RESEARCH PAPER

# Distribution and Migration of Recent Healthcare Graduates in Canada

## Répartition et migration des nouveaux diplômés en soins de santé au Canada

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## Abstract

*Introduction:* Although data on new graduates are available and typically included in the health workforce planning (HWP) model, information on their interprovincial migration pattern is less known. This paper aims to understand the mobility pattern of recent healthcare graduates – family physicians and regulated nurses – across the different Canadian jurisdictions.

*Methodology:* Health workforce data from the Canadian Institute for Health Information (CIHI) were used to identify recent family physician and regulated nurse graduates. We identified new graduates (between 2015 and 2019) in a particular province and distributed them according to the province/territory in which they registered to practise.

*Results:* The jurisdiction where they are trained is a key factor in determining their migration rates. For both professions, Ontario and British Columbia have the lowest rates of new graduate out-migration and the highest rates of in-migration, leaving them with a positive net interprovincial migration.

*Discussion:* This analysis can be used to inform better HWP at the jurisdictional level in these professions.

*Conclusion:* Working and community conditions matter to keep and attract new graduates.

## Résumé

*Introduction :* Bien que les données sur les nouveaux diplômés soient disponibles et généralement incluses dans les modèles de planification de la main-d'œuvre en santé, l'information sur les tendances migratoires interprovinciales est moins connue. Ce document vise à comprendre le schéma de mobilité des nouveaux diplômés en soins de santé – médecins de famille et infirmières réglementées – parmi les différentes administrations au Canada.
*Méthodologie :* Les données sur la main-d'œuvre en santé, provenant de l'Institut canadien d'information sur la santé (ICIS), ont été utilisées pour identifier les médecins de famille et infirmières réglementées récemment diplômés. Nous avons repéré les nouveaux diplômés (entre 2015 et 2019) dans une province particulière et nous les avons répartis selon la province ou territoire où ils se sont inscrits pour exercer.
*Résultats :* La province ou le territoire où ils reçoivent la formation est un facteur clé pour déterminer leurs taux de migration. Pour les deux professions, l'Ontario et la Colombie-Britannique connaissent les taux les plus faibles d'émigration des nouveaux diplômés et les taux les plus élevés d'immigration, ce qui donne une migration interprovinciale nette positive.
*Discussion :* Cette analyse peut servir à éclairer, pour ces professions, une meilleure planification de la main-d'œuvre en santé au niveau de la province ou du territoire.
*Conclusion :* Les conditions de travail et communautaires sont importantes pour garder et attirer de nouveaux diplômés.

## Introduction

During the last few decades, Canada has been facing health workforce–related challenges. The situation has been exacerbated by the COVID-19 pandemic to create an unprecedented level of staffing issues in all jurisdictions, with a higher impact on some. These shortages undermine the ability of the healthcare system to provide timely access to high-quality care for everyone in Canada. There are two drivers of the health workforce crisis. On the one hand, the supply of healthcare providers includes factors such as stock of providers, inflow, distribution and aging of the workforce. On the other hand, the demand for healthcare (also known as population needs) encompasses disease prevalence and population aging, for example. However, the focus of this study is on the supply side, particularly the distribution. The pattern of health workforce distribution is as important as the aggregate supply. Interprovincial migration is one of the important factors that may potentially affect the regional distribution of physicians.

In this context, jurisdictional health workforce planning (HWP) plays an increasingly important role. Although data on new Canadian graduates and international healthcare graduates are available and typically included in the HWP model, information on their interprovincial migration pattern is less known. In the few studies where this question is addressed, physicians and nurses are considered separately. In practice, these two professional categories work in a team to provide healthcare. Looking at their interprovincial migration

pattern in the same study could help us better understand the similarities and differences between these professions. The objective of this analysis is to understand the mobility pattern of recent healthcare graduates – specifically family physicians (FPs) and regulated nurses – across the different Canadian jurisdictions. This can provide better insights into the issue of health workforce supply and shortage, which is so topical in the Canadian healthcare system.

