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**International migration and movement of nursing personnel to and within OECD countries –
2000 to 2018: Developments in countries of destination and impact on countries of origin**

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Abstract

This paper presents the most recent data on the extent to which migrant nurses contribute to the nursing workforce in the OECD countries as well as the impact these regular migration flows have on the countries of origin, including an analysis of the developments since 2000. The objective of this paper is to provide new data for policy dialogue at the national and international levels. The shares of foreign-born or foreign-trained nurses have continued to rise over the last two decades across the OECD countries, with intra-OECD migration making up a third of the migration volume. Regarding the impact on countries of origin, emigration rates to OECD countries are generally moderate but a few countries experience significant losses of (needed) nurses. However, for a significant share of the foreign-trained nurses, the data sources do not allow the identification of the country of training. Hence, some of the results should be treated as lower-bound estimates.

Sommaire

Ce document présente les données les plus récentes visant à montrer dans quelle mesure les infirmiers migrants contribuent à la main-d'œuvre de personnel infirmier dans les pays de l'OCDE ainsi que l'impact de ces flux migratoires réguliers sur les pays d'origine, y compris une analyse des évolutions depuis 2000. L'objectif de ce document est de fournir de nouvelles estimations pour nourrir le dialogue politique aux niveaux national et international. La part des infirmiers nés à l'étranger ou formés à l'étranger a continué d'augmenter au cours des deux dernières décennies dans les pays de l'OCDE, les migrations intra-OCDE représentant un tiers du volume des migrations. En ce qui concerne l'impact sur les pays d'origine, les taux d'émigration vers les pays de l'OCDE sont généralement modérés mais quelques pays connaissent des pertes importantes d'infirmiers (jugés nécessaires). Cependant, les sources des données ne permettent pas toujours d'identifier le pays de formation parmi les infirmiers formés à l'étranger. Par conséquent, certains des résultats sont probablement en deçà des chiffres réels.

Executive summary

Nurses are the largest professional group within the health workforce, providing a broad range of essential health services and often being the first and sometimes the only health professionals that people see. This paper presents new data on the extent to which migrant nurses contribute to the nursing workforce in OECD countries, as well as the impact these regular migration flows have on countries of origin.

The analysis exploits the two main sources of data used in monitoring of the international movement and migration of nurses, which combined allow the most complete picture of trends and patterns possible to be obtained:

- the most recent (2017/18) data on foreign-trained nurses working in OECD countries, collected through the OECD/Eurostat/WHO-Europe Joint Questionnaire on Health Care Statistics;
- the most recent (2015/16) data on foreign-born nurses working in OECD countries, collected in Database on Immigrants in OECD Countries from population censuses and labour force surveys.

For the countries of destination, the main findings reveal that despite the increasing investment in many countries in training of domestic nursing graduates, the total number of migrant nurses as well as their share in the nursing workforce increased in most OECD countries since 2000. Moreover, during the COVID-19 pandemic, a number of the OECD countries have implemented additional policy measures to ease the entry and the recognition of professional qualifications of migrant nurses.

The overall number of foreign-born nurses more than doubled across the OECD countries between 2000/01 and 2015/16 and their average share in nursing workforce increased from around 11% to 16%. The proportions of foreign-born nurses are highest in the OECD countries with the highest share of immigrants, such as Israel (48%) or Australia (35%).

Between 2011/12 and 2017/18, the number of foreign-trained nurses also rose by around 20%, reaching more than 7% of the nursing workforce in the OECD area at the end of the period. In most OECD countries, the share of foreign-trained nurses is below 5%, but Australia, Switzerland, and New Zealand have proportions of at least 20%.

In most OECD countries, the number of nurses born abroad is higher than the number of nurses trained abroad, in part reflecting the fact that some individuals migrated at an early age and completed education in the country of destination or alternatively that barriers to recognition of foreign qualification obliged them to redo part or all of their training at destination. Moreover, in some countries, foreign-trained nurses consist of people born in the country who studied abroad. In Israel, for example, around 40% of foreign-trained nurses are native-born.

For the countries of origin, nearly a third of all foreign-born nurses working in OECD countries originate from within the OECD area and a quarter from upper-middle-income countries (non-OECD). The lower-middle-income countries account approximately for another third and low-income countries for 6% of foreign-born nurses. By far largest numbers of foreign-born or foreign-trained nurses originate from the Philippines, India, and Poland. However, in some countries of destination, the data sources allow for establishing the country of training only for some of the foreign-trained nurses. This means that the results by country of training should be treated as lower-bound estimates.

Regarding the impact on the countries of origin, emigration rates to OECD countries (defined as the ratio between the number of native-born/home-trained nurses working in (other) OECD countries and the sum of all nurses born/trained or working in the country of origin) are generally much lower than for the native-born or home-trained doctors but a few countries still experience significant brain drain.

- Among the three main countries of origin, the emigration rates for native-born or home-trained nurses are very low for India (3% or 1%), but more significant for Poland (24% or 9%) and the Philippines (43% or 11%). Among the other major countries of origin for migrant nurses, Jamaica stands out with the highest emigration rate for native-born nurses (92%) and second highest emigration rate for home-trained nurses (16%). Also, Romania stands out with the emigration rates by place of birth (25%) or place of training (15%), which signal a sizeable impact. However, as mentioned above, the emigration rates for home-trained nurses might be underestimated due to data gaps.
- For 20 out of the 188 studied countries – predominantly in Africa and Latin America - the emigration rates for native-born nurses exceed 50%. Among these countries, Guyana stands out with the highest emigration rate also for home-trained nurses (28%). Emigration rates for native-born nurses of between one-third and one-half are found for another 10 countries of origin, again in Africa and Latin America as well as Western Pacific and Europe (Albania).

When taking into account the number of nurses per 1 000 population, the analysis reveals that the global health workforce shortage goes far beyond the migration issue. In particular, the needs for nurses in developing countries largely outstrip the numbers of immigrant nurses working in OECD countries. Relatively few of the countries of origin would significantly increase the number of nurses per 1 000 population by additionally having all migrant nurses born or trained, respectively, in that country to also work in that country. This regards especially the countries of origin that have less than two nurses per 1 000 population. Thus, the global shortage of health human resources, notably nurses, goes well beyond migration issues even if it may exacerbate the acuteness of the problems in some countries. However, for some countries of origin, where a large part of their migration takes place outside OECD corridors, the data presented here may be insufficient to fully support this conclusion. Overall this contributes to highlight the need to invest not only in education but also in employment and health systems in general.

Looking more closely at the developments in countries of origin since 2000, the number of nurses grew in all WHO regions and country income groups, but in some countries, the domestic nursing workforce grew slower than the number of native-born nurses working abroad in an OECD country, making emigration rates grow. This is apparent notably in many low-income countries. To the contrary, emigration rates to OECD countries stagnated for the lower-middle income group and decreased for the upper-middle-income and high-income countries.

Among the top-ten countries of origin of foreign-born nurses, the emigration rate to OECD countries increased in Jamaica (from already very high 88% to 92%), Nigeria (10% to 14%), and the United Kingdom (6% to 8%), while they decreased in Haiti (94% to 80%), the Philippines (46% to 43%), and Mexico (12% to 10%). Among the remaining countries of origin, the strongest increases of emigration rates are observed for Eswatini (1% to 14%), Somalia (14% to 76%), and the Dominican Republic (11% to 67%).

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1. Introduction

1. Nurses¹ are by far the most numerous professional group within the health workforce, accounting for nearly 60% of health professions (medical doctors, nursing personnel, midwifery personnel, dentists, pharmacists) globally (WHO, 2020^[1]). Nurses provide a broad range of essential public health and care services in all levels of health facility as well as close to the community, often being the first and sometimes the only health professional that people see.

2. This paper describes the international migration trends of the nursing workforce to and within OECD countries. It looks at the extent to which the migrant nurses contribute to the nursing workforce in OECD countries (Section 2) and at the impact on the countries of origin (Sections 3 and 4), including an analysis of the developments since 2000.

3. This work is part of the OECD-ILO-WHO “Working for Health” programme – a five-year Action Plan for Health Employment and Inclusive Economic Growth (2017–21) – that has led to the launch of an [International Platform on Health Worker Mobility](#), among other initiatives. The *Platform* aims at maximising benefits from international health worker movement and migration. This paper contributes to the first objective of the *Platform*, i.e. improving the monitoring of health workforce international movement and migration through better data collection and analysis. A companion paper on international movement and migration of doctors is also available as part of the analysis produced within the “Working for Health” programme.

4. The data analysis behind this work was completed in 2019 relying on the most recent data (2017/18) from the OECD/Eurostat/WHO-Europe Joint Questionnaire on Non-Monetary Health Care Statistics to monitor the numbers of foreign-trained nurses working in the OECD countries, as well as the most recent (2015/16) data from the Database on Immigrants in OECD Countries (DIOC) to monitor the numbers of foreign-born nurses working in the OECD countries. Considering place of birth and place of training offers the most complete picture. Box 1 provides a summary of the two approaches (i.e. the analysis of data on foreign-trained or foreign-born nurses, respectively), along with the data sources used.

5. Despite important efforts to gather corresponding data in many countries of origin, statistical evidence on outflows of native-born/home-trained nurses remains scarce or is difficult to compare internationally (except for the OECD countries). Therefore, the data reported by the OECD countries (as countries of destination) remain the most comprehensive and internationally comparable source of information. However, for the interpretation of the results, one should keep in mind that there are also significant (but not uniformly documented) regular flows of migrant nurses among non-OECD countries, in particular within Africa and Latin America.

Box 1. Methods and sources used to monitor the international movement and migration of nurses

Migration patterns of health personnel can be measured based on place of birth or place of education.

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.

¹ Includes nursing professionals and nursing associate professionals. According to the WHO estimates, in 2018, the 27.9 million nursing personnel include 19.3 million (69%) professional nurses, 6.0 million (22%) associate professional nurses and 2.6 million (9%) who are not classified either way. This paper does not cover the separate profession of midwifery except in as much as in some OECD countries all midwives are also nurses.

Data by the place of birth from the [Database on Immigrants in OECD Countries](#) (DIOC) amassing information from population censuses or large-scale population surveys² enable to identify cross-border movements independently of acquisition of nationality. These data also include only the currently practicing nurses as opposed to other nurses who might be professionally inactive or work outside care sector at a given point of time.

Another advantage is that the data by the place of birth allows to account for migrant nurses that followed re-education in the countries of destination, which might occur in the process of accreditation/validation of foreign qualifications due to the international variability in the levels of qualification and diversity in the duration and prequalification of the nursing education programmes. The data may, however, include people who have moved at younger age, most probably accompanying their family, and therefore completed their prequalification and nursing education exclusively in the country of destination.

Data by the place of education collected in the [OECD Health Statistics Database](#) from the professional registers and other health workforce databases³ through the annual OECD/Eurostat/WHO-Europe Joint Questionnaire, identify nurses who have obtained a recognised qualification in nursing abroad. However, in a number of OECD countries (including countries attracting large numbers of migrant nurses such as the United States or Germany), the data sources allow to establish or estimate the share of foreign-trained nurses in the current nursing workforce, but do not contain detailed information allowing to group all of the foreign-trained nurses by country of education. This limits the possibility to establish the full extent of the migration impact on countries of origin with the use of these data sources.

Another shortcoming is that, as mentioned above, these data do not account for foreign-trained nurses, who in the process of accreditation/validation of their foreign qualifications repeated (part of) their education or followed re-education in the country of destination because of barriers to the full recognition of their foreign credentials. A related issue has to do with the internationalisation of nursing education, which means that a certain number of foreign-trained nurses may be people who were born (and raised) in one country but pursued their nursing education 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 nurses, but so far only a limited number of OECD countries have been able to isolate this group of nurses in the professional registers or other health workforce databases. Moreover, some of the professional registers do not allow for distinguishing between nurses currently practicing in the country and those who are licensed to practice but work in administrative positions, are professionally inactive, work outside care sector, or work abroad.

Source: (Dumont, Lafortune and Zurn, 2014^[2])

6. This paper builds on earlier work of the OECD on the international movement and migration of health workers as well as migration policies of the OECD countries related to health professionals. In 2007, the chapter devoted to immigrant health workers in the *International Migration Outlook* presented an internationally comparable picture of immigrants in the health sector in OECD countries, in order to better inform the policy dialogue at national and international levels (OECD, 2007^[3]). The 2008 report *Looming Crisis in the Health Workforce*, discussed international and movement migration of health professionals in the context of the concerns about shortages of doctors and nurses in OECD countries (OECD, 2008^[4]). This information on health workers movement and the related migration policies was updated in the 2015

² For details, please see Annex A in (d'Aiglepierré et al., 2020^[16]).

