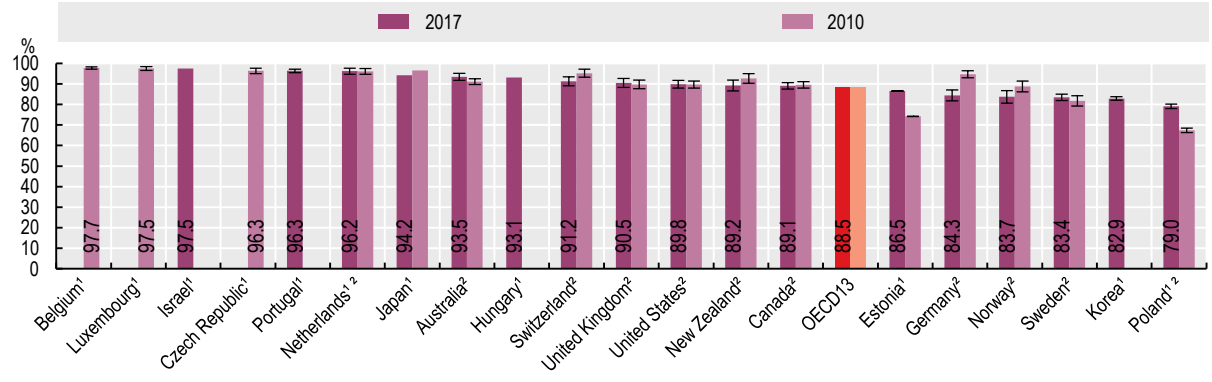
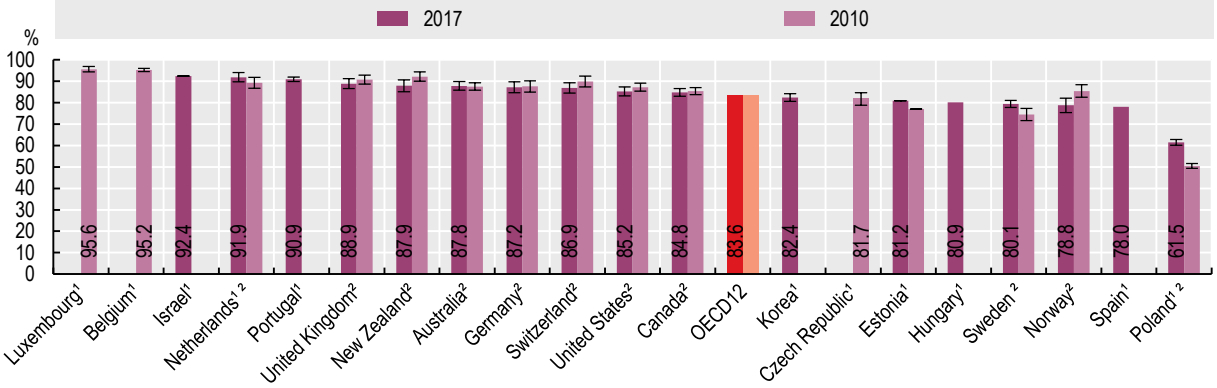
Figure 6.42. **Doctor providing easy-to-understand explanations, 2010 and 2017 (or nearest year)**



Note: H line shows 95% confidence intervals. 1. National sources. 2. Data refer to patient experiences with regular doctor or regular practice.
Source: Commonwealth Fund International Health Policy Survey 2016 and other national sources.

StatLink https://doi.org/10.1787/888934016740

Figure 6.43. **Doctor involving patient in decisions about care and treatment, 2010 and 2017 (or nearest year)**



Note: H line shows 95% confidence intervals. 1. National sources. 2. Data refer to patient experiences with regular doctor or regular practice.
Source: Commonwealth Fund International Health Policy Survey 2016 and other national sources.

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7. HEALTH EXPENDITURE

Health expenditure per capita

Health expenditure in relation to GDP

Prices in the health sector

Health expenditure by financing scheme

Public funding of health spending

Health expenditure by type of service

Health expenditure by provider

Capital expenditure in the health sector

Projections of health expenditure

The statistical data for Israel are supplied by and under the responsibility of the relevant Israeli authorities. The use of such data by the OECD is without prejudice to the status of the Golan Heights, East Jerusalem and Israeli settlements in the West Bank under the terms of international law.

Health expenditure per capita

The level of health spending in a country, covering both individual needs and population health as a whole, and how this changes over time is dependent on a wide range of demographic, social and economic factors, as well as the financing and organisational arrangements of the health system.

In 2018, overall spending on health care in the United States was estimated to be the equivalent of more than 10 000 dollars for each US resident. This amount of expenditure (when adjusted for different purchasing power in countries) was higher than all other OECD countries by a considerable margin. Switzerland, the next highest spender in the OECD, spent less than 70% of this amount, while the overall average of all OECD countries was less than 40% of the US figure (USD 3 994) (Figure 7.1). Many high-income OECD countries, such as Germany, France, Canada and Japan spend only around a half or less of the US per capita spending on health, while the United Kingdom and Italy were around the OECD average. Lowest per capita spenders on health in the OECD were Mexico and Turkey with health expenditure at around a quarter of the OECD average, and levels similar to the key emerging economies such as the Russian Federation, South Africa and Brazil. Latest available figures show that China spent around 20% of the OECD per capita spending level, while both India and Indonesia spent less than 10%.

Figure 7.1 also shows the split of health spending based on the type of health care coverage, either organised through government health schemes or some kind of compulsory insurance, or through a voluntary arrangement such as private health insurance or direct payments by households (see also indicator "Health expenditure by financing schemes"). Across OECD countries, 76% of all health spending is financed by government schemes or compulsory insurance (with a cross-country range of 51% to 85%). 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.

In 2017, OECD per capita spending on health care grew by an average of 2.0% – a marked slowdown from the 3.3% growth observed in 2015 and 2016, and significantly below the growth rates experienced before the onset of the global financial and economic crisis. Preliminary estimates for 2018 point to growth having strengthened in 2018. On average, since 2013, annual per capita health spending growth across the OECD has been 2.4% compared with 1.0% in the five years up to 2013, in the period following the crisis (Figure 7.2).

In a number of European countries, there have been significant turnarounds in health spending. In Greece, the strong annual decreases in growth halted after 2013, even if growth in health spending has been close to zero overall since 2013 (-9.4% in the time period 2008-13 vs. 0.2% in the time period 2013-18), and real per capita spending in 2018 remained almost a third below the 2009 level. A similar if less dramatic picture can also be seen in Iceland (-3.0% vs. 4.0%). In other European countries, such as Germany and Norway, health spending remained relatively stable over the ten-year period, with annual growth of between 2.0-2.5%. Overall, health spending growth has picked up in the majority of European countries in most recent years.

Outside of Europe, Korea and Chile have continued to report annual health spending increases above 5% in real terms since 2008. A provisional estimate for 2018 suggests further strong spending growth of 9.0% in Korea. In the United States, health spending is estimated to have grown by 1.4% in real terms in 2018, which along with similar growth in 2017 shows health spending in the United States growing slower than the overall economy.

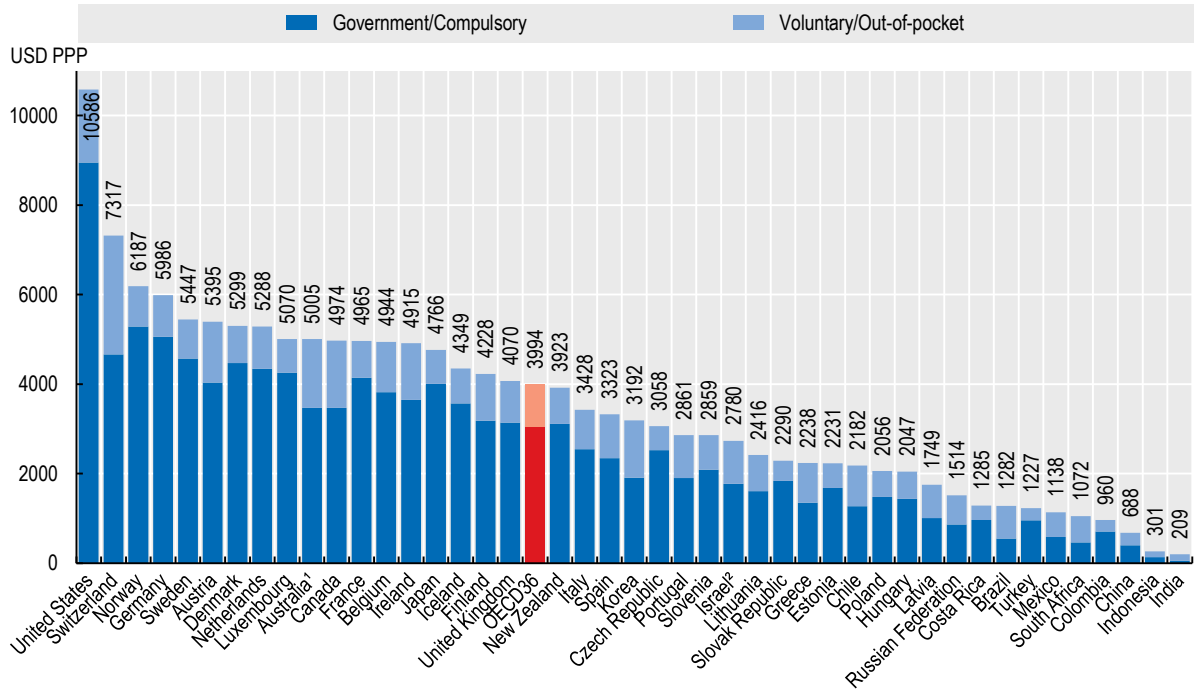
Definition and comparability

Expenditure on health gives a measure of the final consumption of health goods and services (i.e. current health expenditure). This includes spending by all types of financing arrangements (e.g. government-based programmes, social insurance or 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 (for example in Switzerland and the Netherlands). Due to data limitations, voluntary private 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 dollar) and adjusted to take account of the different purchasing power of the national currencies, in order to compare spending levels, Actual Individual Consumption (AIC) PPPs are used as the most available and reliable conversion rates. For the calculation of growth rates in real terms, AIC deflators are used for all countries, where available.

Note that data for 2018 are based on provisional figures provided by the country or estimated by the OECD Secretariat.

Figure 7.1. **Health expenditure per capita, 2018 (or nearest year)**



Note: Expenditure excludes investments, unless otherwise stated.
1. Australia expenditure estimates exclude all expenditure for residential aged care facilities in welfare (social) services. 2. Includes investments.
Source: OECD Health Statistics 2019, WHO Global Health Expenditure Database.

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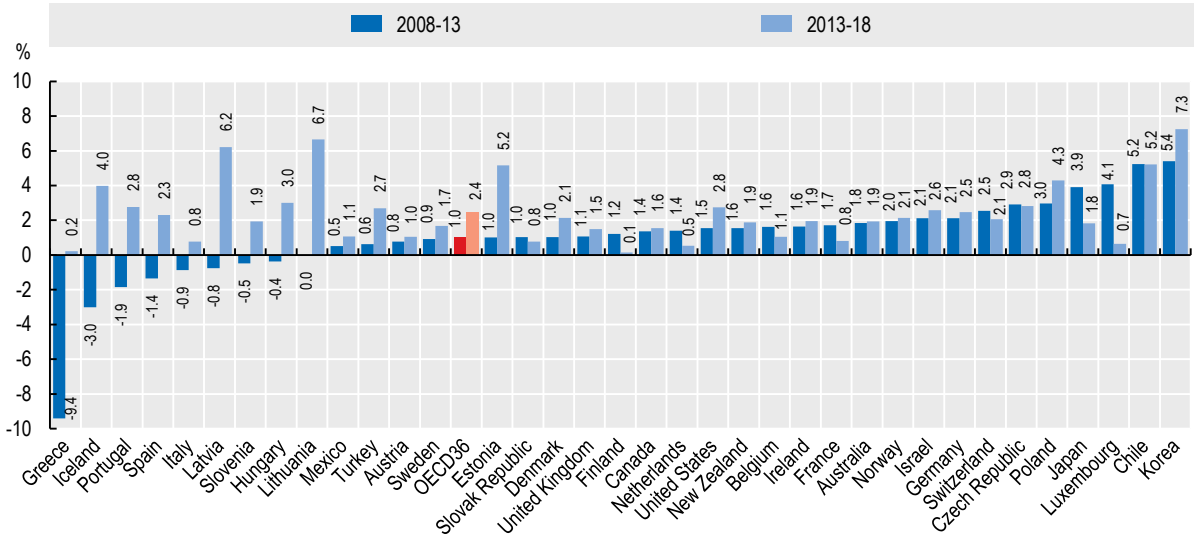
Figure 7.2. **Annual growth in health expenditure per capita (real terms), 2008 to 2018 (or nearest year)**



Source: OECD Health Statistics 2019.

StatLink https://doi.org/10.1787/888934016797

Health expenditure in relation to GDP

The ratio of spending on health care goods and services compared to total spending in the economy can vary over time due to differences in the growth of health spending compared to overall economic growth. During the 1990s and early 2000s, health spending in OECD countries was generally growing at a faster pace than the rest of the economy, leading to an almost continual rise in the health expenditure to GDP ratio. After a period of volatility during the economic crisis, the average share has remained relatively stable in recent years, as growth in health spending across the OECD has broadly matched overall economic growth.

On average, OECD countries are estimated to have spent 8.8% of GDP on health care in 2018, a figure more or less unchanged since 2013 (Figure 7.3). The United States spent by far the most on health care, equivalent to 16.9% of its GDP – well above Switzerland, the next highest spending country, at 12.2% (Figure 7.3). After the United States and Switzerland, a group of high-income countries, including Germany, France, Sweden and Japan, all spent close to 11% of their GDP on health care. A large group of OECD countries spanning Europe, but also Australia, New Zealand, Chile and Korea, fit within a band of health spending of between 8-10% of GDP. Many of the Central and Eastern European OECD countries, such as Lithuania and Poland, as well as key partner countries, allocated between 6-8% of their GDP to health care. Finally, a few OECD countries spent less than 6% of their GDP on health care, including Mexico, Latvia, Luxembourg, and Turkey at 4.2%. Turkey's health spending as a share of GDP sits between that of China and India.

Looking in more detail at trends over the last decade, the average share of GDP related to health care jumped sharply in 2009 as overall economic conditions rapidly deteriorated in many countries, but health spending growth was generally maintained (Figure 7.4). Subsequently, growth in health spending also significantly declined – on average, growth fell to around zero between 2009 and 2011 – as a range of different policy measures to rein in public spending on health kicked in. Since 2011, the average rate of health spending growth has tended to closely track growth in the overall economy, largely maintaining the increased ratio of health spending to GDP at its present level of around 8.8%.

On a country-by-country basis there have been differing patterns in the health-to-GDP ratio in recent years. In the United States, after a number of years (2009-14) when the ratio of health spending to GDP remained stable at around 16.4%, this rapidly increased to 17.1% with the onset of a number of coverage changes, before falling to 16.9% in 2018 as overall economic growth in the US economy outpaced the growth in health spending (Figure 7.5). Korea, due to its rapidly increasing wealth and ongoing government policy to increase health coverage for the population, has seen substantial increases in the share of economic resources allocated to health. In 2003, health spending in Korea accounted for only 4.6% of GDP compared with 2018 when the ratio was estimated to have reached 8.1%. Chile has also seen its health spending to GDP ratio increase from 7.3% to 9.0% over the same time, due to an expansion in the coverage of health care for the population.

In Europe, France has seen the health spending to GDP ratio fluctuate – increasing during the financial crisis to reach a peak of 11.6% in 2014 – before a gradual decline to 11.2% by 2018. Health spending in France continued to outpace economic growth until 2016, but then stagnated due to a number of measures to contain costs including for example price negotiations for pharmaceuticals. The Netherlands has seen the proportion of GDP relating to health decrease from a high of 10.6% in 2014 to an estimated 9.9% in 2018, relating to reforms in health and long-term care insurance aimed at limiting spending growth within predefined levels.

Definition and comparability

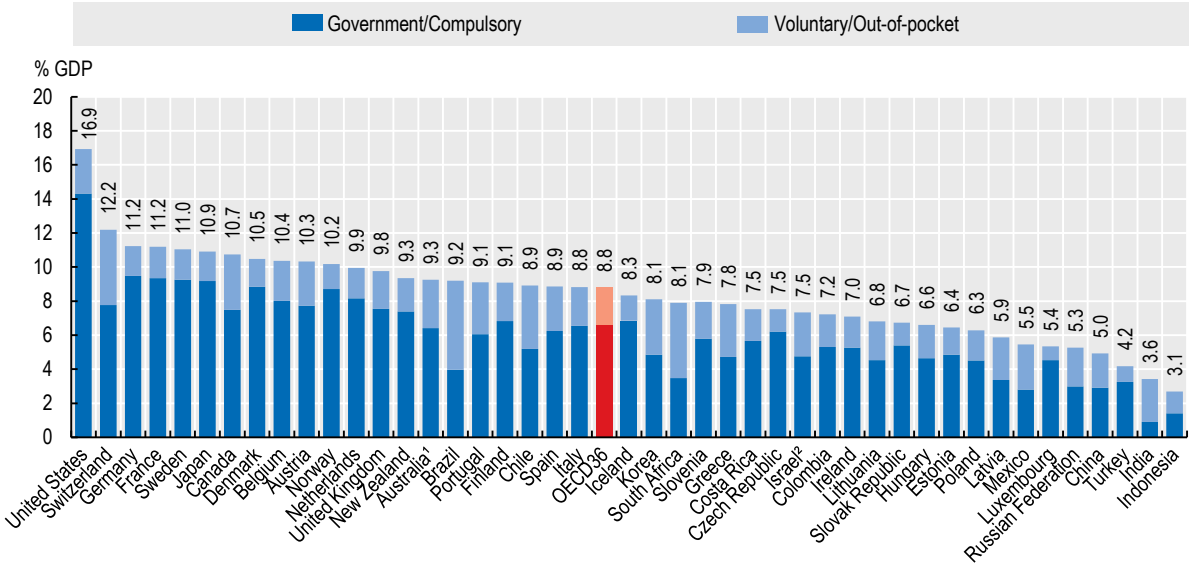
See indicator "Health expenditure per capita" for a definition of current expenditure on health.

Gross Domestic Product (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 thus not available for national consumption, Gross National Income (GNI) may be a more meaningful measure than GDP. However, for consistency, GDP is maintained as the denominator for all countries.

Note that data for 2018 are based on provisional figures provided by the country or preliminary estimates made by the OECD Secretariat.

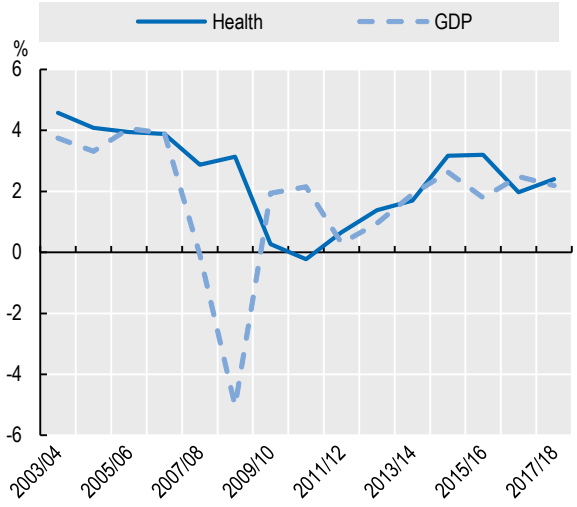
Figure 7.3. **Health expenditure as a share of GDP, 2018 (or nearest year)**



Note: Expenditure excludes investments, unless otherwise stated.
1. Australia expenditure estimates exclude all expenditure for residential aged care facilities in welfare (social) services. 2. Includes investments.
Source: OECD Health Statistics 2019, WHO Global Health Expenditure Database.

StatLink https://doi.org/10.1787/888934016816

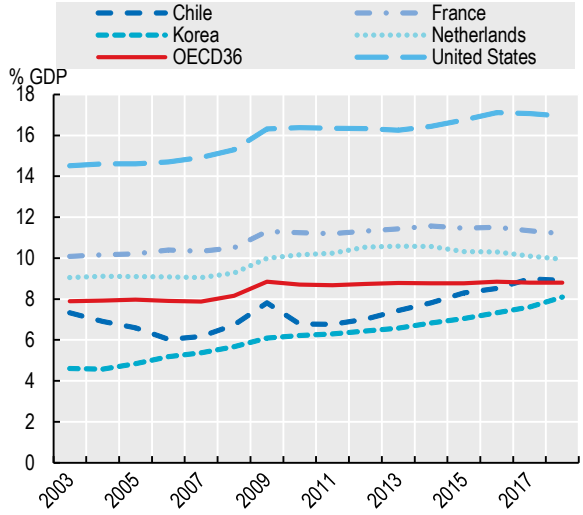
Figure 7.4. **Annual growth in health expenditure and GDP per capita, OECD average, 2003-18**



Source: OECD Health Statistics 2019.

StatLink https://doi.org/10.1787/888934016835

Figure 7.5. **Health expenditure as a share of GDP, selected OECD countries, 2003-18**



Source: OECD Health Statistics 2019.

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Prices in the health sector

Variations in per capita health spending can be the result of differences in prices for health care goods and services, and in the quantity of care that individuals are using ("volume"). Breaking down health spending into these two components gives policymakers a better understanding of what is driving the differences, and therefore guides them to what responses can be put in place to increase value for money. Depending on what explains high spending, the options can differ.

Comparing spending across countries requires data to be expressed in a common currency. The choice of the currency conversion measure, however, can significantly influence the results and interpretation. Whilst market exchange rates are commonly used, they are not ideal for sectors such as health care. First, exchange rates are determined by the supply and demand for currencies, which can be influenced by speculation and interest rates, among other factors. Second, for predominantly non-traded sectors, such as health care, exchange rates are unlikely to reflect the relative purchasing power of currencies in their national markets (Eurostat/OECD, 2012[1]).

Purchasing power parities (PPPs), on the other hand, are conversion rates that show the ratio of the prices in national currencies for the same basket of goods and services. When PPPs are used, the results are valued at a uniform price level and reflect only differences in volumes of goods and services consumed. Traditionally, health care expenditures have been compared using broad economy-wide PPPs (see indicator "Health expenditure per capita"). This gives an indication of the level of spending on health adjusted to take account of differences in the overall price levels between countries. To assess differences solely in health volumes requires the use of health-specific PPPs. Health and hospital PPPs have been developed and can be used to calculate health price level indices (PLI), a ratio of PPPs to exchange rates, to indicate the number of units of a common currency needed to purchase the same volume of health care.

Figure 7.6 shows a comparison of prices for a basket of health goods and services compared with the price level in the United States. This shows that prices in the health sector based on the same set of goods and services are estimated to be about 10% more in Sweden, 20% more in Norway and up to 39% higher in Switzerland. Prices across all OECD countries are on average around 28% lower than in the United States. Health care prices in France and Germany are around a third cheaper than in the United States and half that of their neighbour, Switzerland. The lowest prices for health care are in Turkey at 17% of the US level and less than a quarter of the OECD average.

In general, there is a high correlation between prices in a country and its level of wealth. Prices of durable goods (e.g., cars) vary less than the prices of services (e.g., education and health). In different countries durable goods are frequently traded, which tends to equalise their price levels, while services are often purchased locally, with higher wages in advanced countries leading to higher service prices. The variation in prices in the health sector, which is relatively labour-intensive, therefore tends to be greater than the economy as a whole, with high-income countries having even higher prices for health care compared to lower-income countries.

By removing the price differences for health goods and services between countries, we can get an idea of volume of health services being consumed (Figure 7.7). The overall effect is to reduce the differences between countries with relatively higher prices compared to those with lower prices. For example, taking the relatively high health prices in the United States into account means that they are still the highest consumers of health services but the gap with the OECD average decreases. It also shows that the difference in volume of health care consumed in the United States compared to countries with lower prices, such as Australia and France, is getting smaller. The very low prices in the Turkish health sector means that on average the population still consumes around 54% of the OECD average in term of health care, but spends only 30% of the average.

Definition and comparability

Purchasing power parities (PPPs) are conversion rates that show the ratio of the prices in national currencies of the same basket of goods and services in different countries. Thus, they can be used as both currency converter and price deflators. When PPPs are 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.

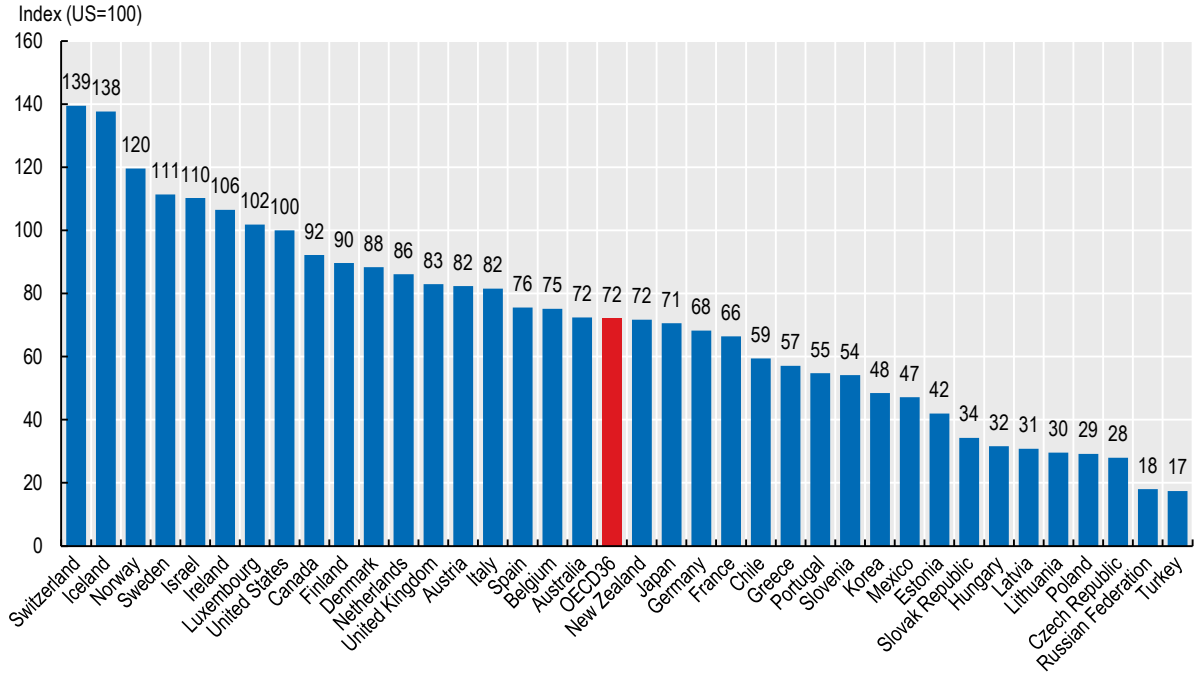
To assess differences in health volumes requires health-specific PPPs. Eurostat and the OECD calculate PPPs for GDP and some 50 product groups, including health, on a regular and timely basis. In recent years, a number of countries have worked towards output-based measures of prices of health care goods and services. The output-based methodology has then been used to produce both health and hospitals PPPs, which are now incorporated into the overall calculation of GDP PPPs. Such PPPs can be used to calculate health price level indices (PLI) 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.

References

[2] Eurostat (2001), *Handbook on Price and Volume Measures in National Accounts*, European Union, Luxembourg.

[1] OECD/Eurostat (2012), *Eurostat-OECD Methodological Manual on Purchasing Power Parities (2012 Edition)*, OECD Publishing, Paris, *https://dx.doi.org/10.1787/9789264189232-en*.

Figure 7.6. **Comparative price levels for health, 2017, US=100**



Source: OECD estimates (unpublished).

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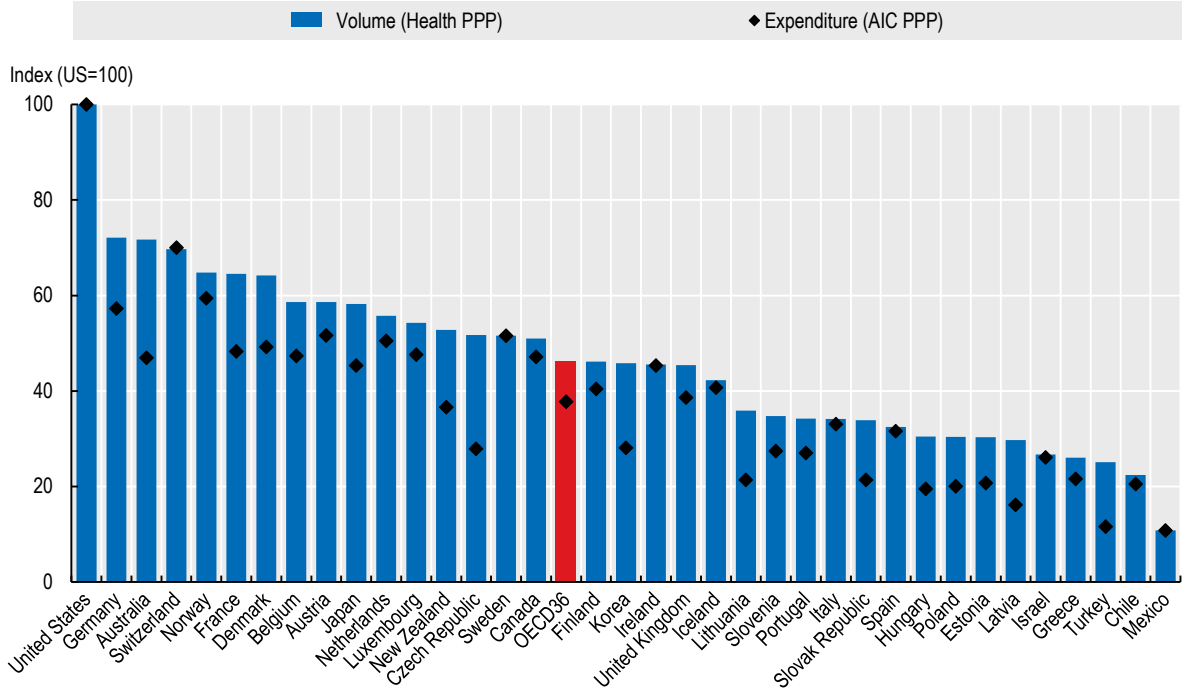
Figure 7.7. **Indices of per capita spending and volume of health care, 2017, US=100**



Note: AIC refers to actual individual consumption.
Source: OECD estimates (unpublished).

StatLink https://doi.org/10.1787/888934016892

Health expenditure by financing scheme

A variety of financing arrangements, broadly classified according to their compulsory or voluntary nature, provide coverage against the cost of health care by purchasing health care services. Government financing schemes, organised at a national or regional level or for specific population groups, automatically entitle individuals to care based on residency, and form the principle mechanism by which health care expenses are covered in a number of OECD countries. The main alternative is for residents to be enrolled in a compulsory health insurance scheme (through public or private entities) which then covers the bulk of their health care use. Despite near universal health care coverage in many OECD countries, direct expenditure by households (out-of-pocket spending) in the form of standalone payments or as part of some co-payment arrangement remain an important element of health financing but the extent can vary considerably. Finally, among the other types of discretionary health care financing, voluntary health insurance, in its various forms, can play an important funding role in some countries.

Taken together, government schemes and compulsory health insurance form the principal financing arrangement in all OECD countries (Figure 7.8). On average, around three-quarters of all health care spending across the OECD is currently covered through these types of mandatory financing schemes. In Norway, Denmark, Sweden and the United Kingdom, central, regional or local government schemes account for around 80% or more of all health spending, with out-of-pocket payments making up most of the remainder. Compulsory health insurance schemes are the dominant source of health care financing in Germany, Japan, France, Luxembourg and the Netherlands, typically covering about three-quarters of all health spending. While Germany and Japan rely on a system of social health insurance, France supplements the public health insurance coverage ("*assurance maladie*") with a system of different private health insurance arrangements *(e.g. "mutuelles")*, which have become compulsory under certain employment conditions in 2016.

In the United States, federal and state programmes, such as Medicaid, make up around a quarter of all US health care spending. Another 22% is covered by social health insurance schemes (e.g. Medicare). Most private health insurance, which, since the introduction of the Affordable Care Act (ACA) in 2014, is considered compulsory due to the current existence of an individual mandate for individuals to buy health insurance or pay a penalty, covers more than a third of total health spending.

Out-of-pocket payments generally constitute the next important source of funding. On average private households directly financed more than a fifth of all health spending in 2017, but with substantial variation across the OECD. Whereas this share is above 30% in Latvia (42%), Mexico (41%), Greece (35%), Korea (34%) and Chile (34%) it is below 10% in France. Out-of-pocket spending on health care was greater than 30% in India, Russia and China.

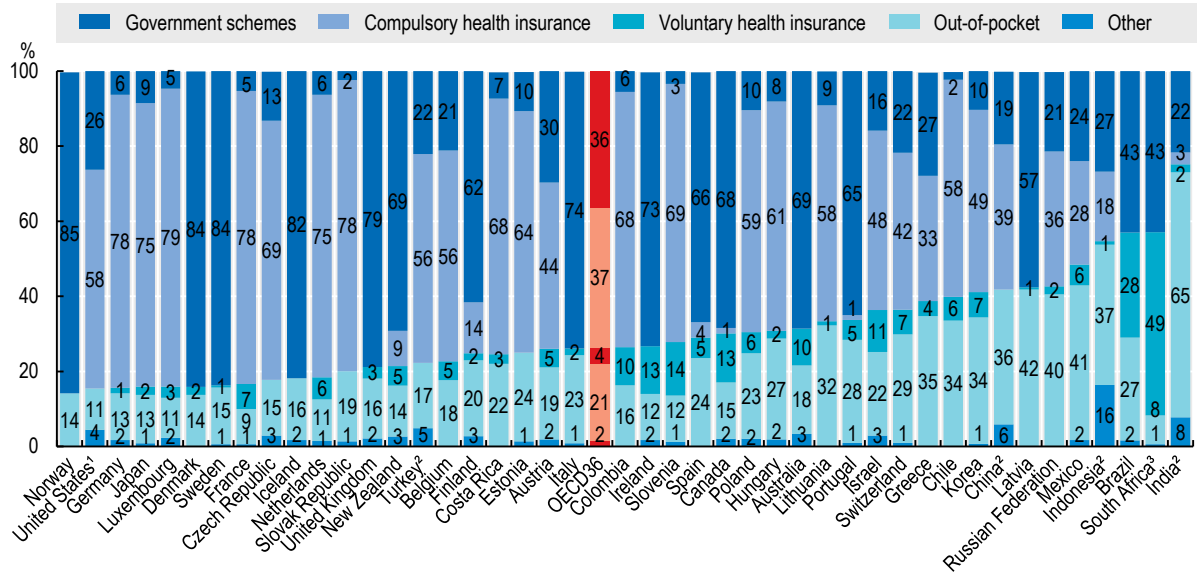
With the aim to move towards universal health coverage, a number of OECD countries have increased spending by government or compulsory insurance schemes in recent decades. As a result, there have been some significant decreases in the share of health care costs payable by individuals and voluntary insurance schemes in some countries. Yet, while the proportion of health spending covered by those two schemes across the OECD has slightly decreased from around 28% in 2003 to 26% in 2017, there is notable variability within countries.

Among those countries where voluntary health insurance plays a more important role, this share has been growing in Korea and Australia in recent years while it remained more or less flat in Slovenia and Canada (Figure 7.9). The share of expenditure covered by out-of-pocket payments rose substantially between 2009 and 2017 in several European countries, such as Greece (5%), Spain (5%) and Portugal (3%), though this proportion has stabilised in recent years (Figure 7.10). This is the result of policies introduced in a number of countries to balance public budgets following the global financial and economic crisis, such as introducing or increasing co-payments for primary care and hospitals, raising reimbursement thresholds or reducing benefits for pharmaceuticals and dental care, or removing public coverage for particular groups.

Definition and comparability

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

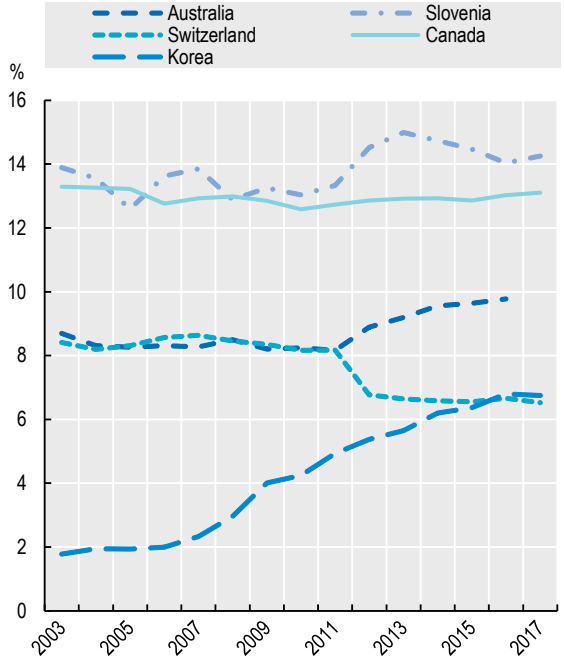
Figure 7.8. **Health expenditure by type of financing, 2017 (or nearest year)**



1. All spending by private health insurance companies in the United States is reported under compulsory health insurance. 2. Health payment schemes unable to be disaggregated into voluntary health insurance, NPISH and enterprise financing are reported under other. 3. Voluntary payment schemes unable to be disaggregated are reported under voluntary health insurance.
Source: OECD Health Statistics 2019.

StatLink https://doi.org/10.1787/888934016911

Figure 7.9. **Voluntary health insurance expenditure as a proportion of total, selected countries, 2003-17**



Source: OECD Health Statistics 2019.

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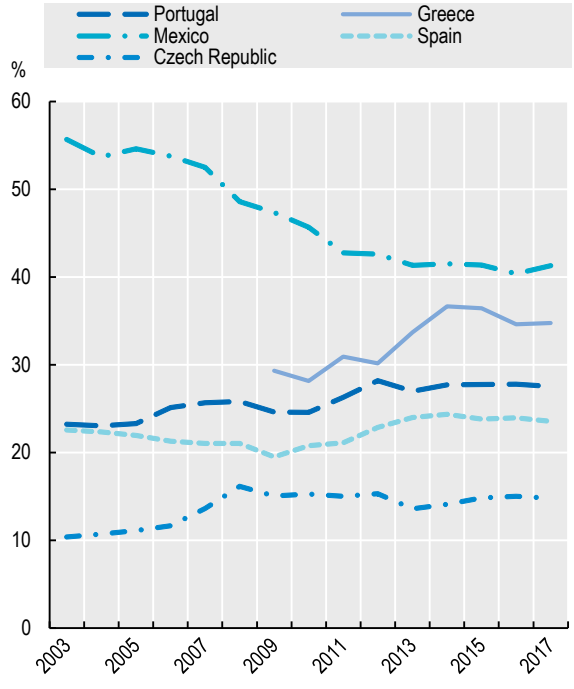
Figure 7.10. **Out-of-pocket health expenditure as a proportion of total, selected countries, 2003-17**



Source: OECD Health Statistics 2019.

StatLink https://doi.org/10.1787/888934016949

Public funding of health spending

While health care goods and services are purchased through different financing schemes (see indicator "Health expenditure by financing scheme"), these in turn need to mobilise revenues to fund the spending, often relying on a number of different sources. Analysing the financial flows from sources through to the schemes gives a more comprehensive understanding of how health services are ultimately funded and the overall burden on different sectors of the economy.

Funding of government schemes comes mainly from general revenues, primarily through taxation, which are then allocated through a budgetary process across the various levels of government. However, governments might also contribute towards other schemes, such as social health insurance, by covering the contributions of particular population groups or providing general budget support to the insurance fund. Individuals can purchase private health insurance, which means paying regular premiums into a pool, which then pays their medical needs. A proportion of the premium may be paid by their employer or 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. Other health financing schemes (e.g. non-profit or enterprise schemes) can receive donations, or income from investments or other commercial operations. Finally, funds can be received from international sources through bilateral agreements between foreign governments or development partners, though this is limited in most OECD countries.

Government transfers and social contributions paid by employers, employees and others constitute public revenues. Private sources comprise the premiums for voluntary and compulsory insurance policies, as well as any other funds from households or corporations. On average, public sources fund around 71% of health care spending across OECD countries (Figure 7.11). Where government financing schemes are the principal mechanism, such as in Denmark, public funding is the major source for health care expenditure (84%). In other countries, governments do not directly pay for the majority of health services but provide transfers and subsidies to other schemes (Mueller and Morgan, 2017[1]). In Japan, only about 9% of spending on health was directly from government schemes, but transfers and social insurance contributions means that a large proportion of expenditure is still publicly funded (84% of the total).

Governments are responsible for funding a range of public services, and health care is competing 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 the OECD (Figure 7.12). Around 20% or more of public spending was linked to health care spending in Japan, the United States, New Zealand, Ireland and Germany. On the other hand, Greece and Hungary allocated around 10% of government spending to health care, a level similar to that in Russia and Brazil.

Many countries have a system of compulsory health insurance – either social health insurance or through private coverage. There is more diversity in the composition of revenues for these type of schemes (Figure 7.13). The importance of government transfers as a source of revenue can differ significantly. On average, around three-quarters of financing comes from social contributions (or premiums) – primarily split between employees and employers - but around a quarter still comes from government transfers, either on behalf of certain groups (e.g. the poor or unemployed) or as general support. In Hungary, governmental transfers funded 68% of the health spending of the social health insurance. In Poland, Slovenia and Estonia the share was less than 5%, with social insurance contributions being 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 (e.g. insurance premiums), other domestic revenues and revenues from abroad (e.g. as part of development aid).

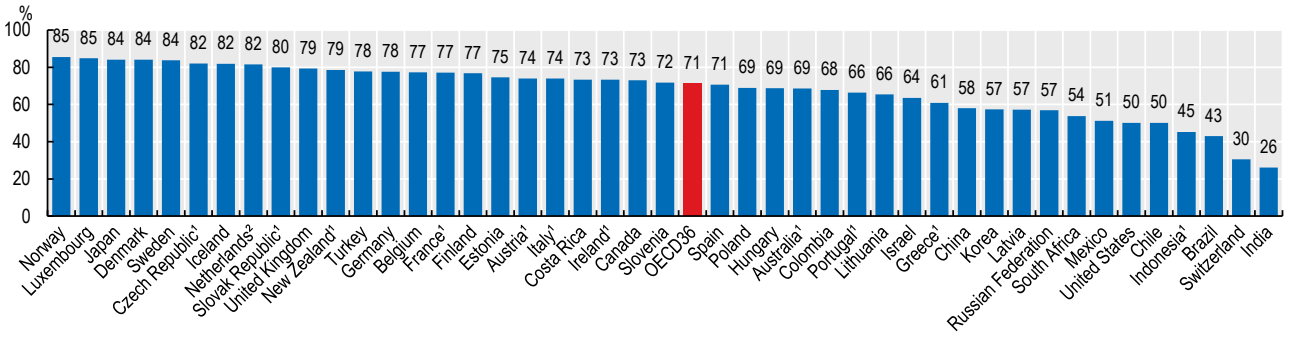
Revenues of a financing scheme are rarely equal to expenses in any given year leading to a surplus or deficit of funds. In practice, most countries use the composition of revenues per scheme to apply on a pro-rata basis to the scheme's expenditure thus providing a picture of how spending was financed in the accounting period.

Total government expenditure is as defined in the System of National Accounts. Public spending on health from the System of Health Accounts is equal to the sum of FS.1 Transfers from government (domestic), FS.2 Transfers from government (foreign) and FS.3 Social insurance contributions. In the absence of information from the revenue side, the sum of HF.1.1 Government financing schemes and HF1.2.1 Social health insurance is taken as a proxy.

References

[1] Mueller, M. and D. Morgan (2017), "New insights into health financing: First results of the international data collection under the System of Health Accounts 2011 framework", *Health Policy*, Vol. 121/7, pp. 764-769, *http://dx.doi.org/10.1016/j.healthpol.2017.04.008*.