## Literature Review

There are a few studies on the migration of physicians in Canada (e.g., Basu and Rajbhandary 2006; Mou and Olfert 2015). However, the literature specifically on migration of new graduates (after completing the residency) is relatively scant. Patterns and predictors of physician movements can be classified into two main categories: personal and professional. Personal factors include, among others, age as young male and single physicians are more likely to move than their counterparts (Basu and Rajbhandary 2006; Vanasse et al. 2009). Cultural and family reasons are also important: migration is a family decision, and spousal characteristics matter (McDonald and Worswick 2012). The Canadian Institute for Health Information (CIHI) has also factored years after graduation: physicians usually move to other provinces within the first five years of establishing a medical practice (CIHI 2009).

Professional factors include the level of compensation and working conditions (Benarroch and Grant 2004), but another study found mixed evidence for income and a greater role for community characteristics (Mou and Olfert 2015). It should be acknowledged that other professional factors, such as dissatisfaction with professional life and professional relationships (Vanasse et al. 2009) and burnout and excessive workload (Mainous et al. 1994; Nestman 1998), are more relevant to experienced physicians and may not be applied to new physicians.

Studies addressing the topic of nurse migration in Canada are relatively sparse, particularly in the context of new graduates. The CIHI (2002) looked at the supply and distribution of registered nurses in rural and small-town Canada. More recent existing ones focus mostly on international migration (Covell et al. 2017; Hillman et al. 2022; WHO 2017). Nourpanah et al. (2018) admitted that mobility is relatively understudied among healthcare workers. They undertook a qualitative study to understand the policies that impact the mobility of healthcare workers in Nova Scotia (NS), Canada. The authors focused on the mobility of registered nurses (RNs), licensed practical nurses (LPNs) and continuing care assistants (CCAs). They outlined four key intersecting policy contexts: international labour mobility and migration, interprovincial labour mobility, provincial credential recognition and workplace and occupational health and safety. To our knowledge, no study has used administrative data to simultaneously look at the interprovincial migration of new physician and nurse graduates in Canada to determine the similarities and differences, particularly in recent years.

## Data and Methodology

Secondary health workforce data from the CIHI were used to conduct this quantitative research. We identified recent Canadian-educated medical graduates, as well as regulated nurse graduates and tracked their retention and migration rates. The physician data were sourced from Scott's Medical Database (SMDB). Physician data include active physicians in clinical and non-clinical practice who have a medical degree and a valid mailing address. The data exclude residents, physicians in the military, semi-retired and retired physicians and physicians who requested that their information not be published. See CIHI (2022c) for the methodology notes details.

Only FPs are considered in this analysis. They include general practitioners, family medicine specialists and emergency family medicine specialists who are certificants of the College of Family Physicians of Canada or the Collège des médecins du Québec. More specifically, FP data include new medical graduates (NMGs) between 2015 and 2019 in a particular province. Then the data were broken down according to the province or territory in which the FPs registered to practise in 2021 (cross-tabulation). The two-year lag between graduation and registration is considered to allow for the required residency period for FPs.[1] International migration is out of scope in this study. Prior to 2004, it was a relatively important phenomenon to be considered. However, since then, more Canadian medical graduates were returning from abroad than were leaving, and the current outflow is negligible (Freeman et al. 2016).

The nursing data were sourced from the Health Workforce Database (HWDB) and include all regulated nurses (nurse practitioners, RNs/registered psychiatric nurses in the four western provinces and LPNs [called registered practical nurses in Ontario]). More specifically, new nursing graduates (NNGs) in a specific province during the same five-year period are considered in this analysis. No lag period between graduation and registration was considered for nurses.

The out-migration rate for either FPs or nurses is the number of trainees who started working in a different jurisdiction from where they received their degrees divided by the total number of trainees. The rate of new physicians or nurses residing in a jurisdiction is the sum of new graduates/trainees retained and migrating in the jurisdiction divided by the total number of trainees. If this rate is higher (lower) than 100%, this means that the jurisdiction has a positive (negative) net interprovincial migration or a net gain (loss). The lower the rate, the higher the net loss.

