European Commission



State of Health in the EU

Luxembourg

Country Health Profile 2019

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European Observatory on Health Systems and Policies
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The Country Health Profile series

The *State of Health in the EU*'s Country Health Profiles provide a concise and policy-relevant overview of health and health systems in the EU/European Economic Area. They emphasise the particular characteristics and challenges in each country against a backdrop of cross-country comparisons. The aim is to support policymakers and influencers with a means for mutual learning and voluntary exchange.

The profiles are the joint work of the OECD and the European Observatory on Health Systems and Policies, in cooperation with the European Commission. The team is grateful for the valuable comments and suggestions provided by the Health Systems and Policy Monitor network, the OECD Health Committee and the EU Expert Group on Health Information.

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Data and information sources

The data and information in the Country Health Profiles are based mainly on national official statistics provided to Eurostat and the OECD, which were validated to ensure the highest standards of data comparability. The sources and methods underlying these data are available in the Eurostat Database and the OECD health database. Some additional data also come from the Institute for Health Metrics and Evaluation (IHME), the European Centre for Disease Prevention and Control (ECDC), the Health Behaviour in School-Aged Children (HBSC) surveys and the World Health Organization (WHO), as well as other national sources.

The calculated EU averages are weighted averages of the 28 Member States unless otherwise noted. These EU averages do not include Iceland and Norway.

This profile was completed in August 2019, based on data available in July 2019.

To download the Excel spreadsheet matching all the tables and graphs in this profile, just type the following URL into your Internet browser: http://www.oecd.org/health/Country-Health-Profiles-2019-Luxembourg.xls

Demographic and socioeconomic context in Luxembourg, 2017

Demographic factors	Luxembourg	EU
Population size (mid-year estimates)	596 000	511 876 000
Share of population over age 65 (%)	14.2	19.4
Fertility rate[1]	1.4	1.6
Socioeconomic factors		
GDP per capita (EUR PPP[2])	75 900	30 000
Relative poverty rate[3] (%)	18.7	16.9
Unemployment rate (%)	5.6	7.6

1. Number of children born per woman aged 15-49. 2. Purchasing power parity (PPP) is defined as the rate of currency conversion that equalises the purchasing power of different currencies by eliminating the differences in price levels between countries. 3. Percentage of persons living with less than 60 % of median equivalised disposable income.
Source: Eurostat Database.

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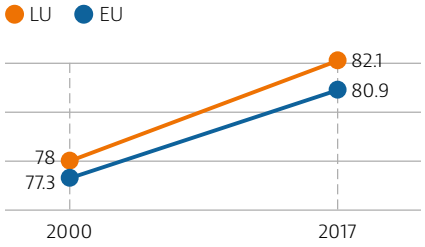
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1 Highlights

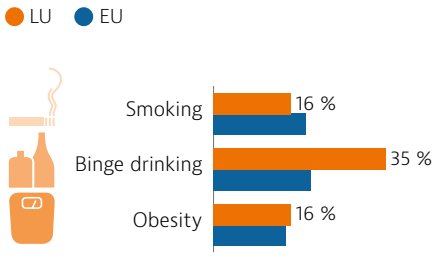
Although Luxembourg has a relatively young population, it is ageing rapidly due to steadily increasing life expectancy. Most life expectancy gains have been achieved after the age of 65 but many years in old age are lived with chronic diseases and disabilities, which increases demand on the health and long-term care systems. The social health insurance system offers broad access to health care and operates three schemes that cover health, sickness leave and long-term care. The health system is well resourced with strong infrastructure and stable levels of personnel. Reforms have started to shift activities towards ambulatory (or outpatient) care and to improve the efficiency of the health system.



Life expectancy at birth, years

Health status

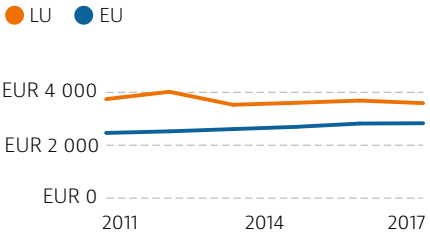
Life expectancy at birth stood at 82.1 years in 2017 (up from 78 years in 2000) and is among the highest across the EU. Women live around five years longer than men. Ischaemic heart disease, stroke and lung cancer are still the leading causes of death. While overall mortality rates for these diseases declined since 2000, mortality rates for lung cancer in women have increased.



% of adults

Risk factors

In 2017, 16 % of adults smoked every day, slightly below the EU average and down from 26 % in 2001. The share of regular smokers among adolescents also decreased slightly in this period, but it remains above the EU average. Binge drinking among adults was among the highest in the EU in 2014 at 35 %, but levels among 15-year-olds are lower than in many other EU countries. Obesity rates among adults are close to the EU average of 15 %, as is the rate among 15-year-olds, although the latter has increased over the last decade.



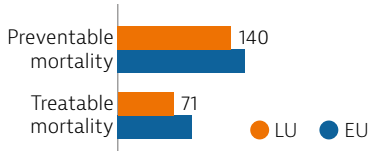
Per capita spending (EUR PPP)

Health system

In 2017, Luxembourg spent EUR 3 575 per capita on health care, which is well above the EU average. About 84 % of health spending is publicly funded. Most of the remaining private expenditure is paid directly out of pocket by households either on co-payments for a variety of services or on voluntary health insurance (VHI), which is purchased by around two thirds of the population. The system has an over-reliance on foreign health professionals, but new domestic training opportunities for doctors and nurses may attenuate this.

Effectiveness

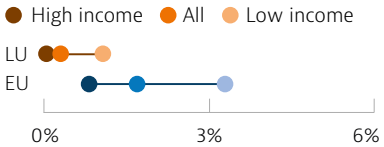
Luxembourg ranks among the EU's better performers in terms of mortality from preventable and treatable causes, signalling that its high level of spending, preventive policies and effective care translate into positive health outcomes.



Age-standardised mortality rate per 100 000 population, 2016

Accessibility

In Luxembourg, people report low unmet needs for medical care mainly because of low cost sharing. Overcrowding in emergency departments should be reduced through the reorganisation of the current system and strengthening of primary care.



% reporting unmet medical needs, 2017

Resilience

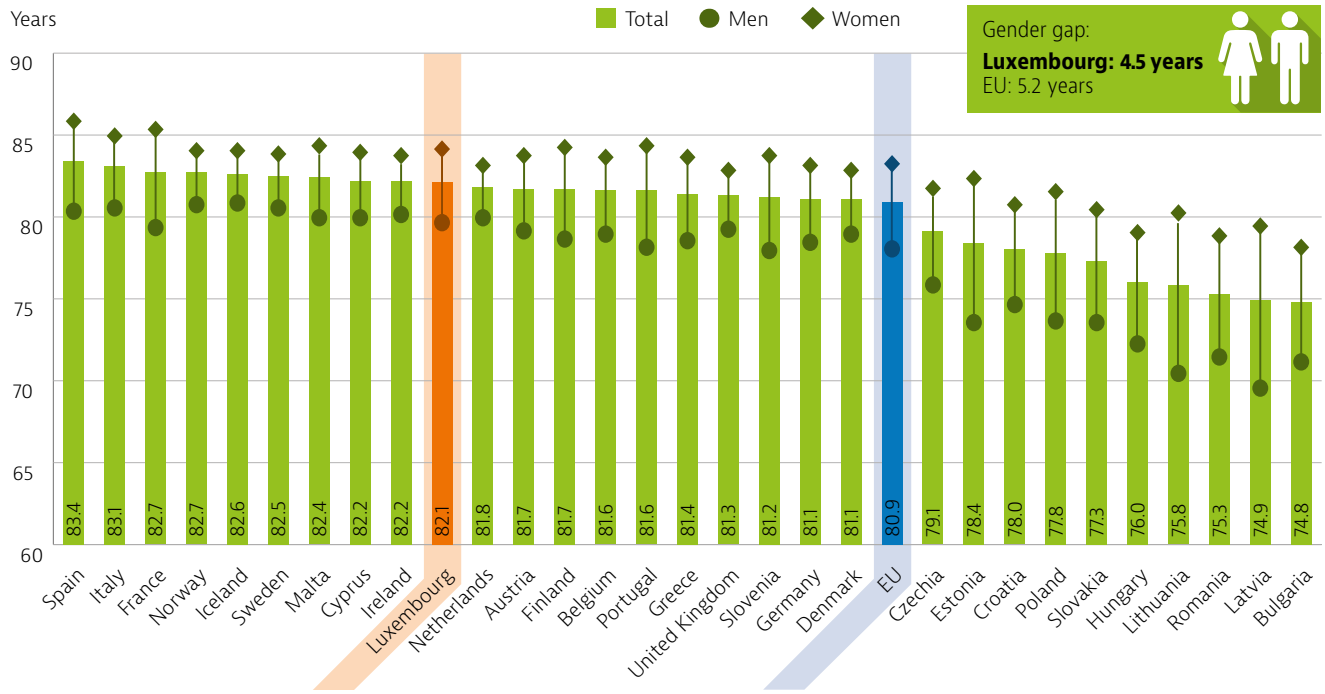
Age-related spending in health and long-term care is projected to increase markedly, constituting a risk to fiscal sustainability in the long term. The transformation of the health system is under way to make it more outpatient care-centred and open for skill mix innovations, while eHealth solutions are being developed to enhance efficiency.

2 Health in Luxembourg

Life expectancy at birth in Luxembourg is higher than in most other EU countries

In Luxembourg, life expectancy at birth has increased continuously since 2000. In 2017, average life expectancy was 82.1 years, about 1.2 years above the EU average (80.9) but behind the highest performers such as Spain, Italy and France (Figure 1). The life expectancy of women is particularly high. Women can expect to live about five years longer than men (84.4 years, compared with 79.9 years for men).

Figure 1. Luxembourger's life expectancy is over a year longer than the EU average



Source: Eurostat Database (data refer to 2017).

Mortality rates from cardiovascular diseases are among the lowest in the EU

The increase in life expectancy since 2000 has been driven by reductions in mortality rates from all main causes of death. Notably, death rates from ischaemic heart disease and stroke have decreased (Figure 2) and, although these still remain among the leading causes of death, they are among the lowest in the EU. The rates for lung cancer have declined overall since 2000, but it is still the most frequent cause of cancer death in Luxembourg. While mortality from lung cancer has been falling among men, it has been rising for women. These trends reflect historic changes in the prevalence of smoking among the population.