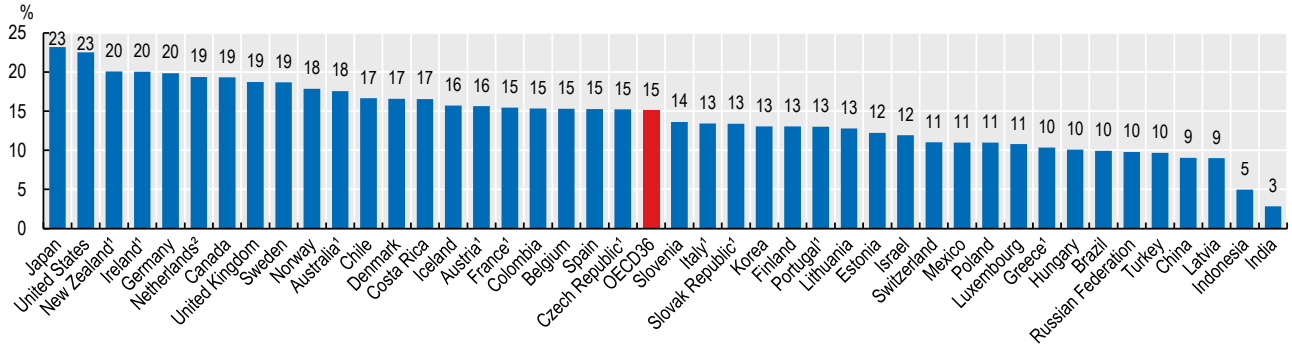
Figure 7.11. **Health expenditure from public sources as share of total, 2017 (or nearest year)**



1. Public is calculated using spending by government schemes and social health insurance.
2. Public is calculated using spending by government schemes, social health insurance and compulsory private insurance.
Source: OECD Health Statistics 2019.

StatLink https://doi.org/10.1787/888934016968

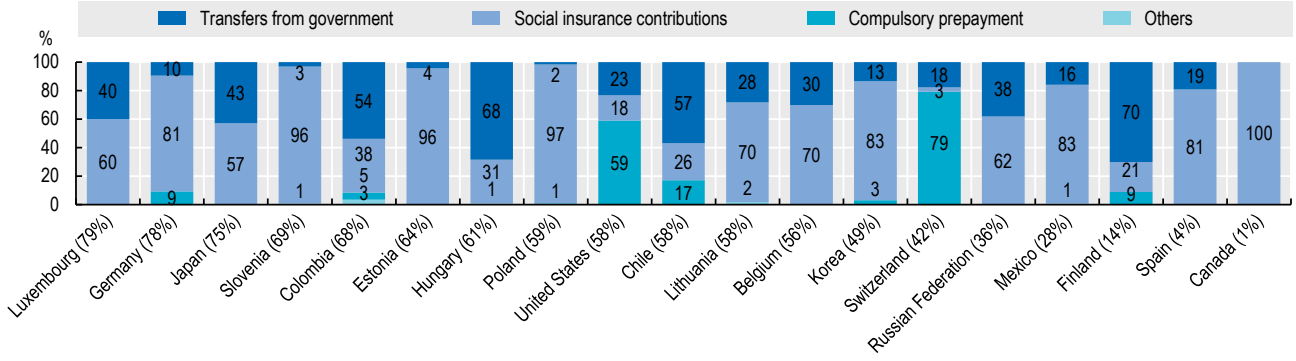
Figure 7.12. **Health expenditure from public sources as a share of total government expenditure, 2017 (or nearest year)**



1. Government expenditure includes expenditure by government schemes and social health insurance.
2. Government expenditure includes expenditure by government schemes, social health insurance, and compulsory private insurance.
Source: OECD Health Statistics 2019.

StatLink https://doi.org/10.1787/888934016987

Figure 7.13. **Financing sources of compulsory health insurance, 2017 (or nearest year)**



Note: Numbers in brackets indicate the contribution of compulsory health insurance to total expenditure. "Other" includes voluntary prepayments and other domestic revenues.
Source: OECD Health Statistics 2019.

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Health expenditure by type of service

Factors such as how care is organised and prioritised across providers, input costs and population needs all affect the level of spending across different services. Inpatient and outpatient services comprise the greatest share – typically accounting for around 60% of all health spending across OECD countries (Figure 7.14). Medical goods (mostly pharmaceuticals) take up a further 20%, followed by a growing share on long-term care, which in 2017 averaged around 14% of health spending. Administration and overall governance of the health system, together with preventive care covered the remainder.

The structure of spending across the various types of care can vary considerably by country. About 42% of health spending in Greece can be attributed to inpatient (curative and rehabilitative) care services. This is by far the highest share and some 14 percentage points above the OECD average. At the other end of the scale, many of the Nordic countries, but also Canada and the Netherlands, saw inpatient services account for a quarter or less of all spending. Outpatient care, covering generalist and specialist consultations, was particularly high in Portugal and Israel relative to the OECD average of 32%. Greece and Belgium spent the lowest proportion on outpatient services.

Spending on medical goods comprises the third largest category. Prices of goods generally tend to be less variable across countries than services (see indicator on Prices in the health sector). This means that spending on pharmaceuticals and medical devices often accounts for a higher share of health spending in lower income countries. As such, medical goods accounted for more than a third of all health spending in the Slovak Republic. By contrast, in Denmark, Norway, the Netherlands and Sweden, the share was much lower, at between 10 and 12%.

Where formal arrangements are in place for the care of the elderly and the dependent population such as in Norway, Sweden and the Netherlands, a quarter or more of all health spending can relate to long-term care services. In countries with a more informal long-term care sector such as in many Southern, Central and Eastern European countries, spending on long-term care is much lower – around 5% or less in Greece, Portugal, Hungary and Latvia.

A vital component of any health system that stretches across the different types of services described above is primary care. As a proxy for this complex concept, primary care is here defined to include a variety of different services such as general outpatient care, preventive services, dental care services and home-based curative services when provided by ambulatory care providers. Using this proxy measure, primary care accounts for around 13% of all health spending across the OECD, ranging from around 10% in Switzerland, the Slovak Republic, the Netherlands and Austria to 18% in Australia and Estonia (Figure 7.15).

Growth in health expenditure resumed across all areas following the general slowdown after the economic crisis (Figure 7.16). During the years of the economic downturn, some governments introduced policies to protect expenditure for primary care and front-line services while looking to make cost savings elsewhere in the health system. Reducing wages in public hospitals, postponing staff replacement and delaying investment in hospital infrastructure were among the most frequent measures taken in OECD countries to balance health budgets. While outpatient care and long-term care continued to grow annually during the period 2009-13, spending on inpatient care and administration stalled in many countries, and decreased for pharmaceuticals and prevention services.

These cuts have since been reversed, and prevention was the fastest growing area between 2013-17 at 3.2% on average, annually. The rate of growth for outpatient care has more than doubled (2.8% vs 1.1%), and inpatient care grew by 2.4%. Spending on pharmaceuticals and administration increased more modestly at 1.6% and 2.0% per year, respectively. Finally, spending on long-term care has continued to grow at a consistent rate since 2003.

Definition and comparability

The *System of Health Accounts* (OECD, Eurostat and 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, long-term care, 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, rehabilitative and long-term care can also be classified by mode of provision (inpatient, day care, outpatient and home care).

A key health service that has been notably missing in the SHA framework is primary care. Efforts have been made in recent years to develop a methodology using the SHA framework to develop a proxy indicator for primary care spending (Mueller and Morgan, 2018[2]). Comparability of primary care figures is mainly affected by the extent to which countries are able to distinguish between generalist and specialist services and the methods used to implement such a split.

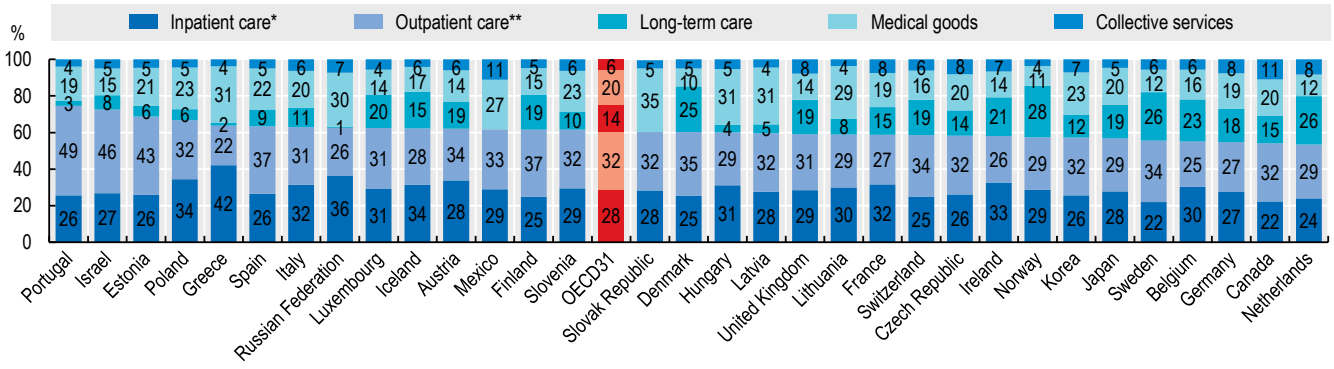
For the calculation of growth rates in real terms, AIC deflators are used.

References

[2] Mueller, M. and D. Morgan (2018), "Deriving preliminary estimates of primary care spending under the SHA 2011 framework"; *http://www.oecd.org/health/health-systems/Preliminary-Estimates-of-Primary-Care-Spending-under-SHA-2011-Framework.pdf*.

[1] OECD/Eurostat/WHO (2017), *A System of Health Accounts 2011: Revised edition*, OECD Publishing, Paris, *https://doi.org/10.1787/9789264270985-en*.

Figure 7.14. **Health expenditure by type of service, 2017 (or nearest year)**



Note: Countries are ranked by curative-rehabilitative care as a share of current expenditure on health.
*Refers to curative-rehabilitative care in inpatient and day care settings. **Includes home care and ancillary services.
Source: OECD Health Statistics 2019.

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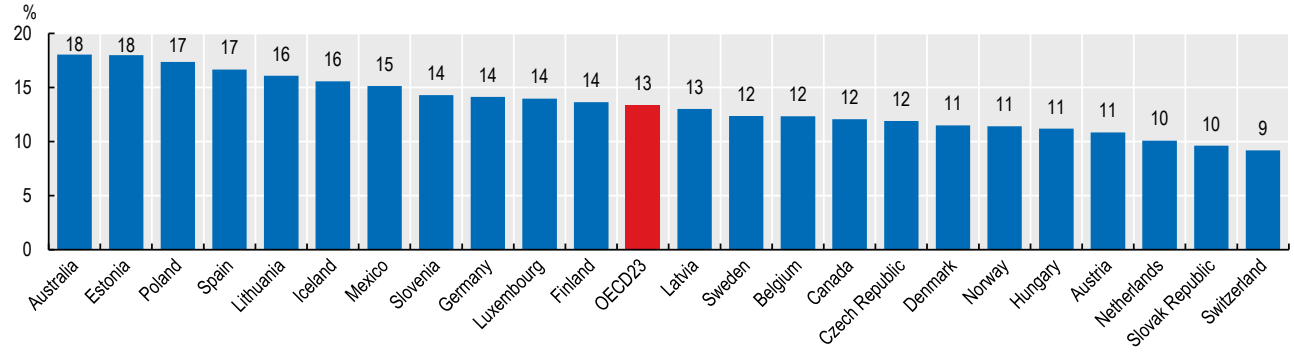
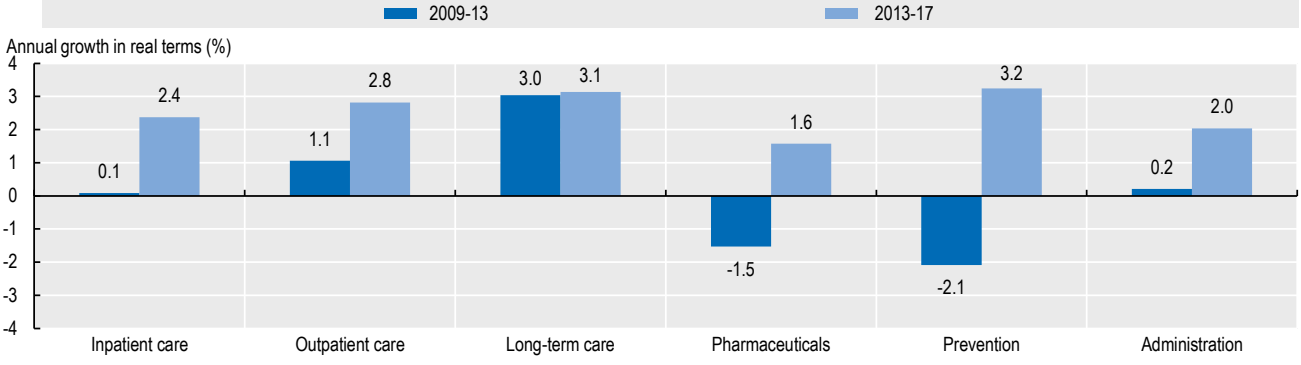
Figure 7.15. **Spending on primary care as a share of current health expenditure, 2017 (or nearest year)**



Source: OECD Health Statistics 2019.

StatLink https://doi.org/10.1787/888934017044

Figure 7.16. **Annual growth in health expenditure for selected services (real terms), OECD average, 2009-13 and 2013-17**



Source: OECD Health Statistics 2019.

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Health expenditure by provider

How and where health care is delivered can have a significant impact on spending for different goods and services. Health care can be provided in many different organisational settings, ranging from hospitals and medical practices to pharmacies and even private households caring for family members. 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").

Activities delivered in hospitals account for the largest proportion of health care expenditure in almost all OECD countries, even though each country organises their system to provide funding and care in different ways. On average, hospitals receive 38% of health system funding, but receive more than half of all financial resources in Turkey (Figure 7.17). Estonia, Korea and Italy also have significant hospital sectors, where spending accounts for around 45%. Only Germany and Mexico spend less than 30% of the total on hospitals.

After hospitals, the largest provider category are ambulatory providers. This category covers a wide range of facilities and depending on the country-specific organisation of health service delivery, most spending relates either to medical practices including offices of GPs and specialists (e.g. Austria, France and Germany) or ambulatory health care centres (e.g. Finland, Ireland and Sweden). Across OECD countries, care delivered by ambulatory providers accounts for around a quarter of all health spending. This share stands above 30% in Israel, Belgium, the United States, Luxembourg, Mexico and Germany, but is less than 20% in Turkey, Greece, the Netherlands and the Slovak Republic. Around two-thirds of all spending on ambulatory providers relate to GP and specialist practices together with ambulatory health care centres, and roughly one-fifth to dental practices.

Other main provider categories include retailers (mainly pharmacies selling prescription and over-the-counter medicines) – accounting for 18% of all health spending – and residential long-term care facilities (mainly providing inpatient care to long-term dependent people), to which 9% of the total health spending bill can be attributed.

There is a large variation in the range of activities that may be performed by the same category of provider across countries, depending on the structure and organisation of the health system. This variation is most pronounced in hospitals (Figure 7.18). Although inpatient curative and rehabilitative care defines most of the hospital expenditure in almost all OECD countries, 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 provided to outpatients. In Germany and Greece, hospitals are generally mono-functional with the vast majority (93%) of spending on inpatient care services, and very little outpatient and day care spending. On the other hand, outpatient care accounts for over 40% of hospital expenditure in Denmark, Sweden, Estonia, Finland and Portugal. In those countries, specialists are typically receiving outpatients in hospital outpatient departments.

Many countries have shifted some medical services from inpatient to day care settings in recent years (see indicator on "Ambulatory surgery" in Chapter 9). The main motivation behind this is the generation of efficiency gains and a reduction of waiting times. Moreover, for some interventions day care procedures are now the most appropriate treatment method. Hence, in a number of countries day care now accounts for more than 10% of all hospital expenditure. Furthermore, the provision of long-term care in hospital makes up a sizeable share of hospital expenditure in some countries (e.g. Korea, Japan and Israel).

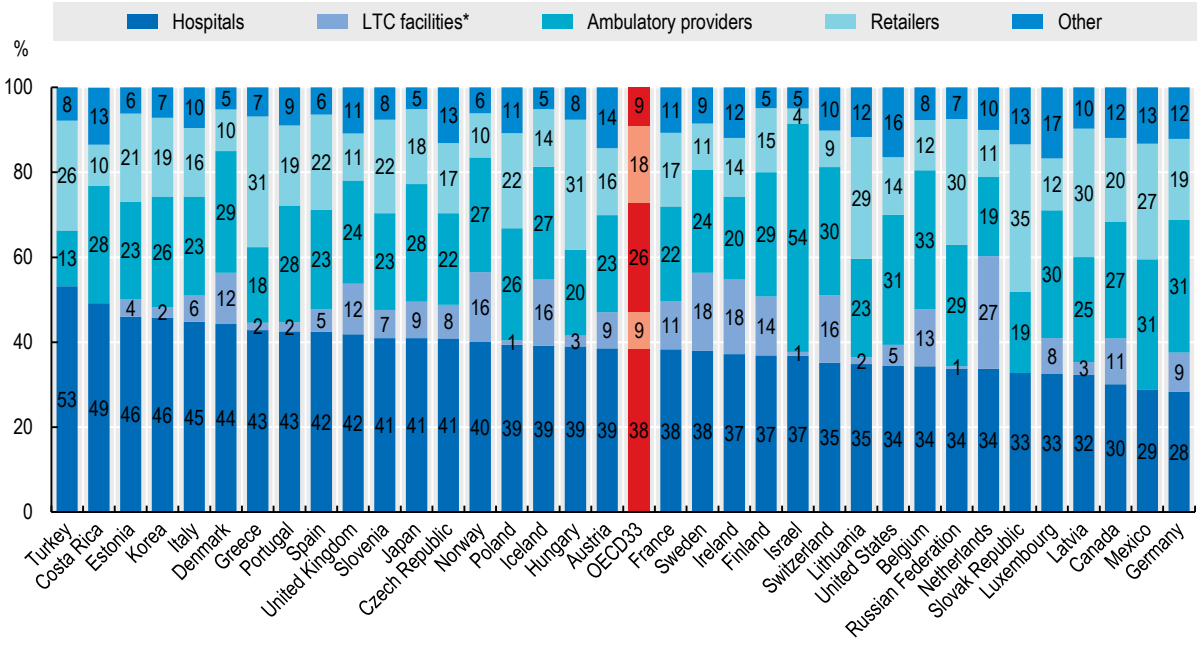
Definition and comparability

The universe of health care providers is defined in the *System of Health Accounts* (OECD, Eurostat and WHO, 2017) and encompasses primary providers, i.e. organisations and actors that deliver health care goods and services as their primary activity, as well as 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 long-term care facilities, ambulatory providers (practices of GPs and specialists, dental practices, ambulatory health care centres, providers of home health care services), providers of ancillary services (e.g. ambulance services, laboratories), retailers (e.g. pharmacies), and providers of preventive care (e.g. public health institutes).

Secondary providers include residential care institutions whose main activities might be the provision of accommodation but provide nursing supervision as secondary activity, supermarkets that sell over-the-counter medicines, or 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 (e.g. government agencies, health insurance agencies) and households as providers of home health care.

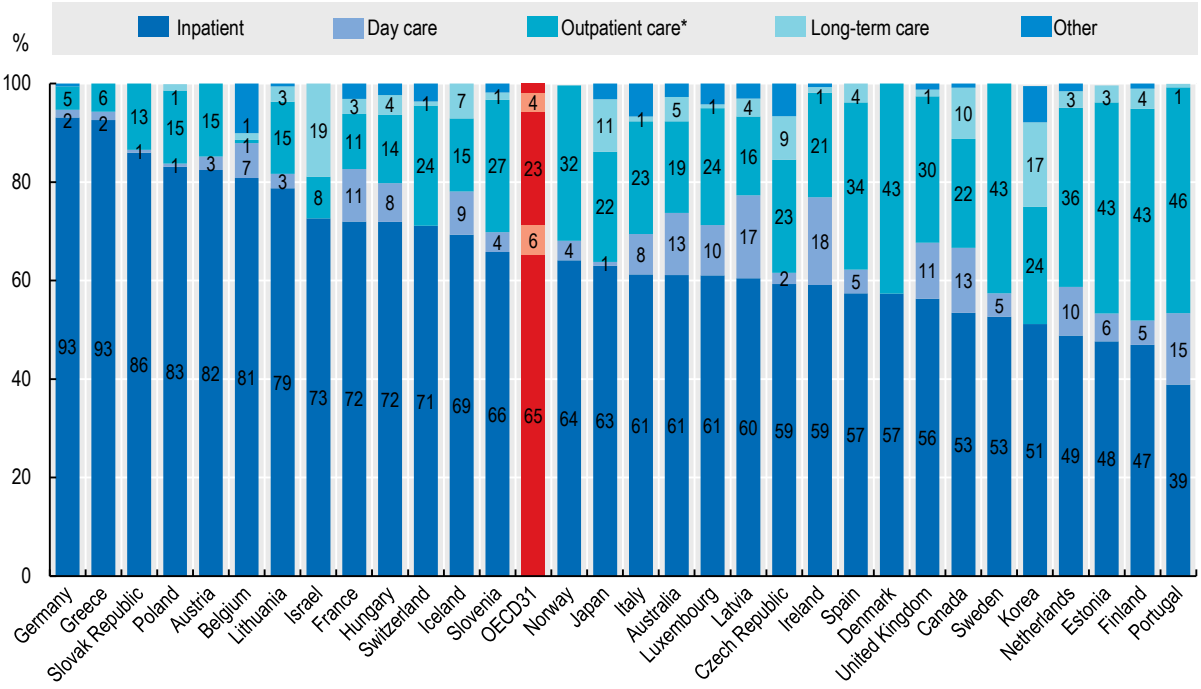
Figure 7.17. **Health expenditure by provider, 2017 (or nearest year)**



Note: Countries ranked by hospitals as a share of current expenditure on health. * Refers to long-term care facilities.
Source: OECD Health Statistics 2019.

StatLink https://doi.org/10.1787/888934017082

Figure 7.18. **Hospital expenditure by type of service, 2017 (or nearest year)**



Note: Countries ranked by inpatient curative-rehabilitative care as a share of hospital expenditure. * Includes ancillary services.
Source: OECD Health Statistics 2019.

StatLink https://doi.org/10.1787/888934017101

Capital expenditure in the health sector

The health and long-term care sectors remain highly dependent on labour inputs, but capital is also a key factor in the production of health services. How much a country invests in new health facilities, the latest 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 needs of the population and thus contribute to better outcomes. For example, a low level of MRI and CT scanners (see indicator "Medical technologies" in Chapter 5) can have consequences on the ability to detect diseases at an early stage. However, the level of capital expenditure tends to fluctuate more from year to year than current spending on health services, as investment decisions can be much more dependent on economic circumstances and political or business choices as well as reflecting future needs and past levels of investment. In making such decisions, policy-makers and providers need to weigh up not only the short-term costs, but also the potential benefits in the short, medium and longer-term. 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.

For the most recent year available, the average *capital* expenditure in OECD countries was equivalent to around 5.6% of *current* spending on health (that is, on medical care, pharmaceuticals, etc.) and around 0.5% of GDP compared to 8.8% of GDP for current spending on health (see indicator "Health expenditure as a share of GDP") (Figure 7.19). As is the case with current spending, there are significant differences in the levels of investment expenditure between countries and over time, especially as a result of the economic crisis.

In relation to their current spending, Luxembourg and Japan were the highest spenders in 2017 with the equivalent of more than 10% going on new construction, equipment and technology in the health and social sector, although in relation to its GDP, Luxembourg is closer to the average. A number of European countries – including Germany, Belgium, and the Netherlands – were also relatively high capital spenders, corresponding to around 9% of current spending on health. Both Japan and Germany spent more than 1% of GDP on capital investment in the health sector in 2017. The United States and the United Kingdom spent less than the average compared to current spending at 3.5% and 3.2%, although because of the very high expenditure on health services, this translated into a relatively high share of GDP in the case of the United States. Turkey, by contrast, allocated only 0.3% of GDP to capital spending in 2017 but this appears relatively high compared to its low current spending on health.

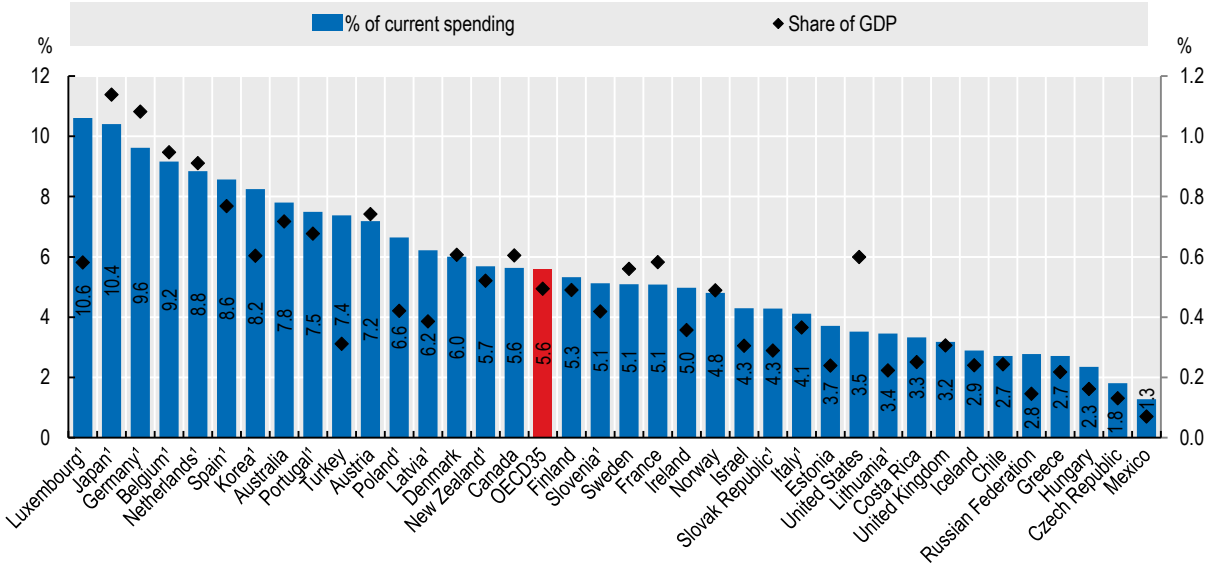
Capital spending fluctuates more than current spending from year to year, particularly in small economies, as capital projects on construction (i.e. building of hospitals and other health care facilities) and investment programmes on new equipment (e.g. medical and ICT equipment) are implemented. Decisions on capital spending also tend to be more affected by economic cycles, with spending on health system infrastructure and equipment often a prime target for reduction or postponement during downturns. Figure 7.20 shows an index of capital spending in real terms over a ten-year period for a selection of European and North American countries. While France maintained a constant level of capital investment over the period, both the United Kingdom and, in particular, Greece reported a sharp drop in capital spending in the wake of the global financial and economic crisis, and expenditure remains at levels well below that of 2007. Both the United States and Canada have current capital spending similar to the levels (in real terms) before the crisis. There was a marked increase in capital expenditure in Canada in 2010/11 as a counter-cyclical measure, which was even more pronounced in Mexico from 2008-12, as the public health insurance (*Seguro Popular*) was significantly expanded.

Definition and comparability

Gross fixed capital formation in the health sector is measured by the total value of the fixed assets that health providers have acquired during the accounting period (less the value of the disposals of assets) and that are used repeatedly or continuously for more than one year in the production of health services. The breakdown by assets includes infrastructure (e.g. hospitals, clinics, etc.), machinery and equipment (including diagnostic and surgical machinery, ambulances, and ICT equipment), as well as software and databases.

Gross fixed capital formation is reported by many countries under the System of Health Accounts. It is also reported under the National Accounts broken down by industrial sector according to the International Standard Industrial Classification (ISIC) Rev. 4 using Section Q: Human health and social work activities or Division 86: Human health activities. The former is normally broader than the SHA boundary while the latter is narrower.

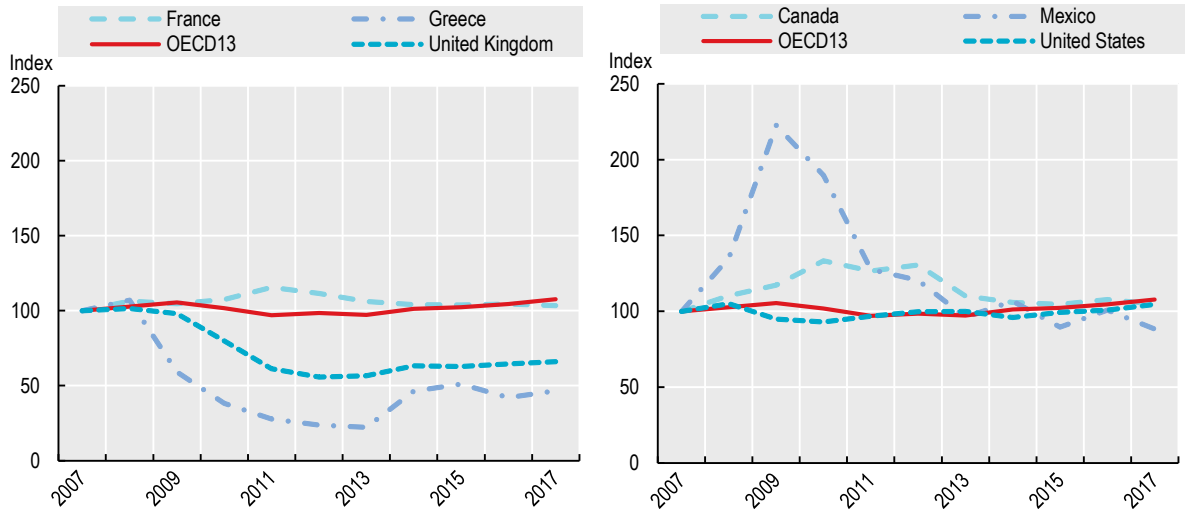
Figure 7.19. **Capital expenditure on health as a share of current health expenditure, 2017 (or nearest year)**



1. Refers to gross fixed capital formation in ISIC Q: Human health and social work activities (ISIC Rev. 4).
Source: OECD Health Statistics 2019, OECD National Accounts.

StatLink https://doi.org/10.1787/888934017120

Figure 7.20. **Trends in capital expenditure (constant prices), selected countries, 2007-17**



Source: OECD Health Statistics 2019, OECD National Accounts.

StatLink https://doi.org/10.1787/888934017139

Projections of health expenditure

Health expenditure has outpaced economic growth across OECD countries over most of the past half century. This additional spending has contributed to improvements in health outcomes and been an important source of economic growth and jobs. Nevertheless, financial sustainability is becoming an increasing concern, as most countries draw their funding largely from public sources (OECD, 2015[1]). Projections of health expenditure growth can give countries a perspective regarding how quickly, and by how much, health expenditure could rise compared to general economic growth, or with respect to a country's population (Lorenzoni et al., 2019[2]).

Over the long run, health expenditure has largely outpaced GDP growth across all OECD countries, even taking into account the volatility following the financial crisis of 2007-08 (Figure 7.21). Over the period 2000-15, annual health spending growth across the OECD was 3.0%, compared to GDP growth of 2.3%. By comparison, for the period 2015-2030, health expenditure per capita is projected to grow at an average annual rate of 2.7% across the OECD under a base scenario (with GDP growth averaging 2.1%). Average growth is projected to be as low as 2.2% with greater cost control, but as high as 3.1% in a cost pressure scenario. These scenarios reflect diverging assumptions such as countries' economic growth, productivity and healthy ageing. However, across OECD countries health expenditure is projected to outpace GDP growth in the next 15 years in all scenarios.

Looking at country-specific projections, health spending per capita in 2015-30 is projected to grow more than 4% per year in the Slovak Republic, Turkey and Korea, while in Belgium, Germany, Italy, Lithuania, Japan and Portugal projected growth is less than 2% per year (Figure 7.22). In 20 out of 36 OECD countries, growth is projected to be within ±1 percentage points growth compared to 2000-15. In the six countries – Iceland, Hungary, Mexico, Israel, Portugal and Turkey – where per capita growth is projected to be more than one percentage point higher than that observed for 2000-2015, most experienced a slowdown in health spending growth in the aftermath of the global economic and financial crisis. In contrast, in Lithuania, Korea, Chile, Latvia and Estonia, growth rates are projected to be over two percentage points lower than historical rates. These countries also reported some of the highest growth rates in health spending per capita from 2000 to 2015.

Across the OECD, under the base scenario, health expenditure as a share of GDP is projected to rise to 10.2% by 2030, compared to 8.8% in 2015 (Figure 7.23). The only countries for which a slight decrease in this ratio is expected are Latvia, Hungary and Lithuania, largely due to projected decreases in population size over the coming decades. Most countries are expected to experience moderate increases in health expenditure as a share of GDP, with only the United States seeing growth of more than three percentage points.

Definition and comparability

The underlying model for projecting health expenditure in the future includes several country-specific determinants. It is based on age-specific health expenditure curves for total health expenditure (in real terms), which are projected in the future by using population changes, mortality rates, expected costs associated with dying, and the share of survivors and non-survivors in any given year. These are further adjusted for GDP growth, productivity and wages growth, time effects, individual and collective shares of expenditure and technological change. This modelling is applied to both total and public current health expenditure (excluding capital expenditure), and a range of scenarios are constructed based on parameters gathered from the literature, regression-based sensitivity analysis, and assumptions in line with specific theories in the literature (i.e. time-to-death, healthy ageing). A detailed breakdown of the theoretical framework and the methodological assumptions underlying the projections presented in this column are available in the References section.

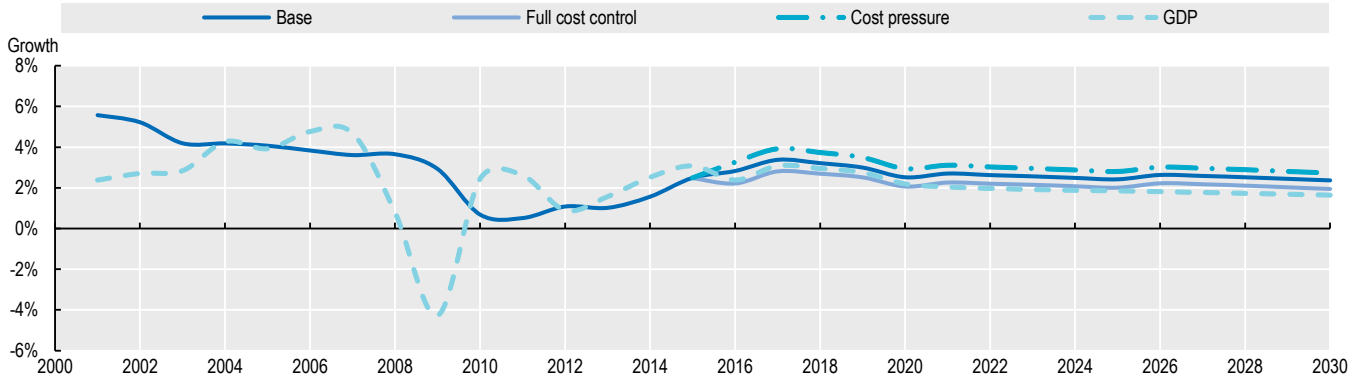
References

[2] Lorenzoni, L. et al. (2019), "Health Spending Projections to 2030: New results based on a revised OECD methodology", *OECD Health Working Papers*, No. 110, OECD Publishing, Paris, *https://doi.org/10.1787/5667f23d-en*.

[3] Marino, A. et al. (2017), "Future trends in health care expenditure: A modelling framework for cross-country forecasts", *OECD Health Working Papers*, No. 95, OECD Publishing, Paris, *https://doi.org/10.1787/247995bb-en*.

[1] OECD (2015), *Fiscal Sustainability of Health Systems: Bridging Health and Finance Perspectives*, OECD Publishing, Paris, *https://doi.org/10.1787/9789264233386-en*.

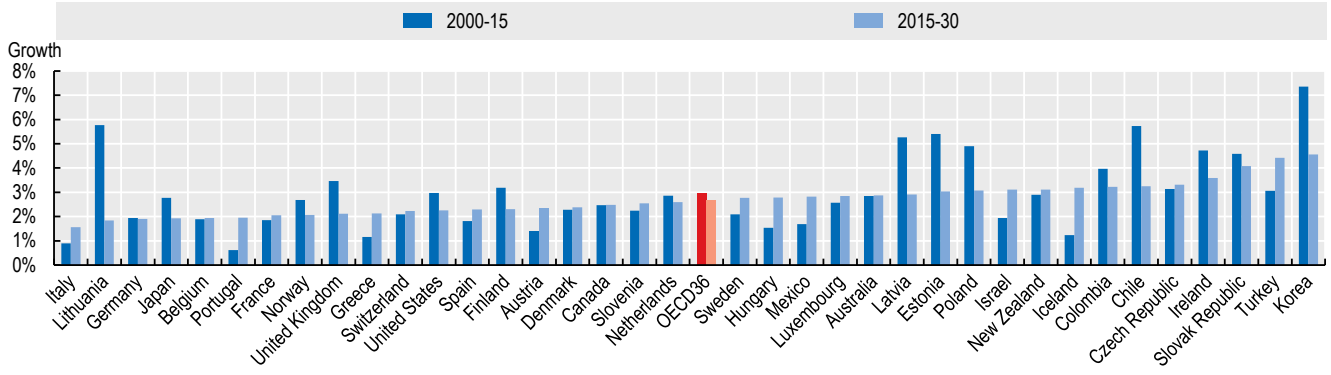
Figure 7.21. **Health expenditure per capita vs GDP growth trends, observed and projected, 2000-30**



Source: OECD Health Division projections, 2019.

StatLink https://doi.org/10.1787/888934017158

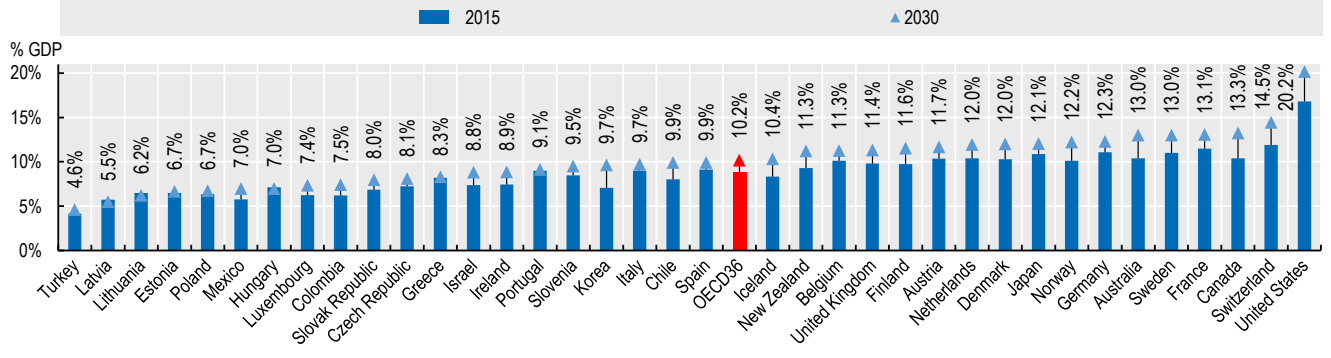
Figure 7.22. **Average per capita health expenditure growth, 2000-15 and 2015-30**



Source: OECD Health Division projections, 2019.

StatLink https://doi.org/10.1787/888934017177

Figure 7.23. **Health expenditure as a share of GDP, projection to 2030**



Source: OECD Health Division projections, 2019.

StatLink https://doi.org/10.1787/888934017196

8. HEALTH WORKFORCE

Health and social care workforce

Doctors (overall number)

Doctors (by age, sex and category)

Remuneration of doctors (general practitioners and specialists)

Nurses

Remuneration of nurses

Medical graduates

Nursing graduates

International migration of doctors and nurses

The statistical data for Israel are supplied by and under the responsibility of the relevant Israeli authorities. The use of such data by the OECD is without prejudice to the status of the Golan Heights, East Jerusalem and Israeli settlements in the West Bank under the terms of international law.

Health and social care workforce

In OECD countries, health and social systems employ more workers now than at any other time in history. In 2017, about one in every ten jobs was found in health or social care (Figure 8.1), which amounts to a nearly two percentage-point increase since 2000. In Nordic countries and the Netherlands, more than 15% of all jobs are in health and social work. From 2000 to 2017 the share of health and social care workers remained steady or increased in all countries except the Slovak Republic (where it decreased in the 2000s and has remained stable since 2010). In some countries, notably Japan, Ireland and Luxembourg, the share of health and social care workers increased considerably.

The health and social care sector is critical for the effective functioning of OECD societies and economies, and as a result the sector is not directly aligned with general workforce trends. Specifically, in OECD countries from 2000 to 2017, employment in the health and social sector increased on average by 42% (with a median increase of 38%), outpacing even the growth in the service sector and trends in total employment, while employment in agriculture and industry declined sharply across the same period (Figure 8.2). At the same time, the health and social care sector also tends to be more robust to cyclical employment fluctuations. For example, while total employment declined in the United States and other OECD countries during the economic recessions of the early 1990s and, in particular, 2008-09, employment in the health and social care sector continued to grow steadily throughout.

Looking forward, employment in the health and social care sector is likely to continue to increase. Investment in health systems, including in workforce development, can promote economic growth by securing a healthy population, as well as along other pathways such as innovation and health security (UN High-Level Commission on Health Employment and Economic Growth, 2016[1]). The distribution of health and social care workers' skills and roles, however, is expected to change, driven in large part by ageing populations. With more older people, the pattern of demand for health and social services will shift towards greater demand for long-term care and related social services, which are particularly labour-intensive (OECD, 2019[2]). In response to, or in anticipation of, this demographic shift, many countries have begun to introduce new care delivery models that integrate health and social services. Policies such as expanding the roles of non-physician providers (such as nurse practitioners, pharmacists and community health workers), or introducing more multi-professional teams and treatment structures, can increase the productivity of the health workforce, as well as improving continuity and quality of care for patients.

New health technologies are a further factor driving rapid change in the health and social care sector, and their development and impact can be hard to predict. Technological shifts are expected in information technology and big data, automation and artificial intelligence; these may generate demand for new specialities or skills for health and social care workers, while reducing the importance of other professional roles (OECD, 2019[3]).

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 (ISIC). 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. The employment data are taken from the OECD National Accounts database for the 36 OECD member countries, except for Turkey where the source is the OECD Annual Labour Force Statistics database.

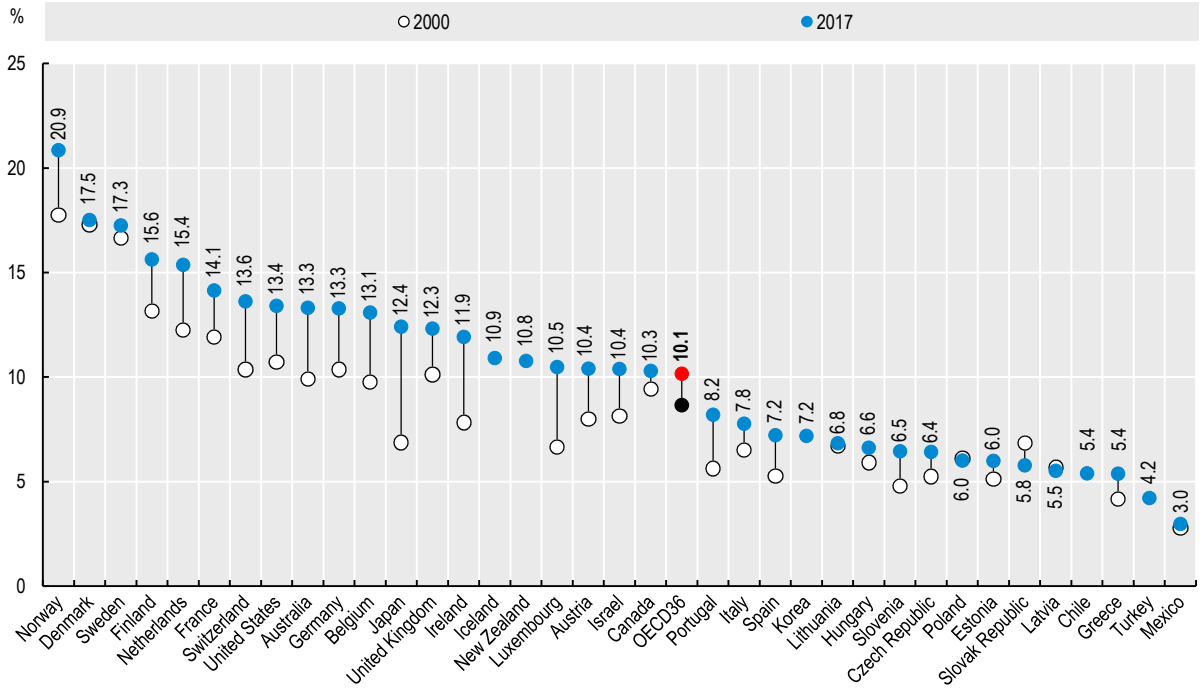
References

[2] OECD (2019), *Who Cares? Attracting and Retaining Care Workers for the Elderly*, OECD Publishing, Paris, *https://doi.org/10.1787/92c0ef68-en*.

[3] OECD (2019), "Engaging and transforming the health workforce", in *Health in the 21st Century: Putting Data to Work for Stronger Health Systems*, OECD Publishing, Paris.

[1] UN High-Level Commission on Health Employment and Economic Growth (2016), *Working for Health and Growth: Investing in the Health Workforce*, World Health Organization, Geneva, *http://www.who.int/hrh/com-heeg/reports*.

