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Understanding the Distribution and Mobility Patterns of Family Physicians: An Outcomes of Training Project evidence summary

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Background

The distribution of family physicians practising in Canada is a source of information that health workforce planners monitor closely. Where family physicians decide to practise is an indicator of the level of accessibility that people in Canada have to primary care in those regions. The federal government, through the Health Minister's mandate letter in 2021, pledged to support every Canadian in having access to a family physician or primary care team.¹ For this to become a reality it is essential to have a picture of the distribution patterns of family physicians in Canada. For this review we examined the practice locations of Canadian medical graduates.

Objective

An understanding of the distribution and mobility of family physicians supports health human resource planning and decision making related to the deployment and training of the health workforce. As part of the social accountability mandate of the College of Family Physicians of Canada (CFPC), this study was designed to examine the temporal and regional patterns of the distribution and mobility of early-career family physicians in Canada. Both Canadian medical graduates and international medical graduates were examined in the full study; however, this report highlights the findings specifically related to Canadian medical graduates based on the following questions:

1. What is the ratio of family physicians to population by practice region (provincial jurisdiction) and the proportions of family physicians practising in particular settings (urban, rural) over time?
2. At five years after exiting the programs, what are the proportions of Canadian medical graduates from the family medicine and extended training programs (training taken beyond core family medicine residency) by practice region? Over time?
3. What is the relationship between participation in rural training programs and the chosen practice settings of family medicine graduates at five years after exiting the programs? Over time?

4. What are the mobility patterns of Canadian medical graduates in relation to the practice region of their education by year? What is the relationship between practice region and mobility patterns? Over time?

Methods

This descriptive study was informed by two data sources:

Canadian Institute for Health Information's Scott's Medical Database: This database reports on the number, distribution, demographics, and migration of physicians in Canada.² These data are collected from organizations and institutions such as jurisdictional registrars, the Royal College of Physicians and Surgeons of Canada, and the CFPC and from physicians who contact them directly. Active family physicians identified as being in practice from 2000 to 2019 were included in a trend analysis.

Canadian Post-MD Education Registry: This registry maintains record-level data (individual) for all postgraduate medical residents and fellows in Canada.³ Data are captured longitudinally, from the time of entering training to the year of exit and out into practice. This self-reported, census-type data set includes all resident trainees who are surveyed by the postgraduate medical education offices of each Canadian medical school and archived in this registry. It also collects limited data on the graduates from family medicine Category 1 and 2 programs.⁴ These data include third-year family medicine trainees who completed a Certificate of Added Competence (CAC) in either Emergency Medicine (Category 1) or Care of the Elderly (Category 1), and all other enhanced skills trainees (i.e., trainees in all other Category 1 and all Category 2 programs). For this study we used the term **extended training** based on language used in the literature.⁵ Extended training in this study is defined as additional training beyond core family medicine residency, which may or may not culminate in a CAC, including emergency medicine, care of the elderly, and all other enhanced skills programs. (Refer to Appendix 1 for the List of Other Enhanced Skills Training Programs.)

To examine the locations of family medicine graduates five years into practice by region and practice setting, we included Canadian medical graduates who were Canadian citizens or permanent residents and who exited the family medicine program and the extended training programs of Canadian medical schools between 2004 and 2014, and for whom this registry collects data. Records with missing practice location data and those identified in other countries at five-year follow-up after exiting family medicine residency training were excluded.

To examine the practice settings of family medicine residents from rural training programs and other programs at five years into practice, we examined available data on Canadian citizens and permanent residents from exit years 2011 to 2014. We used the CFPC’s definition of rural training programs for this analysis. We defined practice settings based on the Statistical Area Classification type associated with a practice postal code.⁶

Analysis: Data were analyzed based on trends across exit years.^{7,8} Descriptive statistics were used to analyze secondary data and summarize study outcomes. Chi-square tests were used to study the relationship between participation in rural training programs and location at five years into practice.

Mobility patterns of family medicine graduates

We examined the numbers and proportions of

Canadian medical graduates who remained in or left their regions of medical degree training and residency training based on their practice locations five years after exiting residency. This study adopted the Canadian Post-MD Education Registry’s classification for mobility categories, as outlined in **Table 1**.⁹

The study population included all Canadian citizens and permanent residents with valid practice location data who exited residency training from a Canadian faculty between 2006 and 2016 and who earned their medical degrees in Canada.

Analysis: Data were analyzed using a trend analysis. Descriptive statistics were used to analyze secondary data and summarize study outcomes.

Findings

What is the proportion of family physicians by practice region and setting over time?