³ For details, please see https://stats.oecd.org/index.aspx?DataSetCode=HEALTH_STAT#

edition of the *International Migration Outlook* (OECD, 2015^[5]) and the 2019 report on trends in international migration of doctors, nurses, and medical students (OECD, 2019^[6]). This topic was also addressed in a chapter in the 2016 OECD publication, *Health Workforce Policies: Right Jobs, Right Skills, Right Places*, which analysed the impact of health and migration policies on the international movement and migration of foreign-trained doctors and nurses into the OECD countries (OECD, 2016^[7]).

2. Foreign-born and foreign-trained nurses contribute significantly to nursing workforce across the OECD countries

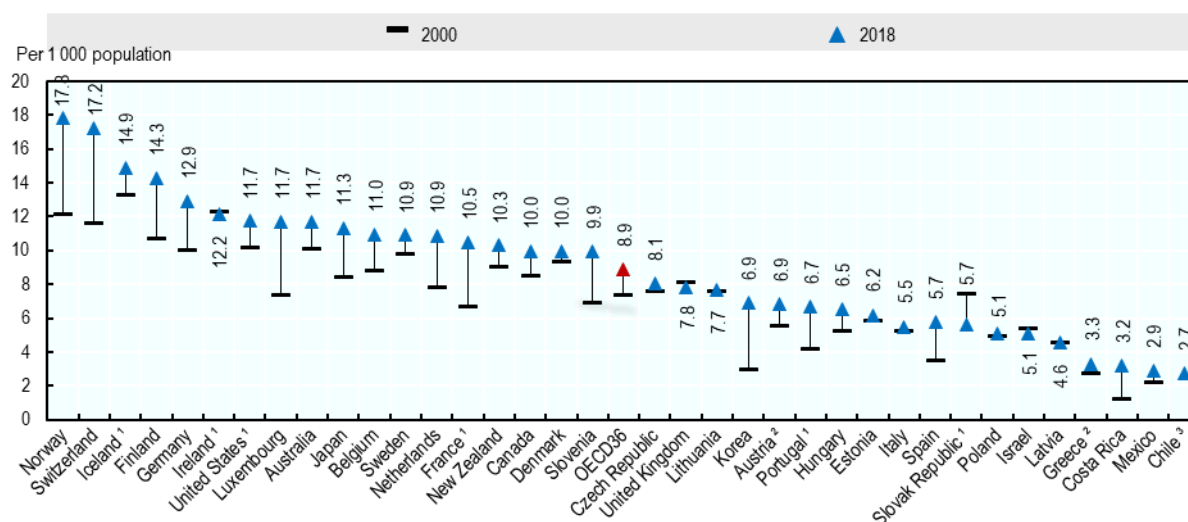
2.1. The number of nurses per population has continued to increase in most OECD countries

7. Over the last two decades, in many OECD countries concerns about shortages of nursing personnel have prompted an increase in the number of students in nursing education programmes (OECD, 2019^[8]; OECD, 2007^[3]). As a result of these education policies, but also owing to greater retention and immigration of nurses in some countries, the overall number of nurses has continued to increase in most OECD countries since 2000. In 2018, there were nearly nine nurses per 1 000 population on average across the OECD countries, up from 7.4 in 2000 (Figure 1). Nurses outnumber doctors in most OECD countries, and on average, there are three nurses to every doctor. The ratio of nurses to doctors ranges from about one nurse per doctor in Chile, Turkey and Greece, to nearly five nurses per doctor in Japan and Ireland (OECD, 2019^[9]).

8. In the Slovak Republic, Israel, the United Kingdom, and Ireland, however, the number of nurses per 1 000 population fell between 2000 and 2018. The decreases in Israel and Ireland are due to the rapid growth of the population, with the increase in the number of nurses not keeping up. In Ireland, the growth in the number of nurses outpaced population growth until 2008, when it peaked at 13.6 per 1 000 population, but has since fallen behind population increases. In the Slovak Republic, the number of nurses declined both in absolute and per population numbers, mainly during the 2000s, while in the United Kingdom the number of nurses per population increased rapidly between 2000 and 2006 and then declined until 2018.

9. No clear pattern emerges from the rate of increase of nurses: significant increases were seen in both countries that already have high numbers of nurses per population, such as Switzerland, as well as countries with lower numbers of nurses, such as France, Slovenia, and Korea.

Figure 1. OECD countries – practising nurses per 1 000 population, 2000 and 2018 (or nearest year)



Notes: 1. Data include not only nurses providing direct care to patients, but also those working in the health sector as managers, educators, researchers, etc.

2. Austria and Greece report only nurses employed in hospitals.

3. Data in Chile refer to all nurses who are licensed to practice.

Source: OECD Health Statistics 2019

2.2. Foreign-born and foreign-trained nurses have significantly contributed to the growing nursing workforce across the OECD area

10. While the growing numbers of domestic nursing graduates have largely driven the increase in the nursing workforce in most OECD countries, migrant nurses have also contributed significantly to this rise. In particular, the total numbers as well as the shares of foreign-born or foreign-trained nurses in the overall number of practicing nurses have continued to rise across the OECD countries since 2000.

44. The overall number of foreign-born nurses more than doubled between 2000/01 and 2015/16, while the overall increase in nursing workforce was around 50% across the OECD countries. Consequently, the average share of foreign-born nurses increased by around five percent points, from around 11% to 16% in the OECD area (Table 1). This growth is due to both migration dynamics and differences in age structures between foreign-born and native-born nurses, which affect exits from the workforce via retirement.

12. Unsurprisingly, the proportions of foreign-born nurses are highest in the OECD countries with the highest share of immigrant population, such as Israel (48%), Australia (35%), Switzerland (32%), and Luxembourg (29%). Canada, Ireland, and the United Kingdom are near the top of the list for shares of foreign-born nurses. Countries in Central and Eastern Europe have the lowest proportions of foreign-born nurses. In absolute terms, the United States remains the main country of destination for foreign-born nurses, attracting 45% of all foreign-born nurses who practise in the OECD area. Germany is the second most popular country of destination, receiving 15% of all foreign-born nurses who practise in the OECD countries, followed by the United Kingdom (11%).

Table 1. Foreign-born nurses working in OECD countries, 2000/01, 2010/11 and 2015/16

	2000/01			2010/11			2015/16		
	Total	Foreign-born		Total	Foreign-born		Total	Foreign-born	
		number	%		number	%		number	%
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 ¹	23 575	16.8	135 893 ¹	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 ²	57 047	2 320	4.1	61 082 ²	6 301	10.3	62 212 ²	4 173	6.7
Estonia*	..	..	..	8 302	2 162	26	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	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
Ireland ³	43 320	6 204	14.3	58 092 ³	15 606	26.9	52 832 ³	13 778	26.1
Israel*	..	..	..	31 708	16 043	50.6	41 531	19 946	48
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	..	..	..
Norway	70 698	4 281	6.1	97 725	8 795	9	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
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
Sweden ¹	98 505	8 710	8.9	113 956 ¹	15 834	13.9	110 143 ¹	14 455	13.1
Switzerland ¹	104 227	28 041	26.9	101 302 ¹	31 020	30.6	102 134 ¹	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* (18 countries)	5 944 460	694 522	11.7	7 792 201	1 164 953	15.0	8 716 125	1 434 346	16.5
OECD Total for a given year	6 491 034	704 502	10.9	8 824 466	1 244 600	14.1	9 623 645	1 523 726	15.8
		(22 countries)			(27 countries)			(27 countries)	

Notes: Nurses whose place of birth is unknown are excluded from the calculation.

OECD total includes 18 countries, for which data is available in 2000/01, 2010/11, and 2015/16. Countries with an asterisk () are not counted.

1. Other sources indicate an increase in the number of nurses between 2010/11 and 2015/16.

2. Associate nurses may not be counted.

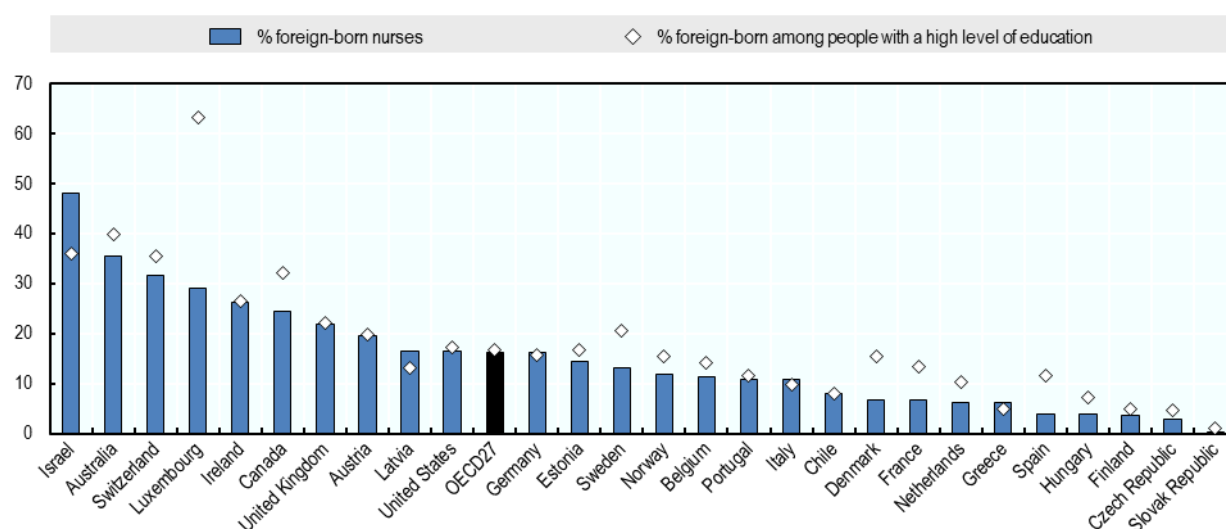
3. The decrease in the total number of nurses and number of foreign-born nurses is partially due to change of data source from Labour Force Survey (LFS) to census data between 2010/11 and 2015/16.

Source: (OECD, 2007^[3]) for 2000/01, DIOC 2010/11 and LFS 2009/12, DIOC 2015/16 and LFS 2015/16.⁴

⁴Countries for which data for 2000/01 are derived from a census: AUS, AUT, CAN, CHE, ESP, FIN, FRA, GBR, HUN, IRL, LUX, MEX, NZL, POL, PRT, TUR, USA; Countries for which data for 2000/01 are derived from LFS: BEL, DEU, NLD, NOR; Countries for which data for 2000/01 are derived from a population register: DNK; Countries for which data for 2010/11 are derived from a census: AUS, CAN, ISR, NZL, USA; Countries for which data for 2010/11 are derived

13. The migration of nurses takes place against a backdrop of larger migration trends, including increasing overall highly skilled migration. On average, across the OECD area, the share of foreign-born nurses in the nursing workforce mirrors that of foreign-born people – particularly those with high education – in the workforce as a whole (Figure 2), although depending on the country of origin nurses might have migrated with post-secondary non-tertiary education⁵ (WHO, 2020^[1]). That being said, in around half of the OECD countries, for which data is available, the percentage of foreign-born nurses tends to be lower than the percentage of foreign-born people among highly educated workers. For several key destination countries, such as Luxembourg, Ireland, and the United Kingdom, the shares of foreign-born nurses are higher or similar to the share of all foreign-born workers with high education.

Figure 2. Share of foreign-born among nurses and among people with high education in 27 OECD countries, 2015/16



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

14. In most OECD countries, the proportion of nurses born abroad is higher than the proportion trained abroad. In some cases, this might be 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 nursing education. In other cases, it might reflect the fact that migrant nurses followed re-education in the countries of destination, which might occur if they face barriers to the full recognition of their foreign credentials. The latter problem tends to be quite frequent, including between (non-EU) OECD countries.

from LFS: AUT, BEL, CHE, CZE, DEU, DNK, ESP, EST, FIN, FRA, GBR, GRC, HUN, IRL, ITA, LUX, NLD, NOR, POL, PRT, SVK, SVN, SWE, TUR; Countries for which data for 2010/11 are derived from a population register: DNK; Countries for which data for 2015/16 are derived from a census: AUS, CAN, DEU, FRA, HUN, IRL, USA; Countries for which data for 2015/16 are derived from LFS: AUT, BEL, CHE, CHL, CZE, ESP, GBR, GRC, ISR, ITA, LUX, LVA, NLD, PRT, SVK, SVN, SWE; Countries for which data for 2015/16 are derived from a population register: DNK, FIN, NOR.