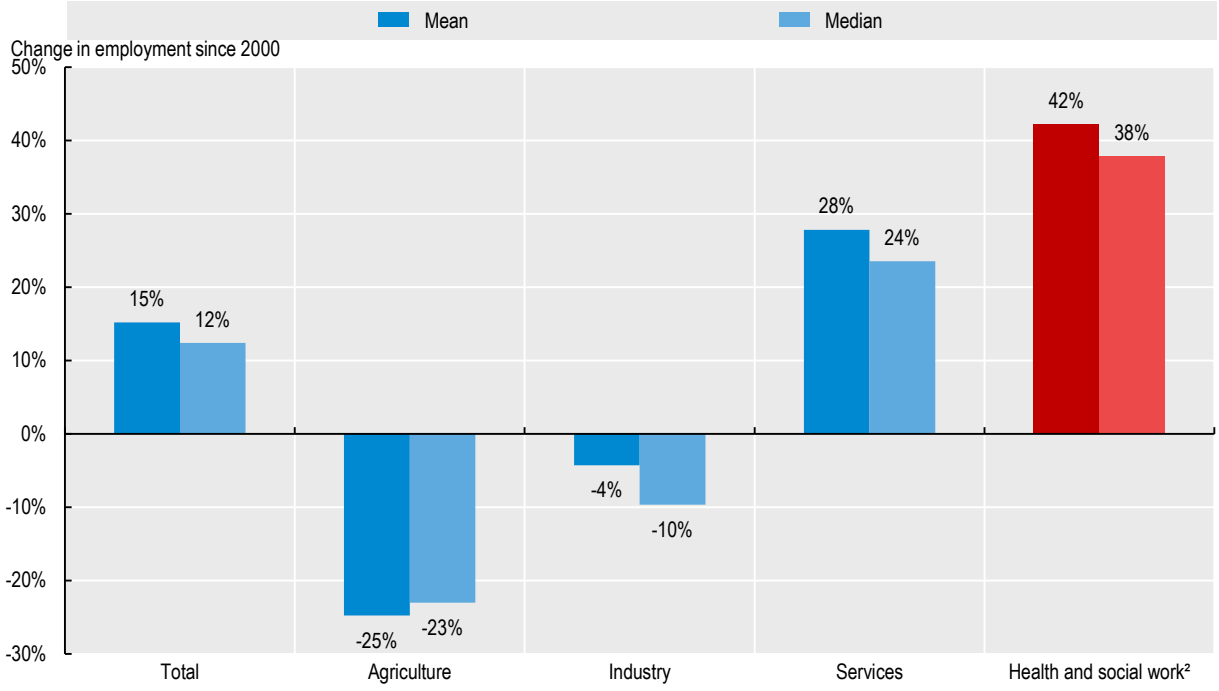
Figure 8.1. **Employment in health and social work as a share of total employment, 2000 and 2017 (or nearest year)**



Source: OECD National Accounts; OECD Annual Labour Force Statistics for Turkey.

StatLink https://doi.org/10.1787/888934017215

Figure 8.2. **Employment growth by sector, OECD average[1], 2000-17 (or nearest year)**



1. Average of 30 OECD countries (excluding Chile, Iceland, Korea, New Zealand, Switzerland and Turkey).
2. Health and social work is classified as a sub-component of the services sector.
Source: OECD National Accounts.

StatLink https://doi.org/10.1787/888934017234

Doctors (overall number)

Across OECD countries in 2017 the number of doctors ranged from 2.5 or less per 1 000 population in Turkey, Korea, Poland, Mexico, Japan and Chile, to five or more in Portugal, Austria, and Greece. However, numbers in Portugal and Greece are over-estimated as they include all doctors licensed to practise. On average, there were 3.5 doctors per 1 000 population (Figure 8.3). In Indonesia, India and South Africa there were significantly fewer doctors per 1 000 population – less than one – while in China the number of doctors increased rapidly from 1.25 per 1 000 population in 2000 to 2 per 1 000 population in 2017.

Targeted education and training policies, as well as greater retention rates and in some countries immigration of doctors, have meant that both the absolute and per capita numbers of doctors have increased in almost all OECD countries since 2000. The only exception is Israel, where a 25% increase in the absolute number of doctors was still not enough to keep pace with total population growth of about 40% between 2000 and 2017. Overall, in most OECD countries the number of doctors increased steadily between 2000 and 2017, and did not appear vulnerable to external shocks. However, the 2008-09 recession had a profound impact in Greece, where the number of doctors increased until 2008 before stagnating from 2012.

In some countries there were particularly rapid expansions in the number of doctors between 2000 and 2017 (Figure 8.4). This was the case in Korea, Mexico and the United Kingdom, where despite outpacing average per capita growth in doctors, there were still fewer doctors per 1 000 than the OECD average in 2017. In other countries, such as Australia,Denmark and Austria, increases both outpaced OECD average growth, and left these countries with more doctors per capita than the OECD average. In Australia, where the number of doctors per capita went from below the OECD average in 2000, to above it in 2017, this increase was driven by a significant rise in the number of graduates from domestic medical education programmes (see indicator on "Medical graduates").

At the other end of the spectrum, the number of doctors per capita grew much more slowly or remained stable since 2000 in Belgium, France, Poland, and the Slovak Republic. In these four countries, the number of domestic students admitted to medical schools has increased in recent years. This should contribute towards replacing those doctors who will be retiring in the coming years, as long as new doctors end up working in their country of training (OECD, 2019[1]).

Concerns about shortages of health professionals are not new in OECD countries, but these concerns have grown in many countries, especially as the "baby-boom" generation of doctors and nurses starts to retire. Over the past decade, concerns about the ageing medical workforce moving towards retirement have prompted many OECD countries to increase the number of students in medical and nursing education programmes (OECD, 2016[2]). While some countries, such as Australia, have already started to see the benefits of earlier increases in medical education places, the long duration of doctors' training means that it takes a decade or more to feel the impact of increasing intake into medical education.

In most OECD countries, there are also concerns about shortages of general practitioners (see the indicator on "Doctors by age, sex and category") and an undersupply of doctors in rural and remote regions (see the indicator on "Geographic distribution of doctors" in Chapter 5). These issues have been driven or exacerbated by the ageing of general practitioners and of the population in general.

Definition and comparability

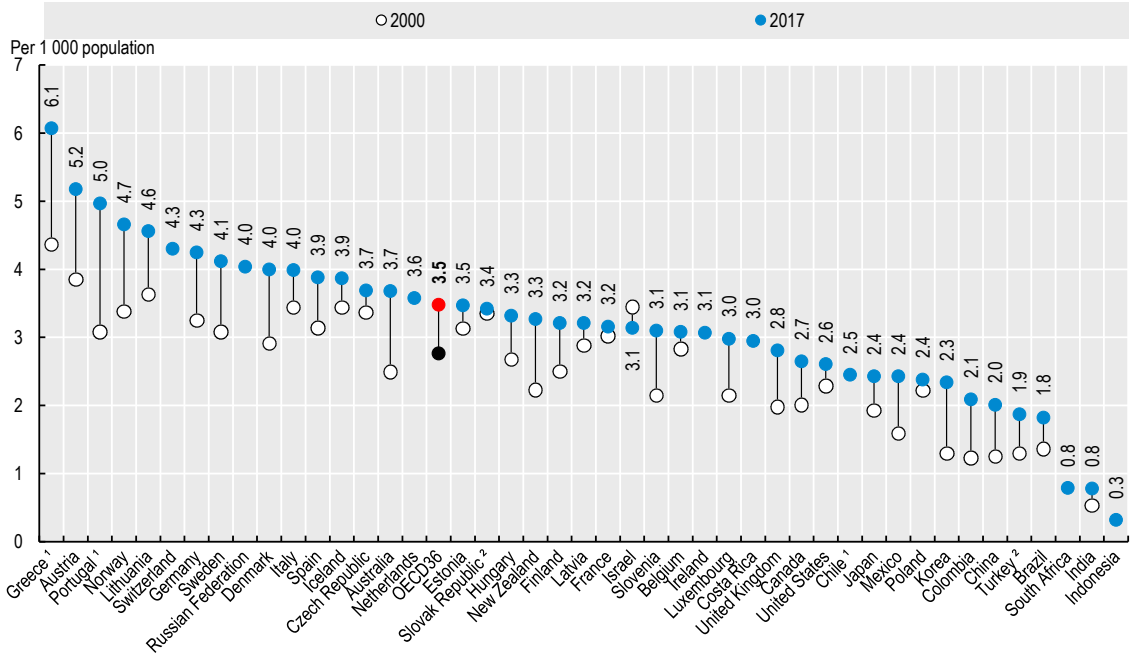
The data for most countries refer to practising doctors, defined as the number of doctors providing care directly to patients. In many countries, the numbers include interns and residents (doctors in training). The numbers are based on head counts. The Slovak Republic and Turkey also include doctors who are active in the health sector even though they may not provide direct care to patients, adding another 5-10% of doctors. Chile, Greece and Portugal report the number of physicians entitled to practice, resulting in an even larger over-estimation of the number of practising doctors. Belgium sets a minimum threshold of activities for general practitioners to be considered to be practising (500 consultations per year), thereby resulting in an under-estimation compared with other countries that do not set such minimum thresholds. Data for India may be over-estimated as they are based on medical registers that are not updated to account for migration, retirement or death; nor do they take into account doctors registered in multiple states.

References

[1] OECD (2019), *Recent Trends in International Migration of Doctors, Nurses and Medical Students*, OECD Publishing, Paris, *https://dx.doi.org/10.1787/5571ef48-en*.

[2] OECD (2016), "Education and training for doctors and nurses: What's happening with numerus clausus policies?", in *Health Workforce Policies in OECD Countries: Right Jobs, Right Skills, Right Places*, OECD Publishing, Paris, *https://dx.doi.org/10.1787/9789264239517-6-en*.

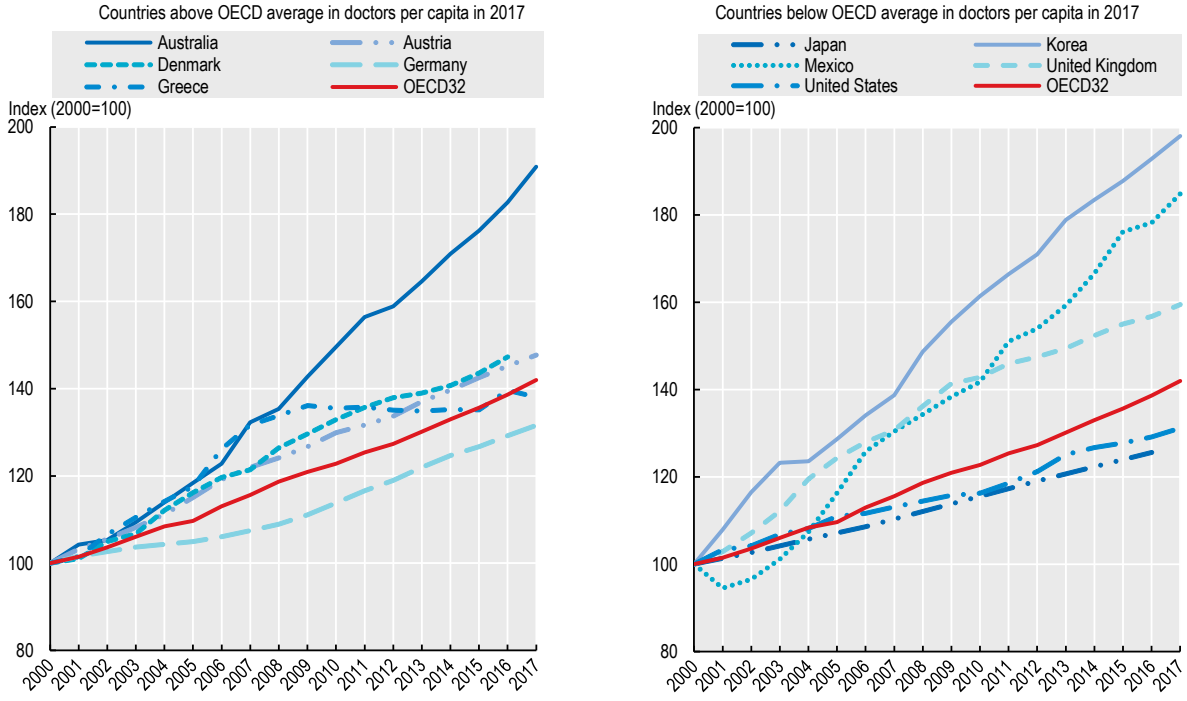
Figure 8.3. **Practising doctors per 1 000 population, 2000 and 2017 (or nearest year)**



1. Data refer to all doctors licensed to practice, resulting in a large over-estimation of the number of practising doctors (e.g. of around 30% in Portugal).
2. Data include not only doctors providing direct care to patients but also those working in the health sector as managers, educators, researchers, etc. (adding another 5-10% of doctors).
Source: OECD Health Statistics 2019.

StatLink https://doi.org/10.1787/888934017253

Figure 8.4. **Evolution in the number of doctors, selected countries, 2000-17 (or nearest year)**



Source: OECD Health Statistics 2019.

StatLink https://doi.org/10.1787/888934017272

Doctors (by age, sex and category)

In 2017, 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 2017%.

While some countries saw only a small increase, such as Norway (+2 percentage points), Australia (+3 percentage points), and the United Kingdom (+4 percentage points), others saw a dramatic ageing of their medical workforce. In Italy, the share of older doctors increased by 36%, with 55% of all doctors aged 55 or over by 2017. In France the doctor population is ageing almost as rapidly, with a 30% increase in older doctors between 2000 and 2017; other countries such as Israel, Spain and Austria are not far behind (Figure 8.5).

Ageing of the medical workforce is a concern, as doctors aged 55 and over are generally expected to retire in the following decade and need to be replaced in order to prevent a decline in overall physician numbers. Many doctors do keep working beyond age 65, and several OECD countries have reformed their pension systems and increased the retirement age to take into account the longer average life expectancy (OECD, 2016[1]). While few studies have examined the impact of these pension reforms specifically on doctors, it is possible that such steps will prolong the working lives of doctors, which could have a significant impact on future replacement needs.

In 2017 almost half of all doctors in OECD countries were female, at between one-third and two-thirds of all doctors in most OECD countries. In some countries, the gender balance was skewed more dramatically: in Japan and Korea only one-fifth of doctors were women in 2017, while in Latvia and Estonia three quarters of doctors were female (Figure 8.6). In most OECD countries the share of female doctors increased between 2000 and 2017, while in countries such as Lithuania, Estonia and Latvia – which traditionally have far more female than male doctors – the ratio of male-to-female doctors remained stable. The most significant increases in the share of female doctors were reported for the Netherlands (+19 percentage points) and Spain (+18 percentage points). In countries where the number of female doctors has increased, this is probably driven by rising female labour force participation and higher numbers of young women enrolling in medical school, but may also be affected by the retirement of older and more commonly male generations of doctors.

Up to and including the 2015 issue of Health at a Glance, the category 'generalist' did not distinguish between general practitioners/family doctors and non-specialised physicians who work in hospitals and other settings. It is now possible to distinguish between these two categories of phyisicans, and as of 2017, general practitioners/family doctors represented 23% of all physicians. The share of general practitioners/family doctors as a percentage of all doctors ranged from around half in Chile, Canada and Portugal, to just 5% in Greece and Korea (Figure 8.7). The numbers of generalists remains difficult to compare, however, due to variation between countries in the ways doctors are categorised. For example, in the United States, general internal medicine doctors often play a role similar to that of general practitioners/family doctors in other countries, yet they are categorised as specialists. In other countries, such as Japan, general practitioners/family doctors are very uncommon, and the majority of physician consultations are with specialists.

In many countries, general practitioners/family doctors play a key role in guaranteeing good access to health care, managing chronic conditions and keeping people out of hospital (see indicator on "Avoidable hospital admissions" in Chapter 6). Accordingly, many countries have taken steps to increase the number of training places in general medicine in response to concerns about shortages of general practitioners. However, in most OECD countries, specialists earn more than general practitioners, which provides financial incentives for doctors to specialize (see indicator on the "Remuneration of doctors").

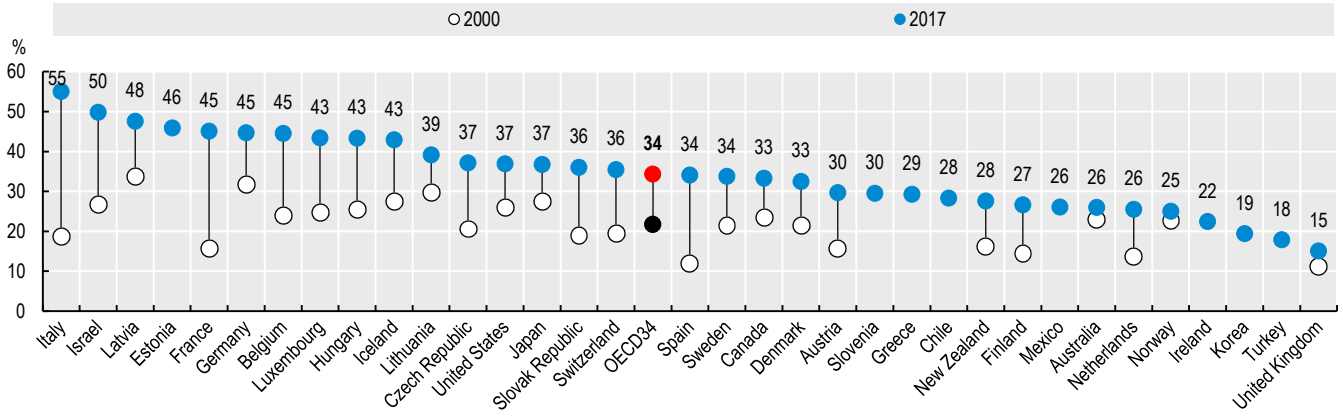
Definition and comparability

The definition of doctors is provided under the previous indicator. In some countries, the data are based on all doctors licensed to practice, 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 due to the fact that 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 general practitioners/family doctors and non-specialist doctors working in hospital or in other settings. In Switzerland, general internal medicine doctors and other generalists are included under general practitioners.

References

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

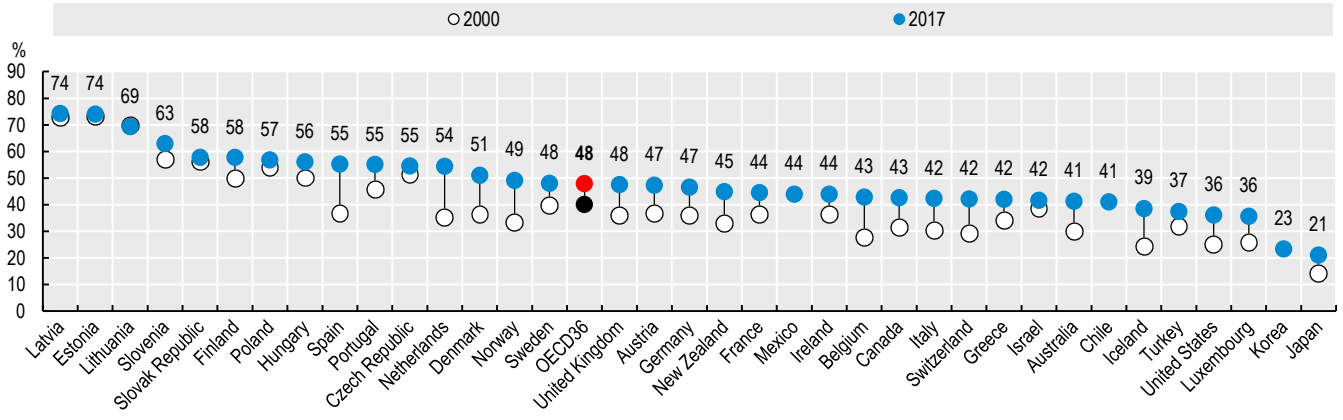
Figure 8.5. **Share of doctors aged 55 and older, 2000 and 2017 (or nearest year)**



Source: OECD Health Statistics 2019.

StatLink https://doi.org/10.1787/888934017291

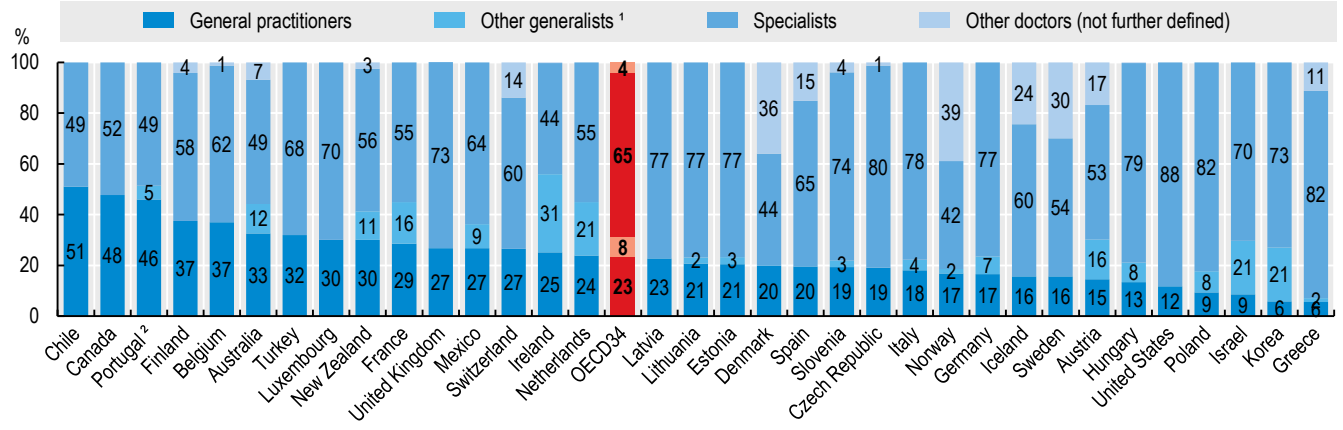
Figure 8.6. **Share of female doctors, 2000 and 2017 (or nearest year)**



Source: OECD Health Statistics 2019.

StatLink https://doi.org/10.1787/888934017310

Figure 8.7. **Share of different categories of doctors, 2017 (or nearest year)**



1. Includes non-specialist doctors working in hospital and recent medical graduates who have not yet started post-graduate 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 2019.

StatLink https://doi.org/10.1787/888934017329

Remuneration of doctors (general practitioners and specialists)

The remuneration level and structure for the different categories of doctors affects the (relative) financial attractiveness of these specialities. 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. As for any other category of workers, differences in remuneration levels of doctors across countries can be a push or pull factor when it comes to physician migration (OECD, 2019[1]).

Across OECD countries, the remuneration of doctors (both general practitioners and specialists) is substantially higher than the average wages (Figure 8.8). In most countries, general practitioners earn two to four times more than the average wage in each country, while specialists earn two to six times more.

In most countries, specialists earned more than general practitioners (Figure 8.8). In Australia, Belgium, and Luxembourg self-employed specialists earned at least twice as much as self-employed general practitioners. In Germany the difference between specialists and general practitioners is much smaller, at only 20%. Among salaried physicians, specialists in Israel and the United Kingdom earned twice as much as general practitioners in 2017. In Poland, however, salaried specialists earned 40% less than salaried general practitioners.

The remuneration of physicians has generally increased since 2010, but at different rates across countries and between general practitioners and specialists (Figure 8.9). Both generalists and specialists in Hungary and Estonia have obtained substantial pay raises in recent years. To reduce shortages and emigration of doctors, the Hungarian government has substantially increased their remuneration since 2010, with the income of general practitioners increasing by about 80% between 2010 and 2017 and that of specialists nearly doubling. These pay raises have started to have a measurable impact on the intention of Hungarian doctors to leave the country: between 2017 and 2018, the number of doctors asking for foreign work certificates decreased by over 10%.

In several countries, the remuneration of specialists has risen faster than those of generalists since 2010, thereby increasing the remuneration gap. However, in Austria and Belgium, the gap has narrowed slightly, as the income of general practitioners grew a little more than that of specialists (Figure 8.9).

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 should normally exclude practice expenses for self-employed doctors (in Belgium, practice expenses are included). OECD data on physician remuneration makes 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 general practitioners and all other medical specialists combined, although especially the latter may be a rather inhomogeneous group.

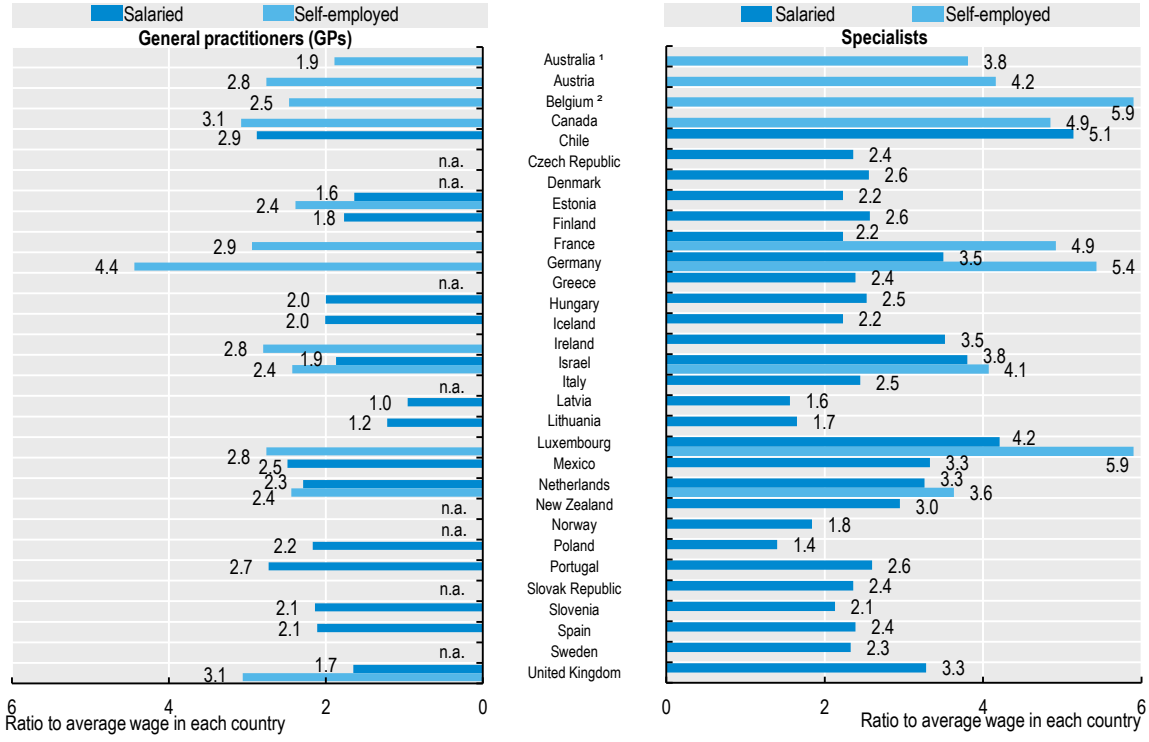
A number of data limitations contribute to an under-estimation of remuneration levels in some countries: 1) payments for overtime work, bonuses, other supplementary income or social security contributions are excluded in some countries (in Austria for GPs, Ireland for salaried specialists, and Italy); 2) incomes from private practices for salaried doctors are not included in some countries (e.g. Czech Republic, Hungary, Iceland, Ireland and Slovenia); 3) informal payments, which may be common in certain countries (e.g. 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 is from the OECD Employment Database.

References

[1] OECD (2019), *Recent Trends in International Migration of Doctors, Nurses and Medical Students*, OECD Publishing, Paris, *https://doi.org/10.1787/5571ef48-en*.

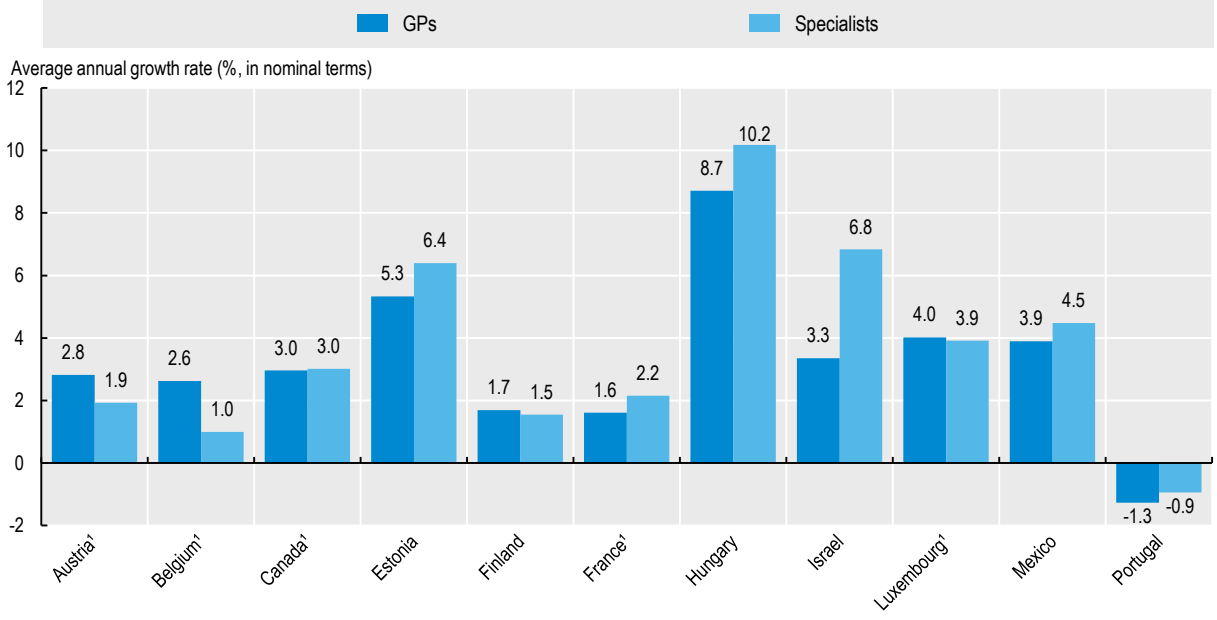
Figure 8.8. **Remuneration of doctors, ratio to average wage, 2017 (or nearest year)**



1. Physicians in training included (resulting in an under-estimation). 2. Practice expenses included (resulting in an over-estimation).
Source: OECD Health Statistics 2019 and OECD Employment Database 2019.

StatLink https://doi.org/10.1787/888934017348

Figure 8.9. **Growth in remuneration of GPs and specialists, 2010-17 (or nearest year)**



1. The growth rate is for self employed GPs and specialists.
Source: OECD Health Statistics 2019.

StatLink https://doi.org/10.1787/888934017367

Nurses

There were just under nine nurses per 1 000 population in OECD countries in 2017, ranging from about two per 1 000 in Turkey to more than 17 per 1 000 in Norway and Switzerland. Between 2000 and 2017 the number of nurses per capita grew in almost all OECD countries, and the average rose from 7.4 per 1 000 population in 2000 to 8.8 per 1 000 population in 2017. In the Slovak Republic, Israel, the United Kingdom and Ireland, however, the number of nurses per capita fell over that period (Figure 8.10).

The decreases in Israel and Ireland are due to the rapid growth of the population, with the increase in the number of nurses not keeping up. In Ireland, the growth in the number of nurses outpaced population growth until 2008, when it peaked at 13.6 per 1 000 population, but has since fallen behind population increases. In the Slovak Republic, the number of nurses declined both in absolute and per capita numbers, mainly during the 2000s, while in the United Kingdom the number of nurses per capita increased rapidly between 2000 and 2006 and then declined until 2017.

No clear pattern emerges from the rate of increase of nurses: significant increases were seen in both countries which already have high numbers of nurses per capita, such as Switzerland, as well as countries with lower numbers of nurses, such as France, Slovenia and Korea. In most countries, growth in the number of both doctors and nurses has been driven by growing numbers of domestic nursing and medical school graduates, although in some countries immigration of foreign-trained doctors and nurses also played an important role (see indicator on "International migration of doctors and nurses").

Nurses outnumber physicians in most OECD countries, and on average there are three nurses to every doctor. The ratio of nurses to doctors ranges from about one nurse per doctor in Chile, Turkey and Greece, to more than four nurses per doctor in Japan, Ireland, Finland and the United States (Figure 8.11).

In response to shortages of doctors, and to ensure proper access to care, some countries have developed more advanced roles for nurses, including "nurse practitioner" roles. Evaluations of nurse practitioners from the United States, Canada and the United Kingdom show that advanced practice nurses can improve access to services and reduce waiting times, while delivering the same quality of care as doctors for a range of patients, including those with minor illnesses and those needing routine follow-ups. These evaluations find a high patient satisfaction rate, while the impact on cost is either cost-reducing or cost-neutral. The implementation of new advanced practice nursing roles can require changes to legislation or regulation (Maier, Aiken and Busse, 2017[1]).

Definition and comparability

The number of nurses includes those employed in public and private settings providing services directly to patients ("practising") and in some cases also those working as managers, educators or researchers. The numbers are based on head counts.

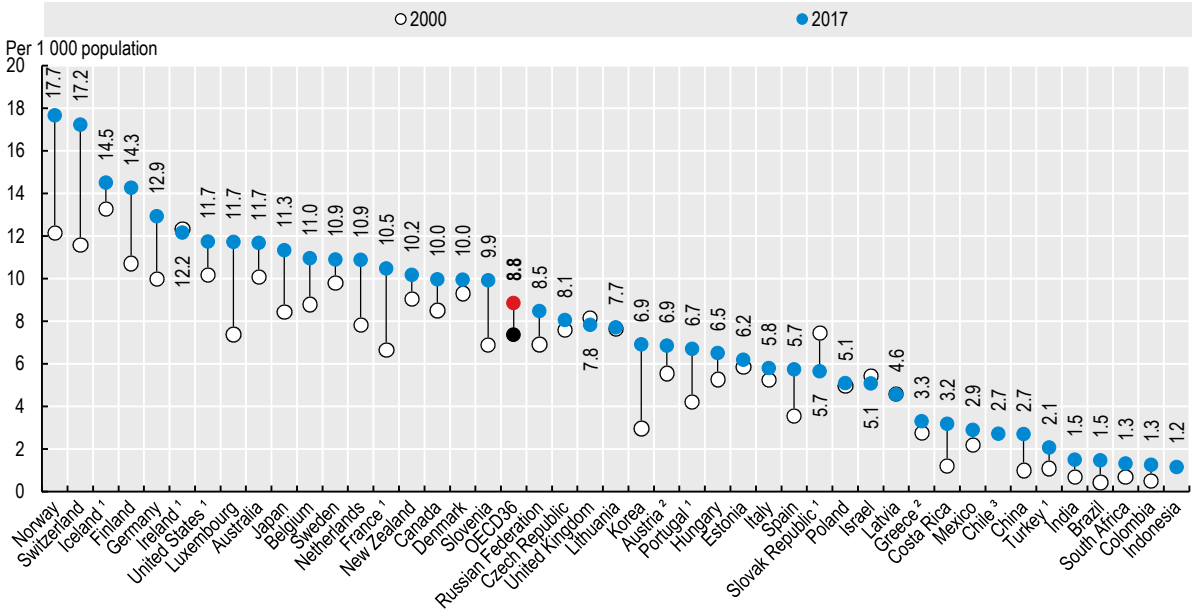
In countries where different nurses can hold different levels of qualification or role, the data include both "professional nurses" who have a higher level of education and perform more complex or skilled tasks, and "associate professional nurses" who have a lower level of education but are nonetheless recognised and registered as nurses. Health care assistants (or nursing aides) who are not recognised as nurses are excluded. The number of nurses in Denmark and Austria is lower than reported in previous editions because "caring personnel" (nursing aides) were formerly included for these two countries. Midwives are excluded, except in some countries where they are included at least in part because they are considered as specialist nurses, or for other categorisation reasons (Australia, Ireland and Spain).

Austria and Greece report only nurses working in hospitals, resulting in an under-estimation.

References

[1] Maier, C., L. Aiken and R. Busse (2017), "Nurses in advanced roles in primary care: Policy levers for implementation", *OECD Health Working Papers*, No. 98, OECD Publishing, Paris, *https://dx.doi.org/10.1787/a8756593-en*.

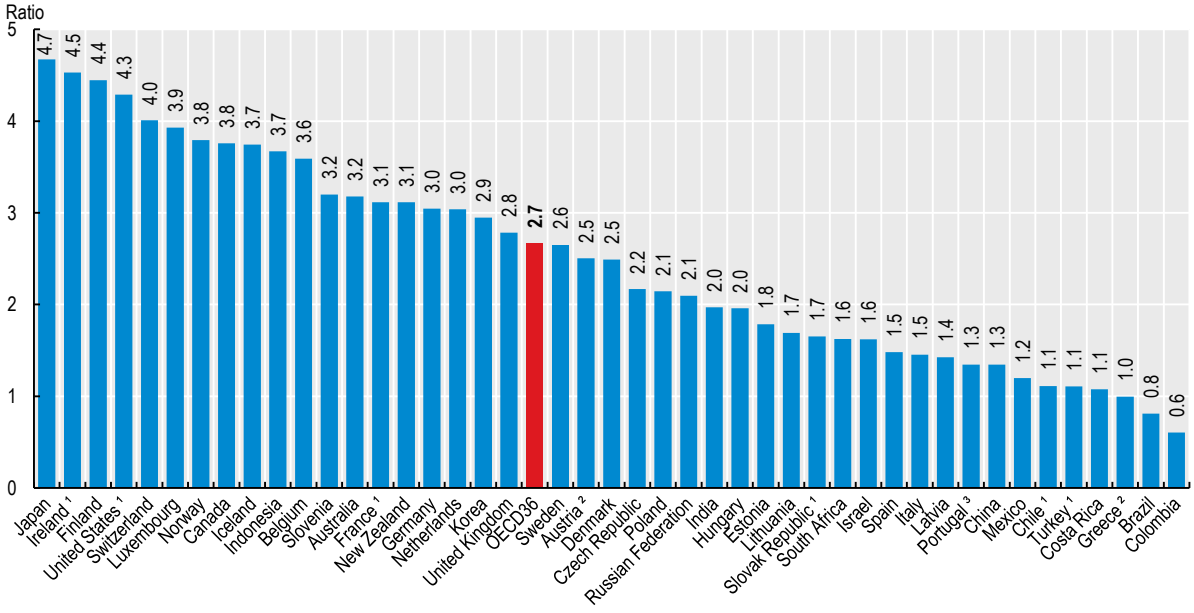
Figure 8.10. **Practising nurses per 1 000 population, 2000 and 2017 (or nearest year)**



1. Data include not only nurses providing direct care to patients, but also those working in the health sector as managers, educators, researchers, etc. 2. Austria and Greece report only nurses employed in hospital. 3. Data in Chile refer to all nurses who are licensed to practice.
Source: OECD Health Statistics 2019.

StatLink https://doi.org/10.1787/888934017386

Figure 8.11. **Ratio of nurses to doctors, 2017 (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, where numbers include all nurses and doctors licensed to practise). 2. For Austria and Greece, the data refer to nurses and doctors employed in hospitals. 3. The ratio for Portugal is underestimated because the numerator refers to professionally active nurses while the denominator includes all doctors licensed to practise.
Source: OECD Health Statistics 2019.

StatLink https://doi.org/10.1787/888934017405

Remuneration of nurses

On average across OECD countries, the remuneration of hospital nurses was slightly above the average wage of all workers in 2017. In most countries, their remuneration was in the range of being about 10% lower than the average wage to 20% higher. However, in some countries like Lithuania and Latvia, nurses earn much less than the average wage of all workers, while in other countries like Chile, Mexico, Israel and Luxembourg, they earn much more (Figure 8.12). .

Converting the remuneration of hospital nurses to a common currency (here US dollars) and adjusting for purchasing power parity (PPP) reveals a sizeable variation in the income of hospital nurses across countries. In 2017, nurses in Luxembourg had remuneration levels six times higher than those working in Latvia and Lithuania (Figure 8.13). In general, nurses working in Central and Eastern European countries have the lowest levels of remuneration, explaining at least partly that many of them migrate to other EU countries (OECD, 2019[1]).

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 thousands of nurses from other countries every year.

In most countries, the remuneration of nurses has increased since 2010, albeit at different rates (Figure 8.14). In some countries, like the Czech Republic and the Slovak Republic, nurses have obtained substantial pay raises in recent years. In the Czech Republic, nurses benefitted from a pay increase following protests of hospital workers in 2011 (although their pay rise was lower than that given to doctors), accompanied by improvements in other areas of their working conditions (OECD, 2016[2]). The remuneration of nurses in the Slovak Republic increased by about 40% between 2010 and 2017, and in 2018 the Slovak government also announced a further increase of at least 10% in the salaries of nurses and other non-medical health professionals.

In other countries, like Portugal and Spain, the remuneration of nurses fell after the 2008-09 economic crisis due to remuneration cuts in the public sector and have only recovered slowly in recent years. . This was also the case in Greece where the salaries of nurses decreased by about 25% between 2009 and 2015.

Definition and comparability

The remuneration of nurses refers to average gross annual income, including social security contributions and income taxes payable by the employee. It should normally include all extra formal payments, such as bonuses and payments for night shifts and overtime. 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, the level and structure of nurse remuneration is determined at the sub-national 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 over-estimation 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, registered and otherwise, and includes health assistants who have a different and significantly lower salary structure than registered nurses.

The data relate to nurses working full time, with the exception of Belgium, where the data provided also include part-time nurses (resulting in an under-estimation). The data for some countries do not include additional income such as overtime payments and bonuses (e.g. Italy and Slovenia). Informal payments, which in some countries represent a significant part of total income, are not reported.

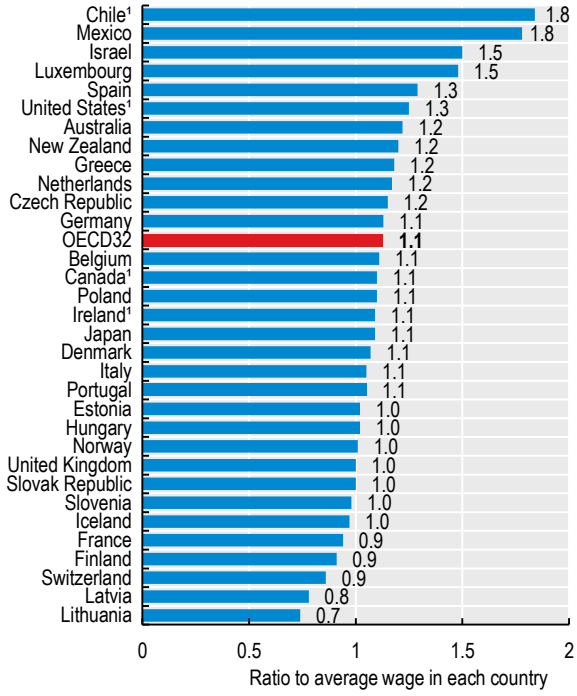
The income of nurses is compared to the average wage of full-time employees in all sectors in the country. The source for the average wage of workers in the economy is the OECD Employment Database.

References

[1] OECD (2019), *Recent Trends in International Migration of Doctors, Nurses and Medical Students*, OECD Publishing, Paris, *https://dx.doi.org/10.1787/5571ef48-en*.

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

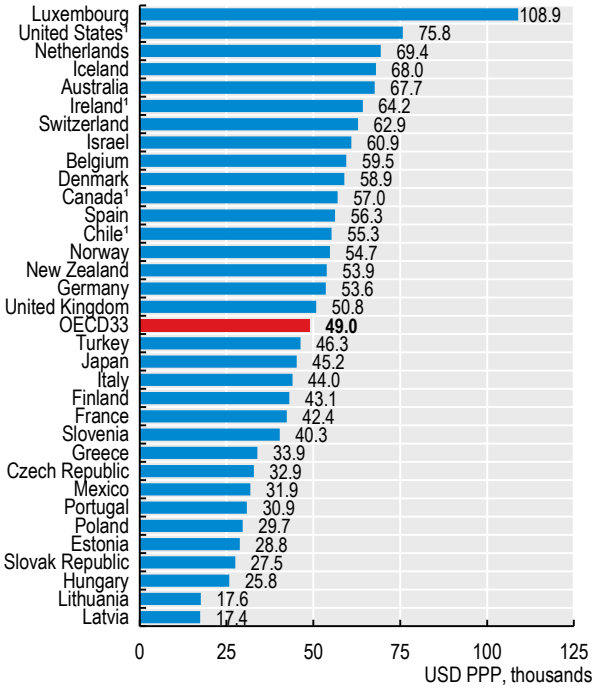
Figure 8.12. **Remuneration of hospital nurses, ratio to average wage, 2017 (or nearest year)**



1. Data refer to registered ("professional") nurses in the United States, Canada, Ireland and Chile (resulting in an over-estimation).
Source: OECD Health Statistics 2019.

