Recent Trends in International Migration of Doctors, Nurses and Medical Students

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Foreword

This report builds on OECD work since 2007 to monitor trends in the migration of health workers to promote more informed policy dialogues between source and destination countries of doctors, nurses and other categories of health workers. The report is divided in two parts and seven chapters.

Part 1 presents an overview of the most recent trends in the international mobility of health workers, looking at the significant contribution that foreign-born and foreign-trained doctors and nurses have made to the growing number of doctors and nurses in OECD countries between 2000 and 2015/16 (Chapter 1). It also provides a synthesis of new analysis on the internationalisation of medical education in OECD and EU countries (Chapter 2), drawing on the results from four country case studies in Europe and a study on the integration of foreign-trained doctors and nurses in Canada.

Part 2 summarises the results of each of these four case studies on the internationalisation of medical education in France (Chapter 3), Ireland (Chapter 4), Poland (Chapter 5) and Romania (Chapter 6), as well as the study on “brain gain” and “brain waste” in Canada (Chapter 7).

This report is the joint work of staff in the OECD Health Division and the OECD International Migration Division. The country case studies were prepared in collaboration with national experts and consultants. Karolina Socha-Dietrich and Gaetan Lafortune coordinated this publication and prepared the first two chapters, with the support from Erik Vickstrom (formerly from the OECD International Migration Division) for Chapter 1. Chapter 3 was prepared by Marie-Laure Delamaire (Researcher, IESEG School of Management in Paris) and Gaetan Lafortune (OECD Health Division), Chapter 4 by Mairead Heffron (researcher and consultant) and Karolina Socha-Dietrich (OECD Health Division), Chapter 5 by Anna Jaroń (Researcher, Institute of Public Affairs), Agnieszka Łada (Director of the European Programme, Institute of Public Affairs) and Karolina Socha-Dietrich (OECD Health Division), Chapter 6 by Marius Ungureanu (Director of Education, Department of Public Health, Babeș-Bolyai University) and Karolina Socha-Dietrich (OECD Health Division), and Chapter 7 by Alexia Olaizola and Arthur Sweetman (Department of Economics, McMaster University). Gaëlle Balestat and Eileen Rocard (OECD Health Division) provided statistical support.

Akiko Maeda (formerly from the OECD Health Division) provided an important contribution in designing the project and undertaking the first steps. Jean-Christophe Dumont (Head of the OECD International Migration Division) and Francesca Colombo (Head of OECD Health Division) provided useful comments on the first two chapters. Many useful comments on the first two chapters were also provided by national delegates during and after the OECD Health Committee meeting in December 2018.

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Executive summary

This report describes how the international migration of doctors, nurses, and medical students in OECD countries has evolved over the past decade. These recent trends are examined in the context of larger migration patterns, including the increasing mobility of students and highly skilled workers in general. This work contributes to the call for regular monitoring of migration flows in the 2010 Global Code of Practice on the International Recruitment of Health Personnel.

Foreign-born and foreign-trained doctors and nurses have contributed to growing health workforce in OECD countries

- The number of doctors and nurses has increased in most OECD countries over the past decade, driven largely by growing numbers of domestic graduates, but foreign-born and foreign-trained doctors and nurses have also significantly contributed to this rise.
- Among the 18 OECD countries for which data are available from 2010/11 to 2015/16, the number on foreign-born doctors rose by over 20%, a much higher growth rate than the overall increase of 10%. As a result, the proportion of foreign-born doctors across these OECD countries rose by 3 percentage points to 27% in 2016. The trend for nurses is similar, with the number of foreign-born nurses increasing by 20% while the overall increase was about 10%, so their share increased by 1.5 percentage points to 16%.
- In most OECD countries, the proportion of health workers born abroad is higher than the proportion trained abroad, reflecting the fact that destination countries provide education and training to migrants who may have moved at an early age with their families or moved to pursue their university education. For example, 40% of foreign-born doctors in Australia in 2016 received their medical education in Australia.
- Of all doctors working in 26 OECD countries in 2016, 16% (about 483 000) obtained at least their first medical degree in another country, up from 14.5% (about 424 000) in 2011. The share and number of foreign-trained nurses have also risen to 7% (about 546 000) of all nurses working in 25 OECD countries in 2016, up from 6.6% (about 461 000) in 2011.
- The United States has traditionally attracted the largest number of foreign-trained doctors and nurses, followed by the United Kingdom. The main country of origin of foreign-trained doctors in both the United States and the United Kingdom is still India, followed by Pakistan. However, over the past decade, a growing number of new foreign-trained doctors in the United States are in fact American citizens who studied mostly in the Caribbean before coming back to the United States. These American international graduates have largely replaced the inflow of Indian graduates into the United States.

The internationalisation of medical education provides new opportunities for young people to study medicine abroad, but there are potential risks of waste in human capital if the growing number of new graduates exceeds greatly the number of internship and specialty training places to allow them to complete their training

- The number of students pursuing medical education outside their home country has increased significantly over the past decade, with a growing number of students moving between OECD and EU countries. Building on four case studies of European countries that receive a large number of international medical students, this report highlights that half of all medical students in Ireland are international students, nearly a third in Romania and a quarter in Poland. The proportion in France is lower with about one in ten.
- While the mobility of medical students is part of the growing internationalisation of higher education in general, some specific supply and demand factors have also played a role:
  - Faced with *numerus clausus* policies that limit entry into medical education, many young people have taken the opportunity to study in other countries where medical schools can accept large number of international students.
  - Medical schools in some countries have responded to this demand by implementing strategies to attract international students as a way to increase their revenues and expand. For example, a growing number of medical schools in Romania offer programmes in English and French, and most medical schools in Poland offer programmes in English. In Ireland, medical schools have established agencies to recruit and assist international students in their application process.
  - The mobility of medical students in Europe has been facilitated by the recognition of medical diplomas across all EU countries under the EU directive on the recognition of professional qualifications.
- Most international medical students in Ireland, Poland, and Romania only do their first degree in these countries before returning home or moving to another country to complete their internship and postgraduate specialty training. This is either because they seek better training and employment opportunities at home or in other countries (in the case of students studying in Poland and Romania) or because they are not able to enter postgraduate training (in the case of students in Ireland). While most students from Norway, Sweden and France who obtain their medical degree in Poland and Romania face no major difficulties completing their postgraduate training at home, this is not the case for some other international graduates, for example from Canada and to a lesser extent from the United States, who are facing difficulties accessing internship/residency training at home. These bottlenecks may result in a “brain waste”, if these new graduates are not able to complete their clinical training.
- Ireland, Poland and Romania are highly successful in attracting large numbers of international medical students, yet they are facing widespread shortages of doctors for various reasons:
  - In Poland and Romania, this is mainly due to working conditions that are less attractive than in other countries, meaning not only that nearly all international medical students leave after completing their first medical degree, but also that Polish and Romanian medical graduates and fully-trained doctors emigrate.
  - In Ireland, many international students would like to practice in the country, but most cannot access internship posts as these are mainly allocated to domestic students, so they must leave the country, while at the same time hospitals and other health care facilities need to recruit foreign-trained doctors to meet their needs. Increasing postgraduate training capacity would help to address this paradoxical situation.

1 Recent trends in international mobility of doctors and nurses

Gaétan Lafortune (OECD Health Division), Karolina Socha-Dietrich (OECD Health Division) and Erik Vickstrom (formerly from the OECD International Migration Division)

This chapter reviews the contribution of foreign-born and foreign-trained doctors and nurses to the rising number of doctors and nurses working in OECD countries over the past decade. The number of foreign-trained doctors working in OECD countries increased by 50% between 2006 and 2016 (to reach nearly 500 000 in 2016), while the number of foreign-trained nurses increased by 20% over the five-year period from 2011 to 2016 (to reach nearly 550 000). The United States is still the main country of destination of foreign-trained doctors and nurses, followed by the United Kingdom and Germany. The number of foreign-trained doctors has also increased rapidly over the past decade in some European countries like Ireland, France, Switzerland, Norway and Sweden. However, it is important to bear in mind that not all foreign-trained doctors are foreigners as a large number in countries such as Norway, Sweden and the United States are people born in the country who obtained their first medical degree abroad before coming back. In these cases, it is not appropriate to refer to this phenomenon as a “brain drain”, particularly as these people usually pay the full cost of their education while studying abroad.

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1.1. Introduction

This chapter builds on and updates earlier work on the international mobility of health workers undertaken by the OECD, often jointly with WHO and the European Commission. In 2007, the chapter devoted to immigrant health workers in the OECD publication *International Migration Outlook* (2007[1]) presented a broad picture of the migration flows with a view to support more informed policy dialogues. This information on migration flows was updated in the 2015 edition of the *International Migration Outlook* (OECD, 2015[2]). This topic was also addressed in a chapter in the 2016 OECD publication, *Health Workforce Policies: Right Jobs, Right Skills, Right Places* (2016[3]), which analysed the impact of health and migration policies on the migration of foreign-trained doctors and nurses in OECD countries.

At the global level, the adoption of the WHO Global Code of Practice on the International Recruitment of Health Personnel in May 2010 called for a more ethical recruitment of health personnel to avoid active recruitment in those countries with acute shortages of skilled health workers as well as for a regular monitoring of the international mobility of health workers (WHO, 2010[4]). The third round of country reporting on the Global Code took place in 2018 and 2019, and a report on the implementation of the Code was discussed at the World Health Assembly in May 2019, contributing to such a regular monitoring.

The migration of health professionals takes place in a broader context of larger migration trends, including the increasing migration of highly-skilled workers and changes to the configuration of the European Union. There has been a steady rise in highly-skilled migration to OECD countries over the past 15 years: the number of tertiary-educated immigrants in the OECD more than doubled between 2000 and 2015.

This chapter draws on the OECD's long experience in collecting data across OECD countries to review the most recent trends in the overall number of doctors and nurses working in OECD countries (Section 1.2) and update the information on the international migration of health workers measured in terms of both foreign-born doctors and nurses (Section 1.3) and foreign-trained (Section 1.4). Annex 1.A provides further data and analysis on the growing efforts in most OECD countries to train more doctors and nurses domestically to respond to their needs and in some cases also to reduce their reliance on foreign-trained health workers. Annex 1.B provides further information on the country of education of foreign-trained doctors working in the two main destination countries, the United States and the United Kingdom.

1.2. The number of doctors and nurses has increased in most OECD countries, driven mainly by growing numbers of domestic graduates

Concerns about shortages of health professionals are not new in OECD countries, and these concerns have grown in many countries with the prospect of the retirement of the 'baby-boom' generation of doctors and nurses. These concerns prompted many OECD countries to increase over the past decade the number of students in medical and nursing education programmes to train more new doctors and nurses in order to replace those who will be retiring and avoid a "looming crisis" in the health workforce.[1]

Because of these education and training policies, but also because of greater retention rates of current doctors and nurses and greater immigration of doctors and nurses in some countries, the number of doctors and nurses has continued to increase in most OECD countries since 2000, both in absolute number and on a per capita basis. In absolute number, a total of 3.7 million doctors and 11.2 million nurses were working in OECD countries in 2016, up from 2.9 million doctors and 8.3 million nurses in 2000. On a per capita basis, there were 3.4 doctors per 1 000 population on average across OECD countries in 2016, up from 2.7 in 2000 (Figure 1.1), and 8.6 nurses per 1 000 population, up from 7.3 in 2000 (Figure 1.2).

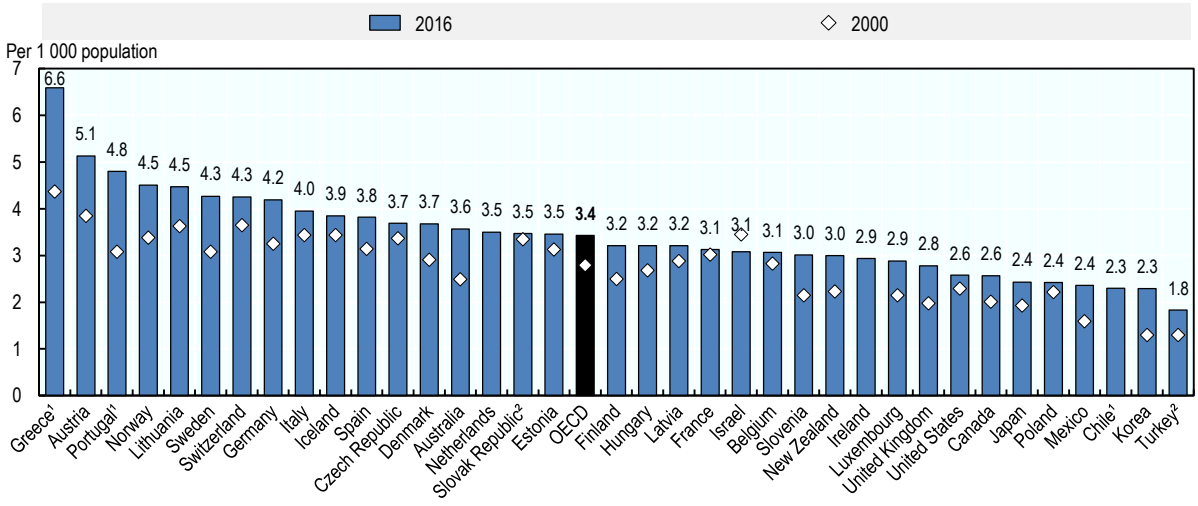
The growth in the number of doctors per capita has been particularly rapid in some countries that started with low levels in 2000, such as Korea, Mexico and the United Kingdom, converging to some extent to the

OECD average. But there has also been rapid growth in several countries that already had high levels of doctors per capita in 2000 (e.g. Greece, Austria, Portugal and Norway[2]). The number of doctors per capita has also grown quite rapidly in Sweden, Germany and Australia.

On the other hand, the number of doctors per capita has grown 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 in medical schools has increased in recent years, which should contribute to increasing the number of new doctors who will be available to replace those who will be retiring in the coming years, if these newly-trained doctors end up working in these countries.

In Israel, the absolute number of doctors has increased substantially since 2000 (by over 20%), but this has not kept up with population growth (which has gone up by more than 33%). This explains the reduction in the doctor-to-population ratio between 2000 and 2016.

Figure 1.1. Practising doctors per 1 000 population in OECD countries, 2000 and 2016 (or nearest year)



Notes: 1. Data refer to all doctors licensed to practice, resulting in a large over-estimation of the number of practising doctors (e.g. adding around 30% of doctors in Portugal). 2. Data include not only doctors providing care to patients, but also those working in the health sector as managers, researchers, etc. (adding another 5-10%).
Source: OECD Health Statistics 2018, https://doi.org/10.1787/health-data-en.

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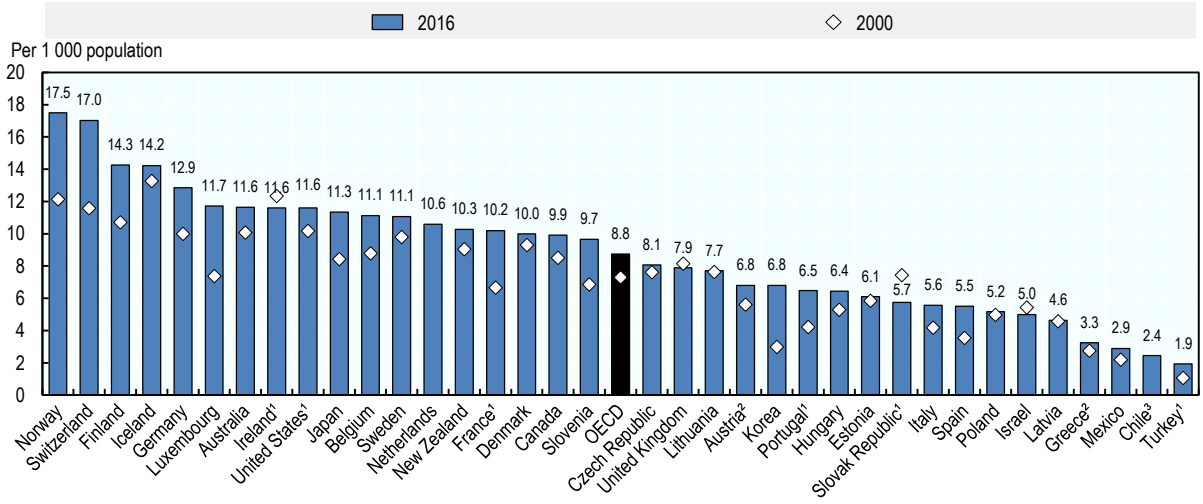
For nurses, the growth in the number per capita has been particularly rapid in countries that already had a relatively high number of nurses in 2000 such as Norway, Switzerland and Finland (Figure 1.2). In Switzerland, most of the growth in the number of nurses has been in lower-qualified nurses. Strong growth in the number of nurses per capita has also occurred in Japan and Korea. The growth rate has been more modest, but still noticeable, in the United States, Canada and Australia. In the United Kingdom, the number of nurses per capita increased rapidly between 2000 and 2006, but has gradually decreased since then, so that the number per capita was slightly lower in 2016 than in 2000. Similarly, in Ireland, the number of nurses peaked at 13.6 per 1 000 population in 2008, but has decreased since then to 11.6 per 1 000 population in 2016.

Figure 1.2. Practising nurses per 1 000 population in OECD countries, 2000 and 2016 (or nearest year)



Notes: In Finland, Iceland and Switzerland, about one-third of nurses are "associate professional" nurses with a lower level of qualifications. In Switzerland, most of the growth in the number of nurses since 2000 has been in this category of "associate professional" nurses. 1. Data include not only nurses providing care for patients, but also those working as managers, educators, etc. (adding another 8-10% on nurses on average). 2. Austria and Greece report only nurses employed in hospital (resulting in an under-estimation).3. Data in Chile refer to all nurses licensed to practice.
Source: OECD Health Statistics 2018, https://doi.org/10.1787/health-data-en.

StatLink https://doi.org/10.1787/888933969886

In most countries, the growth in the number of doctors and nurses has been fuelled largely by growing numbers of domestic graduates who have entered these professions, although in some countries the immigration of foreign-trained doctors and nurses also played an important role (as discussed in section 1.4). For example, in the United States, 75% of the increase in the number of doctors between 2006 and 2016 came from domestic graduates from US medical schools (i.e. about 150 000 out of a total increase of 200 000 doctors), while the other 25% came from foreign-trained doctors (see Table 1.3 below). A growing number of these foreign-trained doctors were Americans who went to get a first medical degree abroad before coming back.

Overall, the number of medical graduates in OECD countries has increased from less than 100 000 per year in 2006 to over 125 000 in 2016, whereas the number of nurse graduates across OECD countries has increased from about 450 000 per year in 2006 to more than 600 000 in 2016 (see Annex 1.A for more country-specific information).

1.3. Foreign-born doctors and nurses have contributed significantly to the growing number of doctors and nurses in many OECD countries

Immigrant doctors and nurses have contributed significantly to the growth in the overall number of doctors and nurses over the past decade in many OECD countries. This section presents the most recent data on the number of foreign-born doctors and nurses working in OECD countries. It is important to keep in mind that many of these foreign-born doctors and nurses may have pursued their medical or nursing studies in their country of destination, not in their country of origin (because they moved with their family at a young age or because they pursued their university education in their country of destination). Box 1.1 provides a

summary of the pros and cons of different approaches to monitor the international migration of health workers, along with the data sources used in this paper.

Box 1.1. Methods and sources used to monitor the international migration of health workers

A regular monitoring of the international migration of health personnel needs to be based on two key criteria: 1) relevancy to both countries of origin and countries of destination; and 2) feasibility of regular data collection.

Approaches to measure migration patterns

Migration patterns can be measured based on nationality, place of birth, or place of education/training. The first approach, based on nationality, faces a number of shortcomings. Firstly, foreigners disappear from the statistics when they are naturalised. Secondly, in several OECD countries, many people who were born and raised in the country hold a different nationality, so there is therefore no systematic link between migration and nationality.

The second approach, based on the place of birth, is more meaningful because when the country of birth differs from the country of residence, it implies that the person did cross a border at some point in time. However, the main question that arises to evaluate the impact of highly skilled migration on origin countries is where the education took place. Some foreign-born people arrived at younger ages, most probably accompanying their family, while others came to the country to pursue their tertiary education and have stayed after completing their studies. In these cases, most of the cost of education will have been supported by the receiving country, and/or by migrants themselves, not by the country of origin.

The third approach, based on the place of education/training, is the most relevant from a policy perspective, although it does raise a number of measurement issues. One of these issues is that nursing and medical education and training can be very long and go through different stages. The definition used in the annual OECD/Eurostat/WHO-Europe Joint Questionnaire is based on where people have received their first medical or nursing degree. Another issue has to do with the internationalisation of medical education, which means that a certain number of foreign-trained doctors or nurses may be people who were born in a country and decided to pursue their studies in another country before returning to their home country. The Joint Questionnaire seeks to collect data on the number of such native-born but foreign-trained doctors and nurses.

Data sources

The description of the international mobility of health workers presented in this chapter is based on the second and third approaches (doctors and nurses born abroad, and doctors and nurses trained abroad). Two data sources were used to identify the country of birth: the latest round of population censuses and Labour Force Surveys (LFS) for some European countries. National censuses generally include all persons aged 15 years and older, while the LFS is restricted to persons between the ages of 15 and 64. Health workers are generally identified on the basis of the International Standard Classification of Occupations (ISCO), revised in 2008. Data collected cover "medical doctors" (221) and "nursing and midwifery professionals" (222) and "nursing and midwifery associate professionals" (322).

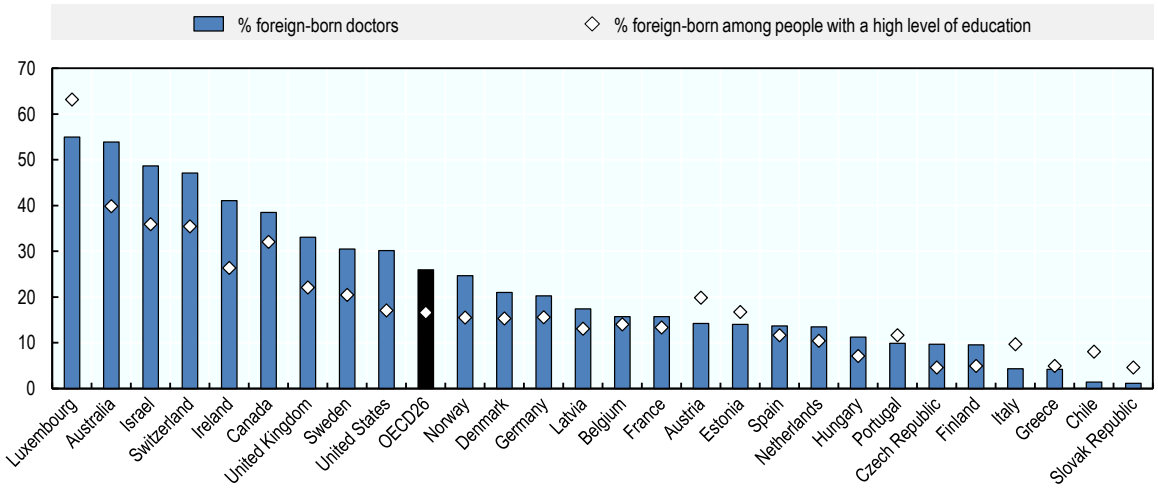
The data on foreign-trained doctors and nurses come from the annual OECD/Eurostat/WHO-Europe Joint Questionnaire that is administered to designated focal points in member countries. The main data source used by countries to supply these data are professional registries managed either by a professional organisation (e.g. a National Medical or Nursing Council) or by a government agency, although some countries have used other data sources.

To a certain degree, the share of migrants among health professionals mirrors that of immigrants – particularly those who are skilled – in the workforce as a whole. That being said, the percentage of foreign-born doctors tends to be greater than the percentage of immigrants among highly educated workers (Figure 1.3), whereas the share of foreign-born nurses is similar or lower (Figure 1.4).

The proportion of doctors born abroad ranges from less than 2% in the Slovak Republic to more than 50% in Australia and Luxembourg. With regard to nurses, the share of foreign-born is insignificant in the Czech Republic and the Slovak Republic, but over 30% in Switzerland, Australia and Israel. With the exceptions of a few countries, immigrants make up a higher proportion of doctors than of nurses, and markedly so in Luxembourg, Sweden, Switzerland and Australia.

Unsurprisingly, the proportions of foreign-born doctors and nurses are highest in the main settlement countries (e.g. Australia, Canada and Israel) and European countries like Luxembourg and Switzerland where large migrant flows head. Ireland and the United Kingdom are also near the top of the list for shares of foreign-born health professionals. Countries in Southern, Central and Eastern Europe have the lowest proportions of foreign-born health workers.

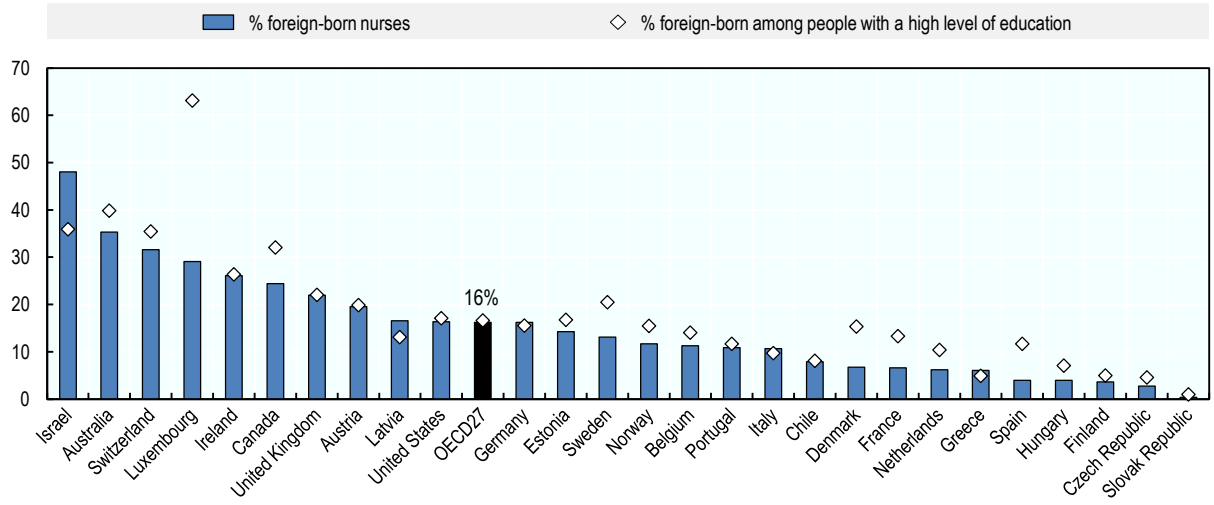
Figure 1.3. Percentage of foreign-born doctors in 27 OECD countries, 2015/16



Note: The OECD average is the unweighted average for the 27 OECD countries presented in the chart. It differs slightly from the OECD total presented in Table 1.1 which is a weighted average of the 18 OECD countries for which data are available in 2000/01, 2010/11 and 2015/16.
Source: DIOC 2015/16, LFS 2015/16.

StatLink https://doi.org/10.1787/888933969905

Figure 1.4. Percentage of foreign-born nurses in 27 OECD countries, 2015/16

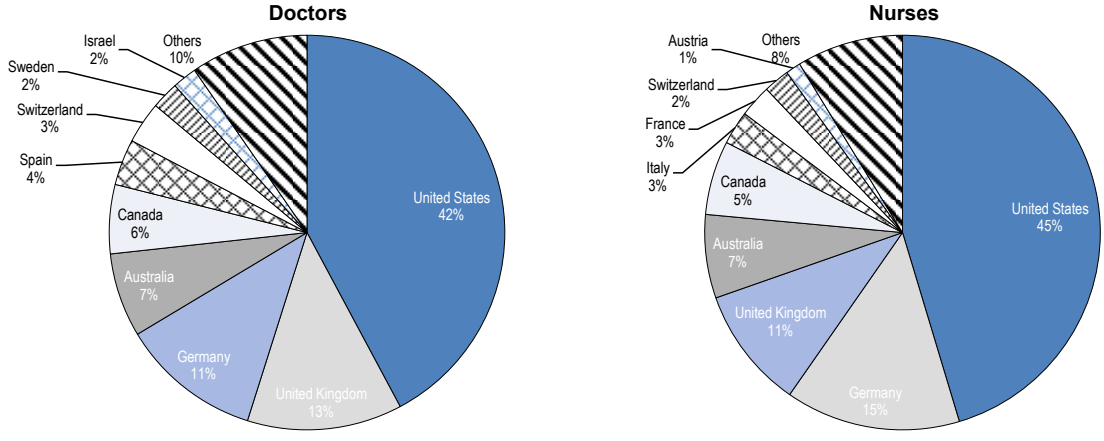


Note: The OECD average is the unweighted average for the 27 OECD countries presented in the chart. It differs slightly from the OECD total presented in Table 1.2 which is a weighted average of the 19 OECD countries for which data are available 2000/01, 2010/11 and 2015/16.
Source: DIOC 2015/16, LFS 2015/16.

StatLink https://doi.org/10.1787/888933969924

In absolute terms, the United States remains the main country of destination for migrant doctors and nurses. Of all foreign-born health workers who practise in OECD countries, 42% of doctors and 45% of nurses practise in the United States (Figure 1.5). This is roughly equal to the share of all foreign-born highly-skilled people in OECD countries working in the United States (41%). The United Kingdom is the second country of destination for doctors, receiving 13% of all foreign-born doctors who practise in OECD countries, followed by Germany (11%). This ranking is reversed for nurses, with Germany in second place (15%) followed by the United Kingdom (11%).

Figure 1.5. Distribution of foreign-born doctors and nurses by country of residence, 2015/16



Source: DIOC 2015/16, LFS 2015/16.

StatLink https://doi.org/10.1787/888933969943

Among the 18 OECD countries for which data are available and comparable over time, the number of foreign-born doctors rose by over 20% between 2010/11 and 2015/16, a much higher growth rate than the overall increase in the number of doctors of 10% (Table 1.1).[3] As a result, the proportion of foreign-born doctors across these OECD countries rose by 3.1 percentage points to 27.2%. This growth is due to both migration dynamics and differences in age structures between foreign-born and native-born doctors and nurses, which affect their exits from the labour market via retirement.

Increases in the share of immigrant doctors were highest in Luxembourg (+15 percentage points), Switzerland (+6), Germany (+5), Canada (+4), the United States (+4) and Spain (+3). In terms of absolute numbers, the greatest swing in the number of foreign-born doctors came in the United States (+67 000) and Germany (+22 000), followed by Australia (+11 100), Canada (+11 000), Switzerland (+5 400) and Spain (+4 900). By way of comparison, the increase in the United Kingdom was a mere 3 000.

Some OECD countries, such as Greece and Italy, recorded declines in the number of foreign-born doctors between 2010/11 and 2015/16. The negative trend in Greece may be related to the government-debt crisis after 2010, which may have prompted foreign-born doctors to leave the country.

Table 1.1. Foreign-born doctors working in OECD countries, 2000/01, 2010/11 and 2015/16

	Doctors								
	2000/01			2010/11			2015/16		
Country of residence	Total	Foreign-born	% foreign-born	Total	Foreign-born	% foreign-born	Total	Foreign-born	% foreign-born
Australia	48 211	20 452	42.9	68 795	36 076	52.8	87 471	47 154	53.9
Austria[1]	30 068	4 400	14.6	40 559	6 844	16.9	36 782	5 225	14.2
Belgium*	..	..	..	..	..	..	39 265	6 174	15.7
Canada	65 110	22 860	35.1	79 585	27 780	34.9	100 780	38 780	38.5
Czech Republic*	…	…	…	39 562	3 468	8.8	42 363	4 110	9.7
Denmark[2]	14 977	1 629	10.9	15 403	2 935	19.1	18 593	3 904	21.0
Estonia*	…	…	…	4 145	747	18.0	5 299	742	14.0
Finland	14 560	575	4.0	18 937	1 454	7.7	20 121	1 917	9.5
France*	200 358	33 879	16.9	224 998	43 955	19.5	..	..	..
Germany	282 124	28 494	11.1	366 700	57 210	15.7	390 039	78 907	20.2
Greece[3]	13 744	1 181	8.6	49 577	3 624	7.3	49 922	2 103	4.2
Hungary	24 671	2 724	11.0	28 522	3 790	13.3	33 532	3 761	11.2
Ireland	8 208	2 895	35.3	12 832	5 973	46.6	13 538	5 565	41.1
Israel*	…	…	…	23 398	11 519	49.2	28 264	13 753	48.7
Italy*	…	…	…	234 323	11 822	5.0	234 704	10 163	4.3
Latvia*	…	…	…	…	…	…	6 868	1 197	17.4
Luxembourg	882	266	30.2	1 347	536	40.0	2 006	1 103	55.0
Mexico*	205 571	3 005	1.5	…	…	…	…	…	…
Netherlands	42 313	7 032	16.7	57 976	8 429	14.6	65 744	11 247	17.1
New Zealand*	9 009	4 215	46.9	12 708	6 897	54.3	…	…	…
Norway	12 761	2 117	16.6	19 624	4 460	22.7	22 348	5 082	22.7
Poland*	99 687	3 144	3.2	109 652	2 935	2.7	…	…	…
Portugal	23 131	4 552	19.7	36 831	6 040	16.4	35 592	3 508	9.9
Slovak Republic[1]*	…	…	…	21 552	823	3.8	13 127	153	1.2
Slovenia*	…	…	…	5 556	1 006	18.1	…	…	…
Spain[1]	126 248	9 433	7.5	210 500	21 005	10.3	189 396	25 875	13.7
Sweden[4]	26 983	6 148	22.9	47 778	14 173	29.8	50 437	15 372	30.5
Switzerland[4]	23 039	6 431	28.1	43 416	18 082	41.6	49 760	23 438	47.1
Turkey*	82 221	5 090	6.2	104 950	3 003	2.9	…	…	…
United Kingdom	147 677	49 780	33.7	236 862	83 951	35.4	262 465	86 866	33.1

	Doctors								
	2000/01			2010/11			2015/16		
United States	807 844	196 815	24.4	838 933	221 393	26.4	958 666	289 106	30.2
OECD Total (18 countries)	1 712 551	367 784	21.5	2 174 176	523 755	24.1	2 387 192	648 913	27.2

Notes: Doctors whose place of birth is unknown are excluded from the calculation of the percentage of foreign-born doctors. Countries with an asterisk (*) are not counted in the total due to data gaps at least for one year.
1. Other sources indicate an increase in the number of doctors in Austria, the Slovak Republic and Spain between 2010/11 and 2015/16.
2. Some doctors undergoing specialty training may not be counted in 2011.
3. In 2001, doctors are only partially covered.
4. Some doctors undergoing specialty training may not be counted in 2000.
Source: OECD (2007[1]) for 2000/01, DIOC 2010/11 and LFS 2009/12 for 2010/2011, DIOC 2015/16 and LFS 2015/16 for 2015/16.

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The overall trend for nurses is similar to that of doctors. The number of foreign-born nurses increased by 20% between 2010/11 and 2015/16 while the overall increase in nurses was about 10%, so the share of foreign-born nurses increased by an average of 1.5 percentage points to 16.2% (Table 1.2). The largest numerical increase was in the United States (+130 000), followed by Germany (+68 000) and Australia (+26 000). On the other hand, the number of foreign-born nurses decreased in some OECD countries.

Table 1.2. Foreign-born nurses (professional and associate professional nurses) working in OECD countries, 2000/01, 2010/11 and 2015/16

	Nurses								
	2000/01			2010/11			2015/16		
Country of residence	Total	Foreign-born	% foreign-born	Total	Foreign-born	% foreign-born	Total	Foreign-born	% foreign-born
Australia	191 105	46 750	24.8	238 935	78 508	33.2	295 103	104 272	35.3
Austria	56 797	8 217	14.5	70 147	10 265	14.6	96 048	18 779	19.6
Belgium[1]	127 384	8 409	6.6	140 054	23 575	16.8	135 893	15 281	11.2
Canada	284 945	48 880	17.2	326 700	73 425	22.5	378 775	92 530	24.4
Czech Republic*	…	…	…	89 301	1 462	1.6	94 879	2 600	2.7
Chile*							121 107	9 532	7.9
Denmark[1]	57 047	2 320	4.1	61 082	6 301	10.3	62 212	4 173	6.7
Estonia*	…	…	…	8 302	2 162	26.0	9 134	1 304	14.3
Finland	56 365	470	0.8	72 836	1 732	2.4	74 927	2 722	3.6
France	421 602	23 308	5.5	550 163	32 345	5.9	612 387	40 329	6.6
Germany	781 300	74 990	10.4	1 074 523	150 060	14.0	1 346 118	217 998	16.2
Greece	39 952	3 883	9.7	55 364	1 919	3.5	52 851	3 221	6.1
Hungary	49 738	1 538	3.1	59 300	1 218	2.1	56 442	2 238	4.0
Ireland	43 320	6 204	14.3	58 092	15 606	26.9	52 832	13 778	26.1
Israel*	…	…	…	31 708	16 043	50.6	41 531	19 946	48.0
Italy*	…	…	…	399 777	39 231	9.8	392 630	41 935	10.7
Latvia*	…	…	…	…	…	…	8 056	1 334	16.6
Luxembourg*	2 551	658	25.8				3 098	900	29.1
Mexico*	267 537	550	0.2	…	…	…	…	…	…
Netherlands	…	…	…	…	…	…	188 094	11 643	6.2
New Zealand*	33 261	7 698	23.2	40 002	13 884	35.0	…	…	…
Norway[1]	70 698	4 281	6.1	97 725	8 795	9.0	102 843	12 418	12.1
Poland*	243 225	1 074	0.4	245 667	595	0.2	…	…	…
Portugal	36 595	5 077	13.9	53 491	4 643	8.7	61 178	6 637	10.8

	Nurses								
	2000/01			2010/11			2015/16		
Country of residence	Total	Foreign-born	% foreign-born	Total	Foreign-born	% foreign-born	Total	Foreign-born	% foreign-born
Slovak Republic*	…	…	…	52 773	303	0.6	48 991	186	0.4
Slovenia*	…	…	…	17 124	1 483	8.7	…	…	…
Spain	167 498	5 638	3.4	252 804	14 400	5.7	258 709	10 302	4.0
Sweden[1]	98 505	8 710	8.9	113 956	15 834	13.9	110 143	14 455	13.1
Switzerland[1]	104 227	28 041	26.9	101 302	31 020	30.6	102 134	32 264	31.6
Turkey*	…	…	…	147 611	4 484	3.1	…	…	…
United Kingdom	538 647	81 623	15.2	618 659	134 075	21.7	692 001	151 815	21.9
United States	2 818 735	336 183	11.9	3 847 068	561 232	14.6	4 225 529	691 134	16.4
OECD Total (19 countries)	6 203 999	712 302	11.5	8 115 621	1 195 863	14.7	8 904 219	1 445 989	16.2

Notes: Nurses whose place of birth is unknown are excluded from the calculation of the percentage of foreign-born nurses. Countries with an asterisk (*) are not counted in the total due to data gaps for at least one year.
1. Other sources indicate an increase in the number of nurses in Belgium, Sweden and Switzerland between 2010/11 and 2015/16. Other sources indicate that the number of nurses in Denmark may be about 50% higher in 2010 and in 2015 (some "associate professional" nurses may not be counted).
Source: OECD (2007[1]) for 2000/01 (except Switzerland, LFS 2001), DIOC 2010/11 and LFS 2009/12 for 2010/2011, DIOC 2015/16 and LFS 2015/16 for 2015/16.