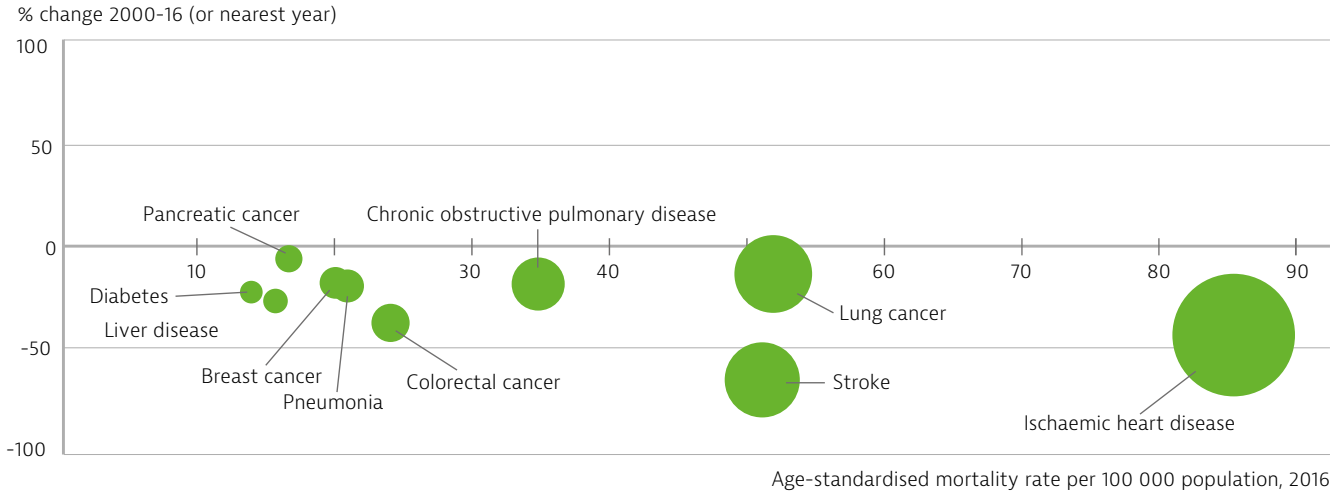
The majority of people report being in good health but social disparities exist

In Luxembourg, almost three quarters (71 %) of people report being in good health, in line with the EU average (70 %). Although the gap in self-rated health by socioeconomic status is less pronounced compared to most other countries, some disparities by income group exist. Two thirds of people in the lowest income group report being in good health, compared to over three quarters for those in the highest income quintile.

Luxembourg's rapidly ageing population will increase demand for health and long-term care

In Luxembourg, the share of people aged 65 and over is among the lowest in Europe, largely due to a steady influx of working-age population. In 2017, only one in seven people (14.1 %) were aged 65 and over. However, this rate is projected to rise to nearly one in four (24 %) by 2050. People aged 65 years can expect to live for 20 additional years, and around nine of these years can be expected to be spent without disability,

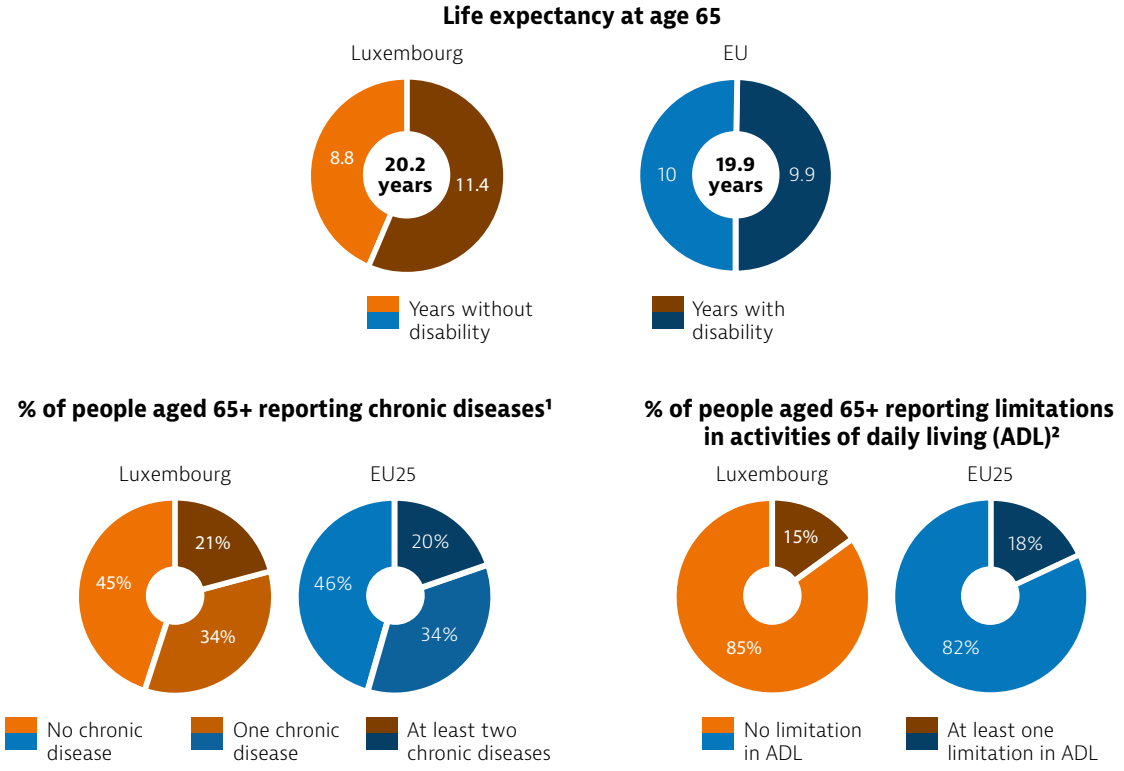
Figure 2. Mortality rates for all the main causes of death have fallen since 2000



Note: The size of the bubbles is proportional to the mortality rates in 2016.
Source: Eurostat Database.

compared to ten years in the EU as a whole (Figure 3).[1] Just over half of people in this age group report living with at least one chronic disease, a proportion that is similar to other EU countries. About one in six people over 65 report some limitations in basic activities of daily living such as dressing and showering, slightly lower than in other EU countries. The share of these people will continue to grow with general population ageing, increasing the fiscal burden on health and long-term care systems (Section 5.3).

Figure 3. Some 55 % of older people in Luxembourg report having one or more chronic diseases



Notes: 1. Chronic diseases include heart attack, stroke, diabetes, Parkinson's disease, Alzheimer's disease and rheumatoid arthritis and osteoarthritis. 2. Basic activities of daily living include dressing, walking across a room, bathing or showering, eating, getting in or out of bed and using the toilet.
Sources: Eurostat Database for life expectancy and healthy life years (data refer to 2017); SHARE survey for other indicators (data refer to 2017).

1: These are based on the indicator of 'healthy life years', which measures the number of years that people can expect to live free of disability at different ages.

3 Risk factors

More than one third of deaths can be attributed to unhealthy lifestyles

Over one in three (37 %) of all deaths in Luxembourg in 2017 were due to behavioural risk factors, including tobacco smoking, dietary risks, alcohol consumption and low physical activity, just below the average for the EU as a whole (39 %) (Figure 4). Around 16 % of all deaths can be attributed to tobacco smoking alone (including direct and second-hand smoking). Dietary risks, including low fruit and vegetable intake, and high sugar and salt consumption, are estimated to account for about 14 % of all deaths in Luxembourg, less than in the EU overall. However, about 9 % of deaths can be attributed to alcohol consumption, one of the highest shares in the EU, and 2 % of deaths are related to low physical activity.

Figure 4. Modifiable lifestyle risk factors account for 37 % of deaths in Luxembourg



Note: The overall number of deaths related to these risk factors (1 600) is lower than the sum of each one taken individually (1 800), because the same death can be attributed to more than one risk factor. Dietary risks include 14 components such as low fruit and vegetable consumption and high sugar-sweetened beverage consumption.
Source: IHME (2018), Global Health Data Exchange (estimates refer to 2017).

Smoking among adults has declined but is relatively high among teenagers

The proportion of adults smoking daily has decreased sharply in Luxembourg. Only one in six adults smoked daily in 2017, compared with over one in four in 2001. This decrease is partly due to various anti-smoking laws and information campaigns. It is expected that the number of daily smokers will further decline following the transposition of the EU Tobacco Products Directive into national law in 2017 (Section 5.1). Although teenage smoking rates have decreased slightly over the last decade, some 16 % of 15-year-olds still reported smoking at least once a week, a higher proportion than in most other EU countries.

Rising obesity among adults and adolescents reflect unhealthy lifestyles

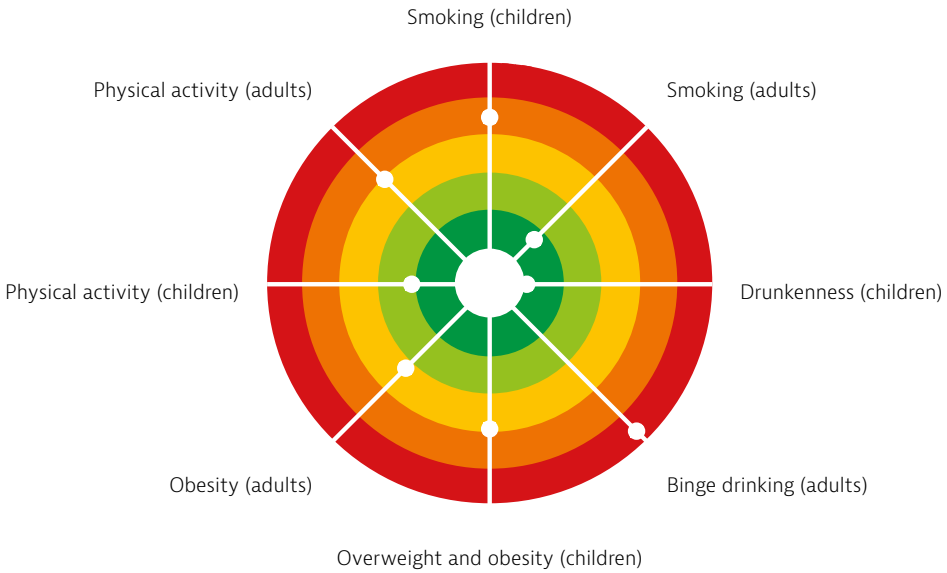
One in six adults and nearly one in five 15-year-olds are obese. Overall, obesity and overweight levels among adults and adolescents are slightly above EU average[2] (Figure 5), and have increased over the last decade. Regular physical activity among adults is less common than in many EU countries, but among 15-year-olds about 18 % reported doing at least moderate physical activity every day, a higher proportion than in the EU as a whole (15 %).

2: Based on data measuring the actual weight and height of people, the obesity rate among adults is even higher in Luxembourg and reached 23 % in 2014, up from 16 % in 2000.

Excessive and regular alcohol consumption in adults is among the highest in the EU

Limited progress has been achieved in tackling excessive alcohol consumption and it continues to be a major public health problem (Section 5.1). The percentage of adults reporting binge drinking[3] is among the highest in the EU, with more than one in three adults reporting such behaviour. This is the third highest level in the EU after Denmark and Romania. On a more positive note, only about one in seven 15-year-olds reported having been drunk at least twice in their life, the lowest rate in the EU. While most behavioural risk factors are more prevalent among people with lower income or education, binge drinking among adults is slightly more prevalent in more highly educated people.

Figure 5. Obesity and excessive alcohol consumption are important public health issues in Luxembourg



Note: The closer the dot is to the centre, the better the country performs compared to other EU countries. No country is in the white 'target area' as there is room for progress in all countries in all areas.
Sources: OECD calculations based on ESPAD survey 2015 and HBSC survey 2013–14 for children indicators; and EU-SILC 2017, EHIS 2014 and OECD Health Statistics 2019 for adults indicators.