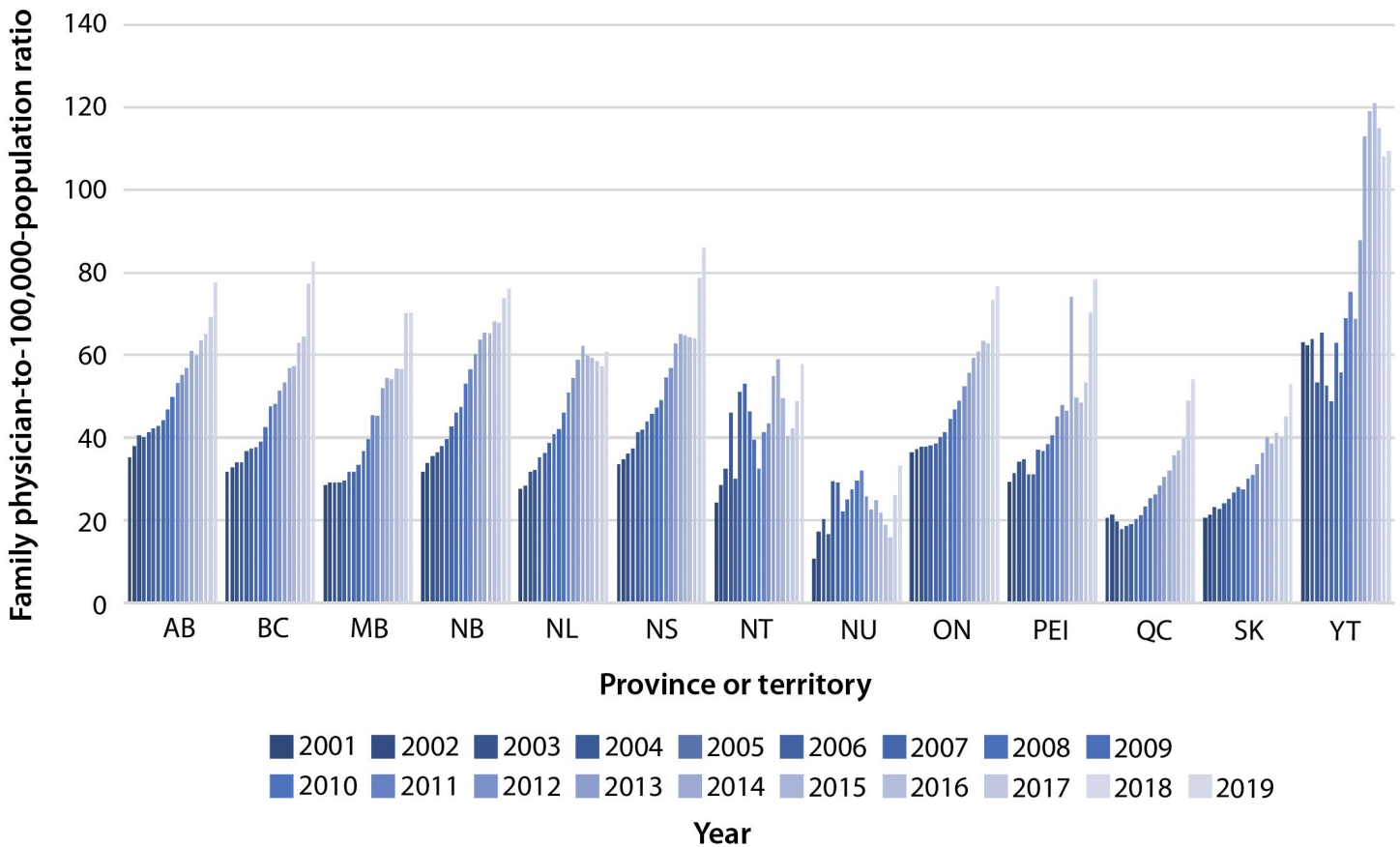
Practice region of family physicians

The family-physician-to-100,000-population ratio in general increased across most provinces and territories between 2001 and 2019 (**Figure 1**). Yukon consistently had the highest ratio across the country. Alberta, New Brunswick, Nova Scotia, and Ontario tended to have the highest ratios of family physicians to 100,000 population while Nunavut, Quebec, and Saskatchewan had the lowest ratios.

Table 1. Classification of mobility categories

Mobility Category	Definition
Consistent	Physician was found in the same region at all three points in time (region of MD, post-MD, and practice [five-year follow-up])
Mobile	Physician was found in different regions at all three points in time
Return to MD	Physician left region of MD for postgraduate training and returned to practise in region of MD
Remain in Post-MD (residency)	Physician left region of MD and practised in the same region where postgraduate training occurred
Leave Education Territories	Physician completed MD and postgraduate training in one region but practised in another region

Figure 1. The number of family physicians per 100,000 people by province or territory, from 2001 to 2019



Practice settings of family physicians

The proportion of family physicians located in urban environments increased slightly, from 85 per cent in 2000 to 87 per cent in 2019, compared with rural environments (Figure 2). Fewer than 20 per cent of family physicians were practising in rural settings, and this pattern remained relatively consistent from 2000 to 2019.

What are the proportions of Canadian medical graduates from family medicine and extended training programs by practice region five years after exiting the program by year? Over time?

At five years into practice, the greatest proportions of Canadian medical graduates from family medicine and extended training programs were located in Ontario and Quebec (Figure 3).

Observations about graduates from family medicine programs:

Prairies: The proportion of Canadian medical graduates practising in the Prairies increased from 13.5 per cent in 2009 to 17.6 per cent in 2019.

British Columbia: The proportion of Canadian medical graduates practising in British Columbia decreased from 13.0 per cent in 2009 to 11.4 per cent in 2019.

Atlantic region: The proportion of Canadian medical graduates practising in the Atlantic provinces decreased from 9.3 per cent in 2009 to 6.8 per cent in 2019.

Outside Canada or not located: The proportion of Canadian medical graduates practising outside Canada (or not accounted for) varied over time, dropping from 3.4 per cent in 2009 to 0.8 per cent in 2019.

Among graduates from extended training programs:

Ontario: The proportion of Canadian medical graduates practising in Ontario increased from almost 40 per cent in 2009 to 44.7 per cent in 2019.