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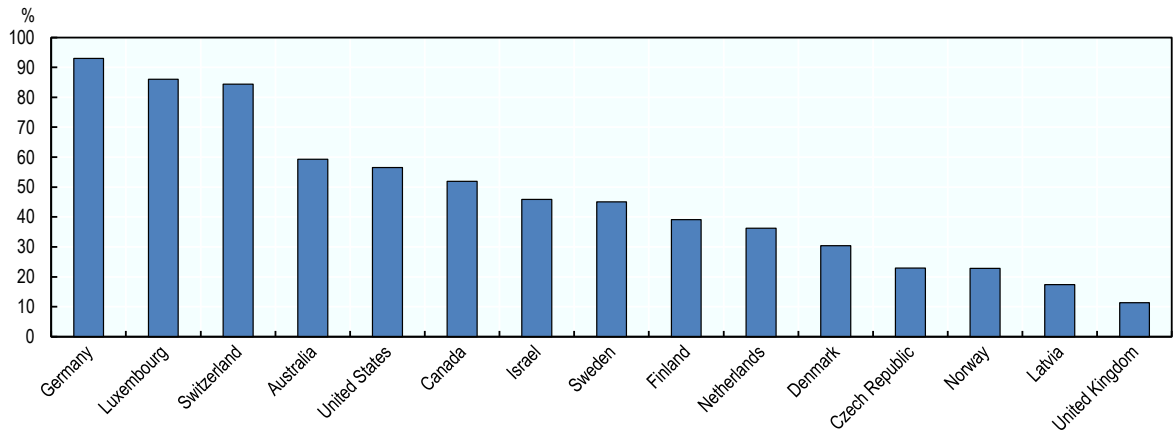
In six out of fifteen OECD countries, more than half of the increase in the total number of doctors in recent years is attributable to immigration (Figure 1.6). For nurses, in half of the OECD countries for which data is available, more than a third of the increase in the total number of nurses came from people who were born in another country (Figure 1.7).

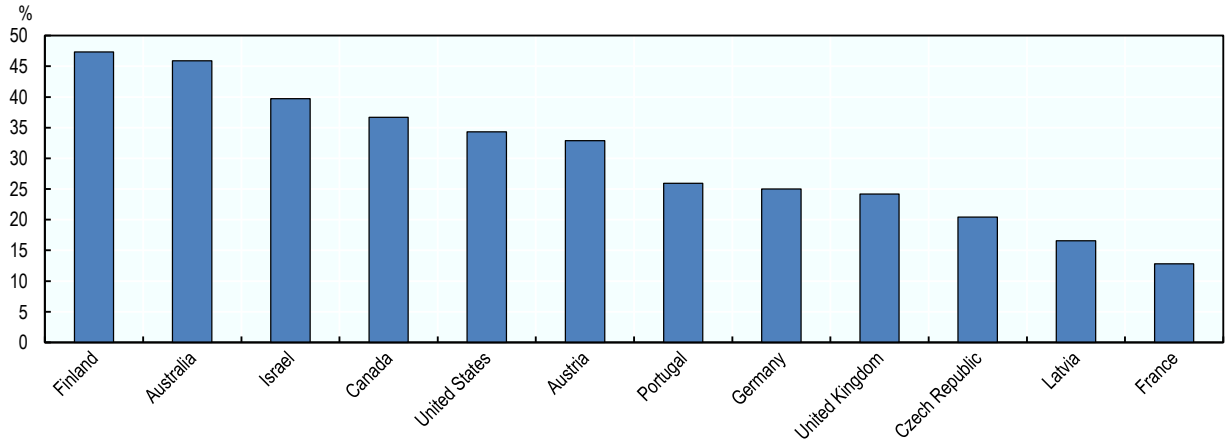
Figure 1.6. Share of the growth in practising doctors between 2010/11 and 2015/16 attributed to foreign-born doctors in 15 OECD countries



Source: DIOC 2010/11 and LFS 2009/12 for 2010/2011, DIOC 2015/16 and LFS 2015/16 for 2015/16.

StatLink https://doi.org/10.1787/888933970000

Figure 1.7. Share of the growth in practising nurses between 2010/11 and 2015/16 attributed to foreign-born nurses in 12 OECD countries



Source: DIOC 2010/11 and LFS 2009/12 for 2010/2011; DIOC 2015/16 and LFS 2015/16 for 2015/16.

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1.4. Many OECD countries have also relied increasingly on foreign-trained doctors and nurses

In most OECD countries, the proportion of health workers trained abroad is lower than those born abroad, reflecting the fact that destination countries provide part of the education and training to migrants. For example, 40% of foreign-born doctors in Australia received their medical education there (according to 2016 census data).

Overall, 16% of all doctors working in 26 OECD countries in 2016 had obtained at least their first medical degree in another country, that is, about 483 000 doctors (Table 1.3). This is up from 14% of all doctors in 2006 (or about 323 000) and 15% in 2011 (or about 424 000). The number and share of foreign-trained nurses has also increased in most OECD countries over the past decade (Table 1.4). However, it is important to keep in mind that not all of the foreign-trained doctors and nurses are foreigners, and that a large number in some countries (e.g. Chile, Israel, Norway, Sweden and the United States) are people born in the country who went to obtain at least a first medical degree abroad before coming back (see also Chapter 2).

Looking a bit more specifically at the trends in foreign-trained doctors in various parts of the OECD:

- Outside Europe, the share of foreign-trained doctors has increased greatly in New Zealand and Australia between 2006 and 2011, but has started to decline in recent years as the number of domestically-trained doctors increased faster. In Canada, both the number and share of foreign-trained doctors have increased steadily, whereas the share has remained relatively stable in the United States as the number of foreign-trained doctors increased at the same rate as the domestically-trained. Among the medical graduates with a foreign degree who obtained a certification to practice in the United States in 2017, a third were American citizens, up from 17% in 2007 (see also Figure 2.3 in Chapter 2). Similarly, in Israel, a growing number of foreign-trained doctors are people born in Israel who went to study abroad: their number nearly doubled between 2006 and 2016, accounting for 40% of all foreign-trained doctors in 2016.

- In Europe, the share of foreign-trained doctors has increased rapidly over the past decade in Ireland, Norway, Switzerland and Sweden, whereas it has decreased slightly in the United Kingdom as the number of domestically-trained doctors has increased slightly more rapidly. However, in Norway more than a half of foreign-trained doctors are in fact people who were born in the country and went to study abroad before returning. In Sweden, the number of foreign-trained natives quadrupled since 2006, accounting for nearly a fifth of foreign-trained doctors in 2015 (see also Figures 2.1 and 2.2 in Chapter 2). In Belgium, France and Germany, the number and share of foreign-trained doctors has also increased steadily over the past decade (with the share doubling from about 5 to 6% of all doctors in 2006 to 11 to 12% in 2016).

In absolute number, the United States had by far the highest number of foreign-trained doctors, with more than 215 000 initially trained abroad in 2016. Following the United States, the United Kingdom had more than 50 000 foreign-trained doctors in 2017. The main country of origin of these foreign-trained doctors in the United States and the United Kingdom is India, followed by Pakistan (see Annex 1.B).

Table 1.3. Foreign-trained doctors working in OECD countries, 2006, 2011 and 2015-17

	2006				2011				2015-17			
	Year	Total	Foreign-trained (of which natives)[1]	% of total	Year	Total	Foreign-trained (of which natives)[1]	% of total	Year	Total	Foreign-trained (of which natives)[1]	% of total
Australia	2007	62652	14808	23.6	2012	75258	24892	33.1	2016	86550	28283	32.7
			..	..			..	..			(304)	(0.3)
Austria	2006	30426	926	3.0	2011	33656	1372	4.1	2017	37963	2189	5.8
			..	..			(151)	(0.4)			(381)	(1.0)
Belgium	2006	49695	2636	5.3	2011	54851	5033	9.2	2017	63615	7801	12.3
Canada	2006	70870	15275	21.6	2011	84313	19864	23.6	2016	97169	23560	24.3
Chile		..	..	..		..	..	..	2017	45088	9591	21.3
		..	..	..		..	..	..			(2015)	(4.5)
Czech Rep.	2006	44064	1744	4.0	2011	42166	1984	4.7	2016	42682	2799	6.6
Denmark	2006	18402	1144	6.2	2011	20201	1141	5.7	2015	20902	1071	5.1
Estonia	2006	5336	30	0.6	2011	5884	102	1.7	2017	6748	238	3.5
Finland		..	..	..	2011	20502	3882	18.9		..	..	..
France	2006	212711	12261	5.8	2011	216762	17857	8.2	2016	224875	24420	10.9
			..	..			(542)	(0.2)			(660)	(0.3)
Germany[2]	2006	284427	14703	5.2	2011	312695	22829	7.3	2016	346390	38247	11.0
Hungary	2006	37908	2917	7.7	2011	32966	2525	7.7	2016	31515	2459	7.8
			..	..			..	..			(376)	(1.2)
Ireland		..	..	..	2011	18812	6708	35.7	2017	22693	9606	42.3
Israel	2006	24675	15342	62.2	2011	26337	15777	59.9	2017	28690	16598	57.9
			(3448)	(14.0)			(4342)	(16.5)			(6320)	(22.0)
Italy	2006	357519	2488	0.7	2011	377376	3088	0.8	2017	396007	3250	0.8
			(1193)	(0.3)			(1339)	(0.3)			(1387)	(0.3)
Latvia	2006	7510	605	8.1	2011	7930	567	7.2	2017	8022	477	6.0
Lithuania		..	..	..		..	..	..	2017	14578	63	0.4
Netherlands	2006	45051	941	2.1	2011	51939	1352	2.6	2015	59144	1288	2.2
			..	..			..	..			(522)	(0.9)
New Zealand	2006	11889	4833	40.7	2011	14039	6111	43.5	2017	16368	6942	42.4
Norway	2008	18557	5996	32.3	2011	20649	7153	34.6	2017	24433	9689	39.7
			(2987)	(16.1)			(3529)	(17.1)			(5087)	(21.0)
Poland	2008	119604	2529	2.1	2011	123281	2172	1.8	2017	135468	2549	1.9

	2006				2011				2015-17			
	Year	Total	Foreign-trained (of which natives)[1]	% of total	Year	Total	Foreign-trained (of which natives)[1]	% of total	Year	Total	Foreign-trained (of which natives)[1]	% of total
Slovak Rep.		..	..	..	2011	16899	506	3.0		..	..	..
Slovenia		..	..	..	2011	5121	604	11.8	2017	6311	1092	17.3
		..	..	..			..	..			(142)	(2.2)
Spain		..	..	..	2011	207042	19462	9.4		..	..	..
Sweden	2006	32833	6351	19.3	2011	37499	9106	24.3	2015	41848	11715	28.0
			(542)	(1.7)			(1011)	(2.7)			(2117)	(5.0)
Switzerland	2008	29653	6477	21.8	2011	30849	7808	25.3	2016	36175	11900	32.9
Turkey	2006	104475	240	0.2	2011	126029	261	0.2	2015	141259	262	0.2
			(210)	(0.2)			(222)	(0.2)			(223)	(0.2)
UK	2008	147417	44050	29.9	2011	158439	46399	29.3	2017	180069	51329	28.5
USA	2006	664814	166810	25.1	2011	791602	195196	24.7	2016	862965	215630	25.0
OECD Total		**2380488**	**323106**	**13.6**		**2913097**	**423751**	**14.5**		**2977527**	**483048**	**16.2**
		(22 countries)				**(27 countries)**				**(26 countries)**		

1. So far only 12 OECD countries report data on number of foreign-trained but native-born doctors.
2. The data refer to foreign citizens (not necessarily foreign-trained).
Source: OECD Health Statistics 2018 , https://doi.org/10.1787/health-data-en.

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The trends in foreign-trained nurses working in OECD countries are as follows:

- Outside Europe, the number and share of foreign-trained nurses have increased steadily over the past decade in Australia, New Zealand, Canada and the United States. In Israel, the share of foreign-trained nurses has remained at around 10% (the fourth highest share among OECD countries), but one in four are in fact people born in the country who obtained their nursing degree abroad before coming back.
- In Europe, the number and share of foreign-trained nurses has increased particularly rapidly in Switzerland (with most of them coming from neighbouring countries, mainly Germany and France, but also to a lesser extent from Italy; it also includes a growing number of foreign-trained but native-born). In Belgium, France and Germany, the number and share of foreign-trained nurses have also increased quite rapidly over the past decade. In Italy, the number of foreign-trained nurses increased sharply between 2007 and 2015 (driven mainly by the arrival of many nurses trained in Romania following Romania's accession to the EU is 2007), but the number and share have started to decrease in recent years. Norway has a relatively high share of foreign-trained nurses (fifth highest among OECD countries), but more than one in eight were native-born in 2017.

In absolute number, the United States has by far the highest number of foreign-trained nurses, with an estimated number of almost 200 000 registered nurses (RNs) trained abroad in 2015. Following the United States is the United Kingdom with over 100 000 foreign-trained nurses in 2017 and Germany with 62 000 foreign-trained nurses in 2016.

Table 1.4. Foreign-trained nurses working in OECD countries, 2006, 2011 and 2015-17

	2006				2011				2015-17			
	Year	Total	Foreign-trained (of which natives)[1]	% of total	Year	Total	Foreign-trained (of which natives)[1]	% of total	Year	Total	Foreign-trained (of which natives)[1]	% of total
Australia	2007	263 331	38 108 (..)	14.5 (..)	2013	263 232	45 364 (669)	17.2 (0.2)	2016	279 789	51 180 (958)	18.3 (0.3)
Belgium	2006	150 817	1 290	0.9	2011	170 062	2 843	1.7	2017	204 256	7 215	3.5
Canada	2006	326 170	21 445	6.6	2011	360 572	26 005	7.2	2016	396 177	31 356	7.9
Chile		..	.. (..)	.. (..)		..	.. (..)	.. (..)	2017	50 062	1 048 (199)	2.1 (0.4)
Denmark	2006	51 841	820	1.6	2011	54 408	744	1.4	2015	55 732	645	1.2
Estonia		..	..	..	2011	11 543	4	0.0	2017	13 479	16	0.1
Finland		..	..	..	2011	71 160	1 089	1.5		..	..	..
France	2006	493 503	11 658	2.4	2011	567 564	14 495	2.6	2016	681 459	19 405	2.8
Germany		..	..	..	2012	814 000	50 000	6.2	2016	888 000	62 000	7.0
Greece	2006	10 023	311 (291)	3.1 (2.9)	2011	16 906	437 (403)	2.6 (2.4)	2015	17 770	451 (416)	2.5 (2.3)
Hungary		..	.. (..)	.. (..)	2013	53 323	650 (..)	1.2 (..)	2016	61 167	907 (13)	1.5 (0.0)
Israel	2006	46 188	4 907 (1 834)	10.6 (4.0)	2011	48 119	4 686 (1 701)	9.7 (3.5)	2017	52 956	4 875 (1 957)	9.2 (3.7)
Italy	2006	358 747	15 304 (403)	4.3 (0.1)	2011	397 859	23 621 (488)	5.9 (0.1)	2017	444 968	22 121 (449)	5.0 (0.1)
Latvia	2006	9 269	413	4.5	2011	9 032	381	4.2	2017	8 460	274	3.2
Lithuania		..	..	..		..	..	..	2017	27 712	104	0.4
Netherlands	2006	186 990	2 149 (..)	1.1 (..)	2011	198 694	1 358 (..)	0.7 (..)	2016	181 715	978 (249)	0.5 (0.1)
New Zealand	2008	39 247	8 931	22.8	2011	44 384	10 532	23.7	2017	48 743	12 680	26.0
Norway	2008	70 575	5 022 (..)	7.1 (..)	2011	83 851	7 076 (1 060)	8.4 (1.3)	2017	96 076	8 393 (1 113)	8.7 (1.2)
Poland		..	..	..		..	..	..	2016	288 395	150	0.1
Portugal	2006	51 095	2 285	4.5	2011	64 535	1 958	3.0	2014	66 473	1 212	1.8
Slovenia		..	..	..	2011	4 490	18	0.4	2017	6 731	27	0.4
Sweden	2006	98 792	2 695 (241)	2.7 (0.2)	2011	105 009	2 764 (306)	2.6 (0.3)	2016	108 185	3 269 (..)	3.0 (..)
Switzerland		..	.. (..)	.. (..)	2011	60 674	9 037 (703)	14.9 (1.2)	2016	70 866	18 352 (1 381)	25.9 (1.9)
Turkey	2006	82 626	118 (98)	0.1 (0.1)	2011	124 982	190 (153)	0.2 (0.1)	2015	152 803	456 (397)	0.3 (0.3)
UK	2006	686 815	91 412 (..)	13.3 (..)	2014	687 028	91 832 (..)	13.4 (..)	2017	691 482	103 671 (210)	15.0 (0.0)
USA[2]		..	..	..	2012	2 779 650	166 779[e]	6.0	2015	2 928 810	196 230[e]	6.7
OECD Total						**6 991 077**	**461 863**	**6.6**		**7 822 266**	**547 015**	**7.0**
						(23 countries)				**(25 countries)**		

Notes: 1. So far only 12 OECD countries report data on number of foreign-trained but native-born nurses. 2. The estimates for the United States refer only to registered nurses (RNs), not including lower-qualified nurses.
Source: OECD Health Statistics 2018, https://doi.org/10.1787/health-data-en.

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1.5. Conclusions

While there continue to be concerns in many countries about growing shortages of health professionals, the number of doctors and nurses in absolute number and on a per capita basis has never been greater in most OECD countries. Since 2000, the number of doctors and nurses has grown more rapidly than the overall population in most countries, so both the doctor-to-population and nurse-to-population ratios have generally increased.

The growth in the number of doctors and nurses since 2000 has been driven mainly by growing numbers of domestically-trained doctors and nurses, as most OECD countries took actions to increase the number of students in medical and nursing education programmes in response to concerns about current or projected shortages. The United States provides a striking example of this growth: the number of medical graduates from American medical schools grew from 18 000 per year in 2000 to 24 000 in 2016, while the growth in the number of nurse graduates (as proxied by the number of new nurses receiving an authorisation to practice) doubled from 100 000 per year in 2000 to 200 000 in 2016.

At the same time, growing numbers of foreign-trained doctors and nurses have also contributed significantly to the rise in the number of doctors and nurses in several countries. Taking the example of the United States again, whereas about three quarters of the overall increase in the number of doctors between 2006 and 2016 came from domestic graduates, the other one quarter came from foreign-trained doctors (who accounted for about 50 000 new doctors out of a total increase of 200 000). However, a growing number of these foreign-trained doctors were Americans who went to study abroad before coming back.

Immigration contributed to the growing number of doctors and nurses particularly in the main settlement countries (e.g. Australia, Canada, the United States and Israel) and European countries where large number of immigrants go (e.g., Luxembourg and Switzerland). In several OECD countries for which data is available, more than half of the increase in the total number of doctors in recent years came from doctors who were born in another country. For nurses, the proportion is a bit smaller, but still in half of OECD countries for which data is available, more than a third of the increase in the number of nurses came from foreign-born nurses. It is important to keep in mind that many of these foreign-born doctors and nurses may have pursued their medical or nursing studies in their country of destination.

Focussing more on the place of medical or nursing education, the number and share of foreign-trained doctors and nurses have increased in most OECD countries over the past decade. One in six doctors working in OECD countries in 2016 had obtained at least their first medical degree in another country, up from one in seven in 2006. For nurses, one in fourteen had obtained their first nursing degree in another country in 2016, up from one in fifteen in 2011. However, it is important to bear in mind that not all these foreign-trained doctors and nurses are foreigners: a large and growing number of foreign-trained doctors and nurses in some countries (e.g. Israel, Norway, Sweden and the United States) are people born in the country who went to obtain a first medical degree abroad before coming back. In these cases, it is not appropriate to refer to this phenomenon as a “brain drain” as these students usually pay the full cost of their education while studying abroad.

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Annex 1.A. Trends in number of medical and nursing graduates in OECD countries

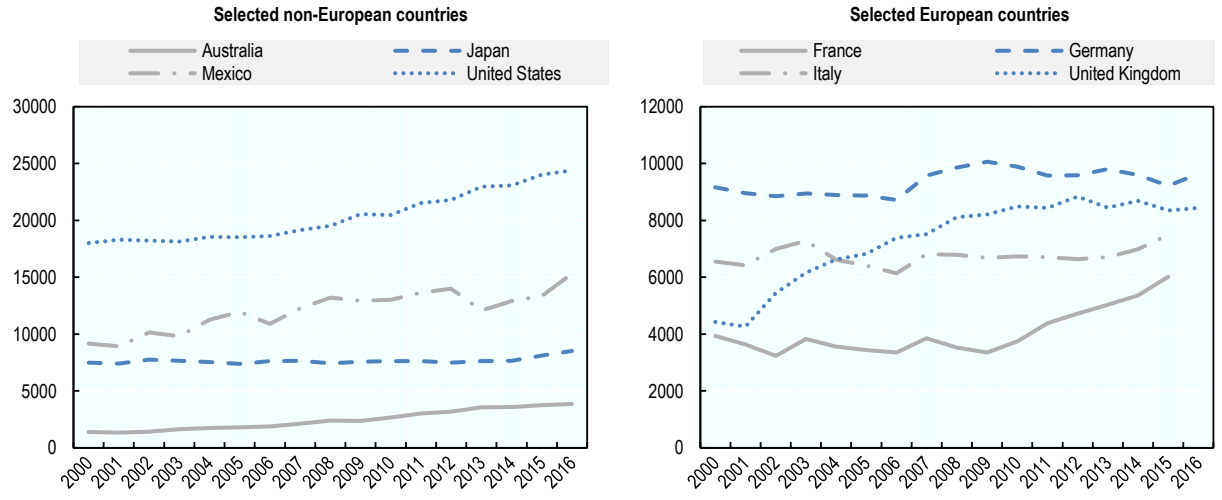
The increase in the number of doctors and nurses in most OECD countries since 2000 has been driven mainly by an increase in domestic graduates from medical and nursing education programmes. This rise in the number of medical and nursing graduates reflects in most cases deliberate policy decisions that were taken a few years earlier to increase the number of students admitted in medical and nursing schools, in response to concerns about current or possible future shortages of doctors and nurses. In some countries like Ireland, Poland and other Central and Eastern European countries, the strong increase in recent years also reflects the growing number of international medical students and graduates.

In the United States, the number of medical graduates has steadily increased from about 18 000 in 2000 to 24 000 in 2016 (Annex Figure 1.A.1). The number has also gone up substantially in Mexico, rising from 9 200 in 2000 to 15 000 in 2016. In Japan, the increase has been more modest, from 7 500 in 2000 to 8 500 in 2016, but the government decision to increase student intakes in medical education in 2008 in response to current and projected shortages of doctors should result in growing numbers of medical graduates in the coming years.

In Europe, while the number of medical graduates has remained relatively stable in Germany and Italy between 2000 and 2016, it has gone up markedly in the United Kingdom and France. The number of medical graduates in the United Kingdom increased from 4 400 in 2000 to over 8 300 since 2010, whereas in France it increased rapidly in recent years following a decade of stability in the 2000s. This rise reflects the gradual increase in the *numerus clausus* in France since 2000 (see Chapter 3).

Overall, the number of medical graduates across OECD countries has increased from less than 100 000 in 2006 to over 125 000 in 2016 (Annex Table 1.A.1).

Annex Figure 1.A.1. Changes in number of medical graduates, selected OECD countries, 2000 to 2016



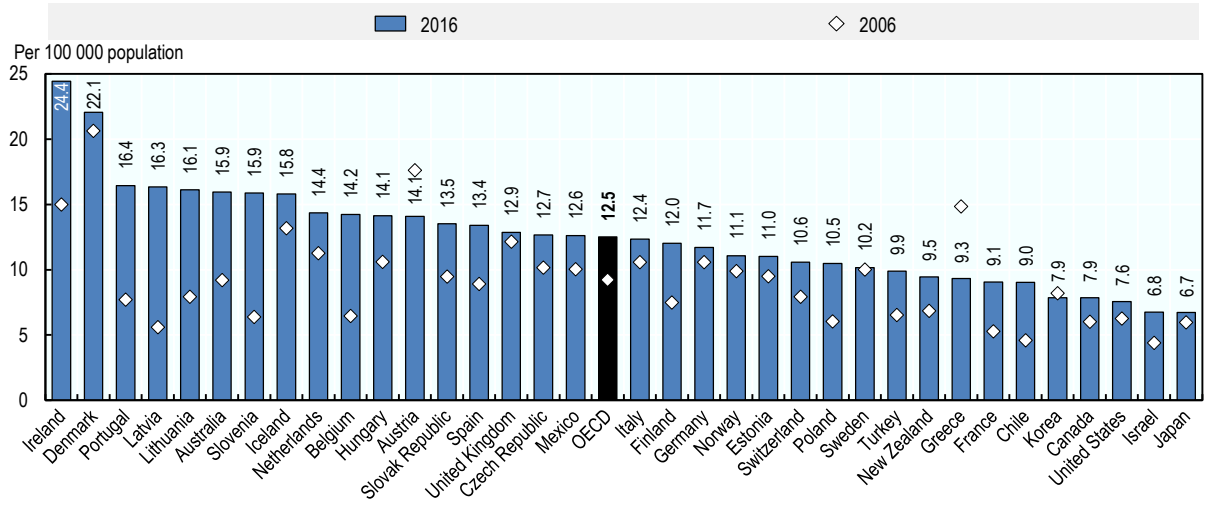
Source: OECD Health Statistics 2018, https://doi.org/10.1787/health-data-en.

StatLink https://doi.org/10.1787/888933970209

Relative to the population in each country, the proportion of new medical graduates per capita in 2016 was highest in Ireland and Denmark (Annex Table 1.A.2), although the number of Denmark may be an over-estimation as it reflects doctors getting a new authorisation to practice and may therefore also include foreign-trained doctors. In Ireland, about 50% of medical graduates nowadays are international students; in most cases, these international students do not pursue their postgraduate training and work in Ireland afterwards (see Chapter 4).

The number of medical graduates relative to the population in 2016 was lowest in Japan and Israel. In Israel, the low number of domestic medical graduates is compensated by the high number of foreign-trained doctors, who increasingly are people born in Israel who went to pursue their studies abroad before coming back.

Annex Figure 1.A.2. Number of medical graduates per 100 000 population, 2006 to 2016



Note: In Denmark, Mexico, New Zealand and Sweden, the data refer to the number of new doctors receiving an authorisation to practice, which may result in an over-estimation if these include foreign-trained doctors. There are no medical graduates in Luxembourg (explaining why this country is not shown in this chart).
Source: OECD Health Statistics 2018, https://doi.org/10.1787/health-data-en.

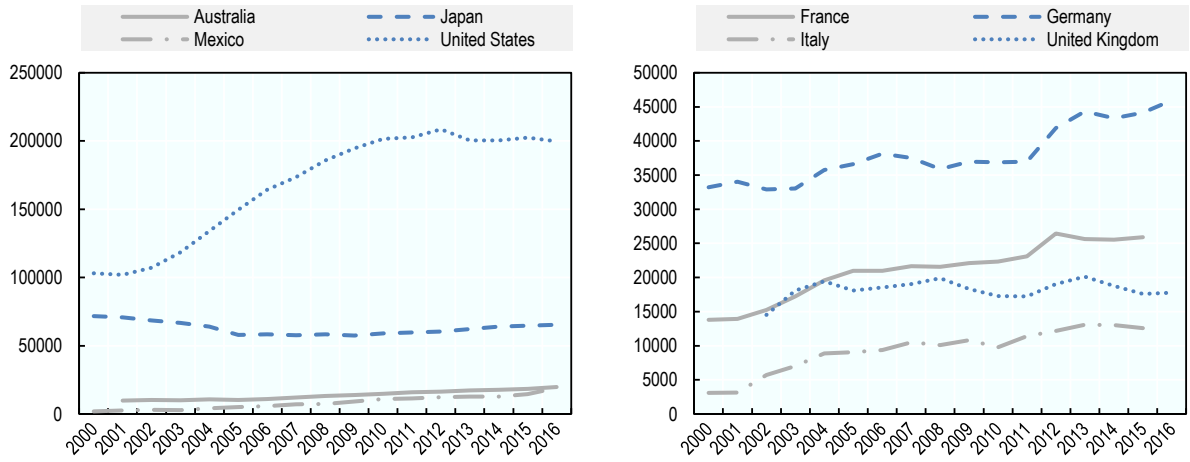
StatLink https://doi.org/10.1787/888933970076

The number of nursing graduates has also increased in most OECD countries since 2000, often reflecting deliberate policies to increase the number of students in nursing schools in response to concerns about current or possible future shortages of nurses (Annex Table 1.A.3 and Annex Table 1.A.2).

In the United States, the number of nursing graduates (as proxied by the number of new nurses receiving an authorisation to practice) doubled between 2000 and 2010, rising from 100 000 per year to 200 000, but it has stabilised since then at around 200 000 per year. The number of nurse graduates has also doubled in Australia, increasing from less than 10 000 in 2000 to nearly 20 000 in 2016. By contrast, the number of nurse graduates decreased in Japan between 2000 and 2010, but it has started to increase since 2010. In Europe, the number of nurse graduates has increased fairly steadily in Germany, France and Italy since 2000. In the United Kingdom, it has levelled off since the mid-2000s and even decreased slightly in 2015 and 2016, before starting to rise again in recent years.

Overall, the number of nurse graduates across OECD countries has increased from about 450 000 in 2006 to more than 600 000 in 2016 (Annex Table 1.A.2).

Annex Figure 1.A.3. Changes in number of nursing graduates, selected OECD countries, 2000 to 2016

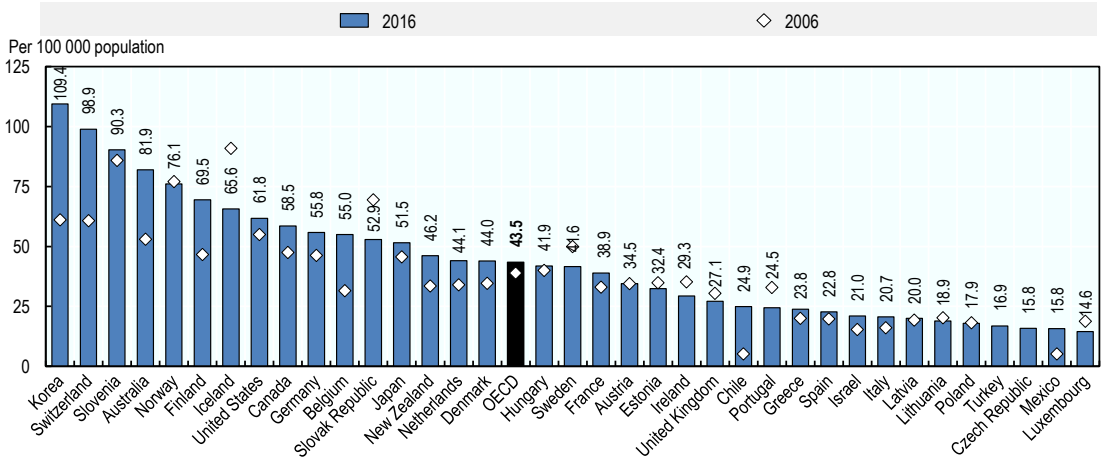


Note: In the United Kingdom and the United States, the data are based on the number of new nurses receiving an authorisation to practice, which result in an over-estimation as these may include foreign-trained nurses.
Source: OECD Health Statistics 2018, https://doi.org/10.1787/health-data-en.

StatLink https://doi.org/10.1787/888933970057

In proportion to the population size in each country, the number of new nurse graduates per capita was highest in 2016 in Korea and Switzerland, whereas it was lowest in Luxembourg, Mexico and Czech Republic (Annex Figure 1.A.4).

Annex Figure 1.A.4. Number of nursing graduates per 100 000 population, 2006 to 2016



Note: In Mexico, the data refer to professional nursing graduates only. In Denmark, Israel, Sweden, the United Kingdom and the United States, the data are based on the number of new nurses receiving an authorisation to practice; this may result in an over-estimation if these include foreign-trained nurses. The data for Turkey refer to 2017.
Source: OECD Health Statistics 2018, https://doi.org/10.1787/health-data-en.

StatLink https://doi.org/10.1787/888933970076

In 2016, several OECD countries reported that they had raised admission rates in medical and nursing schools over the previous four years (Annex Table 1.A.3), so the number of medical and nursing graduates can be expected to continue to increase in these countries in the coming years.

Annex Table 1.A.1. Number of medical graduates, 2006 to 2016

	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
Australia	1884	2117	2389	2361	2662	3011	3179	3573	3595	3751	3858
Austria	1456	1835	1814	1726	1466	1413	1170	1259	1255	1218	..
Belgium	681	732	758	851	980	1125	1180	1176	1289	1359	1614
Canada	1957	2046	2122	2338	2447	2526	2643	2658	2795	2813	2847
Chile	750	664	853	1068	1248	1193	1632	1294	1537	1693	1644
Czech Republic	1041	1108	1163	1319	1458	1460	1591	1338	1473	1430	1338
Denmark	1122	1192	1121	1204	1210	1179	1039	1032	1101	1254	..
Estonia	128	106	112	120	149	125	136	128	139	133	145
Finland	395	367	546	500	603	621	790	624	636	625	661
France	3354	3850	3526	3354	3740	4384	4717	5040	5365	6025	..
Germany	8724	9574	9857	10069	9894	9572	9587	9801	9599	9215	9647
Greece	1635	1599	1418	1285	1038	1096	1017	1022	..	..	..
Hungary	1069	1005	960	923	1040	1148	1374	1405	1347	1319	1388
Iceland	40	36	49	37	44	44	49	40	53	42	53
Ireland	641	726	673	722	785	738	781	931	1009	1107	1162
Israel	310	296	325	300	314	377	304	408	517	458	578
Italy	6143	6816	6796	6682	6732	6699	6635	6706	6981	7500	..
Japan	7639	7647	7434	7561	7619	7631	7501	7639	7652	8118	8529
Korea	3973	4354	4454	4449	4064	3992	4096	4009	4112	4004	4028
Latvia	124	111	140	161	179	232	234	271	280	320	320
Lithuania	259	264	322	395	391	407	394	438	429	476	462
Luxembourg[1]	0	0	0	0	0	0	0	0	0	0	0
Mexico	10899	12255	13209	12926	13033	13647	13998	12077	12905	13334	15328
Netherlands	1842	2019	2022	2075	2276	2456	2467	2416	2445	2475	2445
New Zealand	287	284	308	337	317	351	348	379	392	399	444
Norway	461	497	496	516	551	568	619	578	567	580	580
Poland	2308	2550	2727	2788	3081	3349	3549	3757	3689	3888	3983
Portugal	812	1029	1101	1126	1262	1287	1394	1426	1554	1642	1698
Slovak Republic	509	535	458	421	577	590	621	690	732	..	..
Slovenia	128	129	174	162	229	206	266	245	302	358	328
Spain	3951	3841	3922	3882	4299	4199	4457	4770	5571	6053	6226
Sweden	910	932	950	993	969	1011	1131	987	1091	1216	1008
Switzerland	594	612	667	729	813	744	782	786	863	894	885
Turkey	4532	4872	4753	5087	5138	4981	4949	4803	5175	6952	7849
United Kingdom	7390	7520	8115	8210	8490	8435	8840	8450	8690	8355	8440
United States	18635	19140	19532	20555	20469	21522	21799	22963	23075	24027	24410
Total[2]	**96583**	**102660**	**105266**	**107232**	**109567**	**112319**	**115269**	**115119**	**119237**	**124787**	**128431**

Notes: 1. Luxembourg has arrangements with neighbouring countries to provide medical education to some of its citizens. 2. When data are missing, the latest year available has been used to calculate the total number of graduates across OECD countries.
Source: OECD Health Statistics 2018, https://doi.org/10.1787/health-data-en.

StatLink https://doi.org/10.1787/888933970133

Annex Table 1.A.2. Number of nursing graduates, 2006 to 2016

	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
Australia	10853	12113	13093	13772	14886	16004	16296	17303	17804	18291	19835
Austria	4758	4898	4890	4006	4703	4900	4697	4920	4628	4752	..
Belgium	3324	3566	3476	4022	4542	4140	4735	5305	5315	5601	6236
Canada	..	15637	14941	15417	17471	19055	20031	19926	..	20964	..
Chile	848	709	1233	1306	1977	1851	2056	2211	3309	3875	4537
Czech Republic	5029	3643	1612	1457	1283	1822	1810	1565	1596	1665	1674
Denmark	4555	4627	4984	4597	5214	5348	5167	5688	5951	5911	..
Estonia	470	591	332	433	379	387	455	467	451	429	426
Finland	2453	2633	2981	3076	3368	3430	3594	3747	3541	3707	3817
France	20982	21648	21566	22122	22311	23113	26447	25619	25539	25888	..
Germany	38155	37499	35877	36968	36860	36959	41906	44312	43317	44134	45938
Greece	..	2207	2633	2863	2609	2659	2689	2609	..	..	..
Hungary	4031	3684	3158	3369	2863	2544	2596	3364	4000	4318	4112
Iceland	276	224	327	206	248	208	224	236	269	239	220
Ireland	1508	1410	1572	1440	1641	1720	1518	1528	1460	1352	1394
Israel	1081	1010	960	860	848	879	1111	1271	1813	1592	1792
Italy	9388	10491	10091	10821	9776	11389	12154	13075	13035	12563	..
Japan	58343	57634	58344	57529	59014	59629	60508	62258	63938	64722	65395
Korea	29600	32224	35099	38293	45268	47012	45953	48955	56711	55579	56072
Latvia	429	554	470	428	806	1646	592	1865	556	545	392
Lithuania	662	933	688	630	581	574	474	502	536	535	543
Luxembourg	89	88	81	89	101	130	130	61	72	73	85
Mexico	5653	7039	7260	9162	10864	11477	12323	12747	12719	14598	19133
Netherlands	5562	5876	6177	6322	6519	6331	6215	6334	6823	7244	7513
New Zealand	1403	1318	1372	1343	1454	1522	1627	1966	2073	2112	2166
Norway	3593	3696	3282	3488	3260	3347	3522	3653	3764	3811	3983
Poland	6938	7918	9187	8428	9653	17323	12395	13561	10929	12187	6812
Portugal	3457	3594	3571	3792	3706	3391	3005	2666	2674	2716	2528
Slovak Republic	3732	..	2713	3061	3167	3159	3430	3416	2868	..	..
Slovenia	1723	1788	1711	1641	1665	1679	1614	1598	1611	1599	1864
Spain	8764	8748	8987	9472	10098	11654	8194	8783	11700	10766	10578
Sweden	4534	4184	4114	3960	4081	4211	3793	3847	3865	3871	4126
Switzerland	4549	4960	5124	5738	5983	6180	5699	6759	7649	8112	8282
Turkey	5708	7001	4035	4288	11597	14046	14865	19842	22272	30205	57041
United Kingdom	18521	19023	19884	18316	17289	17241	19036	20133	18771	17580	17793
United States	164190	173495	185801	194575	201611	202697	208486	200338	200467	202345	199710
Total[1]	**453005**	**469376**	**481626**	**497290**	**527696**	**549657**	**559347**	**572430**	**584561**	**599358**	**629552**

Notes: In Mexico and Sweden, the data refer to professional nursing graduates only. The large variations from year-to-year in some countries (e.g. Czech Republic, Latvia, Poland) reflect changes in the education and training system for nurses. In Turkey, the large increases in recent years is due to the fact that a very large number of students were admitted in nursing programmes in vocational high schools between 2007 and 2014, but 2014 was the last year when new students were admitted in these programmes; the number of nurse graduates has started to fall greatly in 2017.

1. When data are missing, the latest year available has been used to calculate the total number of graduates across OECD countries.

Source: OECD Health Statistics 2018, https://doi.org/10.1787/health-data-en.