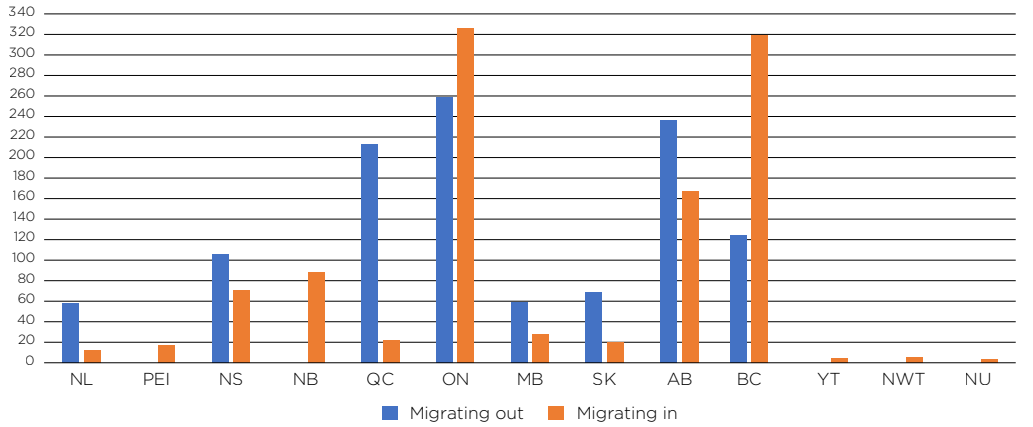
## Findings

### *Family physicians*

Among the 4,380 FP graduates in Canada during the five-year period, 1,698 (38.8%) were in Ontario (ON), followed by Quebec (QC), 831 (19.0%); Alberta (AB), 633 (14.4%); and British Columbia (BC), 567 (12.9%). The remaining 651 (14.9%) were shared between

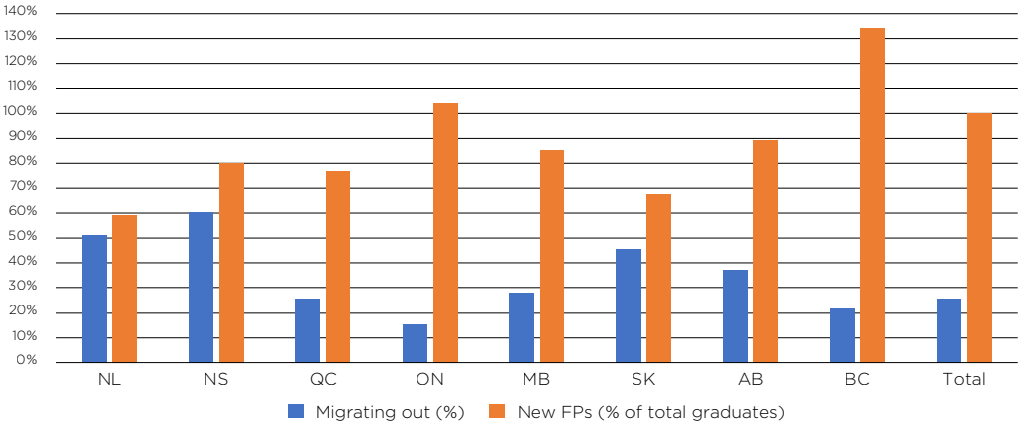
Manitoba (MB), NS, Saskatchewan (SK) and Newfoundland and Labrador (NL), in decreasing order. No independent medical schools are located in Prince Edward Island (PEI), New Brunswick (NB) and the territories (Northwest Territories [NWT], Yukon [YT], and Nunavut [NU]), although Dalhousie University's Faculty of Medicine has a campus in NB. Figures 1 and 2 depict the migration of these NMGs, showcasing their number (Figure 1) and the rate (Figure 2) of those migrating out and those residing in.