StatLink https://doi.org/10.1787/888934017424

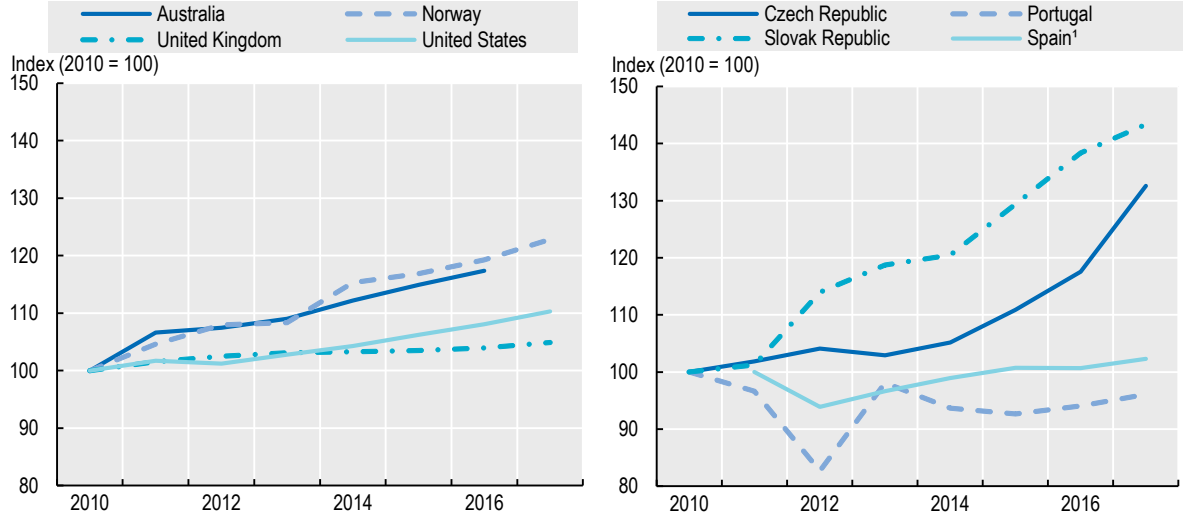
Figure 8.13. **Remuneration of hospital nurses, USD PPP, 2017 (or nearest year)**



1. Data refer to registered ("professional") nurses in the United States, Canada, Ireland and Chile (resulting in an over-estimation).
Source: OECD Health Statistics 2019.

StatLink https://doi.org/10.1787/888934017443

Figure 8.14. **Trends in the remuneration of hospital nurses in nominal terms, selected OECD countries, 2010-17**



1. Index for Spain, 2011 = 100.
Source: OECD Health Statistics 2019.

StatLink https://doi.org/10.1787/888934017462

Medical graduates

On average across OECD countries in 2017, there were 13 new medical graduates per 100 000 population (up from 12 in 2015). This ranges from about seven in countries such as Japan and Israel to more than 20 in Ireland and Denmark (Figure 8.15).

In Israel, the low number of domestic medical graduates is compensated by the high number (about 60%) of foreign-trained doctors. Increasingly however, foreign-trained doctors consist of Israeli-born people returning after completing studies abroad. In contrast, Japan does not currently rely on foreign-trained doctors. However, Japan recently took action to increase the number of students admitted to medical schools (the *numerus clausus*), but this is not yet reflected in the number of new medical graduates due to lags. In Ireland, the high number of medical graduates reflects the large share of international medical students. In the academic year 2017/18, this share made up half of all medical students, with the majority coming from outside the OECD area. However, after obtaining their first medical degree, international medical students often leave Ireland due to difficulties in securing an internship – the last stage in medical education prior to postgraduate training. At the same time, Ireland compensates for its shortage of doctors by importing doctors trained in other countries (OECD, 2019[1]).

In all OECD countries except Greece, the number of new medical graduates per capita has risen since 2000. However increases have not been steady, with numbers falling to less than 90% of levels in 2000 (mostly during the 2000s) in Belgium, the Slovak Republic and Switzerland (countries close to the OECD average), as well as in Turkey, France, and Israel, with numbers considerably below the OECD average (OECD, 2019[1]).

In Latvia, Slovenia, Portugal and Australia, where annual numbers of new medical graduates per capita are above the OECD average, the number increased up to fourfold between 2007 and 2017. Twofold increases are common, and are found in countries with high, medium, and low numbers of new medical graduates per capita (Figure 8.16). In total, the number of medical graduates across OECD countries increased from less than 100 000 in 2006 to nearly 120 000 in 2017.

The growth of the number of doctors in the majority of the OECD countries since 2000 has been fueled predominantly by a rise in the number of domestic medical graduates. In most cases, this rise reflects goal-oriented policy decisions taken a few years earlier to raise the number of students admitted to medical schools. This was in response to concerns about current or possible future shortages of doctors. In some countries like Poland, as well as other central, and eastern European countries, the strong increase in recent years also reflects the growing number of international medical students and graduates. Polish medical schools, for example, offer medical studies in English, and 25% of all medical students are foreigners (OECD, 2019[1]).

In reply to the OECD Health System Characteristics Survey 2016, none of the responding OECD countries other than Italy and Spain reported that they had reduced admission rates for medical schools and most countries declared increases (OECD, 2016[2]). Hence, the number of new medical graduates can be expected to continue to increase in most countries in the coming years.

Definition and comparability

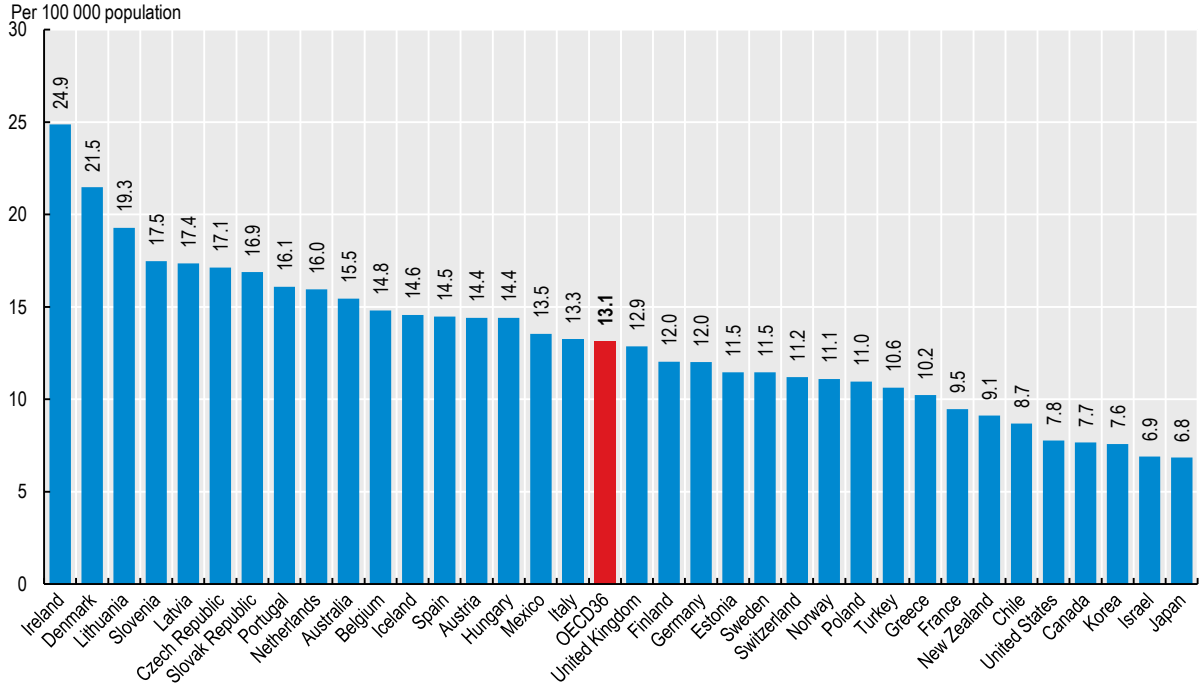
Medical graduates are defined as students who have graduated from medical schools in a given year. The data for Australia, Austria and the Czech Republic include foreign graduates, but other countries may exclude them.

References

[1] OECD (2019), *Recent Trends in International Migration of Doctors, Nurses and Medical Students*, OECD Publishing, Paris, *https://dx.doi.org/10.1787/5571ef48-en*.

[2] OECD (2016), *OECD Health System Characteristics Survey 2016*, *http://www.oecd.org/els/health-systems/characteristics.htm*.

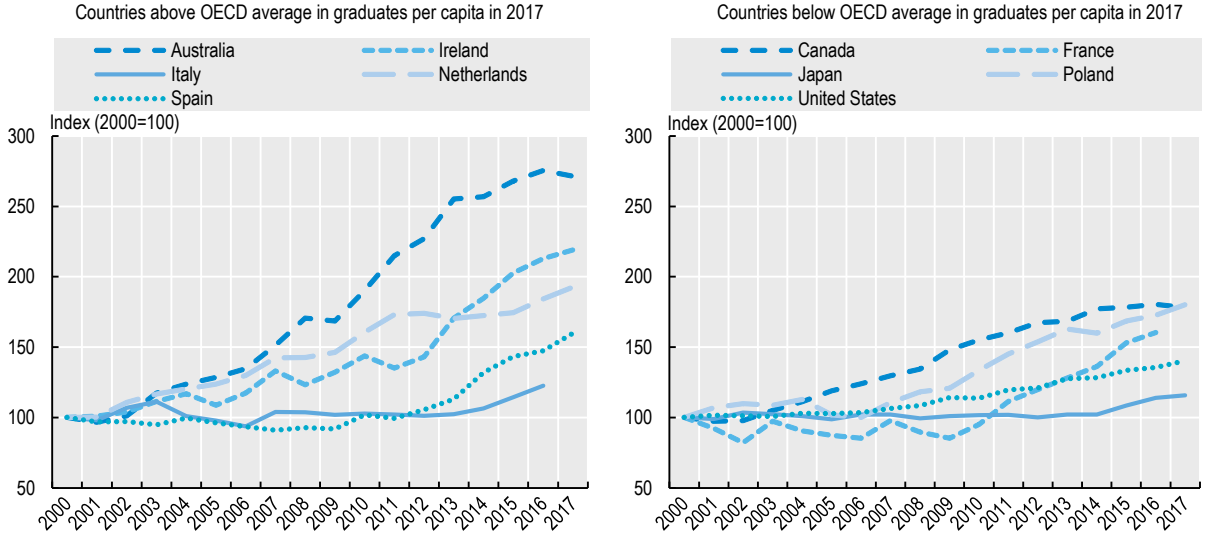
Figure 8.15. **Medical graduates, 2017 (or nearest year)**



Source: OECD Health Statistics 2019.

StatLink https://doi.org/10.1787/888934017481

Figure 8.16. **Evolution in the number of medical graduates, selected OECD countries, 2000-17 (or nearest year)**



Source: OECD Health Statistics 2019.

StatLink https://doi.org/10.1787/888934017500

Nursing graduates

On average across OECD countries in 2017, there were around 44 new nurse graduates per 100 000 population, with a range from around 14 in the Czech Republic and Mexico to about 100 in Switzerland and Korea (Figure 8.17). This wide range may be explained by differences in the current number and age structure of the nursing workforce, in the capacity of nursing schools to take on more students, and in the future employment prospects of nurses.

Since 2000, the number of nursing graduates has increased in most OECD countries, with the exception of Luxembourg, Japan, the Czech Republic, Lithuania and Ireland. Of these countries, only Japan has maintained a number above the OECD average. In Finland, Hungary and Belgium, the number of nursing graduates has recently returned to numbers above the level in 2000 and is now well above the OECD average, after experiencing intermittent declines.

Despite a more than tenfold increase in the annual number of nursing graduates since 2000 in Poland, Turkey and Mexico, the numbers in these countries remain well below the OECD average. At least 50% increases between 2000 and 2017 are common and are seen across countries with high, medium and low numbers of nurse graduates per capita (Figure 8.18). In total, the number of nurse graduates across OECD countries increased from about 450 000 in 2006 to more than 550 000 in 2017.

The increase in the number of nursing graduates in most casesreflects deliberate policy decisions taken a few years earlier to increase the number of students admitted to nursing schools, in response to concerns about current or possible future shortages (OECD, 2016[1]). In reply to the OECD Health System Characteristics Survey 2016, none of the responding OECD countries reported that they had reduced admission rates for nursing schools and many declared increases (OECD, 2016[2]). Hence, the number of nursing graduates can be expected to continue to increase in most countries in the coming years.

In Norway, the number of students admitted to and graduating from nursing education programmes has grown particularly since 2010, and the number of new nursing graduates in 2017 was one-third higher than in 2000, which should contribute to increasing the supply of nurses. 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.

In Italy, the number of nurse graduates increased fairly rapidly in the 2000s but has levelled off and even decreased slightly in recent years. While the number of students admitted to nursing education programmes has remained more or less stable during this decade, there has been a sharp drop in the number of applicants (with the number cut by half), signalling reduced student interest in the profession.

Definition and comparability

Nursing graduates refer to 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. They exclude graduates from Masters or PhD degrees in nursing to avoid double-counting nurses acquiring further qualifications.

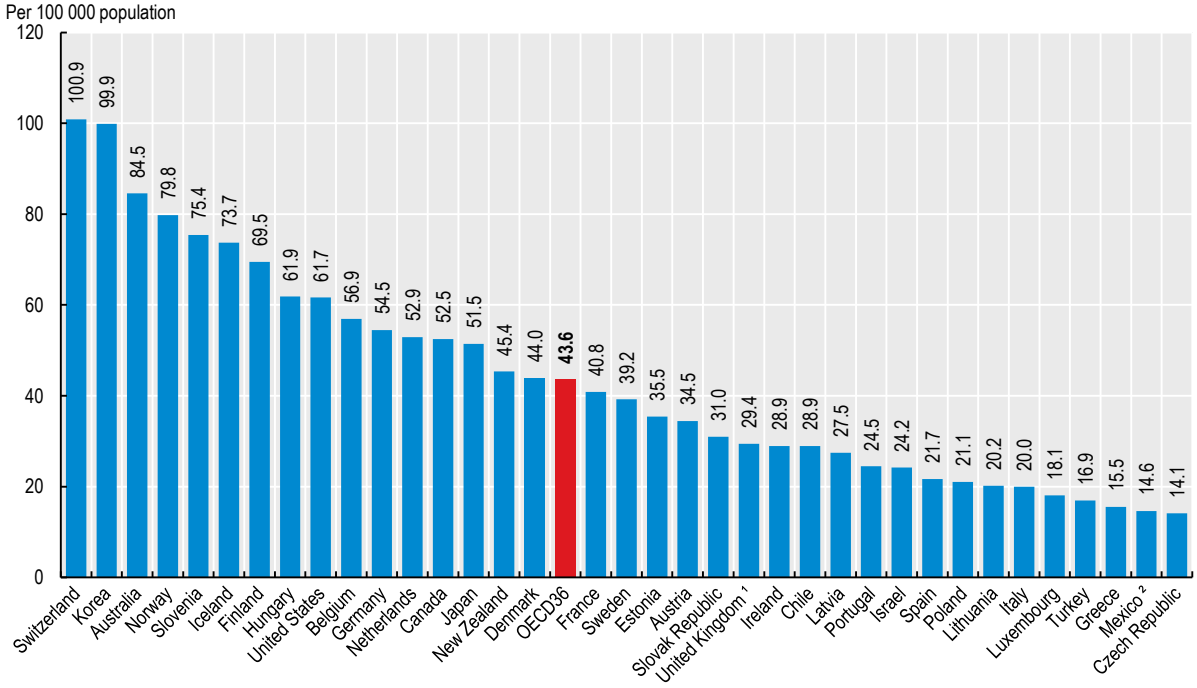
The data for the United Kingdom are based on the number of new nurses receiving an authorisation to practise.

References

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

[2] OECD (2016), *OECD Health System Characteristics Survey 2016*, *http://www.oecd.org/els/health-systems/characteristics.htm*.

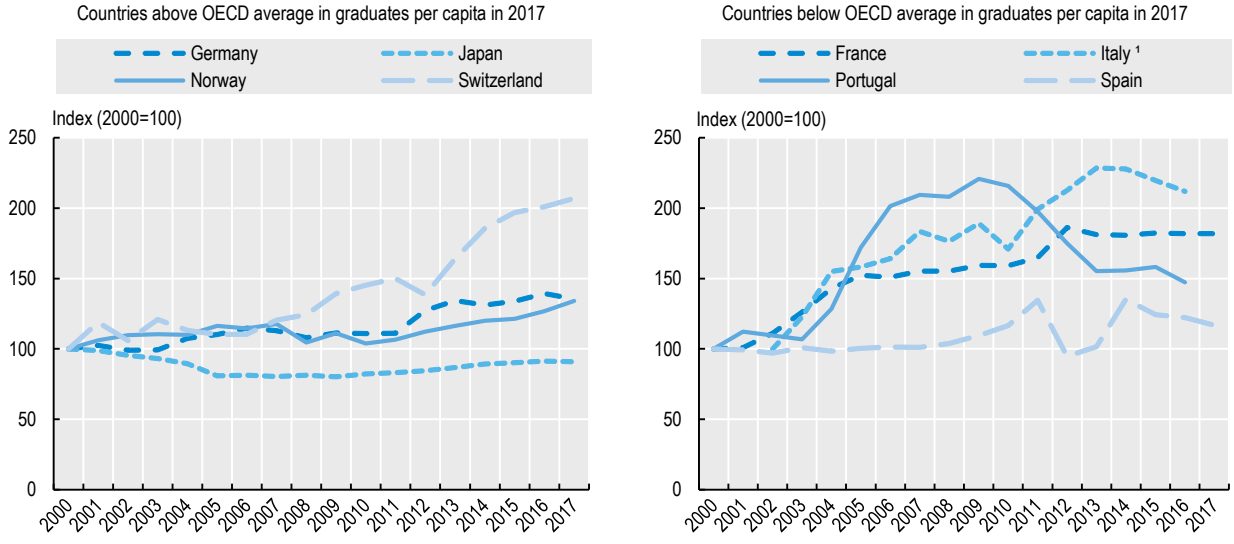
Figure 8.17. **Nursing graduates, 2017 (or nearest year)**



1. In the United Kingdom, the numbers refer to new nurses receiving an authorisation to practise, which may result in an over-estimation if these include foreign-trained nurses. 2. In Mexico, the data include professional nursing graduates only.
Source: OECD Health Statistics 2019.

StatLink https://doi.org/10.1787/888934017519

Figure 8.18. **Evolution in the number of nursing graduates, selected OECD countries, 2000-17**



1. Index for Italy, 2002 = 100.
Source: OECD Health Statistics 2019.

StatLink https://doi.org/10.1787/888934017538

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 2017, more than one in six doctors working in OECD countries had obtained at least their first medical degree in another country (Figure 8.19), up from one in seven a decade earlier. For nurses, on average, one in 17 had obtained a nursing degree in another country in 2017 (Figure 8.20). 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 also indicators on "Medical graduates" and "Nursing graduates"), which is indicative of substantial demand for these professionals.

In 2017, the share of foreign-trained doctors ranged from less than 3% in Turkey, Lithuania, Italy, the Netherlands and Poland, to around 40% in Norway, Ireland and New Zealand, and to nearly 60% in Israel. In most OECD countries, the share of foreign-trained nurses is below 5%, but Australia, Switzerland and New Zealand have proportions of around or above 20%. However, in some cases, foreign-trained doctors and nurses consists 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. These foreign-trained but native-born doctors and nurses frequently paid the full cost of their studies abroad. In 2017 in Israel, for example, around 40% of foreign-trained doctors and nurses are native-born.

The share of foreign-trained doctors in various OECD countries evolved between 2000 and 2017 (Figure 8.21). The share remained relatively stable in the United States, with the number of foreign and domestically trained doctors increasing at a similar rate. However, among the medical graduates with a foreign degree who obtained certification to practise in the United States in 2017, one-third were American citizens, up from 17% in 2007 (OECD, 2019[1]). In Europe, the share of foreign-trained doctors increased rapidly in Norway and Sweden. However, in Norway more than one half of foreign-trained doctors are Norwegian-born, returning after studying abroad. In Sweden, the number of foreign-trained but native-born doctors quadrupled since 2006, accounting for nearly one-fifth of foreign-trained doctors in 2015. In France and Germany, the number and share of foreign-trained doctors has also increased steadily over the past decade (with the share doubling from 5-6% of all doctors in 2007 to 11-12% in 2017). Conversely, in the United Kingdom, the share of foreign-trained doctors decreased slightly, as the number of domestically-trained doctors increased more rapidly.

The share of foreign-trained nurses has increased steadily over the past decade in Australia, Canada and New Zealand, although in New Zealand, a slight decline occurred between 2016 and 2017 (Figure 8.22). In Israel, the share of foreign-trained nurses has decreased over time, but has stagnated at around 9% since 2015. In France, while the share of foreign-trained nurses is relatively low, the number has nearly doubled over the past decade. In Italy, the number of foreign-trained nurses increased sharply between 2007 and 2015 (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 measured in terms of total stocks. The OECD health database also includes data on the annual flows for most of the countries shown here, 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 regularly updated, 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 practice, regardless of whether they are still active. The latter will tend to over-estimate not only the number of foreign-trained doctors and nurses, but also the total number of doctors and nurses (including those trained domestically), making the impact on the share unclear.

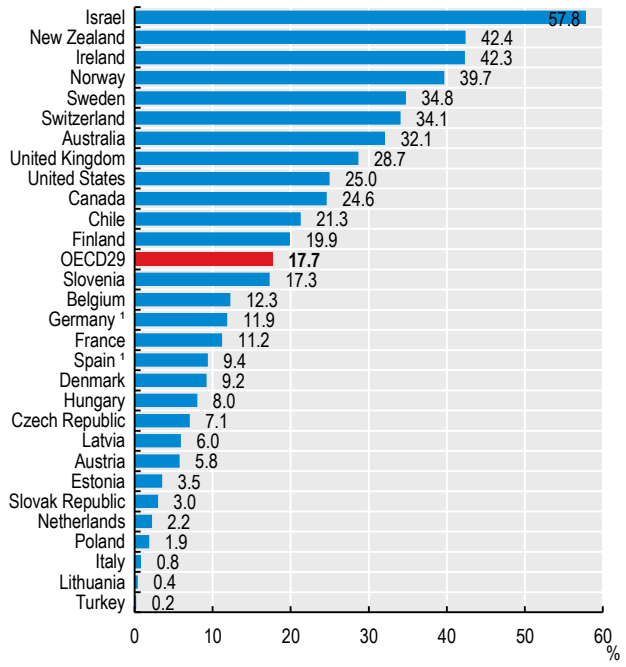
The data source in some countries includes interns and residents, while these physicians in training are not included in other countries. Because foreign-trained doctors are often over-represented in the categories of interns and residents, this may result in an under-estimation of the share of foreign-trained doctors in countries where they are not included (such as Austria, France and Switzerland).

The data for Germany (on foreign-trained doctors) and for some regions in Spain are based on nationality (or place of birth in the case of Spain), not on the place of training.

References

[1] OECD (2019), *Recent Trends in International Migration of Doctors, Nurses and Medical Students*, OECD Publishing, Paris, *https://dx.doi.org/10.1787/5571ef48-en*.

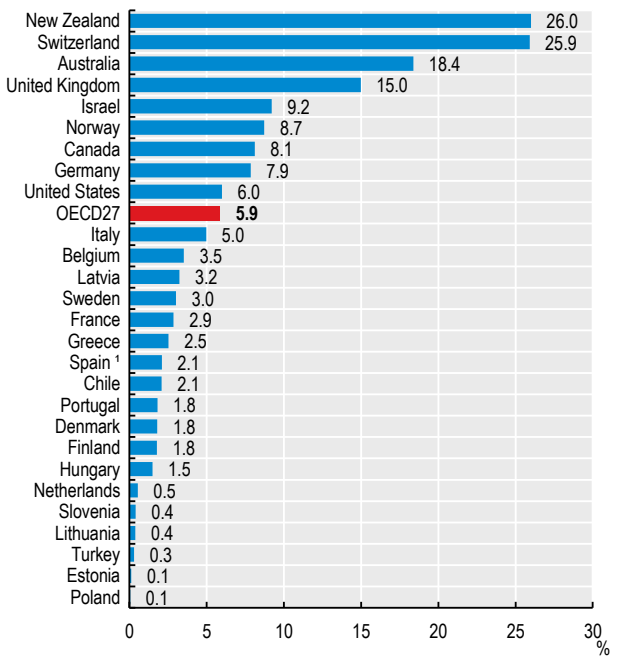
Figure 8.19. **Share of foreign-trained doctors, 2017 (or nearest year)**



1. In Germany and some regions in Spain data based on nationality (or place of birth in the case of Spain), not on the place of training.
Source: OECD Health Statistics 2019.

StatLink https://doi.org/10.1787/888934017557

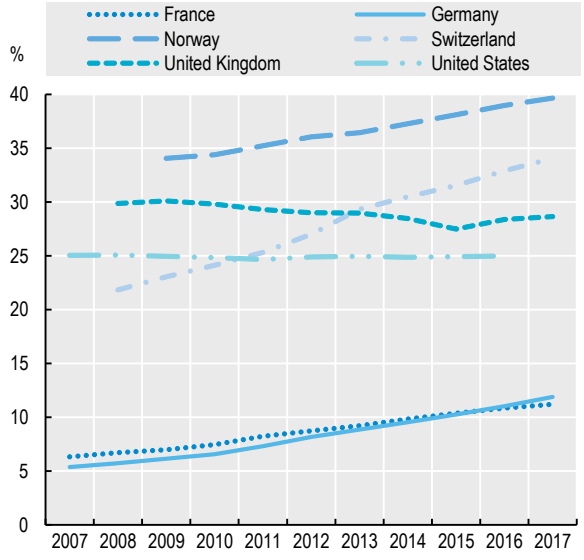
Figure 8.20. **Share of foreign-trained nurses, 2017 (or nearest year)**



1. Data for some regions in Spain based on nationality or place of birth, not on the place of training.
Source: OECD Health Statistics 2019.

StatLink https://doi.org/10.1787/888934017576

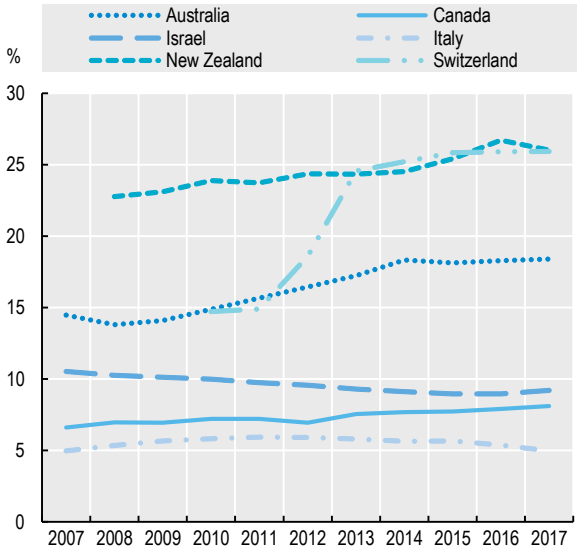
Figure 8.21. **Evolution in the share of foreign-trained doctors, selected OECD countries, 2000-17**



Source: OECD Health Statistics 2019.

StatLink https://doi.org/10.1787/888934017595

Figure 8.22. **Evolution in the share of foreign-trained nurses, selected OECD countries, 2000-17**



Source: OECD Health Statistics 2019.

StatLink https://doi.org/10.1787/888934017614

9. HEALTH CARE ACTIVITIES

Consultations with doctors

Medical technologies

Hospital beds and discharge rates

Average length of stay in hospitals

Hip and knee replacement

Caesarean sections

Ambulatory surgery

The statistical data for Israel are supplied by and under the responsibility of the relevant Israeli authorities. The use of such data by the OECD is without prejudice to the status of the Golan Heights, East Jerusalem and Israeli settlements in the West Bank under the terms of international law.

Consultations with doctors

Consultations with 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 occur online or by video call, to improve access for remote populations, or for consultations after regular hours.

In 2017, the number of doctor consultations per person ranged from less than 3 in Mexico and Sweden, to almost 17 in Korea (Figure 9.1). The OECD average was 6.8 consultations per person per year, with most countries reporting between four and ten. Among key partners, consultation rates were also less than 3 in Colombia, Costa Rica, South Africa and Brazil.

Cultural factors play a role in explaining some of the variations across countries, but incentive structures also matter. Provider payment methods and the levels of co-payments are particularly relevant. For example, in Korea and Japan, health providers are paid through fee-for-service, thus creating incentives for overprovision of services, while countries with mostly salaried doctors tend to have below-average rates (e.g. Mexico, Finland 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 can be high, which may result in patients not consulting a doctor because of the cost of care (see indicators in Chapter 5 on access).

Recent reforms to expand the role of nurses across many OECD countries can also partially explain low rates of consultations with doctors. This may involve nurses working as generalists to support GPs, focusing on health promotion, or as single-disease specialists. In many cases, nurses also have the authority to prescribe pharmaceuticals and order medical tests and exams. In Canada, Finland, Ireland, New Zealand, Sweden, the United Kingdom and the United States, nurses are authorised to work at high levels of advanced practice in primary care – in all these countries doctor consultation rates are below the OECD average (Maier, Aiken and Busse, 2017[1]).

The average number of doctor consultations per person across OECD countries has remained relatively stable since 2000 (between 6.5 and 6.8). However, some countries have seen large increases over time (Germany, Korea, Lithuania and Turkey), while in a few countries, numbers have fallen. This was the case in Japan and Spain, although consultations remain above the OECD average in both countries.

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, Japan and Turkey (Figure 9.2). Numbers were lowest in Sweden and Norway, where consultations with doctors in both primary care and hospital settings tend to be focused towards 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 (see indicator on "Use of primary care services" in Chapter 5). Income inequalities in accessing doctors are much more marked for specialists than for general practitioner consultations (OECD, 2019 [2]).

Definition and comparability

Consultations with doctors refer to the number of contacts with physicians, including generalists and specialists. There are variations across countries in the physicians counted (e.g. physicians on parental or sick leave) and in the coverage of these consultations, notably in outpatient departments of hospitals. Data come mainly from administrative sources, although in some countries (Ireland, Italy, Netherlands, New Zealand, Spain and Switzerland) the data come from health interview surveys. Estimates from administrative sources tend to be higher than those from surveys because of problems with recall and non-response rates.

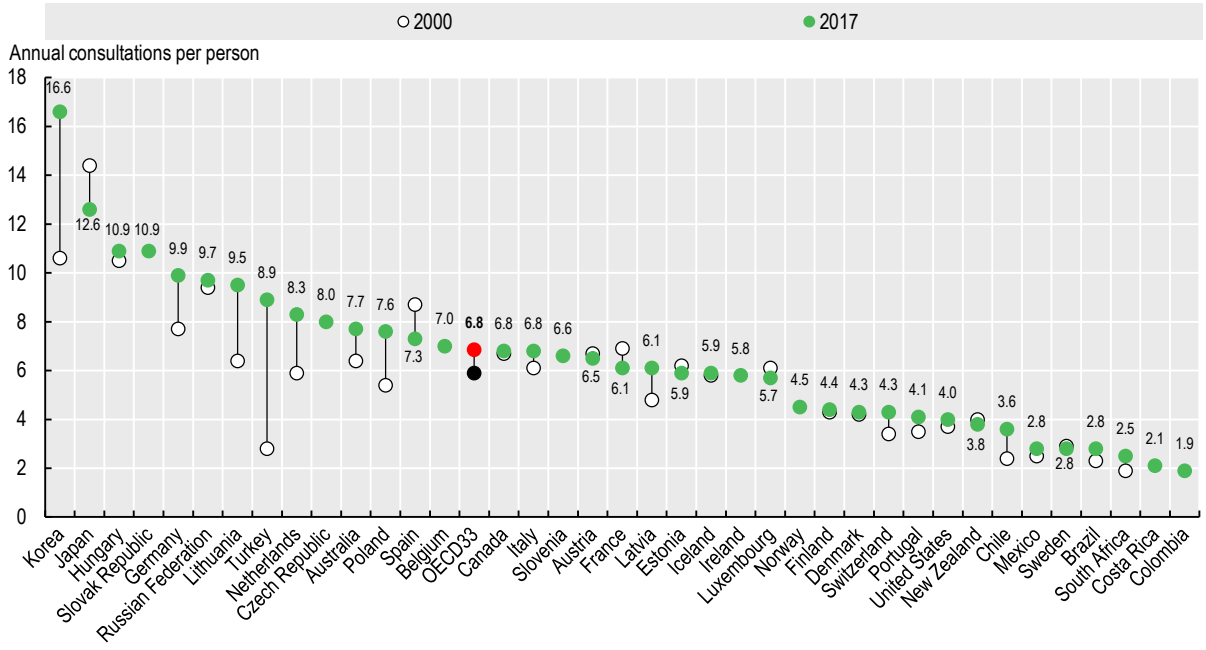
In Hungary, figures include consultations for diagnostic exams such as CT and MRI scans (resulting in an over-estimation). Figures for the Netherlands exclude contacts for maternal and child care. Data for Portugal exclude visits to private practitioners (resulting in an under estimation). In Germany, data include only the number of cases of physicians' treatment according to reimbursement regulations of the social health insurance scheme. This may lead to both underestimation (a case only counts the first contact over a three-month period, even if the patient consults a doctor more often) and overestimation (contacts that are not face-to-face, such as laboratory testing, are counted). Telephone contacts are included in a few countries (e.g. Spain). In Turkey, the most consultations with doctors occur in outpatient departments in hospitals.

References

[1] Maier, C., L. Aiken and R. Busse (2017), "Nurses in advanced roles in primary care: Policy levers for implementation", *OECD Health Working Papers*, No. 98, OECD Publishing, Paris, *https://dx.doi.org/10.1787/a8756593-en*.

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

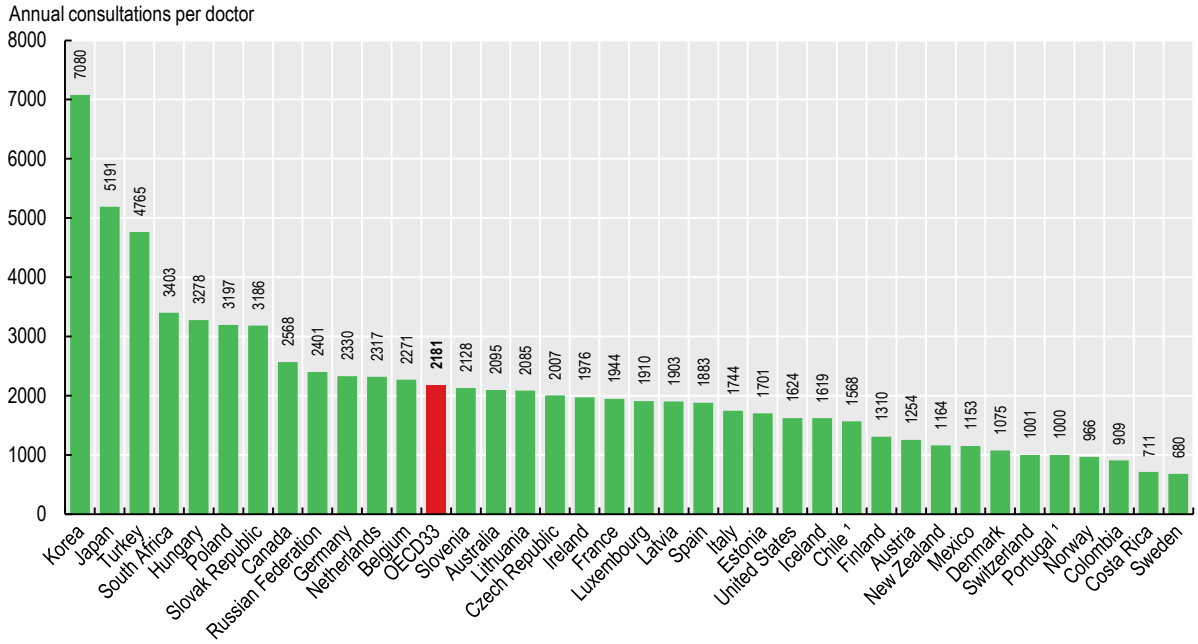
Figure 9.1. **Number of doctor consultations per person, 2000 and 2017 (or nearest year)**



Source: OECD Health Statistics 2019.

StatLink https://doi.org/10.1787/888934017633

Figure 9.2. **Estimated number of consultations per doctor, 2017 (or nearest year)**



1. In Chile and Portugal, data for the denominator include all doctors licensed to practice.
Source: OECD Health Statistics 2019.

StatLink https://doi.org/10.1787/888934017652

Medical technologies

Technology plays an important role in the health system, allowing physicians to better diagnose and treat patients. However, new technologies can also drive up costs, and are commonly acknowledged to be one of the main causes behind increases in health spending (Lorenzoni et al 2019[1]). This section presents data on the availability and use of two diagnostic imaging technologies: computed tomography (CT) scanners and magnetic resonance imaging (MRI) units. CT and MRI exams help physicians diagnose a range of conditions.

The availability of CT scanners and MRI units has increased rapidly in most OECD countries over the past two decades. Japan has by far the highest number of MRI units and CT scanners per capita, followed by the United States for MRI units and by Australia for CT scanners (Figure 9.3). Austria, Germany, Greece, Iceland, Italy, Korea and Switzerland also have significantly more MRI and CT scanners per capita than the OECD average. The number of MRI units and CT scanners per population is the lowest in Mexico, Hungary, Israel and the United Kingdom. It is also comparatively low in Colombia, Costa Rica and the Russian Federation.

There is no general guideline or international benchmark regarding the ideal number of CT scanners or MRI units per million population. However, too few units may lead to access problems in terms of geographic proximity or waiting times. If there are too many, this may result in overuse of these costly diagnostic procedures, with little if any benefits for patients.

Data on the use of these diagnostic scanners are available for most OECD countries. The number of MRI examinations per capita is highest in Germany, the United States, Japan and France, all of which have more than 100 MRI exams per 1 000 population (Figure 9.4). In France, the (absolute) number of MRI exams more than doubled between 2007 and 2017. The number of CT exams per capita is highest in the United States, followed by Japan and Iceland (Figure 9.5). 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[2]), .

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 been emulated in a growing number of countries since, 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[3]).

Definition and comparability

The data in most countries cover MRI units and CT scanners installed both in hospitals and the ambulatory sector, but coverage is more limited in some countries. MRI units and CT scanners outside hospitals are not included in Belgium, Portugal, Sweden and Switzerland (for MRI units). For the United Kingdom, the data only include equipment in the public sector. For Australia and Hungary, the number of MRI units and CT scanners includes only those eligible for public reimbursement.

Similarly, MRI and CT exams performed outside hospitals are not included in Austria, Portugal, Switzerland and the United Kingdom. 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.

References

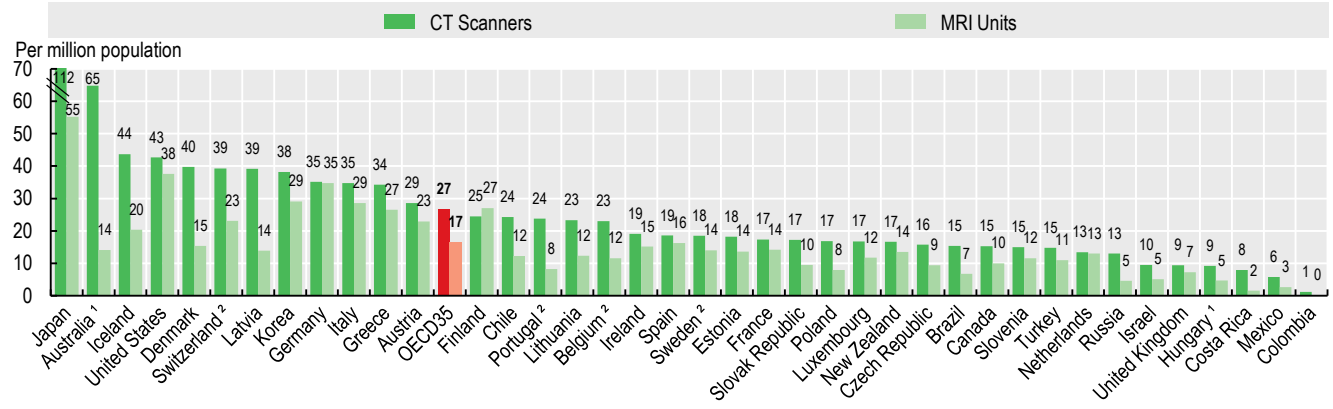
[3] Choosing Wisely UK (2018), "Clinical Recommendations: Royal College of Physicians", *http://www.choosingwisely.co.uk/*.

[2] INAMI/RIVIZ (2019), "Medical Practice Variations", *https://www.healthybelgium.be/en/medical-practice-variations*.

[1] Lorenzoni, L. et al. (2019), "Health Spending Projections to 2030: New results based on a revised OECD methodology", *OECD Health Working Papers*, No. 110, OECD Publishing, Paris, *https://doi.org/10.1787/5667f23d-en*.

[4] OECD (2014), *Geographic Variations in Health Care: What Do We Know and What Can Be Done to Improve Health System Performance?*, OECD Health Policy Studies, OECD Publishing, Paris, *http://dx.doi.org/10.1787/9789264216594-en*.

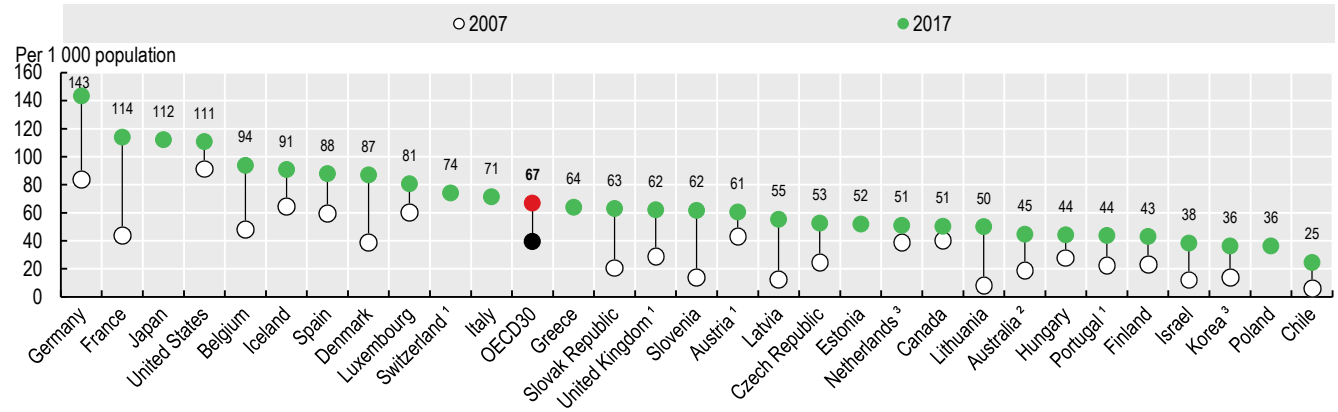
Figure 9.3. **CT scanners and MRI units, 2017 (or nearest year)**



1. Only equipment eligible for public reimbursement. 2. Equipment outside hospital not included. For Switzerland, this only applies for MRI units.
Source: OECD Health Statistics 2019.

StatLink https://doi.org/10.1787/888934017671

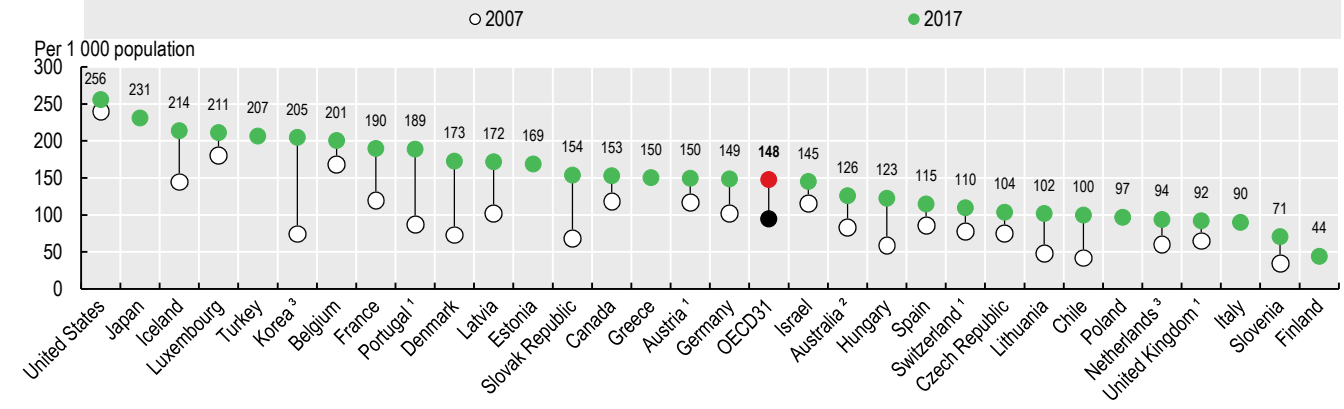
Figure 9.4. **MRI exams, 2007 and 2017 (or nearest year)**



1. Exams outside hospital not included. 2. Exams on public patients not included. 3. Exams privately funded not included.
Source: OECD Health Statistics 2019.