Figure 2. Practice settings of family physicians from 2000 to 2019

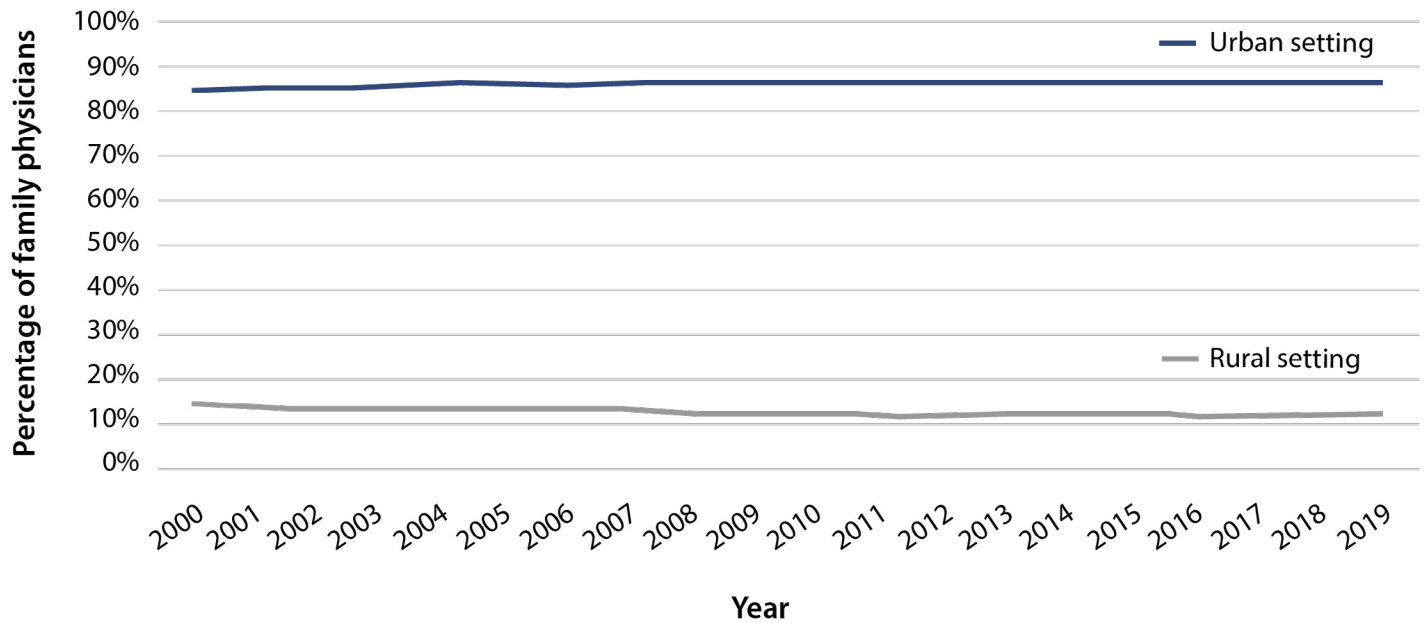
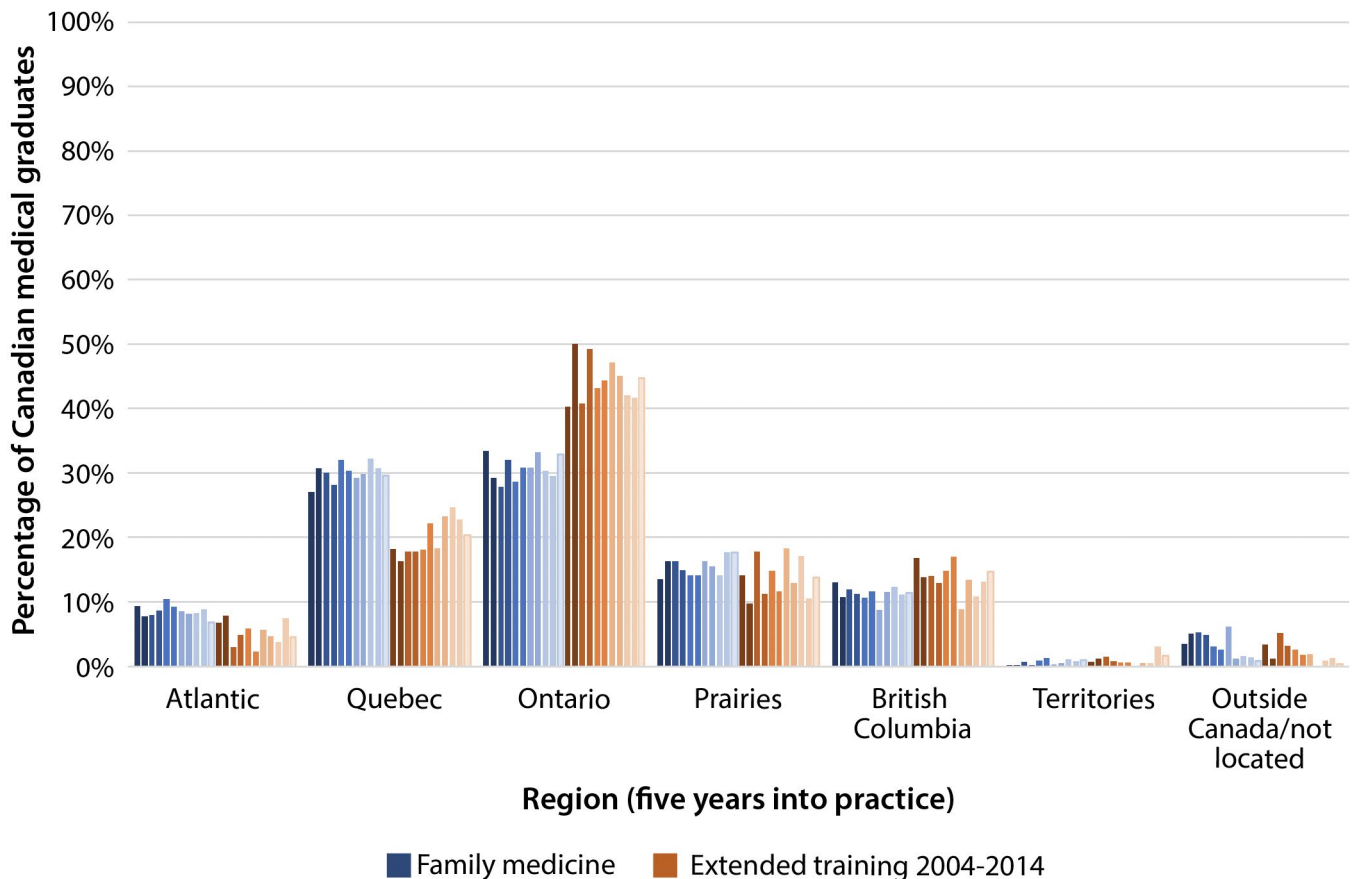


Figure 3. Practice region of Canadian medical graduates at five years into practice by program and by exit year, from 2004 to 2014



British Columbia: The proportion of Canadian medical graduates decreased from 16.8 per cent in 2009 to 14.6 per cent in 2019.

Atlantic region: The proportion of Canadian medical graduates decreased from 6.7 per cent in 2009 to 4.5 per cent in 2019.

Practice region of Canadian medical graduates from extended training programs by exit year

At five years into practice, most Canadian medical graduates of extended training programs, including emergency medicine, care of the elderly, and all other enhanced skills programs, lived in Ontario (Figures 4, 5, and 6). There were few graduates from care of the elderly programs, thus this domain should be assessed with caution.

What is the relationship between participation in rural training programs and the practice setting of family medicine graduates five years after exiting the program? Over time?

At five years into practice, the proportions of Canadian medical graduates based in various practice settings were similar for those who had participated in family medicine and extended training programs. For both family medicine and extended training graduates, most were located in large urban centres (Figure 7). There were no clear trends over time.

Practice settings of Canadian medical graduates by extended training programs by exit year

For Canadian medical graduates from extended training programs, the trends related to practice settings were similar to those for Canadian medical graduates from the family medicine program: Most (up to 100 per cent) were located in large urban centres, followed by rural locations, towns, and small cities (Figure 8).