**FIGURE 1.** Number of FP graduates between 2015 and 2019 migrating out of/into Canadian jurisdictions in 2021




*Source:* Author's calculations based on CIHI (2022a).
Excludes physicians where the province of graduation from medical school is unknown.
Jurisdictions with no migrating-out figures have no dedicated medical schools.
The number of family medicine graduates in NS by province/territory of registration may include graduates of the Dalhousie University Faculty of Medicine from both the NS and NB campuses.
AB = Alberta; BC = British Columbia; FP = family physician; MB = Manitoba; NB = New Brunswick; NL = Newfoundland and Labrador; NS = Nova Scotia; NWT = Northwest Territories; NU = Nunavut; ON = Ontario; PEI = Prince Edward Island; QC = Quebec; SK = Saskatchewan; YT = Yukon.

**FIGURE 2.** Percentage of FP graduates between 2015 and 2019 migrating out of and residing in Canadian jurisdictions in 2021




*Source:* Author's calculations based on CIHI (2022a).
Jurisdictions with no dedicated medical schools do not have migrating-out figures and are not represented on this chart.
AB = Alberta; BC = British Columbia; FP = family physician; MB = Manitoba; NL = Newfoundland and Labrador; NS = Nova Scotia; ON = Ontario; QC = Quebec; SK = Saskatchewan.

At the national level, the NMG migration rate was around 25% – more precisely, 25.7% (1,126) for migrating out and 24.7% (1,082) for migrating in, excluding international migration. BC and ON were the only two provinces with a positive net interprovincial NMG migration. The numbers of migrating-out/migrating-in NMGs for BC were 124/319, resulting in a net gain of 195 NMGs and a rate of residing in of 134.4% of their total graduates. As for ON, the numbers of NMGs migrating out/migrating in were 259/326 (resulting in a net gain of 67 NMGs and a rate of residing in of 103.9% of their total graduates). So BC and ON were best able to retain the highest proportion (≥ 78%) of their NMGs and attract the highest proportion of NMGs from other provinces (≈ 30%).

That was not the case for the rest of the provinces, for which the share of migrating in is well below the national average and which experienced negative net interprovincial NMG migration. In absolute terms, the net loss was the strongest in QC (191), followed by AB (69), SK (49), NL (46), NS (35) and MB (31). However, in relative terms, the net loss was more pronounced in NL, followed by SK, QC and AB, with residing-in new physicians representing, respectively, 59.3%, 67.5%, 77.0% and 89.1% of their total graduates.

Let us turn our attention to which provinces contribute more to the BC and ON net gain. Table 1 (available online at longwoods.com/content/27234) shows the provinces of NMGs between 2015 and 2019 (vertical axis) and their jurisdictions of registration in 2021 (horizontal axis).

Among the 762 NMGs residing in BC, 443 graduated and stayed in the province, whereas 319 graduated elsewhere and migrated in BC. The provinces of origin are as follows: 116 (36.4%) came from AB, 110 (34.5%) from ON, 27 (8.4%) from SK, 24 (7.5%) from QC, 21 (6.6%) from MB and the remaining 21 (6.6%) from NS (13) and NL (8). Among the 1,765 NMGs residing in ON, 1,439 graduated and stayed in the province, whereas 326 graduated elsewhere and migrated in ON. The provinces of origin are as follows: 98 (30.1%) came from QC, 92 (28.2%) from AB, 50 (15.3%) from BC, 36 (11.0%) from NS and the remaining 50 (15.3%) from MB (20), NL (16) and SK (14).