3: *Binge drinking is defined as consuming six or more alcoholic drinks on a single occasion for adults, and five or more alcoholic drinks for children.*

4 The health system

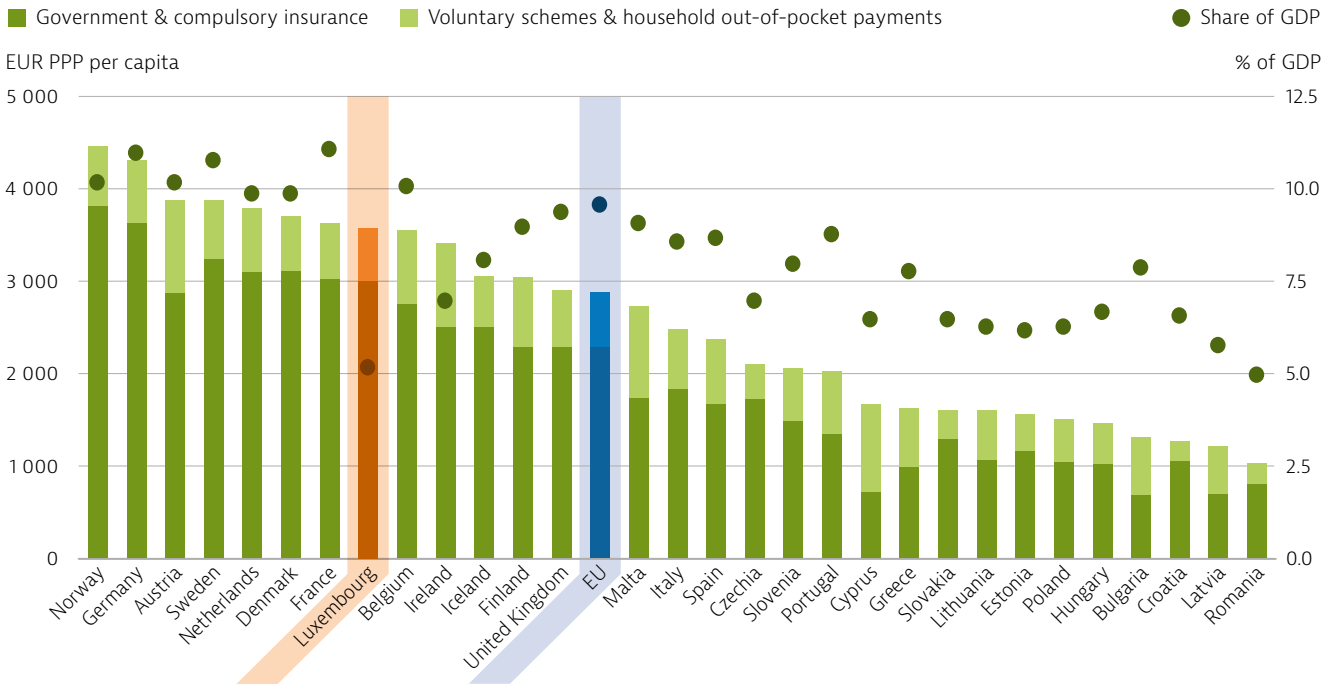
The social health insurance system is centralised, with responsibilities shared across ministries

Luxembourg operates a compulsory social health insurance (SHI) system with a single payer, the National Health Insurance (*Caisse Nationale de Santé*, CNS). The CNS covers three schemes: health care, sickness leave and long-term care insurance. It negotiates global hospital budgets, negotiates with providers and monitors the quality of health services. Responsibility for health system governance is highly centralised and split between key ministries. The Ministry of Health develops health policy and oversees planning and regulatory functions as well as licensing of providers. Its Health Directorate oversees public health issues. The Ministry of Social Security supervises the public institutions funding health care, sickness leave and long-term care, while the Ministry of Family Affairs oversees long-term care facilities, home care networks, and care services for disabled people. In 2010, the government adopted a broad health reform aimed at cost containment and efficiency improvements that has shaped health policies over the last few years (Box 1).

Health expenditure is still among the highest in the EU

Despite the containment efforts, Luxembourg is still in the top quartile of EU Member States in terms of per capita spending on health. At EUR 3 575 (adjusted for differences in purchasing power) it is well above the EU average of EUR 2 884 (Figure 6).[4] Public financing is based on a system of shared contributions, 40 % paid by the state with the rest being shared between the insured population and employers. In 2017, the public share of spending on health (83.8 %) was above the EU average (79.3 %). Nearly 11 % is paid directly out of pocket by households (Section 5.2), while voluntary complementary insurance takes up 3.1 % of total spending.

Figure 6. Health spending per capita is higher than in most EU countries



Note: As a share of GDP (5.4 %) health expenditure is the lowest in the EU (9.8 %) which is also due to Luxembourg's strong economic performance.[5]
Source: OECD Health Statistics 2019 (data refer to 2017).

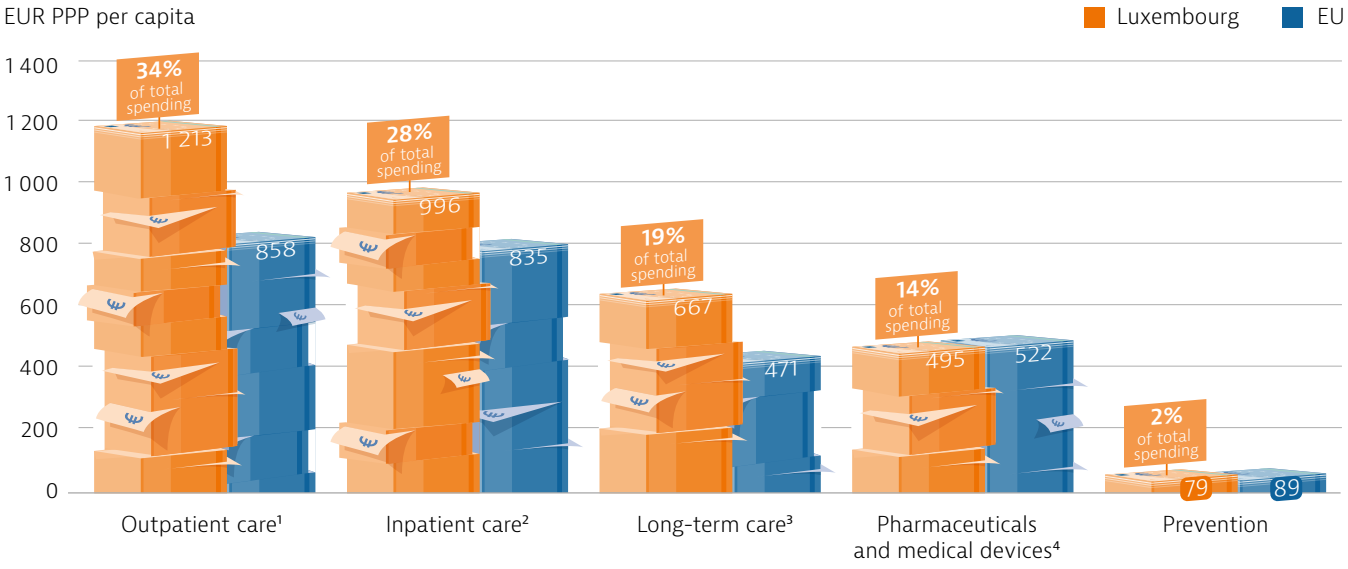
4: Health spending in Luxembourg is lower than previously reported in Health at a Glance: Europe 2018 (OECD, EU, 2018) mainly because the country carried out major revisions of its health accounts in 2019, resulting in a reduction of around 15 % in health spending.
5: Given that a significant proportion of GDP in Luxembourg consist of profits from foreign-owned companies that are repatriated, gross national income (GNI) may be a more meaningful measure for the capacity to pay for health care, but even GNI is not a true measure of the productive capacity of the domestic economy.

Box 1. Key reform priorities focus on efficiency improvements

With the aim of improving efficiency, the comprehensive health reform law of 2010 was the most important health system milestone of the last decade. Measures focused on a number of areas. Containing rising health costs were tackled by, for example, imposing a legal ceiling on hospital budgets and introducing pharmaceutical substitution. Primary care was strengthened by introducing a care coordination programme led by general practitioners (GPs) and based on shared electronic health records and multidisciplinary care competence networks of providers (Section 5.3). The health system's transparency and accountability were enhanced by establishing an inpatient information system, a health information agency and a medical expert board, as well as by revising the services fee catalogue. More recently, reforms were launched to improve the transparency and accountability of the hospital sector and promote intersectoral cooperation as well as shifting more care towards day surgery (Section 5.3).

Per capita spending levels on all health functions are high compared to other EU countries. Luxembourg spends EUR 1 213 per capita on outpatient care, EUR 996 on inpatient care and EUR 667 on long-term care – all above the EU averages (Figure 7). As a share of health expenditure, outpatient (33.9 %) and long-term care (18.7 %) are above the EU averages (29.7 % and 16.3 % respectively), while inpatient care (27.9 %) is just under what is spent across the EU (28.9 %). Luxembourg spends 2.2 % of its health resources on prevention, which is also under the EU average (3.1 %).

Figure 7. Luxembourg spends a high proportion of its health resources on outpatient and long-term care



Note: Administration costs are not included. 1. Includes home care; 2. Includes curative–rehabilitative care in hospital and other settings; 3. Includes only the outpatient market; 4. Includes only the health component.
Sources: OECD Health Statistics 2019, Eurostat database (data refer to 2017).

Strong economic performance and cross-border workers have positive impacts on health financing

Luxembourg's strong economic performance, as well as its population and employment growth, have strong positive effects on the public financing of health care. The large reserve of the CNS benefits the population by allowing the broad benefit package to be continuously extended (Sections 5.2 and 5.3).

The country also attracts many cross-border workers commuting from neighbouring countries (France, Belgium and Germany), representing nearly half (45 %) of the labour force and more than one third of those insured with the CNS. As these non-residents mostly seek health care in their country of residence, where service costs are on average lower than in Luxembourg, they subsidise health services for the resident population (CNS, 2018).

Health insurance is mandatory and population coverage is good

In 2015, 95.2 % of the resident population were covered by the SHI scheme, with about 65 % having complementary VHI that reimburses cost sharing or supplementary services (Section 5.2). Purchasing SHI is compulsory for everyone who is economically active or receiving replacement income. The insurance covers family members, including minors and students who have no other health insurance coverage. People who only work occasionally in Luxembourg (i.e. less than three months per calendar year) are exempted but may choose to pay voluntary contributions. People working for European Institutions or International Organisations (e.g. NATO Support Agency), that represent an important share of the population, are covered by their employers' health insurance schemes. Nevertheless, some people are uninsured because they have no professional or replacement income or do not belong to special groups such as disabled people or beneficiaries of the minimum income scheme (Section 5.2).

New domestic training opportunities for doctors and nurses could decrease reliance on foreign health professionals

Luxembourg has three doctors per 1 000 population – below the EU average in 2017 (3.6 per 1 000). Although the number has increased slightly, the doctor workforce is ageing rapidly: the average age of GPs is now 51 years and specialists are aged on average 52.3 years (IGSS, 2019), suggesting there may be supply issues in the years to come.[6] Luxembourg is one of the few countries in the EU without training places in medicine. To date, only the first-year training and a specific training in general medicine are available. This makes the country dependent on foreign-trained doctors. One response is to introduce a bachelor's degree in medicine probably starting in 2021 at the University of Luxembourg, with the hope that this will increase the number of students opting for a medical career and, ultimately, the number of young doctors practising domestically.