⁵ Across countries, there are a variety of entry-level educational programmes that may prepare nurses at the certificate level, diploma level, and degree (bachelor's and master's) level. The academic requirements for an entry into nursing education can vary from completion of the ninth grade or below to completion of secondary school (12th grade) plus two-three years of university-level education to enter a master's level programme (WHO, 2020^[1]).

15. The number and share of foreign-trained nurses working in the OECD area have also been growing. Between 2011/12 and 2017/18, the number of foreign-trained nurses rose by more than 20%, reaching on average more than 7% of the nursing workforce (Table 2). In most OECD countries, the share of foreign-trained nurses is below 5%, but Australia, Switzerland, and New Zealand have proportions of around or above 20%.

16. The number and/or share of foreign-trained nurses have increased particularly rapidly in Belgium, France, Germany, and Switzerland. A steady growth has been also occurring in Australia, New Zealand, Canada, and the United States. 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 European Union in 2007), but the number and share have started to decrease in recent years. In Israel, the share of foreign-trained nurses has slightly decreased over time and stagnated at around 9%. In absolute terms, the United States has by far the highest number of foreign-trained nurses, with an estimated number of almost 200 000 registered nurses trained abroad in 2015, followed by the United Kingdom with over 100 000 foreign-trained nurses in 2018.

17. However, in some cases, foreign-trained nurses include people born in the country who studied abroad but have returned. In a number of countries, such as Israel, Norway, or Sweden, this share is relatively large and growing. In Israel, for example, around 40% of foreign-trained nurses are native-born. Frequently, these foreign-trained but native-born nurses had to pay the full cost of their nursing education abroad, from their own resources or through loans/scholarships from their home countries (OECD, 2019^[6]).

Table 2. Foreign-trained nurses working in OECD countries, 2006/07, 2011/12, and 2017/18 (or nearest year)

	2006/07 (or nearest year)				2011/12 (or nearest year)				2017/18 (or nearest year)			
	Year	Total	Foreign-trained (of which natives) ¹		Year	Total	Foreign-trained (of which natives) ¹		Year	Total	Foreign-trained (of which natives) ¹	
			number	%			number	%			number	%
Australia	2007	263 331	38 108	14.5	2013	263 232	45 364 (669)	17.2 (0.2)	2017	287 405	52 860 (815)	18.4 (0.3)
Belgium	2006	150 817	1 290	0.9	2011	170 062	2 843	1.7	2018	210 506	7 889	3.7
Canada	2006	326 170	21 445	6.6	2011	360 572	26 005	7.2	2017	398 845	32 346	8.1
Chile*		..	..	..		..	..	..	2018	55 508	1 135 (196)	2.0 (0.4)
Denmark	2006	51 841	820	1.6	2011	54 408	744	1.4	2016	56 991	1 034	1.8
Estonia		..	..	..	2011	11 543	4	0.0	2018	13 786	20	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	2018	722 572	20 757	2.9
Germany		..	..	..	2012	814 000	50 000	6.2	2017	908 000	71 000	7.9
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	2017	63 739	953 (17)	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)	2018	54 361	5 078 (2 125)	9.3 (3.9)
Italy	2006	358 747	15 304 (403)	4.3 (0.1)	2011	397 859	23 621 (488)	5.9 (0.1)	2017	449 781	21 561 (458)	4.8 (0.1)
Latvia	2006	9 269	413	4.5	2011	9 032	381	4.2	2017	8 460	274	3.2
Lithuania*		..	..	..		..	..	..	2018	26 078	113	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	2018	50 057	13 115	26.2

Norway	2008	70 575	5 022	7.1	2011	83 851	7 076 (1 060)	8.4 (1.3)	2018	97 197	6 065 (1 121)	8.7 (1.2)
Poland*		..	..	..		..	..	..	2017	291 790	162	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)	2017	71 005	18 403 (1 387)	25.9 (2.0)
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)
United Kingdom	2006	686 815	91 412	13.3	2014	687 028	91 832	13.4	2018	693 618	104 365 (294)	15.1 (0.0)
United States ²		..	..	..	2012	2 779 650	166 779 ²	6.0	2015	2 928 810	196 230 ²	6.7
OECD Total* (22 countries)						6 919 917	460 774	6.7		7 548 810	558 343	7.4
OECD Total for a given year						6 991 077	461 863	6.6		7 922 186	559 753	7.1
						(23 countries)				(25 countries)		

Notes: * OECD total includes 22 countries, for which data is available in 2011/12 and 2017/18. Countries with an asterisk (*) are not counted in this total. Total for 2006/07 is not presented as it would be largely underestimated due to missing data for the United States.

1. So far only 11 OECD countries report data on the number of foreign-trained but native-born nurses.

2. The estimates for the United States refer only to Registered Nurses, not including lower-qualified nurses.

Source: OECD Health Statistics 2019.

18. The COVID-19 pandemic revealed once more that foreign-trained nurses are key assets for health systems in many OECD countries. Along with bringing into the spotlight the important role and dedication of frontline health workers, the pandemic has further highlighted the deeply embedded challenge of staff shortages as well as the significant contribution that migrant nurses make to the health workforce (Box 2).

Box 2. COVID-19 pandemic - mobilising foreign-trained nurses in the United Kingdom

The COVID-19 pandemic has been putting unprecedented pressure on the health workforce in many OECD countries, often exacerbating existing shortages of nurses. In the United Kingdom, for example, the NHS in England alone went into the pandemic with vacancies in about one in ten registered nursing posts. In the United Kingdom, prior to the pandemic outbreak, foreign-trained nurses accounted for 15% of the total of registered nurses, a much higher share than in most other OECD countries (Table 2). Moreover, the inflows of foreign-trained nurses have risen in prominence, from 23% of new registrants to the Nursing and Midwifery Council (NMC) in 2018/19 to 34% in 2019/20.

With COVID-19 disrupting international travel and leading to some key source countries introducing exit constraints for nurses, the United Kingdom witnessed a sharp reduction in new registrations from foreign-trained nurses. This has been perceived as a major short-term challenge given the increasing reliance on migrant nurses and the need to bolster the pandemic response, even accounting for any short-term fall in the emigration of nurses already working in the United Kingdom. As a response, in March 2020, the NMC have permitted a large number of foreign-trained nurses from outside the EU/EEA area, who were already in the United Kingdom, to join its temporary register without completing otherwise obligatory regulatory and testing requirements. By end of April 2020, that led to more than 2 000 additional foreign-trained non-EEA nurses joining the temporary register. It is not clear, however, what the status of nurses on the temporary register will be in the longer term.

Source: (Buchan and Shembavnekar, 2020^[10])

3. Main countries of origin of migrant nurses represent all income levels

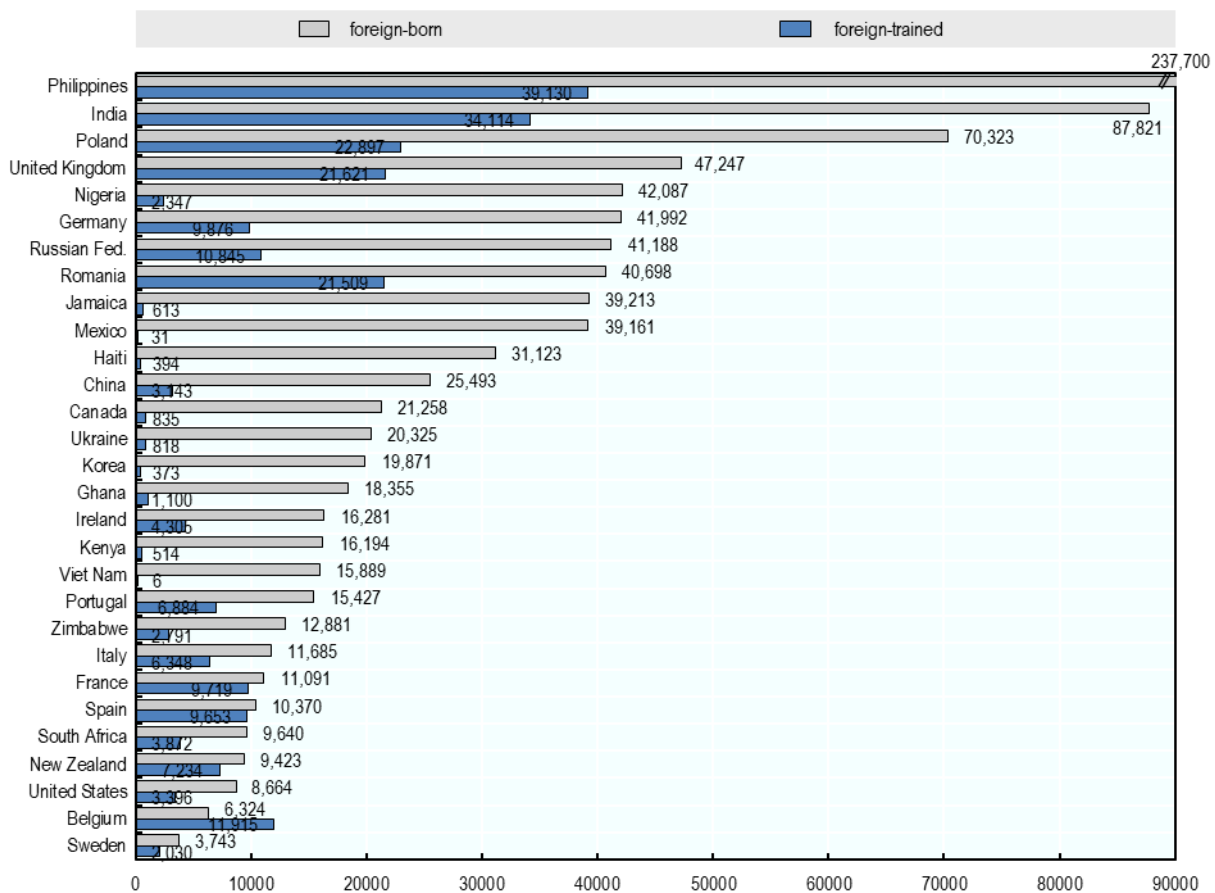
19. The top 20 countries of origin for foreign-born or foreign-trained nurses working in the OECD area comprise non-OECD as well as the OECD or European Union (EU) countries, and represent all income levels (Figure 3).

20. The Philippines is the origin for the by far largest group of migrant nurses, representing more than 15% (237 700) of all foreign-born nurses in the OECD area. By comparison this is nearly three times as much as India, which is the origin for the second largest group of foreign-born nurses (87 821). The Philippines is also the top country of origin for foreign-trained nurses working in the OECD countries. Poland ranks third, being an origin for an outstanding number of migrant nurses working in (other) OECD countries. However, as discussed earlier, for many countries of origin the number of home-trained nurses working in the OECD area is underestimated due to data gaps (regarding the place of training) in large countries of destination such as the United States, the United Kingdom, and Germany (OECD, 2015^[5]).

21. While a number of factors contribute to the international movement and migration of nurses, the high number of migrant nurses originating from the Philippines can be at least partially explained by the nursing schools training for the international market. For India, a strong contribution factor is the fact that it is the second most populous country worldwide. For a much smaller (by population size) Poland, the relatively large contribution is related to the country's accession to the EU in 2004, its wealth relative to the older EU Member States, and the EU-wide automatic recognition of nursing qualifications that enables the free movement of nursing workforce.

22. A number of lower-middle-income African countries – Nigeria, Zimbabwe, Ghana, and Kenya – are origin of relatively large groups of both, foreign-born or foreign-trained trained nurses working in the OECD area. Moreover, Haiti ranks high and is the only low-income country among the top 20 countries of origin for foreign-born nurses.