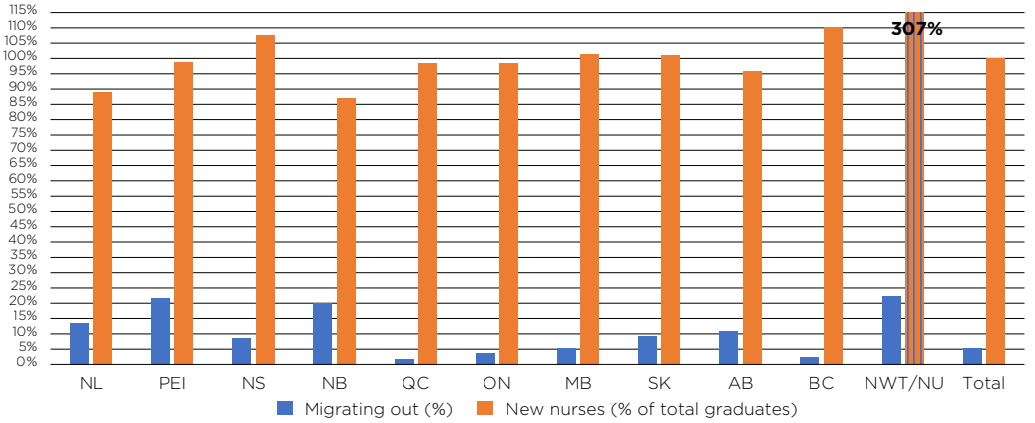
Table 1 can show the source of the NMGs who migrated in any specific jurisdiction but also the destination of the NMGs who migrated out of any specific province. For example, among the 236 NMGs migrating out of AB, 116 (49.1%) moved to BC, 92 (39.0%) to ON and the remaining 28 (11.9%) to NS (11), SK (8), MB (3), QC (2), NB (2), NL (1) and NWT (1).

In the exceptional case of NS, the movement of new graduates from a bigger province to a smaller one is not negligible. This province retains 69 of its FP graduates and receives 71 graduates from other provinces, for a total of 140 new physicians. Of the 71 attracted, it receives 58 from larger provinces (QC, ON, MB, AB and BC) and 13 from a smaller province (NL). Given that NS produced 175 graduates, new physicians represented 80% of its graduates (140/175).

## *Nurses*

Among the 77,055 new nursing graduates in Canada during the five-year period, 28,476 (37.0%) were in ON, followed by QC, 16,532 (21.5%); AB, 10,206 (13.2%); and BC, 9,864 (12.8%). The remaining 11,977 (15.5%) were shared between SK, NS, MB, NL, NB, PEI and the territories, in decreasing order. Figure 3 depicts the interprovincial migration of these nursing graduates, showcasing their rate of migrating out and residing in.

**FIGURE 3.** Percentage of nursing graduates between 2015 and 2019 migrating out of and residing in Canadian jurisdictions




*Source:* Authors' calculations based on CIHI (2022a).
Registration data in YT and the NWT/NU include only nurse practitioners and registered nurses. Therefore, the number of regulated nurses migrating to YT or the NWT/NU may be understated.
Data for new nursing graduates migrating out are not available for Yukon.
NWT and NU data are combined.
AB = Alberta; BC = British Columbia; MB = Manitoba; NB = New Brunswick; NL = Newfoundland and Labrador; NS = Nova Scotia; NWT = Northwest Territories; NU = Nunavut; ON = Ontario; PEI = Prince Edward Island; QC = Quebec; SK = Saskatchewan.

At the national level, the nursing migration rate was 5.3%, representing 4,084 nurses. BC and NS were the two provinces with significant positive net migration. The numbers of nurses migrating out/migrating in for BC were 239/1,237, resulting in a net gain of 998 NNGs and a rate of residing in of 110.1% of their total graduates. As for NS, with 2,618 NNGs, the numbers of migrating-out/migrating-in NNGs were 223/427, resulting in a net gain of 204 NNGs and a residing-in rate of 107.8% of their total graduates.

MB and SK also had positive net migration, but marginally. Their rates of NNGs residing in were, respectively, 101.5% and 100.9%. NWT and NU, the two territories for which data are available, had 72 trainees combined but exhibited very strong positive net migration, with numbers of migrating-out/migrating-in NNGs of 16/165, resulting in a net gain of 149 NNGs and a residing-in rate of 306.9% [(72 – 16 + 165)/72]. Like BC, QC and ON were able to retain the highest proportions (≥ 95%) of their NNGs. However, they were not able to attract a share of NNGs as significant as that of BC. QC's share of migrating-in nurses (1.7%) was barely enough to compensate for its rate of migrating-out nurses. As for ON, even though its share of migrating-in nurses (16.5%) was much higher than that of QC, its rate

of migrating-out nurses was more than twice that of QC. For both provinces, this resulted in a slightly negative net migration, with a residing-in rate of around 99%. PEI also had this same residing-in rate, although its migrating-out rate was among the highest, suggesting that it has the capacity to attract NNGs (its share of migrating-in nurses was 2.5%, which is fairly substantial for a small province). A detailed table for nurses, similar to Table 1 for FPs, is available upon request.