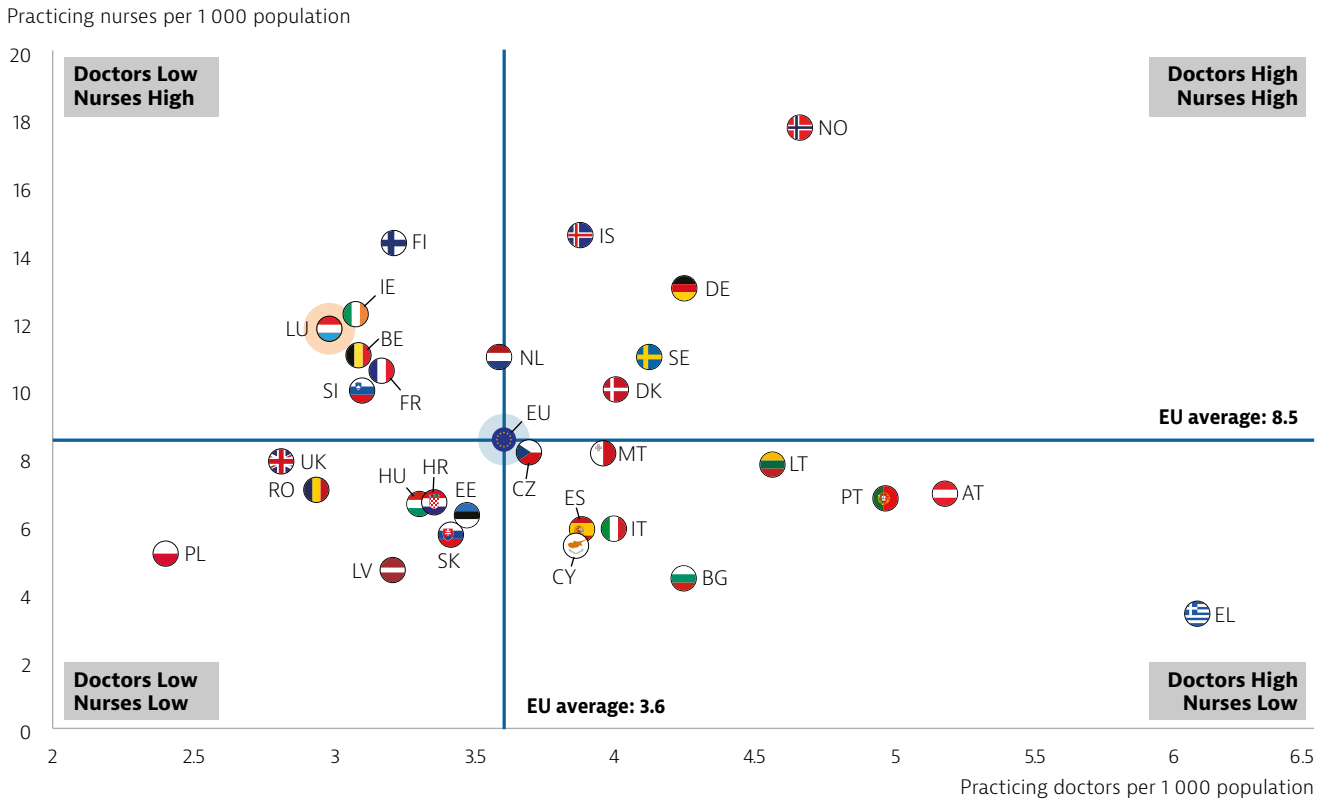
The number of nurses per inhabitant is above the EU average (Figure 8), but the supply of nurses also relies strongly on foreign-trained professionals, who are attracted by good working conditions and better salaries. In Luxembourg, the number of nursing graduates has declined and between 2013 and 2017 only one in ten newly registered nurses were trained in the country. A study is under way, exploring various opportunities for attracting and training more nursing students and for adapting the curricula of nurses, midwives and medical assistants to European standards and future challenges.

Steps are being taken to strengthen primary care and relieve pressure on emergency departments and hospitals

Patients in Luxembourg enjoy free choice of providers and unrestricted access to all levels of care (GPs, specialists and hospitals). There are six acute care hospitals, of which four are general and two are specialist hospitals. Many complex treatments and diagnostic procedures not available in Luxembourg are provided in neighbouring countries because the size of Luxembourg's population makes it inefficient to offer these services domestically. Since 2010, several measures have aimed to strengthen the primary care system through eHealth, new care pathways and better coordination of care (European Commission, 2019a). However, the GP care coordination programme, which relies on shared electronic health records, is still in its infancy (Section 5.3). Other efforts to strengthen primary care and relieve pressure on emergency departments and hospitals include financial support for group practices and enhanced cooperation between ambulatory and inpatient providers (Sections 5.2 and 5.3).

6: Luxembourg residents travel frequently for planned care cross-border, which nuances the low provision levels in terms of doctors per capita.

Figure 8. Luxembourg has a relatively low number of doctors and a high number of nurses



Note: In Portugal and Greece, data refer to all doctors licensed to practise, resulting in a large overestimation (e.g. of around 30 % in Portugal). In Austria and Greece, the number of nurses is underestimated as it only includes those working in hospital.
Source: Eurostat Database (data refer to 2017 or nearest year).

5 Performance of the health system

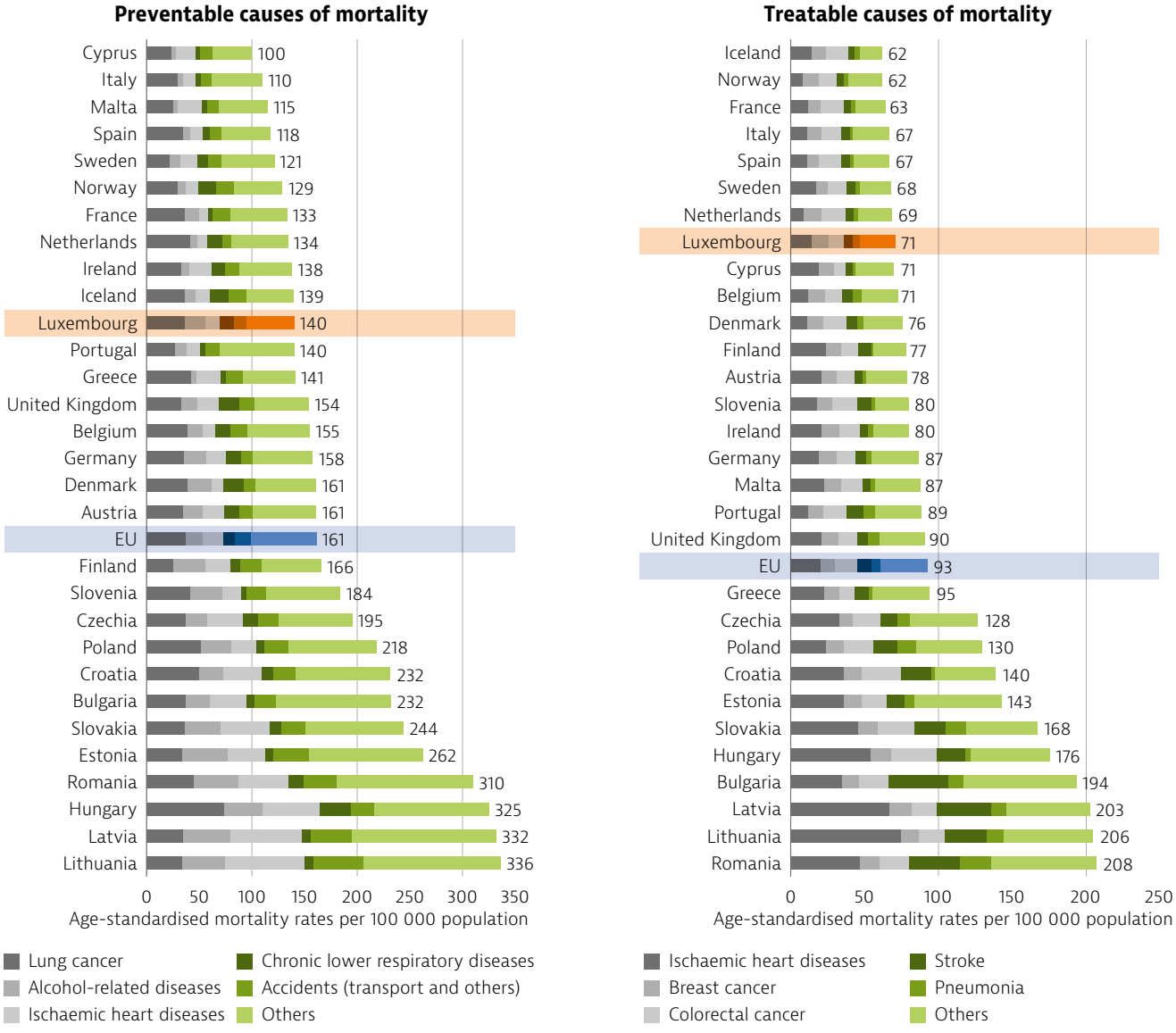
5.1. Effectiveness

Low preventable mortality rates suggest Luxembourg provides effective public health interventions

Luxembourg has a comparatively low rate of preventable mortality (140 per 100 000 compared to an EU average of 161), suggesting that public health interventions are effective. Lung cancer is the primary cause of preventable deaths, accounting for one in four such deaths in 2016 (Figure 9).

Smoking is the largest risk factor for mortality in Luxembourg (Section 3). Various policies have been implemented to address smoking in public places (2006) and to extend the ban in bars and cafés (2014). In 2017, the EU Tobacco Products Directive was transposed into national law, raising the legal age for purchasing tobacco products and e-cigarettes to 18 and extending the smoking ban in public places to playgrounds and vehicles when a child below the age of 12 is present.

Figure 9. Luxembourg is in the top performing quarter of EU Member States when it comes to mortality from preventable and treatable causes



Note: Preventable mortality is defined as death that can be mainly avoided through public health and primary preventive interventions. Mortality from treatable (or amenable) causes is defined as death that can be mainly avoided through health care interventions, including screening and treatment. Both indicators refer to premature mortality (under age 75). The data are based on the revised OECD/Eurostat lists.
Source: Eurostat Database (data refer to 2016).

Preventable deaths due to alcohol-related diseases continue to be a public health issue as well. They are above the EU average (Figure 9), which reflects the impact of frequent alcohol consumption, and especially excessive drinking (Section 3). Luxembourg has launched awareness campaigns on drink-driving and on the risks of alcohol misuse, targeting young people in particular. However, the implementation of the national alcohol plan, initiated in 2012, is still pending.

In response to rising obesity rates (Section 3), several national strategies have been developed, including the 'Eat Healthy, Move More'(*Gesond iessen, Méi bewegen*) inter-ministerial action plan, first adopted in 2006 and updated in 2018, which aims to promote healthy nutrition and increase physical activity. Also in 2018, two national sports programmes were launched to inform patients and health professionals about the benefits of physical activity, in particular for people with chronic conditions.