StatLink https://doi.org/10.1787/888933970114

Annex Table 1.A.3. Changes to medical and nursing education intake, OECD countries, 2012 to 2016

	Medical education intake	Nursing education intake
Australia	No change	Increase
Austria	No change	No change
Belgium	Increase	No change
Canada	No change	Increase
Chile	No change	Increase
Czech Republic	Increase	No change
Denmark	Increase	No change
Estonia	No change	n.a.
Finland	Increase	Increase
France	Increase	No change
Germany	Increase	No change
Greece	No change	No change
Hungary	Increase	n.a.
Iceland	No change	Increase
Ireland	No change (domestic students)	n.a.
Israel	Increase	Increase
Italy	Decrease	No change
Japan	Increase	No change
Korea	n.a.	n.a.
Latvia	No change	No change
Lithuania	No change	n.a.
Luxembourg	[no medical school]	No change
Mexico	n.a.	n.a.
Netherlands	No change	n.a.
New Zealand	n.a.	n.a.
Norway	Increase	n.a.
Poland	Increase	Increase
Portugal	Increase	No change
Slovak Republic	Increase	n.a.
Slovenia	Increase	Increase
Spain	Decrease	Increase
Sweden	No change	No change
Switzerland	Increase	Increase
Turkey	Increase	n.a.
United Kingdom	No change	No change
United States	n.a.	n.a.

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

StatLink https://doi.org/10.1787/888933970152

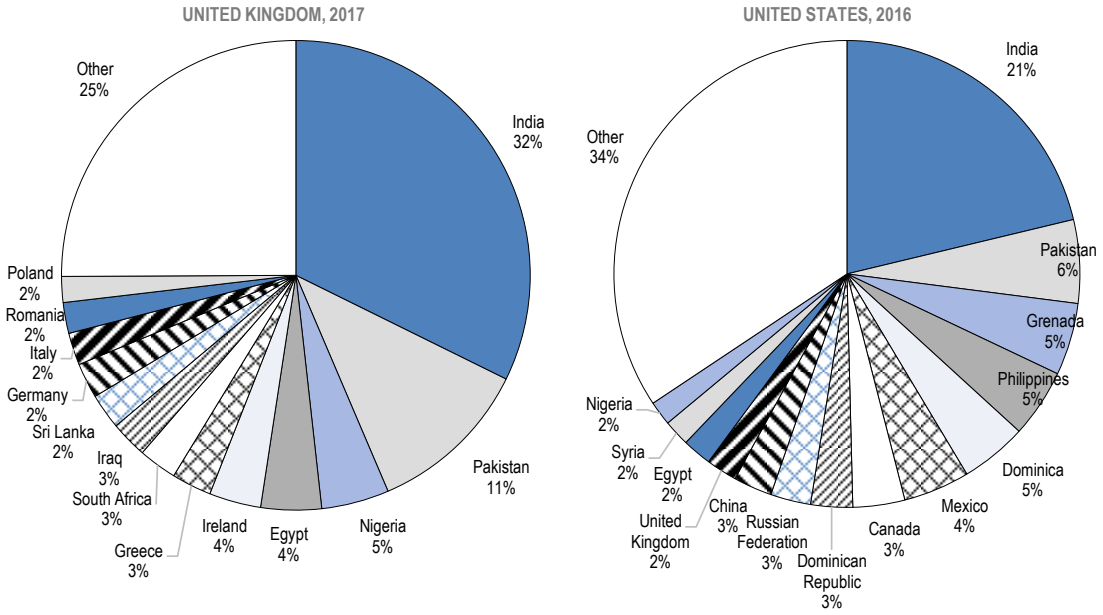
Annex 1.B. Countries of education of foreign-trained doctors working in the United States and the United Kingdom

The United States and the United Kingdom are the two main countries of destination of foreign-trained doctors working in OECD countries, with over 215 000 foreign-trained doctors working in the United States in 2016 and more than 50 000 working in the United Kingdom in 2017. Annex Figure 1.B.1 shows that the main country of origin of foreign-trained doctors working in these two countries was by far India, followed by Pakistan.

In the United States, more than one-fifth (21%) of foreign-trained doctors in 2016 came from India, with doctors trained in Pakistan and the Philippines following (with a share of 6% and 5% respectively). Many foreign-trained doctors in the United States were also trained in the Caribbean Islands (notably in Grenada and Dominica), but in many cases these are American students who went to study abroad and then came back to the United States to complete their postgraduate training and work. A large number of foreign-trained doctors also came from neighbouring countries (Mexico and Canada).

In the United Kingdom, nearly one-third (32%) of foreign-trained doctors in 2017 came from India, followed by Pakistan (11%). Many foreign-trained doctors also came from African countries (e.g. Nigeria, Egypt and South Africa). A significant number of foreign-trained doctors in the United Kingdom also came from other EU countries (e.g. Ireland, Greece, Germany, Italy, Romania and Poland).

Annex Figure 1.B.1. Main countries of training of foreign-trained doctors in the United Kingdom and the United States



Source: OECD Health Statistics 2018.

StatLink https://doi.org/10.1787/888933970171

Notes

[1] "The Looming Crisis in the Health Workforce: How Can OECD Countries Respond?" was the title of an OECD publication in 2008 that called for greater efforts from OECD countries to train more doctors and nurses, as well as to improve retention rates and delay the retirement of existing health workers, to respond to growing demand for health care arising from population ageing.

[2] It is important to bear in mind, however, that the number of doctors in Greece and Portugal is over-estimated as it includes all doctors who are licensed to practice but may no longer be practising because some of them might have emigrated, be unemployed or retired.

[3] This increase is roughly equal to the growth in the number of highly-skilled immigrants in OECD countries during that period.

2 Recent trends in internationalisation of medical education

Karolina Socha-Dietrich (OECD Health Division) and Gaetan Lafortune (OECD Health Division)

The number of international students pursuing medical education away from their home country has increased significantly over the past decade, with some countries becoming popular destinations. For example, around half of all medical students in Ireland, nearly a third in Romania and a quarter in Poland are international students. This mobility of students is driven by demand and supply factors, including admission limits in medicine in the home countries of these students and active recruitment strategies of some medical schools. The mobility has been supported by the mutual recognition of qualifications, particularly across EU member states. Most international students from OECD countries studying medicine abroad intend to return to their home country to complete their postgraduate training and work as doctors. While most students from countries like Israel, Norway, Sweden, and France are able to do this, this is not the case for many students from countries like Canada or the United States who are facing a bottleneck when they wish to return to their home country, as the number of training/residency posts is significantly lower than the number of applicants. This raises the risks of a waste in human capital if these new international medical graduates are not able to complete their training.

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.

2.1. Introduction

The number of international students (i.e. students enrolled in a study programme in a country other than their country of origin) rose from 2 million worldwide in 1999 to 5 million in 2016, of which 3.5 million were studying in OECD countries. They represent about 6% of the total number of university students across all OECD countries, with the proportion rising to more than one in ten students at the master's level (OECD, 2018[1]). The international mobility of medical students is no exception: The number of international students enrolled in OECD countries in the field of health[1] exceeded 270 000 in 2016, a 25% increase in just three years from around 215 000 in 2013.

As noted in Chapter 1 (see Table 1.A.1), the number of new domestically-trained medical graduates has increased significantly over the past decade across nearly all OECD countries, but in some countries a growing number of them are international students. Historically, international medical students studying in OECD countries were coming mainly from lower-income countries that did not have a sufficient capacity to train doctors. Nowadays, an increasing number come from other OECD countries rather than from outside the OECD area.

A number of factors have contributed to the growing international mobility of medical students: *Numerus clausus* policies that limit entry into medical education programmes in many countries have provided incentives for many students to study abroad, particularly in the European Union (EU) countries, because there is recognition of medical qualifications across all EU/EFTA countries since 2005. The accession of 13 new EU member states since 2004 has increased greatly the number of countries where EU/EFTA students can pursue a medical degree while being sure that it will be recognised in all others. Moreover, medical schools in some countries have engaged in active marketing strategies to attract international students – notably by creating programmes in English or French to reduce the language barrier – because these students bring additional incomes by paying higher tuition fees than domestic students.

The growing internationalisation of medical education entails additional complexities and uncertainties for national medical workforce planning and policies to regulate the number of graduates getting into further stages of medical training, because these international students are mobile: they may either stay in their country of education after graduation or return to their home country or move to a third country to pursue their postgraduate training and work as a doctor. While the growing number of these international graduates may help fill the needs for new doctors in the countries to which they will be heading, they may also put pressures to expand the number of internship and postgraduate specialty training places required to become a fully-trained doctor, either in the country where they have obtained their first medical degree or in their country of origin if they decide to return home.

This chapter provides an overview of recent trends in the international mobility of medical students enrolled in long-cycle study programmes, revealing the growing magnitude and complexity of the phenomenon. It also provides additional insights into the factors that motivate young people to emigrate at least temporarily to study medicine as well as the potential benefits and risks that these decisions might have on their professional careers and on the medical education and training systems in the countries of education and destination.

This chapter draws mainly on the findings from five country case studies presented in Part II of this report. These include four case studies of European countries that receive a large number of international medical students (France, Ireland, Poland, and Romania) as well as a study on the labour market integration of Canadian and foreign-born doctors trained in Canada or abroad.

2.2. A growing number of students follow medical education abroad before returning to their home countries

While data on the number of international medical students are not yet systematically captured across OECD or EU countries, the data available from some countries reveal that their numbers are growing (see also Box 2.1. For example:

- In Ireland, the share of international medical students has been growing rapidly and accounted for half of all medical students in the academic year 2017/18 (Box 2.1) (Health Education Authority, 2018b[2]).
- In Romania, the number of international students has grown rapidly since 2007 and has been estimated to reach nearly 30% of all medical students in 2018/19, based on the number of places in medical schools in English- and French-language programmes (see Figure 6.2 in chapter 6).
- Poland has also become an increasingly popular destination for international medical students over the past two decades, accounting for a quarter of all medical students in 2017/18 (Ministry of Health of the Republic of Poland, 2017).
- In Australia, the number of international students has also grown over the past decade to reach 2 668 students in 2017, accounting for 16% of all medical students in that year (Australian Government Department of Health, 2019[3]).
- France has a long tradition of hosting a substantial number of international medical students with the overall number of students in undergraduate and postgraduate medical education totalling about 12 000 in 2017/18, although this number has come down over the past decade (Table 2.2 in Box 2.1).

The movement of international medical students increasingly occurs inside the OECD and EU area, rather than from non-OECD or EU countries to the OECD or EU area. For example, the most numerous groups of international medical students in Ireland and Poland come from other OECD countries, including Canada, Norway, Sweden, and the United States. In France, while many international medical students still come from Maghreb countries, the share of students coming from other OECD and European countries has been on the rise, accounting for more than a third of all international students in 2017/18.

Over the past two decades, thousands of Norwegian and Swedish students have enrolled in English-language medical education programmes in Central and Eastern European countries – with Poland becoming the most popular choice (Box 2.2). The number of Norwegian students pursuing their initial medical education outside their home country during the academic year 2017/18 was almost as large as those pursuing their studies in Norway (Norwegian State Educational Loan Fund, 2018[4]).

Box 2.1. Recent trends in numbers of international medical students in selected countries

Ireland

All Irish medical schools have a large number of international students (Table 2.1). The biggest group among these international students are Canadian students (28% or 993), followed by students from Malaysia (18% or 667) and Kuwait (7% or 250).

Table 2.1. Irish and international medical students in Irish medical schools, 2017/18

Medical school	All students	Irish students	International students	% International
Royal College of Surgeons	1 929	424	1 505	78%
University College Dublin	1 514	978	536	35%

National University, Galway	1 074	620	454	42%
University College Cork	935	560	375	40%
Trinity College Dublin	878	559	319	36%
University of Limerick	587	327	260	44%
All	**6 917**	**3 468**	**3 449**	**50%**

Source: Health Education Authority, Ireland, September 2018.

StatLink https://doi.org/10.1787/888933970285

Poland

Foreign students accounted for 25% (6 759 out of 26 381) of all full-time medical students in Polish medical schools in 2017/18 (Ministry of Health, 2018). Data from six of the biggest medical schools show that the majority of these students come from Norway, Sweden, Saudi Arabia, the United States and Canada.

Australia

The number of international students graduating from Australia's medical schools increased by more than 40% between 2007 and 2017 (from 316 to 450). In 2017, 2 668 international students were enrolled in medical schools in Australia, accounting for 16% of total enrolments (Australian Government Department of Health, 2019[3]).

France

The number of international medical students in France remains substantial with around 12 000 students enrolled in 2017/18, but it has decreased by around 20% since 2010/11, now accounting for less than 9% of all students. One-third of these students came from Algeria, Morocco, and Tunisia, although their share has decreased in recent years. The second largest and growing group come from other EU countries (Table 2.2).

Table 2.2. Main nationalities of foreign medical students in France, 2017/18

Region/country of origin		Number	% of international students
Africa		**6 256**	**52%**
	Algeria	1 811	15.1
	Morocco	1 120	9.3
	Tunisia	1,036	8.6
Europe		**3 818**	**32%**
	Romania	902	7.5
	Italy	634	5.3
	Belgium	499	4.2
Asia		**1 516**	**12.6%**
	Lebanon	467	3.9
Americas		**414**	**3.4%**
All nationalities		**12 020**	**8.8%**

Source: Ministry of National Education of the Republic of France, 2018.

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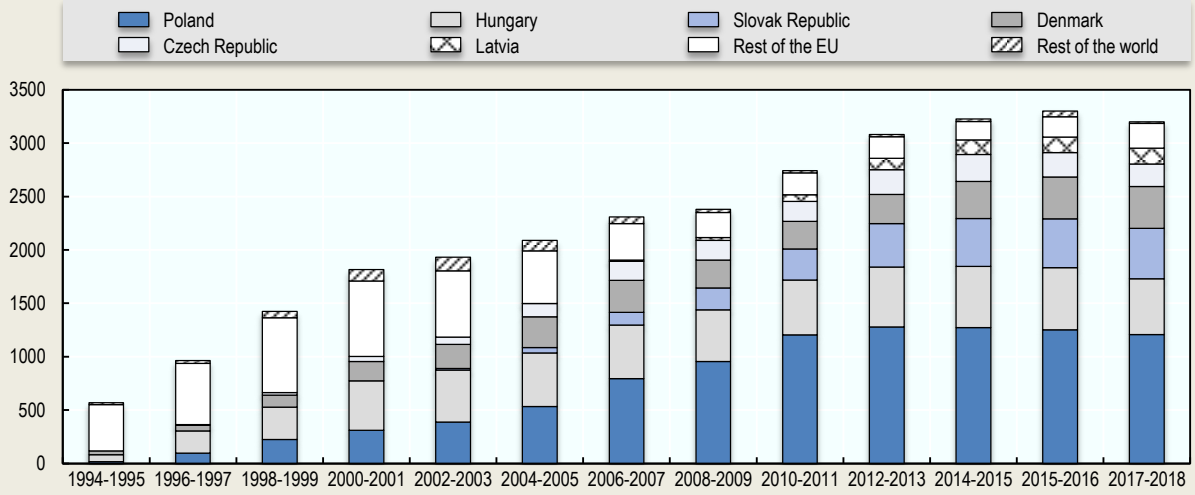
Box 2.2. Large numbers of Norwegian and Swedish students study medicine abroad

Over the past two decades, the number of Norwegian students studying medicine outside their country rose by about 40%. In 2017/18, over 80% of them were studying in Central and Eastern European countries, with the greatest number studying in Poland (Figure 2.1). The number in Poland increased strongly during the 2000s and has remained fairly stable at around 1 200 since 2010.

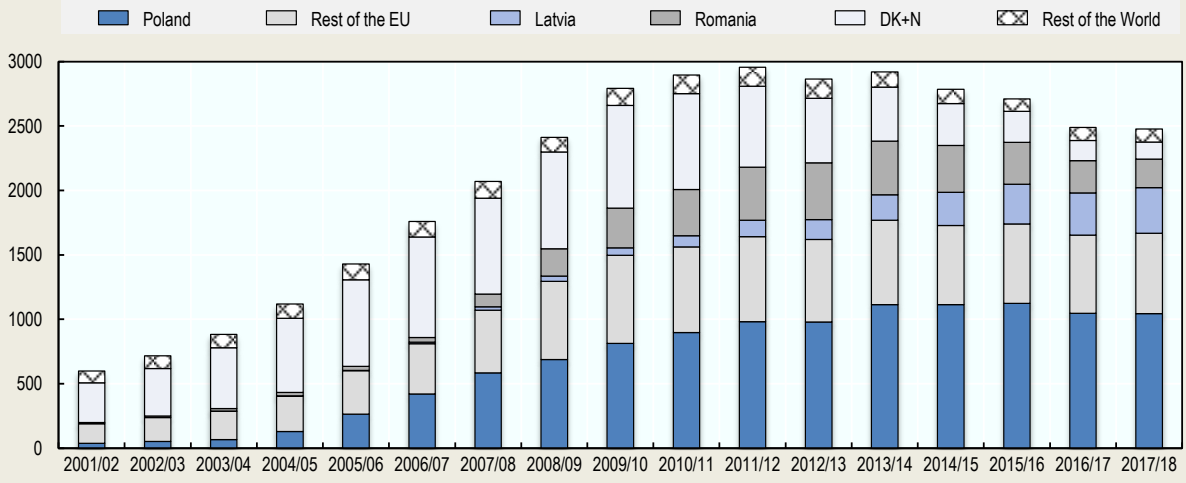
Figure 2.1. Norwegian students studying medicine abroad, 1994/95-2017/18



Source: Norwegian State Educational Loan Fund, July 2018.

Similarly, the number of Swedes pursuing medical studies abroad has increased greatly between 2001/02 and 2011/12 to reach a peak of about 3 000, after which the number has decreased to about 2 500 in 2017/18 (Figure 2.2). Poland is also the main destination, attracting over 40% (or 1 044) of the students in 2017/18. The second and third most popular destinations in 2017/18 are Latvia (14% or 354) and Romania (9% or 222), respectively (Swedish Board of Student Finance, 2018).

Figure 2.2. Swedish students studying medicine abroad, 2001/02-2017/18

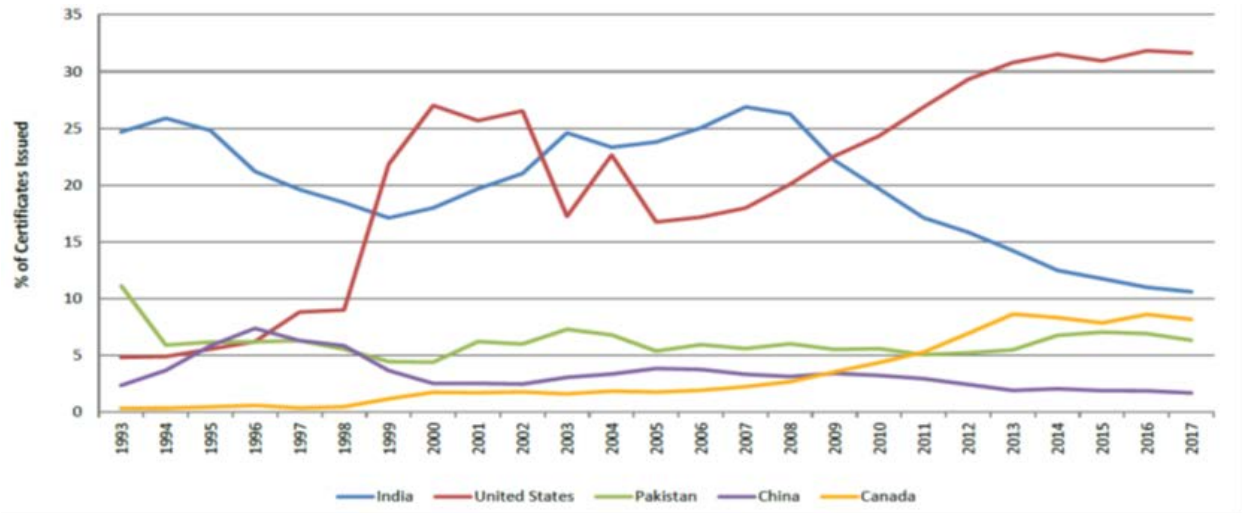


Source: Swedish Board of Student Finance, July 2018.

Additional information can be derived from the countries where the international medical graduates are pursuing their postgraduate specialty training and practice. Data from the United States and France, for example, show that a growing share of foreign-trained doctors are in fact people born in these countries, who completed their first medical degree abroad before returning to their home country:

- In the United States, a growing share of international medical graduates are American citizens who studied mostly in the Caribbean before coming back to the United States (Figure 2.3). In 2017, American citizens were by far the most numerous group (more than 30%) of international graduates who obtained certification in the United States (up from 17% in 2007). American graduates trained abroad have largely replaced Indian graduates coming to the United States.
- In France, among all international medical graduates attending the exam for entry into postgraduate training in 2017, the largest group was, in fact, made up by French citizens (133 out of 328) who obtained their first medical degree in another EU country.[2] Romania was the country of education for the vast majority of them (110 out of the 133).

Figure 2.3. Top five countries of citizenship of international medical graduates certified by the ECFMG to enter postgraduate training in the United States, 1993-2017



Notes: Citizenship is at the time of entrance into the medical school.
Source: ECFMG (Educational Commission for Foreign Medical Graduates), January, 2018.

The case of Ireland illustrates another layer of complexity in the international mobility of medical students and graduates. In 2016, medical graduates from four Asian and African countries – India, Nigeria, Pakistan, and Sudan – accounted for over a quarter (28%) of all junior doctors seeking or having a postgraduate training place in Ireland. However, a significant share of these medical graduates did not complete their first medical degree in their home country or in Ireland, but rather in a Central and Eastern European country before going to Ireland (Table 2.3). This was the case for many Indian junior doctors who graduated from medical schools in Bulgaria and Romania before moving to Ireland. Similarly, almost half of the Nigerian junior doctors graduated from medical schools in Hungary, Romania, and Poland, with only around 40% of them obtaining their diploma from Nigerian medical schools (Royal College of Surgeons in Ireland, 2018[6]).

Table 2.3. Top nationalities and countries of graduation of foreign-trained junior doctors (seeking or in postgraduate training) working in Ireland, 2016

Nationality[1] (share of junior doctors)[2]	Country of education	% of nationals working in Ireland
India (4% or 164)	India	53%
	Romania	22%
	Bulgaria	12%
	11 other countries	13%
Nigeria (3% or 134)	Nigeria	43%
	Hungary	21%
	Romania	15%
	Poland	11%
	Ireland	7%
	4 other countries	3%
Pakistan (15% or 669)	Pakistan	88%
	other countries[3]	12%
Sudan (6% or 266)	Sudan	91%
	other countries[3]	9%

Notes: 1. Nationality is determined by self-selected passport (doctors may hold more than one passport). 2. Share of junior (non-consultant hospital) doctors in public sector posts in Ireland. 3. Not disclosed.
Source: Royal College of Surgeons in Ireland, 2018.

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In summary, the profile of international medical students and foreign-trained doctors is changing. An increasing share of them is made up of students from OECD countries who complete their first medical degree outside their home country with the intention to return there to take up postgraduate training and practice as a doctor. One of the implications of this growing movement is that the full medical education and training process increasingly takes place in more than one country, with the first (more theoretical) medical degree being obtained in one country and the second step (more practical and clinical) internship and the subsequent postgraduate specialty training being carried out in another. This may cause some planning issues and create some bottlenecks for students as they wish to move from the first medical degree to postgraduate training if not enough places are available (see also Section 2.4). Another relatively new phenomenon is that migrant doctors born in some Asian and African countries (such as India or Nigeria), which are traditionally perceived as net exporters of medical practitioners, often complete their medical education in OECD or other European countries, most likely with the intention to get access to labour markets in the OECD or EU area.

2.3. A number of "push" and "pull" factors drive student mobility

Studying medicine abroad is not a new phenomenon, but the factors driving the international mobility and composition of international medical students have changed.

Traditionally, international medical students studying in OECD and other EU countries were coming mainly from countries that did not have a sufficient capacity to train doctors (often through bilateral agreements). Over the past 15 years, a number of factors have contributed to a growth in the internationalisation of the medical education, though. These factors include the reduction of barriers to the mobility of students through the recognition of qualifications – especially within the EU/EFTA area –, active recruitment strategies of medical schools in some countries to attract more international students, and the *numerus*

clausus policies in many countries that continue to provide incentives to study abroad for students not admitted in their home country.

The largest groups of international medical students in Ireland, Poland, and Romania (coming mainly from countries like Canada, France, Norway, and Sweden) decide to study abroad because of the limits on the intake of medical students in their home countries, even in those cases where they have to pay higher tuition fees themselves (Table 2.4).

Even for the students from Norway and Sweden, two countries where all students are eligible for scholarships even if they decide to study outside their country, these subsidies are not sufficient to cover all the tuition fees and cost of living to pursue their studies in other EU/EFTA countries like Poland or Romania, since the foreign-language programmes in the latter countries are more expensive. These students may get additional government loans from their own country, which they will need to pay back once they have completed their studies. Many North American international medical students also fund their studies through government loans that they will have to pay back. Only some students from Malaysia receive analogous loans to study in Ireland, with most of them having to pay upfront all of their studies through private funding (own/family savings).

Table 2.4. Tuition fees for medical education in selected countries, 2018/2019 or nearest year

Place of training	Avg. yearly tuition (USD)[1]	Range of yearly tuition fees (USD)[1]		Type of students
		Lowest in the country	Highest in the country	
Canada (2017/18)	(varies by province)	4 042 (Quebec)	21 714 (Ontario)	Domestic
	(varies by province)	24 450 (Quebec)	57 365 (Ontario)	International
Denmark (2018/19)	0	0	0	Domestic/EU/EFTA
	17 400[2]	-	-	Non-EU/EFTA international
Hungary (2018/19)	0	0	0	Domestic/EU/EFTA
	18 200[3]	-	-	International in English programme
France (2018/19)	205 to 445[4]			All (domestic and international)
Ireland (2018/19)	3 500	3 420	3 960	Domestic/EU/EFTA
	15 960 GEM (graduate entry)[5]			
	56 120 or 56 900 GEM	51 300 or 49 020 (GEM)	62 700 or 64 410 (GEM)	Non-EU/EFTA
Norway (2018/19)	0	0	0	Domestic/EU/EFTA
	-	-	-	Non-EU/EFTA
Poland (2018/19)	0	0	0	Domestic/EU/EFTA
	-	11 340	16 245	International in English programme
Romania (2018/19)	2 850	2 850	2 850	Domestic/EU/EFTA
	6 270	5 700	6 840	International in English/French programme
Sweden (2017/18)	0	0	0	Domestic/EU/EFTA
	-	-	9 875[6]	Non-EU/EFTA

1. The conversions are based on exchange rates of: 0.77 from Canadian dollars to US dollars; 1.14 from Euro to US dollars; 0.11 from Swedish crowns to US dollars (as of October 2018). 2. Aarhus University. 3. Semmelweis University. 4. Increasing from the 1st to the 6th year of studies. In November 2018, the French government announced its intention to increase the tuition fees for non-EU and non-EFTA students regardless of their field of studies. At the start of the 2019 academic year, tuition fees for these non-EU/EFTA students are expected to increase to EUR 2 770 a year for undergraduate students (first cycle) and EUR 3 770 a year for master's and PhD students. 5. The Graduate Entry Medicine (GEM) programme is four years in duration as compared to the longer programme for students entering medical education directly from a secondary school. Students entering GEM have usually three-year undergraduate education in medicine or related fields.6. Karolinska Institut.
Source: https://search.wsoms.org.

StatLink https://doi.org/10.1787/888933970228

The international mobility of students has also been supported by deliberate strategies of medical schools in some countries to attract more international students. These strategies have included developing medical education programmes in English and French to reduce language barriers, developing agreements with other (non-EU/EFTA) countries on the recognition of diplomas and qualifications, and the active recruitment of students through agents representing schools in selected foreign countries.

International students are an additional source of funding for the medical schools through tuition fees they pay, which are either higher than the tuition fees for the domestic students or from which the domestic students are exempt (Table 2.4, Box 2.3). In Ireland, medical schools can more or less flexibly expand the intake of international students (while the intake of national students remains subject to a *numerus*

clausus), while in Poland, the Ministry of Education in co-operation with the Ministry of Health set the maximum number of admissions to all study programmes. In Romania, the expansion in the number of international students is subject to some external assessment of the medical schools' teaching capacity, with an increase in international students being compensated by a decrease in the number of Romanian students.

Box 2.3. International students provide additional source of funding for medical schools

Tuition fees paid by international students are an alternative source of funding for the medical schools in Poland, Romania, and Ireland.

Medical schools in Poland and Romania estimate that the tuition fees paid by international students are close to the marginal cost of education for each additional student, and the remaining funds are used to offer extra pay to the staff involved in international study programmes, usually in the form of paid over-time. In Poland, the average cost of medical education in 2016 was estimated to be around 10 500 USD per student (Ministry of Health of the Republic of Poland, 2016), which is slightly less than the tuition fees paid by students in the English programme. The additional revenues brought by international students are part of the schools' efforts to attract and/or retain qualified staff, thus addressing the emigration of medical personnel from Poland and Romania. In Romania, a part of these tuition fees is used to offer merit-based scholarships to some international students, thereby largely covering their tuition fees. At the Medical University in Cluj-Napoca (which has the largest number of students in the English and French programmes in the country), for example, around 20% of international students receive a scholarship.

In Ireland, the estimated unit cost of medical education is between approximately USD 120 000-144 000, depending on the duration of the studies (Campbell, 2015[7]). This is reflected in and consistent with the medical schools' opinion that the cost of teaching a medical student is around USD 23 000 to 28 500 annually. Considering that on average the tuition fees paid by international medical students is around USD 56 000 (Table 2.4), representatives of the Irish medical schools recognise that international students subsidise the education of Irish students. They often express the concern that the medical schools would not be able to offer the high standards of education without these international students.

2.4. In some countries international medical graduates face a bottleneck in accessing postgraduate training required to become a doctor

The further training and career paths of international medical students are often not documented. Evidence from some countries such as Norway and Sweden indicates that most students from these countries who got their medical degree abroad manage to enter into postgraduate specialty training in their home country and then obtain the right to practice there. The access to postgraduate training positions in France for French and foreign students with a medical degree from another EU/EFTA country is also relatively easy, as all these students are allowed to go through the qualifying exam (the *ECN*) and will be offered an internship post, even if they get a very low mark at the exam. However, the post that they will be offered will often not be in the specialty or the region where they wanted to pursue their postgraduate training because the allocation is based on the ranking in the exam (i.e. students with the highest marks choose first) and students with a foreign degree generally end up having lower marks (see chapter 3).

On the other hand, a substantial number of students from other countries like Canada and the United States can face significant difficulties in accessing internship and postgraduate training either in the

countries where they got their first medical degree or in their home countries, where they often want to pursue their career. If they cannot pursue their internship and postgraduate training, all their investment of financial as well as human capital in obtaining their first medical degree risks being wasted, as they will never become fully registered doctors.

In Ireland, the current selection procedure for entry into internship prioritises Irish (and other EU/EFTA) graduates of Irish medical schools[3] (NDTP, 2018[8]). Therefore, the vast majority of international medical students in Ireland – coming from non-EU/EFTA countries such as Canada and Malaysia – will either need to go back to their home country or move to another country to find an internship and postgraduate specialty training post. Paradoxically, at the same time, Ireland struggles with shortages of doctors and recruits many foreign-trained doctors from other countries (see also chapter 4).

In Canada, most residency posts in the first step of the residency matching process are reserved for graduates from Canadian medical schools, with only a limited share opened for Canadian and foreign international medical graduates. The second step in this residency matching process, which is used to fill any unfilled positions, is more equally open to both Canadian and international medical graduates (CaRMS, 2019[9]). As a result, in 2018 and 2019, only about 20% of Canadian and foreign graduates with a medical degree obtained outside Canada and the United States managed to find a residency posts in Canada, about the same proportion as in 2010. This compares to around 95% for medical graduates who have obtained their degree in Canada (CaRMS, 2019[9]). This low success rate of Canadian international medical graduates might explain the increase in the number applying for postgraduate training in the United States in recent years (Figure 2.3).

In the United States also, international students face stiff competition in the residency matching process because the number of domestic and international applicants significantly exceeds the number of available residency positions, although the bottleneck is less severe than in Canada. The success rate in the residency matching process for both American and foreign international medical graduates was around 60% in 2019 (National Resident Matching Program, 2019[10]).

In Poland and Romania, all graduates of medical schools have equal access to medical internship and postgraduate specialty training (residency). However, the decisions on the number of available internship/residency posts have traditionally not taken into account the international students, based on the assumption that most of them will leave the country after obtaining their first medical degree; and this is indeed the case for the majority of international graduates of Polish and Romanian medical schools who are not pursuing further training in these countries because they consider the working conditions to be relatively poor.

2.5. The international mobility of students brings additional challenges to national health workforce planning and policies

The growing international mobility of medical students is not always taken into account in national health workforce planning, either in the countries where they pursue their medical studies or in their countries of origin.

Since the majority of international students enrolled in medical schools in Poland and Romania return to their home countries or move to third countries upon completing their first medical degree, they are not accounted for in the planning of the domestic supply of doctors. However, there is a potential risk in these countries that a number of domestic students may be squeezed out, as medical schools might be tempted to give preference to international students who generate higher revenues through higher tuition fees. In Poland, the expansion of places for international students has been much more moderate than the expansion of places for domestic students. The opposite has happened in Romania, where the decisions on the intake of domestic and international students are almost entirely left to the medical schools. If the

demand for doctors increases in Romania in the years ahead, the pool of Romanian medical graduates may not be sufficient to respond to this demand.

In Ireland, the main stakeholders responsible for medical education and training are well aware of the current paradoxical situation whereby many international graduates of Irish medical schools are forced to leave Ireland in search for internship posts despite the fact that the country is struggling with a shortage of doctors and ends up recruiting many in other countries. The main factors contributing to the current bottlenecks in internship posts are, on the one hand, a limited consultant trainer capacity (which is related to doctor shortages) and, on the other hand, the failure to reconfigure the hospital system, which results in the maintenance of too many small hospitals that are not allowed to provide internship and specialty training.

In France, the Ministry of Health has started to take into account foreign-trained doctors in its health workforce planning and projections, without distinguishing between French students who completed their first medical degree abroad and others with a foreign degree. The most recent projection assumes that 1 500 foreign-trained doctors will come to France each year between 2015 and 2040), a number which is roughly equal to the inflow of foreign-trained doctors over the previous five years from 2010 to 2015 (Bachelet and Anguis, 2017[11]).

In Sweden, Swedish medical students studying outside the country are included in the national medical workforce planning, based on the assumption that they will all come back to complete their postgraduate training and work as doctors. Moreover, the 2012 modification of the regulations governing the practice of junior doctors streamlined the transition into training in Sweden for students who obtained their first medical degree in another EU/EFTA country (Swedish National Board of Health and Welfare, 2012[12]). Swedish medical students studying outside the country are therefore considered to be an attractive pool of medical practitioners for the Swedish health system, in addition to those who got their first medical degree in Sweden.

Also in Norway, the vast majority of Norwegian students who got a first medical degree abroad manage to complete their training and obtain the right to practice. The Norwegian government recently increased the *numerus clausus* on the number of students admitted in the Norwegian medical schools, which may reduce the number of Norwegians going to study abroad.

In summary, in some countries like Ireland, Poland, and Romania, international medical students are considered more as a source of additional funding for medical schools than an additional pool of physicians-in-training who would eventually become available for the country's national health system. In other countries like Sweden and Norway that have maintained some fairly tight domestic *numerus clausus* policies while supporting domestic students to get a first medical degree abroad, the latter are included in the countries' health workforce planning and are able to complete their postgraduate training when they come back. In yet other countries like Canada and the United States, a sizeable number of domestic students have gone to study medicine abroad, in most cases with the hope to return to their home country afterwards, but a substantial share of them have not been able to find a residency post at home to complete their clinical training, because the number of these posts has been significantly lower than the number of domestic and/or international applicants. This raises a potential risk of a waste in human capital if these international students are not able to complete their training.

2.6. Conclusions

The number of international medical students pursuing an education away from their home country has increased significantly over the past decade, now accounting for half of all medical students in Ireland, nearly a third in Romania, one-quarter in Poland, and around one in ten in France.

A number of factors have contributed to this internationalisation of medical education, including the reduction of barriers to the mobility of students through the recognition of qualifications especially when moving within the EU/EFTA area, the growing offer of international medical education programmes in some countries (particularly in some new EU member states), and the *numerus clausus* policies that limit entry into medical education programmes in many countries (or high tuition fees – for example, for American students). The movement of international medical students increasingly occurs also within the OECD and EU/EFTA area, with many students intending to return to their home country to practice as doctors.

The growing opportunities for students to study medicine abroad may allow them to fulfil their educational goals when they have not been admitted at home, while, at the same time, promoting fruitful international exchanges and experiences. However, the growing internationalisation of medical education may also entail some potential risks for these students, if they face difficulties in getting access to internship and postgraduate training posts and may also raise issues for national medical workforce planning and policies.

In countries that have been successful in attracting a large number of international medical students (such as Ireland, Poland, and Romania), medical schools benefit from, or might even have become dependent on, the tuition fees paid by these international students to retain their highly-skilled staff and to develop. However, a potential risk is that the increase in the number of international students might come at the expense of domestic students who may be squeezed out if the education capacity is limited. Given that domestic students are more likely to remain and practice as doctors in their country than international medical students, this could reduce the pool of domestic candidates available to respond to any increase in the demand for doctors. While this has not occurred in Poland, where the expansion of places for international students has been much more moderate than the expansion in the number of domestic students, the opposite has happened in Romania, where medical schools have more freedom regarding decisions on the intake of domestic and international students.

The international mobility of medical students may also raise issues of coordination between the first step in the medical education process (i.e. the obtention of a first medical degree) and the second step that is more oriented towards clinical training (i.e. the internship and postgraduate training period required to obtain the right to practice as a doctor). The growing number of international medical students can create pressures to increase further the number of internship and postgraduate training places to allow more graduates to complete their training, either in the countries where they have obtained their first medical degree or in their home countries. In countries where there are current or projected shortages of doctors, it may be desirable to increase the number of internship and postgraduate training places to respond to these needs, if sufficient training capacity can be mobilised. In countries where the number of domestically-trained doctors is expected to be sufficient to respond to future demands, increasing the training capacity may lead to surpluses.

For those international medical graduates who manage to find a postgraduate training place in their home country, which is the case for example for most Norwegian and Swedish students who studied abroad, this raises the issue of whether the access to the first phase of the medical education in these countries should not be opened up more by increasing the number of students admitted. This would have the advantage of treating more equitably those students who had to study abroad and paid higher tuition fees compared to those who were domestically-trained and paid much lower (or no) tuition fees.

The additional hurdles that international medical students can face in some countries in accessing internship and postgraduate training places might mean that some have to patch together their education in three or more countries or even work in non-training positions in the hope of finally becoming a fully-trained doctors. This may also result in “brain waste” if they are not able to complete their training in due time or at all to obtain the right to practise. In those countries that are providing government loans to students to study medicine abroad, there is also a need to ensure that these loans are wisely used.

Finally, the analysis illustrates important implications for the interpretation of the data on foreign-trained doctors, as it is increasingly important to recognise that not all foreign-trained doctors are non-native. In

some countries (e.g. Norway, Sweden, and the United States) a large and growing number are students who obtained their first medical degree abroad before coming back to their home country to complete their training and work. In these cases, it is difficult to talk about a “brain drain” from the countries where they studied, particularly since in most cases these international students pay the full cost of their education abroad.

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Notes

[1] The data cover all OECD countries except Canada, Italy, Japan, Slovenia, and the United Kingdom. The field of health includes medicine but also dental studies, pharmacy, nursing, and midwifery.

[2] The other top nationalities among international medical graduates applying for a medical internship in France were students from Italy (122) and Romania (32).

[3] The current intern-matching procedure prioritises those graduates of Irish medical schools who entered these schools through the Irish State's Central Applications Office (CAO) admissions system, the majority of whom are Irish nationals. As a rule, foreign candidates enter the medical schools through separate channels.