Figure 3 Top 20 countries of origin, foreign-born or foreign-trained nurses working in the OECD area

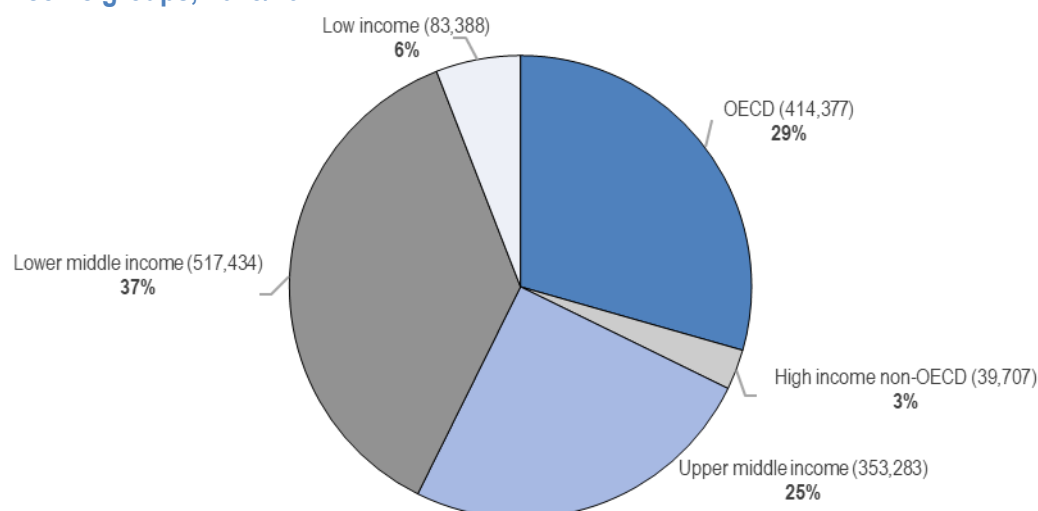


Note: Most recent data is from 2017/18 (or nearest year) for foreign-trained nurses and 2015/16 for foreign-born nurses. The number of foreign-trained nurses working in the OECD area might be underestimated due to data gaps ((regarding the place of training)) in large countries of destination such as the United States, the United Kingdom, or Germany. Nurses whose place of birth is unknown are excluded from the calculation.

Source: OECD Health Statistics 2019; DIOC 2015/16 and LFS 2015/16

23. In total, around a third all foreign-born nurses working in the OECD countries originate from within the OECD area and other high-income countries, a quarter from upper-middle-income countries (non-OECD), and approximately another third from lower-middle-income countries. The low-income countries are origin to 6% of foreign-born nurses working in the OECD area (Figure 4).

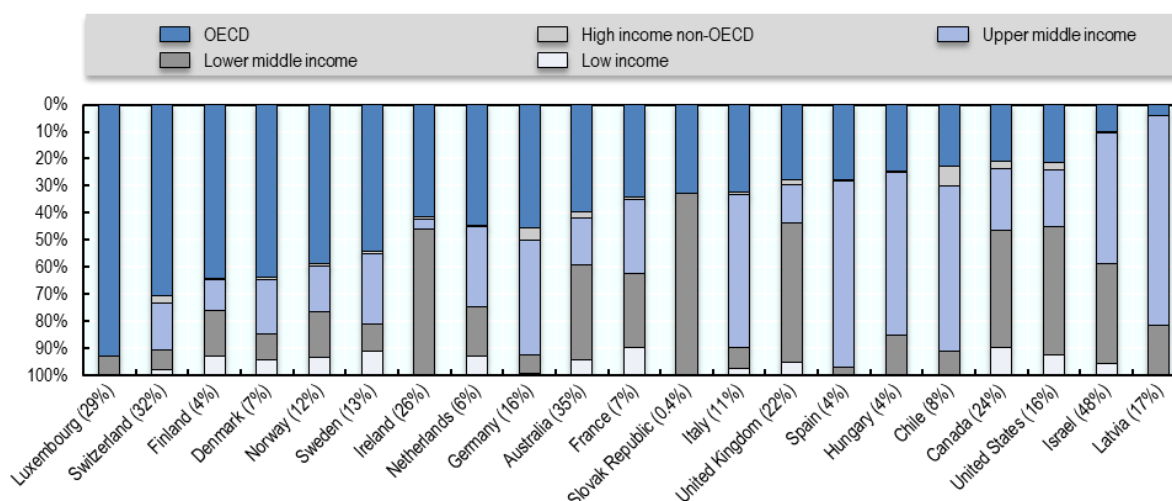
Figure 4. Regions of origin - distribution of foreign-born nurses working in the OECD area by country income groups, 2015/16



Source: DIOC 2015/16 and LFS 2015/16

24. While generally, the majority of foreign-born nurses working in the OECD area are coming from high-income and upper-middle-income countries, different OECD countries host migrant nurses from different income regions (Figure 5). Among the OECD countries with the larger shares of foreign-born nurses in the nursing workforce, the Anglosphere countries host relatively more nurses born in lower-middle- and low-income countries. In Ireland and the United Kingdom, for example, more than 50% or all foreign-born nurses come from lower-middle- and low-income countries, while in Luxembourg and Switzerland around 70 to 90% of all foreign-born nurses come from other OECD countries. The shares of nurses born in low-income countries vary from 0% to around 10% in Canada, France, Sweden, and the United States.

Figure 5. Regions of origin - distribution of foreign-born nurses by country income groups in selected OECD countries, 2015/16

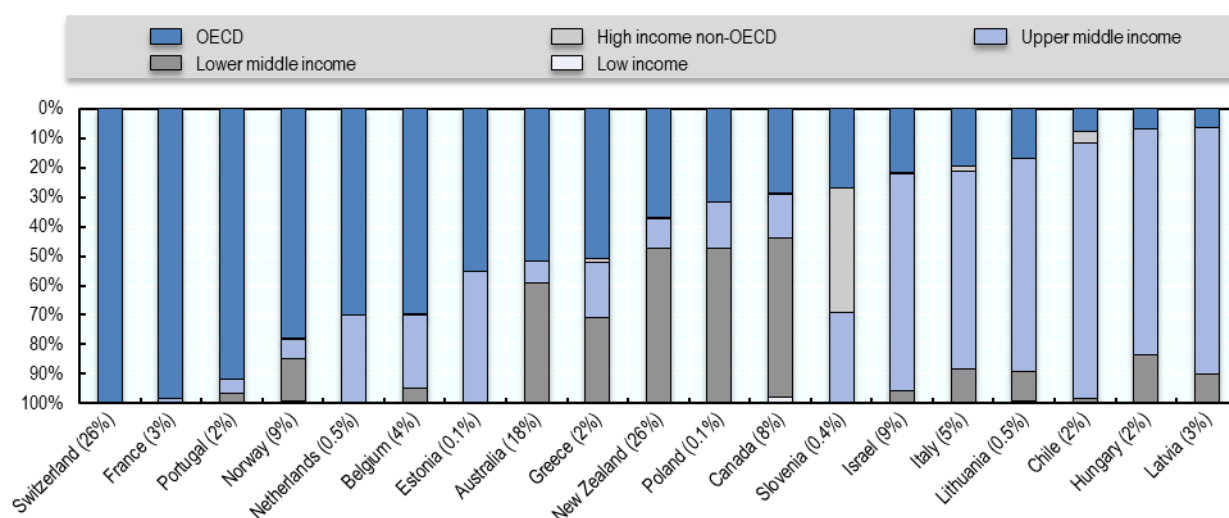


Note: Numbers in the brackets next to the country names indicate the overall share of foreign-born nurses in each country. For income groups, the [World Bank classification](#) is used, in which economies are currently divided into four income groupings using gross national income (GNI) per capita, in USD, converted from local currency. Data are presented for 21 OECD countries that submitted detailed statistics allowing to group foreign-born nurses by country of birth.

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

25. As for foreign-trained nurses, the analysis of data on place of training available for 19 OECD countries reveals patterns similar to that described above for foreign-born nurses working in the OECD area. Among the OECD countries with the larger shares of foreign-trained nurses, English-speaking countries host relatively more nurses born in lower-middle-income countries (Figure 6). In New Zealand, Australia, and Canada, for example, between 40% to more than 50% or all foreign-trained nurses come from lower-middle-income countries, while in Switzerland and Norway the majority come from other OECD countries. In Israel, two-thirds of the foreign-born nurses come from upper-middle-income countries. There are no sizable contributions from low-income countries in any of the countries of destination, for which detailed data is available.

Figure 6. Regions of origin – distribution of foreign-trained nurses by country income groups in selected OECD countries, 2017/18 (or nearest year)



Note: Numbers in the brackets next to the country names indicate the overall share of foreign-trained nurses in each country. For income groups, the [World Bank classification](#) is used, in which economies are currently divided into four income groupings using gross national income (GNI) per capita, in USD, converted from local currency. Data are presented for 19 OECD countries that submitted detailed statistics allowing to group foreign-trained nurses by country of training.

Source: OECD Health Statistics 2019

3.1 Intra-OECD migration makes up a third of the total nurse migration volume

26. The intra-OECD migration of nurses makes up a third of the migration volume into the OECD countries. The unique data collected by the OECD allows to analyse each of the OECD countries as a country of origin and as a country of destination simultaneously to calculate net stocks of migrant nurses, i.e. the number of nurses born / trained in country A and working in country B minus the number of nurses born / trained in country B and working in country A.

27. Figure 7 depicts all these within-OECD net stocks⁶ for foreign-born nurses (see also Table A.2 in the Annex), which are very well approximated by a cascade pattern, i.e. generally, countries higher in the cascade send net-stocks of native-born nurses to one or more countries lower in the cascade⁷.

⁶ The net stocks of more than +/-100 nurses.

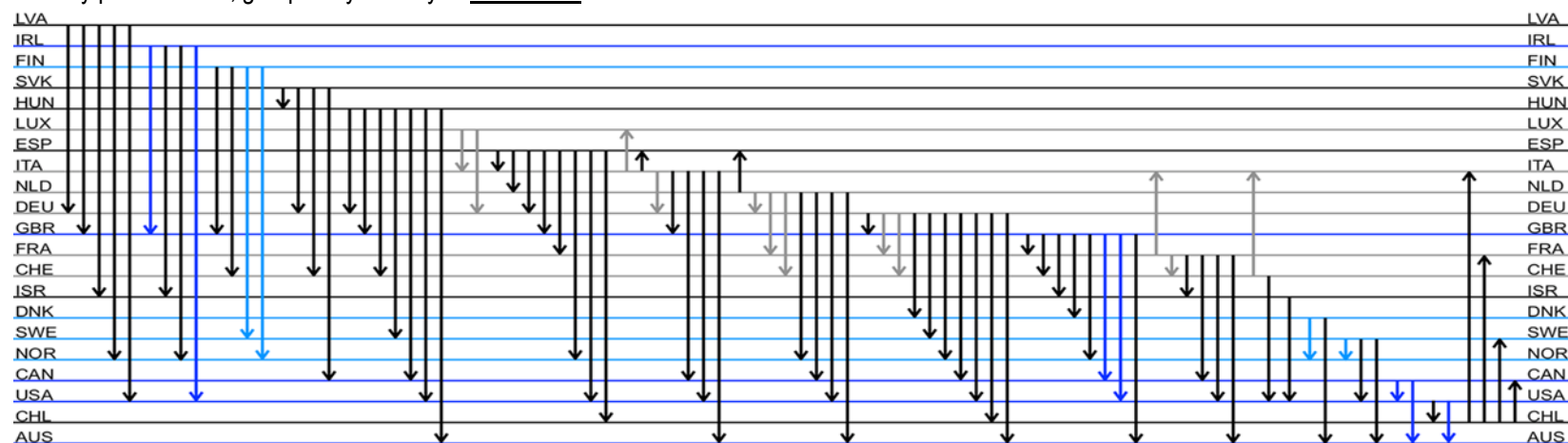
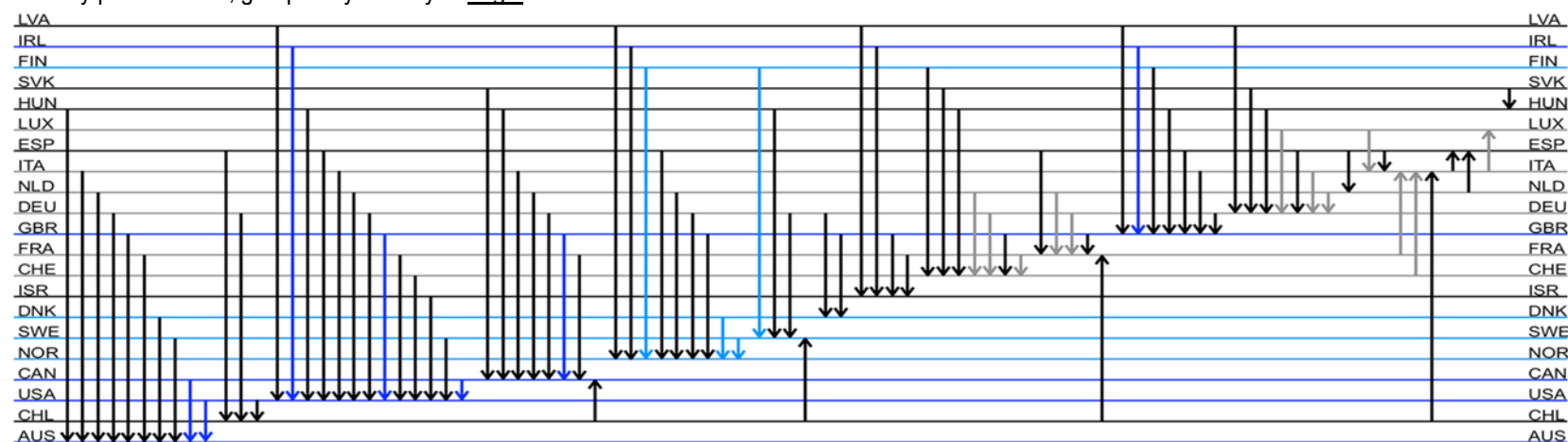
⁷ It should be noted that the ordering of the countries according to the net stocks does not generally coincide with the ordering with respect to the total stock of nurses each country has owing to the exchanges with all other OECD