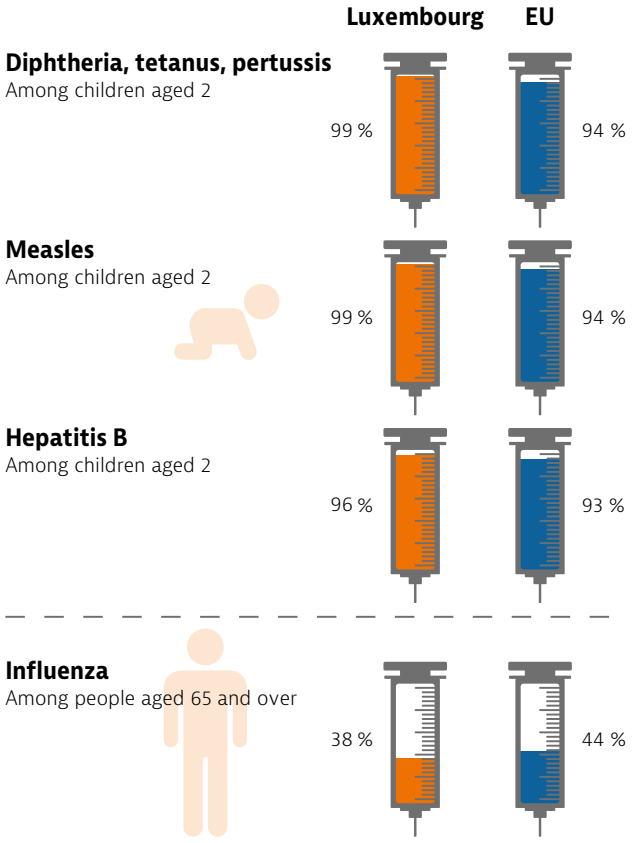
Falling vaccination coverage for influenza is a cause for concern

The immunisation programme for children has achieved high vaccination levels in infants against major infectious diseases, with immunisation coverage above the EU average and the WHO target of 95 % (Figure 10). However, the second of two shots against measles covers only 90 % (Ministry of Health of Luxembourg, 2019). Moreover, even though it is covered by health insurance, vaccination coverage for influenza among people over 65 is relatively low and has been continously falling over the last decade – from 45 % in 2010 to 38 % in 2017 – below the EU average of 44 % and the WHO recommendation of 75 %.

Antibiotic resistance campaigns have helped bring down the misuse of antibiotics

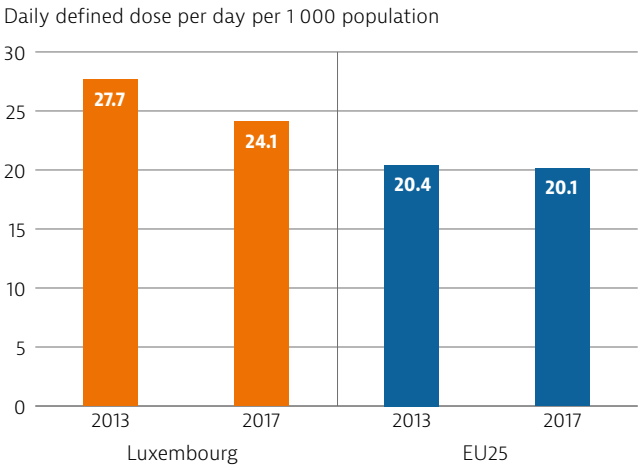
Inappropriate use of antibiotics is the main driver for antimicrobial resistance (AMR). Luxembourg is among the highest consumers of antibiotics in the outpatient (ambulatory) sector across the EU, with more than 90 % of all antibiotics used in this sector (GPs prescribe about 60 % of these). Health campaigns to promote the rational use of antibiotics (since 2006) have had an effect, yielding significant reductions in antibiotic use in the community (by 13 %) between 2013 and 2017, though this figure is still above the EU average (Figure 11; ECDC, 2018). The new National Antibiotic Plan (2018–2022) aims to contain antimicrobial resistance further, based on an intersectoral approach (Ministry of Health of Luxembourg, 2018b).

Figure 10. Luxembourg has generally high vaccination coverage among children, but not for influenza among older adults



Note: Data refer to the third dose for diphtheria, tetanus, pertussis and hepatitis B, and the first dose for measles.
Sources: WHO/UNICEF Global Health Observatory Data Repository for children (data refer to 2018); OECD Health Statistics 2019 and Eurostat Database for people aged 65 and over. Data refer to 2017 or the nearest year.

Figure 11. The use of antibiotics is above the EU average but has fallen considerably



Note: Consumption of antibacterials for system use (Anatomical Therapeutic Chemical Classification System (ATC) group J01) by country, expressed as daily defined dose per 1 000 inhabitants.
Source: ECDC (2018).

Mortality from treatable causes is lower than in many other EU countries

Luxembourg fares well in terms of mortality from treatable causes, indicating that the health system provides effective care. Mortality rates have decreased since 2011 and, at 71 deaths per 100 000, are now in the lowest quartile of EU Member States (see Figure 9).

Deaths from breast cancer, however, are closer to the EU average (12 compared to 11 deaths per 100 000). Participation rates for the national breast cancer screening programme have dropped in comparison to rates seen in the late 2000s and are slightly below the EU average (56 % compared to 61 % in the EU). The breast cancer screening programme invites all (insured) women aged 50-69 to have a mammogram free of charge every other year. In contrast, death rates for colorectal cancer are below the EU average (10 compared to 15 per 100 000). The national colorectal screening programme for people aged between 55 and 74 was introduced in 2016 as part of the National Cancer Plan and is expected to further reduce these mortality rates through early detection.

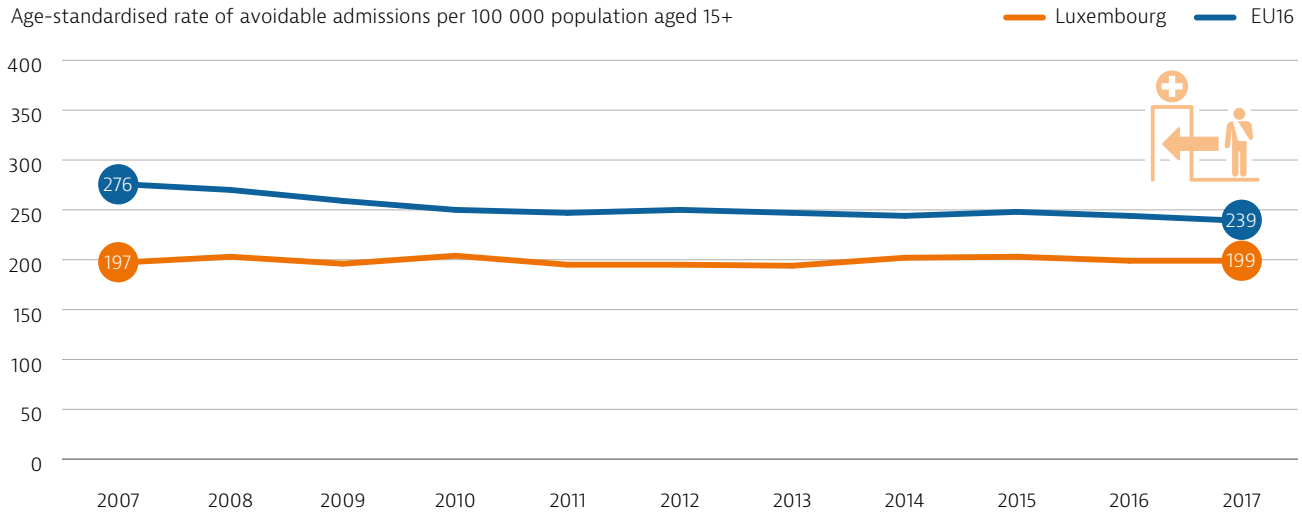
The low number of avoidable hospitalisations point to effective primary care

Luxembourg has a relatively low number of avoidable hospital admissions, suggesting that primary care and outpatient secondary care are effective at managing chronic diseases. Indeed, avoidable hospital admissions for chronic conditions, such as asthma and chronic obstructive pulmonary disease (COPD) have remained stable over the past decade and are below the EU average (Figure 12). Nevertheless, Luxembourg aims to further strengthen primary and outpatient care to reduce pressure on emergency services and treat more patients in outpatient settings (Sections 5.2 and 5.3).

The quality of acute care has improved, but more can be done

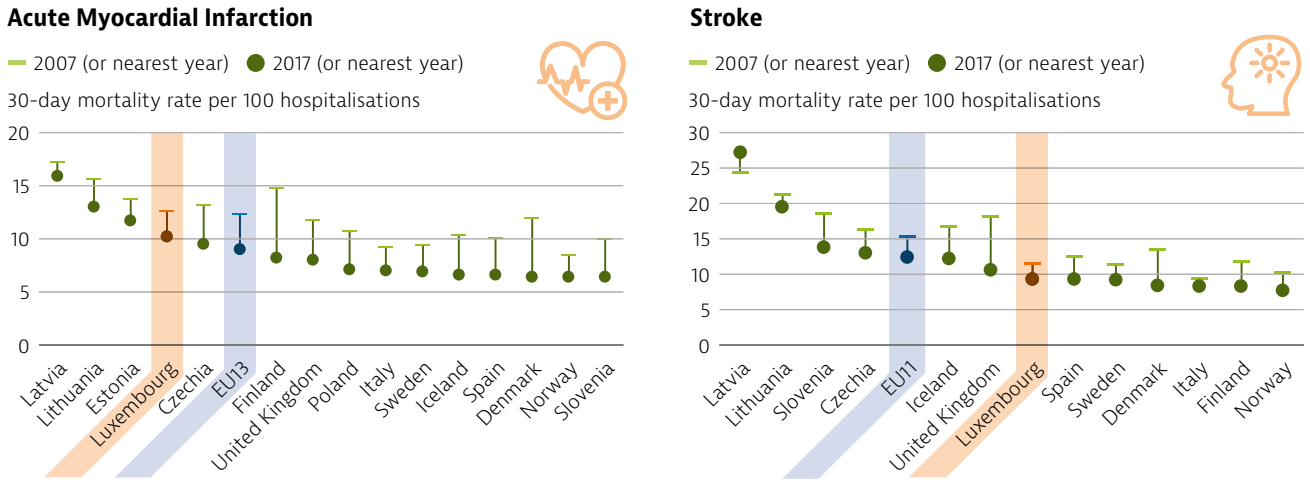
The quality of acute care for life-threatening conditions, such as heart attacks (acute myocardial infarction, AMI) and stroke, has improved during the period 2007-17. Fewer people die after being admitted for stroke than in many other countries. However, there seems to be room for improvement regarding care for AMI as indicated by the 30-day case fatality rate, which is higher than in comparable countries (Figure 13).

Figure 12. Avoidable admissions for asthma and chronic obstructive pulmonary disease are consistently below the EU average



Source: OECD Health Statistics 2019.