StatLink https://doi.org/10.1787/888934017690

Figure 9.5. **CT exams, 2007 and 2017 (or nearest year)**



1. Exams outside hospital not included. 2. Exams on public patients not included. 3. Exams privately funded not included.
Source: OECD Health Statistics 2019.

StatLink https://doi.org/10.1787/888934017709

Hospital beds and discharge rates

The number of hospital beds provides an indication of the resources available for delivering services to inpatients. The influence of the supply of hospital beds on admission rates has been widely documented, confirming that a greater supply generally leads to higher admission numbers (Roemer's Law that a "built bed is a filled bed"). Therefore policymakers are recognising that simply increasing the number of hospital beds will not solve problems of overcrowding or delays in hospitals.

Across OECD countries, there were on average 4.7 hospital beds per 1 000 people in 2017. In Japan and Korea, rates were much higher (13.1 and 12.3 beds per 1 000 people respectively). Two-thirds of OECD countries reported between 3 and 8 hospital beds per 1 000 population, with rates lowest in Mexico, Chile and Sweden.

Since 2000, 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% (from 7.5 beds per 1 000 population in 2000 to 3.3 in 2017), mainly affecting long-term care beds and psychiatric care beds. Several other countries reduced capacity by 2 beds or more per 1 000 population (Estonia, France, Latvia, Lithuania and the Slovak Republic). 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. On the other hand, the number of beds has strongly increased in Korea (+164%), with a significant number of these dedicated to long-term care.

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, allowing hospitals to reduce the number of beds. 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 154 hospital discharges per 1 000 population in 2017. Hospital discharge rates were highest in Germany, Austria and Lithuania (over 200 per 1 000 population) and lowest in Mexico, Canada, Chile and the Netherlands (less than 100). The number of discharges fell in the majority of OECD countries, with some of the largest reductions observed in countries where there were also large decreases in the number of beds (e.g. Italy, Finland, Estonia, Sweden and Latvia). On the other hand, hospital discharge rates doubled in Korea, Turkey and China.

High occupancy rates of curative (acute) care beds can be symptomatic of a health system under pressure, and may lead to bed shortages and higher rates of infection. Overly low occupancy rates may reflect underutilised resources. The National Institute of Health and Care Excellence (NICE) in the United Kingdom recommend that health care providers should plan capacity to minimise the risks associated with occupancy rates exceeding 90% (NICE, 2018[1]). The occupancy rate was over 90% in Ireland, Israel and Canada in 2017. In Ireland, this represents a ten percentage point increase since 2000 (from 85% to 95%). Occupancy rates were comparatively low in Greece, the United States, the Netherlands and Hungary (around 65% or less). Around half of OECD countries have bed occupancy rates of 70-80%, and the OECD average is 75%.

Definition and comparability

Hospital beds include all beds that are regularly maintained and staffed and are immediately available for use. They include beds in general hospitals, mental health and substance abuse hospitals, and other specialty hospitals. Beds in residential long-term care facilities are excluded. In the United Kingdom, data are restricted to public hospitals. Data for Sweden exclude private beds that are privately financed. Beds for use by patients recovering from day surgery but released the same day may be included in countries where they cannot be distinguished from inpatient beds (e.g. Austria, Luxembourg and the Netherlands). Cots for healthy infants are included for a few countries (e.g. Canada, the Netherlands and Poland).

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 discharges are usually excluded, with the exceptions of Chile, Japan, Norway and the United States which include some same-day discharges. Healthy babies born in hospitals are excluded from hospital discharge rates in several countries (Australia, Austria, Canada, Chile, Estonia, Finland, France, Greece, Ireland, Lithuania, Luxembourg, Mexico, the Netherlands and Norway). These comprise around 3-10% of all discharges. Data for some countries do not cover all hospitals. For instance, data for 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, the Netherlands and the United States include only acute care/short-stay hospitals.

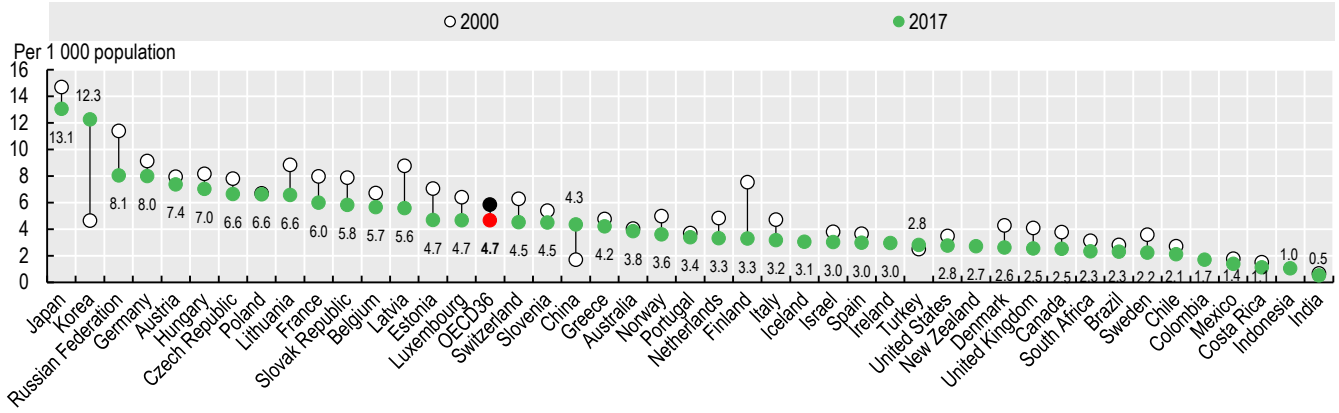
The occupancy rate for curative (acute) care beds is calculated as the number of hospital bed-days related to curative care divided by the number of available curative care beds (multiplied by 365).

References

[1] NICE (2018), "Bed occupancy", *https://www.nice.org.uk/guidance/ng94/evidence/39.bed-occupancy-pdf-172397464704*.

[2] OECD (2014), *Geographic Variations in Health Care: What Do We Know and What Can Be Done to Improve Health System Performance?*, OECD Health Policy Studies, OECD Publishing, Paris, *https://dx.doi.org/10.1787/9789264216594-en*.

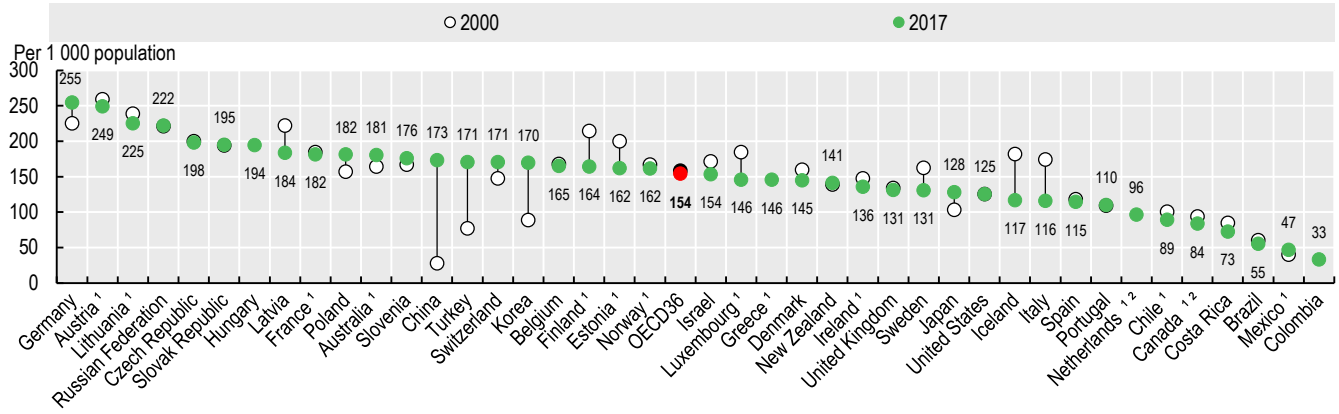
Figure 9.6. **Hospital beds, 2000 and 2017 (or nearest year)**



Source: OECD Health Statistics 2019.

StatLink https://doi.org/10.1787/888934017728

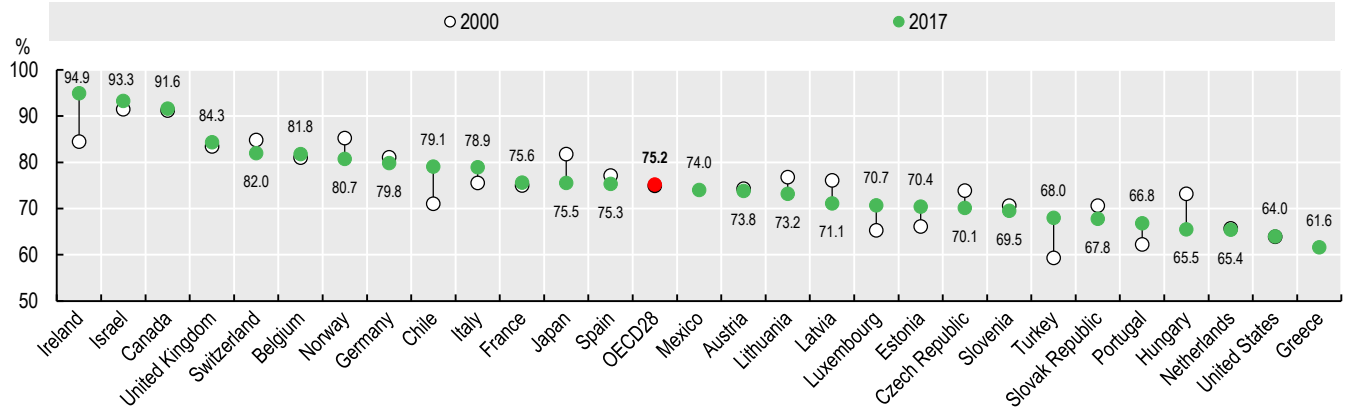
Figure 9.7. **Hospital discharge rates, 2000 and 2017 (or nearest year)**



1. Data exclude discharges of healthy babies born in hospital (3-10% of all discharges).
2. Data include discharges for curative (acute) care only.
Source: OECD Health Statistics 2019.

StatLink https://doi.org/10.1787/888934017747

Figure 9.8. **Occupancy rate of curative (acute) care beds, 2000 and 2017 (or nearest year)**



Source: OECD Health Statistics 2019.

StatLink https://doi.org/10.1787/888934017766

Average length of stay in hospitals

The average length of stay in hospitals is often regarded as an indicator of efficiency in health service delivery. All else being equal, a shorter stay will reduce the cost per discharge and will shift care from inpatient to less expensive settings. Longer stays can be a sign of poor care coordination, 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 could have improved their health outcomes or reduced chances of re-admission.

In 2017, the average length of stay in hospitals was slightly less than 8 days across OECD countries (Figure 9.9). Mexico and Turkey had the shortest stays, with patients staying for about 4 days on average in hospitals. Korea and Japan had the longest stays, averaging over 16 days per patient. Since 2000, the average length of stay has decreased in most countries; the most significant declines occurred in Japan, Finland, Switzerland, the United Kingdom, Israel and the Netherlands. The only country with a large increase was Korea (from around 15 days in 2002 to 18.5 in 2017) – 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.

Focusing on specific diseases or conditions can remove some of the effect of different case mix and severity. Across OECD countries, the average length of stay for a normal delivery was 2.9 days in 2017 (Figure 9.10). It reached over 4 days in Hungary, the Slovak Republic and the Czech Republic, and was less than 2 in Mexico, the United Kingdom, Canada, Iceland and the Netherlands. Length of stay for normal deliveries has decreased since 2000 in most countries, most notably in those with long stays such as the Slovak Republic and Czech Republic.

For acute myocardial infarction (AMI), the average length of stay ranged from 11 days or over in Chile and Korea to about 4 or under in Norway, Denmark and Sweden (Figure 9.11). The OECD average stood at 6.6 days, three days shorter than in 2000. The average length of stay for AMI decreased in all countries except Chile (where it increased by more than 3 days).

Apart from disparities in the average length of stay due to case mix, other factors including payment structures can explain cross-country variations. In particular, the introduction of prospective payment systems that encourage providers to reduce the cost of episodes in care, such as diagnosis-related groups (DRG), has been credited for the reduction in the average length of stay in hospitals. France, Austria and Sweden are among the countries that have moved to DRG payment structures, and in doing so have experienced a decrease in the average length of stay.

Results from a recent OECD study highlight the significance of a number of hospital characteristics on the average length of stay in hospitals. Specifically, hospitals with many beds (higher than 200) are associated with a longer length of stay, while a bed occupancy rate of 70% or more is associated with a shorter length of stay (Lorenzoni and Marino, 2017[1]).

Definition and comparability

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 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 under estimation).

Healthy babies born in hospitals are excluded from hospital discharge rates in several countries (e.g. Australia, Austria, Canada, Chile, Estonia, Finland, France, Greece, Ireland, Lithuania, Luxembourg, Mexico and Norway), resulting in a slight over-estimation of the length of stay (e.g. the inclusion of healthy newborns would reduce the average length of stay by 0.5 days in Canada). These comprise around 3-10% of all discharges.

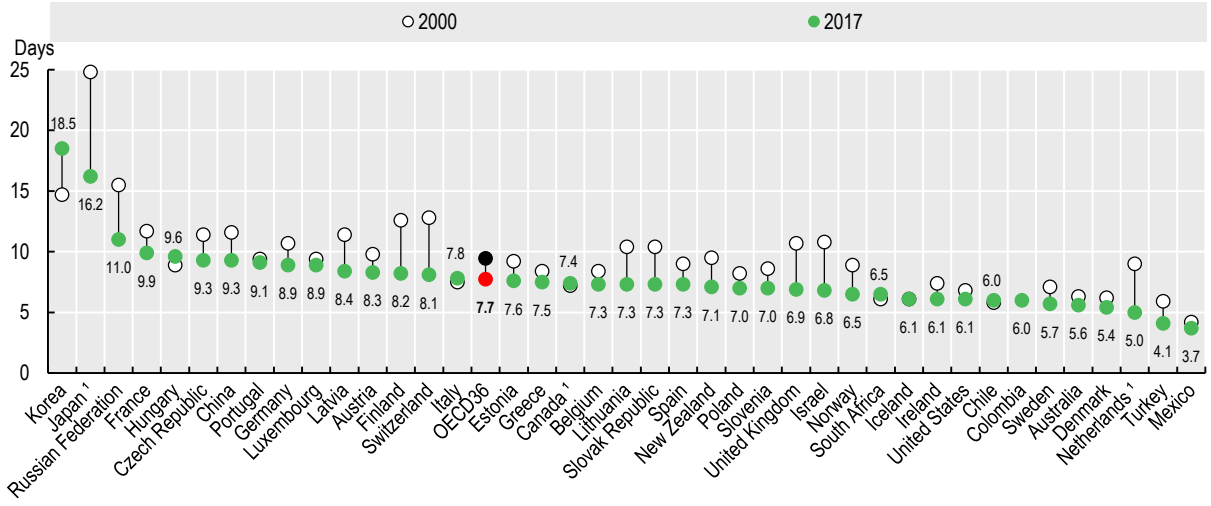
Data for normal delivery refer to ICD-10 code O80, and for AMI to ICD-10 codes I21-I22.

References

[1] Lorenzoni, L. and A. Marino (2017), "Understanding variations in hospital length of stay and cost: Results of a pilot project", *OECD Health Working Papers*, No. 94, OECD Publishing, Paris, *https://dx.doi.org/10.1787/ae3a5ce9-en*.

[2] OECD (2017). *Tackling Wasteful Spending in Health*, OECD Publishing, Paris, *http://dx.doi.org/10.1787/9789264266414-en*.

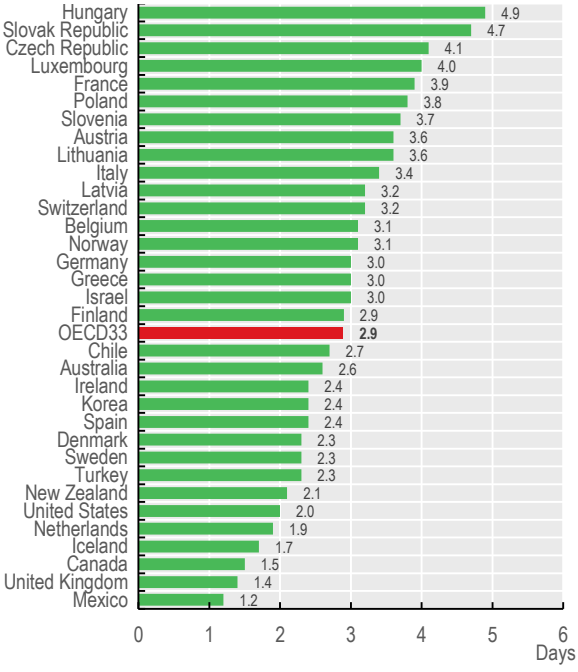
Figure 9.9. **Average length of stay in hospital, 2000 and 2017 (or nearest year)**



1. Data refer to average length of stay for curative (acute) care (resulting in an under-estimation). In Japan, the average length of stay for all inpatient care was 28 days in 2017 (down from 39 days in 2000).
Source: OECD Health Statistics 2019.

StatLink https://doi.org/10.1787/888934017785

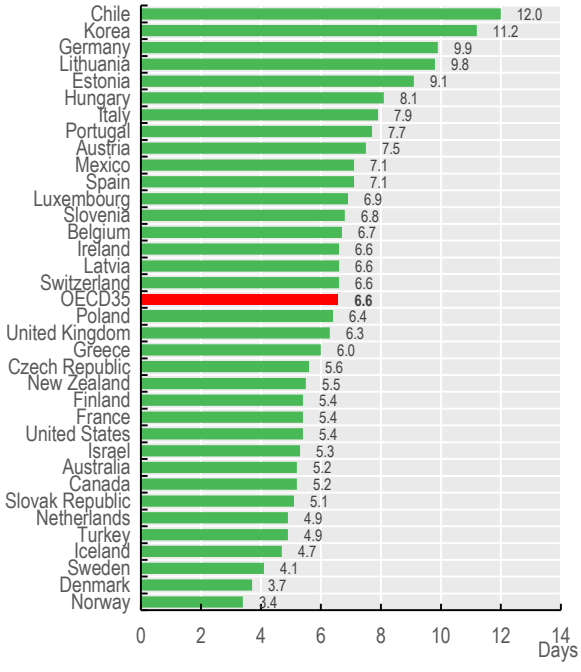
Figure 9.10. **Average length of stay for normal delivery, 2017 (or nearest year)**



Source: OECD Health Statistics 2019.

StatLink https://doi.org/10.1787/888934017804

Figure 9.11. **Average length of stay for acute myocardial infarction, 2017 (or nearest year)**



Source: OECD Health Statistics 2019.

StatLink https://doi.org/10.1787/888934017823

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 years have symptomatic osteoarthritis, including moderate and severe forms (WHO, 2014[1]).

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 2017, Germany, Austria, Switzerland, Finland, Luxembourg and Belgium were among the countries with the highest rates for hip and knee replacement (Figure 9.12 and Figure 9.13). The OECD averages are 182 per 100 000 population for hip replacement, and 135 per 100 000 for knee replacement. Mexico, Portugal, Israel, Ireland and Korea 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[2]).

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[3]). Alongside the number of operations, the quality of hip and knee surgery (see indicator on "Hip and knee surgery" in Chapter 6) and waiting times (see indicator on "Waiting times for elective surgery" in Chapter 5) are also critical for patients.

Since 2000, the number of hip and knee replacements has increased rapidly in most OECD countries (Figure 9.14 and Figure 9.15). On average, hip replacement rates increased by 30% between 2007 and 2017 and knee replacement rates by 40%. 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-20th century (Wallace et al., 2017[4]).

Most OECD countries show increasing trends of varying degrees, but Ireland and Luxembourg show slower growth than the average, these are also the only OECD countries to show a decrease in hip replacements rates from 2007.

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 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. Data for Spain only partly include activities in private hospitals.

References

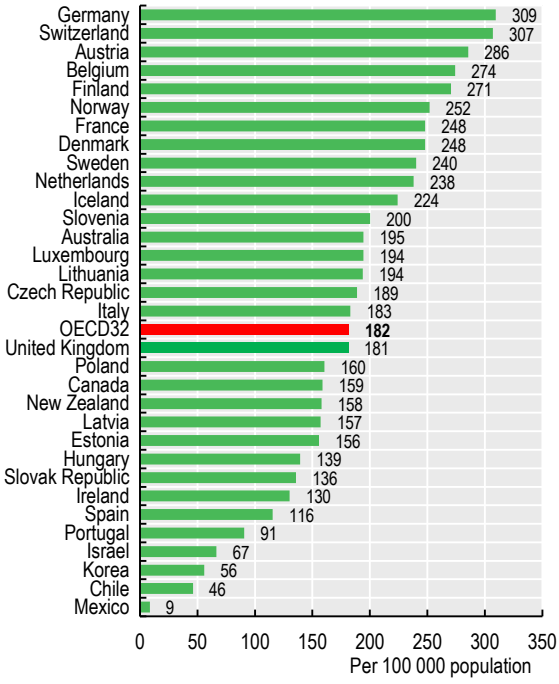
[2] McPherson, K., G. Gon and M. Scott (2013), "International Variations in a Selected Number of Surgical Procedures", *OECD Health Working Papers*, No. 61, OECD Publishing, Paris, *https://dx.doi.org/10.1787/5k49h4p5g9mw-en*.

[3] OECD (2014), *Geographic Variations in Health Care: What Do We Know and What Can Be Done to Improve Health System Performance?*, OECD Health Policy Studies, OECD Publishing, Paris, *https://dx.doi.org/10.1787/9789264216594-en*.

[4] Wallace, I. et al. (2017), "Knee osteoarthritis has doubled in prevalence since the mid-20th century", *Proceedings of the National Academy of Sciences*, Vol. 114/35, pp. 9332-9336, *http://dx.doi.org/10.1073/pnas.1703856114*.

[1] WHO (2014), "Chronic Rheumatic Conditions", *Fact Sheet*, *http://www.who.int/chp/topics/rheumatic/en/*.

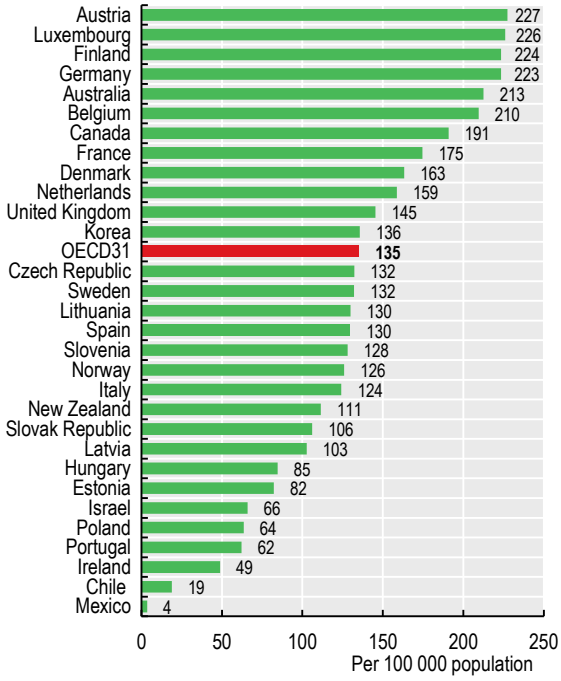
Figure 9.12. **Hip replacement surgery, 2017 (or nearest year)**



Source: OECD Health Statistics 2019.

StatLink https://doi.org/10.1787/888934017842

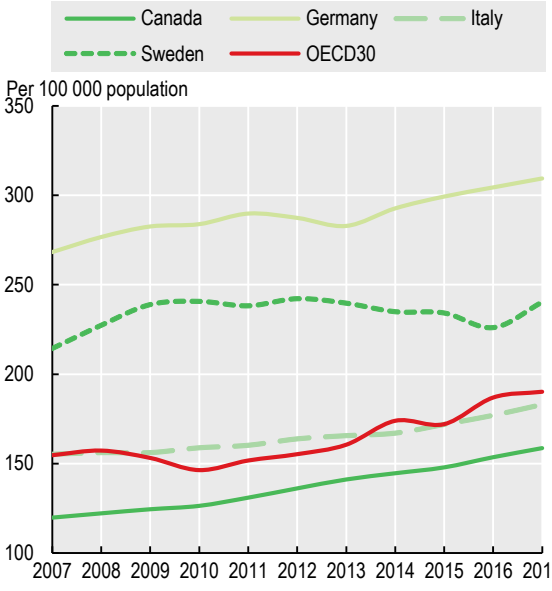
Figure 9.13. **Knee replacement surgery, 2017 (or nearest year)**



Source: OECD Health Statistics 2019.

StatLink https://doi.org/10.1787/888934017861

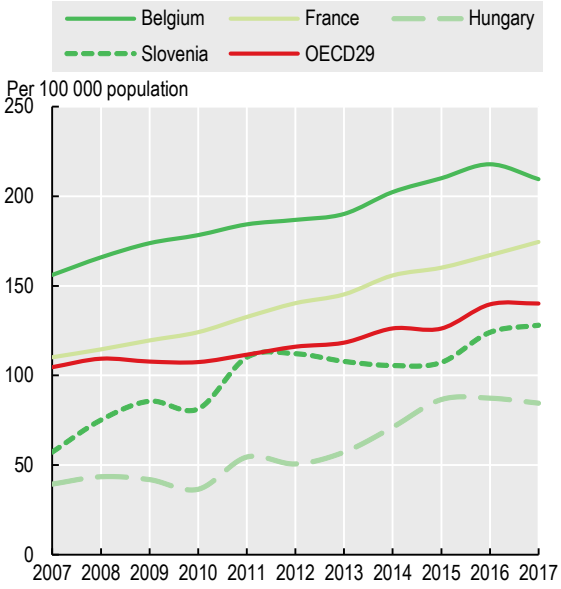
Figure 9.14. **Hip replacement surgery trends in selected OECD countries, 2007-17**



Source: OECD Health Statistics 2019.

StatLink https://doi.org/10.1787/888934017880

Figure 9.15. **Knee replacement surgery trends in selected OECD countries, 2007-17**



Source: OECD Health Statistics 2019.

StatLink https://doi.org/10.1787/888934017899

Caesarean sections

Caesarean sections can be a lifesaving and necessary procedure. Nonetheless, caesarean delivery continues to result in increased maternal mortality, maternal and infant morbidity, and increased complications for subsequent deliveries. This raises concerns over the growing rates of caesarean sections performed across OECD countries since 2000, in particular among women at low risk of a complicated birth who have their first baby by caesarean section for non-medical reasons. The World Health Organization concludes that caesarean sections are effective in saving maternal and infant lives, but that caesarean section rates higher than 10% are not associated with reductions in maternal and newborn mortality rates at the population level. Nevertheless, caesarean sections should be provided based on need, rather than striving to achieve a specific rate.

In 2017, caesarean section rates remain lowest in Nordic countries (Iceland, Finland, Sweden and Norway), Israel and the Netherlands, with rates ranging from 15% to 17% of all live births (Figure 9.16). They were highest in Korea, Chile, Mexico and Turkey, with rates ranging from 45% to 53% of all births. Across OECD countries, 28% of live births were performed as caesarean sections.

Caesarean rates have increased since 2000 in most OECD countries, with the average rising from 20% in 2000 to 28% in 2017, although the rate of growth has slowed over the past five years (Figure 9.17). Growth rates have been particularly rapid in the Slovak Republic and Czech Republic, Slovenia and Austria, which have historically had relatively low rates. There have also been large increases over the past decade in Chile, Korea, Mexico and Turkey – countries that already had high caesarean rates. In Italy, caesarean rates have come down significantly in recent years, although they remain among the highest in Europe.

Variations in caesarean section rates across countries have been attributed to a number of factors, including financial incentives, malpractice liability concerns, differences in the availability and training of midwives and nurses, and the proportion of women who access private maternity care. For example, there is evidence that private hospitals tend to perform more caesarean sections than public hospitals. In Switzerland, caesarean sections were found to be substantially higher in private clinics (41%) than in public hospitals (30.5%) (OFSP, 2013[1]).

Furthermore, divergences exist for preferences among women for a caesarean section for a healthy birth across countries, which can be linked to the institutional arrangements of the maternal health system and cultural attitudes towards labour and birth. For example, in Iceland, the rate of preference for a caesarean section in the context of a healthy birth was 9.2% of women, compared to 16% in Australia. Preference for a caesarean section in young women can also be linked to psychological reasons, including fear of uncontrollable pain and fear of physical damage (Stoll et al., 2017[2]).

Public reporting, provider feedback, the development of clearer clinical guidelines, and adjustments to financial incentives have been used to try to reduce the inappropriate use of caesarean sections. In Australia, where caesarean section rates are high relative to most OECD countries, a number of states have developed clinical guidelines and required reporting of hospital caesarean section rates, including investigation of performance against the guidelines. These measures have discouraged variations in practice and contributed to slowing down the rise in caesarean sections. Other countries have reduced the gap in hospital payment rates between a caesarean section and a normal delivery, with the aim of discouraging the inappropriate use of caesareans (OECD, 2014[3]).

Definition and comparability

The caesarean section rate is the number of caesarean deliveries performed per 100 live births.

In Ireland, Mexico, New Zealand and the United Kingdom, the data only include activities in publicly funded hospitals (though for Ireland all maternity units are located in publicly funded hospitals and for New Zealand the number of privately funded births is negligible). This may lead to an underestimation of caesarean section rates in these countries, since there is some evidence that private hospitals tend to perform more caesarean sections than public hospitals.

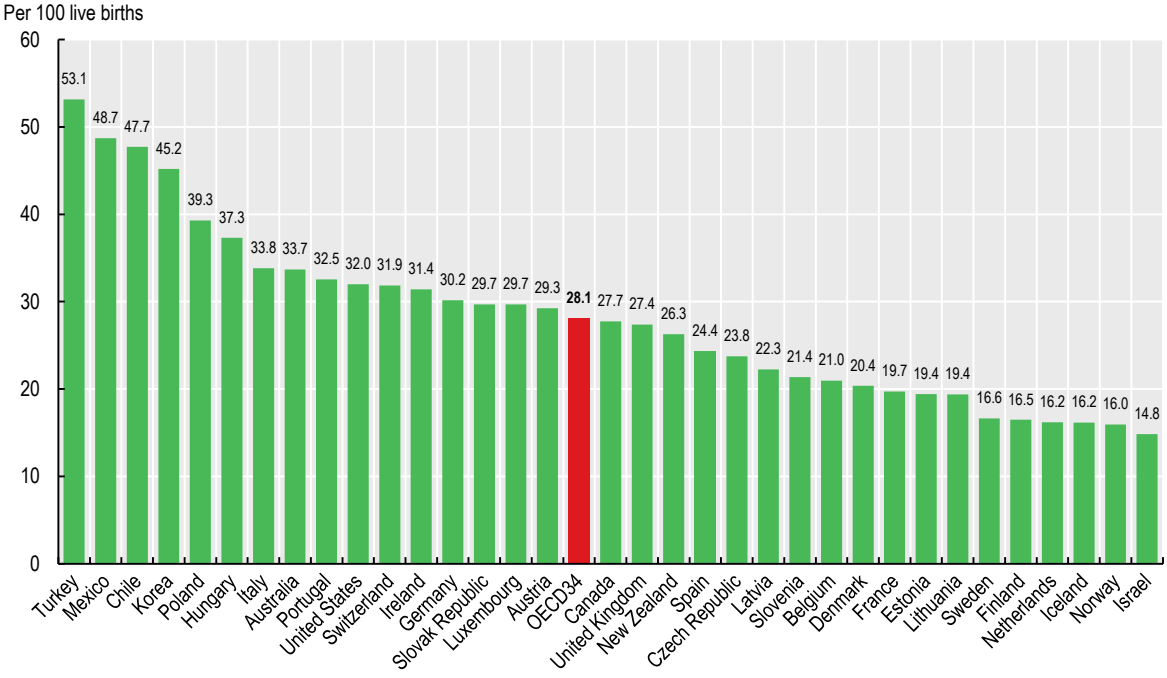
References

[3] OECD (2014), *Geographic Variations in Health Care: What Do We Know and What Can Be Done to Improve Health System Performance?*, OECD Health Policy Studies, OECD Publishing, Paris, *https://dx.doi.org/10.1787/9789264216594-en*.

[1] OFSP – Office fédéral de la santé publique (2013), *Accouchements par césariennes en Suisse* [Births by caesareans in Switzerland], Bern.

[2] Stoll, K. et al. (2017), "International Childbirth Attitudes- Prior to Pregnancy (ICAPP) Study Team - Preference for cesarean section in young nulligravid women in eight OECD countries and implications for reproductive health education", *Reproductive Health*, Vol. 14/1, *http://dx.doi.org/10.1186/s12978-017-0354-x*.

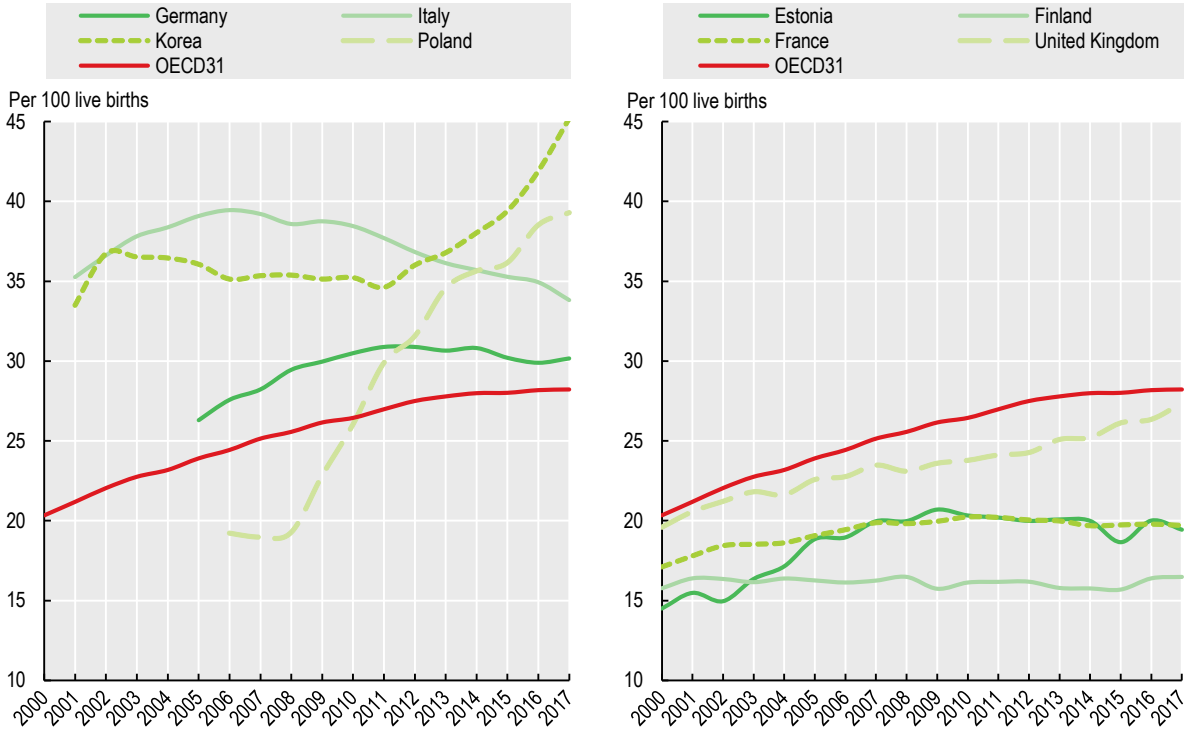
Figure 9.16. **Caesarean section rates, 2017 (or nearest year)**



Source: OECD Health Statistics 2019.

StatLink https://doi.org/10.1787/888934017918

Figure 9.17. **Caesarean section trends in selected OECD countries, 2000-17**



Source: OECD Health Statistics 2019.

StatLink https://doi.org/10.1787/888934017937

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, same-day 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 surgeries 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 cost 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.

Day surgery accounts for 90% or more of all cataract surgeries in the majority of OECD countries (Figure 9.18). In several countries, nearly all cataract surgeries are performed as day cases. However, the use of day surgery is low in Poland, Lithuania, Turkey and Hungary, with less than 60% of surgeries performed as day cases). While this may be explained partly by limitations in the data coverage of outpatient activities in hospital or outside hospital, it may also reflect higher reimbursement for inpatient stays or constraints on the development of day surgery.

The number of cataract surgeries performed on a same-day basis has grown significantly since 2007 in many countries, including Austria, France, Hungary, Ireland, Poland, Portugal and Slovenia (Figure 9.18). In Austria, the share of cataract surgeries performed as day cases increased from only 10% in 2007 to almost 85% in 2017.

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 same-day surgery in 10 of 29 OECD countries with comparable data, with children returning home the same day (Figure 9.19). However, the proportion of day cases is not as high as for cataract surgery, at 34% of tonsillectomies, on average across OECD countries. Day surgery rates are relatively high in Iceland, Finland and Sweden (75% of cases or higher) but remain less than 10% of cases in 10 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 same-day surgery may reflect variations in the perceived risks of postoperative complications, or simply clinical traditions of keeping children for at least one night in hospital after the operation.

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 (DRG) systems have been adjusted to incentivise same-day surgery. In the United Kingdom, a financial incentive of approximately GBP 300 per case is awarded for selected surgical procedures if the patient was managed on a day-case basis (OECD, 2017[1]).

Definition and comparability

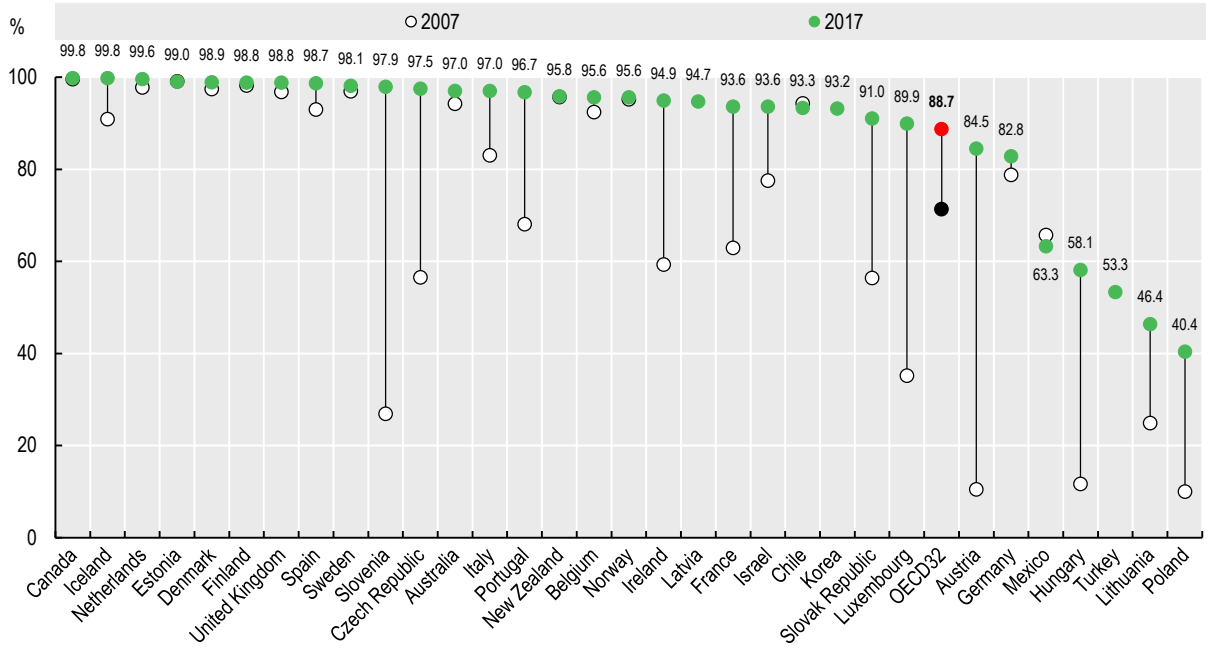
Cataract surgery consists of removing the lens of the eye because of the presence of cataracts partially or completely clouding the lens, and replacing it with an artificial lens. It is mainly performed on elderly people. Tonsillectomy consists of removing the tonsils – glands at the back of the throat.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

The data for several countries do not include outpatient cases in hospital or outside hospital (i.e. patients who are not formally admitted and discharged), leading to some under-estimation. In 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. Data for Spain only partly include activities in private hospitals.

References

[1] OECD (2017), *Tackling Wasteful Spending in Health*, OECD Publishing, Paris, *http://dx.doi.org/10.1787/9789264266414-en*.

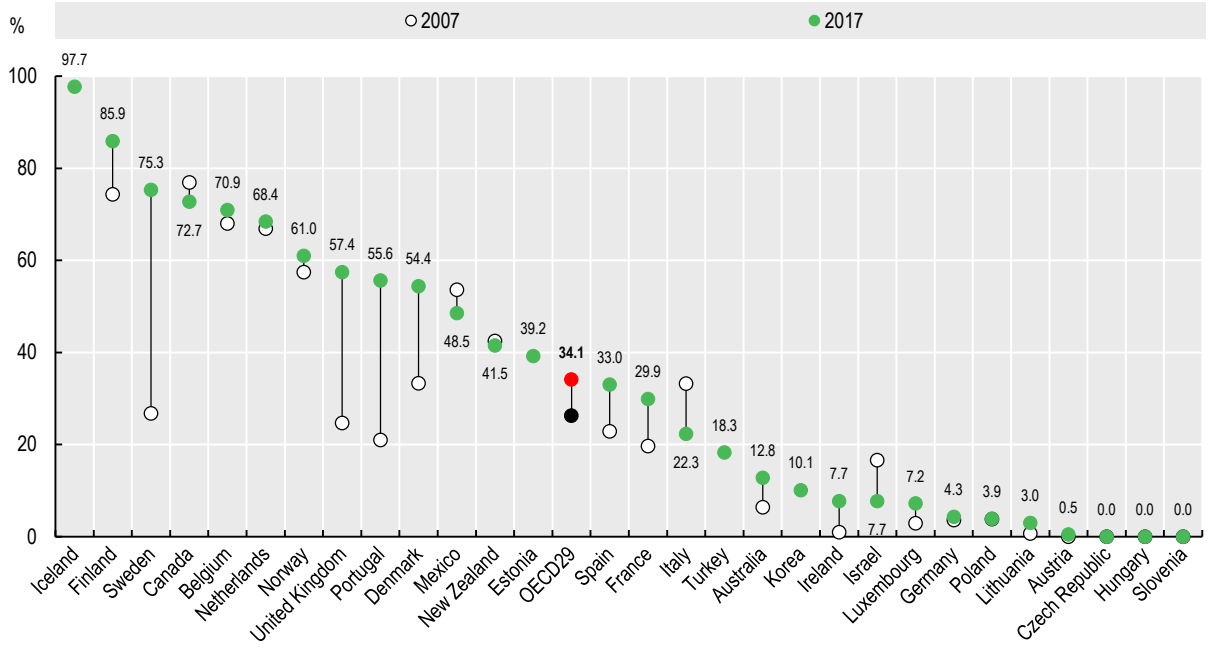
Figure 9.18. **Share of cataract surgery carried out as ambulatory cases, 2007 and 2017 (or nearest year)**



Source: OECD Health Statistics 2019.

StatLink https://doi.org/10.1787/888934017956

Figure 9.19. **Share of tonsillectomy carried out as ambulatory cases, 2007 and 2017 (or nearest year)**



Source: OECD Health Statistics 2019.

StatLink https://doi.org/10.1787/888934017975

10. PHARMACEUTICAL SECTOR

Pharmaceutical expenditure

Pharmacists and pharmacies

Pharmaceutical consumption

Generics and biosimilars

Research and development in the pharmaceutical sector

The statistical data for Israel are supplied by and under the responsibility of the relevant Israeli authorities. The use of such data by the OECD is without prejudice to the status of the Golan Heights, East Jerusalem and Israeli settlements in the West Bank under the terms of international law.

Pharmaceutical expenditure

Pharmaceutical care is constantly evolving, with many novel drugs entering the market. These offer alternatives to existing treatments, and in some cases, the prospect of treating conditions previously considered incurable. However, the costs of new drugs can be very high, with significant implications for health care budgets. In 2017, retail pharmaceuticals accounted for almost one-fifth of all health care expenditure, and represented the third largest spending component in OECD countries after inpatient and outpatient care.

Across OECD countries, funding from governments and compulsory insurance schemes played the largest role in purchasing pharmaceuticals (Figure 10.1). On average, these schemes covered 58% of spending on retail pharmaceuticals. Most of the remainder is financed from household out-of-pocket payments; only 3% of spending is covered by voluntary insurance. In Germany and France, government and compulsory schemes cover 80% or more of pharmaceutical costs. By contrast, in Latvia, Poland and Lithuania, almost two-thirds of pharmaceutical spending was through out-of-pocket payments.