The other jurisdictions have significant negative net NNG migration. The net percentage loss was the strongest in NB and NL, with residing-in rates of 87.2% and 89.0%, respectively.

## General Discussion and Limitations

### *General discussion*

These results have implications for regional HWP from several aspects, including funding profession-specific training seats in universities in each jurisdiction and profession/jurisdiction-specific policies/programs focused on incentives to stay. The fact that smaller provinces have a lower percentage of medical graduates who remain in the province after graduation could lead these provinces to train more physicians than they required. This phenomenon should not be seen as these smaller provinces subsidizing larger ones but rather as an economically efficient strategy. Medical schools are funded not only by the provincial government but also by the federal government and private and international sources. Out-of-province and international students generated economic activity by paying their tuition and living expenses. Moreover, research in medical schools attracts funding from outside the province and sometimes from foreign countries. So it can be optimal for these smaller provinces to train more physicians than they need.

Still, in terms of interprovincial NMG migration, smaller provinces are disadvantaged. To account for this fact, the federal government could adjust its transfer mechanisms to allocate a proportionally higher share of funding for medical and nursing training seats in these provinces. This is all the more relevant as the Government of Ontario is in the process of removing the registration requirement for out-of-province healthcare workers, specifically physicians and nurses[2] (Cook 2023; Ontario's Regulatory Registry 2023). Schedule 2 under Bill 60 will allow Out-of-Province Regulated Health Professionals to temporarily practise in Ontario without registering with an Ontario regulatory college (Ontario's Regulatory Registry 2023). Although this measure will generate more flexibility and mobility in the labour market for these professionals, it could also mean an acceleration of the imbalance in net interprovincial migration.

Policies and programs focused on incentives to stay could also be considered. Typically, wage or pay increases come to mind when discussing them. Although the level of income is an important factor, the literature shows that other factors, such as working conditions, could be more important. In fact, Mou and Olfert (2015) find that in FPs' intention to move,

higher compensation has a modest effect, whereas community characteristics have a consistently important influence. To attract and retain primary care workers in small provinces or in small communities, policy makers could derive some benefits by seeking to mimic large-community conditions, such as spousal hire programs, assistance for conference travel and support for other means of accessing peers and specialists. These measures would come on top of others, such as group and interprofessional practice and an adequate staff-to-patient ratio, which is generally known to prevent burnout, an excessive workload, excessive on-call duties and a lack of leaves for vacations.

The fact that BC and ON were best able to retain the highest proportion of their NMGs and attract the highest proportion of NMGs from other provinces could be due to different factors in each province, mainly lifestyle for BC and income for ON. The average gross clinical total payment per physician (trimmed at $60,000) was $256,896 in BC and $380,199 in ON in fiscal year 2020–2021 (CIHI 2022b). This suggests that although BC was not able to compete for physicians based on income, it managed to do so on the basis of other factors, including climate, amenities and lifestyle. In QC, the low in-migration may be explained by the official language factor: mostly francophones or bilingual people will migrate to QC. Out-migration from this province is driven by the bilingual neighbouring province (NB) and the fact that medical graduates from the English program at McGill University are more likely to migrate to other provinces – namely, ON. Finally, the territories rely more on nurses to provide care. The finding that NWT/NU has attracted so many nurses is consistent with their model of care. NS and PEI have also attracted many nurses, along with MB and SK. Generally, it seems easier for small or medium jurisdictions to attract nurses than to attract physicians given the migration and distribution pattern of nurses compared to FPs.