3 The internationalisation of medical education in France

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Historically, many foreign students have come to France to study medicine. In 2017-18, around 12 000 foreign students were enrolled in French medical schools, a lower number than in 2010-11. Increasingly, these international students come from European countries with the number coming from other parts of the world decreasing. A growing number of French students also go to other European countries to get at least a first medical degree, before returning to France to complete their postgraduate training (internship). It is difficult to find precise figures on the number of French students studying medicine abroad, but it has gone up, particularly in Romania, where it increased from around 680 in 2014-15 to over 1 200 in 2017-18. Most French students who study abroad do so either because they have failed the *numerus clausus* exam to get into a medical education programme in France or because they consider the risk of failing this exam too high. The recent government proposal to increase both the number of students admitted to medical education in France and the flexibility of the admission process may bring down the number of French students going to study abroad.

3.1. Introduction

Historically, France has hosted large numbers of foreign medical students, although their number fell between 2010-11 and 2017-18. In 2017-18, around 12 000 foreign students were enrolled in medical schools in France at all levels (first, second and third cycles of medical education), representing almost 9% of all medical students. A more recent development is the growing number of French students obtaining a first medical degree abroad before returning to France to complete their postgraduate specialty training (internship), although their number is still relatively low.

The overall objective of the Ministry of Health is to train enough doctors to meet the needs of the French population, including those living in remote and underserved areas, while respecting the European regulations on people's mobility and recognition of professional qualifications. Following steep reductions in the *numerus clausus* policy governing the number of students admitted to medical education programmes in the 1980s and 1990s, the admission of medical students has increased greatly since 2000, and the Ministry of Health has announced further increases in the coming years to try to address the growing shortages of doctors. In its medical workforce planning exercises used as input for education and training policies, the Ministry of Health now takes into account not only the growing number of doctors educated and trained domestically but also those who have undertaken part or all of their education and training in another country as another source of new doctors (Bachelet and Anguis, 2017[1]).

This chapter reviews recent trends in the number of international students of medicine in France and the number of French students going to study medicine abroad, and analyses some of the causes and consequences of these movements. It also examines the admission process for French and foreign students graduating with either a French or foreign degree to the third cycle of medical education in France (internship) and some of the recent measures taken or proposed to ensure that they have the necessary skills (theoretical, practical and language) before admission and throughout the internship period to become good doctors.

This study was carried out from May 2018 to January 2019 and draws on a series of interviews with key stakeholders in the French medical education system, including the Ministry of Health (Direction Générale de l'Offre de Soins and Direction de la Recherche, des Etudes, de l'Evaluation et des Statistiques), the Observatoire National de la Démographie des Professions de Santé (ONDPS), the Conseil National de l'Ordre des Médecins (CNOM), the Fédération Hospitalière de France and the Intersyndicale Nationale des Internes.[1]

3.2. Overview of the French medical education system, and recent and proposed reforms

3.2.1. The French medical education system is characterised by a strict numerus clausus at entry, but a much more flexible admission system in internship

Since the 1970s, France (like many other OECD countries) has applied a *numerus clausus* policy to control the number of students admitted to medical schools each year. The admission process for postgraduate training programmes (internships) is much more flexible and based on a national ranking exam (*Epreuves Classantes Nationales*, ECN); this does not exclude any candidates but is used to allocate new medical graduates to the different specialties and medical schools in France. Box 3.1 provides an overview of the three cycles of medical education and training in France and the current admission process for French and international students.

Box 3.1. Medical education and training in France, and admission process for French and international students

Medical education and training in France is divided into three cycles, which add up to 9-12 years of study, depending on the specialty area.

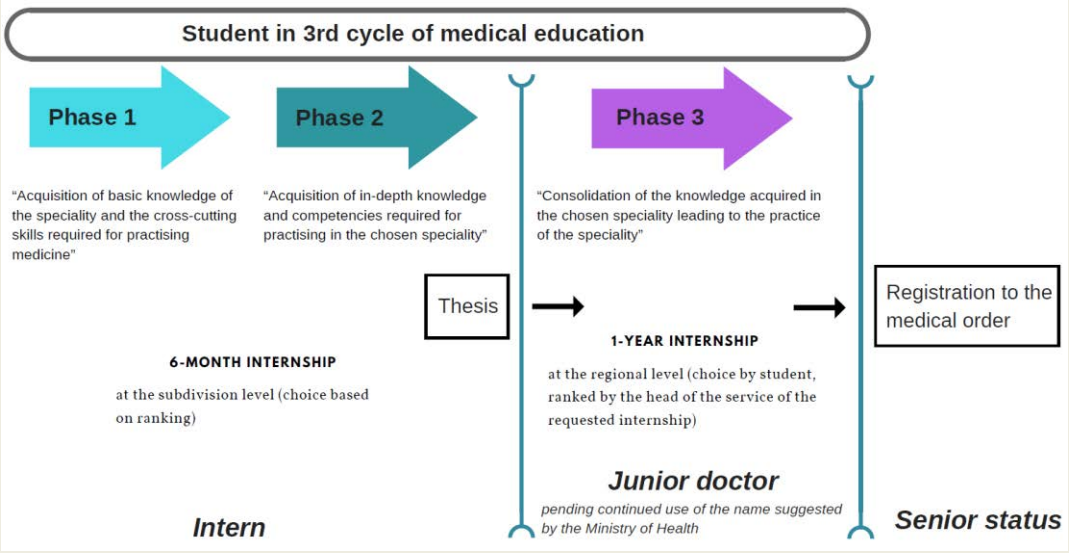
1. The **first cycle** lasts three years and leads to the Diplôme de Formation Générale en Sciences Médicales, recognised as a bachelor's degree. At the end of the first university year of common health studies (*Première année commune aux études de santé*, PACES), students who wish to pursue studies in medicine have to take a *numerus clausus* exam, which is highly selective. In 2016-17, only about 12% of students who took this exam for the first time succeeded in achieving a place at medical school; the proportion was 22% among those taking it for a second time (Ministry for Higher Education, Research and Innovation, 2018[2])).

   All students from the European Union (EU) and European Economic Area (EEA) and nationals of the Swiss Confederation and Andorra are entitled to take this exam to be admitted into a medical education programme, following the EU Directive on the free movement of people. For non-EU and non-EEA nationals, however, the quota is set at 8% of the total established intake. In reality, no French medical school has ever exceeded this quota, as the number of non-European applicants is always much lower than 8%. For example, in 2016-17, non-European students represented at most 3% of all students in those universities that accept the most international students, and on average 1.6% of students across all medical schools. For each non-EU or non-EEA student admitted, an additional French candidate can be accepted (e.g. if the *numerus clausus* in a given year is 8 205 new students and two non-European students are in the first 8 205 candidates, two additional French students will be accepted).
2. The **second cycle** lasts another three years and is validated by the Diplôme de Formation Approfondie en Science Médicale, recognised as a master's degree.
3. At the end of these six years of studies, medical students who graduate from the second cycle go through a national ranking exam (the ECN) before entering the **third cycle** of postgraduate specialty training (internship). All candidates are accepted in the third cycle, but their ranking at this exam determines the choice of speciality for their internship and the university where they will pursue their studies and internship (students with the highest marks choose first).

   All students who have completed the second cycle of medical education in France can take the ECN, regardless of nationality, as they have a French degree. Following the EU Directive on the recognition of professional qualifications, all students with a recognised medical degree from another EU or EEA country can also register for the ECN and be offered a postgraduate training place. For non-EU and non-EEA students who have obtained a medical degree in another country, however, there is a specific internship competition (the *concours d'internat en médecine à titre étranger*), which offers only a few positions (seven in 2016 and only one in 2017).

   The third cycle of postgraduate training in France was restructured in 2017, based on three clearly defined phases, including regular assessments of the skills and competencies acquired in each phase throughout the training process (Figure 3.1).

Figure 3.1. Third cycle of medical education in France after the 2017 reform



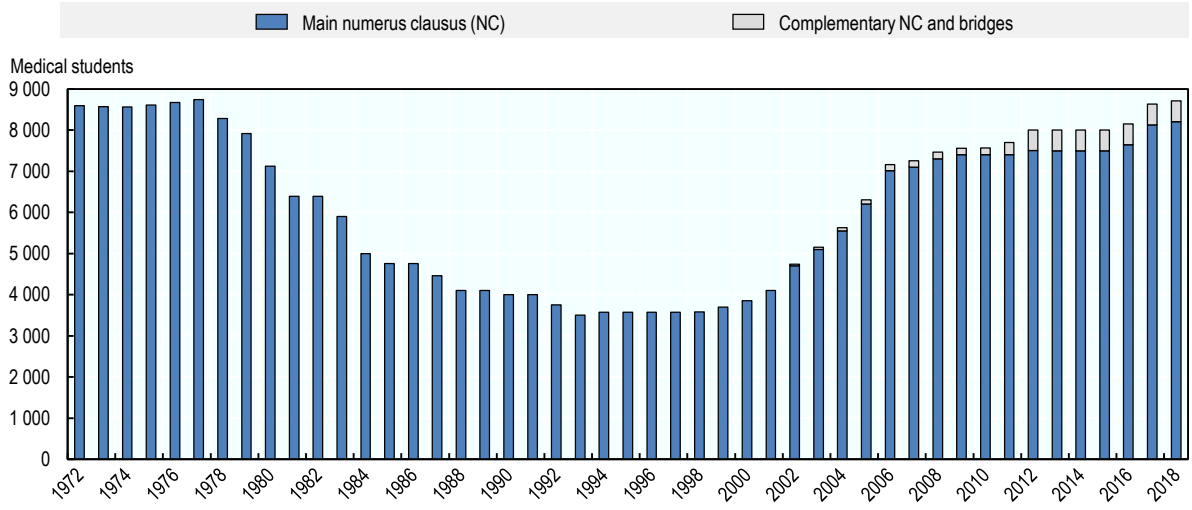
3.2.2. The numerus clausus *policy in France has fluctuated greatly since its introduction in the 1970s*

In France, a *numerus clausus* policy for admission to the first cycle of medical education was introduced in 1971, with the goal of ensuring a good match between the number of students admitted and the limited number of training places available in hospitals. Another aim was to prevent too great an increase in the medical workforce, to contain health expenditure growth. Following a few years of stability, the *numerus clausus* limit fell from around 8 500-9 000 students a year in the middle of the 1970s to 3 500 in the 1990s, due to concerns about a potential surplus of doctors. Since the end of the 1990s, it has started to rise again in response to concerns about potential shortages, to reach roughly the same level in 2017 as it was at the end of the 1970s (Figure 3.2).

In February 2019, the government announced a plan to continue to increase the number of students admitted to medical studies by around 20% by 2020 and to abolish the *numerus clausus* exam at the end of the first year, while allowing medical schools to have more flexibility in the admission process. In fact, the introduction of greater flexibility and diversification of student profiles and access to medical studies started several years ago, with the introduction of "bridges" ("*Passerelles*") for students with 1-3 years of relevant university education, enabling them to be admitted to the second or third year of medical education, but the number of places has remained fairly limited so far.

The increase in the number of students admitted to medical education programmes in France might reduce the number of French students who decide to study abroad.

Figure 3.2. Changes in *numerus clausus* for entry to medical education programmes in France, 1972 to 2018



Source: ONDPS survey (2019).

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3.3. Over 12 000 foreign students were enrolled in French medical schools in 2017-18 – fewer than in 2010-11

In 2017-18, over 12 000 foreign students were enrolled in medical schools in France in all three cycles (excluding students in the first year of common health studies, PACES), representing 8.8% of the total number of medical students (Table 3.1). Historically, students from Maghreb countries (Algeria, Morocco and Tunisia) have accounted for the greatest proportion of foreign students of medicine in France because of historical ties, common language and bilateral agreements. However, the number and share of students from Maghreb countries have fallen since 2010-2011, and in 2017-2018 they comprised about one-third of all foreign medical students in France.

Students from other EU countries account for a growing number of foreign students enrolled in medical schools in France, with their share increasing from about 20% of the total in 2010-11 to nearly 30% in 2017-18. The largest number of students came from Romania (902) and four countries that share borders with France: Italy (634), Belgium (499), Spain (297) and Germany (295). A large number of students (around 200) also came from Luxembourg, which has established agreements with neighbouring countries, including France, for the education of its medical students. This is expected to change as of 2020, at least for the first cycle, with the planned introduction of a new medical degree in Luxembourg.

About 7% of foreign medical students in 2017-18 came from Middle Eastern countries, a lower proportion than in 2010-11. Students from Lebanon were the most numerous (467) in 2017-18, followed by Saudi Arabia (184) and the Syrian Arab Republic (171). Most students from Saudi Arabia are postgraduate trainees financed by the Saudi government, which subsidises medical schools directly. A small number of foreign medical students come from the Americas (e.g. from Canada, Haiti, Brazil and the United States).

Table 3.1. Foreign students enrolled in medical education in France (first, second and third cycles), 2010-11 and 2017-18

	2010-11		2017-2018	
	Number	%	Number	%
Europe	3,165	21%	3,818	32%
European Union	2 810	19%	3 480	29%
ROMANIA	697	5%	902	8%
ITALY	394	3%	634	5%
BELGIUM	391	3%	499	4%
SPAIN	199	1%	297	2%
GERMANY	322	2%	295	2%
LUXEMBOURG	206	1%	197	2%
PORTUGAL	109	1%	139	1%
UNITED KINGDOM	60	0%	91	1%
GREECE	92	1%	85	1%
POLAND	93	1%	81	1%
BULGARIA	52	0%	54	0%
Europe excluding EU	355	2%	338	3%
RUSSIA	83	1%	78	1%
Africa	8 641	58%	6,256	52%
ALGERIA	2,873	19%	1,811	15%
MOROCCO	1,473	10%	1,120	9%
TUNISIA	1,305	9%	1,036	9%
CAMEROON	514	3%	343	3%
COTE D'IVOIRE	254	2%	189	2%
MADAGASCAR	306	2%	175	1%
BENIN	181	1%	170	1%
MAURITIUS	174	1%	163	1%
CONGO	185	1%	153	1%
SENEGAL	181	1%	153	1%
GUINEA	152	1%	144	1%
Middle East and Asia	2,472	17%	1,516	13%
LEBANON	614	4%	467	4%
SAUDI ARABIA	258	2%	184	2%
SYRIA	631	4%	171	1%
VIET NAM	256	2%	112	1%
CHINA	137	1%	95	1%
CAMBODIA	84	1%	73	1%
IRAN	108	1%	49	0%
KOREA	31	0%	38	0%
TURKEY	44	0%	30	0%
America	536	4%	414	3%
CANADA	64	0%	78	1%
HAITI	61	0%	53	0%
BRAZIL	97	1%	51	0%
UNITED STATES	26	0%	44	0%
COLOMBIA	45	0%	36	0%
Oceania	4	0%	9	0%
Stateless or undeclared	8	0%	7	0%
Total	14,826	100%	12,020	100%
Proportion of foreign nationals (%)	12.7		8.8	

Source: Ministry of Education, SISE enrolment survey (date of observation - 15 January).

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The cost of university education in France, for both domestic and foreign students, in medicine and in other fields of study is very low compared to several other European and non-European countries. Enrolment fees are about EUR 170 a year for the first cycle, EUR 240 for the second cycle (master's students) and EUR 380 for the third cycle (PhD students). Most of the cost of university education is paid by public sources, estimated at approximately EUR 10 000 per student per year (Campus France, 2018[3])).

To date, university fees have been the same for all students, regardless of nationality (with no distinction between students from France, the EU or non-EU countries), as is the case in several other countries. In November 2018, however, the government announced its intention to significantly increase university tuition fees for non-EU and non-EEA students, while increasing financial assistance for some of them. At the start of the 2019 academic year, tuition fees for students from outside the EEA are expected to increase to EUR 2 770 a year for undergraduate students (first cycle) and EUR 3 770 a year for master's and PhD students (second and third cycles). While this increase is significant, these tuition fees nevertheless remain much lower than the fees foreign students pay in other countries such as the United Kingdom and the Netherlands.

3.4. The number of French students studying medicine abroad has increased but remains relatively low

It is difficult to know exactly how many French students are enrolled in medical schools abroad as they are not registered in France. However, available data indicate that the number of French students pursuing and completing a first medical degree abroad has increased in recent years, although it remains relatively low. The number of French students with a foreign medical degree passing the ECN exam to get into postgraduate training in France rose from only 13 in 2012 to 134 in 2017; this still amounts to fewer than 2% of the total number of students who took the ECN in 2017 (see Table 3.2).

Among doctors who have completed their training and are registered, the total number who were born in France and completed some or all of their medical education and training abroad before returning to France increased by around 20% between 2011 and 2016 (from 542 to 660). Despite this recent rise, this number still amounted to only 0.3% of all practising doctors in France in 2016.

French students studying medicine abroad can be classified in two broad categories: expatriates "by default" and expatriates by choice (Figure 3.2).

Box 3.2. Profiles of French students studying abroad

i) Expatriates "by default"

These include at least two main categories of students:

1. students who leave France because they fail the exam at the end of the first university year (or who do not think that they are likely to pass it): these students do not want to abandon the prospect of becoming a doctor and so decide to go abroad to pursue their first and second cycle of medical studies, with the intention of coming back to France to complete their postgraduate specialty training;
2. students who do not obtain their preferred speciality at the end of the second cycle in France: these students may move to countries like Switzerland and Belgium to complete their postgraduate studies if they are able to get an internship place in a specialty area they were not able to get in France because they did not achieve a high enough ranking in the ECN exam.

ii) Expatriates by choice

These include postgraduate or postdoctoral students who move to another country, generally with a view to pursue a university academic career. Most of these international mobility projects are for the purpose of carrying out some fundamental research in countries like the United States or Canada, and generally last one year.

In recent years, Romania has rapidly become the preferred destination for French students wanting to obtain their first medical degree abroad. In 2014-15, about 680 French students were enrolled in the eight Romanian medical schools, and their number increased to over 1 200 in 2017-18. This sharp increase was facilitated by the introduction of programmes provided in French in a growing number of Romanian universities (initially in Cluj, but now in at least three other universities), reflecting a deliberate policy to attract a greater number of French and French-speaking students. The students also need to learn Romanian during the course of their studies, as they need to pass the exam in that language when they complete their degree.

The first wave of French students who studied for their medical degree in Romania have started to apply for the ECN in recent years to complete their postgraduate training in France. Around 90 French students with a degree from a Romanian medical school applied to the ECN in 2015; this number went up to 110 in 2017 and should continue to increase in the coming years.

For these French students, the conditions for admission to medical schools in Romania are far less stringent than those for medical schools in France. Admission is mainly based on their marks at the end of the baccalaureate (secondary school). Hence, the vast majority of French students applying to Romanian medical schools are admitted, including both those who have just completed the baccalaureate and those who have already done one year in university in France but failed the medical entrance exam.

To obtain a medical degree in Romanian medical schools, all international students are required to take the exam marking the end of the second cycle in Romanian, including all the students who pursued their studies in French. Since these students have in most cases spent six years in a medical school in Romania to obtain this degree, passing this exam is crucial, as it means validating a huge investment of time and money (the tuition fees for foreign students in Romania are about EUR 5 000 per year on average).

3.5. Student ranking in the ECN is mainly influenced by the place of first medical degree

Applicants to the third cycle of medical education in France (postgraduate specialty training or internship) fall into four main categories: 1) French students who obtained their first medical degree in France (by far the greatest number, accounting for over 90% of the total in 2017); 2) foreign students who obtained their first medical degree in France (a little less than 3%); 3) foreign students who obtained their qualification in another EU country (just over 2%); and 4) French students who obtained their qualification in another country (less than 2%) (Table 3.2).

Table 3.2. Number of students taking the ECN by nationality and place of qualification, 2012 to 2017

Year	French students with a French degree	Foreign students with a French degree	French students with a foreign degree	Foreign students with a foreign (EU) degree	Total number of candidates	Total number of internship positions filled*
2012	7 341	285	13	131	7 770	7 313
2013	7 634	290	23	157	8 104	7 623
2014	7 914	216	33	194	8 357	7 860
2015	8 252	263	97	199	8 811	8 477
2016	7 569	206	123	212	8 110	7 681
2017	7 820	233	134	195	8 382	7 978

* Around 20% of students who take the ECN are not assigned an intern position either because they decide to retake the exam the following year to try to get a better ranking or because they decide to pursue other studies or professional goals.
Note: The exceptionally large increase in the number of students who took the ECN and an internship position in 2015 results from many anticipating the planned change to the exam in 2016. This also explains the large reduction in 2016: many new graduates postpone their registration for the exam by one year to try to obtain better results, but this was not the case in 2015.
Source: DREES (Centre national de gestion).

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Although their numbers remain fairly low, the number of students with a degree from another EU country taking the ECN has increased in recent years, driven mainly by the growing number of French students pursuing their initial medical education outside France. In 2017, of the 328 foreign-educated candidates for the exam, 133 were French, while most of the remainder were Italian (122) and Romanian (32) (Table 3.3).

Most of these students obtained their medical degree in Romania (147) and Italian medical schools (124), with a much smaller number obtaining their degree in Belgium (14). Among those students with a degree from Romania, the vast majority were French (110 compared to 32 Romanian students). By contrast, almost all students with an Italian degree were Italian students (122, while 2 only were French). The main reason for the high number of Italian candidates applying to the ECN each year is that these students have to pass a very difficult exam, with a high failure rate, to be admitted to the third cycle in Italy. Hence, entering the third cycle in France is seen as a good alternative for Italian students who have either failed or are worried that they might fail this exam in their country. The majority of students with a Belgian degree were French students (10 compared to 4 Belgians).

Not all students who register to take the ECN actually turn up to the exam, and some who complete it end up declining the internship post offered, meaning that some positions remain unfilled. In 2017, about 70 candidates with a foreign degree who had registered for the exam did not attend, and 70 who attended did not end up taking an internship post. The number of unfilled internship posts is exacerbated by the fact

that other positions are also declined by French students with a French degree, mainly because some use the opportunity to take the exam again the following year to try to improve their ranking.

Table 3.3. Students with a foreign degree registering for the ECN, attending the exam and being assigned to an internship post, 2015 to 2017

Country of qualification and nationality	2015			2016			2017		
	Registered	Attending	Assigned to a post	Registered	Attending	Assigned to a post	Registered	Attending	Assigned to a post
Total foreign-qualified	349	296	213	413	335	235	401	328	258
- French nationals	104	97	83	134	123	105	154	133	108
- Other nationalities	245	199	130	279	212	130	247	195	150
of which Romanian-qualified	169	151	135	189	168	150	173	147	123
- Romanian nationals	70	62	59	63	52	48	41	32	28
- French nationals	95	89	76	120	111	98	127	110	91
- Other nationalities	4	0	0	6	5	4	5	5	4
of which Italian-qualified	130	107	49	133	101	44	143	124	92
- Italian nationals	129	106	48	132	100	44	141	122	90
- French nationals	1	1	1	1	1	0	2	2	2
- Other nationalities	0	0	0	0	0	0	0	0	0
of which Belgian-qualified	5	2	1	6	6	3	23	14	8
- Belgian nationals	4	1	0	4	4	2	9	4	1
- French nationals	1	1	1	2	2	1	13	10	7
- Other nationalities	0	0	0	0	0	0	1	0	0
of which qualified elsewhere	45	36	28	85	60	38	62	43	35
- French nationals	7	6	5	11	9	6	12	11	8
- Other nationalities	38	30	23	74	51	32	50	32	27

Note: Around 20% of students registered to take the ECN will typically not attend it, and around 20% of those who attend it will not end up being assigned to an internship post because they choose to do something else.
Source: DREES (Centre national de gestion).

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ECN results show that students who obtained their medical degree in France tend to rank higher than those who obtained their first medical degree abroad, regardless of whether they are French or foreign nationals. Several factors may explain this:

1. students who complete their first medical degree in France have to pass the exam at the end of the first year and may therefore have greater capacity to learn and perform well in exams, leading to a "selection effect";
2. the content of the ECN is more aligned with the content of the French course than with programmes in other countries;
3. students studying in France have greater opportunities to take specific programmes to prepare for the ECN; and
4. foreign students who have studied abroad may face language barriers.

Among the 8 372 students who took the ECN in 2017, the average ranking of French students who obtained their first medical degree in France was 3 941; that of foreign students who obtained their degree in France was 4 908 for Europeans and 4 945 for non-Europeans. By comparison, the average ranking of French students who completed their studies outside France was just 7 765 (with the highest ranked student at 3 669 and the lowest at 8 360); for foreign students who studied abroad, the average ranking was 7 998 (with the highest at 1 435 and the lowest at 8 372) (Table 3.4). This supports the ONDPS conclusion that the place of qualification is a more important factor than the nationality of students in determining their ECN ranking (ONDPS, 2015[4]).

Table 3.4. Ranking of ECN candidates by place of qualification and nationality, 2017

Student nationality	French		Foreign			Total
			Non-EU	EU and EEA		
Place of qualification	France	Outside France	France	France	Outside France	
Number of candidates assigned to a post	7 510	109	147	62	150	7 978
Proportion of candidates	94.1%	1.4%	1.8%	0.8%	1.9%	100%
Top-ranked student	1	3 669	105	125	1 435	1
Bottom-ranked student	8 316	8 360	8 263	8 110	8 372	8 372
Average ranking (out of 8 372 students who took the exam)	3 941	7 765	4 945	4 908	7 998	4 095

Source: DREES (Centre national de gestion).

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A number of foreign students with a foreign degree obtain very low marks in the ECN. In 2015, 10% scored less than 100 out of 1 000 (Jolly et al., 2016[5]). This may be due to a more limited knowledge base compared to that being tested in the ECN, but it may also result from more limited knowledge of the French language.

As noted above, the results of the ECN do not affect admission into the third cycle as all students taking the exam are offered an internship post, but they affect the choice of specialisation and the location of the university where students will pursue their postgraduate studies. Given their lower ECN results overall, students with a foreign degree are more likely to specialise in fields that are less popular among medical graduates, such as general practice or occupational medicine. In 2017, nearly half (49%) of foreign-qualified students who began their postgraduate training studies in France were assigned to general practice. This proportion rose to nearly 60% for French students with a French degree, compared to just under 40% among French students who had graduated in France (Table 3.5).

Foreign-qualified students therefore frequently fill internship posts in specialties that may be less popular, but nonetheless in which there are current or expected shortages, such as general practice. Students with a foreign degree are also more likely to do their internship in more remote and underserved areas, such as disadvantaged parts of Ile-de-France, where there are usually a greater number of unfilled internship posts. Although the contribution of these interns is obviously not enough to make up for the shortage of doctors in these areas, they nonetheless help to reduce the tension in the system.

Table 3.5. Assignment to general practice and occupational medicine by nationality and place of qualification, 2017

Student nationality	French		Foreign			Average of all assigned students
			Non-European	European		
Place of qualification	France	Outside France	France	France	Outside France	
Number of candidates assigned a post	7 510	109	147	62	150	7 978
General practice	38.5%	57.8%	30.6%	41.9%	49.3%	38.8%
Occupational medicine	1.0%	3.7%	2.0%	3.2%	4.7%	1.1%

Source: DREES (Centre national de gestion).

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3.6. A number of options have been proposed to strengthen the selection and evaluation of medical students pursuing postgraduate training in France

Consensus has emerged in recent years on the need to tighten oversight and evaluation of the theoretical and practical (clinical) skills of students completing their second cycle of medical studies in France or in another EU country to ensure that they have the required skills to pursue their postgraduate specialty training (internship).

A new certificate of clinical competence (in the form of a practical exam) was introduced in 2016 to evaluate the clinical skills of students completing their second cycle of medical education in France. In 2017, the National Academy of Medicine proposed to extend this certificate to students who have completed their degree in another country and intend to pursue their postgraduate training in France (Bringer, Brunelle and Queneau, 2017[6]). However, it is not clear how such a measure could be implemented while respecting the EU Directive on the recognition of professional qualifications (Box 3.3). This only stipulates a minimum duration of medical education programmes during the first and second cycles for the diploma to be recognised across EU countries (5 500 hours of theoretical learning and practical training, and a minimum of five years of medical studies). It is up to each country to determine the specific curricula, including the balance between theoretical and practical knowledge. The extent of practical clinical training can differ greatly across countries, and students' access to technical equipment (such as medical imaging) can also vary widely, not only across countries but also across medical schools within each country. These differences can translate into important differences in the clinical skills students have acquired at the end of the second cycle.

In addition to ensuring that all students have a minimum level of theoretical and practical knowledge when they start postgraduate training, it is important that all interns have a sufficiently good knowledge of French to be able to communicate with colleagues and patients. There is currently no examination to assess the French language skills of foreign candidates taking the ECN. In 2017, the National Academy of Medicine also proposed introducing a language test for foreign candidates to avoid compromising the quality of care (Bringer, Brunelle and Queneau, 2017[6]). The EU Directive on the recognition of professional qualifications

recognises the right for national authorities to assess the language proficiency of foreign applicants separately from the professional qualifications.

Box 3.3. The EU Directive allows the administration of language tests

First adopted in 2005, the EU Directive on the recognition of professional qualifications (Directive 2005/36/EC) allows for the automatic recognition of diplomas in some fields of study, including medicine, if the education programmes meet certain conditions. The 2005 Directive specified that basic medical education needed to comprise a total of at least 5 500 hours of theoretical learning and practical training.

In 2013, the European Parliament adopted Directive 2013/55/EU, amending the 2005 Directive. The amendment still stipulated a minimum of 5 500 hours of education and training but also specified a minimum of at least five years of basic medical studies. It further aimed to clarify the language skill requirements. It reasserted the principle that any examination of language skills should follow a different procedure from the recognition of qualifications, while recognising that competent national authorities should have the opportunity to administer language tests for all health professions covered under the Directive.

As outlined earlier (Box 3.1), the reform of the third cycle of medical education in France introduced in 2017 provides additional guarantees of the skills acquired by interns at each phase of their internship.

Box 3.4 summarises some of the recent options proposed by different stakeholders to improve the selection and skills assessment of candidates for postgraduate training programmes in France, and to provide better support to interns during their training period.

Box 3.4. Recent options proposed by different stakeholders to improve the selection and support for new interns

- The exam to replace the ECN to select and rank candidates could:
  - be less focused on theory and on subjects that have no relation to the reality of the workplace
  - increase the assessment of clinical skills (including for foreign students)
  - attach greater weight to work experience during the second cycle
  - consider introducing a minimum pass mark
  - consider candidates' motivations and interpersonal skills.
- The assessment of language skills could:
  - evaluate the French proficiency of foreign students who qualified abroad (while respecting the EU Directive on the recognition of professional qualifications)
  - offer more language classes to interns whose mother tongue is not French.
- Greater support for interns could:
  - provide more tools to facilitate integration (guides, dedicated websites, social media)
  - provide more tutoring, peer assistance (interns nearing the end of their course helping their more junior colleagues) and personal development, including stress management.

Sources: Bringer et al. (2017[6]), Dubois-Randé et al. (2017[7]), Dubois-Randé, Sibilia (2017[8]), Mara (2018[9]) .

3.7. Conclusions

The internationalisation of medical studies in France involves both the long-standing intake of foreign students to French medical schools and the more recent development of French students studying at medical schools in other countries. About 12 000 foreign students were studying medicine in France in 2017-2018, accounting for slightly less than 9% of all medical students. Historically, a large number of foreign medical students have come from Maghreb countries, but their number and share have decreased since 2010-11. A growing number and share of foreign medical students come from other EU countries, with the greatest number from Romania, Italy, Belgium, Spain and Germany. About 7% of foreign students come from Middle Eastern countries (mainly Lebanon, Saudi Arabia and Syria), but their number and share have decreased since 2010-11.

It is hard to know the precise number of French students studying medicine in other countries because they are not registered in France. However, their number is rising. For example, the number of French students going to Romania to obtain a first medical degree has increased sharply in recent years, from around 680 in 2014-15 to over 1 200 in 2017-18 (all levels combined). This rise was facilitated by the creation of French language programmes in a growing number of medical schools in Romania, as part of a strategy to attract more students from France and other French-speaking countries. This movement was also supported by the EU Directive on the recognition of professional qualifications, which states that a degree acquired in Romania or in any other EU country should be recognised in all other EU countries. However, the recent and planned increases in the number of students admitted to medical schools in France, combined with the proposed replacement of the *numerus clausus* exam and greater flexibility in admission conditions, may reduce the number of French students studying medicine abroad.

The main factor determining results in the ECN exam, which is used to allocate postgraduate interns to different specialty areas and medical schools, is not students' nationality but the place they obtained their qualification. Students who studied in France generally have better results than those who took their first medical degree abroad, regardless of whether they are French or foreign students. These results have raised some concerns about the level of theoretical and practical knowledge of some candidates who obtained their degree in another country, as well as the language proficiency of some foreign students with a foreign degree.

Since they generally achieve a lower ranking in the ECN exam, foreign and French students with a foreign degree tend to end up in specialisations that are less popular among new medical graduates, including general practice. They are also more likely to work in remote and disadvantaged areas, where shortages of doctors are most acute. The posts filled by these interns can help to mitigate shortages, although they are insufficient to make up for all the shortages.

A new certificate of clinical competence in the form of a practical exam was introduced in 2016 to improve evaluation of the practical skills of students completing their second cycle of medical studies in France. In 2017, the National Academy of Medicine proposed that this certificate should be extended to all students who obtained their first medical degree abroad and want to pursue postgraduate internship training in France. However, it remains to be seen how this would comply with the EU Directive on the recognition of professional qualifications. The Academy also proposed introducing a French language test for foreign students who obtained their medical degree in another country, to ensure that they have sufficiently good knowledge of French to communicate effectively with colleagues and patients. This would not pose any difficulties under the EU Directive.

The French government is planning to reform the ECN, which is felt to be an overly theoretical exam that does not assess the candidates' practical and clinical knowledge sufficiently. Besides putting greater focus on clinical competencies, some university medical schools have also proposed setting a minimum pass mark for this exam, as done in several other countries. These reforms would affect not only students obtaining their first medical degree in France but also those obtaining their degree in other EU countries.

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Note

[1] It should be noted that the study does not cover the DFMS (specialist medical training diplomas) or the DFMSA (advanced medical training diplomas), which are both open to non-EU nationals. These courses can lead to positions with FFI intern status (*faisant fonction d'interne*).

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4 The Irish paradox: Doctor shortages despite high numbers of domestic and foreign medical graduates

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Ireland has the highest number of medical graduates per population among OECD countries, but half of the students come from other countries. The number of international students is not subject to the *numerus clausus* policy that limits the entry of Irish students into medical education, and the medical schools have become increasingly dependent on the tuition fees international students pay. However, the large student numbers are not matched by opportunities to complete an internship and postgraduate training. To the contrary, the number of internship places for international medical students has fallen as national authorities reserve a greater proportion for the growing number of Irish medical graduates to ensure a good return on the public investment in their education. Thus, most international students try to complete their medical education and enter postgraduate training outside Ireland. Also, many Irish medical graduates and (newly trained) doctors seek training and job opportunities abroad. Hence, while Ireland provides initial medical education to a large number of students, since many leave the country after graduation, it nonetheless relies heavily on international recruitment of doctors to fill its domestic needs. More coherent education, training, and employment policies are needed to address this paradox.

4.1. Introduction

Ireland has a long-standing tradition of hosting international medical students. In 2017/18, international students – most coming from outside the European Union/European Free Trade Association (EU/EFTA) – accounted for half the medical student body. This contributes to Ireland producing the highest number of medical graduates per population among all EU and OECD countries.

Irish medical schools are able to attract and admit a large number of international students because of their good reputation and also because these students are not subject to the *numerus clausus* policy that limits the entry of Irish and other EU/EFTA students into medical education. Medical schools in Ireland have become increasingly dependent on the additional income from the high tuition fees that non-EU/EFTA students pay.

However, the expansion in medical student numbers has not been matched by an expansion in the number of internship opportunities the students need to complete their education and obtain the right to practice as a doctor in Ireland. To the contrary, the number of internship places for international medical students has diminished greatly as national authorities have reserved a greater proportion for the growing number of Irish and other EU/EFTA medical graduates. This means that most international graduates of Irish medical schools need to leave the country if they are to earn the right to practice. Furthermore, many Irish medical graduates and doctors also emigrate in search of training and work opportunities abroad.

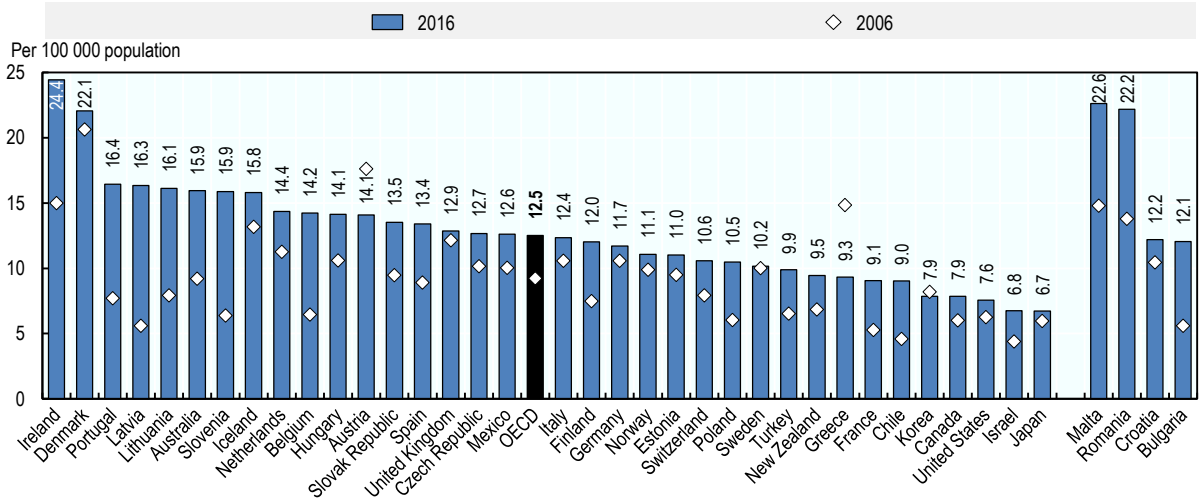
As a result, Ireland faces a paradoxical situation whereby it educates a large number of domestic and international medical students, but since many leave the country after graduation, it has to rely heavily on international recruitment of fully-trained doctors to meet its domestic demand. Indeed, the proportion of foreign-trained doctors in Ireland rose substantially to 42% in 2016 – the second highest among the OECD countries.

Against this background, this chapter describes findings from a case study on the internationalisation of medical education in Ireland – in particular its dynamics, magnitude, and main drivers as well as the views on the current situation of the main stakeholders in the medical education and health sectors. The discussion in this document relates to international medical students enrolled in long-cycle programmes. The study was undertaken in 2018 and is based on key-informant interviews with representatives of the main policy actors in the education and health sectors in Ireland – including government departments, regulatory bodies, professional associations, and medical schools (see Annex Table 4.A.2 for a complete list of interviewees' institutional affiliations) – in addition to a literature review. The perspectives of a sample of non-EU/EFTA graduates of Irish medical schools were also captured through an online survey and by email. Moreover, researchers from the Health Workforce Research Group (Royal College of Surgeons in Ireland) and the Doctor Retention and Motivation Project (Royal College of Physicians of Ireland) provided additional information and perspective.

4.2. International students account for half of all medical students in Ireland

In 2016, Ireland had the highest number of medical graduates per population of all OECD and EU countries, 24.4 per 100 000 population. This is approximately twice the figure in the United Kingdom (12.9) and the OECD average (12.5). Ireland has, at least for the past decade, produced relatively more medical graduates than nearly all other OECD countries (Figure 4.1).