Figure 4. Practice regions of Canadian medical graduates from emergency medicine programs at five years into practice by region and by exit year, from 2004 to 2014

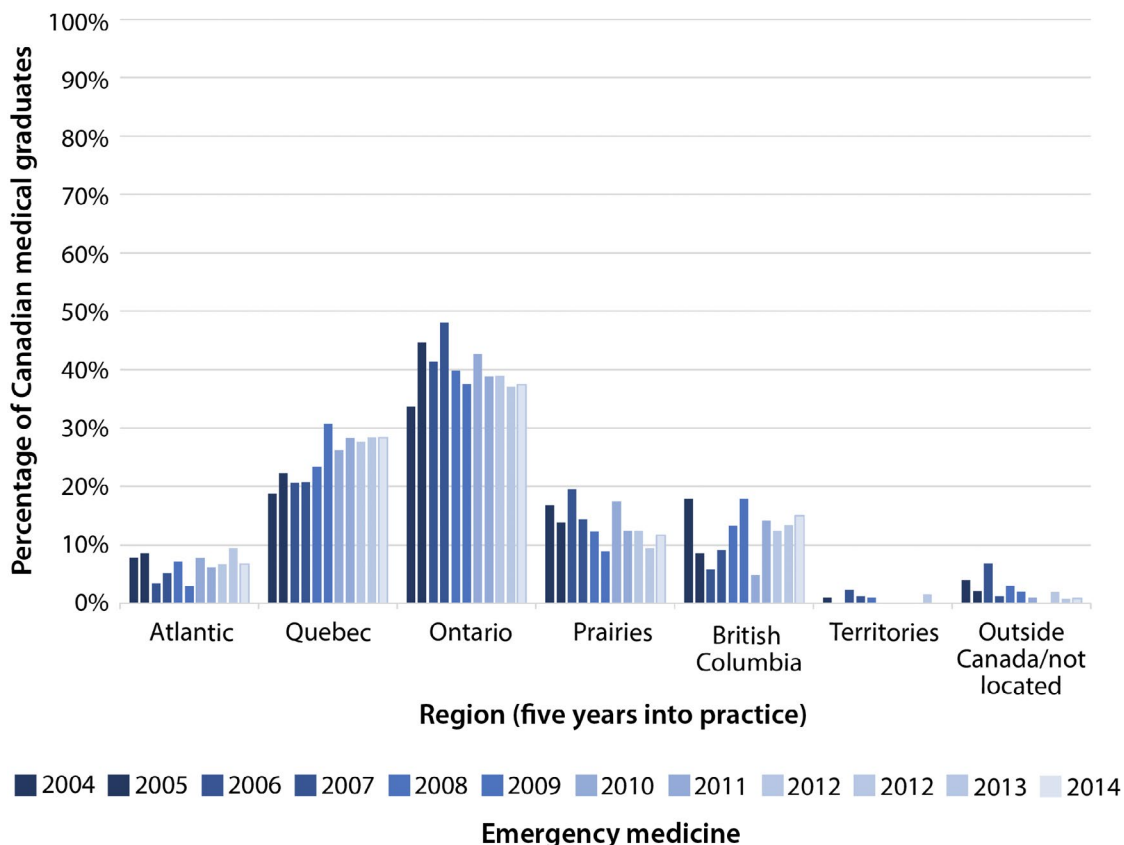


Figure 5. Practice regions of Canadian medical graduates from care of the elderly programs at five years into practice by region and by exit year, from 2004 to 2014

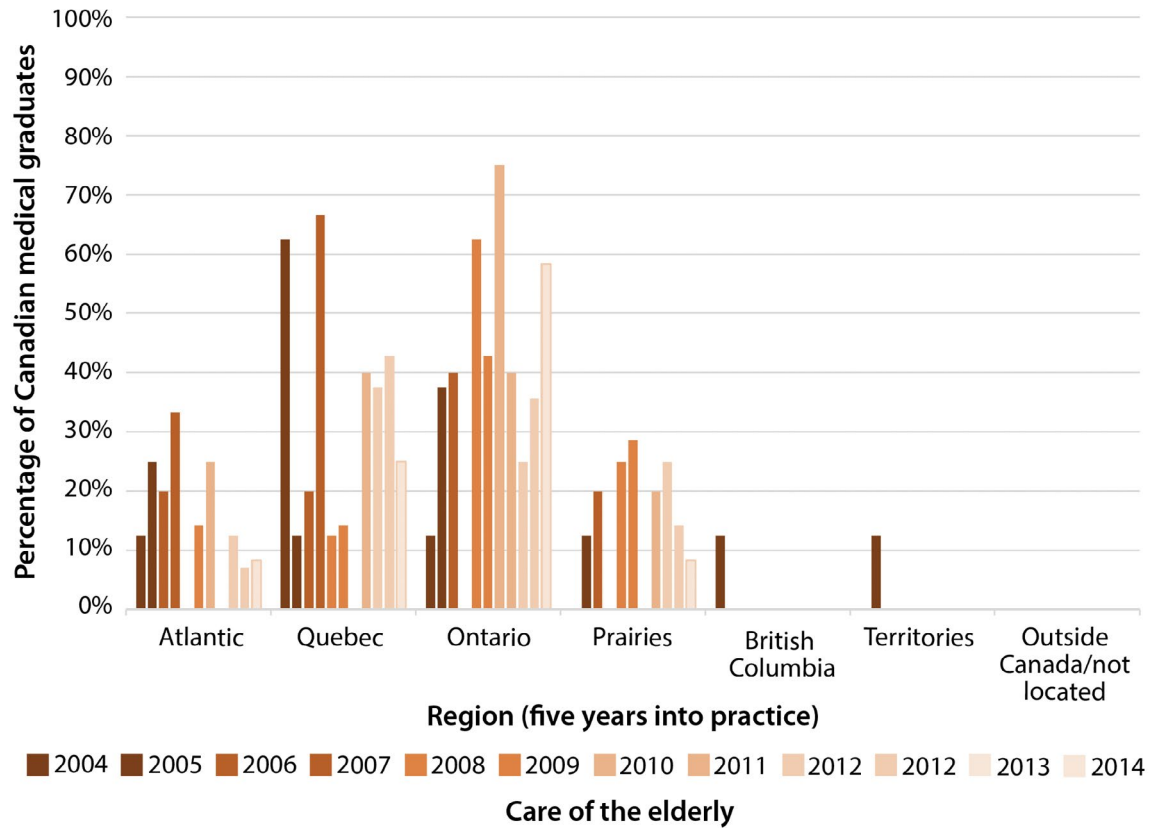


Figure 6. Practice regions of Canadian medical graduates from enhanced skills programs other than emergency medicine and care of the elderly at five years into practice by region and by exit year, from 2004 to 2014