Figure 13. Luxembourg has mixed results for mortality following hospital admission



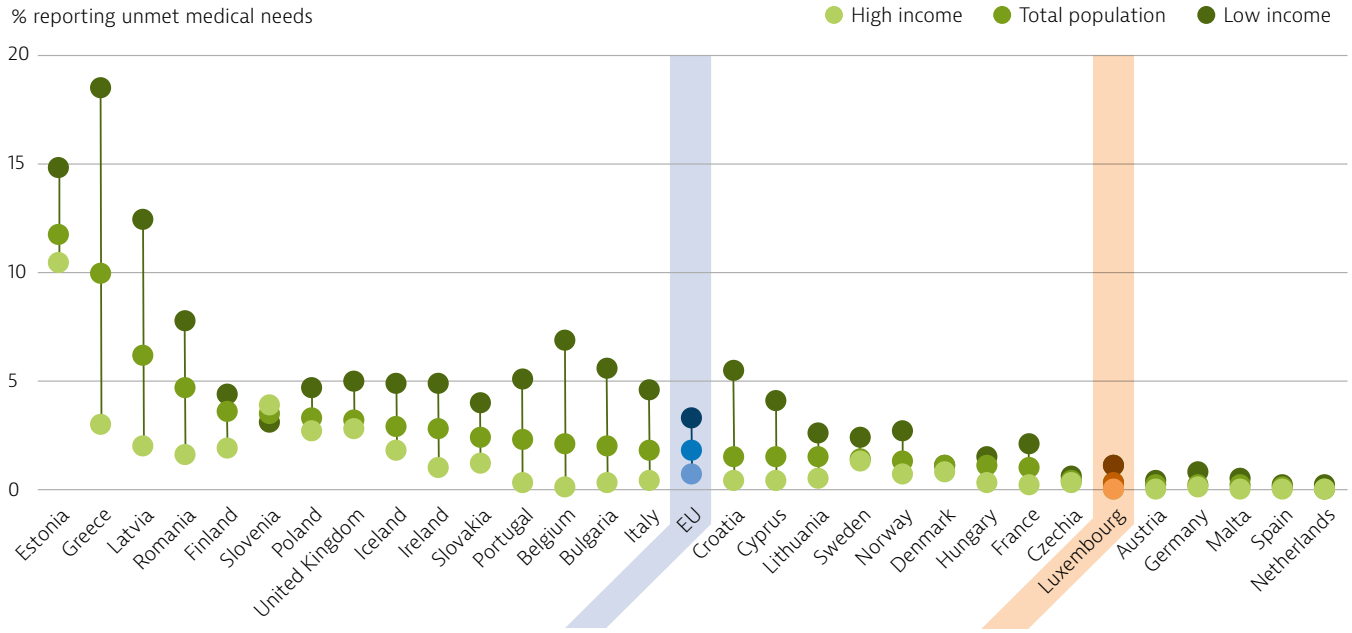
Note: Figures are based on patient data and have been age–sex standardised to the 2010 OECD population aged 45+ admitted to hospital for AMI and stroke.
Source: OECD Health Statistics 2019.

5.2. Accessibility

Very few people report unmet medical needs but inequalities still exist

Luxembourg's health system generally performs well concerning access to health care services. Only 0.3 % of the population reported unmet needs for medical care (0.6 % for dental care) due to cost, distance or waiting times – much lower than the EU averages (1.7 % and 2.9 %, respectively) and with negligible variation across income groups (Figure 14). The figures are higher for other vulnerable population groups (i.e. the unemployed and third-country nationals), which may point to inequalities in access (Swinnen, 2018)[7].

Figure 14. Luxembourg records very low unmet needs for medical care



Note: Data refer to unmet needs for a medical examination or treatment due to costs, distance to travel or waiting times. Caution is required in comparing the data across countries as there are some variations in the survey instrument used.
Source: Eurostat Database, based on EU-SILC (data refer to 2017).

7: A separate survey (the European Health Interview), which targeted people in need of care (as opposed to the population in general), shows that about 6 % of the population reported some unmet medical needs for financial reasons in 2014. The rate was much higher among people on low incomes (12 %) than among those on high incomes (only 2 %). Furthermore, unmet needs were much higher for dental care: 12 % of the population with dental care needs reported that some of these needs were unmet in 2014. Again, the proportion was much greater among low-income people (22 %) than high-income people (4 %).

Two-thirds of the population purchases voluntary health insurance to cover co-payments

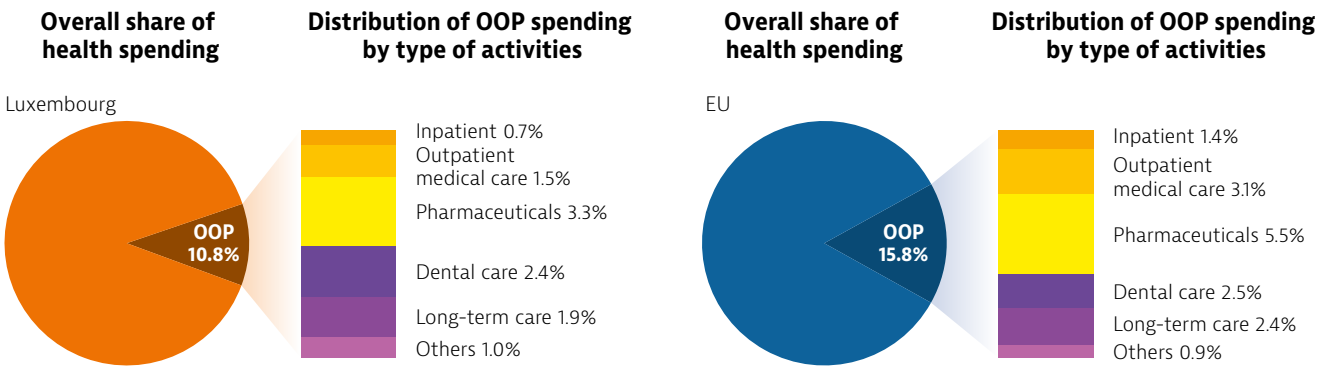
There is good population coverage for health insurance, although not all residents are covered (Section 4). Yet at least 700 people are reported to be without health insurance or face financial difficulties obtaining it (Médecins du monde, 2017). VHI accounts for 3.1 % of total health expenditure. It plays a relatively important role with about 65 % of the population purchasing complementary VHI to cover co-payments or supplementary services in outpatient care, hospital per diems, individual rooms in hospitals, dental care and eye glasses.

Good service coverage with low cost sharing

Luxembourg provides a broad benefit basket that is being continuously expanded and covers more services than in neighbouring countries. This results in low out-of-pocket (OOP) spending. SHI operates a reimbursement system where patients pay providers for outpatient services and are later reimbursed by the CNS at different rates, ranging from 60 % to 100 % of the cost. Usually, a co-insurance rate of 12 % for medical services is paid out of pocket, except for home visits where the OOP cost is 20 %. Exemptions apply for people with certified disabilities or severe chronic conditions, children, pregnant women or if cost sharing exceeds 2.5 % of annual gross income. Dental care for adults is covered at an 88 % cost sharing rate after the first EUR 60 is also paid by health insurance. There are no co-payments for hospital treatments (except for a per diem of EUR 21) and laboratory tests.

The share of health expenditure paid out of pocket was 10.8 % in 2017, the third lowest level in the EU after France and Croatia. As a share of final household consumption, it is also one of the lowest in the EU (1.7 % compared to the 2.2 % EU average). Payments for pharmaceuticals are by far the largest share of OOP spending (3.3 % of health spending in 2017) followed by spending on dental and long-term care (Figure 15). The relatively high OOP spending on pharmaceuticals results from the different reimbursement rates for medicines on the positive list as well as a low market penetration of generic medicines (Section 5.3). For residential long-term care, nearly all private payments are for the cost of accommodation and services (board, lodging, basic domestic services, laundry, etc.) in nursing homes and integrated homes. Luxembourg provides financial support for older people whose own revenues are not sufficient to cover these costs.

Figure 15. Pharmaceuticals account for the highest share of a comparatively low out-of-pocket spending rate



Sources: OECD Health Statistics 2019 (data refer to 2017).

A switch to a benefit-in-kind model for outpatient services may improve access

Despite a broad benefit package, access to health care is hampered for a minority of people because patients have to pay upfront for outpatient services and are only reimbursed retrospectively. In 2013, Luxembourg introduced a benefit-in-kind model (*tiers payant social*) for people on low incomes facing financial difficulties in paying their bills in advance (Box 2).

Box 2. People on low incomes benefit from a direct payment system for outpatient (ambulatory) services

People on low incomes may apply for the benefit-in-kind model (*tiers payant social*). Local social offices certify eligibility on an annual basis for medical and dental treatment costs to be directly covered by the CNS. Patients' co-payments are assumed by local social offices.

Extending the benefit-in-kind model for outpatient health services to the entire population, where patients would only pay the co-payment to service providers, is on the political agenda, triggered by a popular petition in 2017. Proponents of the third-party payer model argue that it will reduce administrative costs (patients currently have to send their bills to the CNS for reimbursement) and will help to improve access for vulnerable groups. Doctors oppose the idea, fearing delayed payments, administrative constraints, increased controls, loss of income and restrictions on therapeutic options. Yet, the current government has committed to implementing the in-kind arrangement, prioritising high cost health care services, and to setting up an electronic system that facilitates immediate reimbursement of providers by the CNS. It remains to be seen if negotiations will be successful during the current legislative period.

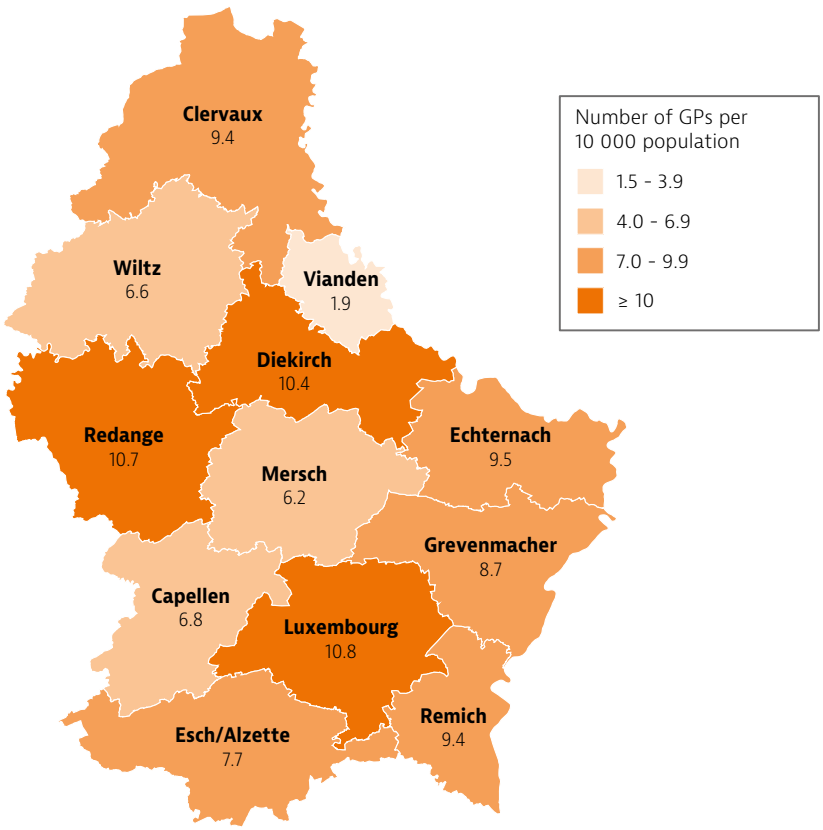
Efforts are being made to reduce pressure on emergency departments

Overcrowded emergency departments (ED) are perceived as a challenge for the accessibility of health services, even though the average waiting times are similar to neighbouring countries and despite the very low reported unmet needs. Currently, about 25 % of patients spend at least three hours in the ED between admission and discharge. To increase admission capacity, within the next two years, a parallel system in which both EDs in Luxembourg city are open simultaneously will replace the current system of rotating sites for emergency services. In addition, emergency care infrastructure, staffing levels as well as procedures and triage will be monitored and improved, along with a re-evaluation of reimbursement.