Figure 4.1. Number of medical graduates per 100 000 population, OECD and EU countries, 2006 and 2016



Notes: In Denmark, Mexico, New Zealand, and Sweden, the data refer to new doctors receiving an authorisation to practise, which may result in an overestimation if these include foreign-trained doctors. The countries on the right-hand side of the figure are EU countries that are not OECD members. There were no medical graduates in Luxembourg in 2016.
Source: OECD Health Statistics 2018, https://doi.org/10.1787/health-data-en.

StatLink https://doi.org/10.1787/888933970418

About half of the medical student body in Ireland, however, consists of international students. All six Irish medical schools have large numbers of international students. The Royal College of Surgeons in Ireland has the largest number and share of international students; they accounted for more than three-quarters (78%) of all students in the academic year 2017/18 (Table 4.1).

This proportion of international medical students is much higher than the average in all tertiary education programmes in Ireland, where international students account for 8% of total enrolments and 15% of enrolments in master's (or equivalent) programmes (OECD, 2018[1]).

Table 4.1. Irish and international medical students in Irish medical schools, 2017/18

Medical school	All students	Irish students	International students	Share of international students
Royal College of Surgeons in Ireland	1 929	424	1 505	**78%**
University College Dublin	1 514	978	536	**35%**
National University of Ireland, Galway	1 074	620	454	**42%**
University College Cork	935	560	375	**40%**
Trinity College Dublin	878	559	319	**36%**
University of Limerick	587	327	260	**44%**
All	**6 917**	**3 468**	**3 449**	**50%**

Source: Authors' analysis of HEA 2017/2018 statistics on medicine enrolments and personal communication (Health Education Authority, 2018a[2]).

StatLink https://doi.org/10.1787/888933970437

4.2.1. Canadians are the most numerous group of international medical students in Ireland

In 2017/18, Canadians were the most numerous international medical students (29% or 993 of the total number of international enrolments), followed by students from Malaysia (19% or 667 enrolments) (Table 4.2). According to statistics of the Higher Education Authority (Health Education Authority, 2018b[3]), the total number of Canadian students enrolled in Irish medical schools nearly tripled in the past decade, from 381 in 2006/07 to 993 in 2017/18.[1]

Table 4.2. International enrolments (full-time) in medicine in Ireland – top 10 countries of origin, 2017/2018

Country of origin	No.	Share of international enrolments	Share of total enrolments (Irish and international)
Canada	993	29%	14%
Malaysia	667	19%	10%
Kuwait	250	7%	4%
Singapore	239	7%	3%
United Kingdom (excluding Northern Ireland)	226	7%	3%
United States	220	6%	3%
Saudi Arabia	189	6%	3%
United Arab Emirates	99	3%	1%
Oman	81	2%	1%
Trinidad and Tobago	67	2%	1%
Other	418	12%	6%
Total	**3 449**	**100%**	**50%**

Note: The number of students from Malaysia includes 310 students enrolled at Penang Medical College – a Malaysian campus of the Royal College of Surgeons in Ireland and the University College Dublin medical college – who spend two years of their studies in Ireland.
Source: Authors' analysis of HEA 2017/2018 statistics on medicine enrolments and personal communication (Health Education Authority, 2018a[2]).

StatLink https://doi.org/10.1787/888933970456

4.3. Admission rules and tuition fees differ for Irish and EU/EFTA students and those from non-EU/EFTA countries

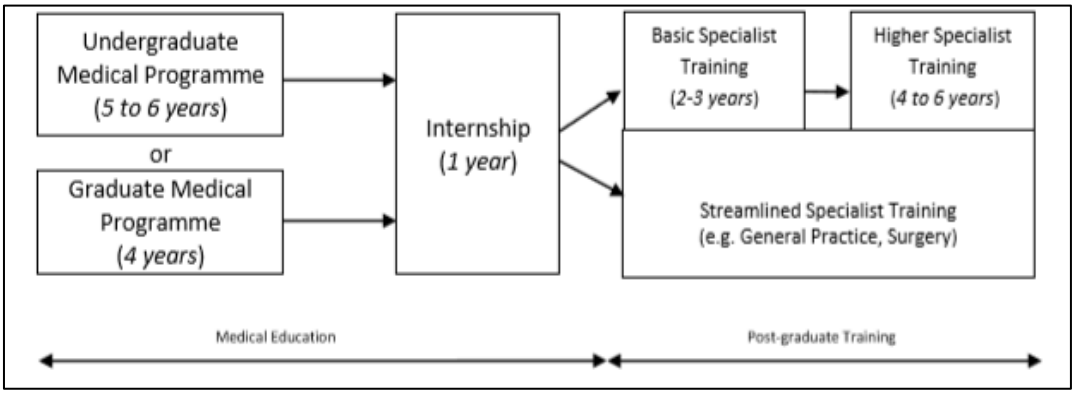
4.3.1. Non-EU/EFTA students face no numerus clausus *policy for entry into medical education but have limited access to internships*

In Ireland, the medical education begins with a medical degree programme of between four and six years, followed by a 12-month internship (Figure 4.2). Students entering their medical education directly from secondary school complete a course of between five and six years,[2] while graduate-entry programmes – offered since 2006 – are four years in duration. The graduate medicine programmes are open to students who have already completed a degree (bachelor's or higher) in another discipline.

In addition to the medical degree, graduates must complete a 12-month internship to obtain the right to practise medicine in Ireland. The National Doctors Training and Planning unit (NDTP) within the Health Service Executive (HSE) has the responsibility for the intern-matching scheme (see Annex Table 4.A.1 for a description of governance and responsibilities of the various actors in medical education and training in

Ireland). The internships are delivered in clinical sites organised in six intern-training networks, each based around one of the medical schools. During the internship, graduates are employed and paid by the HSE. On successful completion, the graduate may proceed to postgraduate specialist training (NDTP, 2017[4]; Health Service Executive, 2018[5]).

Figure 4.2. Medical education and training pathways in Ireland



Source: Medical Council, 2013[6].

Like most other OECD countries, Ireland has two *numerus clausus* systems regulating the number of places for the initial medical education and for the subsequent internship, respectively. The first, related to the entry of students into medical education programmes, applies only to Irish students and other nationals of EU/EFTA countries but not to students from non-EU/EFTA countries.[3]

Between 2006 and 2016, the intake of students subject to the *numerus clausus* policy increased steadily, leading to a more than two-fold increase in the number of Irish (and other EU/EFTA) medical graduates – from 370 in 2006 to 854 in 2016 (of which 7% (61) were from other EU/EFTA countries) (Health Education Authority, 2018b[7]). This increase followed the recommendation of a 2006 government report that called for an expansion to reduce the reliance on foreign-trained doctors.

At the same time, the number of non-EU/EFTA medical graduates increased even more rapidly – more than three-fold: from 140 in 2006 to 479 in 2016 – in line with the strategies of Irish medical schools to recruit more students from abroad (Health Education Authority, 2018b[7]). However, the current intern-matching procedure (in place since 2015) prioritises Irish and other EU/EFTA nationals in the first round. This arrangement has been adopted to protect the public investment in the education of these students (Box 4.1) (NDTP, 2017[4]).

Box 4.1. The 2006 Fottrell report called for new directions in medical education in Ireland

Between 1978 and 2006, the intake of Irish and other EU/EFTA medical students was capped at 305 per year. During this time, the gap between the supply of and demand for doctors was closed by recruiting from overseas (Campbell, 2015[8]). A 2006 government report, known as the Fottrell Report, recommended that the intake of Irish and EU/EFTA students should be increased to approximately 725 students per year, based on an assessment of the medical workforce required to move towards national self-sufficiency (Department of Health, 2006[9]).

The Fottrell Report also noted that the high number of non-EU/EFTA students in Irish medical schools was unusual among developed countries and saw this as potentially limiting the clinical training placements available to the growing numbers of Irish and other EU/EFTA medical students. It therefore recommended that "the proportion of non-EU students entering clinical training should be no greater than 25% of total student intake". The report also stated that the intake strategy "appears to be based on attracting high numbers of non-EU students into medical school because the income generated is essential to maintain the viability of the schools and to subsidise the education of EU and Irish students." This strategy of accepting a high number of international students is ongoing, however.

In 2006, 488 internship places were available, of which 31% were occupied by non-EU/EFTA graduates of Irish medical schools. The report noted that these graduates "in most cases are not likely to remain with the Irish Health Service following internship and full registration".

The number of internship places increased from 488 in 2006 to 727 in 2015 (as recommended in the report), but fears remained that increasing numbers of applicants from non-EU/EFTA countries would result in insufficient places for Irish and other EU/EFTA graduates. A decision was therefore made in 2015, following an engagement between the NDTP and the Department of Health, to prioritise Irish and other EU/EFTA graduates from Irish medical schools in the first round of the intern-matching process to protect the public investment in education of those students (NDTP, 2017[4]), thereby reducing greatly the opportunities for non-EU/EFTA graduates to get a place.

Source: (Department of Health, 2006[9]).

Accordingly, in 2016 there were 1 191 applicants for the 727 available internship places, of which:

- 93% (678) were allocated to graduates of Irish medical schools with Irish (or other EU/EFTA country) citizenship;
- 5% (34) were allocated to other EU/EFTA nationals who had completed their medical studies in other EU/EFTA countries (including Irish nationals who had completed their medical degrees abroad);
- only 2% (15) were allocated to non-EU/EFTA graduates, including those who had completed their first medical degree in Ireland (NDTP, 2017[4]).

In consequence, the majority of non-EU/EFTA graduates of Irish medical schools cannot complete their education and, thus, cannot obtain a full registration to practise as a doctor in Ireland; they are also thereby automatically barred from any access to postgraduate specialist training. These graduates likely seek the internship and specialist training in their home or third countries, but their success rate is not documented. Such a situation bears a risk of "brain waste", if these international medical graduates are not able to complete their training and practice as a doctor.

4.3.2. The selection process for non-EU/EFTA candidates is separate

Irish and other EU/EFTA students are admitted to medical schools through the Central Applications Office. Each medical school sets a minimum subject and points requirement in the Irish leaving certificate or equivalent exam. Candidates must also successfully pass the health professions admission test for Ireland (HPAT-Ireland). The allocation of places for medicine is determined based on a combination of the leaving certificate (or equivalent) and the HPAT-Ireland score (Central Applications Office, 2018a[10]). Graduate-entry students must fulfil a minimum academic requirement in terms of the degree they have obtained and must sit the graduate medical schools admissions test (Central Applications Office, 2018b[11]).

The admission of non-EU/EFTA students is based on a separate competitive selection process, which varies according to the university and/or the region from which the application is made. In general, universities set minimum academic eligibility criteria, including an English language requirement. For graduate-entry programmes, a minimum requirement is a bachelor's degree in addition to a minimum score from the graduate medical schools admissions test or medical college admissions test. Applications by non-EU/EFTA students are facilitated by dedicated agencies, established by the medical schools (Box 4.2).

Box 4.2. A number of agencies facilitate the recruitment and application process for non-EU/EFTA students

Dedicated agencies, such as the Atlantic Bridge programme and the Irish Universities and Medical Schools Consortium, have been established to facilitate the application to Irish medical schools for non-EU/EFTA students.

Atlantic Bridge is the main partner for prospective students from North America (although students from other non-EU/EFTA countries can also apply through the programme). Students can apply to multiple medical schools via one application. All six Irish medical schools are part of the programme (Atlantic Bridge, 2018[12]).

The Irish Universities and Medical Schools Consortium facilitates the application for and the allocation of places for students from Malaysia and Singapore. Four of the six medical schools make up the Consortium (IUMC, 2018[13]), which began to focus on Malaysia and Singapore approximately 25 years ago, when it joined an Irish government trade delegation to Southeast Asia (UCD, 2018[14]).

4.3.3. Non-EU/EFTA students pay significantly higher tuition fees

Under the Free Fees Initiative, Irish and other EU/EFTA students do not pay tuition fees for full-time undergraduate courses in Ireland (Health Education Authority, 2018b[3]). However, universities charge a student contribution (a registration fee) of 3 000 euros (EUR) annually (Student Universal Support Ireland, 2018[15]). Moreover, an additional annual student levy is applied by some universities; for example, EUR 224 by the National University of Ireland, Galway (NUIG, 2018[16]) and EUR 475 by the Royal College of Surgeons in Ireland (RCSI, 2018[17]).

Graduate-entry students are not eligible for the Free Fees Initiative. This means that Irish and other EU/EFTA nationals who take the graduate-entry path into medicine typically pay annual tuition fees of approximately EUR 14 000 (Haugh, Doyle and O'Flynn, 2014[18]).

Medical students from non-EU/EFTA countries also pay tuition fees, which differ depending on the university and whether the student takes the undergraduate or graduate-entry path. Annual tuition fees paid by non-EU/EFTA students are between EUR 43 000 and EUR 56 500 (Table 4.3).

Under the Student Support Act 2011 (Government of Ireland, 2011[19]), some students are eligible for a government grant, depending on their nationality and financial means. Being eligible for a full grant means that either the annual student contribution charge or the tuition fee is covered in addition to a maintenance grant to cover living expenses up to a maximum of EUR 5 915 per year (Student Universal Support Ireland, 2018[15]). Graduate-entry students are not eligible for government grants.

Table 4.3. Annual student registration and tuition fees (EUR), Irish (and other EU/EFTA) and non-EU/EFTA students, 2018/19

Medical school	Irish and other EU/EFTA students		Non-EU/EFTA students	
	Direct entry	Graduate entry	Direct entry	Graduate entry
Royal College of Surgeons in Ireland	3 475	14 000	55 000	56 500
University College Dublin	3 000	14 000	51 000	53 000
National University of Ireland, Galway	3 224	n/a	50 135	n/a
University College Cork	3 000	14 000	45 000	47 000
Trinity College Dublin	3 000	n/a	45 000	n/a
University of Limerick	n/a	14 000	n/a	43 000

Notes: Direct entry means entry from high school. Graduate entry means entry for students who already have a first university degree in another field. Graduate-entry fees based on an approximation produced by (Haugh, Doyle and O'Flynn, 2014[18]). Graduate-entry programmes are offered in four of the six medical schools. The University of Limerick offers only the graduate-entry programme.

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Most international students fund their studies directly or through government loans from their home country or private loans:

- American students are eligible for federal loans up to the cost of attendance (registration and tuition fees) each year, while
- Canadian students can use a student line of credit for professional students or the Canada Student Loan Program (Atlantic Bridge, 2018a).
- According to information from medical schools, some students from Malaysia and Singapore are also funded through (usually private) loans, but many cover their tuition fees out-of-pocket.
- Only a small number of international students receive scholarships, which do not have to be repaid and which in nearly all cases are from their home country.

4.4. Medical schools in Ireland seized the opportunity to respond to the unmet demand from international students to study medicine

4.4.1. Push and pull factors for international students include restrictions on access in home countries and the reputation of Irish medical schools

International medical students and other stakeholders identified two main push factors in students' home countries: a limited medical education capacity in some countries – in particular in Southeast Asia (despite the increase in the number of medical schools in Malaysia in the recent decades) – and *numerus clausus* policies limiting the intake into medical schools in other countries, such as Canada.

Without exception, the people interviewed for this study felt that the medical education and training in Ireland was of a high standard and that the reputation for the quality of education was a major attraction for students from overseas. There was also a general confidence that degrees from Irish medical schools would be widely recognised and would enable the entry into internships and residency programmes in

foreign students' home countries or in third countries around the world. In addition, the fact that the courses are given in English helps in attracting students from other English-speaking countries. At the same time, Irish medical schools have put much greater effort into marketing abroad in the last decade to attract more students (see Box 4.2).

Another important pull factor is the international student cohort itself, which offers unique networking opportunities. The multicultural student body is considered beneficial for growing accustomed to being a doctor in increasingly mixed patient communities and within a multicultural health workforce.

4.4.2. International students are an important source of income for medical schools

Some stakeholders – in particular medical school representatives – pointed to the underfunding of university education as a driver for increasing the number of international medical students (see also Box 4.1). Medical schools indicated that they have become increasingly dependent on the income derived from fees paid by international students, as public funding for domestic students has decreased over the past ten years. They mention, for example, that their world-renowned educational facilities have been financed partly from this additional income – among them the clinical simulation facility of the Royal College of Surgeons in Ireland.

The medical schools receive state funding through the HEA in the form of a block grant that covers fixed costs; they also receive grants for each Irish and other EU/EFTA student (Indecon, 2005[20]).[4] A recent report of the Irish Universities Association highlighted, however, that the average state funding per student (Irish or other EU/EFTA) in universities and colleges in Ireland had fallen by 50% since 2008 (Irish Universities Association, 2018[21]).

According to estimates (Campbell, 2015[8]), each medical graduate costs an Irish medical school between EUR 105 000 and EUR 126 000, depending on the duration of their studies. This is reflected in and consistent with the medical schools' opinion that the cost of teaching a medical student is approximately EUR 20 000 to EUR 25 000 a year. The schools stress that, since only approximately EUR 16 000 is covered by government grants, non-EU/EFTA students subsidise the education costs of Irish and other EU/EFTA students. As noted above, tuition fees for non-EU/EFTA students are between EUR 43 000 and EUR 55 600 per year.

The internationalisation of medical studies is also driven by the medical schools' ambition to maintain their leading position in the global education market through close links with other countries (Box 4.3).

Box 4.3. Irish medical campuses abroad and the International Medical Graduate Training Initiative

The medical schools' international strategy includes the establishment of medical campuses or programmes abroad. The Royal College of Surgeons in Ireland (RCSI) and the University College Dublin, for example, partnered to establish the Penang Medical College in Malaysia in 1995. Under this programme, students spend the first half of their training (two years) in Dublin and the remainder in Penang. Approximately 310 students from Penang Medical College were in Ireland in 2018 (spread between RCSI and University College Dublin). Since 2011, RCSI has also delivered an undergraduate medicine programme in another medical school in Malaysia – the Perdana University. Moreover, in 2005 RCSI established a medical university in Bahrain, which delivers undergraduate programmes in medicine and undergraduate and master's programmes in nursing (RCSI, 2018b[22]).

Medical schools are also involved in international initiatives at the postgraduate level, with the International Medical Graduate Training Initiative the largest effort, contributing to clinical training of 200 overseas doctors in 2016. The Initiative was established in 2013 as a collaboration between the HSE,

the Royal College of Physicians of Ireland, and the College of Physicians and Surgeons of Pakistan (Brugha, Cronin and Clarke, 2018[23]). It enables overseas trainees to gain access to clinical training they cannot get in their home country, with the aim of enhancing the individual doctor's clinical skills and, in the longer term, enhancing their domestic health services (trainees must return home after their training period of approximately two years to receive certification).

Training is now available in the specialties of anaesthesia, emergency medicine, general medicine, obstetrics/gynaecology, ophthalmology, paediatrics, psychiatry, and surgery (NDTP, 2018[24]). Since the Initiative began in 2013 with 28 trainees from Pakistan, it has expanded to take in trainees from Sudan and externally sponsored (by their country of origin) trainees from Kuwait, Saudi Arabia, Oman, and the United Arab Emirates (Walsh and Brugha, 2017[25]). Stakeholders saw this initiative as having clear benefits for all parties involved. Unfilled non-consultant hospital doctor posts in Ireland were converted to training posts, meeting a service need while offering international experience to the participating physicians in training.

4.5. Despite having the highest number of medical graduates relative to its population, Ireland is heavily reliant on foreign-trained doctors

Despite having the highest percentage of medical graduates in the population across all OECD countries (see Figure 4.1), Ireland employs a greater proportion of foreign-trained doctors than any other EU country: 42% of all doctors employed in Ireland in 2016 obtained at least their first medical degree in another country. Among all OECD countries, only Israel – a country of recent and ongoing immigration – has a greater proportion of foreign-trained doctors (58% in 2016). Furthermore, Ireland also ranks only 27th among the 36 OECD countries with regard to the number of doctors per capita, at 2.9 per 1 000 inhabitants in 2016 (see Figure 1.1 in Chapter 1).

This section describes trends in the number of foreign-trained doctors and provides some explanations for this paradoxical situation in Ireland, which delivers medical education to a large number of students but does not seem able to retain many of the international medical graduates or Irish doctors once they complete their clinical training.

4.5.1. The reliance on foreign-trained doctors in Ireland has increased

Because of both the lack of opportunity for international graduates of Irish medical schools to complete their education and postgraduate training in Ireland and the emigration of many newly trained Irish doctors, the country is increasingly reliant on foreign-trained medical practitioners to meet its needs. The proportion of foreign-trained doctors has risen substantially from 13% of all registered doctors in 2000 to 33% in 2010 and to 42% in 2016 – the second highest share among the OECD countries (see Table 1.3 in Chapter 1).

In 2017, among 9 606 foreign-trained doctors in Ireland (see also Figure 4.3):

- 2 057 (21%) trained in Pakistan – a more than 50% increase since 2011 (1 313);
- 1 228 (13%) trained in Sudan – more than twice as many as in 2011 (546);
- 758 (8%) trained in the United Kingdom – around 10% more than in 2011 (691);
- 733 (8%) trained in Romania – a more than three-fold increase since 2011 (226).

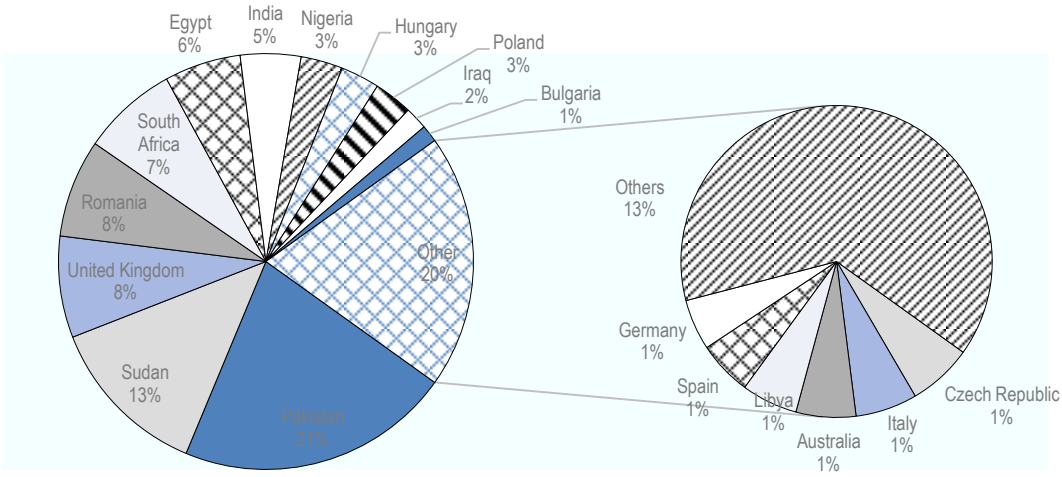
Moreover, a phenomenon observed in relation to the doctors trained in central European medical schools is that many are not nationals of their countries of training. For example:

- more than one-fifth of the 164 Indian junior doctors working in non-consultant hospital doctor (NCHD) posts[5] in Ireland in 2015 graduated from a medical school in Poland (see also Chapter 5);

- over one-third (119 of 301) of doctors working in HSE posts (all posts in the public health service, including those occupied by medical trainees) in Ireland in 2015 who got their first degrees in Romania were nationals from outside the EU/EFTA/OECD – primarily from Pakistan, India, and Nigeria (Brugha, Cronin and Clarke, 2018[23]) (see also Chapter 6).

However, it is also of note that some Irish nationals who did not manage to get a place in a medical school in Ireland and therefore graduated abroad subsequently practise in Ireland. For example, of the 40 graduates of Czech medical schools working as doctors in Ireland in 2015, 13 were Irish nationals. This pattern has also been reported in the United Kingdom with respect to UK nationals (Brugha, Cronin and Clarke, 2018[23]).

Figure 4.3. Foreign-trained doctors working in Ireland by country of training, 2017



Note: Some data may be missing since not all countries of origin (training) are able to provide this migration data.
Source: OECD Health Statistics 2019, https://doi.org/10.1787/health-data-en.

StatLink https://doi.org/10.1787/888933970494

4.5.2. High numbers of international and Irish medical graduates and fully-trained doctors emigrate

The vast majority of international graduates cannot proceed beyond their first medical degree and obtain the right to practise medicine in Ireland

As noted in Section 4.3.1, in addition to the medical degree, graduates must complete a 12-month internship to obtain the right to practise medicine in Ireland. However, the rules of the current intern-matching procedure mean that in practice the priority is given to Irish[6] and other EU/EFTA nationals graduating from Irish medical schools in the first round of the process. Hence, only a few remaining internship places (2% out of 727 in 2016) are offered to students from non-EU/EFTA countries (NDTP, 2017[4]). As a result, nearly all international graduates of Irish medical schools move either back to their home country or to a third country, in the hope of completing their medical education. As also noted earlier, their success rate is not known as the career paths of these international graduates are not documented. Such a situation bears a risk of "brain waste", if these international medical graduates are not able to complete their training and practice as a doctor.

Also many Irish medical graduates and doctors move to other countries

The interviewed stakeholders highlighted a long tradition of temporary emigration among Irish medical graduates and junior doctors, particularly to the United Kingdom and the United States. The pattern in the past was that many returned to Ireland to take up consultant posts once they had enhanced their skills and experience abroad.

In the last decade, however, the general perception is that the scale of emigration has increased and its character has changed from temporary to long-term (Humphries et al., 2017[27]). An analysis of Medical Council register data shows that, between 2012 and 2015, 6-9% of doctors aged 25-44 left the register annually (these numbers may include onward-migrating foreign-trained doctors – see also next sub-section). Most of these exits are believed to be doctors emigrating (Brugha, Cronin and Clarke, 2018[23]). Other data show that between 2008 and 2014 approximately 3 798 doctors previously registered in Ireland registered to practise and/or completed registration processes in five major destination countries (Australia, Canada, New Zealand, the United Kingdom, and the United States). This number exceeds the total number of Irish (or other EU/EFTA) graduates from Irish medical schools during the same period (Humphries et al., 2017[27]). More detailed data on Irish medical trainees reveal high rates of doctors working or training abroad within two years of their internship, or two years after they reported being in higher specialist training (Brugha, Cronin and Clarke, 2018[23]).

Moreover, approximately 400 of 3 140 (13%) permanent consultant posts were either vacant or filled on a temporary or agency basis in 2018 (Public Service Pay Commission, 2018[28]).[7] Other research highlights the fact that vacant posts are also an issue in general practice, despite many general practitioners (GPs) remaining in post after retirement age (Brugha, Cronin and Clarke, 2018[23]).

Poor training experience and working conditions in general are the primary factors pushing Irish medical graduates, trainees, and doctors to migrate to other countries (Brugha, Cronin and Clarke, 2018[23]). Interviews also indicated the limited number of specialist training posts as another driver of outward migration. Although the number of Irish (and other EU/EFTA) graduates from Irish medical schools doubled between 2006 and 2015, the same period saw only a modest increase in the number of doctors enrolled in specialist training programmes (Brugha, Cronin and Clarke, 2018[23]): 2017 saw 704 enrolments in basic and streamlined specialist training programmes (NDTP, 2018b[29]).

Much has been written about the impact of issues related to training experience on the retention of Irish medical graduates and trainees: the associations between these poor experiences and the intention to leave and not return are strong and significant (Brugha, Cronin and Clarke, 2018[23]). In this context, there has been some progress on related recommendations issued by the Department of Health (2014) – for example, in streamlining the training and increasing the flexibility in training opportunities (NDTP, 2018b[29]). Challenges persist, however, including a lack of designated training time, performance of non-core tasks (below the trainees' skill level), and an inconsistency in intern induction practices. Moreover, the shortage of consultants and the inconsistent structuring of their participation in training have a negative impact on the quality (Brugha, Cronin and Clarke, 2018[23]).

Among the aspects of work that affect the retention of fully trained doctors negatively were mentioned high numbers of patients on waiting lists, understaffing, and complex work situations. Doctor wellbeing was also highlighted as a concern. Furthermore, stakeholders named a lack of work-life balance and high levels of stress, and referred to recent findings that 30% of doctors in Ireland are suffering from burnout (RCPI, 2017[30]).

A recent report on public service pay (Public Service Pay Commission, 2018[28]) confirms the difficulties in retaining Irish doctors and filling consultant posts, but concludes that remuneration is not the main issue. Nevertheless, the report points out that the consultants' pay was reduced in 2012. The interviewed stakeholders estimated that consultants appointed after 2012 receive approximately 30% less pay than those appointed before 2012.

Many junior doctors with a foreign medical degree are employed in non-training posts and reemigrate in search of specialist training opportunities

In contrast to the high degree of internationalisation in undergraduate medical education, the number of international graduates in postgraduate specialist training schemes is relatively small. This is partly related to the difficulty in accessing internship positions for many international graduates of Irish medical schools (see Section 4.3.1).

It also reflects the fact that many foreign-trained junior doctors (medical graduates who have not yet completed specialist training) arriving in Ireland are employed in long-term non-training posts, such as NCHD posts in small hospitals that are not suitable for delivering specialist training. Indeed, foreign-trained doctors fill most of the NCHD non-training posts, as few Irish doctors apply for them.

In 2015, only 20% of those on the specialist trainee register had qualified outside Ireland; of the total number of NCHDs who were not in training nearly 80% (2 325) were graduates of a medical school outside Ireland (Medical Council, 2016) (Medical Council Annual report 2017, 2018[31]). In addition, there has been a greater increase in the number of NCHDs in non-training than in training posts (Public Service Pay Commission, 2018). There was a 15.8% increase in the total number of NCHDs (from 4 936 to 5 717) between 2011 and 2015, but a much larger (32%) rise in non-trainee NCHDs over the same period (Walsh and Brugha, 2017[25]). In 2015, the distribution of junior doctors between the training and non-training NCHD posts by nationality and country of training was a follows (Table 4.4):

- Irish nationals represented less than half (49%) of the NCHDs working in Ireland in 2015.
- Of these, 78% were registered in the specialist trainee scheme – i.e. they were on track to become a hospital consultant specialist or a GP.
- Nationals of India, Nigeria, Pakistan, and Sudan accounted for over one-quarter (28%) of the NCHD workforce.
- Most of these – 86% of the Sudanese, 80% of the Pakistani, 73% of the Indian, and 63% of the Nigerian NCHDs – were in non-training posts.
- Regarding the place of training, nine out of ten Pakistani and Sudanese NCHDs trained in their own country, compared with around half of the Indian and Nigerian NCHDs (the other half trained predominantly in medical schools in central and eastern Europe) (see also Table 4.3).
- One-third of the Malaysian NCHDs are in specialist trainee posts. This is an unusual group, as most (130 out of 156) graduated in Ireland.

Table 4.4. NCHDs in training and non-training posts in Ireland by nationality (top 10 countries), 2015

Country	Non-training post Number (%)	Specialist trainee post Number (%)	All[1]
Ireland	435 (20%)	1 699 (78%)	2 177
Pakistan	534 (80%)	64 (10%)	669
Sudan	229 (86%)	36 (14%)	266
India	120 (73%)	30 (18%)	164
Malaysia	103 (66%)	52 (33%)	156
Nigeria	85 (63%)	48 (36%)	134
Romania	91 (71%)	17 (13%)	128
Egypt	91 (94%)	6 (6%)	97
United Kingdom	35 (36%)	58 (60%)	96
Canada	27 (46%)	31 (53%)	59
Other	274	168	497
Total[2]	2 024	2 209	4 443

Notes: 1 Numbers and percentages do not add up to 100%, as only the main divisions of the Medical Council register are shown here. 2 Missing data are likely where data were not entered in the nationality field.
Source: (Brugha, Cronin and Clarke, 2018[23]).

StatLink https://doi.org/10.1787/888933970513

Foreign-trained doctors report taking up service posts in Irish hospitals in the hope of career progression or accessing postgraduate training, but when this hope remains unrealised, and because of a fear of deskilling, the majority actively seek to migrate onwards or return home. A 2013 survey found, for instance, that almost half (47%) of all foreign-trained doctors in Ireland planned to reemigrate (Humphries et al., 2017[27]). Indeed, in 2015, the exit rate for foreign-trained doctors was 2-3 times higher than for graduates of Irish medical schools. On the other hand, many non-EU/EFTA nationals (especially from low- and middle-income countries) remain in non-training posts in smaller hospitals for years and sometimes decades (Brugha, Cronin and Clarke, 2018[23]).

As an exception, the specialist training opportunities for foreign-trained doctors are better in the GP training scheme than for other specialties. The interviewed stakeholders mentioned the requirement to exhaust the pool of EU/EFTA candidates before offers can be made to non-EU/EFTA applicants, but if a non-EU/EFTA candidate was not restrictive about the location of the training posts applied to, they had a good chance of being successful in their application. The trainee intake in this specialisation has increased by 50% in the past decade. In 2017, there were even some unfilled training posts. This initiated an international marketing campaign, targeting Irish and other European graduates of medical schools in Australia, Canada, and New Zealand, which also resulted in successful applications from a number of international medical graduates working in non-training posts in Irish hospitals.

4.6. Conclusions

The current situation in medical education and workforce in Ireland is very paradoxical: Irish medical schools are providing education to a very large number of Irish and international students, yet Ireland is heavily dependent on the recruitment of foreign-trained doctors. This is due to the fact that most international graduates of Irish medical schools cannot pursue their internship and postgraduate training in Ireland after they get their first medical degree and many Irish graduates and doctors also move abroad to obtain better training and job opportunities. This paradox reflects at least two issues of policy coherence: 1) between the initial medical education programmes and the next steps in the training of doctors which

include an internship and postgraduate training programmes; 2) between the education of doctors and recruitment and retention policies.

Sooner or later, the lack of access to internships in Ireland for most international graduates of Irish medical schools is likely to have an impact on the schools' international reputation and reduce their attractiveness – and by that their funding and ability to provide a high-quality education –, unless these international graduates are able to find sufficiently good opportunities for finishing their medical education in their own country or in a third country. It has become increasingly difficult, for example, for the growing number of Canadian students who complete their first medical degree in Ireland to find a residency placements in Canada, as majority of the available residency positions are earmarked for the medical graduates trained in Canada (CaRMS, 2019[32]). Finding a way for non-EU/EFTA graduates of the Irish medical schools to do the internship year and obtain the right to practice in Ireland could also be a response to the domestic needs for doctors.

Another concern is the lack of access to specialist training for a high number of foreign-trained junior doctors working as NCHDs in Ireland: this bears a risk of de-skilling and could ultimately affect the quality of health care services in Ireland. Moreover, considering the World Health Organization (WHO) Global Code of Practice on the International Recruitment of Health Personnel, Ireland should strive to meet its commitments under the Code's aims of reducing the need to recruit migrant doctors and of offering equal employment opportunities to those doctors once they were working in Ireland.

Considering the number of interconnected issues that need to be addressed – ranging from the desired level of internationalisation in medical education and training to the availability and quality of internship and postgraduate training places as well as the working conditions in the Irish Health Service – it is necessary to establish effective coordination mechanisms between the various actors in the medical education and health employment sector. There is, however, limited interaction and engagement between the various bodies involved in medical education, postgraduate training, and health employment. In particular, there is no forum for discussion of challenges relating to the internationalisation of medical education.

In fact, the lack of dialogue between the medical education and health sectors was mentioned by representatives of the Department of Health, who referenced the 2017 National Strategic Framework for Health and Social Care Workforce Planning as a starting point for this dialogue (Department of Health, 2017[33]). Under this framework, the Department intends to develop a protocol for engagement between the health and education sectors. Key actions will include establishing governance and oversight structures for workforce planning, building communications and engagement between stakeholders, developing protocols for the engagement between the education and health sectors, and expanding the evidence base. The implementation of these actions is ongoing. A new Health Workforce Planning Unit within the HSE is also being established under this framework, with the support of the NDTP (responsible for postgraduate training).

Similar actions and coordination efforts had already been proposed in the 2006 Fottrell Report (Department of Health, 2006[9]), but were not followed up by actual implementation. Other policy documents – such as the 2014 Department of Health review (also referred to as the MacCraith Report) – also have not led to any meaningful policy implementation. The 2014 review noted, for example, the issues with junior doctors in non-training posts and made recommendations to improve the situation (Department of Health, 2014[34]); but a seventh progress report on this review from June 2018 stated that there had been no significant progress on this issue, aside from a commitment to carry out another review (Department of Health, 2018[35]).

In general, a number of key questions remain to be addressed:

- Is it desirable to have a large number of international students enrolled in a first medical degree if most of them will not have the opportunity to complete their education and training in Ireland? On the one hand, Irish medical schools are contributing to the international pool of medical graduates

available to pursue their postgraduate training, but if these new medical graduates cannot find internship or specialist training places anywhere – in Ireland, at home, or a third country –, this might result in a "brain waste" (waste of human capital). Where is the balance and how can state funding of medical education help to strike this balance?

- As is obvious from the large number of foreign-trained foreign-born doctors currently working in the country, Ireland has a significant need for doctors beyond its native-born native-trained graduates. Hence, why not plan to retain some of the international graduates of Irish medical schools, who are already acquainted with the Irish health system?
- Is there a way to increase the number of internship places without compromising the quality of the training to give greater opportunities for international students to complete their medical education and training in Ireland?
- How can foreign-trained doctors be offered better access to specialist training?

These concerns about the current situation in medical education and training and the related implications for the medical labour market are well recognised and shared among key policy stakeholders in Ireland, yet the implementation of policy actions to address these issues continues to lag.

Annex 4.A. Auxiliary tables

Annex Table 4.A.1. Governance and responsibilities in medical education and training in Ireland

Name	Responsibilities (in relation to medical education and training)
Department of Health (Ministry of Health)	Sets health policy in general, develops new policy and engages with relevant stakeholders
Higher Education Authority (HEA)	Leads the strategic development of the higher education and research system Responsible for the allocation of state funding to third-level institutions Accountable to the Department of Education and Skills and funded through that Department
National Doctors Training and Planning unit (NDTP) of the Health Service Executive (HSE)	Legislative responsibility for the internship year, postgraduate training, and medical workforce planning Assesses the number of internship posts and specialist medical training posts required by the health service annually Oversees the implementation of service level agreements with postgraduate training bodies and intern-training networks
Postgraduate training bodies	Delivery of postgraduate training and maintenance of professional competence schemes
The Forum of Postgraduate Training Bodies	Established in 2006 as a forum for discussion, best practice sharing, and promotion of common strategies across all postgraduate medical training bodies in Ireland
Medical Council	The regulatory body for doctors Maintains the register of medical practitioners Sets standards for medical education and carries out assessments of medical schools and clinical training sites for accreditation purposes
Medical schools	Provide undergraduate and part of postgraduate medical education
Individual hospitals/hospital groups	Provide facilities where medical schools do clinical placements, graduates do their intern year, and postgraduate trainees do their on-site training

Annex Table 4.A.2. Institutional affiliations of the interviewees

National institutions
Department of Health (Ministry of Health)
Higher Education Authority (HEA)
National Doctors Training and Planning unit (NDTP) of the Health Service Executive (HSE)
Medical Council
Irish Medical Organisation
Royal College of Physicians of Ireland
Irish College of General Practitioners
Local institutions
Royal College of Surgeons in Ireland
Trinity College Dublin
University of Limerick
University College Cork
Health Workforce Research Group (Royal College of Surgeons in Ireland)
Doctor Retention and Motivation Project (Royal College of Physicians of Ireland)
Groups
Non-EU/EFTA graduates of Irish medical schools

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Notes

[1] Authors' analysis of HEA's statistics archive student data for 2006-2016, 8 November 2018: http://hea.ie/statistics-archive/.

[2] The first year of the six-year programme is a foundation year, from which some students may be exempt depending on their academic qualifications. At the Royal College of Surgeons in Ireland, for example, the foundation year programme aims to develop the English language proficiency of students coming from countries where English is not the first language. The National University of Ireland, Galway offers a foundation year for students who did not take physics, chemistry or biology.

[3] While there is no specific cap on the number of non-EU/EFTA students, it is within the remit of the Medical Council to inspect medical schools and to ensure that they possess the capacity for the overall number of students within the school.

[4] Because of its independent status, the Royal College of Surgeons in Ireland receives only the HEA grant in lieu of undergraduate fees, not the HEA block grant.