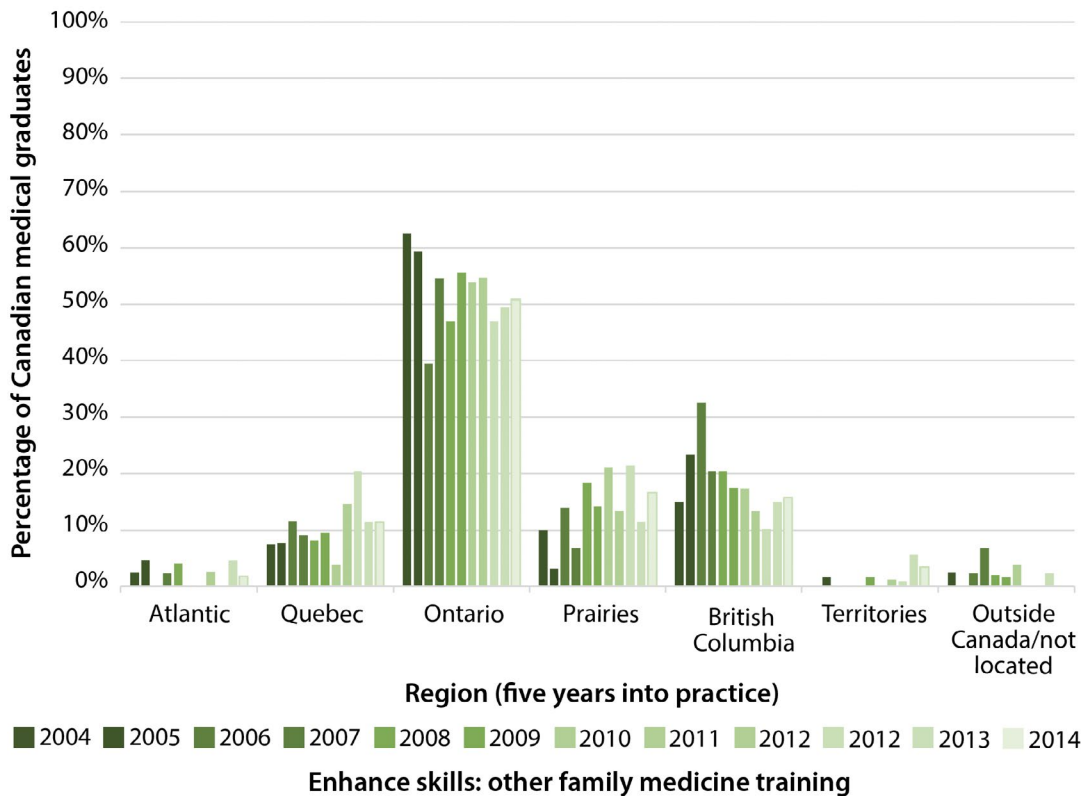


Figure 7. Practice settings of Canadian medical graduates by program at five years into practice by exit year, from 2004 to 2014