- The United States (near the bottom of the cascade) is the main net-receiving country and hosts net stocks of nurses born in 13 other OECD countries, while it sends relatively smaller net stocks of native-born nurses only to Australia and Chile.
- Latvia, Ireland, Finland, and the Slovak Republic (top of the cascade), to the contrary, are sending countries and do not hold net-stocks of foreign-born nurses from any other OECD country. Hungary is also standing out as a sizable sending country, hosting, however, a positive net-stock of nurses born in the Slovak Republic.
- A high-volume net exchange occurs in English-speaking countries, which form a sub-cascade (dark blue lines) proceeding from Ireland, over the United Kingdom, Canada, and the United States to Australia, with the latter being exclusively a net-receiving country. All other OECD countries send net-stocks of native-born nurses to one or more countries in English-speaking countries, with the exception of Luxembourg (sending net stocks only to Italy and Germany).
- A Scandinavian sub-cascade can also be distinguished (light blue lines), which leads from Finland over Denmark and Sweden to Norway, which is (together with Australia) a net-receiving country only.
- Western-European sub-cascades (grey lines) characterised by linguistic and geographic proximity are formed by Luxembourg, Italy, the Netherlands, Germany, France, and Switzerland. Germany stands out as a turntable, insofar as it maintains net stocks in 10 as well as from 7 other countries, i.e. it is the most connected OECD country.

28. The net stocks with respect to the place of training present a similar picture to the one with respect to the place of birth (Figure 8 and Table A.3 in the Annex). However, as mentioned earlier, there are data gaps (regarding the place of training) for large countries of destination such as the United States, the United Kingdom, and Germany, which need to be taken into account in the interpretation of the results.

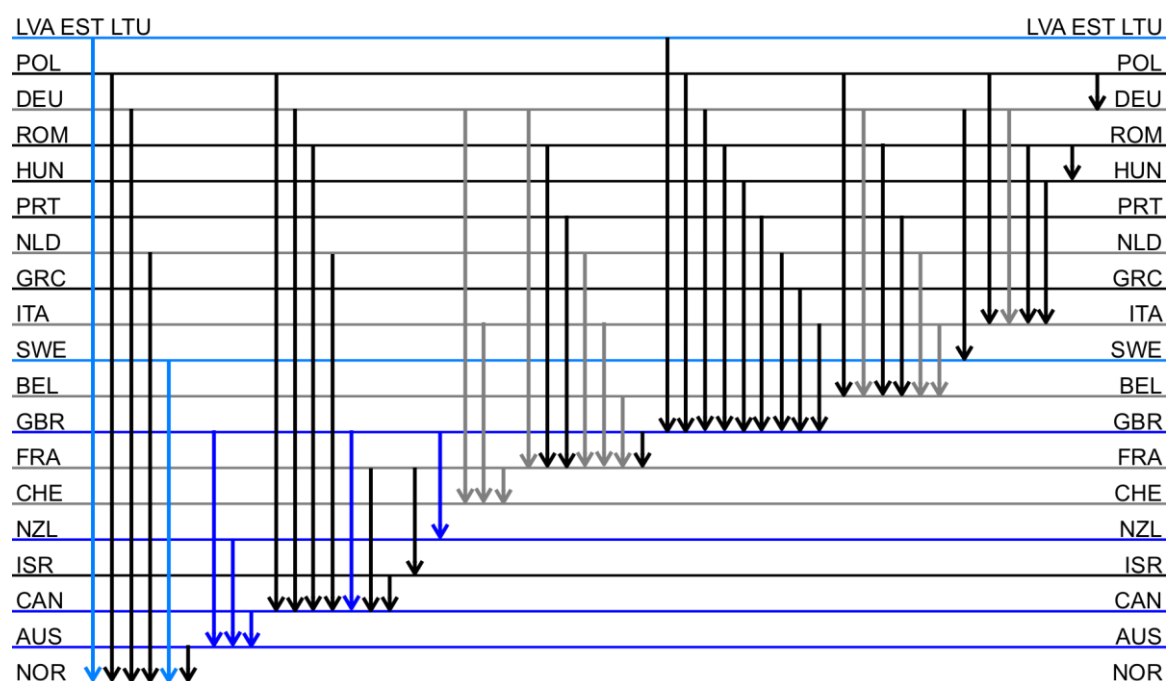
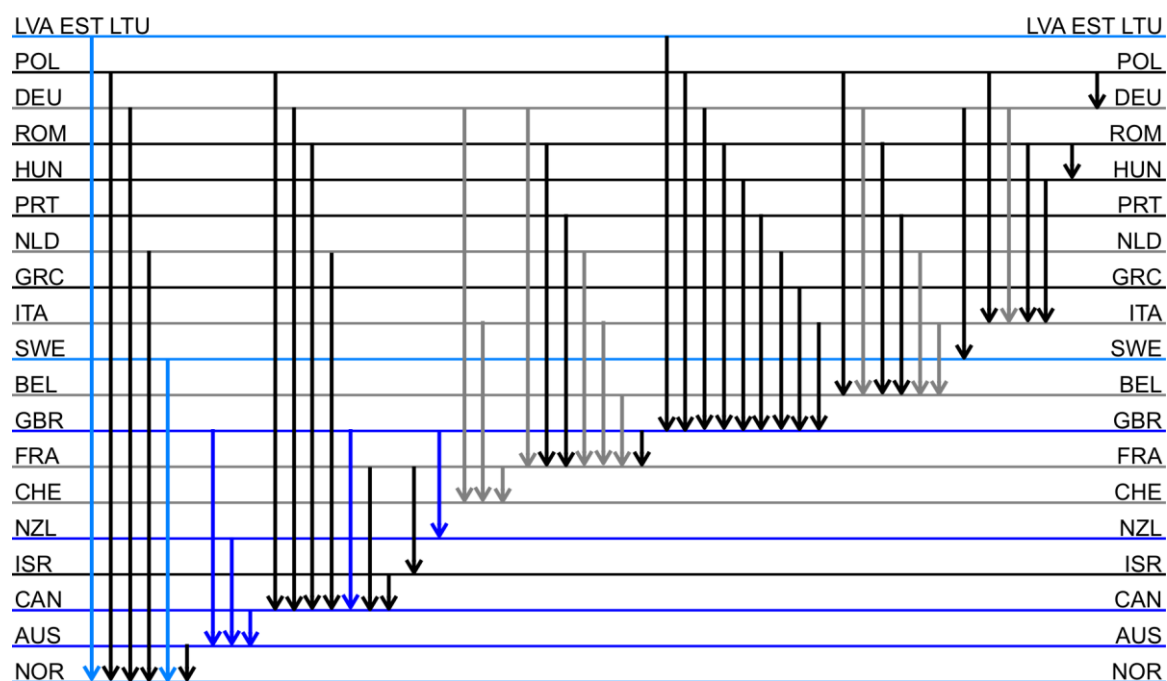
- The United Kingdom receives net stocks of nurses trained in nine other OECD countries, but is not at the bottom of the cascade, as it sends net stocks of home-trained nurses to France and into the other countries within the Anglosphere (dark blue lines), i.e. into New Zealand, Canada, and Australia.
- Also, the Western European sub-cascade (grey lines) can be distinguished for the foreign-trained nurses, with Germany at the top and progressing through the Netherlands, Italy, Belgium, and France and terminating in Switzerland.
- The Eastern European countries – Latvia, Estonia, Lithuania, Poland, Romania, and Hungary – are at the top of the cascade and do not receive net-stocks of trained nurses from any other OECD country with the sole exception of Hungary, which hosts a positive net stock of nurses trained in Romania.

countries taken together. This is because the ordering according to the net stocks takes into account the direction/sign of the exchange, but not their magnitude.

Figure 7. Intra-OECD migration of nurses, net stocks by place of birth 2015/16Net stocks by place of birth, grouped by country of destinationNet stocks by place of birth, grouped by country of origin

Source: DIOC 2015/16 and LFS 2015/16

Figure 8. Intra-OECD migration of nurses, net stocks by place of training, 2017/18 (or nearest year)

Net stocks by place of training, grouped by country of destinationNet stocks by place of training, grouped by country of origin

Source: OECD Health Statistics 2019

4. Impact of international migration of nurses to and within the OECD area on origin countries

4.1 Impact on overall number of nurses in countries of origin

29. The international migration of nurses gives rise to concerns about the impact on countries of origin. One way to quantify the impact of emigration to and within the OECD area on the countries of origin, is to calculate emigration rate, i.e. to compare the number of nurses born or trained in a given country but working in (other) OECD countries to the number of nurses that would be in the country, if all these migrants worked there as nurses⁸ (OECD, 2007^[3]). By taking data on nurses in the countries of origin from the WHO National Health Workforce Accounts (NHWA)⁹ (and OECD Health Statistics for the OECD member and partner countries¹⁰), the emigration rate was computed for 188 countries (Table A.1 in the Annex).

30. Around half of the 188 studied countries have emigration rates for native-born or home-trained nurses of around 5% or below. For the definite majority of the countries of origin, the emigration rates are generally much lower than for the doctors. Generally, in countries of origin that are large, migration to (other) OECD countries seems to have little or at most a moderate impact, but some of the relatively smaller countries or those with weak health systems and low number of nurses experience a substantial impact (Figure 9).

31. Among the three main countries of origin, the emigration rates for native-born or home-trained nurses are very low for India (3% or 1%), but more significant for Poland (24% or 9%) and the Philippines (43% or 11%), especially considering the native-born nurses (Figure 9). Among the other top-10 countries of origin for migrant nurses (see Figure 3), Jamaica stands out with the highest emigration rate for native-born nurses (92%) and second highest emigration rate for home-trained nurses (16%). In addition, Romania stands out with the emigration rates for native-born and home-trained nurses of 25% and 15%, respectively. For Nigeria, the emigration rates are more moderate – 14% for native-born or 1% for home-trained nurses, while for the United Kingdom, Germany, the Russian Federation, and Mexico, the emigration rates are generally below or well-below 10% (Table A.1).

32. For 20 out of the 188 studied countries – many of them in Africa and Latin America -, the emigration rates for native-born nurses exceed 50%. Among these countries, Guyana stands out with the highest emigration rate also for home-trained nurses (28%). Emigration rates for native-born nurses of between one-third and one-half are found for another 10 countries of origin, in Africa, Latin America, Western Pacific, and Europe (Albania). However, the highest emigration rates are at least partially due to the fluctuations observed for small (by population) countries, such as the Caribbean countries. For these small countries, emigration of even few nurses has large impact on the emigration rate.

33. The countries with more than 10% of home-trained nurses working abroad are distributed throughout the geographic regions and country income groups: Guyana (28%), Jamaica (16%), Tonga (15%), Romania (15%), Fiji (14%), Seychelles (13%), New Zealand (12%), Philippines (11%), and Samoa (11%). However, as mentioned earlier, the emigration rates for home-trained nurses might be underestimated. All of these countries have much higher shares of native-born working abroad as nurses with the exception of New Zealand, where the shares are less different.