Spending for retail pharmaceuticals averaged USD 564 per person across OECD countries in 2017, adjusted for differences in purchasing power (Figure 10.2). Cross-country differences are marked, with spending more than double the average in the United States, followed by Switzerland and Japan. Per capita spending was lowest in Mexico and Denmark, at around half or less of the OECD average. Cross-country differences in spending reflect differences in distribution and dispensing patterns, the uptake of both generic and novel medicines, as well as pricing and procurement policies.

Most spending on retail pharmaceuticals is for prescription medicines (75%), with the remainder spent on over-the-counter (OTC) medicines (19%) and medical non-durables (5%). The costs of OTC medicines are typically borne by patients, though occasionally public payers or mandatory insurance schemes may contribute. Depending on country-specific legislation, some OTC medicines can be sold outside pharmacies, for example, in supermarkets, other retail stores or via the internet. Expenditure on OTC medicines in Poland is almost equal to that on prescription medicines, and accounted for almost a third of the total in Spain, Latvia and Australia.

Growth in retail pharmaceutical spending has fluctuated over the past decade across OECD countries, declining in the years during and after the financial crisis, but increasing again in recent years (see indicator on "Health expenditure by type of service" in Chapter 7). This reflects the actions of many governments in introducing cost-control measures such as de-listing of products (excluding them from reimbursement), cutting manufacturer prices and margins for pharmacists and wholesalers, and introducing or increasing user charges for retail prescription drugs (Belloni et al., 2016[1]).

Figure 10.3 compares growth rates of pharmaceutical spending in the retail sector and in hospitals for a selection of OECD countries. In Greece, where a policy to reduce wasteful use of drugs was introduced, retail spending on pharmaceuticals has decreased substantially. Growth over the last decade has been positive in some countries, such as Germany and Canada, partly due to new high cost treatments – notably oncology treatments and hepatitis C drugs. Yet analysing retail pharmaceuticals only gives a partial picture of spending: the costs of pharmaceuticals used for hospital inpatient care can also be high, accounting on average for an additional 20% on top of retail spending. Growth in spending on hospital pharmaceuticals has generally been higher than that for retail medicines, with the highest rates in Korea and Iceland. Several countries, including Denmark, Finland and Portugal, experienced growth in hospital pharmaceutical expenditure at the same time as spending on retail drugs declined.

Definition and comparability

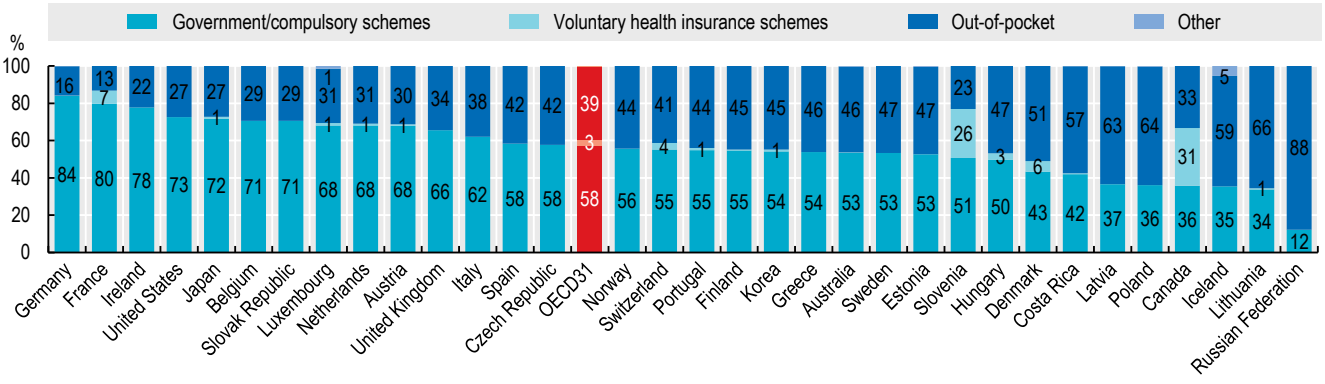
Pharmaceutical expenditure covers spending on prescription medicines and self-medication, the latter often referred to as over-the-counter products. Other medical non-durable goods (such as first aid kits and hypodermic syringes) are also included. It further includes pharmacists' remuneration when the latter is separate from the price of medicines. Retail pharmaceuticals are provided outside hospital care, such as those dispensed through a pharmacy or bought from a supermarket. Hospital pharmaceuticals include drugs administered or dispensed during an episode of hospital care.

Expenditure on retail pharmaceuticals includes wholesale and retail margins and value-added tax. Total pharmaceutical spending refers in most countries to "net" spending – i.e. adjusted for possible rebates payable by manufacturers, wholesalers or pharmacies. Pharmaceuticals consumed in hospitals and other health care settings as part of an inpatient or day-case treatment are excluded (available data suggests that their inclusion would add another 10-20% to retail pharmaceutical spending). Comparability issues exist regarding the administration and dispensing of pharmaceuticals for outpatients in hospitals. In some countries, the costs are included under curative care; in others, under pharmaceuticals.

References

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

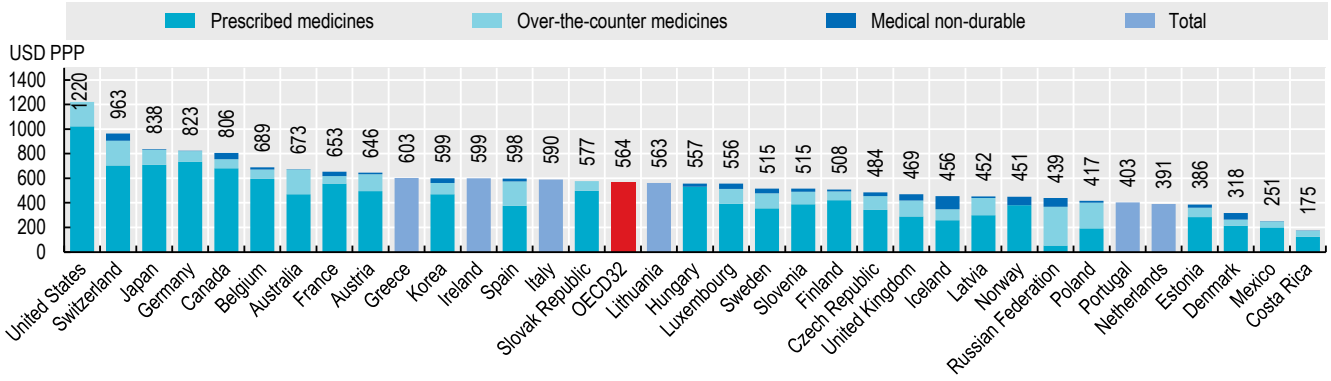
Figure 10.1. **Expenditure on retail pharmaceuticals[1] by type of financing, 2017 (or nearest year)**



Note: "Other" includes financing from non-profit-schemes, enterprises and the rest of the world.
1. Includes medical non-durables.
Source: OECD Health Statistics 2019.

StatLink https://doi.org/10.1787/888934017994

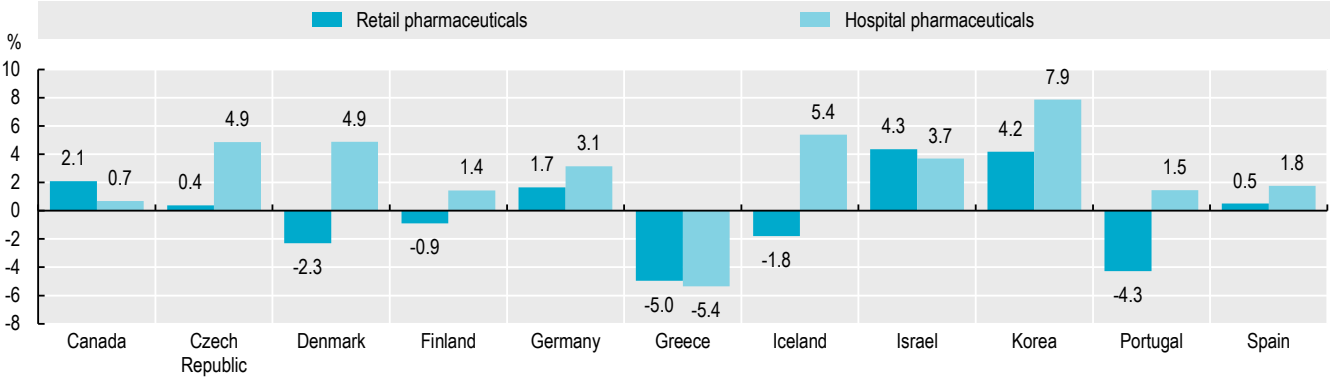
Figure 10.2. **Expenditure on retail pharmaceuticals per capita, 2017 (or nearest year)**



Source: OECD Health Statistics 2019.

StatLink https://doi.org/10.1787/888934018013

Figure 10.3. **Annual average growth in retail and hospital pharmaceutical expenditure, in real terms, 2008-18 (or nearest year)**



Note: OECD estimates for Portugal exclude expenditure on other medical products from retail spending.
Source: OECD Health Statistics 2019.

StatLink https://doi.org/10.1787/888934018032

Pharmacists and pharmacies

Pharmacists are trained health care professionals who manage the distribution of medicines to consumers/patients and help ensure their safe and efficacious use. Between 2000 and 2017, the density of practising pharmacists increased by 33% on average in OECD countries, to 83 pharmacists per 100 000 inhabitants (Figure 10.4). The number of pharmacists per capita is highest in Japan (181 pharmacists per 100 000 people), and lowest in the Netherlands (21 pharmacists).

The number of pharmacists per capita increased in all OECD countries for which time series are available. Pharmacist density increased most rapidly in Japan, Portugal and Slovenia. In Japan, increased numbers of pharmacists are largely attributable to the government's efforts to more clearly separate drug prescribing by doctors from drug dispensing by pharmacists (the Bungyo system).

Across the OECD, most pharmacists work in community retail pharmacies, but some also work in hospital, industry, research and academic settings. In Canada, for example, in 2016 more than three-quarters of practising pharmacists worked in community pharmacies, while about 20% worked in hospitals and other health care facilities (CIHI, 2017[1]). In Japan, around 57% of pharmacists worked in community pharmacies in 2016, while around 19% worked in hospitals or clinics and the remaining 24% in other settings (Ministry of Health, Labour and Welfare, 2017[2]).

The number of community pharmacies per 100 000 people ranges from 7 in Denmark to 88 in Greece; with an average of 29 across OECD countries (Figure 10.5). 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 still have doctors dispensing medicines to their patients (e.g. in the Netherlands). Denmark has fewer community pharmacies, but these are often large, and include branch pharmacies and subsidiary pharmacy units attached to the main pharmacy. 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 over recent years. Although their main role is to dispense medications, pharmacists are increasingly providing direct care to patients (e.g. flu vaccinations in Australia, Ireland and New Zealand; medicine adherence support in Australia, Japan, New Zealand and the United Kingdom), both in community pharmacies and as part of integrated health care provider teams.

Definition and comparability

Practising pharmacists are defined as the number of pharmacists who are licensed to practice and provide direct services to clients/patients. They can be either salaried or self-employed, and work in community pharmacies, hospitals and 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 actively working. Assistant pharmacists are included in Iceland.

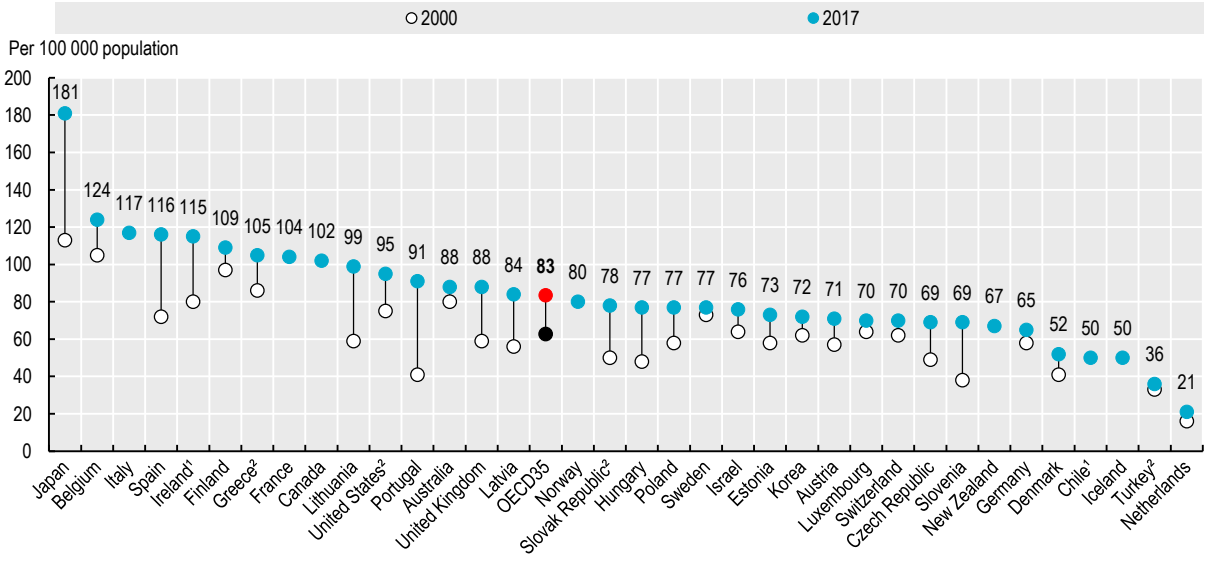
Community pharmacies are premises which, in accordance with the local legal provisions and definitions, may operate as a facility for the provision of pharmacy services in community settings. The number of community pharmacies reported are the number of premises where medicines are dispensed under the supervision of a pharmacist.

References

[1] CIHI (2017), *Pharmacists in 2016*, Health Workforce, *https://www.cihi.ca/en/pharmacists* (accessed on 19 July 2019).

[2] Ministry of Health, Labour and Welfare (2017), *Summary of Survey of Physicians, Dentists and Pharmacists*, Health Statistics Office, Director-General for Statistics and Information Policy, Ministry of Health, Labour and Welfare, Tokyo.

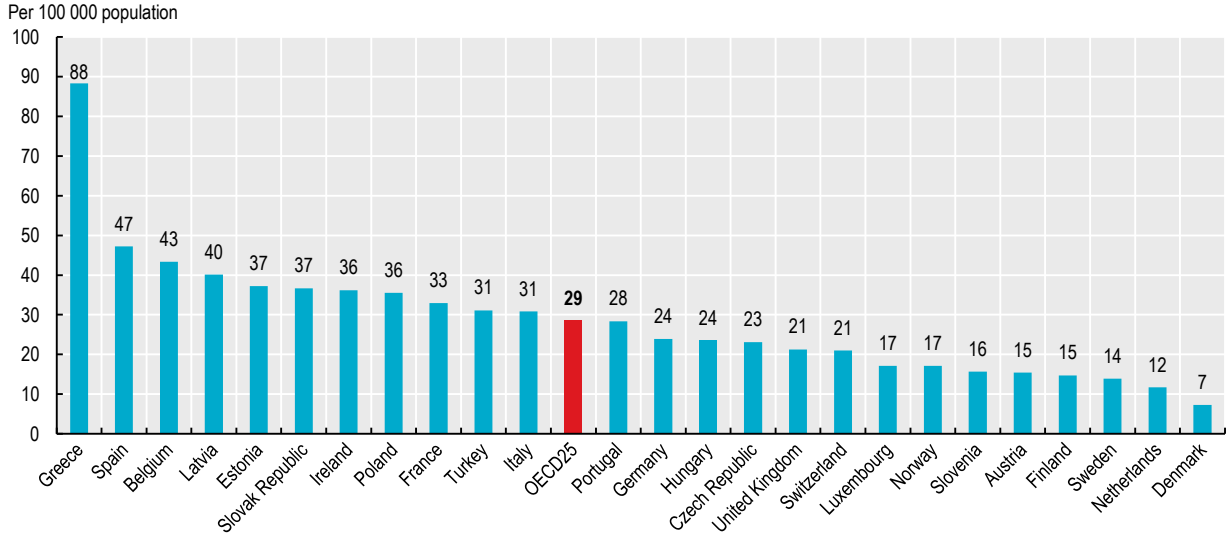
Figure 10.4. **Practising pharmacists, 2000 and 2017 (or nearest year)**



1. Data refer to all pharmacists licensed to practice. 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 2019.

StatLink https://doi.org/10.1787/888934018051

Figure 10.5. **Community pharmacies, 2017 (or nearest year)**



Source: Pharmaceutical Group of the European Union database 2017 or national sources.

StatLink https://doi.org/10.1787/888934018070

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: anti-hypertensives, cholesterol-lowering agents, anti-diabetics, and anti-depressants. 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 70% on average between 2000 and 2017, nearly quadrupling in Luxembourg and Estonia (Figure 10.6). It remains highest in Germany and Hungary, which report almost five times the levels of consumption seen in Korea and Turkey. 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 cholesterol-lowering agents, with consumption in OECD countries increasing by a factor of three between 2000 and 2017 (Figure 10.7). The United Kingdom, Denmark and Belgium report the highest levels of consumption per capita in 2017, with a seven-fold variation in consumption levels across the OECD.

The use of anti-diabetic drugs also grew dramatically, almost doubling in OECD over the same period (Figure 10.8). 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 on "Overweight and obesity" in Chapter 4), a major risk factor for the development of type 2 diabetes. In 2017, consumption of anti-diabetic drugs was highest in Finland and lowest in Latvia, with a two-fold variation.

Consumption of anti-depressant drugs doubled in OECD countries between 2000 and 2017 (Figure 10.9). This may reflect improved recognition of depression, availability of therapies, evolving clinical guidelines and changes in patient and provider attitudes (Mars et al., 2017[1]). However, there was significant variation between countries, with Iceland reporting the highest level of consumption in 2018, at a rate ten times that of Latvia.

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 Anatomic-Therapeutic Classification (ATC). For more detail, see *http://www.whocc.no/atcddd*.

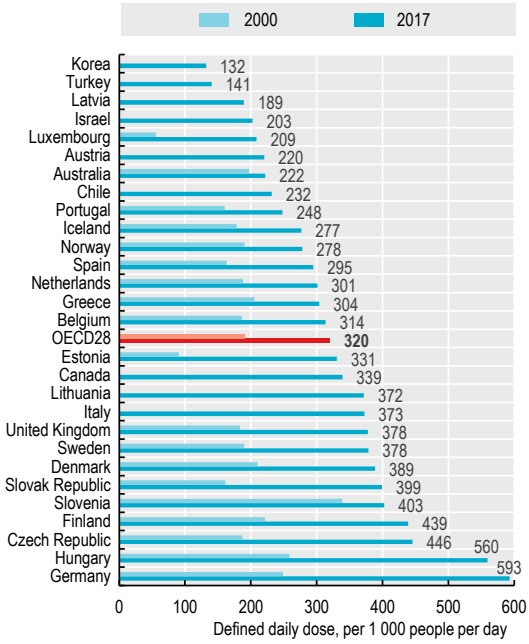
The volume of anti-hypertensive drugs consumption presented in Figure 10.6 refers to the sum of five ATC2 categories, which may all be prescribed for hypertension (C02-anti-hypertensives, C03-diuretics, C07-beta blocking agents, C08-calcium channel blockers, C09-agents acting on the renin-angiotensin system). ATC codes for other classes are: C10 for cholesterol lowering drugs; A10 for antidiabetic drugs; and N06A for anti-depressants.

Data generally refer to outpatient consumption only, except for Chile, the Czech Republic, Estonia, Finland, Iceland, Italy, Korea, Norway, the Slovak Republic and Sweden, where data also include hospital consumption. The data for Canada relate to three provinces only (British Columbia, Manitoba and Saskatchewan). The data for Luxembourg and Spain refer to outpatient consumption for prescribed drugs covered by the national health system (public insurance). Data for Luxembourg are underestimated due to incomplete consideration of products with multiple active ingredients.

References

[1] Mars, B. et al. (2017), "Influences on antidepressant prescribing trends in the UK: 1995–2011", Social Psychiatry and Psychiatric Epidemiology, Vol. 52/2, pp. 193-200, *http://dx.doi.org/10.1007/s00127-016-1306-4*.

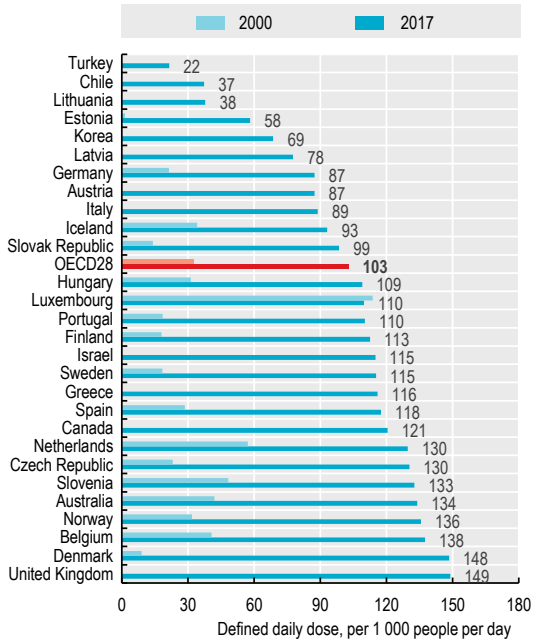
Figure 10.6. **Anti-hypertensive drug consumption, 2000 and 2017 (or nearest year)**



Note: Data refer to the sum of classes: C02-antihypertensives, C03-diuretics, C07-beta blocking agents, C08-calcium channel blockers, C09-agents acting on the renin-angiotensin system.
Source: OECD Health Statistics 2019.

StatLink https://doi.org/10.1787/888934018089

Figure 10.7. **Cholesterol-lowering drug consumption, 2000 and 2017 (or nearest year)**



Note: Data refer to class C10-lipid modifying agents. Source: OECD Health Statistics 2019.

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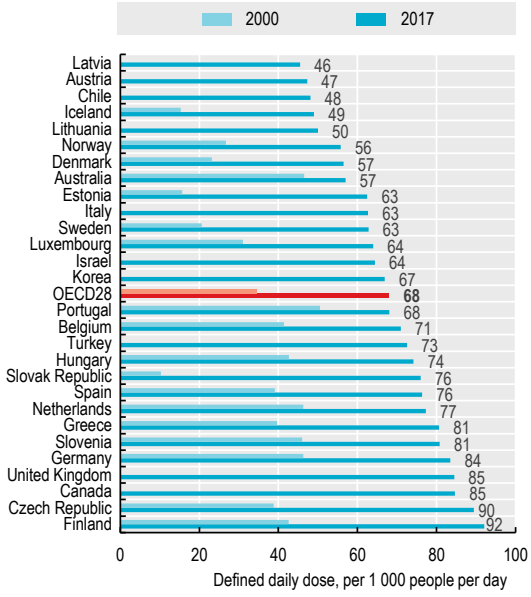
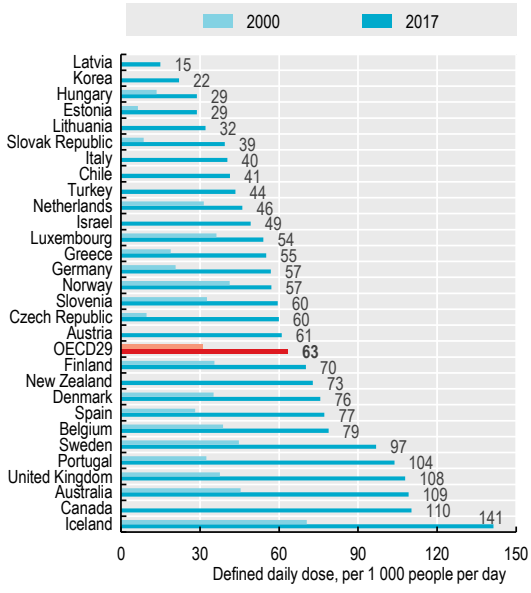
Figure 10.8. **Anti-diabetic drug consumption, 2000 and 2017 (or nearest year)**



Note: Data refer to class A10-drugs used in diabetes.
Source: OECD Health Statistics 2019.

StatLink https://doi.org/10.1787/888934018127

Figure 10.9. **Anti-depressant drug consumption, 2000 and 2017 (or nearest year)**



Note: Data refer to class N06A-antidepressants.
Source: OECD Health Statistics 2019.

StatLink https://doi.org/10.1787/888934018146

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 2017, generics accounted for more than three-quarters of the volume of pharmaceuticals sold in the United Kingdom, Chile, Germany and New Zealand, but less than one-quarter in Luxembourg and Switzerland (Figure 10.10). 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[1]; Socha-Dietrich, James and Couffinhal, 2017[2]). In Austria, for example, generic substitution by pharmacists is still not allowed. In Luxembourg, generic substitution by pharmacists is set by law but 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 GPs 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 between the originator and a generic, but with responsibility for any difference in price. In Greece, patients choosing originator over generic drugs are also required to directly pay the difference.

Biological medicines contain active substances from a biological source, such as living cells or organisms. When such medicines no longer have monopoly protection, 'copies' ("biosimilars") of these products can be approved. Biosimilars have increased price competition and improved affordability. In 2017, biosimilars accounted for more than 70% of the volume of the 'accessible market' for erythropoietin (used to treat anaemia) in Finland, Germany, the Slovak Republic and Greece (Figure 10.11). In most European countries, prices of erythropoietin fell between 30% and 80% after biosimilar entry. In Norway and Denmark, known for their effective procurement policies, data show zero or small biosimilar uptake and no price reduction in 2017. In Denmark, the tender process had already triggered competition between originator products, leading to price reductions with which biosimilars could not compete. In Norway, the originator product won the nationwide tender in 2017, with confidential rebates that affected the list price. These examples highlight the inherent problems of lack of price transparency.

For tumour necrosis factor (TNF) inhibitors (used to treat autoimmune and immune-mediated disorders), biosimilars have over 90% of the accessible market in Denmark and Norway, but less than 10% in Switzerland, Ireland and Greece (Figure 10.11). Price reductions since biosimilar entry are more modest than for erythropoietin, ranging from 4% in Switzerland to 45% in Poland. For both biosimilars, actual price reductions may be higher than what appears in figures, which only report list prices.

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 for the 'accessible market', i.e. the market composed of originator products that are no longer protected and their biosimilars. Market share is computed as biosimilar treatment days as a share of the total volume of biosimilar and referenced product(s). Price change is measured as the difference between prices in 2017 and in the year before entry of the first biosimilar.

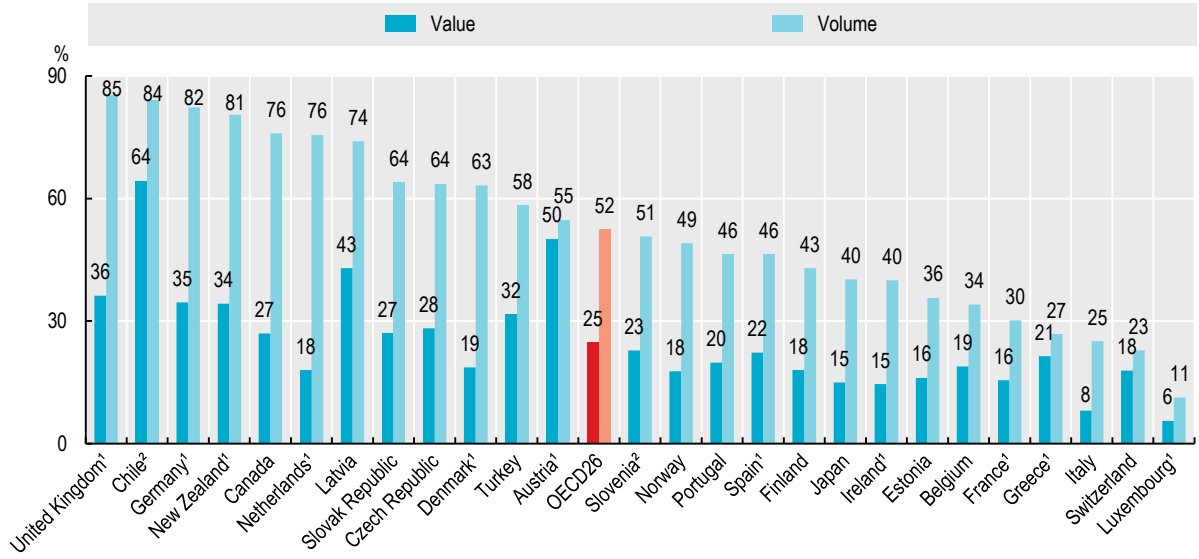
References

[1] OECD (2018), "Strategies to reduce wasteful spending: Turning the lens to hospitals and pharmaceuticals", in *Health at a Glance: Europe 2018: State of Health in the EU Cycle*, OECD Publishing, Paris, *https://dx.doi.org/10.1787/health_glance_eur-2018-5-en*.

[3] QuintilesIMS (2017), *The Impact of Biosimilar Competition in Europe*, QuintilesIMS Institute, Parsippany, *http://www.quintilesims.com*.

[2] Socha-Dietrich, K., C. James and A. Couffinhal (2017), "Reducing ineffective health care spending on pharmaceuticals", in *Tackling Wasteful Spending on Health*, OECD Publishing, Paris, *https://dx.doi.org/10.1787/9789264266414-7-en*.

Figure 10.10. **Share of generics in the total pharmaceutical market, 2017 (or nearest year)**



1. Reimbursed pharmaceutical market. 2. Community pharmacy market.
Source: OECD Health Statistics 2019.

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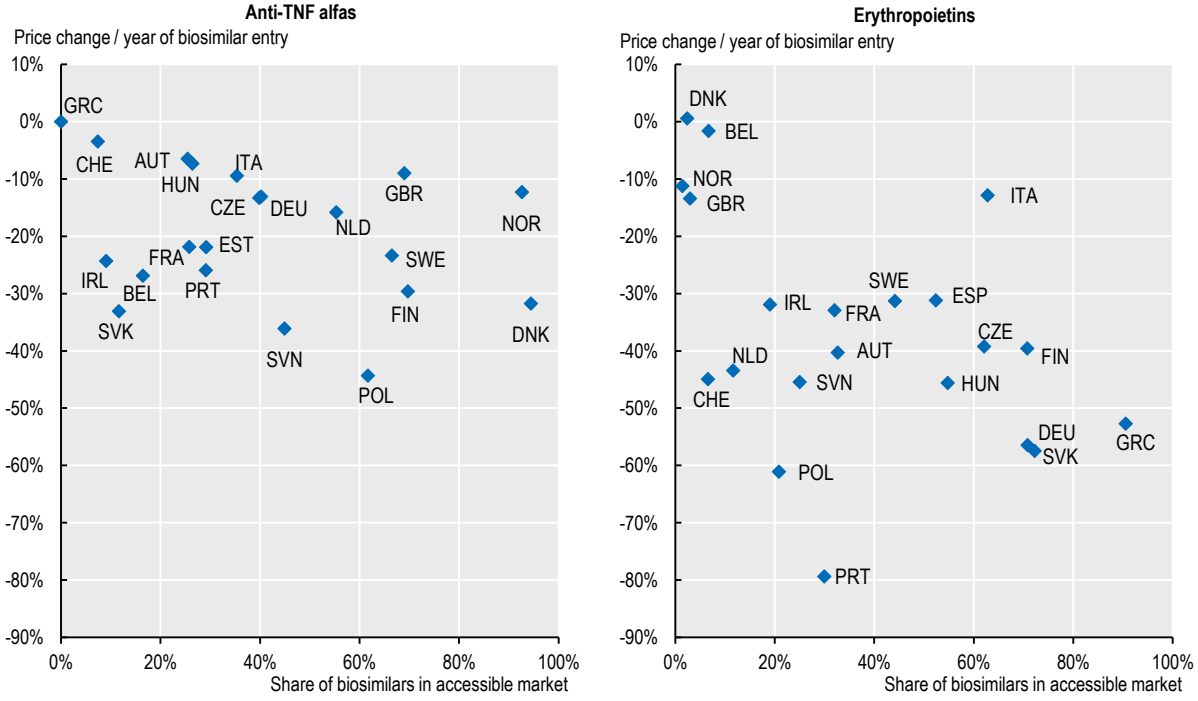
Figure 10.11. **Biosimilar market share in treatment days for anti-TNF alfas and erythropoietin vs accessible market, 2017 (or nearest year), in European countries**



Source: IQVIA MIDAS MAT December 2017.

StatLink https://doi.org/10.1787/888934018184

Research and development in the pharmaceutical sector

Pharmaceutical research and development (R&D) is funded from a complex mix of private and public sources. Governments mainly support basic and early-stage research through direct budget allocations, research grants, publicly owned research institutions and higher education institutions. The pharmaceutical industry is active across all phases of R&D but makes the largest contribution to translating and applying knowledge to develop products. Clinical trials required to gain market approval are largely funded by industry. However, industry also receives direct R&D subsidies or tax credits in many countries.

In 2016, governments of 31 OECD countries from which data are available collectively budgeted about USD 53 billion for health-related R&D (a broader category than pharmaceuticals). This figure understates total government support because it excludes most tax incentives and funding for higher education and publicly-owned corporations. Meanwhile, the pharmaceutical industry spent approximately USD 101 billion on R&D across OECD countries.

Most pharmaceutical industry R&D expenditure comes from OECD countries but the share from non-OECD countries is increasing (EFPIA, 2018[1]). Growth has been particularly rapid in China, where the industry spent USD 14 billion on R&D in 2016 (0.07% of GDP) – a more than 2.5-fold increase since 2010 (in real terms) (OECD, 2019[2]). Nearly two-thirds of the spending in OECD countries (Figure 10.12) occurs in the United States, where the industry spent about USD 65 billion (0.35% of GDP), and government budgets on health-related R&D were USD 36 billion (0.19% of GDP). The industry spent USD 20 billion (0.1% of GDP) and governments budgeted USD 11 billion (0.06% of GDP) in Europe; the figures were USD 13 billion (0.25% of GDP) and USD 1.4 billion (0.03% of GDP) respectively in Japan. As a share of GDP, industry spending is highest in Switzerland (0.85%), Denmark (0.46%) and Slovenia (0.45%), smaller countries with relatively large pharmaceutical sectors.

The pharmaceutical industry is highly R&D intensive. On average across OECD countries, the industry spent nearly 12% of its gross value added on R&D. This is almost as high as in the electronics and optical and air and spacecraft industries, and considerably higher than across manufacturing as a whole (Figure 10.13).

Expenditure on R&D in the pharmaceutical industry in OECD countries grew by 14% in real terms between 2010 and 2016. The number of new drug approvals has also increased since 2010, following a decline after the 1980s. In the United States, for example, the annual number of approvals is now back to a similar level to that seen in the 1980s (Figure 10.14). However, given the increase in R&D expenditure, the number of approvals per inflation-adjusted R&D spending has declined steadily.

This pattern of decreasing productivity despite advances in technology is driven by a complex combination of factors. These include growing requirements to obtain market approval, which have increased clinical trial costs, and an ever-increasing base of effective drugs that has shifted efforts to drugs for more complex conditions. Rising R&D costs can be both a cause and a result of higher drug prices, as the acceptance of higher prices by payers can make increasingly expensive R&D and acquisitions of R&D projects financially viable. Increasing R&D and acquisition costs can, in turn, drive up prices.

Definition and comparability

Business enterprise expenditure on R&D (BERD) covers R&D carried out by corporations, regardless of the origin of the funding, which can include government subsidies. BERD is recorded in the country where the R&D activity took place, not the country providing funding. National statistical agencies collect data primarily through surveys and according to the Frascati Manual but there is some variation in national practices. Pharmaceutical R&D refers to BERD by businesses classified in the pharmaceutical industry. Europe includes 21 EU member states that are also OECD countries, Iceland, Norway and Switzerland (with no data available for Lithuania and Luxembourg).

Government budgets 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. It does not cover spending by public corporations or general university funding that is subsequently allocated to health.

The gross value added (GVA) of a sector equals gross output less intermediate consumption. It includes the cost of wages, consumption of fixed capital and taxes on production. Because GVA does not include intermediate consumption, it is less sensitive than gross output to sector-specific reliance on raw materials. The OECD average in Figure 10.13 is an unweighted mean of R&D intensity across 18 countries with data available for air and spacecraft; and 29-33 countries for all other industries.

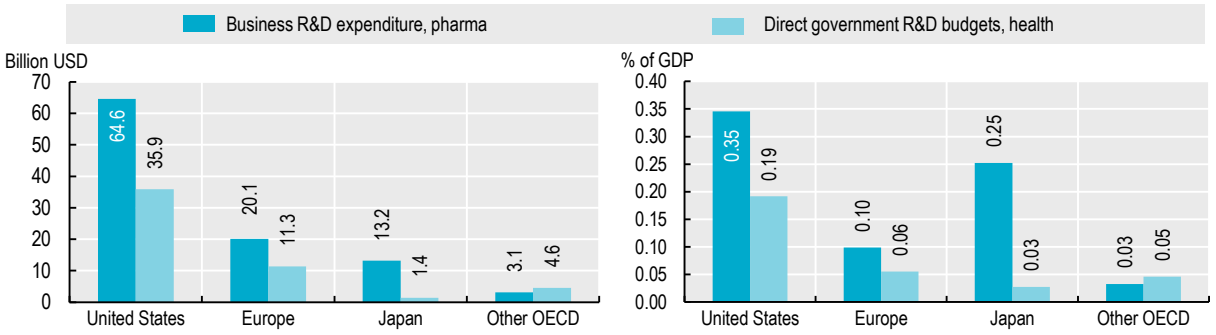
Data in Figure 10.14 include approvals of new molecular entities (NMEs) and other new drug applications (NDAs) and new biologic license application (BLAs) and other BLAs.

References

[1] EFPIA (2018), *The Pharmaceutical Industry in Figures*, *https://www.efpia.eu/media/361960/efpia-pharmafigures2018_v07-hq.pdf*.

[2] OECD (2019), *Analytical Business Enterprise Research and Development (ANBERD) Database*, *http://oe.cd/anberd*.

Figure 10.12. **Business enterprise expenditure for pharmaceutical R&D (BERD) and government outlays for health-related R&D (GBARD), 2016 (or nearest year)**



Source: OECD Main Science and Technology Indicators and Research and Development Statistics databases.

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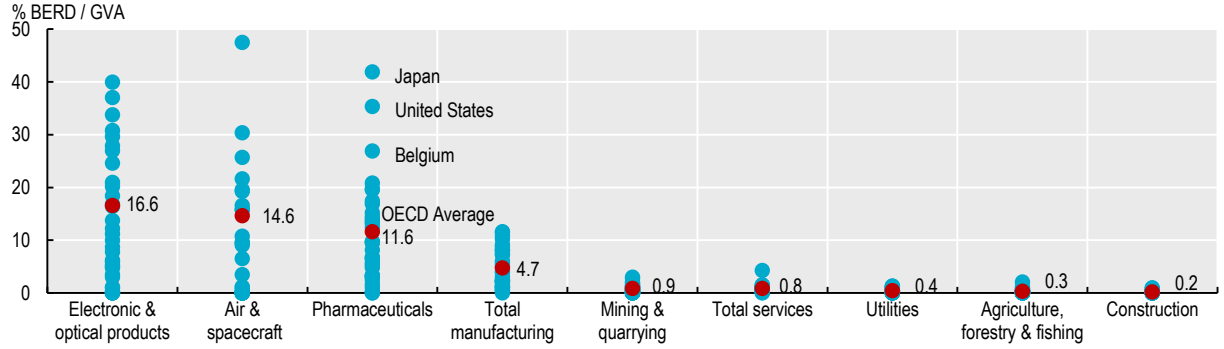
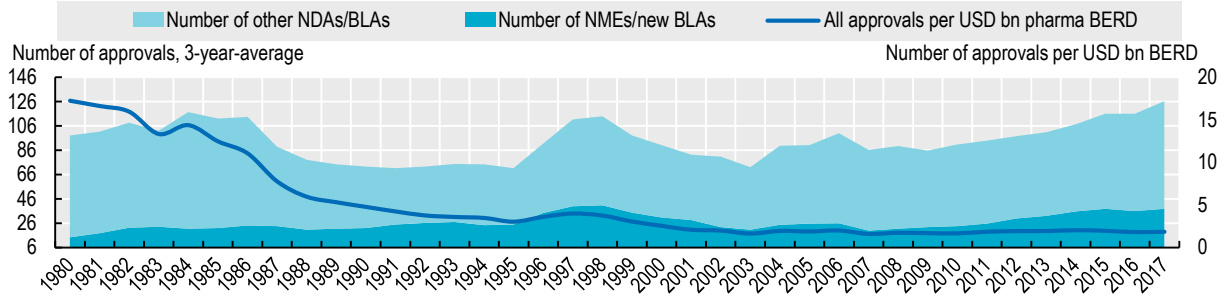
Figure 10.13. **R&D intensity by industry: business enterprise R&D expenditure as a share of gross valued added, 2016 (or nearest year)**



Source: OECD Analytical Business Enterprise R&D, Structural Analysis and System of National Accounts databases.

StatLink https://doi.org/10.1787/888934018222

Figure 10.14. **Annual approvals of new medicines per billion USD pharmaceutical business expenditure on R&D in the United States, inflation-adjusted, 1980 to 2017**



Source: United States Food and Drug Administration; Pharmaceutical Research and Manufacturers of America.

StatLink https://doi.org/10.1787/888934018241

11. 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 prescribing in older populations

Safe long-term care

Recipients of long-term care

Informal carers

Long-term care workers

Long-term beds in facilities and hospitals

Long-term care spending and unit costs

The statistical data for Israel are supplied by and under the responsibility of the relevant Israeli authorities. The use of such data by the OECD is without prejudice to the status of the Golan Heights, East Jerusalem and Israeli settlements in the West Bank under the terms of international law.

Demographic trends

In recent decades, the share of the population aged 65 years or older has nearly doubled on average across OECD countries. The proportion of the population aged 65 years or over increased from less than 9% in 1960 to more than 17% in 2017. Declining fertility rates and longer life expectancies (see indicator on "Life expectancy" in Chapter 3) have meant that older people make up an increasing proportion of the population in OECD countries.

Across OECD countries on average, the share of the population aged 65 and over is projected to continue increasing in the coming decades, rising from 17.4% in 2017 to 27.1% by 2050 (Figure 11.1). In five OECD 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 and Australia will represent less than 20% of the population in 2050, due 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 – people 80 years of age and older. Between 2017 and 2050, the share of the population 80 and above will more than double on average in OECD countries, from 4.6% to 10.1%. At least one in ten people will be 80 or older in nearly half (17) of OECD countries by 2050, while in six countries (Lithuania, Portugal, Italy, Greece, Korea and Japan), more than one in eight people will be 80 or older.

While most OECD partner countries have a younger age structure than many OECD members, population ageing will nonetheless occur rapidly in the coming years – sometimes at a faster pace than among OECD countries. In China, the share of the population aged 65 and over will increase much more rapidly than in OECD countries, more than doubling from 10.6% in 2017 to 26.3% in 2050. The share of the Chinese population aged 80 and above will rise even more quickly, increasing more than three-fold from 1.8% in 2017 to 8.1% in 2050. Brazil – whose population aged 65 and over was barely half of the OECD average in 2017 – will see similarly rapid growth, with nearly 22% of the population projected to be aged 65 or 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 11.2). In the coming years, Korea is projected to undergo the most rapid population ageing among OECD members, with the share of the population 80 and above quintupling from well below the OECD average in 2017 (3% versus 4.6%), to 15.1% (well above the OECD average of 10.1%) by 2050. Among OECD partner countries, the speed of ageing has been slower than OECD members, though 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, despite the gains in healthy life expectancy seen in recent years (see indicator on "Life expectancy and healthy life expectancy"), population ageing will likely lead to greater demand for labour-intensive long-term 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 long-term care workers, and in the coming years, more will find themselves under pressure to recruit and retain skilled long-term care staff (see indicator on "Long-term care workers").

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.