The differences among our 13 provincial/territorial fragmented healthcare systems in terms of location, climate, language, size and economy cannot be changed in the short term. The federal government could play a greater role in regulating the competition among provinces and coordinating the healthcare labour force in the country. For example, it can partner with provincial governments in smaller jurisdictions to increase spousal hire programs and mimic large-community conditions. This can be applied to the spouses of either sex. There are growing calls for promoting nurses and nurse practitioners in underserved communities. Yet we found that nurse interprovincial migration is generally less prevalent than that of physicians, although small jurisdictions are less disadvantaged for NNG migration relative to NMG migration. Therefore, for the federal government, this represents a policy lever that is as relevant for the nursing workforce.

### *Limitations*

The data exclude physicians and regulated nurses for whom the province of graduation is unknown. However, this represents a very low percentage among all new graduates and is

virtually nil among Canadian graduates. Moreover, to avoid double-counting at the national level, the SMDB counts physicians once in the jurisdiction of their mailing address. This means that this count does not include physicians who work on temporary arrangements in a particular jurisdiction – for example, locum physicians. They tend to be physicians registered in more than one jurisdiction and accounted for 25.6% of active physicians in 2021. Therefore, the availability of NMGs could be underestimated, particularly for smaller jurisdictions such as the territories and PEI.

The province in which the FP registered to practise in 2021 does not necessarily represent the first province of registration, particularly for someone who graduated at the beginning of the five-year period. Finally, interprovincial migration rates can mask much wider variations in subprovincial movement rates, which are particularly relevant when considering the provision of healthcare services in rural and remote communities.

## Conclusion

Relative to regulated nurses, medical trainees are more mobile after their graduation. Moreover, the jurisdiction where they are trained is a key factor in determining their migration rates. For FPs, bigger jurisdictions typically experienced lower out-migration rates than smaller ones while at the same time being able to attract more new graduates. This results in a positive net interprovincial migration rate for NMGs in BC and ON (residing-in new physicians at more than 100% of their total graduates). For QC, although the out-migration rate was not that high (on par with the national average), the migrating-in share was very low, which results in its negative net interprovincial migration rate (residing-in new physicians at 77% of its total graduates). Cultural factors, particularly language, can partly explain this phenomenon.

In the case of nurses, BC and NS experienced significant positive net migration and are marginally joined by MB and SK. On top of better working conditions (group and interprofessional practice, an adequate staff-to-patient ratio, level of income), seeking to mimic large-community conditions (spousal hire programs, assistance for conference travel, support for professional networking) could also help alleviate the net migration imbalance between smaller and larger jurisdictions for both FPs and nurses.

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## Notes

1. Some extended FP training programs can take three years instead of the two-year lag used in this analysis. However, that is a rather relatively low figure – 21% of trainees in 2013 (Slade et al. 2016).
2. But also medical laboratory technologists, and respiratory therapists.

## References

Basu, K. and S. Rajbhandary. 2006. Interprovincial Migration of Physicians in Canada: What Are the Determinants? *Health Policy* 76(2): 186–93. doi:10.1016/j.healthpol.2005.06.003.

Benarroch, M. and H. Grant. 2004. The Interprovincial Migration of Canadian Physicians: Does Income Matter? *Applied Economics* 36(20): 2335–45. doi:10.1080/0003684042000281543.

Canadian Institute for Health Information (CIHI). 2002. *Supply and Distribution of Registered Nurses in Rural and Small Town Canada, 2000*. Retrieved January 28, 2023. <https://secure.cihi.ca/free_products/NursingRuralSmallTownCanada2000.pdf>.

Canadian Institute for Health Information (CIHI). 2009. *Supply, Distribution and Migration of Canadian Physicians, 2008*. Retrieved November 10, 2023. <https://secure.cihi.ca/free_products/SMDB_2008_e.pdf>.

Canadian Institute for Health Information (CIHI). 2022a. Health Workforce in Canada, 2021 – Quick Stats. Retrieved January 24, 2023. <https://www.cihi.ca/en/quick-stats>.

Canadian Institute for Health Information (CIHI). 2022b. National Physician Database: Payment Data, 2020–2021. Retrieved January 26, 2023. <https://www.cihi.ca/sites/default/files/document/npdb-payments-data-tables-2020-en.xlsx>.