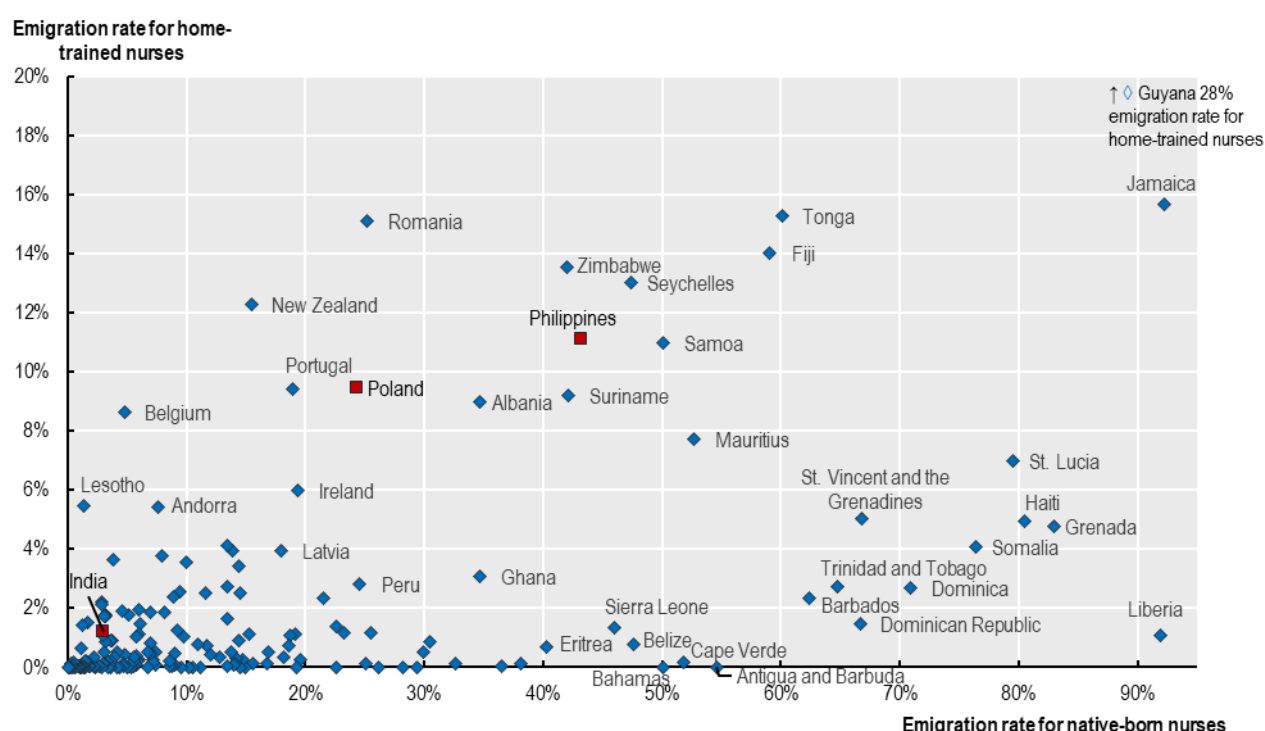
⁸ Emigration rates are computed as follows: X_i = number of foreign-born or foreign-trained nurses working in OECD countries born in country i ; Y_i = number of nurses working in country i ; emigration rate = $X_i/(X_i + Y_i)$.

⁹ Includes nursing professionals and nursing associate professionals, http://apps.who.int/gho/data/node.main.HWFGFRP_0020?lang=en

¹⁰ https://stats.oecd.org/index.aspx?DataSetCode=HEALTH_STAT#

34. Moreover, as mentioned earlier, for the interpretation of the results, one should keep in mind that there are also significant (but not uniformly documented) regular flows of migrant nurses among non-OECD countries, in particular within Africa and Latin America. Many nurses from Zambia and Zimbabwe, for example, migrate to South Africa. In Trinidad and Tobago, while local nurses leave for work opportunities in the United States and the United Kingdom, migrant nurses from the Philippines as well as Cuba and other islands in the Caribbean cover the deficit (APPG, 2016^[11]). It should also be noted that the emigration rates do not account for migrant nurses who work outside medicine.

Figure 9. Countries of origin – top 25 emigration rates to OECD countries for native-born or home-trained nurses



Note: Data for 188 countries of origin. Data on native-born nurses is from 2015/16. Data for home-trained nurses is from 2017/18 (or nearest year). Emigration rates are computed as follows: X_i = number of foreign-born or foreign-trained nurses working in OECD countries born in country i ; Y_i = number of nurses working in country i ; emigration rate = $X_i / (X_i + Y_i)$.

The emigration rates for foreign-trained nurses might be underestimated and should be treated as lower-bound estimates due to data gaps in large countries of destination such as Germany, the United Kingdom, and the United States.

Data on nurses in (non-OECD) countries of origin includes nursing professionals and nursing associate professionals.

Source: OECD Health Statistics 2019, DIOC 2015/16 and LFS 2015/16; NHWA 2019

4.2 Impact on the number of nurses per population in countries of origin

35. According to the most recent WHO estimates, there was a global shortage of 5.9 million nurses in 2018 (WHO, 2020^[11]). An estimated 5.3 million (89%) of that shortage is concentrated in low- and lower middle-income countries, where the growth in the number of nurses is barely keeping pace with population growth, improving only marginally the nurse-to-population density levels (WHO, 2020^[11]).

36. The question remains whether the emigration of the native-born or home-trained nurses is actually the dominant reason for the limited availability of nurses per population in these countries of origin. In general, rather few of the countries of origin would significantly increase the number of nurses per 1 000 population, by having all nurses born or trained, respectively, in that country in addition to those working

there already. This regards especially the low-income and lower-middle-income countries of origin that have less than two nurses per 1 000 population, majority of which are in the WHO African, South-East Asian and Eastern Mediterranean regions, as well as parts of Latin America (WHO, 2020^[1]).

37. In a given WHO region, the number of nurses at home per 1 000 population as well as native-born or home-trained nurses abroad per 1 000 population decreases when descending through the income groups (top to bottom in Table 3). The largest number – by a margin – of 1.2 native-born nurses per 1 000 population working abroad is found for lower-middle-income countries in the WHO Western Pacific, followed by high-income countries in the WHO Europe, with 0.6 native-born nurses per 1 000 population working abroad. The result for the WHO Western Pacific, however, is mainly driven by the high number of migrant nurses originating from the Philippines. For home-trained nurses working abroad, the highest number (0.2 per 1 000 population) is for high-income countries of the WHO Europe and the lower-middle-income countries in WHO Western Pacific, with the latter number being again mostly driven by the migrant nurses from the Philippines. For the remaining lower-middle-income countries as well as for the low-income countries, the number of native-born or home-trained nurses abroad per 1 000 population are close to zero.

38. Taking stock, the analysis reveals that the global health workforce shortage goes far beyond the migration issue. In particular, the needs for nurses in developing countries, as estimated by the WHO (WHO, 2016^[12]; WHO, 2020^[1]), largely outstrip the numbers of immigrant nurses in the OECD countries. Thus, international migration is neither the main cause nor would its reduction be the solution to the worldwide health human-resources shortages, although it exacerbates the acuteness of the problems in some countries. These include also countries with weak health systems and low initial number of nurses or countries that experienced outflows of nurses within a short period. It should be also noted that younger nurses and/or nurses with higher qualifications might be more prone to migrate. Hence, the impact on countries of origin may have more aspects. Moreover, as mentioned above, there are also significant (but not consistently documented) regular flows of migrant nurses among non-OECD countries, in particular within Africa and Latin America. Overall, however, this contributes to highlight the need to invest not only in education but also in employment and health systems in general.

Table 3. Nurses per 1 000 population at home and native-born / home-trained nurses working abroad in an OECD country, by WHO region and country income group

	nurses per 1 000 population	WHO Africa	WHO Eastern Mediterranean	WHO Europe	WHO Americas	WHO South- East Asia	WHO Western Pacific
High income	at home	(3.3)*	5.6	8.9	8.2	n.a.	10.4
	native-born abroad	(2.93)*	0.1	0.6	0.1	n.a.	0.2
	home-trained abroad	(0.5)*	0	0.2	0.01	n.a.	0.05
Upper middle income	at home	2.9	2.2	6.6	5	2.8	2.3
	native-born abroad	0.2	0.1	0.5	0.3	0.1	0.02
	home-trained abroad	0.04	0.01	0.1	0.01	0	0
Lower middle income	at home	1.3	0.9	8.7	1.2	1.9	2.2
	native-born abroad	0.3	0.05	0.3	0.4	0.1	1.2
	home-trained abroad	0.02	0	0.02	0	0.02	0.2
Low income	at home	0.5	0.6	(5.2)*	(0.7)*	3.5	n.a.
	native-born abroad	0.1	0.1	(0.01)*	(2.8)*	0.1	n.a.
	home-trained abroad	0	0	(0)*	(0.04)*	0.01	n.a.

Note: * Brackets indicate categories containing only one country: for high-income Africa it is Seychelles, for low-income Europe, Tajikistan, and for low-income Americas, Haiti. Data on native-born nurses is from 2015/16.

Data for home-trained nurses is from 2017/18 (or nearest year).

Data on nurses in (non-OECD) countries of origin includes nursing professionals and nursing associate professionals.

Source: OECD Health Statistics 2019; DIOC 2015/16 and LFS 2015/16; NHWA, 2019

4.3. Developments in emigration rates to OECD countries since 2000

39. This section relies exclusively on the analysis of data by place of birth, due to the limited longitudinal coverage and international comparability of data by place of training of migrant nurses working in the OECD countries (see also Box 1). The longitudinally comparable data covering both the year 2000/01 and 2015/16 exist for 94 countries of origin (see Table A.1 in the Annex).

40. The average emigration rate remained at 6% from 2000/01 to 2015/16. This is due to both, the total number of nurses in the countries of origin and the number of native-born nurses working abroad in an OECD country growing proportionally (both by more than 80%) over this time span.

41. While the nursing workforce has been expanding in size globally, the expansion has not been equitable, leaving some regions and countries behind. Looking at the different income groups or WHO geographic regions, the picture becomes more diverse, with emigration rates increasing in some regions. While the number of nurses grew in all regions and income groups, there is quite some variation in observed emigration rates (Figure 10, see also Table A.1 in the Appendix).

42. The strongest growth in the number of native-born nurses working abroad occurred in countries in the two lowest income groups, with the lower-middle-income countries experiencing also the strongest growth of the domestic nursing workforce. Accordingly, overall the emigration rate to the OECD countries increased most for the low-income countries (positioned well above the diagonal in the Figure), stagnated for the lower-middle income group (positioned on the diagonal), and decreased for the upper-middle-income and high-income countries (positioned below the diagonal). For almost all the WHO geographic

regions, the growth of the number of nurses at home and abroad, respectively, were very much in step, such that the emigration rates did not change significantly, with the exception of the WHO African and the WHO Eastern Mediterranean regions (positioned well above the diagonal) (Figure 10).

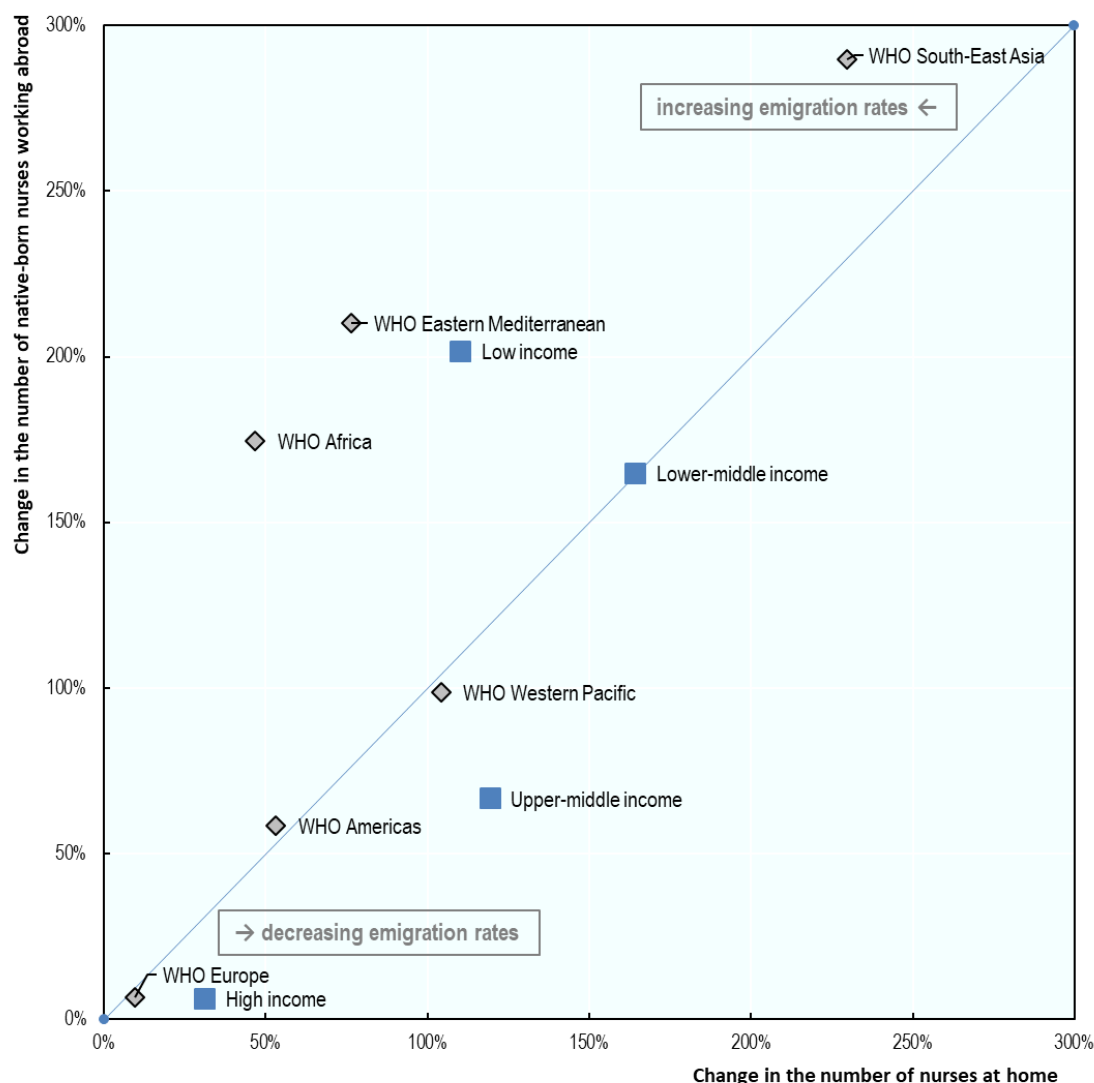
43. Among the main countries of origin of foreign-born nurses working in the OECD area (see Figure 3)¹¹, the emigration rate increased in Jamaica (from already very high 88% to 92%), Nigeria (10 to 14%), and the United Kingdom (6 to 8%), while it decreased in Haiti (94 to 80%), the Philippines (46 to 43%), and Mexico (12 to 10%). The United Kingdom and Jamaica also experienced a decrease in the number of nurses in the country (Table A.1).