[5] NCHDs are medical graduates who have not yet completed specialist training.

[6] The current intern-matching procedure prioritises those graduates of Irish medical schools who entered these schools through the Irish State's Central Applications Office (CAO) admissions system, the majority of whom are Irish nationals. As a rule, foreign candidates enter the medical schools through separate channels (see also Box 4.2 and Box 4.2).

[7] The report notes difficulties in establishing the exact number of vacant posts.

5 International students in Polish medical schools

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Since 1993, most Polish medical schools have opened full-cycle study programmes in English for international students seeking education outside their home country either due to high tuition fees or limits on student intake. The schools continually adapt their international offer and promote recognition of their degrees also outside the European Union. Initially, the schools attracted students mainly from the United States; later also from Middle Eastern and South-East Asian countries; more recently from Norway, Sweden and Canada, and increasingly also from India. International students bring additional income for the schools; this helps to increase the attractiveness of faculty jobs, thereby addressing the emigration of medical educators from Poland. Simultaneously, meeting the domestic demand for medical graduates has been prioritised by the government: the capacity in Polish programmes has increased much more rapidly than in the English programmes. While the number of domestic medical graduates has increased, the emigration of Polish doctors is a concern.

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.

5.1. Introduction

The Polish institutions of higher education have a long-standing and successful tradition of welcoming international students. This is particularly the case for medical studies: Polish medical schools have attracted increasing numbers of international students since the early 1990s. Most offer full-cycle study programmes in English for international students seeking education outside their home country due to high tuition fees, limits on student intake imposed by *numerus clausus* policies, and/or other capacity constraints.

The number of medical students is decided jointly between the Ministry of Science and Higher Education, the Ministry of Health, and the medical schools. The decisions concern both the number of students admitted to the Polish programmes and those admitted to the English programmes, which target international students. One factor taken into consideration in setting the capacity in the English programmes is that the tuition fees derived from these students can be used to improve the recruitment and retention of medical educators, who also train students in the Polish programmes. Hence, by hosting a large number of international medical students, the Polish medical schools receive additional funding that is used to serve all students, including the growing number of domestic students. In fact, the growth in the number of new-entrant study places in the Polish programmes over the past decade has been more rapid than in English programmes. This indicates that the expansion has not “crowded out” places for Polish students.

Despite its internationally recognised medical education system and the growing number of international and domestic medical students, however, Poland is facing shortages of practising doctors. In particular, with 2.4 doctors per 1 000 inhabitants in 2016, Poland ranks lowest of all European Union (EU) countries and fifth lowest among the OECD countries.

Against this background, this chapter describes the findings from an in-depth case study on the internationalisation of the medical education in Poland – in particular its dynamics, magnitude, and main drivers, as well as whether and how it affects the availability of places for domestic students and the training of new doctors. The discussion relates to international medical students enrolled in long-cycle study programmes, not those on, for example, a one-year study exchange programme.

The study was undertaken in 2018 and completed in January 2019. It was based on key informant interviews with representatives of the main actors in the education and health sectors in Poland – including the government, regulatory bodies, professional and student associations, and medical schools (see Annex Table 5.A.1 for a complete list of interviewees’ institutional affiliations) – in addition to a review of the literature.

5.2. One-quarter of new-entrant medicine study places in English programmes for international students

As result of a development that started in 1993, in the academic year 2018/19, 15 of the 20 medical schools in Poland offered English programmes targeting international students, along with Polish programmes mainly for domestic students. One-quarter of the total new-entrant capacity was allocated to the English programmes. In Poland, as in other OECD countries, the medical education lasts six years, leading to a medical degree that is equivalent to a master’s degree.

The Law on Higher Education and Science regulates the Polish medical education system. Unlike in other fields of studies, the regulatory body consists of not only the Ministry of Science and Higher Education but also the Ministry of Health: the maximum number of new places in medical schools is set by the Minister of Health in consultation with the Minister of Science and Higher Education, taking into consideration the

educational capacities of the medical schools and the demand for medical graduates. The medical schools make proposals regarding these limits.

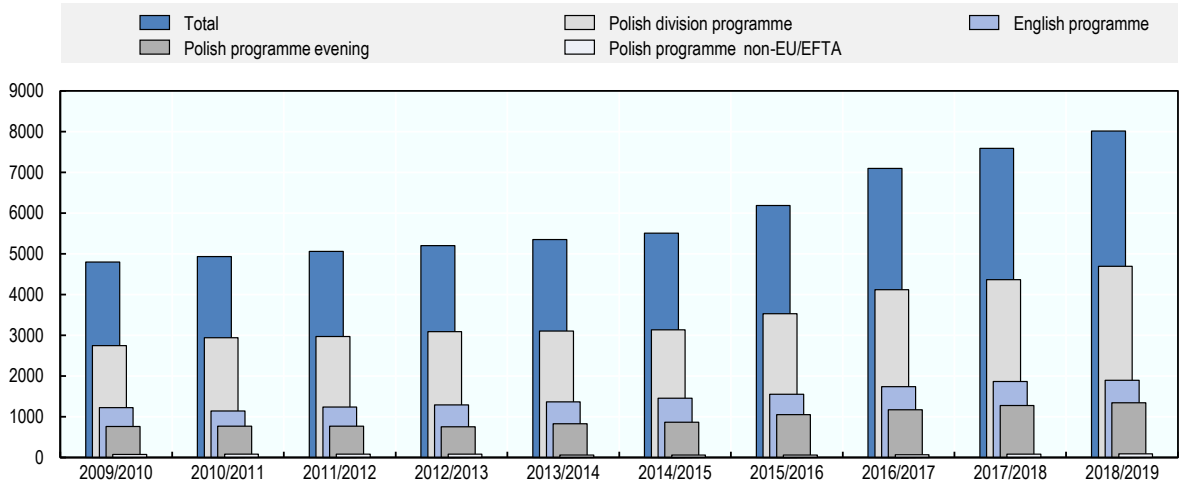
For the academic year 2018/19, the admission limits in all Polish medical schools were:

- 4 691 places for Polish and other EU/European Free Trade Association (EFTA) citizens and 87 places for non-EU/EFTA international students in full-time studies in Polish programmes;
- 1 891 places in English programmes.

The schools also offered 1 345 places in Polish evening study programmes for students wanting to combine studying with work. In total, this adds up to a maximum of 8 014 new-entrant places, of which nearly a quarter are in the English programmes (Figure 5.1).

In response to shortages of doctors in the Polish health system, the number of places in the Polish programmes was increased sizeably over the past decade (by two thirds between 2009/10 and 2018/19). Moreover, the number of students in Polish evening programmes has also increased greatly (by three quarters) over the same period. The simultaneous increase of students in English programmes was less (a little over one half).

Figure 5.1. Trends in admission limits in medicine, Poland, 2009/10 to 2018/19



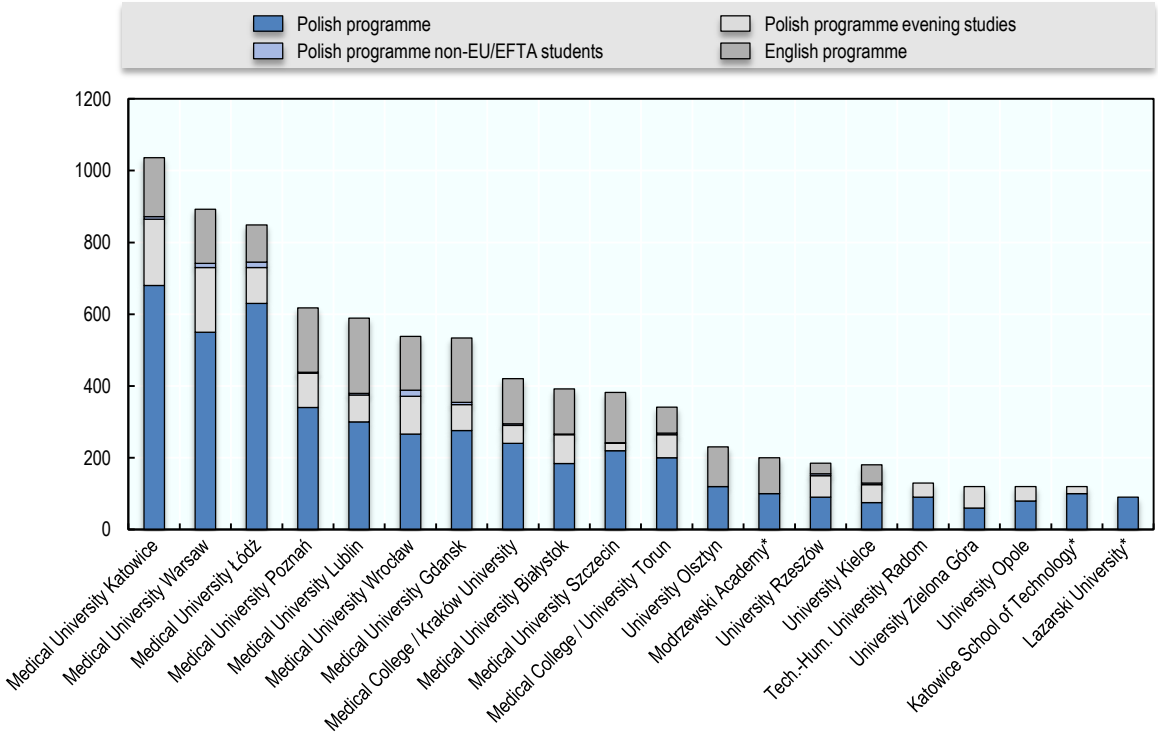
Note: Evening programmes in Polish are targeted at students who want to combine studying with work.
Source: Compilation based on data received from the Ministry of Health and data published in the Ministry of Health Regulations of 18 July and 26 September 2018.

StatLink https://doi.org/10.1787/888933970532

In 2018/19, the three medical schools in Poland that accepted the largest number of new medical students were in Katowice (1 036), Warsaw (892) and Łódź (849) (Figure 5.2). These three schools also have the largest Polish programmes (for full-time or evening studies).

For the English programmes in 2018/19, the largest numbers of new-entrant places were at the Medical University in Lublin (210), the University of Medical Sciences in Poznań and the Medical University in Gdańsk (both 180), and the Medical University of Silesia in Katowice (164) (Figure 5.2).

Figure 5.2. Admission limits by Polish medical school and type of programme, 2018/19

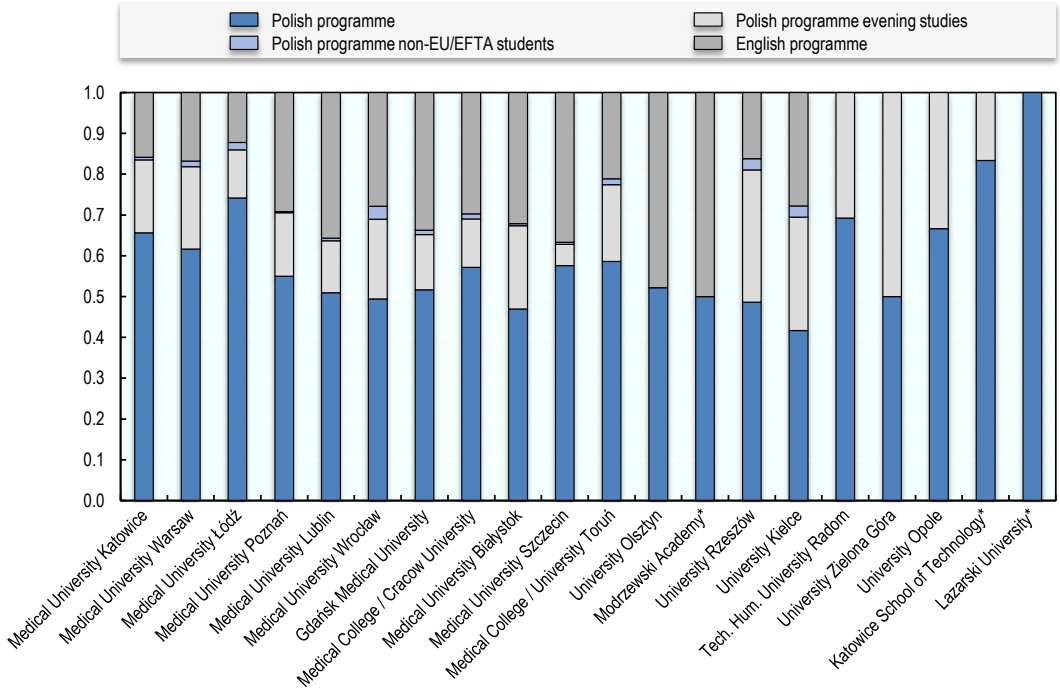


Notes: * indicates a private medical school. Evening programmes in Polish are targeted at students who want to combine studying with work.
Source: Compilation based on data published in the Ministry of Health Regulations of 18 July and 26 September 2018.

StatLink https://doi.org/10.1787/888933970551

The highest shares of new-entrant places reserved for students in English programmes were at the Modrzewski Academy (100 of 200 or 50%), the University of Olsztyn (110 of 230 or 48%), and the Medical University of Szczecin (140 of 382 or37%) (Figure 5.3).

Figure 5.3. Share of admissions by type of programme in Polish medical schools, 2018/19



Note: * indicates a private medical school. Evening programmes in Polish are targeted at students who want to combine studying with work.
Source: Compilation based on data published in the Ministry of Health Regulations of 18 July and 26 September 2018.

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5.2.1. Medical schools do not necessarily fill all the study places in English programmes

The medical schools reject a sizeable share of candidates based on their results in the entry exam, to the extent that the pre-defined admission limits are often not exhausted. It is difficult to establish the actual number of students admitted to most medical schools since these numbers are not readily available.

- One exception is the country's largest medical school (by absolute numbers), Katowice, where readily available data show that the number of students in the English programme accounted for less than 5% of all new medical students in 2017/18 – a much lower proportion than the admission limits of 14-17% that the school was granted between 2014/15 and 2018/19.
- The third and fourth biggest medical schools, Łódź and Poznań, reported that students in the English programmes in medicine, pharmacy, and dentistry combined accounted for 5-9% of all students in these fields in 2017/18, while the admissions limits in the English programme in medicine alone were 12-36% of all places in these two schools between 2014/15 and 2018/19.
- The data reported by the four largest medical schools (which together admitted more than 40% of all new students in 2018/19) indicate that these schools rejected at least 40% of all candidates between 2015/16 and 2017/18. Łódź received between 900 and 1 235 applications each year – the highest number of applicants among the four schools – but accepted less than one fifth of them each year. Here again, the numbers include also students in the English programmes in pharmacy as well as stomatology.

As for the total number of medical students in all years of study, data from the Ministry of Health show that in the academic year 2017/2018 (as of 31 December 2017) there were:

- 19 622 Polish citizens following full-time studies;
- 3 923 Polish citizens following evening studies; and
- 6 759 international students (i.e. about 22% of all students), down from 7 000 in 2016/17.

Medical students constitute the third largest group of international students in Poland by subject, after business administration and social sciences.

5.2.2. Many medical students come from North America, Scandinavia, and the Middle East

At the national level, no data are collected on the countries of origin of international students enrolled in medicine. In each medical school, such data are not always readily available or are organised by broad faculty rather than more specific field of studies, meaning that students in medicine, pharmacy, and stomatology are reported together.

The data available from six medical schools (the four largest as well as the Medical College of University of Cracow and the Medical University of Białystok) for the period 2013/14 to 2017/18 (Table 5.1) show that the largest groups of students came from:

- Norway (around 700) [Norwegian data based on student loans indicate that there were about 1 200 Norwegian students studying in all Polish medical schools during this period (see Box 5.1)]
- Saudi Arabia (around 500)
- United States (around 300)
- Sweden (around 200) [Swedish data based on student loans indicate that there were about 1 100 Swedish students studying in all Polish medical schools during this period (see Box 5.1)]
- Canada (around 170).

Table 5.1. Top countries of origin of students in English programmes in selected Polish medical schools, 2017/18

	Norway	Saudi Arabia	United States	Sweden	Canada	United Kingdom	Poland	Taiwan	Germany	Israel	Lebanon
Medical University Katowice	37	61	109	66	20	33	0	3	18	51	8
Medical University Warsaw	73	182	33	67	18	33	36	8	27	13	5
Medical University Lódz	41	203	26	20	23	29	43	21	40	1	44
Medical University Poznan	127	6	112	17	107	49	1	67	14	11	9
Medical College/ University Cracow	346	–	–	–	–	–	–	–	–	–	–
Medical University Bialystok	118	15	0	41	0	0	37	0	0	0	0
Total	**742**	**467**	**280**	**211**	**168**	**144**	**117**	**99**	**99**	**76**	**66**

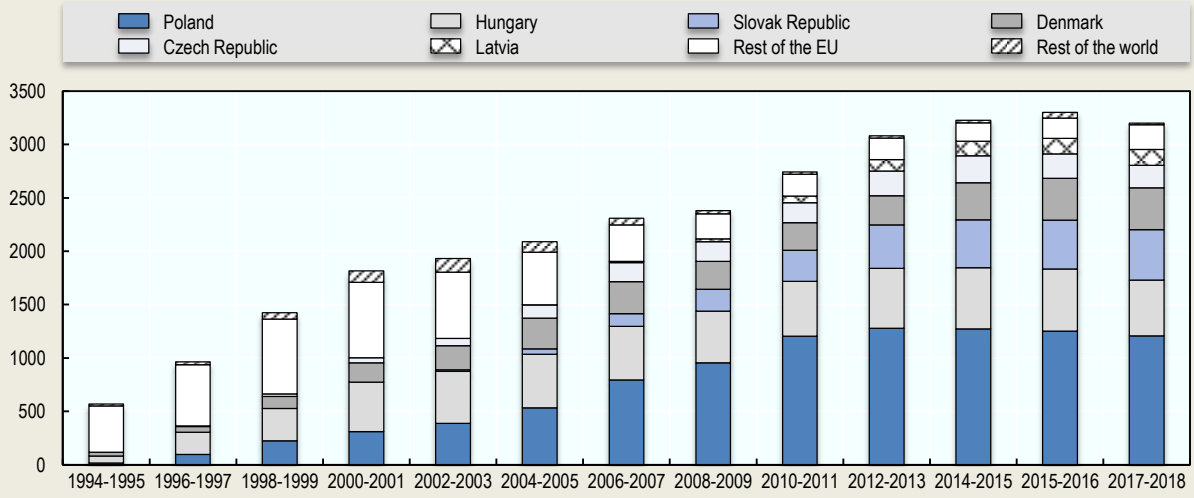
Note: For some medical schools, data include also students in pharmacy as well as stomatology.
Source: Compilation based on data provided by the medical schools.

StatLink https://doi.org/10.1787/888933970589

Box 5.1. Norwegian and Swedish medical students in Poland, 1994/95 to 2017/18

During the past two decades, thousands of Norwegian and Swedish medical students have enrolled in English programmes in different European countries, and Poland has become the most popular choice. About half of all the Norwegian students enrolled in medicine are studying outside Norway, with 18% in Poland in 2017/18 (Figure 5.4). The number of Norwegian medical students in Poland increased strongly during the 2000s, but has remained stable at around 1 200 since 2010.

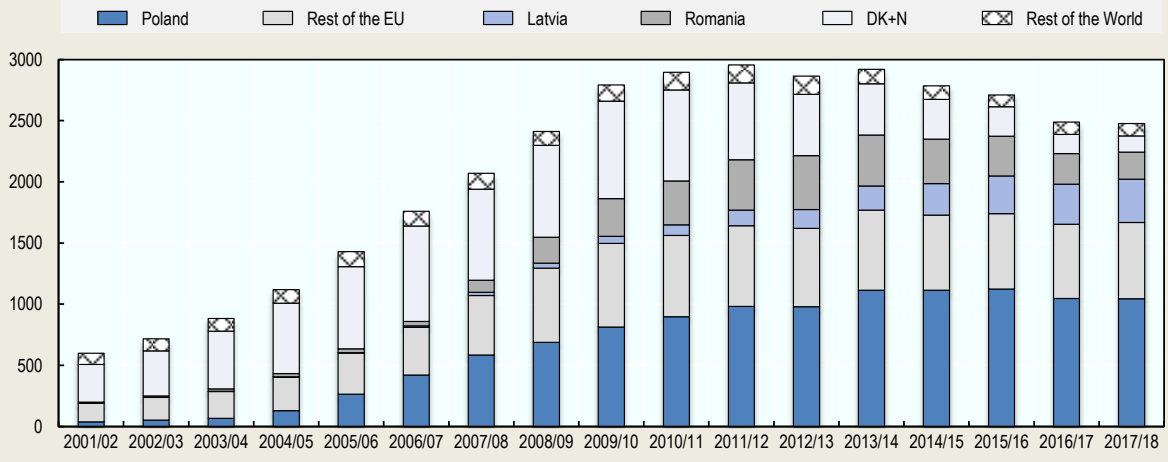
Figure 5.4. Norwegian students studying medicine abroad, 1994/95 to 2017/18



Source: Norwegian State Educational Loan Fund, July 2018.

Poland has also been the main destination for Swedish medical students, attracting over 40% (1 044) of those enrolled in countries other than Sweden in 2017/18 (Figure **5.5**).

Figure 5.5. Swedish students studying medicine abroad, 2001/02 to 2017/18



Source: Swedish Board of Student Finance, July 2018.

Some medical schools have a concentration of students coming from certain countries. The majority of students from Norway, for example, are in the Medical College of the University Cracow; while students from the United States, Canada, and Taiwan are predominantly in Poznań; and students from Saudi Arabia are mostly in Łódź and Warsaw. These differences depend on several factors – mainly on agents who mediate by reaching out to candidates in a given region of the world, but sometimes also on a country's decision to award scholarships for students to study in a specific school (e.g. Saudi Arabia in Warsaw).

Also, a number of Polish students study in English programmes. Among them are people who started their studies in English in Ukraine or the Slovak Republic but were not admitted to full-time medical programmes in Polish.

5.3. Differences in admission processes and tuition fees for Polish and international students

5.3.1. Admission requirements and processes in the Polish and English programmes

To be admitted to a Polish medical programme, students must have a school-leaving certificate (in Poland, the *Matura* certificate) qualifying for entrance to higher education; they must also have taken certain subjects. Typically, these include biology, chemistry, and a foreign language, although some universities also require successful examinations in physics or mathematics. A candidate's proficiency in subjects that were not covered in a school-leaving certificate may be verified in an additional entrance exam. These are also frequently carried out for candidates with a school-leaving certificate from outside Poland. The minimum marks for admission are set by each medical school.

For studies in the English programme, the rules are different – both from the Polish programme and between schools. Medical schools enjoy significant autonomy in decisions regarding the admission to English programmes. Generally, an entrance exam is required. Some medical schools consider only this result and do not take into account the average score of the school-leaving exam; others combine the scores (for subjects such as biology, chemistry, physics, and mathematics). Extra points may be awarded for voluntary services in the field of medicine. The schools organise the entrance exam on several dates during the year and in several countries, with the involvement of agents employed by the school and with promotional or organisational support provided by Polish consulates.

Polish candidates can also enter the English programme (if they have proof of English language proficiency) via the Polish enrolment process, which is important from the point of view of subsidies to cover the cost of tuition fees.

5.3.2. The Polish programme is generally free of charge, while the English programme is subject to tuition fees

Full-time studies at a public institution of higher education in Poland are generally free of charge in the Polish programmes for Polish students and other citizens of the EU/EFTA countries (Box 5.2). Other foreign students may pursue their education in the Polish programme but subject to tuition fees, unless they have a scholarship exempting them from such fees.

Box 5.2. State subsidies for medical schools

For each full-time student in the Polish programme, public medical schools used to receive a state subsidy, calculated on a per student basis until the academic year 2017/18. According to the estimates of the Ministry of Health, the average annual cost per student in a medical programme was USD 10 500

(PLN 38 806) in 2015/2016, making it the most expensive of all study programmes offered in Poland. These costs vary to some extent from one medical school to another.

From 2018/19, state subsidies also depend on the student-staff ratio, defined as the number of students per one academic teacher. The target ratio was set at 13:1; if there are more than 13 students per teacher, the subsidy might be lowered.

Under the new law, grants to medical schools also include a subsidy for maintaining and developing their teaching and research potential, social benefits for students, education-related investment, and support for students with disabilities. Medical schools can receive earmarked subsidies related to the professional development of the medical staff, from the Ministry of Health.

Students in an English programme also have to pay for their studies, unless they receive a scholarship. The annual fee is set by each medical school. In the medical schools for which this information is readily available, these tuition fees range from EUR 9 950 to EUR 14 250 per year (Table 5.2).

The evening study programmes in Polish also involve tuition fees; these are set by each school, ranging from EUR 6 950 (PLN 30 000) to EUR 8 800 (PLN 38 000) annually, in 2018/19.

Table 5.2. Annual tuition fees in English programmes in Polish medical schools (EUR), 2018/19

Medical school	Annual tuition fee (EUR)
Medical College/University Torun	9 950
Medical University Bialystok	10 250
Medical University Szczecin	10 500
University Rzeszów	11 000
Medical University Warsaw	11 100
Medical University of Katowice	11 200
Medical University Wroclaw	11 582
University Lublin	10 750 to 12 000*
Medical University Lódz	11 000 to 13 200*
Medical College/University Krakow	13 400
Medical University Poznan	14 250

Note: * In general, annual tuition fees differ for each year of studies.
Source: Compilation based on information available on medical schools' websites.

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Private medical schools charge tuition fees for all study programmes (in English and in Polish). In 2018/19, these ranged from EUR 9 200 to EUR 14 700 per year, which is comparable to the annual fees for the English programmes in public medical schools.

Among the 6 759 international medical students in 2017/18:

- 218 were studying according to the rules applicable to Polish citizens (i.e. not paying any tuition fees).
- 185 were admitted on the basis of an international agreement or of a ministerial decision (holders of a scholarship from the Polish government or another government with which Poland has an agreement on education of medical students).
- 6 356 were paying tuition fees – the vast majority of these were in the English programme.

5.3.3. Many international students finance their studies through loans from their home countries or pay for their education themselves

International students in Poland mostly finance their studies:

- through student loans, scholarships, sponsors, and other third parties in their home countries;
- out-of-pocket or via personal/family savings.

Scholarships for international students at Polish medical schools remain rare, but their prevalence is increasing, especially to attract gifted candidates to the English programmes. The new Law on Higher Education and Science of 20 July 2018 introduced more scholarship options for students from other EU/EFTA countries.

The main source of financing for international students depends greatly on their country of origin. For example:

- Taiwanese and Thai students are mainly financed by their parents;
- Norwegians often obtain loans from their government through the Norwegian State Educational Loan Fund, covering tuition fees and costs of living;
- Swedes receive financial support from their National Board of Student Finance;
- Saudis' expenses are in most cases covered in total from scholarships for the education of professionals abroad under a Saudi Ministry of Education programme;
- Americans have access to federal loans through the Federal Student Aid Office of the US Department of Education, or commercial loans from companies such as Sallie Mae, just as if they studied in the United States;
- Canadians sometimes receive some financial support from their provincial government (such as via the Ontario Student Assistance Program).

5.4. Education and training pathways are the same for all

Studies in the field of medicine are provided in the form of a master's degree programme lasting six years. Thereafter, graduates are required to follow an obligatory 13-month internship and pass a final medical exam to obtain the right to practise as a physician in Poland and enter residency (specialist medical training).

All Polish and international medical graduates have the same right to access internships and take the final exam, as long as they have completed their master's degree. Both these steps are only available in Polish, and foreign candidates must also pass a Polish language exam organised by the Supreme Chamber of Physicians.

The number of posts for interns is set annually by each regional government in consultation with the Regional Chamber of Physicians. Traditionally, the number of internships available does not take into account graduates from the English programmes, based on the assumption that most of these graduates will leave the country after obtaining their first medical degree. This is indeed the case for the majority of international graduates of Polish medical schools (see also Section 5.6.1).

The internship is based on an employment contract with an accredited institution (selected hospitals but also outpatient clinics) for a defined period (usually 13 months). The Regional Chamber of Physicians determines the place of internship, giving priority to candidates already living in the region and taking into account their average study scores.

Following the internship, the next step is the residency (postgraduate specialist training) usually lasting 4-6 years, depending on the specialty. Access to residency placements follows the same regulations as

for internships: Polish and international medical graduates of Polish medical schools have the same right to access.

The annual number of new residency openings is determined by the Minister of Health in consultation with the regional governments. Estimates by the regional governments should take into account the free training posts available in the region, the current and future health care needs of the region's population, and any available data on the access to services in particular medical specialty. The qualification procedure is carried out biannually, in March and October.

Following the increase in the number of medical students in Polish programmes over the last decade (see Figure 5.1), the number of new residency places also increased (Table 5.3). However, the expansion in the number of residency places occurred with some delay to the increase in the number of medical graduates, which was compensated by a larger increment in residency openings between 2014 and 2015. The allocation of openings between medical specialties also changed, prioritising certain specialties, such as general practice or oncology. In 2015, for example, the largest share of new residency openings – nearly 10% of all openings – was in general practice (Domagala and Klich, 2018[1]). The residents' salaries are slightly higher in prioritised specialties to incentivise physicians to apply for them. The competition for the most popular residency openings is stiff. This is not the case, however, for the less popular specialty areas. In 2015, for example, in at least eight out of 70 specialties – including emergency medicine, palliative medicine, or paediatric haematology/oncology – more than 90% of the available residency placements remained unfilled due to a shortage of candidates (Supreme Audit Office, 2017[2]).

Table 5.3. Trends in number of new residency places for medical specialisations in Poland, 2012-16

Year	Spring session	Autumn session	Total
2012	420	2 441	2 861
2013	511	2 388	2 899
2014	462	2 441	2 903
2015	1 545	5 667	7 212
2016	1 864	3 966	5 830
2017	1 856	4 097	5 953
2018	1 903	4 105	6 008
2019	1 916	-	-

Note: Numbers for 2017-2019 include residency places in dental specialisations.
Source: Ministry of Health, July 2019.

Since 2018, Poland has recognised an additional pathway to become a specialist as an alternative to residency: obtaining a specialisation certificate by passing exams validated by the European medical societies for five specialties: anaesthesiology and intensive care; urology; thoracic surgery; radiology and traumatic diagnostics; and ophthalmology.

5.5. Drivers of internationalisation of medical education in Poland

5.5.1. Admission limits in home countries, relatively low tuition fees in Poland, and international recognition of Polish medical degrees

According to international students and representatives of the medical schools, the primary motivations for international students to pursue medical studies in Poland are:

- limits on admission to medicine programmes imposed by *numerus clausus* policies or other capacity constraints in the students' home countries;

- the wide recognition of Polish medical diplomas, not only in EU/EFTA but also in other countries, combined with the perceived high quality of medical education in Poland;
- the comparatively low cost of living and moderate tuition fees in Poland;
- the relatively transparent admission process, which also includes many entrance options, to Polish medical schools.

The large medical education system in Poland gives students from countries with strict *numerus clausus* policies (or tight capacity constraints) or relatively high tuition fees the opportunity to obtain a diploma in their desired field of studies. This is one of the main reasons given by students from Scandinavia, the United States, Israel, and India for pursuing their medical studies in Poland. As noted above, some countries, such as Saudi Arabia, also award scholarships for education at specific medical schools in Poland.

Polish medical schools are continuing efforts to have their diplomas recognised not only in other EU/EFTA countries but also in a growing number of countries in Asia and North America. For example, the Indian Medical Council now recognises diplomas awarded by several Polish medical universities (including Warsaw, Poznań, and Gdańsk), which is why most students from India in Poland attend these universities. The diplomas obtained at the end of the English programme in Polish medical schools are also recognised automatically in the United States, Canada, as well as many Asian and Middle Eastern countries.

5.5.2. Active marketing abroad to recruit international students and bring additional revenue to medical schools

Accepting international students yields additional funding for the medical schools in Poland in at least two ways. First, most of these students study in the English programme, which is subject to tuition fees. Second, the degree of internationalisation of a medical school (which is judged at least partly by the presence of international students) accounts for 5% of the total subsidy received from the state.

Medical schools in Poland estimate that the tuition fees paid by international students are close to the marginal cost of education for each additional student. Indeed, the tuition fees (see Table 5.2) are of the order of the official estimated average of USD 10 500 per student in medical education programmes (Ministry of Health, 2016). The fees permit to scale up workforce hours. This is frequently done by offering extra pay to the staff in the form of paid overtime and serves to bind and attract highly qualified staff to the medical schools, which is an acute concern.

In order to attract enough good international students, the medical schools run horizon scanning and active recruitment strategies.

- The schools recognise that interest from the international student population is contextual and fluid, depending on changes in the students' countries of origin. Therefore, they are agile in responding to legislative changes in the home countries of international students and strive to address more countries of origin of potential candidates.
- Active recruitment strategies include a range of promotional activities. Apart from the activities of agents and the participation in education fairs, medical schools also organise seminars for candidates in their countries and courses preparing them for the entrance exam.

Polish medical schools have recently identified Indian students as candidates for being attracted to pursue their medical studies in Poland: Following a legislative change in India in 2017, both Indian and foreign medical school diploma holders have to pass the same exam to be able to practise as a doctor in India. This means that studies outside India potentially bring the same benefits and are often cheaper than a private education within the country. Therefore, an increase in the number of Indian students is expected in the near future.

In order to attract new international candidates, Polish medical schools have also developed strategies to facilitate their return to their home country after they have completed their degree (Box 5.3). The aim is to help students to pass the exams that will allow them to obtain a licence to practise their profession in their home country. Schools' staff, for example, go to selected countries to gain a better understanding of the requirements and respond to students' needs with relevant additional offers for studying in Poland.

Nonetheless, the biggest medical schools reject between 30% and 85% of all applicants to their English programmes. This is not simply because they have reached the maximum limits of students they can admit, as several medical schools end up admitting fewer students to these programmes than they are allowed to. The schools only accept candidates with high enough grades in the entrance exam (and in their school-leaving exams for those that also take these into account), even if this means that some places remain unfilled, as a matter of principle and prestige.

Box 5.3. Preparing international students to return home – strategies of the Medical University Poznań

The Medical University Poznań offers several types of course that prepare international students for the exams they will have to take in their home country on their return.

- For students who plan to pursue their career in the United States, the University offers a preparatory course for the US bachelor's degree examination (United States Medical Licensing Examination step 1). The course has been added to the curriculum and includes approximately 1.5 months of additional lectures and mock exams, with the participation of visiting professors from the United States.
- For students planning to do an internship in the United States or Canada, the University offers, as elective courses, basic life support and advanced life support courses necessary to obtain certificates in these fields.
- For students choosing the Taiwanese or Thai study pathway, it is possible to receive from between several hundred to over one thousand additional hours of study, mainly as clinical practice within their existing chosen subjects, as well as in new subjects (such as an introduction to biotechnology or social sciences). This allows graduates to meet the professional guidelines in place in Taiwan and Thailand.

5.6. Growing numbers of international and domestic medical graduates, but persisting doctor shortages

5.6.1. Emigration of international students on completion of degree

In most cases, graduates of the English programmes do not intend to pursue their medical internship and specialist training (residency) in Poland after their first degree. The few who choose to stay and complete their internship and enter specialist training are usually students of Polish origin or have strong Polish ties.

The relatively low pay and poor working conditions during the internship period and the subsequent residency, together with language barriers, are the main factors contributing to low retention rates of international graduates of Polish medical schools. Moreover, graduates from non-EU/EFTA countries are generally not entitled to any remuneration during their internship in Poland. For this reason, the few non-EU/EFTA graduates of Polish medical schools who decide to stay in Poland choose to complete their internship in smaller towns with staff shortages, where the hospital management may be willing to pay them for their work.

In addition, language often remains an obstacle. International medical students are expected to achieve a good command of Polish during their studies. Yet, as they are generally not expected to pursue their professional career in Poland, this requirement is not always enforced.

Hence, nearly all international graduates of Polish medical schools return to their home countries or move to countries in which either their mother tongue or English is spoken. Also, some students are bound to return to their homeland by the conditions of the scholarship they receive.

5.6.2. Emigration of Polish medical graduates and doctors

There is no source of data within the country to establish the exact magnitude of the emigration (permanent or temporary) of Polish medical graduates and fully-trained doctors. Official data regarding physician outflows are limited to the number of requests for certificates of conformity/good standing issued by the Supreme Chamber of Physicians for doctors intending to practise medicine in other EU countries, but these requests do not provide any information on whether or not they have achieved this intention.

Based on the number of such certificates issued since Poland's accession to the EU on 1 May 2004, the number of doctors intending to emigrate was estimated to be 7% of the total stock of practising physicians in 2016 (Domagala and Klich, 2018[1]; Zuk, Zuk and Lisiewicz-Jakubaszko, 2019[3]; Supreme Audit Office, 2017[2]). These certificates, however, remain valid for as little as three months, so some physicians might obtain the certificate more than once (resulting in double-counting or triple-counting). On the other hand, these data do not capture those who may be emigrating to countries outside the EU, such as Australia, Canada and the United States.

Another unknown is whether the emigration of doctors is permanent or temporary and whether it affects mostly medical graduates and junior doctors or rather medical specialists (Zuk, Zuk and Lisiewicz-Jakubaszko, 2019[3]). Interviews with medical students and representatives of medical schools indicated that most medical graduates of Polish programmes prefer to pursue their internships in Poland – even those who intend to move to another country later on – as they wish to acquire the option to practise the profession in Poland in the future, especially since not all countries have such 13-month internships as part of their medical education and training programme.

Medical students and graduates of the Polish programmes also point the relatively low pay and poor working conditions during the internship and residency as the main factors behind their intention to emigrate. Indeed, in autumn 2017, junior physicians in Poland, frustrated with their workload and employment conditions during their residency, went on strike and demanded reforms. The strike was supported by the majority of physician associations and other health professional organisations in Poland. As a result, their employment conditions were revised, including a salary rise (Domagala and Klich, 2018[1]), but the exact impact of the reform – in particular on the retention rate – remains to be seen.

More generally, the lack of reliable data within the country to establish the exact magnitude of emigration (permanent or temporary) limits the capacity to assess the effectiveness of any retention initiatives to address the shortages of doctors.

5.7. Conclusions

Poland has a sizeable and internationally recognised medical education system with a long tradition of welcoming international students. The country makes the best of this good reputation by investing the tuition fees that international medical students are willing to pay for the English study programmes into the retention of highly-qualified faculty members, who also train students in the Polish programmes.

At the same time, in co-ordination with the government, the medical schools have shown moderation in their efforts to attract international students. Places for national medical students have not been sacrificed

for international medical students. Over the last decade, the number of national medical students has in fact increased much more rapidly than the number of students in the English programmes, with the hope that the growing number of Polish medical graduates will remain in the country and help address the shortage of doctors.

While the medical education system in Poland produces a rapidly growing number of Polish and international medical graduates, the Polish health system faces difficulties in retaining them. The success of Polish medical schools in attracting international students is due to readily available and affordable places in English programmes that lead to internationally recognised diplomas. However, most of these international students have no intention to pursue their postgraduate specialist training and to work in Poland as they can get more lucrative internship and job offers in their home country or in a third country. . What is worse is that many Polish medical graduates, who in theory should have a stronger attachment to their home country and do not face any language barrier, often express an intention to emigrate because of relatively poor working conditions. While the exact emigration rate of Polish medical graduates, junior doctors and specialists fully-trained in Poland remains unknown, it is presumed to be sizable.

The bottom line is that despite the success of the Polish medical education system in training a growing number of both Polish and international students, the Polish health system still faces physician shortages. This highlights the importance of a more comprehensive approach to health workforce planning and policies that addresses not only education and training policies, but also the problem of retention.