References

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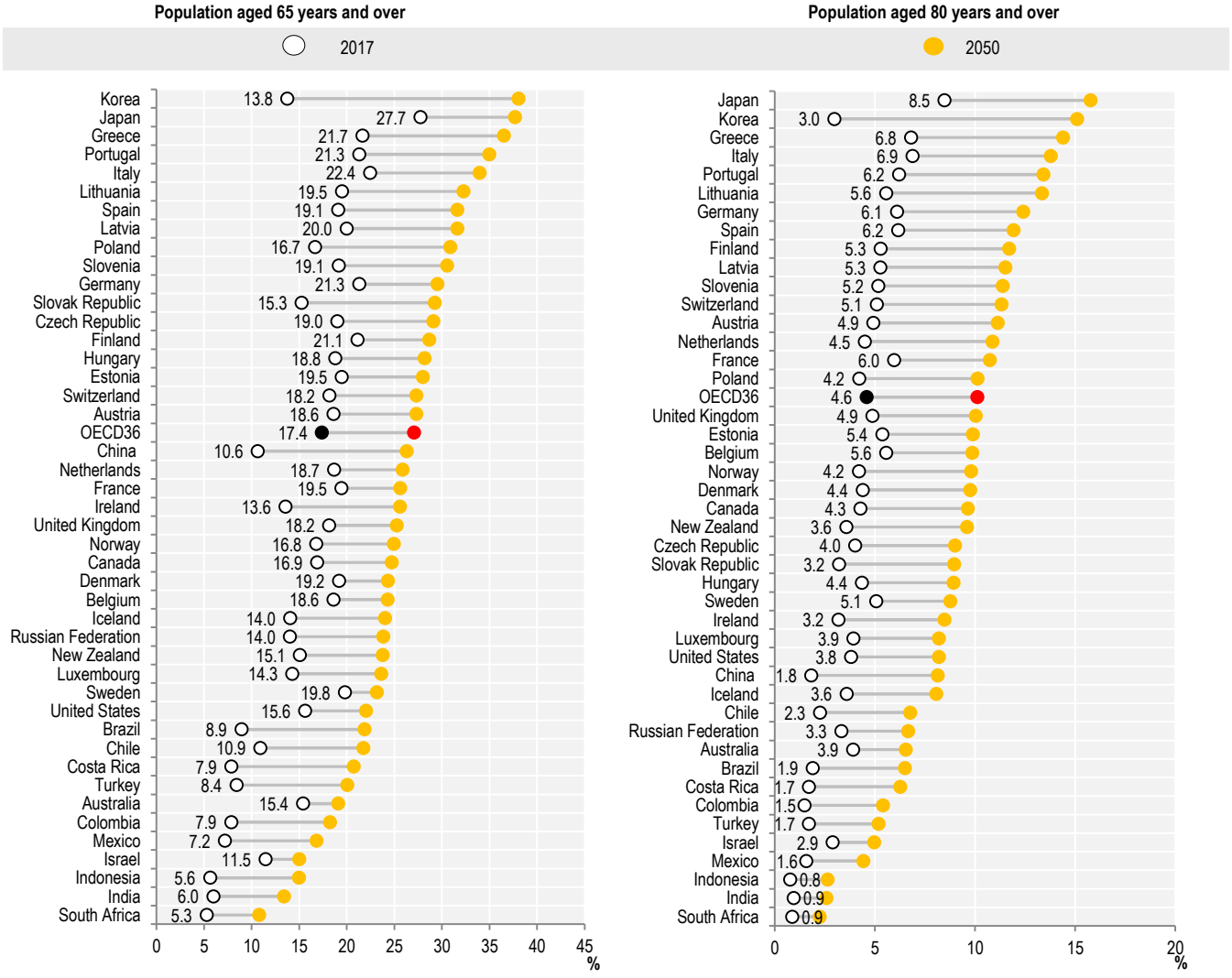
[5] United Nations (2019), "2019 Revision of World Population Prospects", United Nations, *https://esa.un.org/unpd/wpp/*.

Figure 11.1. **Share of the population aged over 65 and 80 years, 2017 and 2050**



Source: OECD Health Statistics 2019, OECD Historical Population Data and Projections Database, 2019.

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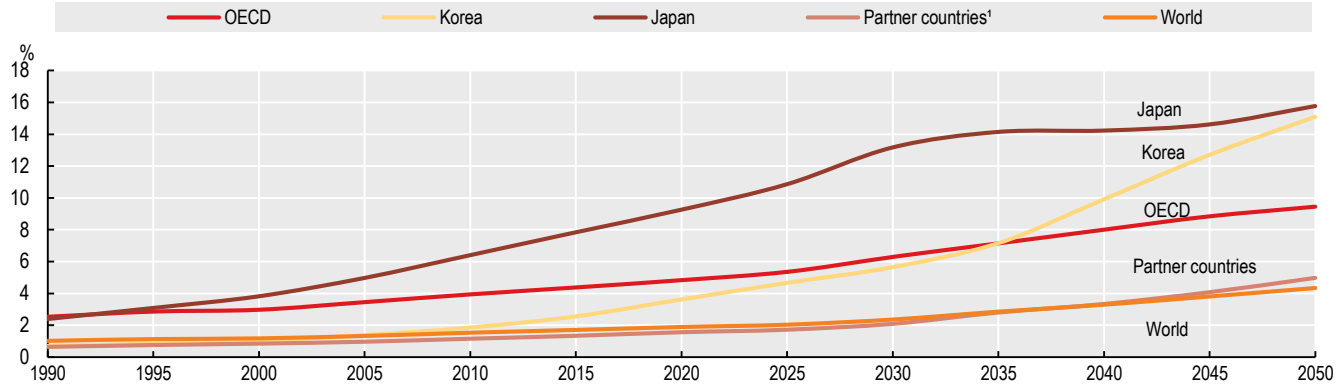
Figure 11.2. **Trends in the share of the population aged over 80 years, 1990-2050**



1. Partner countries include Brazil, China, Colombia, Costa Rica, India, Indonesia, the Russian Federation and South Africa.
Source: OECD Historical Population Data and Projections Database, 2019.

StatLink https://doi.org/10.1787/888934018279

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 5.5 years between 1970 and 2017 (Figure 11.3). Four countries (Australia, Finland, Korea, and Japan) enjoyed gains of more than seven years over the period; only one country (Lithuania) experienced an increase in life expectancy at age 65 of less than two years between 1970 and 2017.

On average across OECD countries, people at age 65 could expect to live a further 19.7 years. Life expectancy at age 65 is more than 2.5 years higher for women than for men of the same age. This gender gap has not changed substantially since 1970, when life expectancy at age 65 was 2.9 years longer for women than men. Life expectancy at age 65 was highest for women in Japan (24.4 years) and for men in Switzerland (20 years). Among OECD countries, life expectancy at age 65 in 2017 was lowest for women in Hungary (18.4 years), and for men in Latvia (14.1 years).

While all OECD countries experienced gains in life expectancy at age 65 between 1970 and 2017, not all additional years are lived in good health. The number of healthy life years at age 65 varies substantially across OECD countries (Figure 11.4). In Europe, an indicator of disability-free life expectancy known as "healthy life years" is calculated regularly, based on a general question about disability in the European Union 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 9.6 for women and 9.4 for men – a markedly smaller difference than that of general life expectancy at age 65 between men and women. Healthy life expectancy at age 65 was above 15 years for both men and women in Norway, Sweden and Iceland; for men, this was nearly three years above the next-best performing countries (Ireland and Spain). Healthy life expectancy at 65 was less than five years for both men and women in the Slovak Republic and Latvia. In the Slovak Republic and Latvia, women spend nearly 80% of additional life years in poor health, compared with less than 30% in Norway, Sweden and Iceland.

Gains in life expectancy at age 65 have slowed in recent years (Figure 11.5). Life expectancy at age 65 increased by 11 months on average in OECD countries between 2002 and 2007; between 2012 and 2017, countries added just over seven months to life expectancy at age 65. Gains in life expectancy at age 65 accelerated in just eight OECD countries (Chile, Greece, Israel, Japan, Latvia, Lithuania, Slovak Republic and Turkey) between 2012-2017 compared with 2002-2007; in Iceland, life expectancy at age 65 declined between 2012 and 2017. The slowdown in life expectancy at age 65 in 2012-2017 compared with 2002-2007 may be partially explained by the severe influenza epidemic of 2014-2015, which affected frail and older populations in particular. As population ageing continues, OECD countries will need to anticipate health challenges, like flu outbreaks, that can disproportionately affect older populations, and be prepared to address them, including by ensuring high influenza vaccination rates.

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. Gains in life expectancy were calculated as the difference in the number of years gained in life expectancy between the periods 2002-2007 and 2012-2017.

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 EFTA countries. The disability measure is based on the Global Activity Limitation Indicator (GALI) question, which comes from the EU-SILC survey. The question asks: "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 satisfactorily reflect other health and disability measures (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.

References

[1] Jagger, C. et al. (2010), "The Global Activity Limitation Indicator (GALI) Measured Function and Disability Similarly across European Countries", *Journal of Clinical Epidemiology*, Vol. 63, pp. 892-899.

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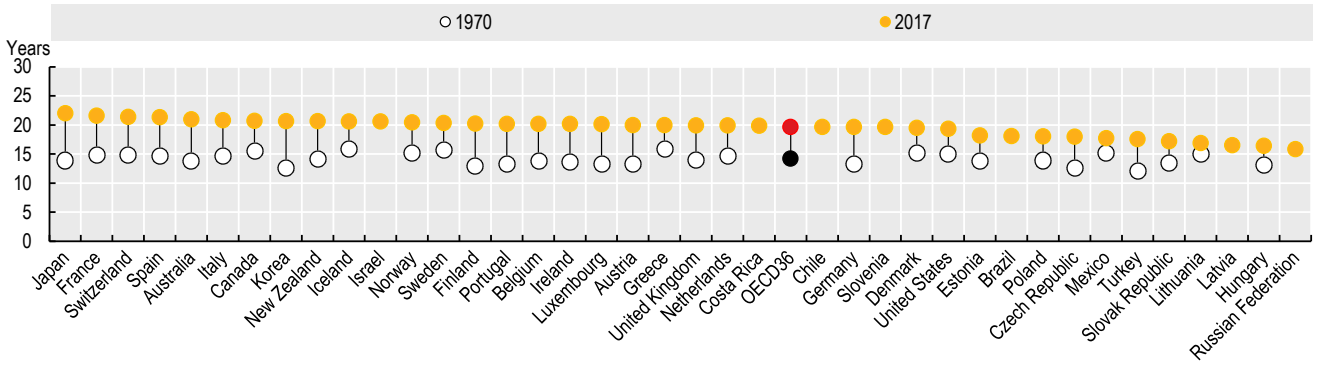
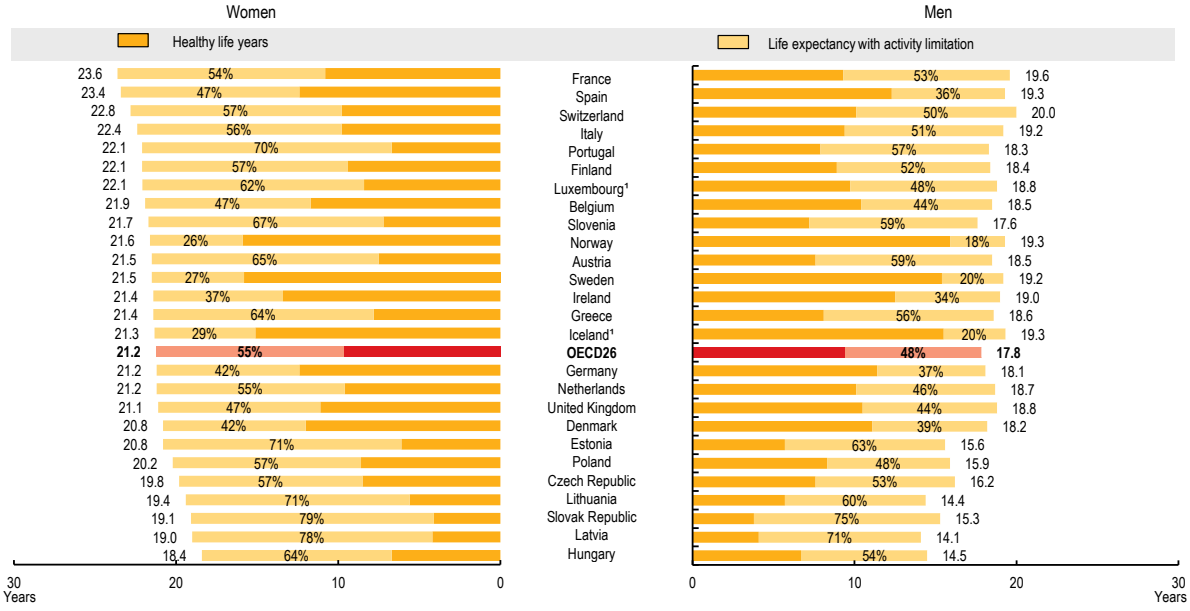
Figure 11.3. **Life expectancy at age 65, 1970 and 2017 (or nearest year)**



Source: OECD Health Statistics 2019.

StatLink https://doi.org/10.1787/888934018298

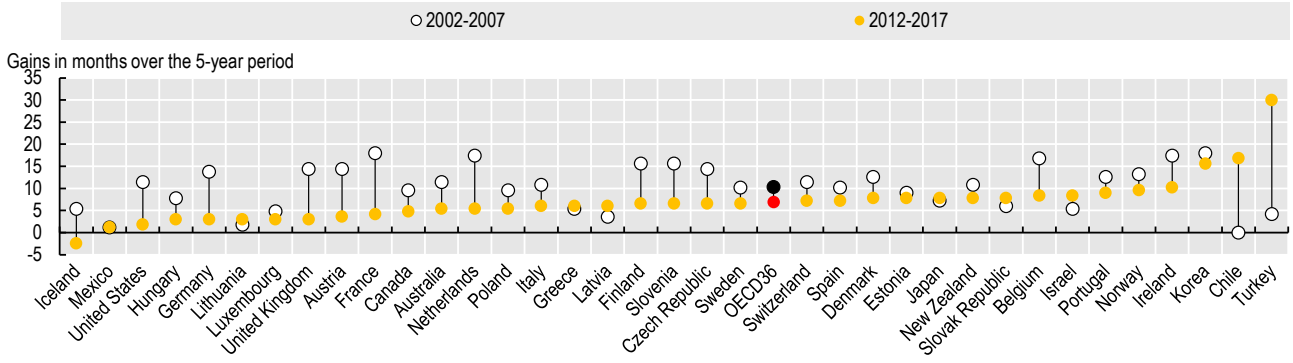
Figure 11.4. **Life expectancy and healthy life years at age 65, by sex, 2017 (or nearest year)**



Note: Data comparability is limited because of cultural factors and different formulations of question in EU-SILC.
1. Three-year average (2015-17).
Source: Eurostat Database.

StatLink https://doi.org/10.1787/888934018317

Figure 11.5. **Slowdown in life expectancy gains**



Source: OECD Health Statistics 2019.

StatLink https://doi.org/10.1787/888934018336

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 on "Life expectancy and healthy life expectancy"). In 2017, more than half the population aged 65 and over in 35 OECD countries reported being in poor or fair health (Figure 11.6). Older people in eastern European OECD countries report some of the highest rates of poor or fair health, with more than three-quarters of people aged 65 and over reporting their health to be fair, bad or very bad in Lithuania, Latvia, Estonia, Hungary, Poland, and the Slovak Republic. High rates of poor health are also reported in Portugal and Korea. Women are slightly more likely to report being in poor or fair health than men: 59% of women report their health to be fair, bad or very bad on average across OECD countries, compared with 54% of men. Less than 40% of the total population aged 65 and over reported being in poor or fair health in five European countries (Norway, Ireland, Switzerland, Sweden and the Netherlands). The lowest rate of poor or fair health for women was reported in Ireland (31%), while men reported the lowest rate of poor or fair health in Norway (also 31%).

In all OECD countries with available data, older people in the lowest income quintile are more likely to rate their health as poor or fair (two in three people) than those in the top income quintile (less than one in two) (Figure 11.7). In every country except Luxembourg, the gap between self-reported poor or fair health among people in the lowest and highest income quintiles is larger than 14 percentage points. In five countries – Iceland, Norway, Finland, Sweden and Ireland – adults aged 65 and over in the lowest income quintile are more than twice as likely to report living in poor or fair health, compared with adults in the highest income quintile.

Across 26 European OECD countries, 50% of people aged 65 and over reported having at least some limitations in their daily activities: 33% reported some limitations and a further 17% reported severe limitations (Figure 11.8). Many of the countries reporting the highest rates of self-rated poor health also reported high rates of limitations in daily activities in adults aged 65 and over. In the Slovak Republic and Latvia, three in four adults aged 65 and over reported at least some limitations to activities of daily living, while in Latvia, the Slovak Republic and Estonia one in four adults aged 65 and over reported severe limitations. In contrast, about one in five people aged 65 and over in Sweden (21%) and Norway (22%) reported having limitations in their daily activities, with fewer than one in 12 reporting severe limitations in both countries.

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 provides figures related to the proportion of people rating their health to be "fair/bad/very bad" 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, 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, very poor"). This difference in response categories may introduce an upward bias in the results from those countries that use an asymmetrical scale.

The category of limitations in daily activities is measured by the Global Activity Limitation Indicator (GALI) question, which comes from the EU-SILC survey. The question is: "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 under-estimation of disability prevalence. Again, the measure is subjective, and cultural factors may affect survey responses.

References

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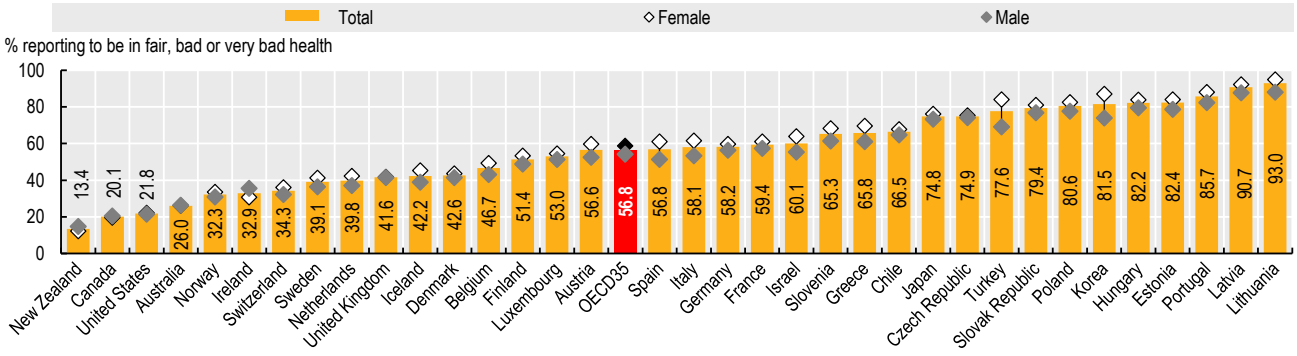
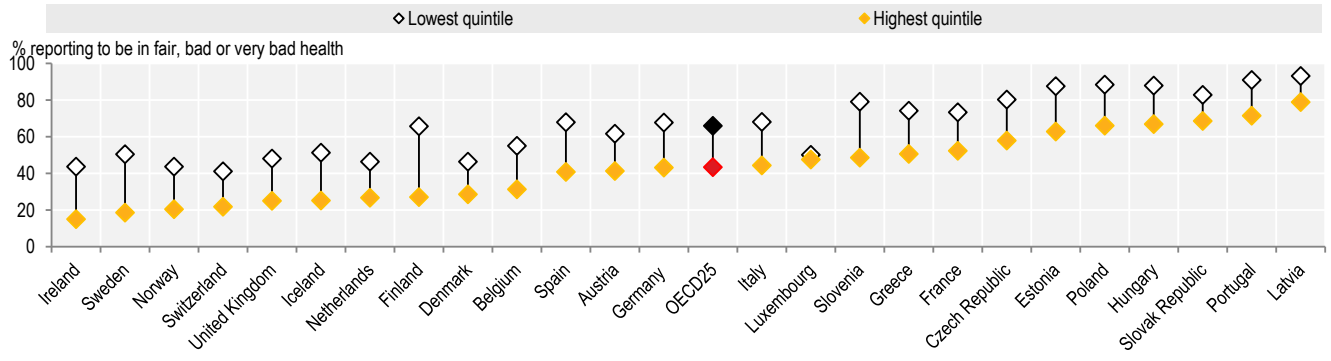
Figure 11.6. **Adults aged 65 and over rating their own health as fair, bad, or very bad, 2017 (or nearest year)**



Note: Numbers are close together for males and females for Canada, the United States, Australia, the United Kingdom and the Czech Republic. Data for New Zealand, Canada, the United States and Australia biased downwards relative to other countries and so are not directly comparable.
Source: OECD Health Statistics 2019.

StatLink https://doi.org/10.1787/888934018355

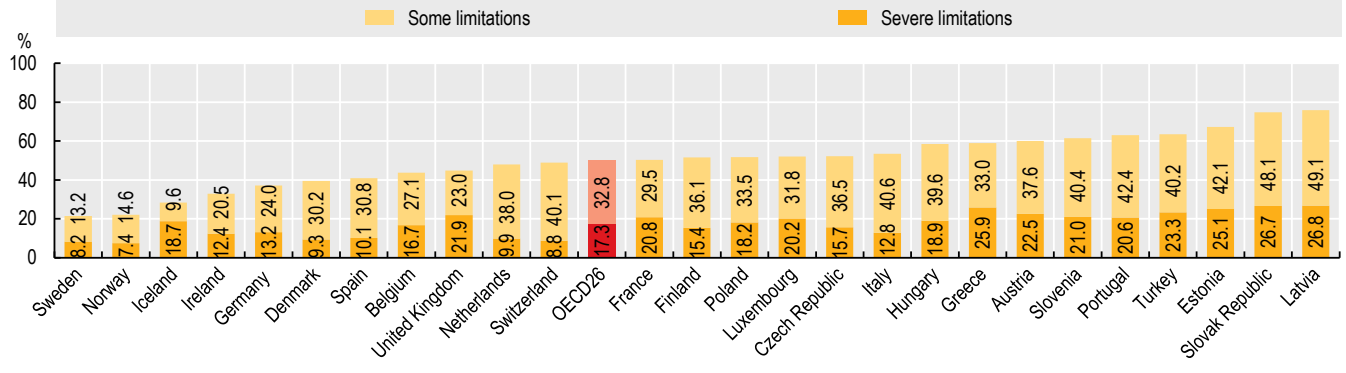
Figure 11.7. **Adults aged 65 and over rating their own health as fair, bad, or very bad, by income, European countries, 2017 (or nearest year)**



Source: Eurostat Database.

StatLink https://doi.org/10.1787/888934018374

Figure 11.8. **Limitations in daily activities in adults aged 65 and over, European countries, 2017 (or nearest year)**



Source: Eurostat Database.

StatLink https://doi.org/10.1787/888934018393

Dementia

Dementia represents one of the greatest challenges associated with population ageing. 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 still no cure or even substantially disease-modifying treatment for dementia.

Nearly 20 million people in OECD countries are estimated to have dementia in 2019. If current trends continue, this number will more than double by 2050, reaching nearly 41 million people across OECD countries. Age remains the greatest risk factor for dementia: across the 36 OECD countries, average dementia prevalence rises from 2.3% 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 in the OECD – including Japan, Italy, and Germany – also have the highest prevalence of dementia. Across OECD countries on average, 15 people per 1 000 population are estimated to have dementia (Figure 11.9). In seven countries, more than 20 people per 1 000 population are living with a dementia disorder. By 2050, all but three OECD countries (Slovak Republic, Israel and Hungary) will have a dementia prevalence of more than 20 people per 1 000 population, while in four countries (Japan, Italy, Portugal and Spain), more than one in 25 people will be living with dementia.

Even without an available treatment, however, 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 there is growing attention to reducing stigma around dementia and better 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 medications, means that they are only recommended as a last resort. However, the inappropriate use of these drugs remains widespread and reducing their overuse is a policy priority for many OECD countries. Across 16 OECD countries in 2017, 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 three and a half across most OECD countries, from 29 prescriptions per 1 000 people aged 65 and over in Sweden, to more than 99 prescriptions per 1 000 in Ireland. Moreover, age-standardised rates of antipsychotic prescribing were higher for women than for men in every OECD country. Across 16 OECD countries on average, women were 23% more likely to be prescribed an antipsychotic medication than men (Figure 11.10).

Definition and comparability

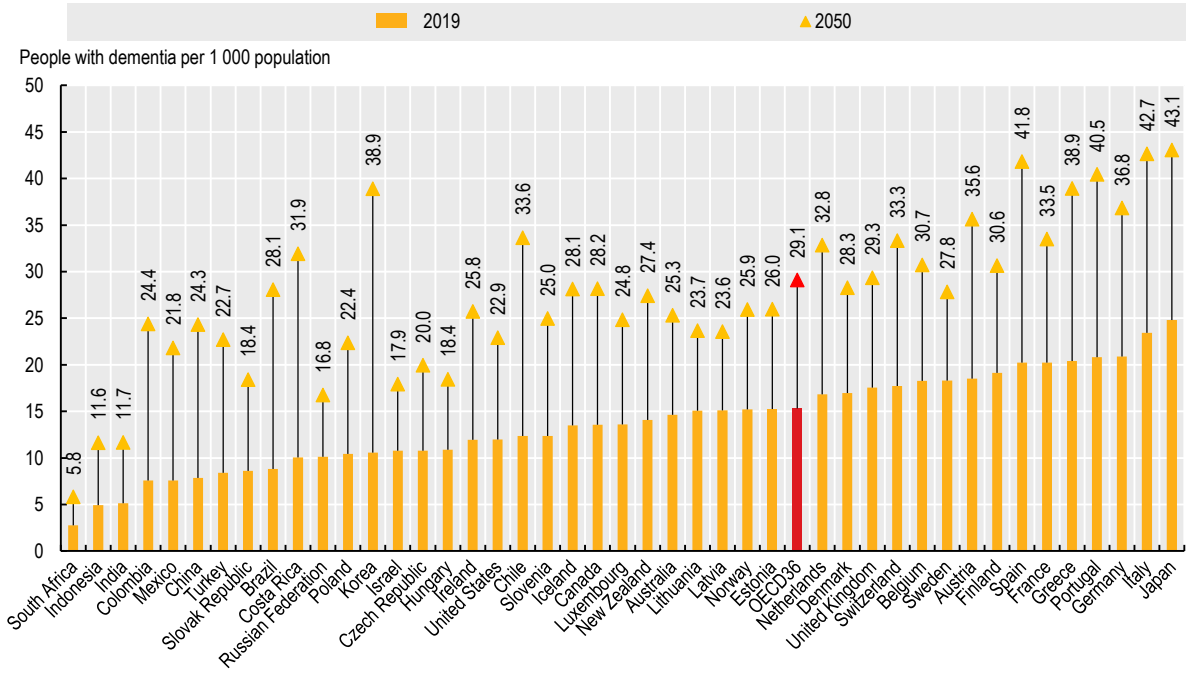
The prevalence estimates in Figure 11.9 are taken from the World Alzheimer Report 2015, which includes a systematic review of studies of dementia prevalence around the world. Prevalence by country has been estimated by applying these age-specific prevalence rates for the relevant region of the world to population estimates from the United Nations (World Population Prospects: the 2017 Revision). Differences between countries are therefore driven by the age structure of populations – i.e. 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 2017 and 2050. Although gender-specific prevalence rates were available for some regions, overall rates were used in this analysis.

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. For the Netherlands and Sweden, the denominator covers all people aged 65 and over who have received at least one prescription of any type, so may slightly overestimate the antipsychotics prescription rate in comparison with other countries. In Latvia, the numerator includes only prescriptions made in primary care. Because many antipsychotics prescriptions are made by specialists, this likely undercounts the proportion of people who received a prescription. 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.

References

[1] OECD (2018), *Care Needed: Improving the Lives of People with Dementia*, OECD Health Policy Studies, OECD Publishing, Paris, *https://dx.doi.org/10.1787/9789264085107-en*.

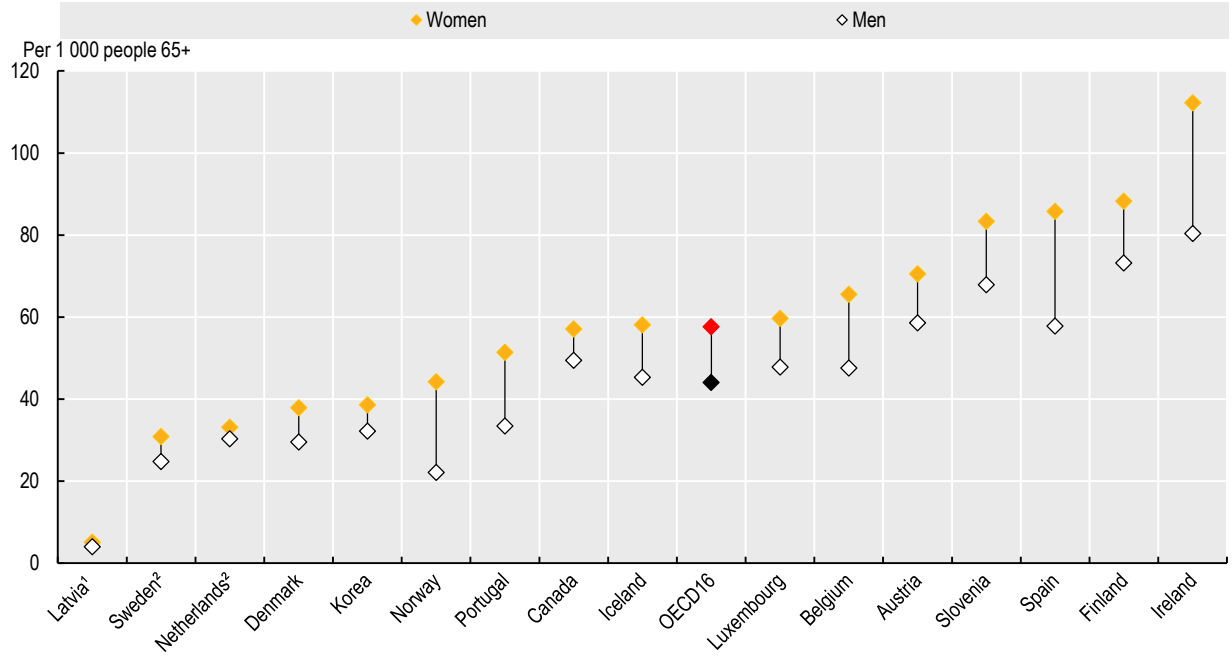
Figure 11.9. **Estimated prevalence of dementia, 2019 and 2050**



Source: OECD analysis of data from the World Alzheimer Report 2015 and the United Nations.

StatLink https://doi.org/10.1787/888934018412

Figure 11.10. **Antipsychotic prescribing rates by sex, 2017 (or nearest year)**



1. Data for Latvia includes only patients receiving a prescription in primary care. 2. Data for the Netherlands and Sweden refers to all people with at least one prescription of any kind.
Source: OECD Health Statistics 2019.

StatLink https://doi.org/10.1787/888934018431

Safe prescribing in older populations

Prescribing is a critical component of care for older people. 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 (ADEs), medication error and harm, resulting in falls, episodes of confusion and delirium. Various initiatives to improve medication safety and prevent harm involve regular medicine reviews and increased coordination between prescribing networks of doctors and pharmacists along the patient care pathway. ADEs cause 8.6 million unplanned hospitalisations in Europe every year (Mair et al., 2017[1]). Polypharmacy is one of the three key action areas of the third WHO Global Patient Safety Challenge (WHO, 2019[2]).

Across a selection of 14 countries with broader data coverage, polypharmacy rates among older people vary more than 11-fold across countries with broader data coverage, with Turkey reporting the lowest rates, and Luxembourg the highest. Among countries with only primary care data, polypharmacy rates vary almost three-fold, with Finland reporting the lowest rate and Korea the highest (Figure 11.11). These large variations can be 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 and long-term care show higher average and larger variation of polypharmacy rates than countries with only primary care data.

Opioids are often used to treat pain (see indicators "Opioids use" in Chapter 4 and "Safe primary care - prescribing" in Chapter 6) and are associated with high rates of emergency admissions caused by ADEs among older adults (Lown Institute, 2019[3]). Figure 11.12 indicates that across all countries except Canada, the overall volume of opioids consumed is highest among older people. On average across OECD countries, older people consume 1.5 times more than the average volume of those aged 50-69, and nearly five times more than the volume consumed by those aged 18-49. Luxembourg shows the highest opioids volumes among older adults, and Turkey the lowest. This variation can be explained in part by differences in clinical practice in pain management, as well as differences in regulation, legal frameworks of opioids, prescribing policies and treatment guidelines.

Despite the risk of adverse side effects such as fatigue, dizziness and confusion, benzodiazepines are often prescribed for older adults for anxiety and sleep disorders. Long-term use of benzodiazepines can lead to adverse events (falls, road accidents and overdoses), tolerance, dependence and dose escalation. As well as the period of use, there is concern about the type of benzodiazepine prescribed, with long-acting types not recommended for older adults because they take longer for the body to eliminate (OECD, 2017[4]). Inappropriate prescribing of benzodiazepines has been targeted as a priority area to improve the rational use of medicines among older populations by Choosing Wisely (2019[5]).

There was a decline in the use of benzodiazepines between 2012 and 2017 across OECD countries on average (Figure 11.13). The largest decline in chronic usage was seen in Iceland and Finland, and Korea and Norway experienced the largest decline in usage of long-acting benzodiazepines. The large variation can be explained in part by different reimbursement and prescribing policies for benzodiazepines, as well as by differences in disease prevalence and treatment guidelines.

Definition and comparability

See the "Definition and comparability" box on "Safe primary care – prescribing" in Chapter 6 for more details regarding the definition and comparability of prescription data across countries.

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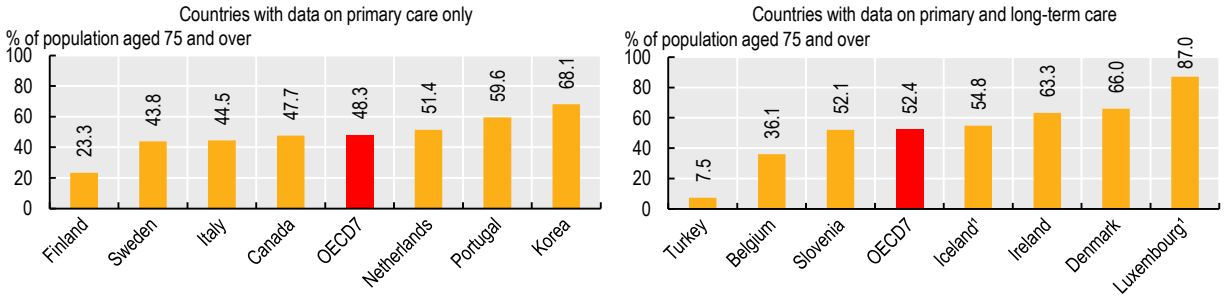
[2] WHO (2019), *The Pursuit of Responsible Use of Medicines: Sharing and Learning from Country Experiences*, *https://www.who.int/medicines/areas/rational_use/en/*.

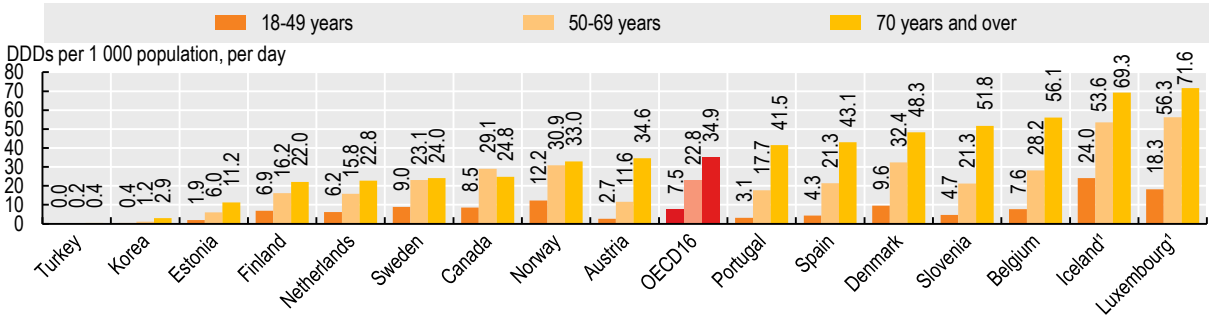
Figure 11.11. **Polypharmacy in adults aged 75 and over: primary and long-term care, 2017 (or nearest year)**



Note: Chronicity defined based on use above 90 DDDs/days in a given year, except in results for Turkey, Ireland, Denmark, Finland and Portugal which instead use number of prescriptions (four and over) in a given year. Dermatologicals for topical use are excluded.
1. Three-year average.
Source: OECD Health Statistics 2019.

StatLink https://doi.org/10.1787/888934018450

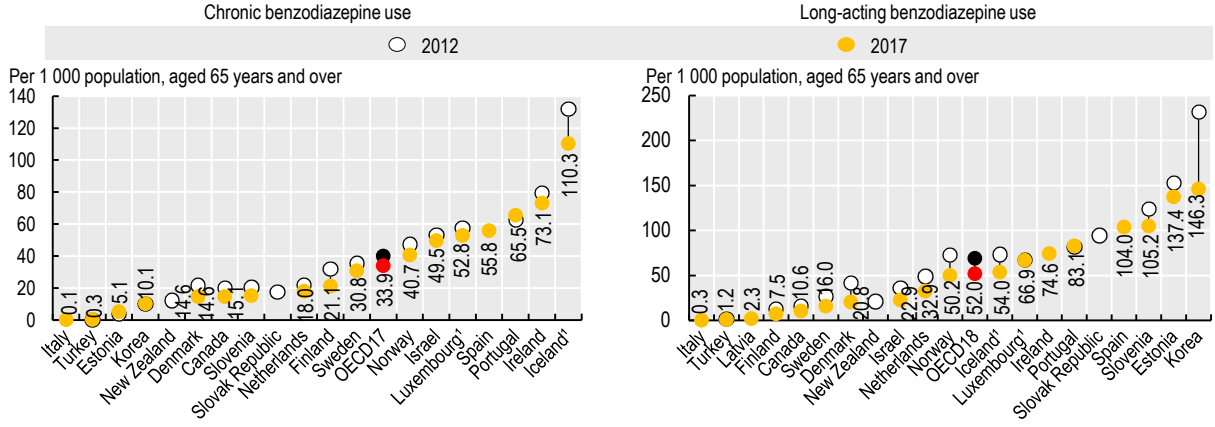
Figure 11.12. **Opioid prescriptions across age groups, 2017 (or nearest year)**



Note: Data excludes products used in the treatment of addiction.
1. Three-year average.
Source: OECD Health Statistics 2019.

StatLink https://doi.org/10.1787/888934018469

Figure 11.13. **Trends in benzodiazepine use in adults aged 65 and over, 2012-17 (or nearest years)**



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

StatLink https://doi.org/10.1787/888934018488

Safe long-term care

As populations across OECD countries continue to age, an increasing number of people will require support from long-term care (LTC) services, including nursing homes and LTC living facilities (see indicator on "Recipients of long-term care"). Providing safe care for these patients is a key challenge for OECD health systems, as residents of LTC facilities are more frail and sicker, and present a number of other risk factors for the development of patient safety events, including healthcare-associated infections (HAIs) and pressure ulcers (OECD/European Commission, 2013[1]).

HAIs can lead to significant increases in patient morbidity, mortality and cost for the health system. In the acute care sector, HAIs alone are estimated to make up 3-6% of hospital budgets (Slawomirski et al., 2017[2]). These infections are also generally considered to be preventable through standard prevention and hygiene measures. The most commonly occurring HAIs in LTC facilities include urinary tract infections, lower respiratory tract infections, skin and soft tissue infections (Suetens et al., 2018[3]).

In 2016-17, the average prevalence of HAIs among LTC facility residents in OECD countries was 3.8% (Figure 11.14). This proportion was lowest in Lithuania, Hungary, Sweden, Germany, and Luxembourg (less than 2%), and highest in Denmark, Portugal, Greece and Spain (over 5%).

The impact of HAIs is increased by the rise of antibiotic-resistant bacteria, which can lead to infections that are difficult or even impossible to treat. Figure 11.15 shows the proportions of bacteria isolated from LTC residents that are resistant to antibiotics. On average, over one quarter of isolates were resistant to antibiotics. This is nearly equivalent to levels seen in acute care hospitals, where antibiotic resistance is considered a major threat.

Pressures ulcers are another important patient safety concern in LTC facilities. A pressure ulcer is an injury to the skin or underlying tissue resulting from sustained pressure; they occur frequently in patients with limited mobility. Pressure ulcers can lead to complications including infections, and cost up to EUR 170 per patient per day in LTC settings (Demarré et al., 2015[4]).

Across OECD countries on average, the observed prevalence rate of pressure ulcers in selected LTC facilities was 5.35 (Figure 11.16). The highest rates of pressure ulcer prevalence were observed in Spain, Italy and Portugal, at nearly twice the OECD average, while Lithuania, Hungary and Luxembourg reported the lowest rates at under 3%.

Definition and comparability

Data came from point-prevalence surveys conducted between 2016 and 2017 by the European Centre for Disease Control and Prevention (ECDC) and the Centers for Disease Control and Prevention (CDC) among participating LTC facilities. Facilities in ECDC data included: general nursing homes, mixed long-term care facilities and residential homes, and excluded specialised long-term care facilities, as defined by the ECDC. Only nursing homes were included in CDC data. Point-prevalence surveys currently represent the best tool for collecting internationally comparable data, but they are subject to possible biases due to facility selection, local recording practices or observer training. Countries noted as having poor data representativeness had low participation among LTC facilities, which may lead to large variance or biased estimates.

Pressure ulcers in prevalence estimates include all grades or categories, including grade I. Accuracy of recognising pressure ulcers may vary considerably, particularly as this measurement was not the core purpose of data collection. HAI data included healthcare-associated pneumonia, urinary tract infections, surgical site infections, *Clostridium difficile* infections and primary bloodstream infections. Resistance proportion data are based on a composite antibiotic resistance indicator developed by the ECDC (Suetens et al., 2018).

Both HAI and pressure ulcer prevalence data are unadjusted. Many factors – including increased patient age, limited mobility and use of invasive medical devices – may increase the risk of developing either an HAI or a pressure ulcer and may influence the variability of rates between countries. One of these factors – the proportion of residents with limited mobility – is noted by country in the relevant figures.

References

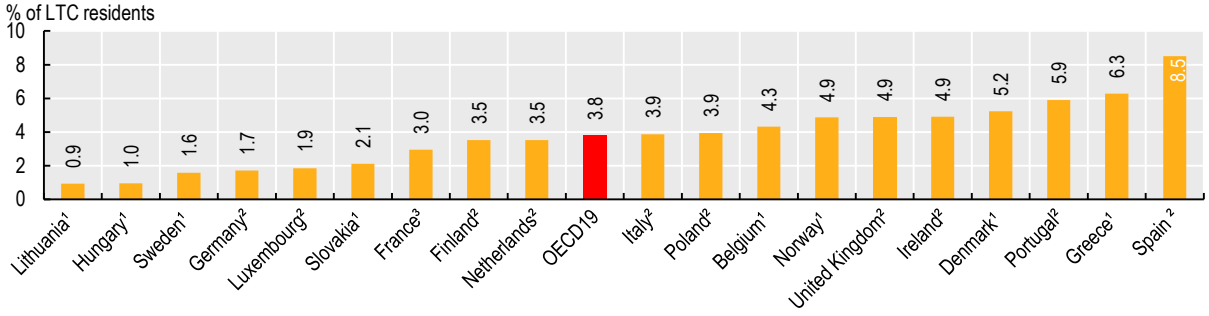
[4] Demarré, L., et al. (2015). "The cost of prevention and treatment of pressure ulcers: a systematic review", *International journal of nursing studies*, Vol. 52, No. 11, pp. 1754-1774.

[1] OECD/European Commission (2013), *A Good Life in Old Age? Monitoring and Improving Quality in Long-term Care*, OECD Health Policy Studies, OECD Publishing, Paris, *https://doi.org/10.1787/9789264194564-en*.

[3] Suetens, C. et al. (2018), "Prevalence of healthcare-associated infections, estimated incidence and composite antimicrobial resistance index in acute care hospitals and long-term care facilities: results from two European point prevalence surveys, 2016 to 2017", *Euro Surveill.*, Vol. 23, No. 46, *https://doi.org/10.2807/1560-7917.ES.2018.23.46.1800516*.

[2] Slawomirski, L., A. Auraaen and N. Klazinga (2017), "The economics of patient safety: Strengthening a value-based approach to reducing patient harm at national level", *OECD Health Working Papers*, No. 96, OECD Publishing, Paris, *https://doi.org/10.1787/5a9858cd-en*.

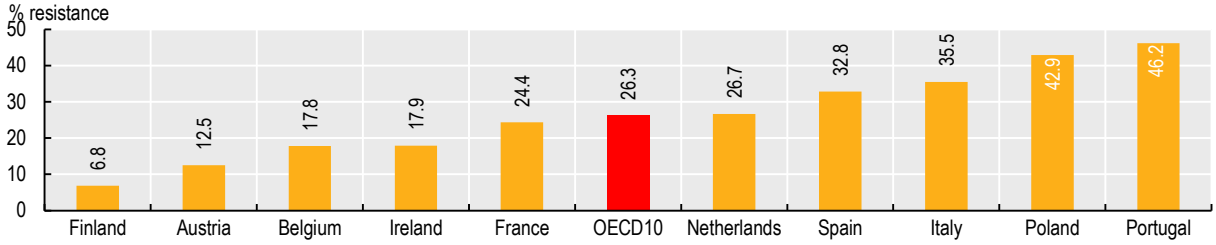
Figure 11.14. **Percentage of long-term care facility residents with at least one healthcare-associated infection, 2016-17**



1. Limited country representativeness 2. Under 40% of residents sampled were wheelchair-bound or bedridden. 3. Between 40% and 50% of residents sampled were wheelchair-bound or bedridden.
Source: ECDC.