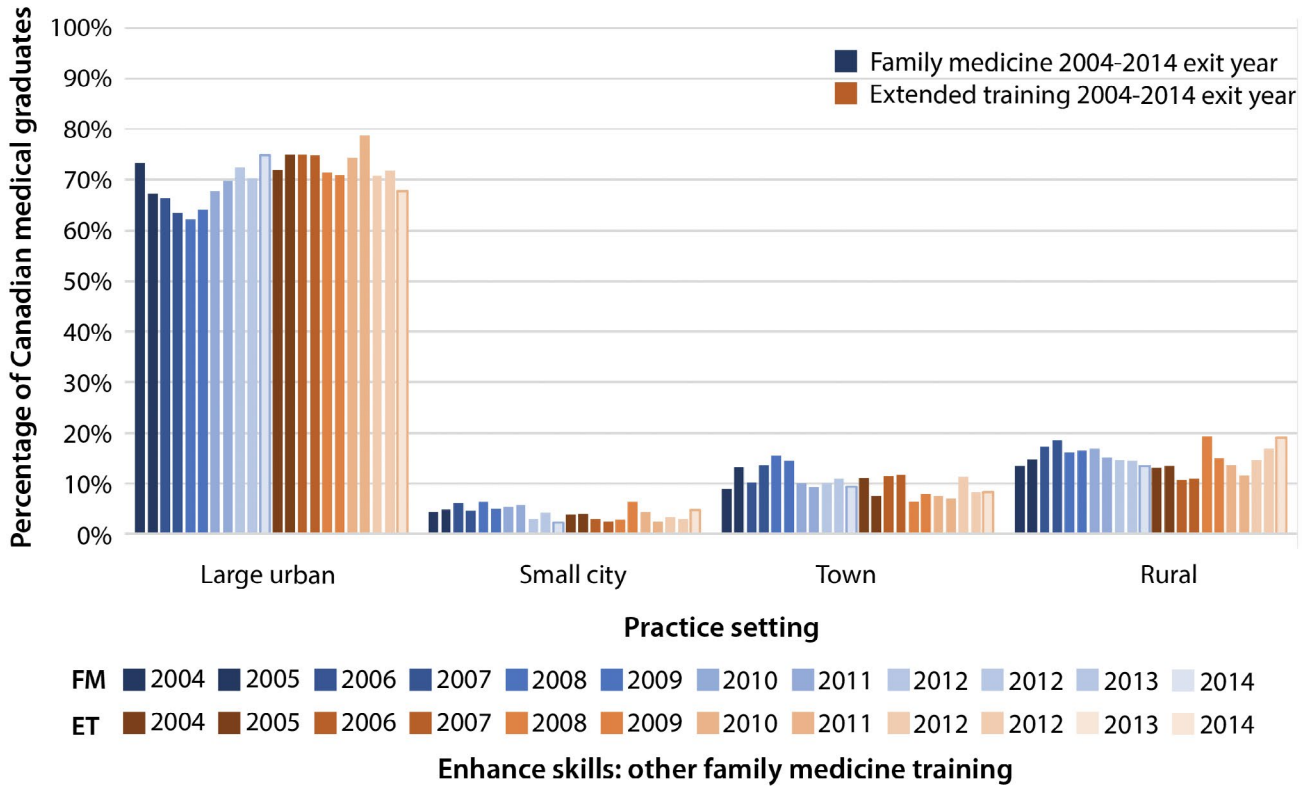
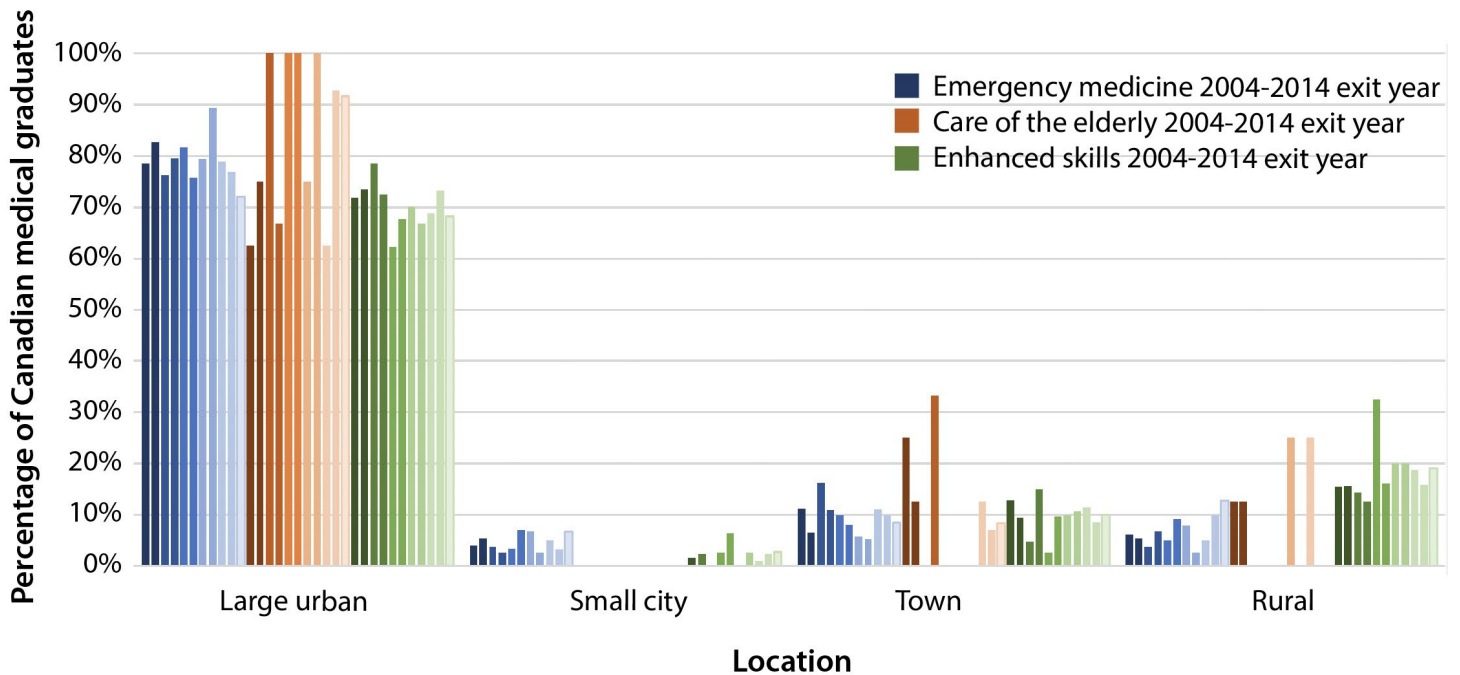


Figure 8. Practice settings of Canadian medical graduates from extended training programs at five years into practice by program and by exit year, from 2004 to 2014



Practice setting by program type by exit year

The percentage of family physicians practising in a town or rural setting at five years after exit was much higher for those from rural family medicine programs compared with those from other programs (Figure 9). Over the three-year period there was a slight decline in the percentage of family medicine graduates from rural programs who were practising in a town or rural setting (from 61 per cent to 52.5 per cent).

What are the mobility patterns of Canadian medical graduates in relation to the region of their education by year? What is the relationship between jurisdiction and mobility patterns? Over time?

There was a relationship between residency exit year and the mobility category. The proportion of family physicians who were in the same region for MD training, post-MD training, and five years into practice (the “Consistent” category) increased slightly over time (Figure 10). In contrast, the proportion of

family physicians in the “Mobile” category dropped slightly over the same period. Finally, the proportion of trainees who did their MD and post-MD training in the same region but were practising outside that region at five years (the “Leave education” category) dropped by almost half, from 8.5 per cent in the 2006 exit year to 4.4 per cent in the 2016 exit year.

Mobility patterns of Canadian medical graduates by jurisdiction

There was a relationship between mobility category and practice region. A large proportion of family physicians practising in the Atlantic provinces had left the region in which they had completed their education to practise in the Atlantic region (Figure 11). In complete contrast to this, the majority of practising physicians in Quebec had completed their education in that province. In British Columbia, almost one in three practising physicians (31.5 per cent versus 12.9 per cent for Canada overall) completed their medical degree in another region but moved to British Columbia to do their residency and practise there.