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Annex 5.A. Institutional affiliations of the interviewees

Annex Table 5.A.1. Institutional affiliations of the interviewees

National institutions
Ministry of Health
Ministry of Science and Higher Education
National Agency for Academic Exchange
Polish College of Physicians
Supreme Medical Chamber
EUROMED European Foundation for Development of Medicine and Education
Local institutions
Medical University Katowice
Medical University Warsaw
Medical University Lódź
Medical University Poznan
Medical University Bialystok
Indo-European Education Foundation in Warsaw
Medical Chamber in Warsaw
Groups
Student Association of Warsaw Medical University
Medical University of Warsaw English Division Student Government
International Federation of Medical Students' Associations - Poland
Erasmus Student Network at Warsaw Medical University
European Medical Students' Association

6 Romania: A growing international medical education hub

Marius Ungureanu (Babeș-Bolyai University) and Karolina Socha-Dietrich (OECD Health Division)

For international medical students, the attractiveness of Romanian medical schools has increased since the country's accession to the European Union in 2007, as they offer diplomas with EU-wide recognition for relatively low tuition fees and living costs. At present, nearly all medical schools offer programmes in English and/or French, taking up around 30% of the total teaching capacity. The internationalisation of medical education in Romania has taken place in the absence of any formal national strategy. Rather, medical schools have developed their own strategies to attract international students as a way to generate additional income, to be able to recruit and retain academic staff and to develop their infrastructure. Although Romania has become increasingly attractive for international medical students, owing to poor working conditions and relatively low salaries, the country's health system is not attractive as a workplace, and most international medical graduates leave after obtaining their first degree.

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.

6.1. Introduction

Since Romania's accession to the European Union (EU) in 2007, the country's medical schools have significantly intensified efforts to open or expand the capacity of medical programmes in foreign languages, targeting international medical students (that is, students who leave their country of origin to study medicine abroad). In the academic year 2018/19, nearly all medical schools (10 out of 13) in Romania offered long-cycle programmes (six years) in English and/or French, along with the programme in Romanian.

While in the past the Romanian medical schools attracted international students mainly from non-EU countries, such as the neighbouring Republic of Moldova, more recently an increasing number of citizens of the EU and OECD countries – for example, France, Germany, Israel, and Sweden – have decided to pursue their medical education in Romania. These students intend to return to their home countries on graduation to complete postgraduate training and start to practise as physicians there.

Romania thus provides the international medical labour market with much-needed medical graduates and, in turn, receives additional funding to spend on its medical education system. However, decisions on how many domestic and international students are admitted to the different medical schools in Romania are based solely on their training capacity, without much (if any) consideration given to the current and future health needs of the population. There is an urgent need to establish a formal medical workforce planning process in Romania, linking decisions on the number of students admitted to all medical programmes (Romanian and English/French) with current and projected future demand for doctors. There is also a need to address the fact that, owing to poor working conditions and relatively low salaries, the country's health system is not attractive as a workplace to either domestic or international medical graduates.

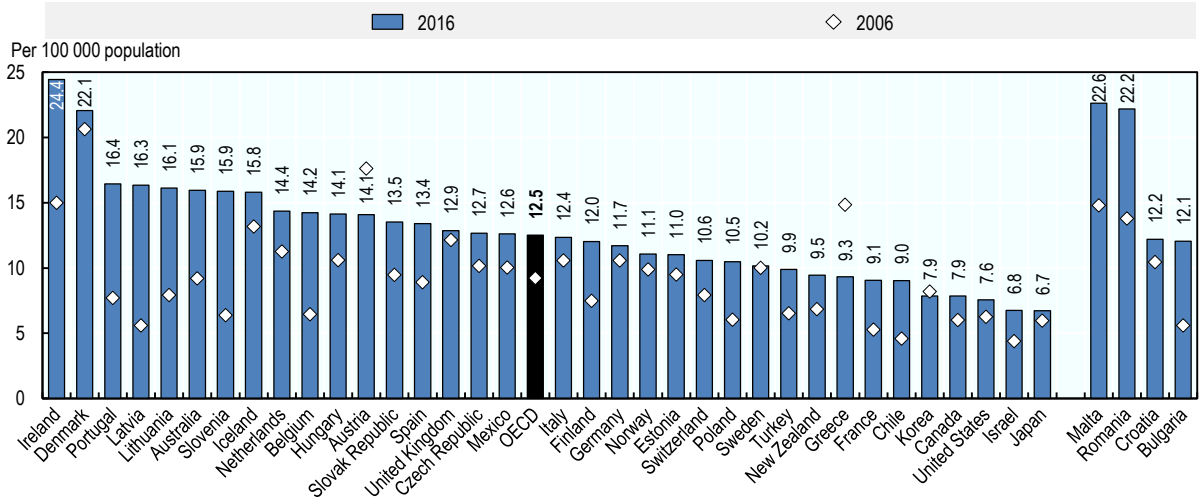
Against this background, this chapter describes findings from a case study on the internationalisation of medical education in Romania – in particular, its dynamics, magnitude, and main drivers, as well as its potential impact on the medical education system and national medical workforce. The discussion relates to international medical students enrolled in long-cycle programmes; it does not include medical students visiting Romania temporarily (for one or two semesters) as part of the EU's international student exchange programmes.

The study was undertaken in 2018 and is based on key-informant interviews with representatives of main policy actors in the education and health sectors in Romania – including government departments, regulatory bodies, professional associations, and medical schools (see Annex Table 6.A.1 for a complete list of interviewees' institutional affiliations) – in addition to a literature review. Furthermore, information on push and pull factors behind decisions to pursue medical education in Romania was obtained from a sample of international medical students.

6.2. Nearly 30% of new-entrant places in medical schools in English- and French-language programmes

Romania has 11 public and 2 private medical schools. In total, they produce a relatively high number of medical graduates: 22.2 medical graduates per 100 000 population in 2016 – a greater number than in nearly all OECD and EU countries, and much higher than the OECD average of 12.5 in 2016 (Figure 6.1).

Figure 6.1. Number of medical graduates per 100 000 population, OECD and EU countries, 2006 and 2016



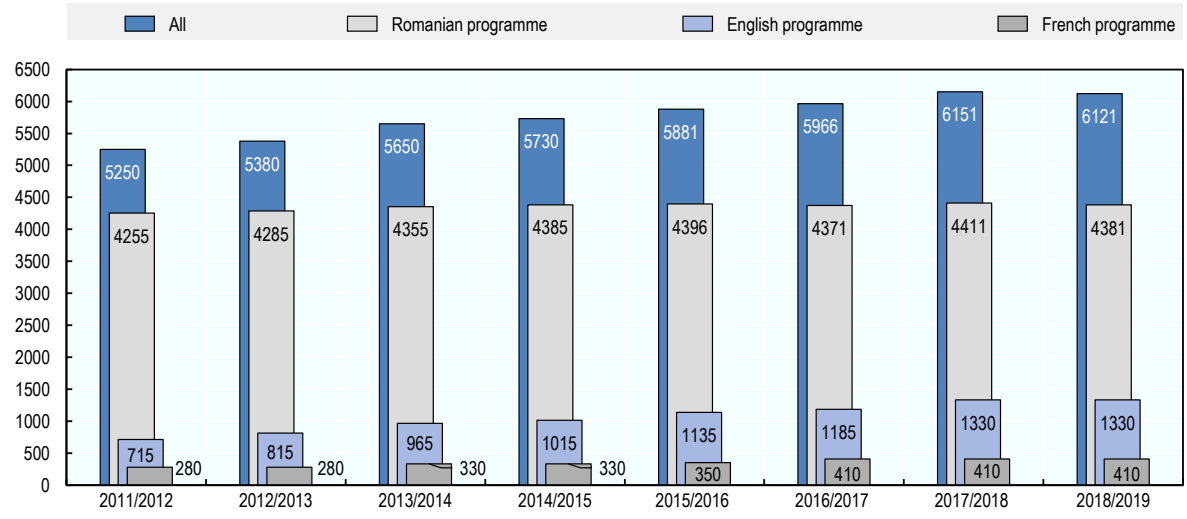
Note: There are no medical graduates in Luxembourg. In Denmark, the data refer to new doctors receiving an authorisation to practise (resulting in an over-estimation if it includes some foreign-trained doctors).
Source: OECD Health Statistics 2018, https://doi.org/10.1787/health-data-en.

StatLink https://doi.org/10.1787/888933970627

In the past decade, the medical education system in Romania has undergone significant internationalisation. In particular, the country's medical shcools have intensified their efforts to either open or expand the capacity of medical programmes taught in English or French. As a result, in the academic year 2018/19, 10 of the 13 medical schools in Romania offered long-cycle programmes in English, and 4 of these 10 also offered the programmes in French, along with the programme in Romanian. In Romania, a long-cycle programme in medicine is six years in duration.

Accordingly, while the total annual number of places for new medical students increased by nearly a fifth between 2011/12 and 2018/19 (from 5 250 to 6 121), the capacity in foreign-language programmes increased by 75% (from 995 to 1 740, of which 76% or 1 330 places were in the English programmes and another 410 in the French programmes) (Figure 6.2). This also means that the proportion of places in foreign-language programmes increased from 20% to 30% in the same time span. The number of new-entrant places in the Romanian programme grew only slightly; in the 2018/19 academic year it even shrank by around 1%, for the first time since 2011/12.

Figure 6.2. Trends in the number of new-entrant places in medicine in Romania – all programmes and Romanian, English, and French programmes, 2011/12 to 2018/19



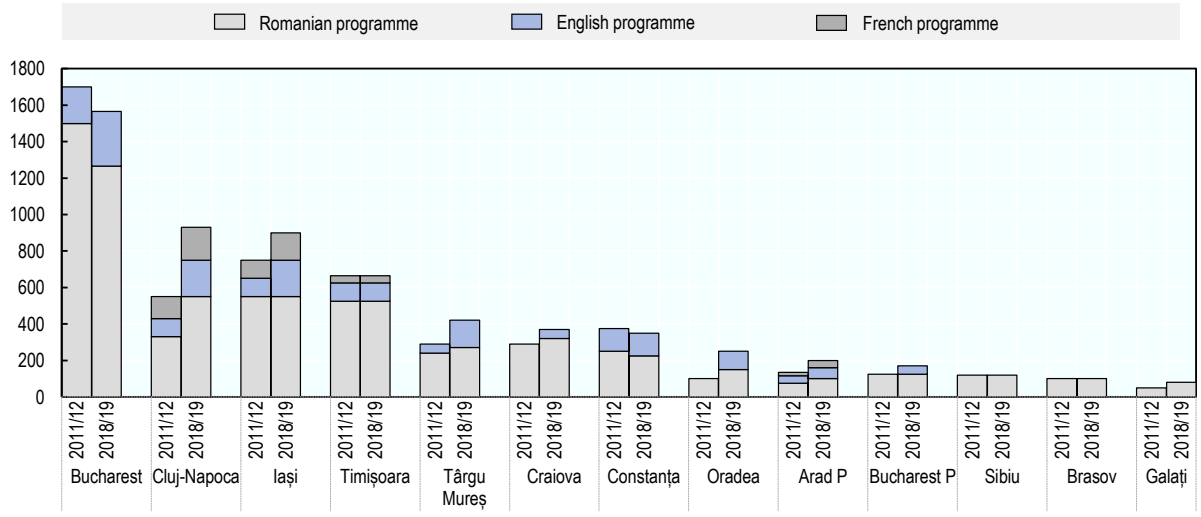
Source: Compilation based on numbers published in the annual government decree on the nomenclature and specialisation in tertiary education in Romania.

StatLink https://doi.org/10.1787/888933970646

The changes in numbers of the new-entrant places available in the Romanian and international programmes vary by medical school (Figure 6.3):

- The largest medical university in Romania – the University of Medicine and Pharmacy Bucharest – expanded its annual new-entrant capacity in the English programme from 200 to 300 (+50%) between 2011/12 and 2018/19, thereby maintaining the largest English-language programme in the country. During the same period, the annual new-entrant capacity in the Romanian programme decreased from 1 500 to 1 266 (-16%), resulting in an overall reduction of capacity. Only the much smaller medical school in Constanţa experienced a similar reduction in overall capacity.
- The second and third largest medical schools – in Cluj-Napoca and Iași – doubled the annual new-entrant capacity in their English programmes and increased the capacity in their French programmes by 50% between 2011/12 and 2018/19. Just behind the much smaller private medical school in Arad (where the proportion is 50%), these two schools now have the largest proportion of foreign-language capacity, at around 40%. The combined capacity of the English and French programmes in the medical school of Cluj-Napoca is the largest in the country. This school also increased the capacity of its Romanian programme, making it the fastest-growing medical school in the country.
- In the medical school in Târgu Mureș, the annual new-entrant capacity of the English programme increased from 50 to 150 between 2011/12 and 2018/19. The English programme accounts now for 35% of the school's capacity.
- Three medical schools that did not offer any international programmes in 2011/12 – Craiova, Oradea, and the private medical school in Bucharest – have since opened programmes in English, offering between 45 and 100 new places in the 2018/19 academic year.
- The three smallest medical schools – in Sibiu, Brasov, and Galaţi – do not offer any foreign-language programmes (for more detailed data see Annex Table 6.A.2).

Figure 6.3. Trends in the numbers of new-entrant places by medical school, Romania, 2011/12 and 2018/19



Note: P indicates a private medical school.
Source: Compilation based on numbers published in the annual government decree on the nomenclature and specialisation in tertiary education in Romania.

StatLink https://doi.org/10.1787/888933970665

6.2.1. A large share of international medical students come from Israel and EU/EFTA countries

In 2017, foreign-born students accounted for 5.4% (25 022) of the total number of students in all tertiary education institutions in Romania. According to the Executive Agency for Higher Education, Research, Development and Innovation Financing (UEFISCD), 6 890 international students originated from other EU or European Free Trade Association (EFTA) countries and 18 132 from non-EU/EFTA countries (UEFISCD, 2017[1]). Of the EU/EFTA students in all fields of study, nearly a third (31%) come from France, followed by Germany (18%) and Italy (12%).

Among all the international students, 55% (3 789) from EU/EFTA countries and 26% (4 753) from non-EU/EFTA countries enrolled in medicine. Data that would allow identification of the specific nationalities of the latter are not available at the national level. Of all non-EU/EFTA students in medicine, dentistry, and pharmacy together, the largest group comes from Israel, followed by Moldova and Tunisia. A quarter of the Moldovan students study in campuses of Romanian universities located within Moldova (UEFISCD, 2017[1]).

Additional information obtained from the University of Medicine and Pharmacy Cluj-Napoca – hosting the largest programme in French – confirms the presence of a large number of French students, with 870 registered to study medicine in 2018/19. At the University of Medicine and Pharmacy Târgu Mureș, the largest group of international students is from Germany, followed by Italy and Sweden. At the University of Medicine and Pharmacy Craiova, international students from Israel make up by far the largest group, followed by Greece (Table 6.1.).

The data provided by the three universities suggest that the distribution of international students by nationality might vary among the medical schools, indicative of a degree of specialisation in their marketing strategies (for further discussion see Section 6.4).

Table 6.1. Top five nationalities of international students – Universities of Medicine and Pharmacy Târgu Mureș and Craiova, 2018/19

University of Medicine and Pharmacy Târgu Mureș		University of Medicine and Pharmacy Craiova	
Country	**Number of students**	**Country**	**Number of students**
Germany	202	Israel	131
Italy	75	Greece	43
Sweden	44	Italy	28
Finland	25	United Kingdom	20
Israel	16	Syrian Arab Republic	17

Note: These numbers include the number of students in the English programmes at the departments of medicine and of pharmacy.
Source: Personal communication with the universities' authorities.

StatLink https://doi.org/10.1787/888933970684

Moreover, information available on Swedish students pursuing medical education in all Romanian medical schools indicates that the number is sizeable but decreasing, at 325 in 2015/16, 251 in 2016/17 and 222 in 2017/18 (Swedish Board of Student Finance, 2018[1]) (see also Figure 2.2 in Chapter 2).

6.3. Admission rules, tuition fees, education and training pathways for international and domestic students

6.3.1. Medical schools enjoy significant autonomy in their decisions on student intake

Every year, each medical school states its preferences on the intake of new medical students – both domestic and international – in an application to the Romanian Agency for Quality in Higher Education (ARACIS). The Agency is an independent institution responsible for the assessment of the didactic capacity, with the aim of ensuring an adequate quality of the tertiary education in Romania.

Following a comprehensive individual assessment by ARACIS, which involves an evaluation of human and material resources, the maximum number of new entrants is determined separately for every medical school and programme – Romanian, English, and French. Medical schools can also apply for an evaluation of their didactic capacity by another independent accreditation agency, in Romania or abroad, as long as it is registered in the European Quality Assurance Register for Higher Education. Following the assessment, the maximum numbers of new entrants to medical programmes are endorsed annually in a government decree.

These maximum numbers do not need to be attained, however. Indeed, some medical schools decide to admit fewer students as part of their marketing strategies to signal a higher quality of education.

It is worth noting that neither the Ministry of Health nor medical associations are formally involved in the process of determining the number of new medical student entrants. More importantly, there is no formal mechanism linking the decision on the maximum number of new entrants to medicine studies with future demand for doctors – as estimated, for example, by the health needs of the population.

6.3.2. The Ministry of Education subsidises places in the Romanian programme

Generally, for students enrolled in the Romanian programme, medical schools receive a per capita subsidy from the Ministry of Education, meaning that these students do not face any tuition fees or other student levies. The competition for these subsidised places is open to Romanians and to all other nationals of

EU/EFTA countries. In practice, however, there is a language barrier to access: the process begins with an exam in Romanian, including questions on biology, chemistry, and/or physics.

Students enrolled in the English or French programmes, including any Romanian nationals, pay tuition fees. The annual fees are decided by each university and range from EUR 3 150 to 6 000 (euros) for the public universities. Tuition fees in the two private medical schools are higher, at EUR 6 250 and 7 000, respectively (Table 6.2).

Table 6.2. Annual tuition fees in English/French programmes in Romanian medical schools (EUR), 2018/2019

Medical school	Annual tuition fee (EUR)
Bucharest	6 000
Brasov	4 000
Cluj-Napoca	5 000
Constanta	5 000
Craiova	5 000
Galati	4 000
Iași	5 000
Oradea	4 800
Sibiu	3 150
Târgu Mureș	5 000
Timișoara	4 500
Private Medical School Arad	6 250
Private Medical School Bucharest	7 000

Source: Compilation based on information from the medical schools.

StatLink https://doi.org/10.1787/888933970703

The programmes in English and French are open to nationals of any country, with candidate selection based on high-school performance. The admission process is organised separately by each university, with the number of places available for each programme announced publicly at least six months prior to admission. The admission of successful candidates from non-EU/EFTA countries is further subject to acceptance by the Ministry of Education.

Medical schools strive to optimise the admission process for international applicants. The University of Medicine and Pharmacy Târgu Mureș, for example, offers “early admission”, which allows international candidates to apply before completion of the final high-school exam and secure a conditional acceptance, pending the exam and its result.

Part of the income from tuition fees is used to offer scholarships to international medical students: of all international student fees charged by tertiary education institutions in Romania, 5% are redirected to the Ministry of Education, which offers a number of scholarships each year. Moreover, some medical schools have created additional scholarship funds for international medical students. At the University of Medicine and Pharmacy Cluj-Napoca, for example, in the first semester of the academic year 2018/19, close to 20% of the students in the French programme received merit-based scholarships ranging from EUR 1 000 to EUR 1 250 per month. These largely cover the monthly costs of living, including accommodation costs.

6.3.3. Domestic and international students follow the same medical education and training pathways

The medical education in Romania covers six years of study, followed by three to seven years of (specialist) residency training. All international students in Romanian medical schools are required to master the Romanian language by the end of the second year of their medical studies, in view of the relatively large share of "hands-on" education in direct contact with patients, which starts in the third year of the programme. The residency training is organised exclusively in Romanian, so applicants need to submit proof of Romanian language proficiency.

During their postgraduate training, residents are employed in designated public healthcare institutions and continue to participate in training activities organised at the universities, the costs of which are borne by the Ministry of Health. The competition for residency placements is open to all medical graduates – domestic and international – of Romanian medical schools, as well as international medical graduates from other EU/EFTA countries. Moreover, international medical graduates from non-EU/EFTA countries can take part, subject to approval from the Ministry of Education.

The competition for residency training is strong. The number of available posts has traditionally been lower than the number of new medical graduates from the Romanian programme alone: in recent years, 10-15% lower, although in 2018 the number of positions advertised matched the number of these graduates. Furthermore, residents already pursuing their training often choose to re-enter the competition in the hope of getting a better ranking that would allow them to choose another specialty. Within the pool of available residency posts, international medical graduates can also compete for a limited number of posts, for which the university-related costs are subject to charges.

The number of residency posts is fixed by the Ministry of Health and is communicated to the Ministry of Education, which includes it in the annual government decree. The Ministry of Health does not use any formal evidence-based mechanism in this process. It often simply updates the numbers based on *ad hoc* consultations with the medical schools.

In 2017, international medical graduates in residency represented 4% of the total number of trainees/residents (688 of 16 950). Most of the residents were nationals of Tunisia (19%), Morocco (17%), and Moldova (7%). No EU country had more than ten residents pursuing postgraduate training in Romania in 2017 (Ministry of Health, 2018). Interviews with representatives of the medical schools suggest that the numbers of foreign-born residents pursuing their postgraduate training in Romania have risen over the past five years. At the University of Medicine and Pharmacy Iași, for example, the number increased from 1 resident in 2014 to 16 in 2018. According to the university's representatives, this can be explained by recent efforts to improve the quality of training in residency, with an increased focus on giving residents a more active role in treating patients.

6.4. Drivers of internationalisation of medical education in Romania

6.4.1. Internationalisation of medical schools as part of general internationalisation efforts in higher education

The international aspirations and efforts of the medical schools also take place within the broader context of the internationalisation of the tertiary education system in Romania. Although a comprehensive national policy for the internationalisation of higher education is lacking, a strategic framework has been in place since 2015. This was developed through the Human Resource Development Operational Programme, with EU funding support ((UEFISCDI, 2015[2])). The project, entitled "Higher Education Evidence Based Policy Making: A Necessary Premise for Progress in Romania", has produced a series of analyses and recommendations for decision makers at the national level as well as for universities (Box 6.1). The final

project report suggests a series of objectives and related activities, but without matching them with a timeline, numerical targets, or a budget.

Box 6.1. Recommendations of the "Higher Education Evidence Based Policy Making: A Necessary Premise for Progress in Romania" project

Recommendations from the 2015 project report addressed to national decision makers in the education sector included calls to:

- design and adopt a comprehensive national policy for internationalisation of higher education, in line with existing EU reference documents, accompanied by an appropriate legal framework and efficient operational structures for implementation
- collect information and statistical data on the higher education system as a whole, as the foundation for policy making for internationalisation and for higher education in general
- remove legislative and bureaucratic barriers to internationalisation and mobility, including by simplifying the procedure for accreditation of foreign-language programmes.

Recommendations addressed to universities included calls to:

- create internationalisation strategies through a comprehensive consultation with the university community and incorporate these into overall institutional strategies
- enhance the internationalisation of curricula
- promote mobility opportunities for students and staff, supported by the university's own resources
- develop a coherent and comprehensive mechanism for collecting nationally standardised data and information, consistent with international practices.

Source: (UEFISCDI - Executive Agency for Higher Education, Research, development and Innovation Financing, 2015[2]).

Apart from this initiative, internationalisation is a component of the "Educated Romania" ("România Educată") initiative, developed by the Department of Education and Research of the Presidential Administration and launched in December 2018. A working group has been established within this project to foster the internationalisation of higher education in Romania (Presidential Administration, 2018[3]).

6.4.2. Push and pull factors for international students: limits on access in home countries, low tuition fees, and EU-wide recognition of medical diplomas

As with health professional mobility, push and pull factors underlie the international students' decisions to pursue medical education outside their home countries. For many international medical students, especially nationals of EU countries, the main push factors are the *numerus clausus* policies that limit access to the medical education in their home countries. As for the reasons that draw those who decide to study abroad to the Romanian medical schools in particular, the main pull factors mentioned by the international students interviewed include:

- relatively low tuition fees compared to their home countries or other countries offering medical education programmes in English;
- relatively low living costs, especially compared to other EU countries;
- recognition of medical diplomas throughout the EU – for international students from non-EU/EFTA countries; a degree from a Romanian medical school opens access to the entire EU medical labour market;

- relatively easy-to-achieve admission standards, i.e. absence of a written admission exam, since the admission is based on high-school grades.

Medical schools frequently tailor their international study offer to nationals of a selected country. The University of Medicine and Pharmacy Cluj-Napoca, for example, concentrates on potential students from France (Box 6.2). It is the second largest medical school in Romania but hosts the largest French programme. In 2017/18, 80% of the students enrolled in this programme came from France.

Box 6.2. French programme at the University of Medicine and Pharmacy Cluj-Napoca

The medical school Cluj-Napoca has offered a programme in French since 2000. In 2018/19, it had more than 1 600 international students, including around 1 000 francophone students, of whom 870 were French nationals. While some of the French students (with Romanian origins) were enrolled in the Romanian programme, most were in the French programme, where they accounted for 80-90% of students.

According to representatives of the school, the medical education model it has adopted is based on the French model. Over time, many members of the faculty in Cluj-Napoca have been trained in France, thus importing knowledge and procedures.

To signal its commitment to the quality of education, the school took the decision not to increase the intake of students to the number allowed by ARACIS. Presently, it accepts 150 new students into the French programme annually of the maximum allowance of 180 students.

The school is also a member of the Conférence Internationale des Doyens et des Facultés de Médecine d'Expression Française – an international network of French-speaking medical faculties and part of the Agence Universitaire de la Francophonie.

With the aim of facilitating the return of the French students to France and preparing them for the entry exam for residency training (the épreuves classantes nationales), the school entered into dialogue with a number of institutions in France involved in the organisation of the exam. This includes Grenoble University (which manages the Système Informatique Distribué d'Évaluation en Santé platform), the French Rectors' Conference, and the French Medical Schools' Deans Conference.

Source: University of Medicine and Pharmacy Cluj-Napoca (2019).

6.4.3. International students as an additional source of income for medical schools

In a poorly funded educational system (OECD, 2017[4]), international students represent a significant source of additional income for medical schools in Romania (see Table 6.2). As discussed earlier (Section 6.3.1), however, medical schools cannot admit an arbitrarily high number of international students because of the ceilings set in an independent assessment of each school's teaching capacity by ARACIS.

Moreover, the international programmes are part of the schools' efforts to attract and retain qualified staff, thus addressing the emigration of medical personnel from Romania (see Section 6.5). Indeed, a significant share of the additional income is used to offer extra pay to the staff involved in the international programmes, usually in the form of paid over-time. Student-oriented internationalisation also creates opportunities for other types of international collaboration, most frequently in the area of research; this also contributes positively to the attractiveness of a career as a medical educator in Romania.

Representatives of the medical schools also stressed that internationalisation is an effective tool for stimulating professional development of the academic staff in general, as it creates a positive environment

in which new courses can be developed and expands faculty interest in new areas, such as new specialties or teaching methods.

6.4.4. Further impetus for internationalisation from competition between medical schools

Apart from the financial gains, medical schools perceive international programmes as positive contributions to their reputations and visibility at the national and international levels. This often leads to improved rankings – again, nationally and internationally.

Consequently, the competition between schools provides additional stimulus for internationalisation. To signal an internationally oriented strategy, medical schools, for instance, can apply for external evaluations by international accreditation bodies such as the European University Association or the European Medical Schools' Association. Significant efforts are also undertaken to establish close partnerships with universities in other EU countries as well as in Asia and North America.

The competition extends to the international level, with schools opening campuses in other EU countries. One example is the University of Medicine and Pharmacy Târgu Mureș, which plans to open a campus in Germany (Box 6.3).

Box 6.3. University of Medicine and Pharmacy Târgu Mureș to open a medical campus in Germany in 2019/20

For the University of Medicine and Pharmacy Târgu Mureș, internationalisation is a key strategic objective. It dedicates more than a third of its teaching capacity to the programme in English (see Figure 6.3 above). The majority of international students came from Germany in the academic year 2018/19 (see Table 6.1. above).

The university reports high demand from international applicants, with around three candidates for each available place in the English programme in 2017. To address this demand, in particular from students in Germany and surrounding countries, the university plans to open a branch in Germany. According to an announcement made by the university's Chancellor in December 2018, the campus will open in Hamburg in the academic year 2019/20 and will train 150 students annually in an English-language programme.

Source: University of Medicine and Pharmacy Târgu Mureș (2019).

6.5. Growing numbers of international medical graduates but low retention

The findings of this study suggest that the internationalisation of medical schools not only brings additional funding but also promotes the quality of medical education, in particular through staff retention and development, as well as through competition among the Romanian universities. However, owing to poor working conditions, notably a high workload – related to low staffing norms and hiring freezes, a weak infrastructure, and the correspondingly weak professional development opportunities – and relatively low salaries, the country's health system is not attractive to either international or domestic medical graduates.

There is no systematic record of the career paths of the international graduates of the Romanian medical schools, but all interviewed stakeholders share the perception that the majority do not consider Romania as a place to practice. Indeed, while postgraduate training is equally open to domestic and international medical graduates, the share of foreign-born medical graduates in residency training is low – it stood at 4% of all residents in 2017, much lower than the 20% of places available in foreign-language programmes in Romanian medical schools in 2010/11, i.e. six years earlier.

Data from some of the students' countries of origin further confirm that international students return home to complete their postgraduate training. In 2017 in France, for example, among all medical graduates of international universities attending the exam for entry to postgraduate training, the most numerous group were French nationals (133 of 328), the majority of whom (110 of the 133) had obtained their first medical degree in Romania (CNG, 2018). Moreover, graduates from non-EU/EFTA countries are legally required to obtain Romanian citizenship to be allowed to practise, which might be an additional discouragement from pursuing postgraduate training and eventually a career in Romania.

Many Romanian doctors have also left the country to practise abroad – predominantly in Western Europe – as indicated by data from the destination countries (Table 6.3). In particular, Romania's accession to the EU in 2007 created new migration opportunities (Vlădescu et al., 2016[5]). Furthermore, in student surveys carried out in some medical schools, the majority (85%) of Romanian students reported their intention to search for postgraduate training and employment abroad on graduation or completion of their training (Suciu et al., 2017[6]).

Between 2015 and 2018, the Romanian health sector experienced the lessening of some of the austerity measures implemented during the previous decade, which included a salary cut of 25% and budget constraints on hospital staffing. Physicians' salaries have increased in several stages since 2015, and for some medical specialties the salaries doubled in 2018. Nevertheless, the staffing norms in public healthcare institutions remain low and/or are still subject to a hiring freeze.

There is no source of data within the country to establish the exact magnitude of the exodus or possible returns of doctors trained in Romania. This limits the capacity to assess the effectiveness of any retention initiatives. Official data regarding physician outflows are limited to the number of requests for certificates of conformity/good standing issued by the Romanian Ministry of Health/College of Physicians for doctors intending to practise medicine in other countries of the EU. These certificates, however, are only evidence of an intention to emigrate and physicians might obtain such certificates more than once.

Discussions with stakeholders revealed a lack of co-ordination (or any clear strategy to establish a co-ordination mechanism) between the Ministry of Education and the Ministry of Health with regard to medical workforce planning and management. The main problem is the lack of continuity in the government, which results in frequent changes in policy directions in the education and health sectors.

The National Health Strategy 2014-2020: Health for Prosperity is the current strategic document to guide the development of the Romanian health care system (Ministry of Health, 2014). In the analysis that informed the development of the strategy and the associated action plan, the challenges related to human resources for health (massive outflows, geographic shortages) were recognised as factors jeopardising people's access to high-quality health care services. In order to address this, the strategy includes as a specific objective the implementation of sustainable policies for human resources for health. Since the adoption of the strategy, however, little has been done to operationalise this objective. In 2016, through a whole-of-government approach, the National Action Plan for Human Resources for Health was developed, with broad consensus from labour unions and professional associations. Its main objectives were to improve human resources for health governance, consolidate data flows about health professionals for better planning and strengthen research efforts to generate evidence for policy making, but approval of the plan is still pending.

In 2017, the Ministry of Health created the Human Resources for Health Centre, with the aims of improving medical workforce planning and management as well as of facilitating the return of doctors who have left to practise abroad. The Centre was still not fully operational at the end of 2018, however. The Ministry also embarked on an effort to develop a national registry of health professionals based on data available in professional colleges. The general objective of the registry is to improve the management of data pertaining to health professionals in Romania in order to improve the evidence base for health workforce planning. The register is expected to be deployed by 2020.

Table 6.3. Number and share of doctors trained in Romania in annual inflows of foreign-trained doctors to selected EU countries, 2006-17

Country	Annual inflow of doctors	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
Belgium	Foreign-trained (number)	204	418	459	400	504	665	684	481	558	566	500	598
	of which trained in Romania (number)	**2**	**126**	**132**	**153**	**146**	**178**	**122**	**108**	**90**	**108**	**76**	**53**
	trained in Romania (%)	**1%**	**30.1%**	**28.8%**	**38.2%**	**29%**	**26.8%**	**17.8%**	**22.4%**	**16.1%**	**19.1%**	**15.2%**	**8.9%**
France	Foreign-trained (number)	-	-	-	-	-	1 578	1 435	1 515	1 732	1 676	1 503	1 330
	of which trained in Romania (number)	**-**	**-**	**-**	**-**	**-**	**457**	**402**	**364**	**339**	**333**	**308**	**253**
	trained in Romania (%)	**-**	**-**	**-**	**-**	**-**	**29%**	**28%**	**24%**	**19.6%**	**19.9%**	**20.5%**	**19%**
Germany	Foreign-trained (number)	-	833	934	1 071	1 426	1 900	2 225	1 964	1 730	1 530	1 430	-
	of which trained in Romania (number)	**-**	**54**	**71**	**103**	**244**	**403**	**579**	**404**	**286**	**244**	**251**	**-**
	trained in Romania (%)	**-**	**6.5%**	**7.6%**	**9.6%**	**17.1%**	**21.2%**	**26%**	**20.6%**	**16.5%**	**15.9%**	**17.5%**	**-**
Ireland	Foreign-trained (number)	-	-	-	-	683	855	783	832	871	1 777	1 819	1 685
	of which trained in Romania (number)	**-**	**-**	**-**	**-**	**83**	**150**	**131**	**124**	**179**	**194**	**185**	**122**
	trained in Romania (%)	**-**	**-**	**-**	**-**	**12.1%**	**17.5%**	**16.7%**	**14.9%**	**20.5%**	**10.9%**	**10.2%**	**7.2%**
Netherlands	Foreign-trained (number)	140	151	166	205	226	158	177	94	138	163	-	-
	of which trained in Romania (number)	**-**	**5**	**11**	**7**	**11**	**6**	**8**	**7**	**-**	**14**	**-**	**-**
	trained in Romania (%)	**-**	**3.3%**	**6.6%**	**3.4%**	**4.9%**	**3.8%**	**4.5%**	**7.4%**	**-**	**8.6%**	**-**	**-**
Norway	Foreign-trained (number)	1 208	1 215	1 179	1 287	1 309	1 300	1 603	2 310	1 304	1 281	1 325	1 505
	of which trained in Romania (number)	**13**	**24**	**15**	**32**	**21**	**26**	**43**	**78**	**56**	**60**	**65**	**59**
	trained in Romania (%)	**1.1%**	**2%**	**1.3%**	**2.5%**	**1.6%**	**2%**	**2.7%**	**3.4%**	**4.3%**	**4.7%**	**4.9%**	**3.9%**
Sweden	Foreign-trained (number)	661	764	821	770	810	739	754	864	940	891	-	-
	of which trained in Romania (number)	**25**	**52**	**56**	**32**	**46**	**65**	**83**	**71**	**116**	**107**	**-**	**-**
	trained in Romania (%)	**3.8%**	**6.8%**	**6.8%**	**4.2%**	**5.7%**	**8.8%**	**11%**	**8.2%**	**12.3%**	**12%**	**-**	**-**
Switzerland	foreign-trained (number)	1 798	1 798	1 984	1 924	1 892	2 015	2 179	2 519	2 123	2 183	2 355	2 268
	of which trained in Romania (number)	**9**	**12**	**17**	**26**	**27**	**21**	**21**	**41**	**53**	**51**	**52**	**53**
	trained in Romania (%)	**0.5%**	**0.7%**	**0.9%**	**1.3%**	**1.4%**	**1%**	**1%**	**1.6%**	**2.5%**	**2.3%**	**2.2%**	**2.3%**
United Kingdom	Foreign-trained (number)	6 156	5 056	5 022	4 960	5 945	5 189	5 951	5 459	5 939	4 980	5 649	6 331
	of which trained in Romania (number)	**87**	**175**	**233**	**254**	**677**	**449**	**292**	**276**	**276**	**216**	**237**	**212**
	trained in Romania (%)	**1.4%**	**3.5%**	**4.6%**	**5.1%**	**11.4%**	**8.6%**	**4.9%**	**5.1%**	**4.6%**	**4.3%**	**4.2%**	**3.3%**

Source: OECD Health Statistics 2018, https://doi.org/10.1787/health-data-en.

StatLink https://doi.org/10.1787/888933970722

6.6. Conclusions

Romanian medical schools are internationalising to expand and grow. Over the past decade many have been able to attract a growing number of international students by developing their programmes in English and French, while maintaining relatively low costs of studies and having the advantage of offering medical degrees that are recognised across the EU.

This internationalisation seems to have contributed positively to the quality of medical education in Romania. The universities have embarked on improvement processes in efforts to appeal to international students and to be competitive in relation to other medical schools in the country and abroad. Moreover, through curriculum changes driven by international students' needs and infrastructure improvements to allow more international students to be enrolled, national students have also benefited from the modernisation of medical schools.

However, the internationalisation of medical education is a growing activity that is mainly happening in parallel with the traditional role of medical schools of training new doctors to serve the needs of the Romanian population. It does not contribute directly to achieving health systems goals, in particular with regard to ensuring adequate medical workforce levels:

- For international students, Romania is an attractive location for obtaining a first medical degree, particularly if they cannot obtain it in their own countries because of *numerus clausus* policies or other capacity constraints, but it is not attractive for completing postgraduate specialty training and pursuing a career. Many Romanian medical graduates and doctors share this view and want to pursue their careers abroad owing to poor working conditions in the country.
- Decisions on how many domestic and international students are admitted to the different medical schools in Romania are based solely on their training capacity, without much (if any) consideration given to the current and future health needs of the population. Over the past five years, the growth in numbers of students admitted to Romanian medical schools has only occurred in the English and French programmes, with zero growth in the Romanian programme. If the demand for doctors increases in Romania in the years ahead, the pool of Romanian medical graduates will not have kept step; and they – despite many voicing their intention to leave – are more likely to remain and practise in the country than international graduates.

There is an urgent need to establish a formal medical workforce planning process in Romania, linking the decisions on the number of students admitted to medicine in all programmes (Romanian, English, and French) with the current and projected future demand for doctors. This model should become a basis for co-ordination between the medical education sector and the health sector, with the view of ensuring that domestic needs for doctors are met.

Internationally, there is a need for more refined data collection that would allow monitoring the international mobility of doctors to distinguish between international and domestic graduates of Romanian medical schools. While the emigration of Romanian graduates and doctors to other countries can be considered a "brain drain" for Romania, this is not the case for international students who pay the full cost of their studies while doing their degrees and who, in most cases, do not intend to stay in Romania after graduation.