44. Among the remaining countries of origin, the strongest increases of emigration rates are observed for Eswatini (1 to 14%), Somalia (14 to 76%), and the Dominican Republic (11 to 67%). In these three countries a rapid growth of the number of native-born nurses working abroad and a decrease in the domestic nursing workforce add up to create this development (Table A.1).

45. The strongest decreases in emigration rates are observed for Malaysia (20 to 4%), Belize (82 to 48%), Brunei Darussalam (13 to 3%), and Malta (22 to 6%). In all these countries a sizable growth of the domestic nursing workforce and a decrease of the number of native-born nurses working abroad add up to create this effect. Also, the total number of nurses working or born in each of these countries grew, with the exception of Belize (Table A.1).

¹¹ Longitudinal analysis is not possible for Poland, Romania, and the Russian Federation due to limited data coverage in 2000/01.

Figure 10. Developments in emigration rates to OECD countries since 2000/01 - change in the numbers of nurses working at home and native-born nurses working abroad in an OECD country, by WHO regions and income groups



Note: Results based on longitudinally comparable data for 94 countries of origin (see Table A.1 the Annex). Data on nurses working in (non-OECD) countries of origin includes nursing professionals and nursing associate professionals.

Source: (OECD, 2007^[3]); DIOC 2000/01 and LFS 2000/01; DIOC 2015/16 and LFS 2015/16; NHWA, 2019.

5. Conclusions

46. This paper contributes to evidence-based policy dialogue at national and international level on challenges and opportunities associated with international movement and migration of nurses. Drawing on the OECD's long experience in collecting data to quantify the trends in international movement and migration of health personnel, this paper presents findings on the extent to which migrant nurses contribute to the health workforce in the OECD countries, as well as the impact these migration flows have on the countries of origin, including an analysis of trends since 2000.

47. For the countries of destination, the findings reveal the shares of foreign-born or foreign-trained nurses have continued to rise since 2000 in majority of the OECD countries. These findings can inform, as an additional data input, broader domestic nursing labour market analysis and workforce development plans designed to achieve a sustainable health workforce. Moreover, the analyses contributes to the implementation of the WHO Global Code of Practice on the International Recruitment of Health Personnel¹² and relevant ILO Conventions and Recommendations through consolidating and strengthening evidence.

48. For countries of origin, the evidence gathered in this paper will help to assess the overall impact of international migration on their nursing workforce and form the basis for a constructive international dialogue regarding a better management of international flows and targeted support for increasing training and improving retention of home-trained nurses.

49. The analysis also reveals that, at least for origin countries where most of migration takes place within OECD corridors, the global health workforce shortage goes far beyond the migration issue. Relatively few of the countries of origin would significantly increase the number of nurses per 1 000 population by additionally having all nurses born or trained, respectively, in that country.

¹² https://www.who.int/hrh/migration/code/WHO_global_code_of_practice_EN.pdf

Annex A.

Table A.1. Emigration rates to OECD countries for home-trained nurses, native-born nurses, and all native-born with tertiary education, most recent and circa 2000

Country of origin	home-trained		native-born			change 2000/01 - 2015/16		
	number of nurses working in (other) OECD countries 2017/18 (or nearest year)	emigration rate for home-trained nurses 2017/18 (or nearest year)	number of nurses working in (other) OECD countries 2015/16	emigration rate for native-born nurses 2015/16	emigration rate for native-born nurses 2000/01	in the number of native-born nurses working in (other) OECD countries	in the number of nurses working in the country of origin*	in the number of all nurses born or working in the country of origin*
Afghanistan	14	0%	3,519	25%				
Albania	1,042	9%	5,581	35%				
Algeria	210	0%	8,526	9%	12%	-3%	+46%	+140%
Andorra	18	5%	26	8%				
Angola	0	0%	348	1%				
Antigua and Barbuda	0	0%	382	55%	74%	-44%	+36%	+77%
Argentina	143	0%	3,503	3%				
Armenia	6	0%	1,539	9%				
Australia	1,989	1%	3,436	1%	3%	-26%	+73%	+171%
Austria	286	0%	4,414	6%				
Azerbaijan	35	0%	1,231	2%				
Bahamas	0	0%	1,246	50%	30%	+123%	-6%	+132%
Bahrain	4	0%	52	2%	3%	-32%	+11%	+110%
Bangladesh	37	0%	1,877	4%	3%	+188%	+148%	+250%
Barbados	41	2%	2,852	62%	78%	-18%	+74%	+102%
Belarus	132	0%	5,415	5%				
Belgium	11,915	9%	6,324	5%				
Belize	5	1%	578	48%	82%	-58%	+110%	+73%
Benin	1	0%	382	5%	3%	+130%	+35%	+138%
Bhutan			64	5%				
Bolivia	42	1%	1,634	17%				
Bosnia and Herzegovina	199	1%	9,861	31%				
Botswana	131	2%	239	3%	1%	+409%	+56%	+160%
Brazil	464	0%	8,937	0%				
Brunei Darussalam	4	0%	88	3%	13%	-32%	+209%	+279%
Bulgaria	1,407	4%	4,253	10%				
Burkina Faso	22	0%	177	2%				
Burundi	5	0%	440	6%	4%	+671%	+435%	+545%
Cambodia	1	0%	1,837	11%	12%	+64%	+80%	+178%
Cameroon	102	1%	8,192	30%	5%	+512%	-26%	+100%

Canada	835	0%	21,258	6%	7%	-14%	+16%	+114%
Cape Verde	1	0%	702	52%				
Central African Republic	1	0%	171	16%	8%	+86%	-7%	+100%
Chad			124	2%	5%	+6%	+145%	+238%
Chile	55	0%	2,259	13%	16%	+15%	+54%	+148%
China	3,143	0%	25,493	1%	1%	+108%	+139%	+238%
Colombia	719	1%	11,130	15%				
Comoros			195	23%	12%	+205%	+39%	+158%
Congo	37	0%	784	9%	12%	+73%	+145%	+236%
Costa Rica	4	0%	611	14%	13%	+9%	+3%	+104%
Cote d'Ivoire	90	0%	1,451	7%	4%	+331%	+147%	+255%
Croatia	398	1%	11,715	26%				
Cuba	239	0%	15,520	15%	5%	+269%	+7%	+119%
Cyprus	118	2%	547	8%	19%	-23%	+105%	+181%
Czech Republic	452	1%	3,892	4%				
Democratic People's Republic of Korea	11	0%	1,707	1%				
Democratic Republic of the Congo	32	0%	2,699	7%	1%	+568%	+16%	+124%
Denmark	1,282	2%	1,759	3%				
Djibouti			86	15%				
Dominica	12	3%	1,062	71%	66%	+71%	+38%	+160%
Dominican Republic	50	1%	6,685	67%	11%	+260%	-78%	+58%
Ecuador	218	1%	4,523	19%				
Egypt	31	0%	1,317	1%	1%	+17%	-6%	+94%
El Salvador	18	0%	7,015	33%	32%	+193%	+183%	+286%
Equatorial Guinea			1	0%	31%	-99%	+191%	+201%
Eritrea	18	1%	1,693	40%				
Estonia	238	3%	1,314	13%				
Eswatini	94	3%	446	14%	1%	+1105%	-43%	+67%
Ethiopia	80	0%	8,752	9%				
Fiji	428	14%	3,781	59%				
Finland	1,466	2%	4,417	5%	7%	-25%	+9%	+106%
France	9,719	2%	11,091	2%				
Gabon			181	3%	2%	+71%	-21%	+80%
Gambia	62	2%	241	7%	4%	+289%	+99%	+206%
Georgia	10	0%	802	5%				
Germany	9,876	1%	41,992	4%	4%	+33%	+35%	+135%
Ghana	1,100	3%	18,355	35%	25%	+251%	+119%	+252%
Greece	928	2%	3,684	9%				
Grenada	17	5%	1,652	83%	88%	-22%	+12%	+82%
Guatemala	1	0%	2,782	15%	3%	+131%	-64%	+41%
Guinea	1	0%	462	9%	2%	+391%	+7%	+114%
Guinea-Bissau	1	0%	17	1%				
Guyana	409	28%	8,650	89%	81%	+16%	-40%	+106%
Haiti	394	5%	31,123	80%	94%	+139%	+807%	+280%
Honduras	0	0%	3,408	29%	10%	+272%	-2%	+125%
Hungary	821	1%	6,581	9%				

Iceland	139	3%	549	9%	7%	+91%	+33%	+137%
India	34,114	1%	87,821	3%	3%	+285%	+226%	+328%
Indonesia	11	0%	3,483	1%				
Iran, Islamic Republic of	779	1%	10,780	7%				
Iraq	27	0%	1,751	3%				
Ireland	4,305	6%	16,281	19%	25%	-19%	+11%	+104%
Israel	460	1%	1,333	3%				
Italy	6,348	2%	11,685	3%				
Jamaica	613	16%	39,213	92%	88%	+26%	-25%	+120%
Japan	230	0%	9,966	1%	0%	+112%	+48%	+148%
Jordan	748	2%	994	3%				
Kazakhstan	64	0%	22,637	13%				
Kenya	514	1%	16,194	19%	6%	+542%	+91%	+220%
Kiribati	1	0%	43	7%				
Kuwait	13	0%	632	2%	2%	+316%	+198%	+300%
Kyrgyzstan	3	0%	136	0%				
Lao People's Democratic Republic	1	0%	2,268	26%	15%	+162%	+30%	+150%
Latvia	392	4%	2,072	18%				
Lebanon	417	3%	2,108	12%	25%	+51%	+287%	+327%
Lesotho	77	5%	18	1%				
Liberia	5	1%	5,121	92%	67%	+313%	-26%	+301%
Libya	9	0%	551	1%	1%	+451%	+142%	+243%
Lithuania	952	4%	3,703	14%				
Luxembourg	54	1%	953	12%				
Madagascar	3	0%	1,543	38%	24%	+33%	-30%	+85%
Malawi	118	3%	777	15%	3%	+289%	-37%	+72%
Malaysia	291	0%	4,767	4%	20%	-37%	+302%	+336%
Maldives	3	0%	9	1%				
Mali	0	0%	302	4%	4%	+33%	+15%	+115%
Malta	76	2%	246	6%	22%	-62%	+67%	+138%
Mauritania	10	0%	71	2%	5%	-26%	+176%	+265%
Mauritius	357	8%	4,741	53%	50%	+5%	-4%	+101%
Mexico	31	0%	39,161	10%	12%	+217%	+317%	+405%
Mongolia	1	0%	22	0%				
Montenegro	19	1%	575	14%				
Morocco	144	0%	8,715	18%				
Mozambique	0	0%	137	1%				
Myanmar	7	0%	723	1%	4%	+73%	+428%	+514%
Namibia	19	0%	339	6%				
Nepal	670	1%	5,878	7%				
Netherlands	1,725	1%	7,125	4%				
New Zealand	7,234	12%	9,423	15%	20%	+25%	+66%	+158%
Nicaragua	13	0%	1,631	14%	16%	+41%	+69%	+165%
Niger	2	0%	119	2%	1%	+526%	+154%	+257%
Nigeria	2,347	1%	42,087	14%	10%	+214%	+96%	+207%
Northern Macedonia	92	1%	2,395	23%				
Norway	314	0%	2,215	2%				
Oman	11	0%	56	0%	0%	+211%	+94%	+194%
Pakistan	1,065	1%	6,010	6%	4%	+233%	+96%	+201%
Panama	136	2%	1,564	22%	30%	-18%	+25%	+112%