Figure 9. Percentage of family physicians based in a town or rural setting by program at five years into practice and by exit year, from 2012 to 2014

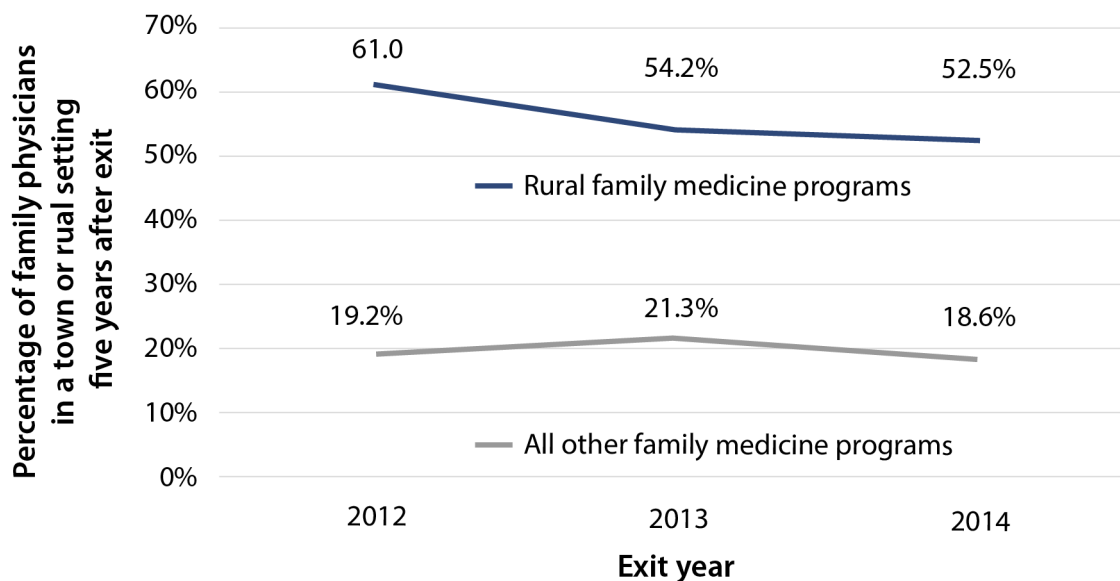


Figure 10. Mobility patterns of family physicians at five years into practice by residency exit year, from 2006 to 2016

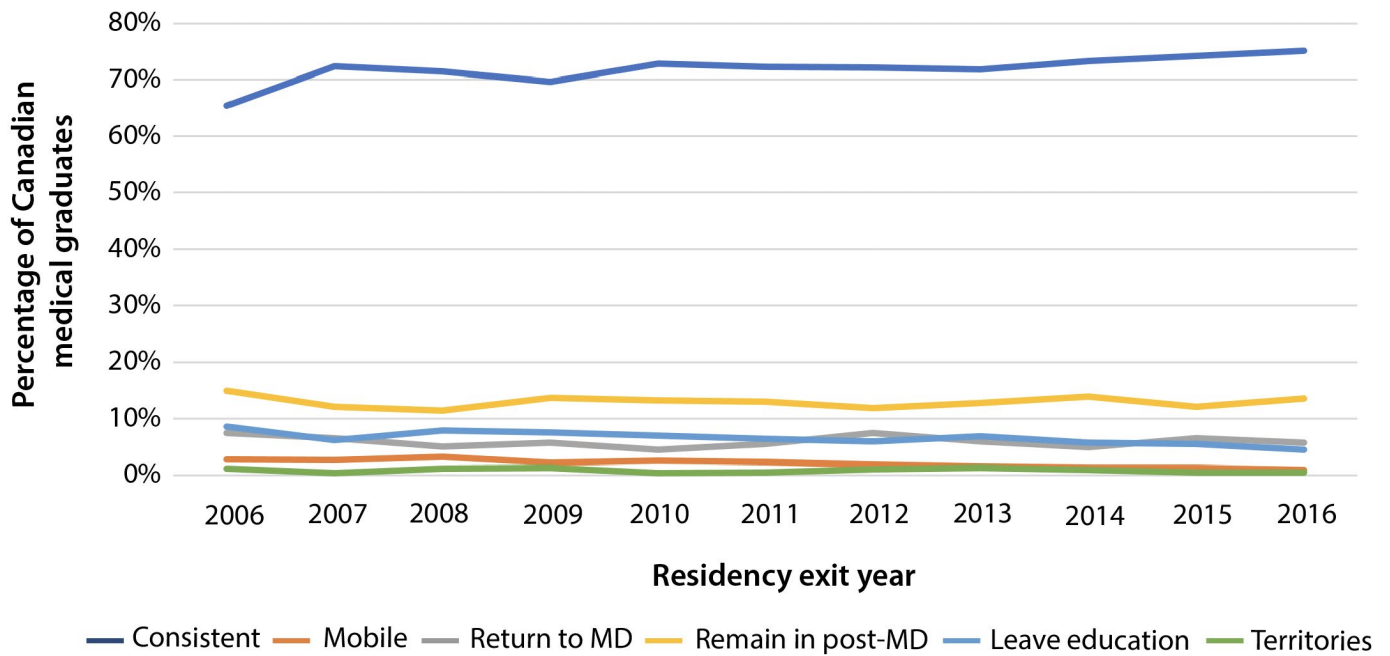
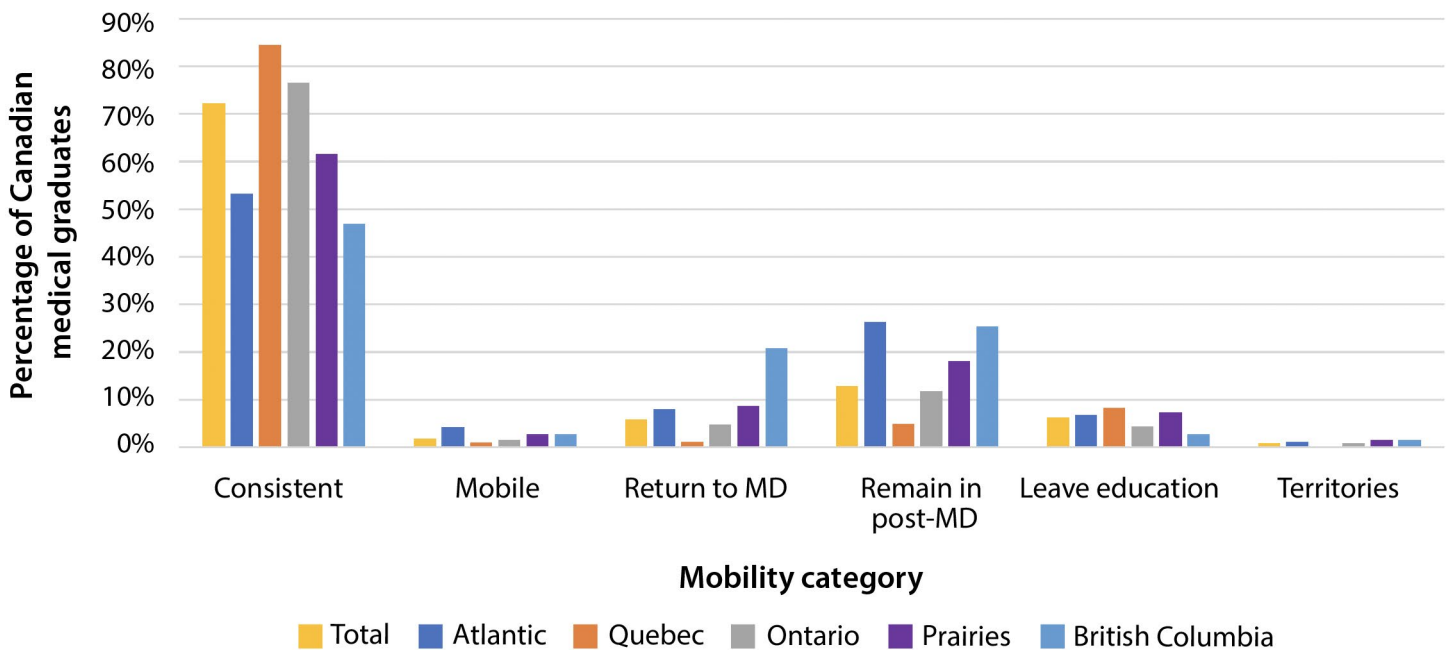