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Annex 6.A. **Institutional affiliations of the interviewees**

Annex Table 6.A.1. Institutional affiliations of the interviewees

National institutions
Ministry of Health
Ministry of Education
Executive Agency for Higher Education, Research, Development and Innovation
Presidential Administration Department of Public Health
Presidential Administration Department of Education and Research
Romanian College of Physicians
Human Resources for Health Centre
National School of Public Health, Management and Professional Development
National Association of Medical Schools' Deans
Local institutions
Carol Davila University of Medicine and Pharmacy Bucharest
Iuliu Hatieganu University of Medicine and Pharmacy Cluj-Napoca
University of Medicine and Pharmacy Târgu Mureș
Faculty of Medicine and Pharmacy Oradea
Gr. T. Popa University of Medicine and Pharmacy Iași
Groups
Romanian medical students in Cluj-Napoca
International medical students in Cluj-Napoca

Annex Table 6.A.2. Trends in the maximum allowed number of new-entrant medical students, by medical school and programme in Romanian, English and French, 2011/2012 to 2018/2019

	2011/2012			2012/2013			2013/2014			2014/2015			2015/2016			2016/2017			2017/2018			2018/2019		
	RO	EN	FR	RO	EN	FR	RO	EN	FR	RO	EN	FR	RO	EN	FR	RO	EN	FR	RO	EN	FR	RO	EN	FR
Bucharest	1 500	200	0	1 500	200	0	1 500	200	0	1 500	200	0	1 266	250	0	1 266	250	0	1 266	300	0	1 266	300	0
Brasov	100	0	0	100	0	0	100	0	0	100	0	0	100	0	0	100	0	0	100	0	0	100	0	0
Cluj-Napoca	330	100	120	330	100	120	330	200	120	330	200	120	550	200	120	550	200	180	550	200	180	550	200	180
Constanţa	250	125	0	250	125	0	250	125	0	250	125	0	250	125	0	225	125	0	225	125	0	225	125	0
Craiova	290	0	0	320	50	0	320	50	0	320	50	0	320	50	0	320	50	0	320	50	0	320	50	0
Galaţi	50	0	0	50	0	0	80	0	0	80	0	0	80	0	0	80	0	0	80	0	0	80	0	0
Iași	550	100	100	550	100	100	550	150	150	550	150	150	550	150	150	550	150	150	550	200	150	550	200	150
Oradea	100	0	0	100	50	0	140	50	0	140	50	0	140	100	0	140	100	0	150	100	0	150	100	0
Sibiu	120	0	0	120	0	0	120	0	0	120	0	0	120	0	0	120	0	0	150	0	0	120	0	0
Târgu Mureș	240	50	0	240	50	0	240	50	0	270	100	0	270	100	0	270	150	0	270	150	0	270	150	0
Timișoara	525	100	40	525	100	40	525	100	40	525	100	40	525	100	40	525	100	40	525	100	40	525	100	40
Arad P	75	40	20	75	40	20	75	40	20	75	40	20	100	60	40	100	60	40	100	60	40	100	60	40
Bucharest P	125	0	0	125	0	0	125	0	0	125	0	0	125	0	0	125	0	0	125	45	0	125	45	0
Total	**4 255**	**715**	**280**	**4 285**	**815**	**280**	**4 355**	**965**	**330**	**4 385**	**1 015**	**330**	**4 396**	**1 135**	**350**	**4 371**	**1 185**	**410**	**4 411**	**1 330**	**410**	**4 381**	**1 330**	**410**
Yearly total			**5 250**			**5 380**			**5 650**			**5 730**			**5 881**			**5 966**			**6 151**			**6 121**

Note: RO = Romanian-language programme; EN = English-language programme; FR = French-language programme; P = private medical school.
Source: Compilation based on numbers published in the annual government decree on the nomenclature and specialisation in tertiary education in Romania.

7 Brain gain and waste in Canada: Physicians and nurses by place of birth and training

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This chapter documents changes from 2006 to 2016 in the number of physicians, registered nurses (RNs) and practical nurses (PNs) in Canada. It identifies those working in each occupation as well as those reporting relevant educational credentials but not working in the occupation. The number of practicing physicians and PNs grew at double the rate of the total workforce, whereas practicing RNs only grew at one-third that rate. The high physician growth rate was a result of education and immigration policies intended to address perceptions of increasing physician shortages. In contrast, the low RN and high PN growth rates likely reflect a shift to lower cost PNs with no growth in total nursing relative to the workforce. The growth rate of foreign-born, foreign-trained professionals working in all three professions was larger than the relevant occupation's average growth rate. Despite this, the percentage of foreign-born, foreign-trained individuals *not* working in their trained profession also increased for physicians and RNs. The net effect is that the percentage of foreign-born, foreign-trained potential physicians and RNs working in their profession declined. This "brain waste" reflects mismatches between health and immigration policies.

7.1. Introduction

Integrating foreign-trained health professionals into the health workforces of OECD countries is an issue of ongoing concern for workers themselves and for the receiving, sending and training countries. In the early 2000s, the sometimes urgent shortages of health care workers in low income countries, and the practices of receiving nations that were frequently seeking to reduce their own shortages of health professionals, drew attention to this long-standing issue (e.g. Chen et al. (2004[1])). In this context, many became concerned about migrant health worker "brain drain" from low income countries and "brain waste" in high income countries. In May 2003, the Commonwealth adopted its "Code of Practice for the International Recruitment of Health Workers" (The Commonwealth, 2003[2]). Data collection and analysis conducted primarily by the (OECD, 2007[3]; 2008[4]) in collaboration with the WHO increased policy attention to this issue, and in May 2010 the WHO passed its Global Code of Practice on the International Recruitment of Health Personnel (WHO, 2010[5])).

(OECD, 2016[6]), among others, have tracked ongoing issues in the international migration of health professionals, while (Grignon, Owusu and Sweetman, 2013[7]) provide an overview of the topic from an economic perspective. Pertinent changes in the landscape include: the small in magnitude, but rapidly growing, internationalisation of health provider education that targets trainees from developed countries wanting to study medicine and other (typically) high earning health occupations; ongoing programmes in some less developed nations training domestic students for international employment; and moves in some OECD countries to increase the domestic health provider supply.

Many receiving nations, including Canada, have made efforts to improve regulatory aspects of international transitions for health professionals who choose to migrate. Dumont, Zurn, Church, and Thi (2008[8]) provide a pre-WHO Code of Practice survey of immigrant health professional regulation in the Canadian context. Canada, subsequently made (with various motivations) several relevant changes with, in particular, some regulatory bodies instituting new protocols (Augustine, 2015[9]; Augustine, 2015[10]), and provincial governments and civil society worked to better integrate increasingly diverse internationally educated immigrant professionals into the workforce. Sweetman, McDonald, and Hawthorne (2015) survey related issues for regulatory institutions (typically self-regulatory Colleges in the Canadian context), including the recognition of credentials and other qualifications. However, despite progress, concerns about the disequilibrium between supply and demand, credential recognition and health professional "brain waste" remain. Sweetman (forthcoming) posits that there are structural problems in the Canadian context resulting from the misalignment of provincial responsibility for healthcare delivery with federal immigrant selection, and proposes a policy change to alleviate negative outcomes going forward by increasing the role of provincial governments in the selection of potential immigrants with healthcare credentials.

Building on earlier research by Owusu and Sweetman (2015[11]), the current analysis examines changes between 2006 and 2016 in the degree to which physicians (MDs; medical doctors), registered nurses (RNs) and practical nurses (PNs; called registered practical nurses or RPNs in the province of Ontario, and licensed practical nurses or LPNs in the rest of the country) practice in Canada in the profession of their training as a function of their place of birth and place of professional training. We examine those working in the relevant occupation as well as those who report relevant educational credentials for the occupations under study, but who are not working in the field associated with that credential.

7.2. Canadian and foreign trained physicians and nurses are required to pass entry tests to be licensed

Canadian Medicare, narrowly defined, is a set of provincial payment systems for physician and hospital services. With few exceptions, the provision of Medicare-insured services outside of Medicare is prohibited by virtue of the federal government's Canada Health Act, which may withhold transfers to provinces that

deviate from this principle. Given this structure, almost all physician services are directly covered by the tax revenue that funds Medicare, as are the salaries of registered nurses and practical nurses who work in hospitals and physicians' offices (via physician billings). However, an appreciable number of registered and practical nurses work in activities beyond Medicare that may be funded by combinations of government, private insurance or out of pocket payment. Outside of Medicare the boundaries between government and private payment are not always obvious.

Within each province, billing rates for physicians and the wages of most registered and practical nurses are set by collective bargaining with the province or provincially funded intermediaries. In those cases where nurses are not covered by a collective agreement, such agreements nevertheless play an important benchmark role. Overall, and especially for physicians, provincial labour markets for these three health occupations are similar to bilateral monopolies, with the provincial government on one side and the provincial medical/nursing association on the other, but with an additional complexity in the form of the relevant provincial self-regulatory College. Beyond wages, this economic structure has substantial implications for changes in the number of funded practitioners over time; the demand for physician and nurse services is almost entirely determined by government funding. Provincial governments are also very active in establishing enrolment targets at Canadian educational institutions for physicians and nurses. They essentially dictate enrolment levels for domestic medical students (Bourgeault and Grignon, 2013[12]; Sweetman, McDonald and Hawthorne, 2015[13]).

Furthermore, most self-regulatory Colleges require candidates to pass national (or international) examinations as part of the licencing process. Since these tests are administered in English or French, to a certain degree they measure language ability as well as professional knowledge and competencies. These tests also measure, to some extent, the alignment of the curriculum taught in each writer's training programme with the test, which is in turn aligned with the demands of the Canadian context. Test takers are categorised into those who completed their professional degree in Canada, and those who are foreign trained (i.e., internationally educated). The foreign trained include Canadians who went outside the country to study as well as those who completed their training prior to immigrating. It is also useful to distinguish between the first attempt for each test, and repeated attempts for those who fail earlier efforts. Sometimes there are limits on the number of repeats that are permitted. For example, starting in 2018, candidates for the relevant Medical Council of Canada exams are permitted to retake each a maximum of four times.

We present selected results for the Medical Council of Canada Qualifying Examination Parts I and II in Table 7.1. Part I is normally administered to those near the end of medical school or to graduates, and Part is normally administered after at least one year of postgraduate medical (residency) training. The pass rate for Canadian trained medical trainees on the first attempt is typically in the mid- to high-90% range. In contrast, the foreign trained have pass rates approximately 20 to 30% lower. The success rate is lower for both groups on subsequent attempts, but the gap between the Canadian and foreign trained remains about the same or increases.

Table 7.1. Medical Council of Canada Qualifying Examination Results, Part I and II, 2016 and 2017

	2016		2017	
	Tested (#)	Pass Rate (%)	Tested (#)	Pass Rate (%)
MCCQE Part I: First Attempt				
Canadian Trained (CT1)	2831	97%	2802	95%
Foreign Trained (FT1)	1704	58%	1677	62%
MCCQE Part I: Repeat Attempts				
CT1	171	69%	156	63%
FT1	1210	29%	1264	29%

	2016		2017	
	Tested (#)	Pass Rate (%)	Tested (#)	Pass Rate (%)
MCCQE Part II: First Attempt				
CT2	2969	92%	2871	97%
FT2	1020	63%	1170	74%
MCCQE Part II: Repeat Attempts				
CT2	282	80%	265	91%
FT2	648	50%	675	65%

Note: Medical Council of Canada Qualifying Exam (MCCQE) Part I is administered to medical students and graduates; for domestic students it is normally taken prior to residency training. MCCQE Part II is for those who successfully complete Part I, hold a recognised medical degree and have completed at least one year of postgraduate medical (residency) training. CT1 = completed medical school in Canada. FT1 = completed medical school outside of Canada. CT2 = completed both MD and residency in Canada. FT2 = completed at least one of MD or residency outside of Canada.
Source: Medical Council of Canada 2017-18 Annual Report.

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Results for registered nurses are in Table 7.2. The overall pass rate on the first attempt is lower on the nursing test than the medical ones, but there is a similar gap between the Canadian- and foreign-trained test writers. We present disaggregated first attempt results by non-Canadian country (where the sample size warrants). There are appreciable differences across jurisdictions. For example, those trained in the Philippines have results like those from the weaker Canadian provinces. There is a long tradition of some Filipino nursing schools aligning their curriculum with that in Canada and the United States.

Table 7.2. National Council Licensure Examination Results for Registered Nurses (NCLEX-RN), 2016 and 2017

	2016		**2017**	
	Tested (#)	Pass Rate (%)	Tested (#)	Pass Rate (%)
NCLEX-RN: First Attempt, Canada				
Canadian Trained (CT)	9 338	79.9%	9 659	82.1%
Foreign Trained (FT)	573	65.4%	966	59.1%
NCLEX-RN: Second Attempt, Canada				
CT	1 775	64.7%	1 105	63.3%
FT	139	51.8%	170	45.9%
NCLEX-RN: First Attempt, FT detailed				
Trained in India	214	56.1%	486	47.5%
Trained in Philippines	173	73.4%	253	72.7%
Trained in Jamaica	21	61.9%	19	68.4%
Trained in UK	23	56.5%	33	63.6%
Trained in Australia	17	70.6%	30	63.3%

Note: Most graduates of Québec nursing programmes write the Ordre des infirmières et infirmiers du Québec's professional examination and are not included. We only include statistics for the first 2 of many possible attempts.
Source: CCRNR (2018).

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We observe a broadly similar pattern for practical nurses in Table 7.3, although data are only available with all attempts aggregated, and for selected provinces. Interestingly, the province of Manitoba requires candidate practical nurses who are foreign trained to undergo an initial clinical competence assessment followed by "bridge training" before writing the test. Subsequent to this process their results are as good as or better than those for the Canadian trained.

Table 7.3. Canadian Practical Nurse Registration Examination Results, 2016 and 2017

	2016		2017	
	Tested (#)	Pass Rate (%)	Tested (#)	Pass Rate (%)
CPRNE: All Attempts, Canada				
Canadian Trained (CT)	n.a.	89.0%	n.a.	91.0%
Foreign Trained (FT)	n.a.	58.0%	n.a.	74.0%
CPNRE: All Attempts, Manitoba Only				
CT	185	94.0%	131	95.0%
FT	36	94.0%	44	100.0%
CPNRE: First Attempt, Ontario Only				
CT	3 975	91.1%	3 922	92.1%
FT	310	53.9%	1 545	71.8%
CPNRE: Second Attempt, Ontario Only				
CT	350	63.4%	299	69.6%
FT	252	38.9%	274	56.2%

Note: Most graduates of Québec nursing programmes write Québec's professional examination and are not included. "All Attempts" refers to the total number of tests written in the country or province that year, including candidates on their first, second or third attempt. Number of test takers is not available (n.a.) at the national level. For illustration, we give details of CPNRE results for Manitoba. Manitoba requires FT PNs to complete a pre-test clinical competence assessment and targeted bridging education. We also include CPNRE results for Ontario, which has a similar pass rate to the national average. We only include statistics for the first 2 of 3 possible attempts in Ontario.
Source: CLPNM (2018) and CNO (2018).

StatLink https://doi.org/10.1787/888933970779

Overall, although they are not the only hurdle to foreign trained health professionals obtaining the right to practice in Canada, these examinations are clearly a hurdle to many test writers and either prevent them from practicing, or delay entry to practice. Some successful individuals, especially in medicine, may take several years to successfully achieve licensure. This can represent a nontrivial percentage of an individual's working career, and during that time those who pass would appear as holding a relevant degree but not practicing.

7.3. Census data are used to analyse occupational access of Canadian and foreign trained physicians and nurses

Data for this analysis are drawn from the 2006 and 2016 Canadian long-form censuses. One key advantage of the censuses for this study is that they allow us to observe not only those working in their trained occupation, but those with relevant credentials who are not primarily working in that occupation (the potential "brain waste" issue). Crucially, the census includes occupation, immigration status, educational credentials, and the field of study and location of training for the highest educational credential. The census also collects a broad range of demographic and related questions. Another benefit is that the

censuses reflect the Canadian resident population and have extremely high response rates. For example, the 2016 long-form census response rate was 97.8%.[2]

We restrict the sample for analysis to permanent residents aged 25-64 inclusive, who are in the labour force and have a postsecondary credential. Focusing on the prime age workforce is useful for our policy question, but this restriction causes our counts of practitioners to differ from the aggregate numbers provided by regulatory colleges. For example, the Canadian Institute for Health Information (CIHI, 2017[14]) reports that just over 14% of licensed physicians were over age 65 in 2016 (around 2.9% were over age 75). Further, because many questions refer to the preceding calendar year, we restrict immigrants in the sample to those who immigrated prior to 2005 (2015) for the 2006 (2016) census. We include the small percentage of Canadian permanent residents who work in a main job outside of Canada (<2% of MDs, <1% of RNs, 0% of PNs; details in Table 7.4 note). In an effort to eliminate individuals in full-time study we remove anyone under age 35 who also reported attending school. The main group this addresses is physicians doing their residency training, and the number dropped from the sample is very similar to the number of residents reported in administrative data.

Overall, taking our sample selection criteria into account, the census counts of physicians and registered nurses quite closely match the administrative counts as recorded by CIHI. However, the census undercounts PNs relative to that administrative source. Although the use of the job title “registered practical nurse” instead of “licensed practical nurse” may be a source of some mislabelling in Ontario, we speculate that part of the gap is accounted for by less stable employment patterns among PNs. For the province of Ontario we address this using the Health Professions Database (HPDB), which comprises data from that province’s regulatory Colleges.[3] We observe that at the time of registration PNs are less likely to work full-time (54% versus 66%) and full-year (16% worked less than 30 weeks in the previous year versus 10%) than RNs. The PN census sampling methodology is, however, stable across the decade giving it some credibility in measuring trends.

The comparator aggregate health workforce is defined using the two-digit health occupation code (based on the National Occupation Coding system, version 2006 and 2016), but removing veterinarians and their assistants. We identify our three main occupations using the relevant four-digit occupational codes and four-digit field of study codes (based on the Classification of Instructional Programs system, version 2000 and 2016). We also employ ancillary census questions to reduce measurement error in the reported occupation; for example, we use a question asking whether an individual has a degree in any of medicine, dentistry, veterinary medicine or optometry regardless of the highest degree held. One limitation of our analysis is that the only occupation collected in the census is that for each individual’s “main” job, which is the one in which they worked the most hours. This is not innocuous, as discussed below. These sample selection criteria are slightly different, and we think slightly improved, from those employed by Owusu and Sweetman (2015[11]).

We classify an individual as being attached to one of the three pertinent occupations if the person: i) holds a relevant educational credential as their highest degree, or ii) reports working in that occupation (subject to cross-checking using ancillary information). This allows us to observe individuals who hold a relevant degree but are not working in the associated occupation as their “main” job.

Two types of misclassification may occur given that only the occupation of the “main” job and the field of the “highest” degree are observed. First, we do not include in our sample individuals who are trained in a relevant occupation but are not currently working in that occupation if they have a “higher” degree in a different profession. We use the HPDB to help understand the magnitude of this misclassification. We calculate what percentage of registered/practical nurses aged 25-64 in Ontario are i) registered/licensed, ii) not currently working and iii) hold a degree that is “higher” than the highest credential associated with their registration/licensure. For this group, 11.7% of practical nurses hold an academic credential outside of their profession higher than their highest professional credential, as do 10.8% of registered nurses.

Second, some individuals may be incorrectly identified as not working in their trained occupation if they are dual job holders – practicing in their trained occupation part of the week but spending a greater number of hours in some other occupation. For example, the small number of physicians who spend most of their work time as hospital administrators or researchers may be identified as holding a medical degree, but their "main" occupation would likely not be coded as physician in the census data. This group of physicians is assigned as trained but not working, although we do not know if they are licensed to practice, nor whether they practice in their trained health profession for a minority of their hours per week.

Two concepts define the four population sub-groups at the core of our study: i) country of birth (Canada or the rest of the world), and ii) country where the highest level of professional education was obtained (Canada and the United States, or the rest of the world). We categorise education from the United States together with domestic Canadian education since many health education programs are similarly accredited. For example, the licensure exam for registered nurses has been common for Canada and the United States since 2015, and medical education in Canada and the United States has been highly integrated since the Flexner (1910[15]) report. We identify these four sub-groups as:

i. CBCT: Canadian born, Canadian trained,
ii. CBFT: Canadian born, Foreign trained,
iii. FBCT: Foreign born, Canadian trained, and
iv. FBFT: Foreign born, Foreign trained.

While place of birth is not a choice variable for individuals (i.e., it is exogenous), the location where the degree is obtained has some element of choice (i.e., it is endogenous). Also, some individuals may obtain additional – perhaps bridging or that is not relevant to the occupation – education in Canada prior to being licensed and they may report this educational input as their highest. Therefore, all interpretations need to keep in mind that there is likely important endogenous selection among the foreign born into place of highest education.

Under Canadian Medicare, involuntary non-employment and involuntary employment in an alternative occupation are virtually unknown for licensed physicians, but these outcomes do exist for registered nurses and practical nurses. For the province of Ontario, we explore this issue with the HPDB. In 2016, for example, at the time of registration with the relevant College, for those age 25 to 64 the ratio of those not working and seeking employment in the profession to those working was 4.7% for practical nurses, and 2.3% for registered nurses. Similar percentages for those working in a different occupation but seeking work in the profession were 2.4% for practical nurses, and 0.3% for registered nurses. These statistics should not be interpreted as unemployment rates; rather, they are the ratio of job seekers in the field to those working in the field. Also, beyond those working or seeking work in their profession in Ontario, many qualified individuals held licenses to practice but at the time of registration were voluntarily doing neither. Their situations included: working outside of Ontario, not working and not seeking work, working in a different occupation and not seeking work in their field of registration, or being on a leave of absence. In total, according to the HPDB, about 23% of practical nurses and 21% of registered nurses holding licenses to practice in Ontario were not practicing in the province at the time of registration.

7.4. Foreign trained physicians and nurses have contributed to the growth in the number of physicians and nurses in Canada, but many have not found jobs in their profession

For each of the four place of birth and place of highest education subgroups, Table 7.4 compares changes over time in the number of those working as physicians, registered nurses and practical nurses, and those reporting a relevant credential but not working in that occupation. As can be seen in the top right of each panel, the total number of physicians in Canada increased about 30% across the decade (Panel A), while

the number of registered nurses only increased by about 4% (Panel B). In contrast, the total number of practical nurses increased about 45% (Panel C), although there are measurement issues with practical nurses relative to the administrative data as discussed in detail in Annex 7.A. Nevertheless, these numbers are consistently estimated across census years, and the growth rates for both sets of nurses are very similar to those from the administrative data reported by CIHI (2007[16]). For comparison, the aggregate health and national workforces grew by about 28% and 14% respectively (Table 7.5), and Canada's population grew by about 11% between 2006 and 2016 (Statistics Canada, Table: 17-10-0009-01, 2019).

Table 7.4. Comparison of Physicians and Nurses Working and Not Working in their Trained Occupation by Place of Birth and Training, 2006 and 2016

		CBCT	CBFT	FBCT	FBFT	Total
Panel A: MDs						
Working (Count)	2006	37 045	390	11 245	7 745	56 425
	2016	45 300	1 565	13 860	12 885	73 610
	% Change	22.3%	301.3%	23.3%	66.4%	30.5%
Not Working in Trained Profession. (Count)	2006	3 620	185	1 530	10 940	16 275
	2016	5 165	645	2 355	21 325	29 485
	% Change	42.7%	248.6%	53.9%	94.9%	81.2%
% Working in Trained Profession	2006	91.1%	67.7%	88.0%	41.5%	77.6%
	2016	89.8%	70.8%	85.5%	37.7%	71.4%
	% Change	-1.5%	4.4%	-3.0%	-10.1%	-8.7%
Panel B: RNs						
Working (Count)	2006	187 285	665	25 670	17 440	231 060
	2016	184 445	575	33 780	20 595	239 400
	% Change	-1.5%	-13.5%	31.6%	18.1%	3.6%
Not Working in Trained Profession (Count)	2006	108 680	600	14 490	22 150	145 925
	2016	97 365	580	16 420	33 215	147 575
	% Change	-10.4%	-3.3%	13.3%	50.0%	1.1%
% Working in Trained Profession	2006	63.3%	52.6%	63.9%	44.1%	61.3%
	2016	65.5%	49.8%	67.3%	38.3%	61.9%
	% Change	3.3%	-5.6%	5.0%	-15.1%	0.9%
Panel C: PNs						
Working (Count)	2006	36 040	20	4 765	2 110	42 935
	2016	45 540	20	10 515	5 935	62 010
	% Change	26.4%	0.0%	120.7%	181.3%	44.4%
Not Working in Trained Profession (Count)	2006	44 340	120	4 400	1 650	50 515
	2016	38 625	30	5 710	1 140	45 505
	% Change	-12.9%	-75.0%	29.8%	-30.9%	-9.9%
% Working in Trained Profession.	2006	44.8	14.3	52.0	56.1	45.9
	2016	54.1	40.0	64.8	83.9	57.7
	% Change	17.1	64.3	19.8	33.1	20.3

Note: This table includes permanent resident MDs (2.0% in 2016, 1.1% in 2006) and RNs (0.5% in 2016, 0.7% in 2006) who report working in their main job outside of Canada. There are no such PNs. MDs working in their trained profession outside of Canada represent a small proportion of the working CBCT (0.4% in both years) and FBCT (1.0% in 2006, 2.1% in 2016), but a larger proportion of the FBFT (4.3% in 2006, 8.3% in 2016). RNs working in their trained profession outside of Canada represent a small proportion of each of the CBCT (1.0% in 2006, 0.6% in 2016), FBCT (1.6% in 2006, 0.9% in 2016) and FBFT (1.4% in 2006, 0.6% in 2016); they are 0% of CBFT in both years.
Source: Authors' calculations based on 2006 and 2016 Canadian Census.

StatLink https://doi.org/10.1787/888933970760

For physicians, both the number of individuals working and the number not working have increased for each of the four population groups. Enrollment rates in Canadian medical schools have increased substantially (e.g., OECD (2017[17]). Nevertheless, a disproportionate share of the increase in physicians in this period is from the foreign trained groups who increased their share of the workforce. This represents significant "brain gain" for Canada. However, there is also basis for concern about "brain waste" (and "brain drain" for sending nations). For the CBCT, FBCT and FBFT, the number reporting medical degrees whose main job is not working as a physician has increased so substantially that, despite the appreciable increases in the number of working physicians, the percentage of each of these three working in their training profession has actually declined, with the FBFT experiencing the most extreme drop. The very small CBFT group is the one exception to this pattern, with approximately equally large increases in both working and non-working groups. Looking across physician groups at the percentage working in their trained field, the two Canadian trained groups have broadly similar percentages (with the CBCT slightly higher) while the CBFT is lower and the FBFT lower again. This is consistent with earlier work by Owusu and Sweetman (2015[11]).

The data for registered nurses in Panel B provide a sharp contrast to that for physicians. The counts in both the working and non-working groups have increased only slightly across the decade. The absolute number of working and non-working registered nurses in both Canadian born groups declined, whereas that for the foreign-born increased – particularly for the FBFT not working in their trained profession. Overall, growth has occurred exclusively among the foreign-born groups, especially the FBFT.

Practical nurses, seen in Panel C, have experienced even steeper increases in the number working than physicians. These numbers are consistent with reports that employers are substituting lower cost practical nurses for registered nurses. At the national level, nursing labour force growth seems to be happening among practical rather than registered nurses. This increase is concentrated in the FBCT and FBFT groups (the CBFT group is effectively nonexistent for practical nurses). There have been substantial declines in the number and percentage not working in their trained field for the CBCT and FBFT, but not the FBCT, groups.

Table 7.5 Panel A presents the distribution of practitioners across the four population subgroups. For comparison, Panel B presents the same breakdown for the aggregate health and national workforces.

Comparing the share of physicians in each of the four groups to that of the entire workforce, the CBCT group is under-represented among physicians in both 2006 and 2016 while the CBFT, FBCT and FBFT groups are overrepresented. This table again shows that the phenomenon of Canadians going abroad to obtain medical education (i.e., their medical degree) and then returning to Canada to practice is growing. In the Canadian context, where provincial governments control the number of places in domestic medical schools, the relative underrepresentation of the CBCT group and the overrepresentation of FBCT and FBFT groups is a direct result of government policy.[4] The same policies can be interpreted as the motivation for the large increase in the number of CBFT physicians. More broadly, the pattern of change in the share of CBCT, CBFT and FBFT individuals is similar among physicians and the entire workforce, although it is attenuated for the entire workforce. In contrast, the FBCT represent a growing share growing of the entire workforce, but a decreasing one among physicians.

Table 7.5. Distribution of Physicians, Nurses, and All Workers by Place of Birth and Training, 2006 and 2016

Occupation	CBCT	CBFT	FBCT	FBFT	Total	Practitioners
Panel A: Three Professions						
MD						
2006	65.7%	0.7%	19.9%	13.7%	100.0%	56 425
2016	61.5%	2.1%	18.8%	17.5%	100.0%	73 610
%Change	-6.3%	208.7%	-5.5%	27.5%	--	30.5%

RN						
2006	81.1%	0.3%	11.1%	7.6%	100.0%	231 060
2016	77.0%	0.2%	14.1%	8.6%	100.0%	239 400
%Change	-4.9%	-17.2%	27.0%	13.9%	--	3.6%
PN						
2006	83.9%	0.1%	11.1%	4.9%	100.0%	42 935
2016	73.4%	0.0%	17.0%	9.6%	100.0%	62 010
%Change	-12.5%	-40.0%	52.8%	94.9%	--	44.4%
Panel B: Aggregate Comparisons						
Health Workforce						
2006	77.1%	0.3%	13.8%	8.8%	100.0%	766 615
2016	72.9%	0.5%	15.8%	10.8%	100.0%	980 715
%Change	-5.4%	71.8%	14.3%	22.4%	--	27.9%
Total Workforce						
2006	75.7%	0.4%	13.0%	10.9%	100.0%	8 791 265
2016	73.6%	0.6%	13.6%	12.2%	100.0%	10 019 030
%Change	-2.7%	27.4%	5.0%	12.0%	--	14.0%

Note: This table includes permanent resident MDs (2.0% in 2016, 1.1% in 2006) and RNs (0.5% in 2016, 0.7% in 2006) who report working in a main job outside of Canada. See Table 4 for details.
Source: Authors' calculations based on 2006 and 2016 Canadian Census.

StatLink https://doi.org/10.1787/888933970741

Registered and practical nurses are more likely to be drawn from the CBCT group than is the case for the total health workforce. In contrast to physicians and the aggregate workforce, the CBFT group is small and declining for both groups of nurses. Canadians are not very likely to obtain foreign education in nursing and then return to practice in Canada. Compared to 2006, the 2016 FBCT group is much more likely to work in nursing, possibly as a result of Canadian bridging programs that select individuals from the FBFT and effectively move them to the FBCT. The share of registered nurses from each population group stayed relatively constant from 2006 to 2016, though the foreign-born groups make up a relatively larger share, as is the case with the aggregate workforce. Turning to practical nurses at the bottom of Panel A in Table 7.5, a large share (although from a small base, as can be seen in Table 7.4, Panel C), of their aggregate growth occurred among the FBCT and FBFT groups who make up a much larger proportion of the practical nursing workforce in 2016.

7.5. Conclusions

We observe that the rate of growth in the number of working physicians and practical nurses has increased much more substantially than total workforce growth, as has the rate of growth of the entire health workforce. In contrast, there has only been a minimal increase in the number of practicing registered nurses. Demand and supply – largely driven by government health expenditures, and immigration and education policy – do not seem to be operating similarly across these professions. For example, on the immigration front both the traditional stand-alone Skilled Worker immigration stream, and especially the recent Express Entry framework, have points systems that prioritise new immigrants with greater years of education and thereby treat these occupations asymmetrically. These issues point to the importance of considering occupation-specific factors when interpreting labour market outcomes.

Before 2006, there was a strong perception of physician shortages in Canada which, in the absence of policy change, were anticipated to become more serious given population aging. Provincial governments

took steps to increase enrollment in medical schools and facilitate the transition of internationally educated physicians to practice in Canada. In contrast, the low growth among registered nurses likely reflects a shift to lower cost providers (e.g., practical nurses) among occupations with overlapping scopes of practice.

One of the most striking observations is that the percentage increase in the number of foreign-born, foreign-trained professionals working in each of these three occupations increased faster –much faster in the case of physicians and practical nurses– than both the aggregate rate of labour force growth and the average growth rate of workers in each profession. Furthermore, the percentage increase in foreign-born, foreign-trained individuals reporting a relevant credential but not working in their training profession simultaneously increased appreciably. The net effect is that for both occupations, the percentage working in their trained occupation declined. Despite robust healthcare labour demand overall, excess supply is accumulating; Canada's immigration system appears to be out of balance. This raises serious questions about "brain waste".

Furthermore, although the numbers are small, more Canadians are studying medicine abroad and then returning to Canada to practice. We do not observe the same trend for either nursing category. This is consistent with there being limited access to training opportunities in Canada for physicians despite excess demand for those opportunities.

Beyond issues of labour demand, one issue hindering these internationally educated health professionals from entering the workforce is the challenge of successfully completing the relevant licensure exams. Moreover, many internationally educated nurses and international medical graduates would maintain that even meeting the requirements that allow them to register to take the required exams (including, for example, specialty certification exams in medicine) is a significant barrier. Of course, the main purpose of these exams is to protect the public's interest in having high levels of safety and proficiency among health professionals. One approach currently being undertaken to address this problem is to administer relevant licensure exams internationally, so that potential migrants can write them before making a final decision regarding moving to Canada. For example, the Medical Council of Canada has recently begun offering Part 1 of its Qualifying Exam in over 80 countries, and registered nurses similarly offer the NCLEX-RN exam internationally.

This study highlights the contribution that foreign-trained health workers – be they Canadian- or foreign-born – have made to the growth in the number of physicians and nurses (particularly practical nurses) over the last decade. However, it also points to ongoing issues regarding the high (and increasing) percentage of qualified foreign-trained health professionals that are not working in their field of training, particularly for those trained as physicians and registered nurses.

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Annex 7.A. Comparing data on physicians and nurses based on census and administrative sources

In this annex, we first describe our process for selecting the sample for analysis from the census. We then compare the count and characteristics of professionals in each of the three occupations in our census sample to health administrative records collected from regulatory Colleges.

In addition to the sample selection criteria discussed in the main body of the text, there are also specific criteria for the two categories of nurses. For registered nurses (RNs), we restrict the sample to those who report at least one year of postsecondary education (including trades/apprenticeship), as we do not include those whose highest educational field of study includes nurse aide, licensed practical nurse training, or other implausible fields (for example, engineering). For practical nurses (PNs), we restrict the sample to those who have at least a high school degree, and we again drop those whose highest educational field of study is implausible.

We compare our counts of professionals in each field to counts from the Canadian Institute for Health Information's (CIHI) administrative data. The counts of physicians (MDs) and RNs match well. However, there is a marked difference in the count of PNs between the two sources. For all three professions, one small contributor to the discrepancies is that our age restriction (25-64) is narrower than the age groupings in the administrative data. Another reason is that we are counting slightly different groups. In the administrative data, CIHI counts individuals who are employed and licensed to practice. In the census data, we can only see information about the job at which individuals work the most hours – i.e. their 'main job.' This means that we do not capture individuals who work in one of the three professions if they work more hours in a second, different, occupation. For example, we may not capture an MD who mainly works as an administrator but still takes one shift a week at a hospital. Similarly, we may not capture an RN who works as an RN casually or part-time if they work more hours at a different non-RN job. Another difference in scope is that the census captures the respondent's main occupation (or the most recent occupation for those not currently employed), at a point in time, whereas the administrative datasets have somewhat different definitions of "working in the profession". Additionally, as mentioned in the notes to Table 7.4, our sample includes those residents of Canada who are practicing in their main job outside of Canada.

Annex Table 7.A.1. Comparison of data on physicians based on census and administrative sources, 2006 and 2016

	2006	2016
Canada (Count)		
Census: Working in Trained Field (Age 25-64)	56 425	73 610
CIHI: Registered to Practice with a Licensing Authority	57 835	75 269

Source: Authors' calculations from 2006 and 2016 Canadian Census; and from Supply, Distribution and Migration of Canadian Physicians Reports (CIHI, 2007[18]; 2017[14]).

To practice in Canada, doctors must be registered with their jurisdiction's licensing authority. CIHI's count of physicians registered to practice is very similar to our count of physicians working in their trained field from the census.

Annex Table 7.A.2. Comparison of data on nurses (RNs and PNs) based on census and administrative sources, 2006 and 2016

	Panel A: RNs		Panel B: PNs	
	2006	2016	2006	2016
Canada (Count)				
Census: Working in Trained Field (Age 25-64)	231 060	239 400	42 940	62 010
CIHI: Employed in Profession (Under 65)	249 637	271 256	66 678	102 253
CIHI: Employed, Casual (all ages)	27 366	28 848	11 485	14 625
Ontario Only (Count)				
Census: Working in Trained Field (Age 25-64)	84 720	83 850	12 310	17 990
HPDB: Employed in Profession (Age 25-64)		86 906		39 351

Source: Authors' calculations from 2006 and 2016 Canadian Census; and from the HPDB; Regulated Nurses Data Tables (CIHI, 2016[19]; CIHI, 2016[20]; CIHI, 2017[21]).

There is a difference between the census and administrative counts for registered nurses. CIHI counts RN supervisors as RNs whereas the census separates them into two categories (RNs and supervisors). This might explain a large part of the difference. For example, in 2016, the census counts approximately 14 325 nurse supervisors (in addition to the 239 400 RNs). Furthermore, in the census data, we only include nurses over 25. However, nurses regularly graduate and being practicing around age 22. The youngest age group in CIHI's public data tables is 'under 30,' so we cannot see exactly how many under 25-year-olds our census count excludes. We include CIHI's count of casually employed RNs in Annex Table 7.A.2. We believe that some of them may report another 'main job' in the census which means we may not capture this entire group. We also look specifically at Ontario. For Ontario, we can compare the census count of RNs to a count from the Health Personnel Database (HPDB, described in the main body of the text). The Ontario counts are quite similar for both sources in 2016. Differences may reflect the 'main job' reporting issue.

There is a much larger difference between the census and administrative counts for PNs. Again, some of this is probably due to differences in the age restrictions. However, without any age or education restrictions, the census only reports around 74 000 PNs in 2016, which is still much lower than CIHI's 102 253 PNs. We include CIHI's count of casually employed PNs. We believe that some of them may report another 'main job' in the census which means we may not capture this whole group. PNs are more likely to be employed on a part time or casual basis than RNs. Based on the HPDB, in 2016, 32% of PNs worked less than 25 hours a week while only 19% of RNs worked less than 25 hours a week. We may therefore miss a higher proportion of PNs than RNs. Furthermore, PNs may also be misclassified as nurse aides or home care workers more often than a RN would be. These differences likely partly explain why the counts match better for RNs than PNs. Finally, there may be a nomenclature issue in the census reporting. For example, in the province of Ontario, PNs are called 'Registered Practical Nurses' whereas in the rest of the English-speaking provinces, they are called 'Licensed Practical Nurses'. This may have led to some misclassification in the census records. Unfortunately, these various explanations do not appear to fully account for the large difference between the administrative and census counts for PNs. This is an issue that Statistics Canada should consider addressing.

Notes

[1] Arthur Sweetman holds the Ontario Research Chair in Health Human Resources. The empirical analysis was undertaken in the Research Data Center at McMaster University; we thank the staff for their tremendous assistance. The views expressed in the manuscript are those of the authors and should not be taken to represent the views of the Government of Ontario or Statistics Canada. We thank Andrew Leal for research assistance with the administrative data.

[2] The 2016 long-form census is a 25% sample of the population, whereas the 2006 census is a 20% sample: https://www12.statcan.gc.ca/census-recensement/2016/ref/response-rates-eng.cfm.

[3] Information regarding the HPDB can be found at: http://www.health.gov.on.ca/en/pro/programs/hhrsd/evidence_research/health_professions_database.aspx (Feb. 20, 2019). These administrative data do not contain a measure of place of birth. All calculations are by the authors.

[4] Canadian physician shortages are frequently, and largely erroneously, attributed to the Barer and Stoddart (1992[23]) report; see Evans and McGrail (2008[22]) for a retrospective reinterpretation.

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