Canadian Institute for Health Information (CIHI). 2022c. *Supply, Distribution and Migration of Physicians in Canada, 2021: Methodology Notes*. Retrieved January 24, 2023. <https://www.cihi.ca/sites/default/files/document/supply-distribution-migration-physicians-2021-meth-notes-en.pdf>.

Cook, D. 2023, January 19. Ontario to Remove Registration Requirement for Out-of-Province Health Care Workers. *Globe and Mail*. Retrieved January 25, 2023. <https://www.theglobeandmail.com/canada/article-ontario-doctors-nurses-credentials>.

Covell, C.L., M.-D. Primeau, K. Kilpatrick and I. St-Pierre. 2017. Internationally Educated Nurses in Canada: Predictors of Workforce Integration. *Human Resources for Health* 15(1): 26. doi:10.1186/s12960-017-0201-8.

Freeman, T.R., S. Petterson, S. Finnegan and A. Bazemore. 2016. Shifting Tides in the Emigration Patterns of Canadian Physicians to the United States: A Cross-Sectional Secondary Data Analysis. *BMC Health Services Research* 16: 678. doi:10.1186/s12913-016-1908-2.

Hillmann, F., M. Walton-Roberts and B.S.A. Yeoh. 2022. Moving Nurses to Cities: On How Migration Industries Feed into Glocal Urban Assemblages in the Care Sector. *Urban Studies* 59(11): 2294–312. doi:10.1177/00420980221087048.

Mainous, A.G., M. Ramsbottom-Lucier and E.C. Rich. 1994. The Role of Clinical Workload and Satisfaction with Workload in Rural Primary Care Physician Retention. *Archives of Family Medicine* 3(9): 787–92. doi:10.1001/archfami.3.9.787.

McDonald, J.T. and C. Worswick. 2012. The Migration Decisions of Physicians in Canada: The Roles of Immigrant Status and Spousal Characteristics. *Social Science & Medicine* 75(9): 1581–88. doi:10.1016/j.socscimed.2012.07.009.

Mou, H., and M.R. Olfert. 2015. Inter-Provincial Migration Intentions of Family Physicians in Canada: The Roles of Income and Community Characteristics. *Healthcare Policy* 11(2): 58–71.

Nestman, N.A. 1998. *The Retention of Physicians in Rural Areas: The Case of Nova Scotia*. IRC Press Industrial Relations Centre, Queen's University. Retrieved February 9, 2023. <https://irc.queensu.ca/wp-content/uploads/articles/articles_the-retention-of-physicians-in-rural-areas-the-case-of-nova-scotia.pdf>.

Nourpanah, S., I. Bourgeault, L. Jackson, S. Price, P. Gardiner Barber and M.P. Leiter. 2018. Intersecting Policy Contexts of Employment-Related Geographical Mobility of Healthcare Workers: The Case of Nova Scotia, Canada. *Healthcare Policy* 4(2): 12–21.

Ontario's Regulatory Registry. 2023. Proposed Regulatory Amendments to Allow Out-of-Province Regulated Health Professionals to Temporarily Practice in Ontario Without Registration with an Ontario Regulatory College. Retrieved October 14, 2023. <https://www.ontariocanada.com/registry/view.do?postingId=44709>.

Slade, S., S. Ross, K. Lawrence, D. Archibald, M. Palacios Mackay and I.F. Oandasan. 2016. Extended Family Medicine Training: Measuring Training Flows at a Time of Substantial Pedagogic Change. *Canadian Family Physician* 62(12): e749–57.

Vanasse, A., S. Scott, J. Courteau and M.G. Orzanco. 2009. Canadian Family Physicians' Intentions to Migrate: Associated Factors. *Canadian Family Physician* 55(4): 396–7.e1-6.

World Health Organization (WHO). 2017. *A Dynamic Understanding of Health Worker Migration*. Retrieved July 4, 2023. <https://cdn.who.int/media/docs/default-source/health workforce/migration-code/2013-health-workermigration.pdf?sfvrsn=efbc213c_3&download=true>.