Figure 11. Mobility categories of Canadian medical graduates by jurisdiction at five years into practice



Limitations

Each database has limitations. Scott's Medical Database is unable to maintain a preferred mailing address for all physicians.³ Furthermore, the accuracy of the data at any given point in time is limited due to time delays in data collection and reporting. The Canadian Post-MD Education Registry collects limited data on family medicine Category 1 and 2 programs. As a result, there may be residents who dropped out and who would not be reflected in the data. The reporting of postgraduate year three programs was sporadic in the first years reported to the registry but is much more consistent now. The Canadian Post-MD Education Registry does collect data on visa trainees when they are in school but does not receive practice location data from partners, as they are expected to return to their countries of origin at the conclusion of training. Some visa trainees may choose to return to Canada and would have been missed in the current analyses.

Discussion

In Canada, Certification in the College of Family Physicians of Canada enables family medicine graduates to apply for a full medical licence to practise in each jurisdiction by its affiliated regulatory body. In 2019 there were 91,375 physicians in Canada, representing 241 physicians per 100,000 population (of the doctors in this ratio, 122 are family physicians).¹⁰ This accounts for a ratio of 1.22 family physicians per 1,000 people. Yet approximately 4.6 million Canadians do not have access to a regular health care provider.¹¹

This review confirms there is a higher proportion of family physicians practising in urban environments versus rural environments, with a slight increase from 85 per cent to 87 per cent from the beginning of 2000 to 2019. Furthermore, fewer than 20 per cent of family physicians practise in rural settings, and this pattern remained relatively consistent between 2000 and 2019.

If the outcome of training is to have an impact on the CFPC's social accountability mandate, then addressing family physician maldistribution is something that residency training programs and the CFPC need to

consider. Understanding the influence that residency education has on actual practice choice is a key factor for consideration.

This review found that most graduates from family medicine programs chose to locate in Ontario and Quebec. The proportions of Canadian medical graduates from family medicine programs who located their practices in the Prairies increased between 2009 and 2019 and declined slightly in British Columbia and the Atlantic regions. Family physicians tended to stay in the same region where they completed their MD training and residency training, with slightly increasing trends. However, there were notable exceptions, with less mobility among family physicians who trained in Quebec and higher mobility among family physicians who trained in the Atlantic region, with physicians more likely to leave the Atlantic provinces to practise in other parts of Canada. In British Columbia, almost one in three practising physicians completed their medical degree in another region but moved to British Columbia to complete family medicine residency and set up practice in that province. Family physicians from rural family medicine programs were more likely to practise in a town or rural setting at five years after residency training, with slight declines noted over a three-year period. The regional differences point to questions about how and to what extent educational exposure in residency influences decisions about location of practice.

In reviewing the practice distribution patterns of graduates with extended training, we found most located their practices in Ontario and Quebec. The proportion of graduates from extended training programs in urban areas remained relatively consistent over time, with more practising in urban than in rural environments. This is of interest when thinking about the purpose of extended training, Certificates of Added Competence, and the role family physicians with this training can have in meeting social accountability needs.

Conclusion

As part of its social accountability mandate, the CFPC is committed to enhancing access to care for

everyone in Canada. The data show that despite a general increase in the ratio of family physicians to the population, there continues to be a maldistribution of the family physician workforce. For workforce planners to be able to make decisions that enable everyone in Canada to have access to a family physician, there needs to be a better understanding of the distribution of family physicians. For planning to

be effective, understanding the factors that influence practice decisions about location are important. This information can help the College and the provinces better support the equitable distribution of family physicians across Canada. In the future, it will be important to look at practice trends and to identify what, if any, changes in education could influence practice location choices over time.

Further information

To read the full report—*Preparing Our Future Family Physicians: An educational prescription for strengthening health care in changing times*—and related evidence and scholarship, please visit <https://www.cfpc.ca/futurefp>.

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Appendix 1

List of Other Enhanced Skill Training Programs

Enhanced Skills: Addiction and Mental Health

Enhanced Skills: Anesthesia

Enhanced Skills: Breast Diseases

Enhanced Skills: Cancer Care

Enhanced Skills: Chronic Disease

Enhanced Skills: Clinical Scholarships

Enhanced Skills: Developmental Disabilities

Enhanced Skills: Environmental Health

Enhanced Skills: Global Health

Enhanced Skills: HIV/AIDS

Enhanced Skills: Hospitalist Medicine

Enhanced Skills: Indigenous Health

Enhanced Skills: Obstetrics

Enhanced Skills: Occupational Medicine

Enhanced Skills: Oncology

Enhanced Skills: Palliative Care

Enhanced Skills: Pediatrics

Enhanced Skills: Psychiatry

Enhanced Skills: Rheumatology

Enhanced Skills: Rural Skills

Enhanced Skills: Sports Medicine

Enhanced Skills: Surgical Skills

Enhanced Skills: Women's Health

Source: Canadian Post-MD Education Registry (CAPER)