StatLink https://doi.org/10.1787/888934018507

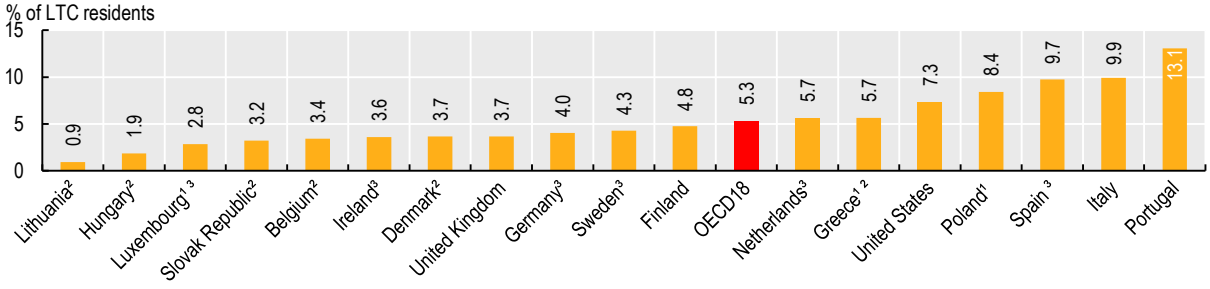
Figure 11.15. **Proportion of antimicrobial-resistant bacterial isolates from healthcare-associated infections in long-term care, 2016-17**



Note: Based on composite antibiotic resistance indicator developed by ECDC. Only countries with over 15 bacterial isolates were included.
Source: ECDC.

StatLink https://doi.org/10.1787/888934018526

Figure 11.16. **Percentage of long-term care facility residents with at least one pressure ulcer, 2016-17**



1. Under 45% of residents sampled were wheelchair-bound or bedridden. 2. Over 45% of residents sampled were wheelchair-bound or bedridden. 3. No data available on the proportion of wheelchair-bound or bedridden residents.
Source: ECDC, CDC.

StatLink https://doi.org/10.1787/888934018545

Recipients of long-term care

Across OECD countries, an average of 10.8% of people aged 65 and over received long-term care (LTC) in 2017. This represents a 5% increase compared with 2007 (Figure 11.17). More than one in five people aged 65 and over received LTC services in Switzerland (22%) and Israel (20%), compared with less than 5% in the Slovak Republic (4%), Canada (4%), Ireland (3%), Portugal (2%), and Poland (1%).

The majority of LTC recipients are older adults (Figure 11.18). 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 2017, just 21% of LTC recipients on average across OECD countries were younger than 65, while a further 27% were between 65 and 79. Adults aged 80 and over represent the majority of LTC recipients in OECD countries. On average in OECD countries, 51% of LTC recipients were aged 80 and above in 2017. In Japan, two-thirds of LTC recipients were 80 and over, while people aged 0-64 represented just 3% 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 utilisation of formal services (see indicator on "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. Between 2007 and 2017, the proportion of LTC recipients who received care at home rose by 6%, from 64% to 68% (Figure 11.19). Increases have been particularly large in Portugal, Australia, Sweden, Germany and the United States. In Germany, part of the increase was due to policy reforms expanding the definition of long-term care and therefore increasing the number of benefit 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 a significant increase in the use of institutional care, but an even larger decrease in the number of "curators" appointed by local government to care for people at home.

Definition and comparability

LTC recipients are defined as people receiving long-term care by 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 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, data on recipients of home care refer only to those who have a "curator" appointed by local government. Other social services, without a personal care component, are not included in the data. It is possible that some of the decrease in recipients reflects the replacement of curators with these other services.

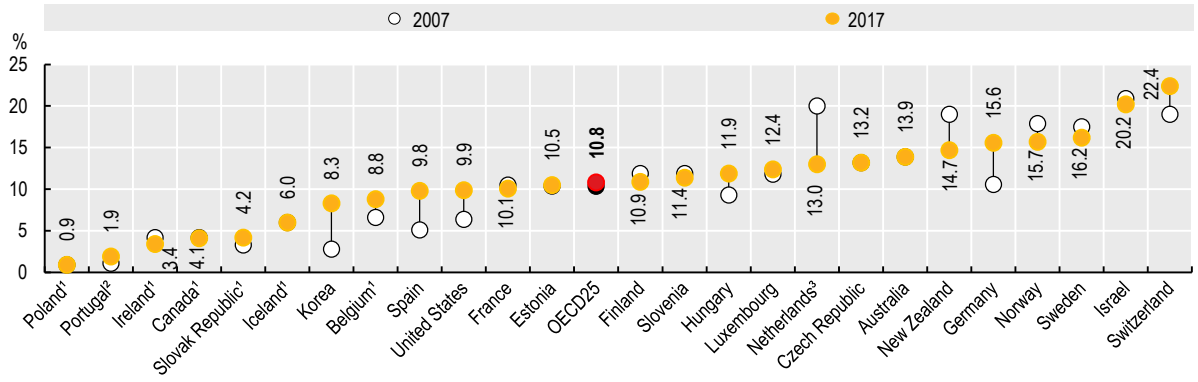
Data on LTC services are difficult to collect in many countries and there are some known limitations of the figures. Data for some countries refers only to people receiving publicly funded care, while other countries include people who are paying for their own care.

References

[1] Colombo, F. et al. (2011), *Help Wanted? Providing and Paying for Long-Term Care*, OECD Health Policy Studies, OECD Publishing, Paris, *http://dx.doi.org/10.1787/9789264097759-en*.

[2] Muir, T. (2017), "Measuring social protection for long-term care", *OECD Health Working Papers*, No. 93, OECD Publishing, Paris, *https://dx.doi.org/10.1787/a411500a-en*.

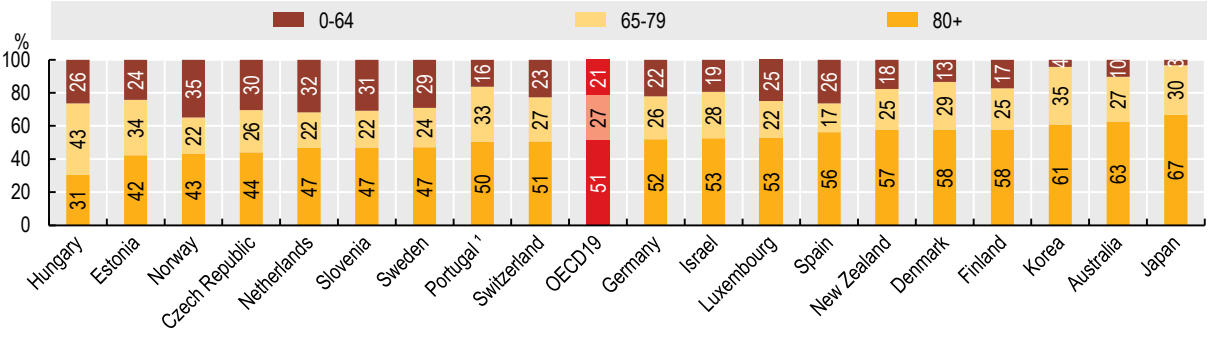
Figure 11.17. **Share of adults aged 65 and over receiving long-term care, 2007 and 2017 (or nearest year)**



1. Include only recipients of LTC in institutions. 2. Refers to people receiving care through the National Network of Integrated Continuing Care. 3. Refers to social-insurance funded LTC only: the fall in recent years largely reflects the transfer of many LTC services to municipalities in 2015.
Source: OECD Health Statistics 2019.

StatLink https://doi.org/10.1787/888934018564

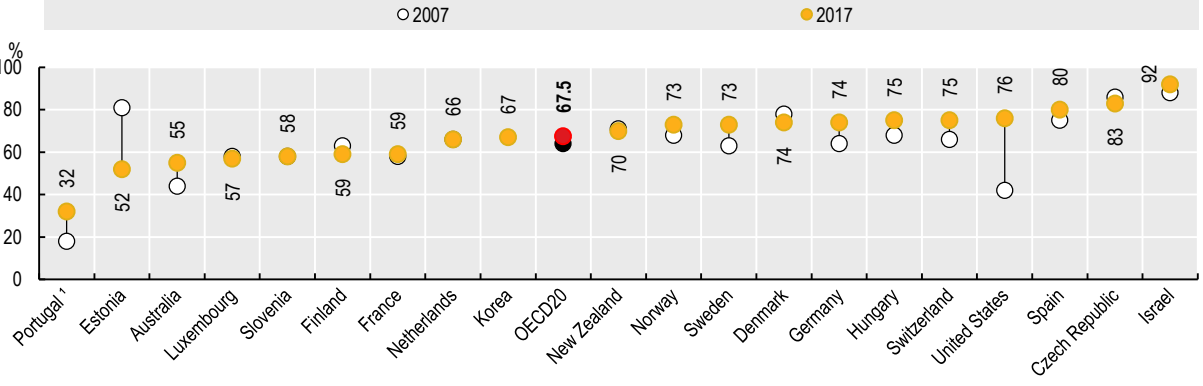
Figure 11.18. **Long-term care recipients by age, 2017 (or nearest year)**



1. Data refer to people receiving care through the National Network of Integrated Continuing Care.
Source: OECD Health Statistics 2019.

StatLink https://doi.org/10.1787/888934018583

Figure 11.19. **Long-term care recipients aged 65 and over receiving care at home, 2007 and 2017 (or nearest year)**



1. Data refer to people receiving care through the National Network of Integrated Continuing Care.
Source: OECD Health Statistics 2019.

StatLink https://doi.org/10.1787/888934018602

Informal carers

Family and friends are the most important source of care for people with long-term care (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 is available, around 13% of people aged 50 and over report providing informal care at least weekly. The share of people aged 50 and over providing informal care is close to 20% in the Czech Republic, Austria, Belgium, the United Kingdom, France, and Germany, and less than 10% in Portugal, Sweden, Poland, the United States, Ireland, and Greece (Figure 11.20). There is also variation in the intensity of the care provided. The lowest rates of daily care provision are found in Sweden, Greece, Switzerland, Denmark and the Netherlands – in most of which the formal LTC sector is well developed and public coverage is comprehensive.

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. These include paid care leave (e.g. Belgium and France), flexible work schedules (e.g. Australia and the United States), respite care (e.g. Austria, Denmark, France, and Germany) and counselling/training services (e.g. Sweden). Moreover, a number of OECD countries provide cash benefits to family caregivers or cash-for-care allowances for recipients which can be used to pay informal caregivers, or periods of paid leave for informal carers (OECD, 2018[1]). In France, evidence suggests that even short-term respite care solutions for older people with Alzheimer's disease may significantly reduce informal caregivers' psychological burden (Rapp, Apouey and Senik, 2018[2]).

On average across OECD countries, 61% of those providing daily informal care are women (Figure 11.21). Greece and Portugal have the greatest gender imbalance, with over 70% of informal carers being women. Around two-thirds of carers are looking after a parent or a spouse, but patterns of caring vary for different age groups. Younger carers (aged between 50 and 65) are much more likely to be caring for a parent (Figure 11.22). They are more likely to be women and may not be providing care every day. Carers aged over 65 are 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 relate only to the population aged 50 and over, and are based on national surveys for Australia (Survey of Disability, Ageing and Carers, SDAC), 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 (Survey of Health, Ageing and Retirement in Europe, SHARE). Data for Ireland were taken from its 2016 census.

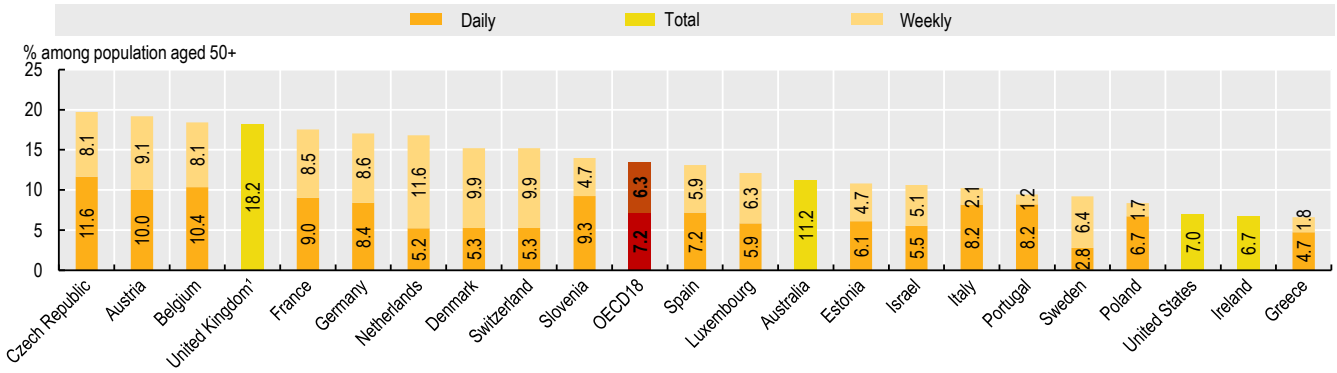
Questions about the intensity of care vary between surveys. In SHARE, carers are asked about how often they provided care in the last year; this indicator includes people who provided care at least weekly. It is important to highlight the change of methodology in SHARE wave 7, in which over four fifths of the respondents answered the SHARELIFE part of the questionnaire only instead of the panel interview. In ELSA, people are asked if they have provided care in the last week, which may be broadly comparable with "at least weekly". Questions in HRS and SDAC are less comparable with SHARE. Carers in HRS are included if they provided more than 200 hours of care in the last year. In SDAC, 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 United States 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.

References

[1] OECD (2018), *Care Needed: Improving the Lives of People with Dementia*, OECD Health Policy Studies, OECD Publishing, Paris, *https://dx.doi.org/10.1787/9789264085107-en*.

[2] Rapp, T., B. Apouey and C. Senik (2018), "The impact of institution use on the wellbeing of Alzheimer's disease patients and their caregivers", *Social Science and Medicine*, *http://dx.doi.org/10.1016/j.socscimed.2018.04.014*.

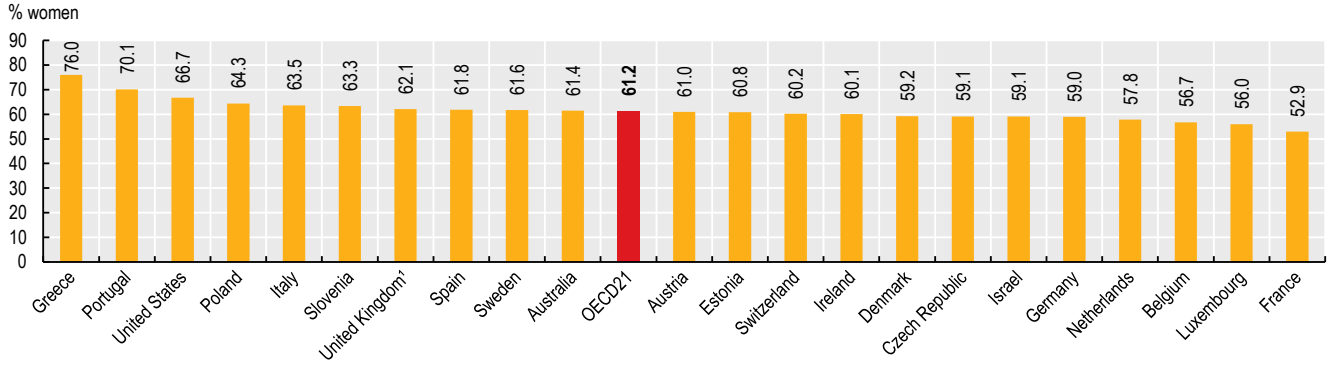
Figure 11.20. **Share of informal carers among population aged 50 and over, 2017 (or nearest year)**



1. The United Kingdom refers to England.
Note: The definition of informal carers differs between surveys (see the "Definition and comparability" box). The United Kingdom and the United States include informal weekly carers. Australia and Ireland include all informal carers together.
Source: Survey of Health, Ageing and Retirement in Europe, wave 7 (2017); Survey of Disability, Ageing and Carers for Australia (2015); English Longitudinal Study of Ageing, wave 8 (2017); Health and Retirement Survey for the United States, wave 13 (2016); Census 2016 for Ireland.

StatLink https://doi.org/10.1787/888934018621

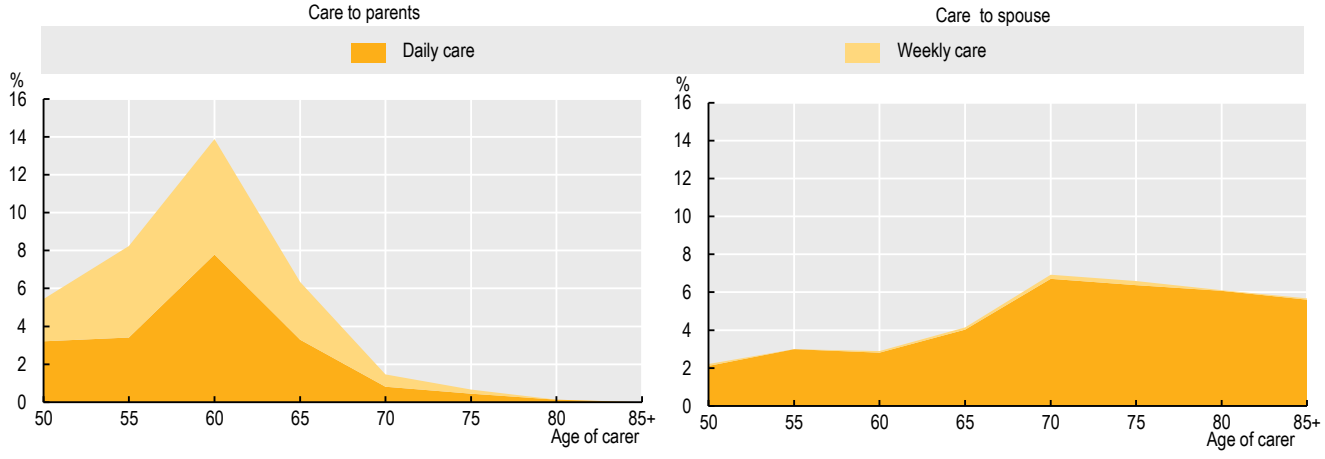
Figure 11.21. **Share of women among informal daily carers aged 50 and over, 2017 (or nearest year)**



1. The United Kingdom refers to England.
Note: The definition of informal carers differs between surveys (see the "Definition and comparability" box).
Source: Survey of Health, Ageing and Retirement in Europe, wave 7 (2017); Survey of Disability, Ageing and Carers for Australia (2015); English Longitudinal Study of Ageing, wave 8 (2017); Health and Retirement Survey for the United States, wave 13 (2016); Census 2016 for Ireland.

StatLink https://doi.org/10.1787/888934018640

Figure 11.22. **Share of informal carers in the European population aged 50 and over, by recipients of care and age, daily and weekly, 2017**



Note: Data refer to the population aged 50 and over for countries included in SHARE wave 7.
Source: Wave 7 of the Survey of Health, Ageing and Retirement in Europe (2017).

StatLink https://doi.org/10.1787/888934018659

Long-term care workers

Long-term care (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 indicators on "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 28 OECD countries, ranging from 13 in Norway to less than one in Greece, Poland, and Portugal (Figure 11.25).

In more than half of OECD countries, population ageing has outpaced the growth of 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 Denmark, the Netherlands, Norway, and Sweden). Nine countries experienced an overall increase in their LTC supply between 2011 and 2016. As populations continue to age, demand for LTC workers is likely to rise. Responding to increasing demand will require policies to improve recruitment; improve retention; and increase productivity.

Less than one-quarter of LTC workers hold tertiary education across OECD countries (see Figure 11.23). 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. 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, 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.

Working conditions in this sector tend to be relatively poor. This tends to affect women disproportionately as, on average, women hold about 90% of the jobs in the LTC sector. For instance, 45.5% of LTC workers work part-time in OECD countries (Figure 11.24.) In northern and central European countries, more than half of 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 explain such high rates. In addition, half of LTC workers experience shift work and almost one quarter are on temporary contracts. Further, while LTC tends to be demanding, both physically and mentally, pay is often low.

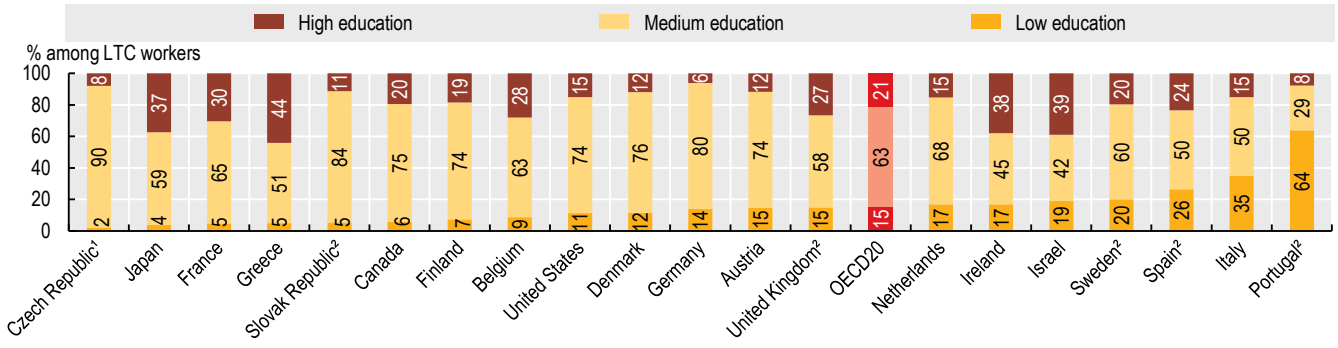
Definition and comparability

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 activities of daily living (ADL) and other personal support. Personal care workers include different categories that 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. LTC workers 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 head counts, not full-time equivalents. Data refer only to workers employed in the public sector for some countries, but include workers in the private and not-for-profit sectors for others. Data from the Czech Republic and Japan are based on surveys of establishments, meaning that people who work in more than one establishment are double-counted.

References

[1] OECD (2018), *Care Needed: Improving the Lives of People with Dementia*, OECD Health Policy Studies, OECD Publishing, Paris, *https://dx.doi.org/10.1787/9789264085107-en*.

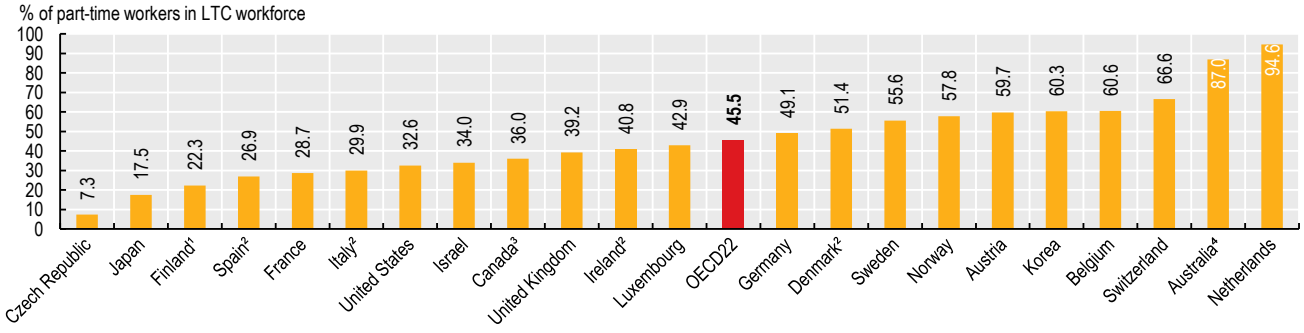
Figure 11.23. **Long-term care workers by education level, 2016**



Note: EU-Labour Force Survey (LFS) data based on ISCO 4 digit and NACE 2 digit. 1. Interpret with caution as sample sizes small. 2. Based on ISCO 3 digit and NACE 2 digit.
Source: EU-LFS; ASEC-CPS for the United States; Census 2016 for Canada; LFS for Israel; Survey on Long-term Care Workers FY for Japan.

StatLink https://doi.org/10.1787/888934018678

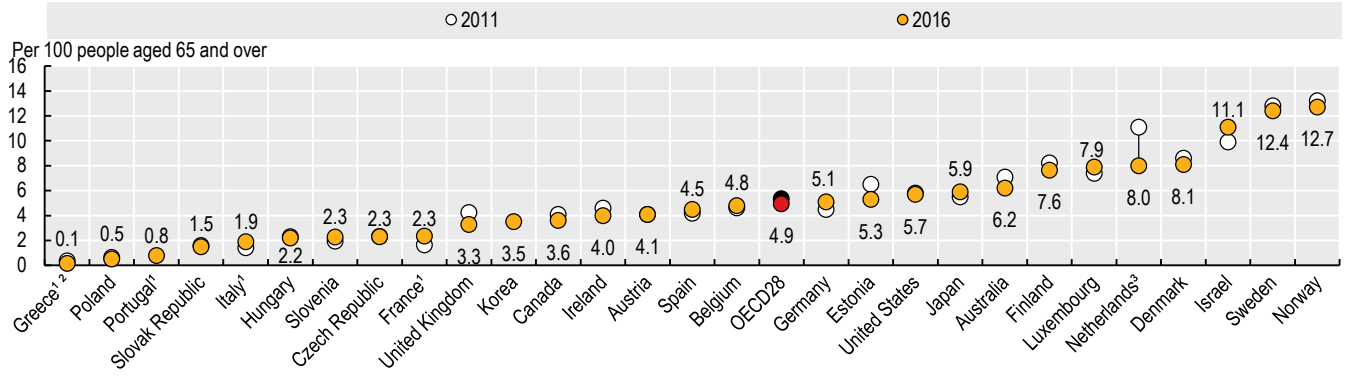
Figure 11.24. **Share of long-term care workers who work part-time, 2016**



Note: EU-Labour Force Survey (LFS) data based on ISCO 4 digit and NACE 2 digit. 1. Interpret with caution as sample sizes small. 2. Based on ISCO 3 digit and NACE 2 digit. 3. Covers only those working mostly full-time or part-time. 4. Covers only those with a permanent position.
Source: EU-LFS; ASEC-CPS for the United States; Census 2016 for Canada; LFS for Israel; Survey on Long-term Care Workers FY for Japan; National Health Insurance System for Korea; OECD estimate based on national source for Australia.

StatLink https://doi.org/10.1787/888934018697

Figure 11.25. **Long-term care workers per 100 people aged 65 and over, 2011 and 2016 (or nearest year)**



Note: EU-Labour Force Survey (LFS) data based on ISCO 4 digit and NACE 2 digit.1. Based on ISCO 3 digit and NACE 2 digit. 2. Interpret with caution as sample sizes small. 3. The decrease in the Netherlands partly due to a methodological break in 2012, as well as reforms.
Source: EU-LFS and OECD Health Statistics 2018, with the exception of the Quarterly LFS for the United Kingdom and the Current Population Survey (ASEC-CPS) for the United States; Eurostat Database for population demographics.

StatLink https://doi.org/10.1787/888934018716

Long-term beds in facilities and hospitals

While countries have increasingly taken steps to ensure that people in need of long-term care (LTC) services who wish to live at home 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 47 beds per 1 000 people aged 65 and over in 2017 (Figure 11.26). The vast majority of beds – 44 per 1 000 people aged 65 and over – were located in LTC facilities, with just three LTC beds per 1 000 people 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 (82.8 beds), had more than 18 times more beds than Greece (4.5 beds), the country with the lowest number in 2017. Five countries – Italy, Latvia, Poland, Turkey and Greece – had fewer than 20 beds per 1 000 adults aged 65 and over. Four – Luxembourg, the Netherlands, Belgium and Sweden – had more than 70 beds per 1 000 adults aged 65 and over.

Between 2007 and 2017, OECD countries reduced the number of LTC beds in facilities by an average of 3.4 beds per 1 000 people aged 65 and over (Figure 11.27). However, the change in the number of beds varied significantly between OECD countries. Over the ten-year period, Sweden, Iceland and Finland 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 increased the number of LTC beds by 36 over the same period. These substantial changes have been largely driven by changes in policies over the period. Reductions in the number of facility-based LTC beds in Sweden have been driven by a move towards community-based LTC service provision, while in Korea, the massive increase in capacity followed the introduction of a public LTC insurance scheme in 2008.

Providing LTC in facilities can be more efficient than community care for people with intensive needs, owing to economies of scale and the fact that care workers do not need to travel to each person separately. However, it often costs public budgets more, since informal carers make less of a contribution and LTC systems often pick up board, lodging and care costs. Facility-based LTC may also be against the preferences of LTC recipients, many of whom wish to remain at home for as long as possible. Most countries have taken steps in recent years to support this preference and promote community care. However, depending on individual circumstances, a move to LTC facilities may be the most appropriate option – for example for people living alone and requiring round-the-clock care and supervision (Wiener et al., 2009[1]) or people living in remote areas with limited home care support. It is therefore important that countries retain an appropriate level of residential LTC capacity, and that care facilities develop and apply models of care that promote dignity and autonomy. This includes ensuring that staff working in LTC facilities are appropriately trained and receive the support they need to discourage high turnover and facilitate the recruitment and retention of high-quality care workers (see indicator on "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.

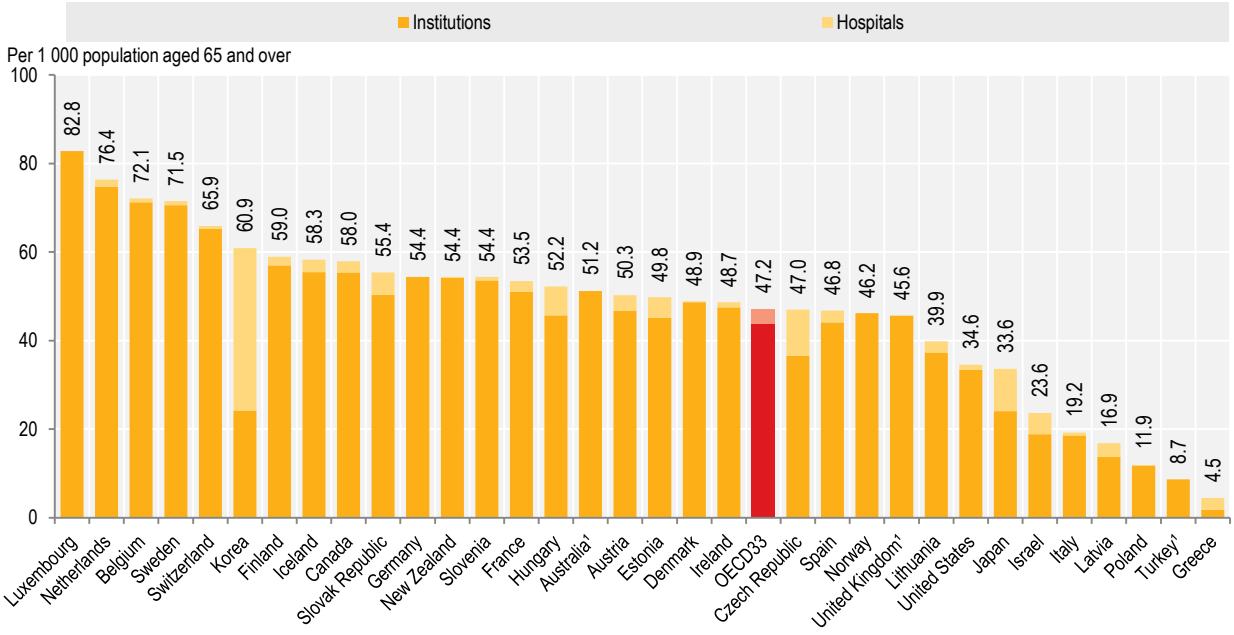
References

[2] Colombo, F. et al. (2011), *Help Wanted? Providing and Paying for Long-Term Care*, OECD Health Policy Studies, OECD Publishing, Paris, *http://dx.doi.org/10.1787/9789264097759-en*.

[3] Muir, T. (2017), "Measuring social protection for long-term care", *OECD Health Working Papers*, No. 93, OECD Publishing, Paris, *https://dx.doi.org/10.1787/a411500a-en*.

[1] Wiener, J. et al. (2009), "Why Are Nursing Home Utilization Rates Declining", *Real Choice Systems Change Grant Program*, US Department of Health and Human Services, Centers for Medicare and Medicaid Services.

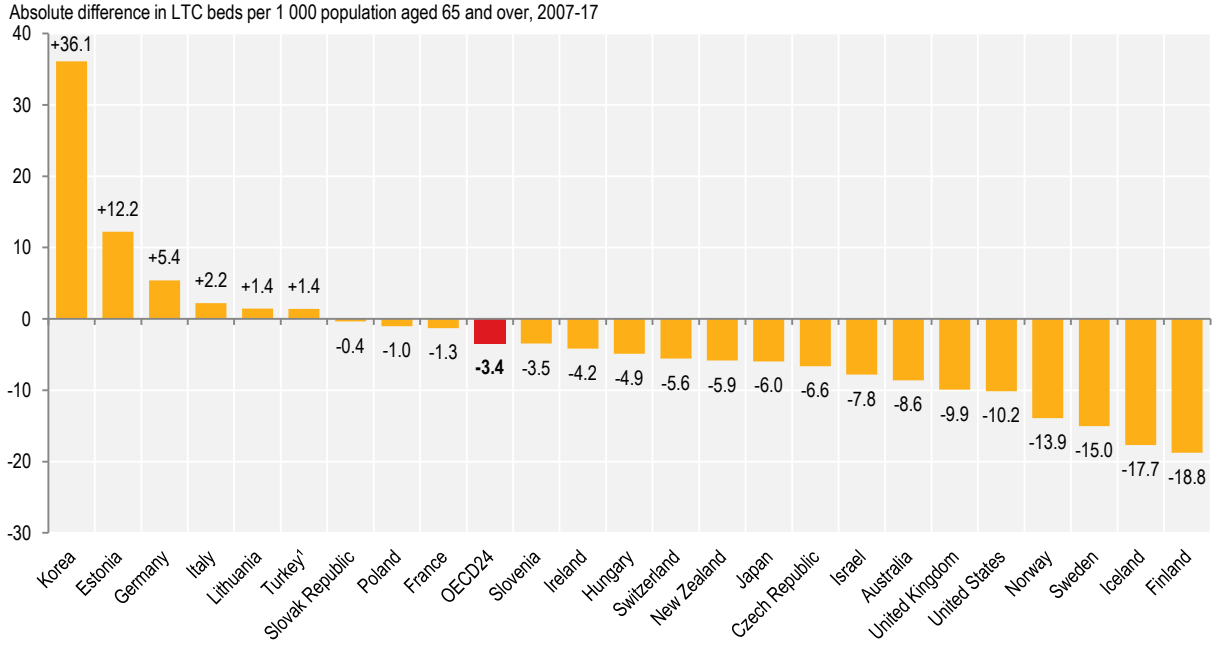
Figure 11.26. **Long-term care beds in facilities and hospitals, 2017 (or nearest year)**



1. The numbers of LTC beds in hospitals are not available for Australia, Turkey and the United Kingdom.
Source: OECD Health Statistics 2019.

StatLink https://doi.org/10.1787/888934018735

Figure 11.27. **Trends in long-term care beds in facilities and hospitals, 2007-17 (or nearest year)**



1. 2007 data refer to 2011.
Source: OECD Health Statistics 2019.

StatLink https://doi.org/10.1787/888934018754

Long-term care spending and unit costs

Compared to other areas of health care, spending on long-term care (LTC) has seen the highest growth in recent years (see indicator on "Health expenditure by function" in Chapter 7). Population ageing leads to more people needing ongoing health and social care; rising incomes increase expectations on 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.

A significant share of the spending on LTC services is covered by government or compulsory insurance schemes. Total government/compulsory spending on LTC (including both the health and social care components) accounted for 1.7% of GDP on average across OECD countries in 2017 (Figure 11.28). At 3.7% of GDP, the highest spender was the Netherlands, followed by Norway (3.3%) and Sweden (3.2%). In these countries, public expenditure on LTC was around double the OECD average. At the other end of the scale, Hungary, Estonia, Poland, and Latvia all allocated less than 0.5% of their GDP to the delivery of LTC services. This variation partly reflects 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. Generally, the health component of LTC represents the vast majority of all LTC expenditure, but some issues remain around properly distinguishing between health and social LTC in some countries.

The way LTC is organised in countries affects the composition of LTC (health) spending and can also have an impact on overall LTC spending. Across OECD countries, around two-thirds of government and compulsory spending on LTC (health) was for inpatient LTC in 2017. These services are mainly provided in residential LTC facilities (Figure 11.29). Yet in Poland, Finland, Denmark, Lithuania, Austria and Germany, spending on home-based LTC accounted for more than 50% of all LTC spending. Spending for home-based LTC can be on services provided by either professional LTC workers or informal workers, when a care allowance exists that remunerates the caregiver for the LTC services provided.

The important role public schemes play in the financing of LTC can be explained by the substantial costs for care that older people with LTC needs face. These costs vary widely between countries but are always high relative to median incomes among elderly people. For institutional care, for example, the costs for a person with severe LTC needs represent between just under one the median disposable income for individuals of retirement age and more than four times that income (Figure 11.30), depending on the country or region. Compared to the average income, costs are higher in Finland, Ireland and the Netherlands and lower in Hungary, Slovenia and Croatia. Only in Slovenia and Croatia would an older person with median income be able to afford the costs of institutional care from their income alone. All OECD countries have some form of social protection against these high financial risks, and out-of-pocket costs that older people ultimately face tend to be lower in countries where public expenditure on LTC is higher, such as in the Netherlands and Finland (Muir, 2017[1]).

Definition and comparability

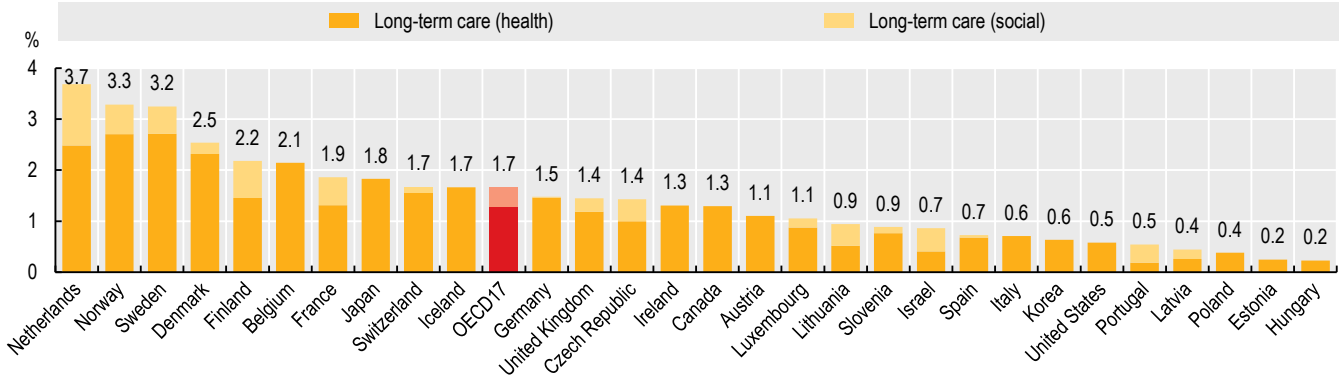
LTC spending comprises both health and social services to LTC dependent people who need care on an ongoing basis. Based on the System of Health Accounts, the health component of LTC spending relates to nursing care and personal care services (i.e. help with activities of daily living). It also covers palliative care and care provided in LTC institutions (including costs for room and board) or at home. LTC social expenditure primarily covers help with instrumental activities of daily living. 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 for some LTC activities in some countries. Currently, LTC expenditure funded by governments and compulsory insurance schemes is more suitable for international comparison as there is more variation in the comprehensiveness of reporting of privately funded LTC expenditure across OECD countries. Finally, some countries (e.g. Israel and the United States) can only report spending data for institutional care, and hence underestimate the total amount of spending on LTC services by government and compulsory insurance schemes.

Long-term care institutions refer to nursing and residential care facilities that provide accommodation and long-term care 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[1]).

References

[1] Muir, T. (2017), "Measuring social protection for long-term care", *OECD Health Working Papers*, No. 93, OECD Publishing, Paris, *https://dx.doi.org/10.1787/a411500a-en*.

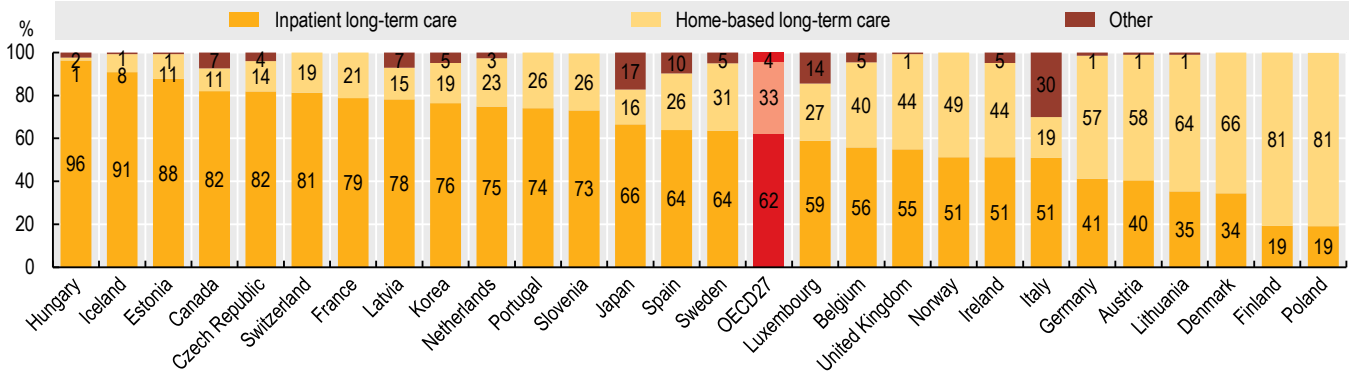
Figure 11.28. **Long-term care expenditure (health and social components) by government and compulsory insurance schemes, as a share of GDP, 2017 (or nearest year)**



Note: The OECD average only includes 17 countries that report health and social LTC.
Source: OECD Health Statistics 2019.

StatLink https://doi.org/10.1787/888934018773

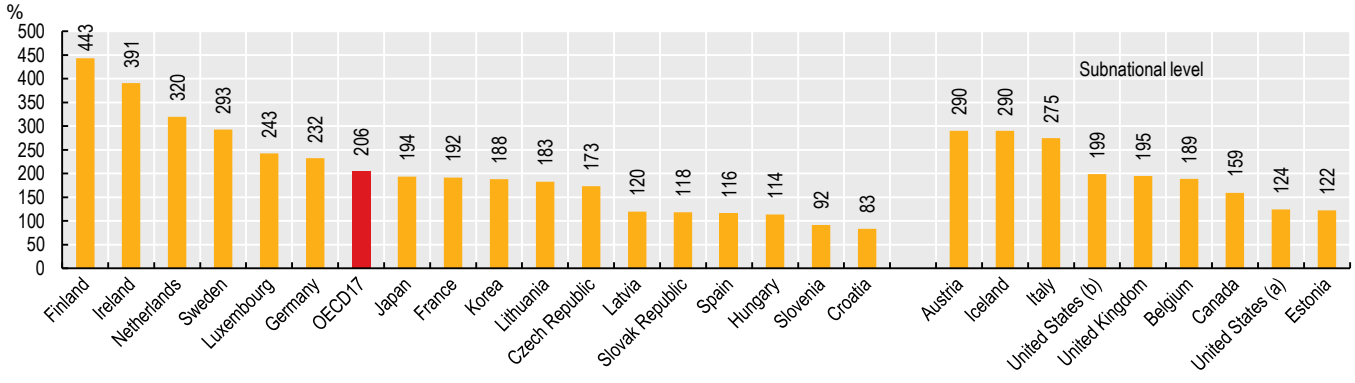
Figure 11.29. **Government and compulsory insurance spending on LTC (health) by mode of provision, 2017 (or nearest year)**



Note: "Other" includes LTC in day care and outpatient settings.
Source: OECD Health Statistics 2019.

StatLink https://doi.org/10.1787/888934018792

Figure 11.30. **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, 2018 (or nearest year)**



Note: Belgium refers to Flanders, Iceland refers to Reykjavik, Canada refers to Ontario, Estonia refers to Tallinn, Austria refers to Vienna, the United States refers to (a) California and (b) Illinois, Italy refers to South Tyrol, and the United Kingdom refers to England.
Source: OECD Long-Term Care Social Protection questionnaire (2018) and OECD Income Distribution Database (2018).

StatLink https://doi.org/10.1787/888934018811

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