Luxembourg's EDs are overcrowded because they are overused. Nearly one in five admissions are a non-urgent case and one in four people could in fact be treated by a GP instead (Ministry of Health of Luxembourg, 2017). In an attempt to influence patients' care-seeking behaviour, a current campaign advises residents to access GP out-of-hour offices. In addition, two apps inform users about the health services that are immediately available in their area. A third measure encourages the creation of GP group practices (with at least four doctors), providing a lump sum of EUR 10 000 if they meet several criteria, including extended opening hours and consultations without an appointment.

Moreover, there is a good network of GPs and three GP offices (*maisons médicales de garde*) covering out-of-hour care. However, the density of practising GPs varies across Luxembourg's twelve cantons (Figure 16).

Figure 16. The density of practising GPs is uneven across Luxembourg



Source: Ministry of Health, 2019 (data refer to 2017).

5.3. Resilience[8]

High health and long-term care spending could undermine fiscal sustainability

Although health spending in Luxembourg is very high, the CNS has accumulated financial reserves amounting to 27 % of its health insurance expenditure in 2017 (IGSS, 2019). Nevertheless, expenditure growth needs careful monitoring, particularly as public health expenditure is projected to increase from 3.9 % of GDP in 2016 to 5.1 % by 2070 (European Commission-EPC, 2018). In addition, expenditure on long-term care as a proportion of GDP (1.3 %) was one of the highest among the EU Member States in 2016 and is projected to increase to 4.1 % in 2070, exceeding the EU average by 1.4 %.

These projected spending increases, due to ageing, paired with the projected dynamics of other relevant macroeconomic features, pose a risk to the fiscal sustainability of the health and long-term care systems in the future (European Commission, 2019b, 2019c). Initially, the 2017 long-term care reform aimed to contain expenditure levels, but given the good financial situation of the long-term care insurance system, the reform is now mainly focused on improving quality of care, expanding the benefits package, investing in preventive services and setting clear standards, rather than addressing the long-term fiscal sustainability concerns.

Opportunities exist for task shifting

As mentioned in Section 4, the number of doctors is relatively low and their average age is increasing. In addition, about 60 % of all health professionals working in Luxembourg are foreign nationals. While this might be a challenge for the stability of the health system, it also represents an opportunity for new divisions of responsibilities and task sharing among health professionals (Box 3).

Despite a small increase in market share, the use of generic medicines is low

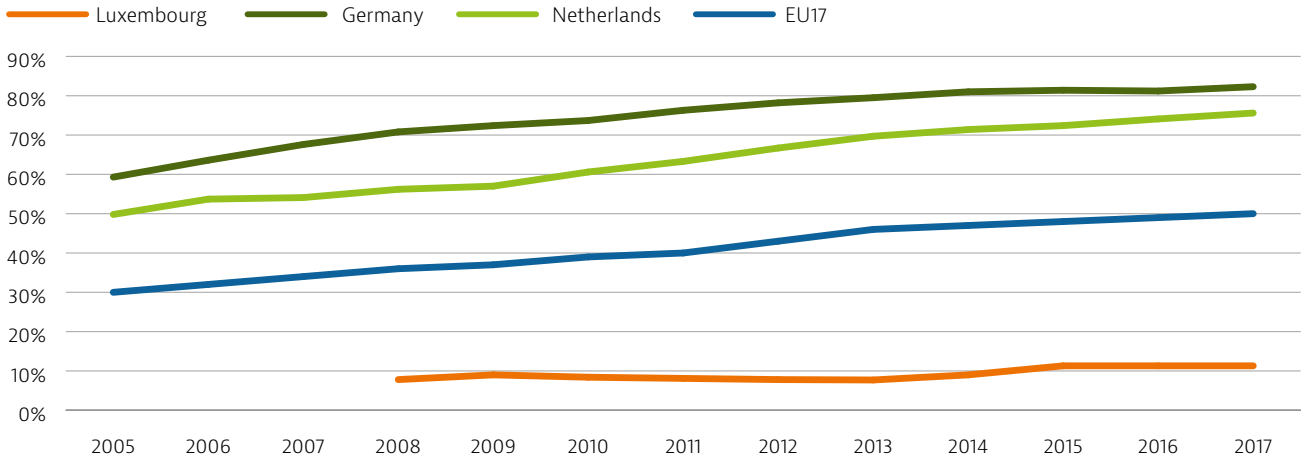
Luxembourg has the lowest market penetration of generic medicines among the 17 EU countries for which data are available (11.3 % of total volume of reimbursed medicines in 2017, compared to about 50 % for the EU 17 countries). As part of cost containment measures (see Box 1), the Ministry of Health introduced a system of generic substitution in 2014. It specified two pharmacotherapeutic groups eligible for mandatory substitution for the lowest priced generic alternative, regardless of what the doctor indicates on the prescription. The policy seems to have contributed to a modest increase in the share of generics (both in volume and value): between 2013 and 2017, volume rose from 7.7 % to 11.3 % (Figure 17). Further efficiency gains could be achieved by opening more categories of medicines to generic substitution and competition, and incentivising prescribing by active principle. It is hoped that the country's participation in the Beneluxa collaboration will contribute to improved pricing, reimbursement and sustainable access to medicines (Box 4).

Box 3. Changing skill mix is a viable option to address the low number of doctors and the reliance on foreign health professionals

To gauge future demand and supply of health professionals, Luxembourg is currently evaluating skill gaps and considering reforms to better respond to the needs of health professionals and patients. Skill mix innovations are being discussed as an important component, which also aim to improve the attractiveness of primary health care, and might address the shortage of health professionals from Luxembourg. Regulatory changes in the skill mix are currently underway for midwives, who will be authorised to provide vaccinations to pregnant women, a task previously only possible with a medical prescription. Additionally, new care competence networks should improve coordination and task sharing: in practice, different health professionals (doctors, nurses, physiotherapists, and clinical researchers) will work closer together to share expertise and standards of care on specific diseases.

8: Resilience refers to health systems' capacity to adapt effectively to changing environments, sudden shocks or crises.

Figure 17. Generics represent about one tenth of market volume in Luxembourg



Note: Data refer to the share of generics in volume.
Source: OECD Health Statistics 2019.

Box 4. Luxembourg seeks to develop its horizon scanning capacity through the Beneluxa initiative

Luxembourg was one of the four founding members of the Beneluxa initiative, along with Belgium, the Netherlands and Austria in 2015. The aim of the cooperation is to improve access to innovative medicines at affordable cost by increasing the efficiency of assessment, pricing and reimbursement, and thus improve the payer's position in the market. In 2018, the Beneluxa countries decided to expand their activities to horizon scanning and launched the International Horizon scanning Initiative with 15 member countries.

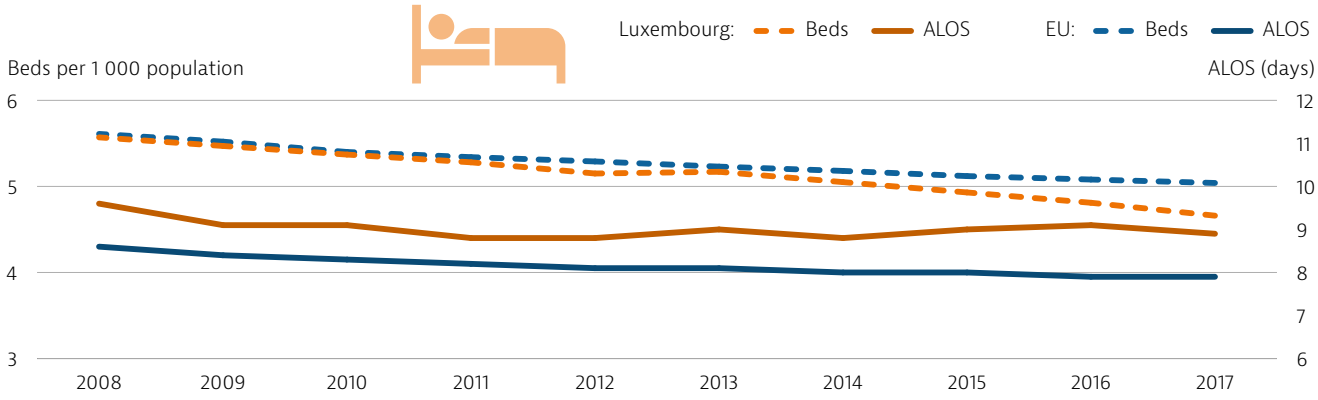
Given the potential impact of new high-cost medicines on long-term access and the fiscal sustainability of health systems, more detailed predictive information is becoming increasingly important. The horizon scanning instrument uses a wide range of data sources and assesses upcoming products based on their predicted impact on patient health, the organisation of health systems and potential cost to public finances.

There is strong commitment to treat more people in day surgery, but more efficiency could be gained by reducing hospital capacity

The reduction in hospitals and hospital beds per population (Figure 18) shows that Luxembourg is attempting to rely less on inpatient hospital care. However, there is room to further reduce utilisation of expensive inpatient treatment. For example, a relatively low bed occupancy rate (71 % compared to on average 77 % in 22 EU countries) and an average length of stay that is above the EU average (Figure 18) suggest opportunities to reduce the number of hospital beds and the length of stay for certain conditions.[9] The average length of stay may decrease in the coming years, as the hospital legislation in 2018 addresses the shortage of rehabilitative care beds, resulting in fewer delayed discharges.

9: The constant trend in average length of stay in hospitals may be partially explained by case-mix and the increase in day surgery in recent years.

Figure 18. The number of hospital beds has declined but length of stay has remained above EU average

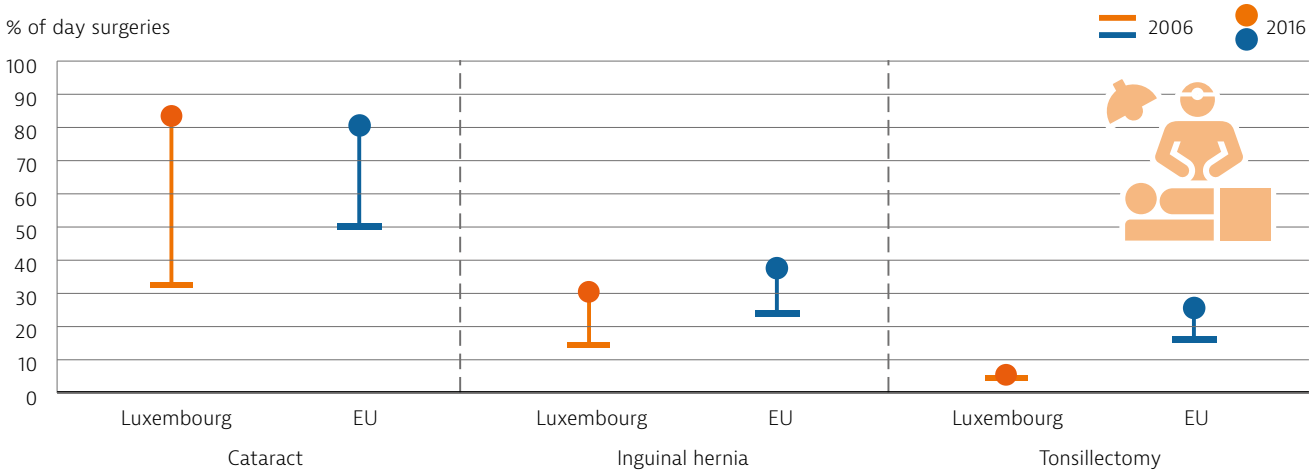


Note: ALOS: average length of stay.
Source: Eurostat Database.