Papua New Guinea	4	0%	734	17%	14%	+61%	+28%	+133%
Paraguay	118	1%	105	1%	1%	-19%	-17%	+83%
Peru	1,237	3%	13,988	25%				
Philippines	39,130	11%	237,700	43%	46%	+115%	+145%	+231%
Poland	22,897	9%	70,323	24%				
Portugal	6,884	9%	15,427	19%				
Qatar	3	0%	25	0%				
Korea	373	0%	19,871	5%				
Republic of Moldova	307	2%	2,861	13%				
Romania	21,509	15%	40,698	25%				
Russian Federation	10,845	1%	41,188	3%				
Rwanda	19	0%	610	6%	1%	+1030%	+171%	+283%
Saint Kitts and Nevis	3	1%	63	23%				
Saint Lucia	21	7%	1,086	80%	53%	+194%	-15%	+195%
Saint Vincent and the Grenadines	15	5%	566	67%	82%	-54%	+2%	+56%
Samoa	44	11%	359	50%				
San Marino	9	3%	0	0%				
Sao Tome and Principe	1	0%	15	3%				
Saudi Arabia	97	0%	1,899	1%				
Senegal	13	0%	1,171	20%	9%	+357%	+85%	+209%
Serbia	569	1%	5,846	10%				
Seychelles	46	13%	276	47%				
Sierra Leone	97	1%	5,998	46%	56%	+192%	+341%	+357%
Singapore	175	0%	2,058	5%	10%	+8%	+133%	+221%
Slovakia	531	1%	3,047	6%				
Slovenia	102	1%	655	3%				
Solomon Islands	0	0%	58	4%				
Somalia	35	4%	2,675	76%	14%	+970%	-44%	+202%
South Africa	3,872	2%	9,640	5%	3%	+60%	+8%	+110%
Spain	9,653	4%	10,370	4%				
Sri Lanka	339	1%	5,418	11%	8%	+167%	+91%	+197%
Sudan	1	0%	954	3%	1%	+421%	+82%	+185%
Suriname	234	9%	1,682	42%				
Sweden	2,030	2%	3,743	3%	3%	+24%	+25%	+125%
Switzerland	482	0%	5,913	4%				
Syrian Arab Republic	1		1,106					
Tajikistan	4	0%	69	0%				
Thailand	98	0%	4,787	2%				
Timor-Leste	0	0%	83	4%				
Togo	1	0%	1,272	37%	4%	+1531%	+18%	+178%
Tonga	76	15%	634	60%				
Trinidad and Tobago	134	3%	8,782	65%	73%	-10%	+31%	+101%
Tunisia	446	1%	1,963	6%				
Turkey	50	0%	12,229	6%				
Turkmenistan	1	0%	26	0%				

Uganda	79	0%	4,197	14%	7%	+247%	+67%	+180%
Ukraine	818	0%	20,325	6%				
United Arab Emirates	36	0%	598	1%				
United Kingdom	21,621	4%	47,247	8%	6%	+4%	-22%	+79%
United Republic of Tanzania	57	0%	1,679	7%	7%	+73%	+62%	+163%
United States	3,396	0%	8,664	0%				
Uruguay	77	1%	1,580	19%				
Uzbekistan	195	0%	3,389	1%				
Vanuatu	2	1%	30	7%				
Venezuela	117	0%	3,854	12%				
Viet Nam	6	0%	15,889	10%	11%	+175%	+204%	+301%
Yemen			217	1%	2%	-6%	+44%	+143%
Zambia	634	4%	2,302	13%	5%	+181%	-13%	+96%
Zimbabwe	2,791	14%	12,881	42%	28%	+256%	+90%	+236%

Note: The most recent data is available for 185 countries of origin. Longitudinal comparison between 2000/01 and 2015/16 available for 94 countries.

* Large changes in the number of nurses working in the country of origin might be due to modifications in methodology applied in collection of data by WHO Global Health Observatory.

Source: (OECD, 2007^[3]) for emigration rates of native-born nurses 2000/01; OECD Health Statistics 2019 for numbers of home-trained nurses; DIOC 2015/16 and LFS 2015/16 for numbers of native-born nurses; NHWA, 2019 for numbers of nurses working in the country of origin.

Table A.2. Intra-OECD net stocks - foreign-born nurses by country of birth and country of destination in selected OECD countries, 2015/16

Country of destination → ↓ Country of birth	LVA	IRL	FIN	SVK	HUN	LUX	ESP	ITA	NLD	DEU	GBR	FRA	CHE	ISR	DNK	SWE	NOR	CAN	USA	CHL	AUS
Latvia	0	22	8	0	0	0	0	0	0	1102	147	22	0	102	15	91	170	50	317	0	26
Ireland	-22	0	-12	-25	-32	0	-89	-42	62	87	5266	19	-10	-1	9	60	17	242	3349	-1	2436
Finland	-8	12	0	-1	-14	-1	-40	-5	-4	-49	558	5	160	-4	47	2170	489	67	25	-2	135
Slovak Rep.	0	25	1	0	356	0	0	0	0	1815	0	34	428	0	5	0	49	200	81	0	53
Hungary	0	32	14	-356	0	0	0	80	-17	3724	687	22	241	0	14	138	27	220	1128	0	108
Luxembourg	0	0	1	0	0	0	0	240	11	225	0	17	-3	0	2	0	3	10	0	0	3
Spain	0	89	40	0	0	0	0	231	104	2110	3013	945	450	0	20	0	129	35	1449	142	118
Italy	0	42	5	0	-80	-240	-231	0	40	1698	3795	-1672	-1716	0	20	0	18	154	1300	-159	339
Netherlands	0	-62	4	0	17	-11	-104	-40	0	1871	-254	138	486	0	57	0	196	548	830	0	595
Germany	-1102	-87	49	-1815	-3724	-225	-2110	-1698	-1871	0	3469	1746	8944	-54	141	504	598	1250	16641	212	1076
United Kingdom	-147	-5266	-558	0	-687	0	-3013	-3795	254	-3469	0	252	218	112	128	74	101	3808	12494	44	20069
France	-22	-19	-5	-34	-22	-17	-945	1672	-138	-1746	-252	0	2806	508	-6	-42	25	1341	895	-143	133
Switzerland	0	10	-160	-428	-241	3	-450	1716	-486	-8944	-218	-2806	0	56	31	-51	-17	-228	742	-48	77
Israel	-102	1	4	0	0	0	0	0	0	54	-112	-508	-56	0	15	0	13	-72	525	34	-58
Denmark	-15	-9	-47	-5	-14	-2	-20	-20	-57	-141	-128	6	-31	-15	0	76	262	46	64	-17	105
Sweden	-91	-60	-2170	0	-138	0	0	0	0	-504	-74	42	51	0	-76	0	423	18	670	-255	143
Norway	-170	-17	-489	-49	-27	-3	-129	-18	-196	-598	-101	-25	17	-13	-262	-423	0	-30	66	-47	52
Canada	-50	-242	-67	-200	-220	-10	-35	-154	-548	-1250	-3808	-1341	228	72	-46	-18	30	0	14813	-216	450
United States	-317	-3349	-25	-81	-1128	0	-1449	-1300	-830	-16641	-12494	-895	-742	-525	-64	-670	-66	-14813	0	712	145
Chile	0	1	2	0	0	0	-142	159	0	-212	-44	143	48	-34	17	255	47	216	-712	0	411
Australia	-26	-2436	-135	-53	-108	-3	-118	-339	-595	-1076	-20069	-133	-77	58	-105	-143	-52	-450	-145	-411	0

Note: Red indicates positive net stocks of above 100; blue, negative net stocks of above 100.

Source: DIOC 2015/16 and LFS 2015/16

Table A.3. Intra-OECD net stocks - foreign-trained nurses by country of education and country of destination in selected OECD countries, 2017/18 (or nearest year)

Country of destination → ↓ Country of education	LVA	EST	LTA	POL	DEU	CHL	ROU	HUN	PRT	NLD	GRC	SLV	ITA	SWE	TUR	BEL	GBR	FRA	CHE	NZL	ISR	CAN	AUS	NOR
Latvia	0	2	0	1	0	0	0	0	0	0	0	0	0	0	0	3	147	4	0	1	3	0	0	215
Estonia	-2	0	0	0	-1	0	0	0	2	0	0	0	8	-1	0	4	99	4	0	1	-1	0	0	118
Lithuania	0	0	0	15	0	0	0	0	0	0	0	0	11	35	0	11	317	5	0	0	4	6	0	529
Poland	-1	0	-15	0	15995	0	0	4	2	38	46	0	2251	67	0	347	2728	75	0	6	5	651	0	663
Germany	0	1	0	-15995	0	9	1	4	31	87	68	3	347	246	38	214	431	637	6830	88	63	193	0	581
Chile	0	0	0	0	-9	0	0	0	0	-1	0	0	11	-4	0	-2	4	-6	-3	2	4	21	0	6
Romania	0	0	0	0	-1	0	0	592	10	12	20	0	10678	44	2	1597	7594	237	0	14	59	524	-1	98
Hungary	0	0	0	-4	-4	0	-592	0	1	33	2	-1	137	37	0	12	489	25	0	1	6	48	0	26
Portugal	0	-2	0	-2	-31	0	-10	-1	0	7	0	0	12	-1	0	674	4740	1336	0	3	0	22	-1	25
Netherlands	0	0	0	-38	-87	1	-12	-33	-7	0	7	0	39	59	7	513	120	210	-10	88	63	112	0	141
Greece	0	0	0	-46	-68	0	-20	-2	0	-7	0	0	-1	25	-2	15	807	13	-2	0	7	11	-3	9
Slovenia	0	0	0	0	-3	0	0	1	0	0	0	0	80	0	0	1	15	1	-2	0	0	0	0	4
Italy	0	-8	-11	-2251	-347	-11	-10678	-137	-12	-39	1	-80	0	8	-2	344	4201	180	1090	1	15	37	-5	13
Sweden	0	1	-35	-67	-246	4	-44	-37	1	-59	-25	0	-8	0	0	14	35	31	0	9	15	27	0	1571
Turkey	0	0	0	0	-38	0	-2	0	0	-7	2	0	2	0	0	2	14	-1	0	2	1	15	-1	5
Belgium	-3	-4	-11	-347	-214	2	-1597	-12	-674	-513	-15	-1	-344	-14	-2	0	17	9488	-25	4	6	81	-1	10
United Kingdom	-147	-99	-317	-2728	-431	-4	-7594	-489	-4740	-120	-807	-15	-4201	-35	-14	-17	0	373	-37	3203	81	2663	13829	76
France	-4	-4	-5	-75	-637	6	-237	-25	-1336	-210	-13	-1	-180	-31	1	-9488	-373	0	5913	9	115	1239	0	18
Switzerland	0	0	0	0	-6830	3	0	0	0	10	2	2	-1090	0	0	25	37	-5913	0	25	22	53	0	18
New Zealand	-1	-1	0	-6	-88	-2	-14	-1	-3	-88	0	0	-1	-9	-2	-4	-3203	-9	-25	0	1	72	6149	6
Israel	-3	1	-4	-5	-63	-4	-59	-6	0	-63	-7	0	-15	-15	-1	-6	-81	-115	-22	-1	0	384	-35	-6
Canada	0	0	-6	-651	-193	-21	-524	-48	-22	-112	-11	0	-37	-27	-15	-81	-2663	-1239	-53	-72	-384	0	137	-4
Australia	0	0	0	0	0	0	1	0	1	0	3	0	5	0	1	1	-13829	0	0	-6149	35	-137	0	302
Norway	-215	-118	-529	-663	-581	-6	-98	-26	-25	-141	-9	-4	-13	-1571	-5	-10	-76	-18	-18	-6	6	4	-302	0

Note: Red indicates positive net stocks of above 100; blue, negative net stocks of above 100.

Source: OECD Health Statistics 2019

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