At the same time, the share of selected day surgery procedures has grown. Between 2010 and 2016, day surgery admissions increased from 48 % to 60 % of all hospital admissions (Ministry of Health of Luxembourg, 2018a), albeit with large variation in the performance of day surgery between hospitals and interventions. Overall, the shares of cataract and inguinal hernia surgeries performed as outpatient cases have increased, while tonsillectomies are still mainly performed in inpatient settings (Figure 19) (Ministry of Health of Luxembourg, 2018a).

The recent hospital reform law (2018) specifically targets the further substitution of inpatient care with day surgery and sets up conditions for improved transparency and accountability. It also aims to foster cooperation and coordination across outpatient and inpatient providers for certain diseases (stroke, cancer, diabetes, chronic pain, neurodegenerative conditions, etc.) through care competence networks. These multidisciplinary networks aim to bring together hospital environments and areas of research. The new government also plans to foster closer hospital collaboration on IT infrastructure, laboratory and sterilisation services, quality and risk management, as well as continuous professional development.

Figure 19. Day surgery has increased in Luxembourg but further gains are possible



Sources: OECD Health Statistics 2018; Eurostat Database (data refer to 2006 and 2016, or nearest years).

Box 5. eHealth technologies are being developed

In 2015, the national eHealth agency (*Agence eSanté*) introduced electronic health records (DSP) as a pilot programme for patients with multimorbidity and chronic diseases who signed up with a care coordinating GP. DSPs can be accessed through the platform eSanté, which enables the secure exchange of electronic health data between inpatient and outpatient providers, and patients. The eHealth agency also provides a data sharing tool for medical test results (regibox) and a national pseudonymisation service for providers and researchers. In 2018, about 10 % of the population held a DSP and about two fifths of GPs were connected to eSanté and regibox. Other planned eHealth programmes include an electronic health card to replace the current social security card and an electronic system that supports the benefit-in-kind model for outpatient health services (Section 5.2).

In terms of research, since 2017, the international project 'Clinnova' has worked to set up a centre of excellence for digital health and personalised medicine in Luxembourg. The project aims to establish a secure research data sharing platform, linking data from clinical studies, registries, the DSP and mHealth. Currently, several companies are performing clinical testing of mHealth technologies for specific chronic diseases, such as Parkinson's disease and dementia.

eHealth may have the potential to increase efficiency further

Luxembourg is one of the most advanced countries in the EU in terms of connectivity, digital skills and use of the Internet by citizens. As part of the *Digital Lëtzebuerg Initiative*, Luxembourg is committed to diversifying towards a digital economy. In health, the initiative focuses on increasing the take-up of digital solutions to improve the exchange of health data (between doctors, pharmacies, etc.), care coordination and patient empowerment. It aims to expand shared electronic health records (*Dossier de Soins Partagé;* DSP) as a central element for improved quality of care and service provision. There is further room for improvement in the digitalisation of public services and the use of digital technologies in public administration, as Luxembourg performs below EU average on both (European Commission, 2018). In addition, mHealth devices and digital solutions to support the management of self-care are still being developed (Box 5).

Information systems will bolster performance assessment

In Luxembourg, there is a lack of data on quality, safety, provision and efficiency of care, making it difficult to monitor health resources and evaluate the health system's performance. Several attempts to improve accountability and the documentation of services and costs have failed in recent years. The setting of tariffs and standards for doctors' services, for instance, has been opposed by doctors, though an extensive revision of tariffs is currently under way.

In a separate initiative, the 2018 hospital law introduced mandatory documentation of hospital activities and coding standards, allowing greater transparency for hospital services, quality and safety, benchmarking, and planning purposes. How this information could be used for the introduction of activity-based payments (Diagnosis Related Groups, DRGs) remains to be seen but in the meantime, the data will facilitate the evaluation and comparison of quality of hospital services. Finally, a National Health Observatory, planned for 2020, will gather national health data and support the government with evidence-based information on health status (morbidity and mortality), risk factors and the health system. This information will be used to assess the health system's performance.

6 Key findings

- Life expectancy in Luxembourg is among the highest in the EU. Relatively low mortality rates from treatable causes indicate that the health system generally provides good quality care and significantly contributes to improving population health. However, some risk factors have a negative impact on life expectancy. In particular, alcohol consumption is among the highest in the EU and represents a major public health challenge.

- Despite cost-containment efforts, health spending per capita (EUR 3 575 in 2017) is one of the highest among EU countries. Although health care is well funded, projected increases in public spending in the health sector, as well as on long-term care, are significant due to the additional needs arising from population ageing. The public share of spending on health (83 %) is above the EU average (79 %) while nearly 11 % is paid directly out of pocket by households.

- Luxembourg's population generally has good access to care with few barriers arising from distance, waiting times or cost. Out-of-pocket spending and cost sharing are low. The benefit basket covers a wide range of services and is being continuously expanded. There are, however, inequalities of access, with people on low incomes reporting unmet medical needs for financial reasons. If adopted, the extension of the third-party payer model for outpatient services may further improve access to health care, particularly for vulnerable groups.

- New domestic training opportunities for doctors and nurses are designed to address Luxembourg's over-reliance on foreign-trained workers and boost the number of doctors in the longer term. However, skill mix innovations and the development of professional roles will be needed in parallel to keep the health sector an attractive place to work, both for domestic and foreign health professionals. Task sharing and substitution will also be key, given the relatively low number of doctors.

- Luxembourg has embarked on important reforms and strategies to improve the efficiency of health care delivery and to strengthen primary care. Diverting people from seeking care in hospitals and emergency departments is also a key focus and, to this end, the government supports general practitioner group practices that have extended opening hours. Key hospital reforms include promoting the use of more day surgery and enhanced cooperation between outpatient and inpatient providers through multidisciplinary care competence networks. Reducing the number of acute care hospital beds and the average length of stay as well as expanding the policy on generic substitution could also improve efficiency.

- Although digital infrastructure is already advanced in Luxembourg, efforts are still ongoing to implement eHealth solutions that would further increase the transparency and efficiency of processes (such as digital solutions for the reimbursement of providers), enhance collaboration and improve integration of care. Important steps have been taken to improve documentation and monitoring in health. For example, the recent hospital reform legislation mandates the documentation of hospital activities, while a new Health Observatory will gather all the data needed to assess the performance of the health system. In light of fiscal sustainability concerns, it is important to focus on those interventions that would improve efficiency without driving costs higher.

Key sources

Berthet F et al. (2015), *Health Systems in Transition. HiT in brief: Luxembourg.* WHO Regional Office for Europe (on behalf of the European Observatory on Health Systems and Policies), Copenhagen.

OECD, EU (2018), *Health at a Glance: Europe 2018: State of Health in the EU Cycle.* OECD Publishing, Paris, https://www.oecd.org/health/health-at-a-glance-europe-23056088.htm

References

CNS (2018), *Décompte de l'assurance maladie-maternité 2017* [Account of the health insurance 2017] Caisse National de Santé [National Health Fund], Luxembourg.

ECDC (2018), *Antimicrobial consumption. In: ECDC. Annual epidemiological report for 2017.* European Centre for Disease Prevention and Control, Stockholm.

European Commission (2018), *Digital Economy and Society Index (DESI) 2018. Country Report Luxembourg.* European Commission, Brussels, http://ec.europa.eu/information_society/newsroom/image/document/2018-20/lu-desi_2018-country-profile_eng_B4406FFE-002F-A163-A4CE5D474BAF2793_52228.pdf

European Commission (2019a), *Joint report on health care and long-term care systems and fiscal sustainability. Country documents 2019 update.* Institutional Paper 105. European Commission, Brussels, https://ec.europa.eu/info/sites/info/files/economy-finance/ip105_en.pdf

European Commission (2019b), *Country Report Luxembourg 2019.* 2019 European Semester. European Commission, Brussels, https://ec.europa.eu/info/sites/info/files/file_import/2019-european-semester-country-report-luxembourg_en.pdf

European Commission (2019c), *Fiscal Sustainability Report 2018.* Institutional Paper 094. European Commission, Brussels, https://ec.europa.eu/info/sites/info/files/economy-finance/ip094_en_vol_1.pdf

Médecins du Monde (2017), *Rapport annuel 2017* [Annual report 2017], Esch-sur-Alzette and Luxembourg.

European Commission (DG ECFIN)-EPC (AWG) (2018), *The 2018 Ageing Report – Economic and budgetary projections for the EU Member States (2016-2070).* Institutional Paper 079. May 2018. European Commission, Brussels.

IGSS (2019), *Rapport général sur la sécurité sociale au Grand-Duché de Luxembourg 2018* [General report on social security in the Grand Duchy of Luxembourg 2018]. General Inspectorate for Social Security, Luxembourg.

Ministry of Health of Luxembourg (2017), *Vers une amélioration des services d'urgences* [Improving emergency services]. Press release 15.12.2017, Luxembourg.

Ministry of Health of Luxembourg (2018a), *Carte sanitaire – Mise à jour 2017* [Health Inventory – 2017 Update], Luxembourg.

Ministry of Health of Luxembourg (2018b), *Plan National Antibiotiques 2018-2022* [National Antibiotics Plan 2018-2022], Luxembourg.

Pivot D, Leite S (2019), *Enquête de couverture vaccinale 2018 au Grand-Duché de Luxembourg* [2018 Vaccination Coverage Survey in the Grand Duchy of Luxembourg]. Health Directorate, Ministry of Health of Luxembourg, Luxembourg.

Swinnen H (2018), *ESPN Thematic Report on Inequalities in access to healthcare Luxembourg 2018.* European Commission Directorate-General for Employment, Social Affairs and Inclusion, Brussels.

Country abbreviations

Austria	AT	Denmark	DK	Hungary	HU	Luxembourg	LU	Romania	RO
Belgium	BE	Estonia	EE	Iceland	IS	Malta	MT	Slovakia	SK
Bulgaria	BG	Finland	FI	Ireland	IE	Netherlands	NL	Slovenia	SI
Croatia	HR	France	FR	Italy	IT	Norway	NO	Spain	ES
Cyprus	CY	Germany	DE	Latvia	LV	Poland	PL	Sweden	SE
Czechia	CZ	Greece	EL	Lithuania	LT	Portugal	PT	United Kingdom	UK

European Commission

State of Health in the EU
Country Health Profile 2019

The Country Health Profiles are an important step in the European Commission's ongoing *State of Health in the EU* cycle of knowledge brokering, produced with the financial assistance of the European Union. The profiles are the result of joint work between the Organisation for Economic Co-operation and Development (OECD) and the European Observatory on Health Systems and Policies, in cooperation with the European Commission.

The concise, policy-relevant profiles are based on a transparent, consistent methodology, using both quantitative and qualitative data, yet flexibly adapted to the context of each EU/EEA country. The aim is to create a means for mutual learning and voluntary exchange that can be used by policymakers and policy influencers alike.

Each country profile provides a short synthesis of:

- health status in the country
- the determinants of health, focussing on behavioural risk factors
- the organisation of the health system
- the effectiveness, accessibility and resilience of the health system

The Commission is complementing the key findings of these country profiles with a Companion Report.

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